

# 1756 ControlLogix I/O Specifications

|                                |  |
|--------------------------------|--|
| AC Digital Catalog Numbers     | 1756-IA8D, 1756-IA16, 1756-IA16K, 1756-IA16I, 1756-IA16IK, 1756-IA32, 1756-IA32K, 1756-IM16I, 1756-IM16IK, 1756-IN16, 1756-OA8, 1756-OA8D, 1756-OA8E, 1756-OA16, 1756-OA16K, 1756-OA16I, 1756-OA16IK, 1756-ON8   |
| DC Digital Catalog Numbers     | 1756-IB16, 1756-IB16K, 1756-IB16D, 1756-IB16DK, 1756-IB16I, 1756-IB16IK, 1756-IB16IF, 1756-IB16IFK, 1756-IB16ISOE, 1756-IB16ISOEK, 1756-IB32, 1756-IB32K, 1756-IC16, 1756-IG16, 1756-IH16I, 1756-IH16ISOE, 1756-IV16, 1756-IV16K, 1756-IV32, 1756-IV32K, 1756-OB8, 1756-OB8EI, 1756-OB8I, 1756-OB16D, 1756-OB16DK, 1756-OB16E, 1756-OB16EK, 1756-OB16I, 1756-OB16IEF, 1756-OB16IEFK, 1756-OB16IEFS, 1756-OB16IS, 1756-OB32, 1756-OB32K, 1756-OC8, 1756-OG16, 1756-OH8I, 1756-OV16E, 1756-OV32E |
| Contact Catalog Numbers        | 1756-OW16I, 1756-OX8I  |
| Analog Catalog Numbers         | 1756-IF6CIS, 1756-IF6I, 1756-IF8, 1756-IF8K, 1756-IF8I, 1756-IF8IK, 1756-IF16, 1756-IF16K, 1756-IF4FXOF2F, 1756-IF4FXOF2FK, 1756-IR6I, 1756-IRT8I, 1756-IRT8IK, 1756-IR12, 1756-IR12K, 1756-IT6I, 1756-IT6I2, 1756-IT16, 1756-IT16K, 1756-OF4, 1756-OF4K, 1756-OF6CI, 1756-OF6VI, 1756-OF8, 1756-OF8K, 1756-OF8I, 1756-OF8IK   |
| HART Interface Catalog Numbers | 1756-IF8H, 1756-IF8HK, 1756-IF8IH, 1756-IF8IHK, 1756-IF16H, 1756-IF16HK, 1756-IF16IH, 1756-IF16IHK, 1756-OF8H, 1756-OF8HK, 1756-OF8IH, 1756-OF8IHK   |
| Specialty Catalog Numbers      | 1756-CFM, 1756-CMS1B1, 1756-CMS1C1, 1756-HSC, 1756-LSC8XIB8I, 1756-LSC8XIB8IK, 1756-PLS  |

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The ControlLogix® Architecture provides a wide range of input and output modules to span many applications, from high-speed digital to process control. The ControlLogix architecture uses Producer/Consumer technology, which allows input information and output status to be shared among multiple ControlLogix controllers.

Each ControlLogix I/O module mounts in a ControlLogix chassis and requires either a Removable Terminal Block (RTB) or a 1492 interface module (IFM) to connect all field-side wiring. RTBs and IFMs are not included with the I/O modules. They must be ordered separately.



## Summary of Changes

This publication contains new and updated information as indicated in the following table.

| Topic  | Page       |
|--|------------|
| Added conformed coated catalog numbers:<br>1756-IA16K, 1756-IA16IK, 1756-IA32K, 1756-IB16K, 1756-IB16DK, 1756-IB16IK, 1756-IB16IFK, 1756-IB16ISOEK, 1756-IB32K, 1756-IF4FX0F2FK, 1756-IF8K, 1756-IF8HK, 1756-IF8IHK, 1756-IF8IK, 1756-IF16K, 1756-IF16HK, 1756-IF16IHK, 1756-IM16IK, 1756-IR12K, 1756-IRT8IK, 1756-IT16K, 1756-IV16K, 1756-IV32K, 1756-LSC8XIB8IK, 1756-OA16K, 1756-OA16IK, 1756-OB16DK, 1756-OB16EK, 1756-OB16IEFK, 1756-OB32K, 1756-OF4K, 1756-OF8K, 1756-OF8IK, 1756-OF8HK, 1756-OF8IHK | Throughout |
| Updated CE, KC, and EAC certification information.   | Throughout |
| Corrected the 1756-IF16H wiring diagram.   | 73         |
| Updated the 1756-OB32 simplified schematic.  | 175        |

## Available 1756 I/O Modules

You can select these types of digital I/O modules.

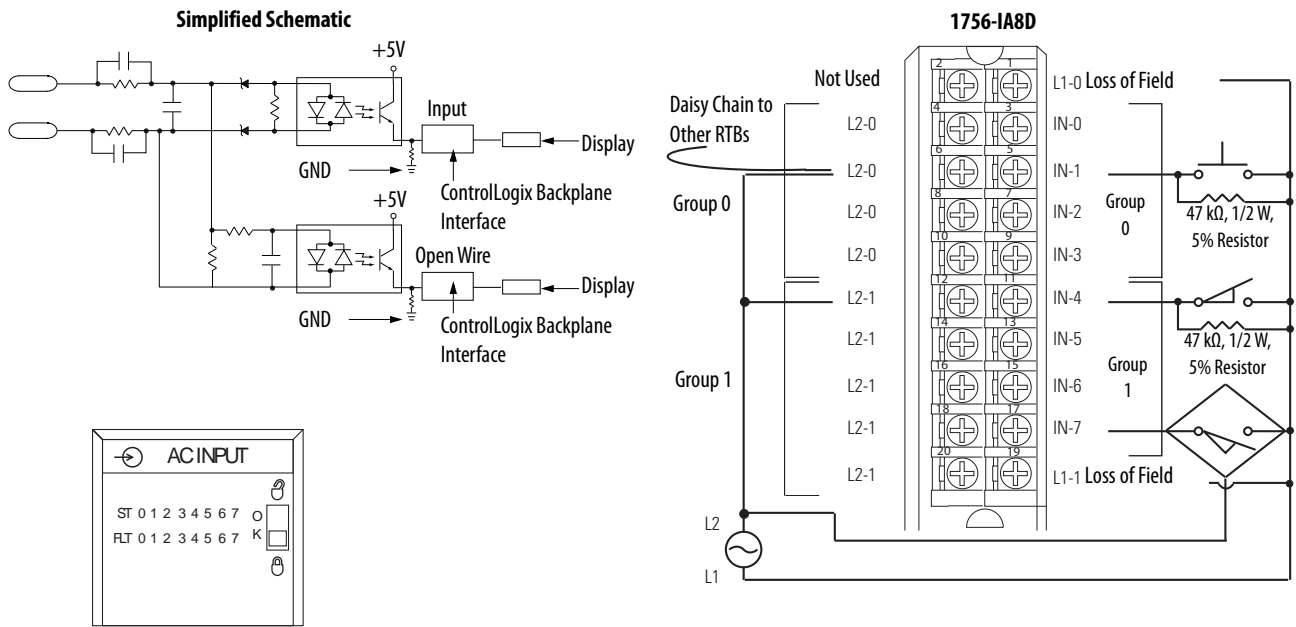
| Digital I/O Type      | Description  |  |  |  |
|-----------------------|--|--|--|--|
| Diagnostic            | These modules provide diagnostic features to the point level. These modules have a <b>D</b> at the end of the catalog number.  |  |  |  |
| Electronic fusing     | These modules have internal electronic fusing to help prevent too much current from flowing through the module. These modules have an <b>E</b> at the end of the catalog number. |  |  |  |
| Individually isolated | These modules have individually isolated inputs or outputs. These modules have an <b>I</b> at the end of the catalog number.   |  |  |  |

| I/O Type              | Cat. No.                        | Page | Cat. No.                        | Page       |
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|                       | 1756-IA32, 1756-IA32K           | 13   | 1756-OA16, 1756-OA16K           | 139        |
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|                       | 1756-HSC                        | 239  | 1756-PLS                        | 247        |

## 1756-IA8D

ControlLogix 120V AC diagnostic input module



### Diagnostic Specifications - 1756-IA8D

| Attribute                 | 1756-IA8D                            |
|---------------------------|--------------------------------------|
| Open wire                 | Off-state leakage current 1.5 mA min |
| Loss of power             | Transition range 46...85V AC         |
| Time stamp of diagnostics | ±1 ms                                |

### Technical Specifications - 1756-IA8D

| Attribute                              | 1756-IA8D                                  |
|--|--|
| Inputs                                 | Eight diagnostic (4 points/group)          |
| Operating voltage range <sup>(1)</sup> | 79...132V AC, 47...63 Hz                   |
| Input delay time (screw to backplane)  | Hardware delay: 10 ms max + filter time    |
| Off to On                              | User-selectable filter time: 1 ms or 2 ms  |
| On to Off                              | Hardware delay: 8 ms max + filter time     |
|  | User-selectable filter time: 9 ms or 18 ms |
| Current draw @ 5.1V                    | 100 mA                                     |
| Current draw @ 24V                     | 3 mA                                       |
| Total backplane power                  | 0.58 W                                     |
| Power dissipation, max                 | 4.5 W @ 60 °C (140 °F)                     |
| Thermal dissipation                    | 15.35 BTU/hr                               |
| Off-state voltage, max                 | 20V  |
| Off-state current, max                 | 2.5 mA                                     |

**Technical Specifications - 1756-IA8D (continued)**

| Attribute                        | 1756-IA8D   |
|----------------------------------|---|
| On-state current, min            | 5 mA @ 74V AC   |
| On-state current, max            | 16 mA @ 132V AC   |
| Inrush current, max              | 250 mA  |
| Input impedance, max             | 8.25 k $\Omega$ @ 132V AC, 60 Hz  |
| Cyclic update time               | 200 $\mu$ s...750 ms  |
| Change of state                  | Software configurable   |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s   |
| Isolation voltage                | 125V (continuous), basic insulation type, inputs to backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested at 1200V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(2)</sup> - on signal ports  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |

(1) UL certification for 120V 50/60 Hz nominal. Rockwell Automation specified to 74...132V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IA8D**

| Attribute   | 1756-IA8D                                      |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IA8D (continued)**

| Attribute                                 | 1756-IA8D  |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . 80 MHz  |

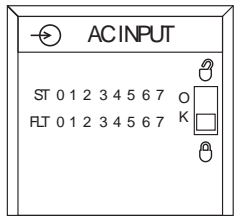
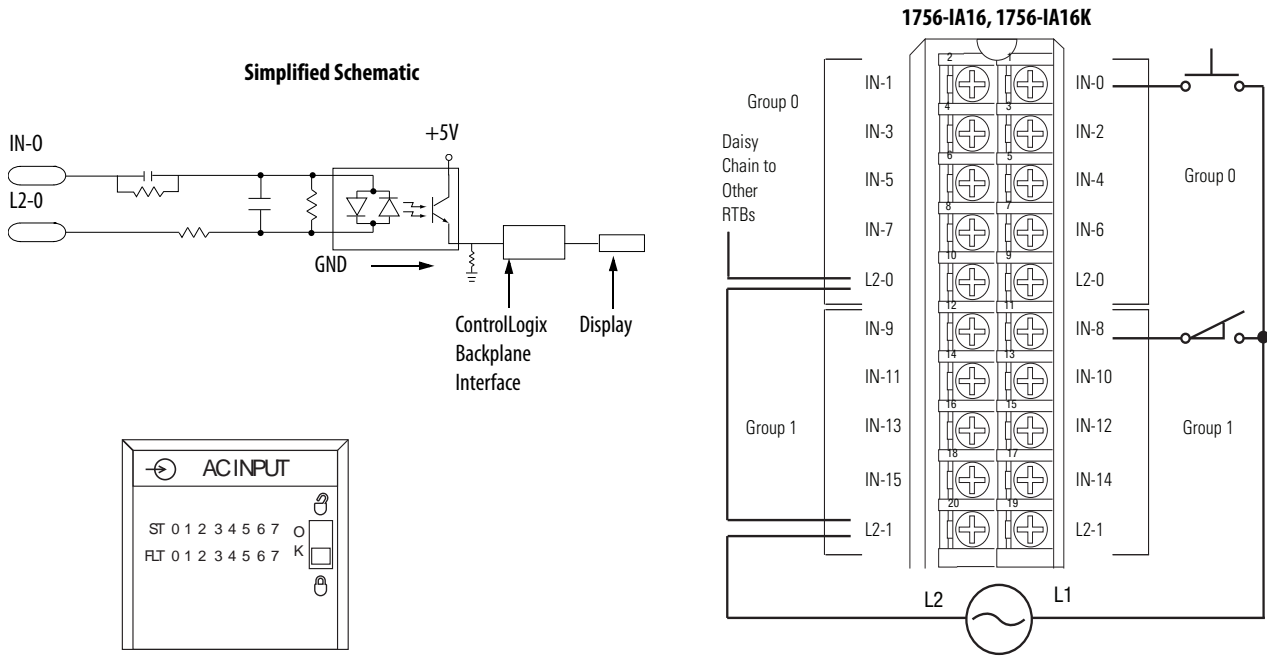
**Certifications - 1756-IA8D**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IA8D   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IA16, 1756-IA16K

ControlLogix 120V AC input module



### Technical Specifications - 1756-IA16, 1756-IA16K

| Attribute  | 1756-IA16, 1756-IA16K  |
|--|--|
| Inputs   | 16 (8 points/group)  |
| Voltage category                                   | 120V AC 50/60 Hz   |
| Operating voltage range <sup>(1)</sup>             | 74...132V AC,<br>47...63 Hz  |
| Input delay time (screw to backplane)<br>Off to On | Hardware delay: 10 ms max + filter time<br>User-selectable filter time: 1 ms or 2 ms |
| On to Off  | Hardware delay: 8 ms max + filter time<br>User-selectable filter time: 9 ms or 18 ms |
| Current draw @ 5.1V                                | 100 mA   |
| Current draw @ 24V                                 | 2 mA   |
| Total backplane power                              | 0.58 W   |
| Power dissipation, max                             | 5.8 W @ 60 °C (140 °F)   |
| Thermal dissipation                                | 18.41 BTU/hr   |
| Off-state voltage, max                             | 20V  |
| Off-state current, max                             | 2.5 mA   |
| On-state current, min                              | 5 mA @ 74V AC  |
| On-state current, max                              | 13 mA @ 132V AC  |
| Inrush current, max                                | 250 mA peak (decaying to <37% in 22 ms, without activation)                          |

**Technical Specifications - 1756-IA16, 1756-IA16K**

| Attribute                        | 1756-IA16, 1756-IA16K  |
|----------------------------------|--|
| Input impedance, max             | 10.15 k $\Omega$ @ 132V AC, 60 Hz  |
| Cyclic update time               | 200 $\mu$ s...750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 125V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1200V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(2)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4   |

(1) UL certification for 120V 50/60 Hz nominal. Rockwell Automation specified to 74...132V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IA16, 1756-IA16K**

| Attribute   | 1756-IA16, 1756-IA16K  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | $\pm$ 4 kV at 5 kHz on signal ports  |



**Environmental Specifications - 1756-IA16, 1756-IA16K**

| Attribute                                    | 1756-IA16, 1756-IA16K  |
|--|--|
| Surge transient immunity<br>IEC 61000-4-5    | $\pm 1$ kV line-line (DM) and $\pm 2$ kV line-earth (CM) on signal ports |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz            |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

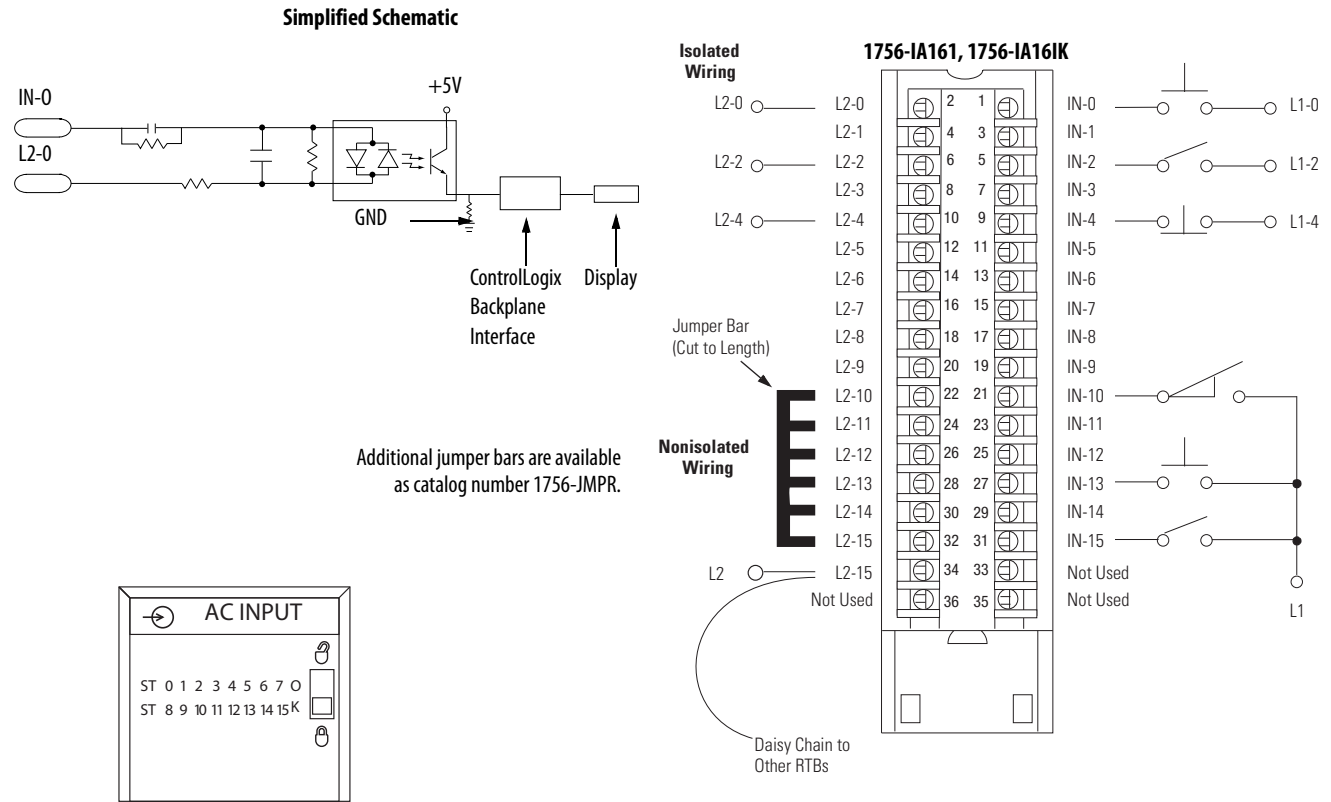
**Certifications - 1756-IA16, 1756-IA16K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IA16, 1756-IA16K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IA16I, 1756-IA16IK

ControlLogix 120V AC isolated input module



### Technical Specifications - 1756-IA16I, 1756-IA16IK

| Attribute                              | 1756-IA16I, 1756-IA16IK  |
|--|--|
| Inputs                                 | 16 individually isolated   |
| Voltage category                       | 120V AC 50/60 Hz   |
| Operating voltage range <sup>(1)</sup> | 79...132V AC,<br>47...63 Hz  |
| Input voltage, nom                     | 120V AC 50/60 Hz   |
| Input delay time (screw to backplane)  |  |
| Off to On                              | Hardware delay: 10 ms max + filter time<br>User-selectable filter time: 1 ms or 2 ms |
| On to Off                              | Hardware delay: 8 ms max + filter time<br>User-selectable filter time: 9 ms or 18 ms |
| Current draw @ 5.1V                    | 125 mA   |
| Current draw @ 24V                     | 3 mA   |
| Total backplane power                  | 0.71 W   |
| Power dissipation, max                 | 4.9 W @ 60 °C (140 °F)   |
| Thermal dissipation                    | 16.71 BTU/hr   |
| Off-state voltage, max                 | 20V  |

**Technical Specifications - 1756-IA16I, 1756-IA16IK**

| Attribute                        | 1756-IA16I, 1756-IA16IK  |
|----------------------------------|--|
| Off-state current, max           | 2.5 mA   |
| On-state current, min            | 5 mA @ 79V AC, 47...63 Hz  |
| On-state current, max            | 15 mA @ 132V AC, 47...63 Hz  |
| Inrush current, max              | 250 mA   |
| Input impedance, max             | 8.8 k $\Omega$ @ 132V AC, 60 Hz  |
| Cyclic update time               | 200 $\mu$ s...750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 125V (continuous), basic insulation type, inputs-to-backplane, and input-to-input<br>Routine tested @ 1200V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category <sup>(2)</sup>     | 1 - on signal ports  |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4A  |

(1) UL certification for 120V 50/60 Hz nominal. Rockwell Automation specified to 74...132V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IA16I, 1756-IA16IK**

| Attribute   | 1756-IA16I, 1756-IA16IK                        |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IA16I, 1756-IA16IK**

| Attribute                                    | 1756-IA16I, 1756-IA16IK  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

**Certifications - 1756-IA16I, 1756-IA16IK**

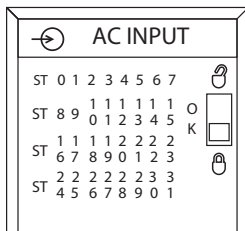
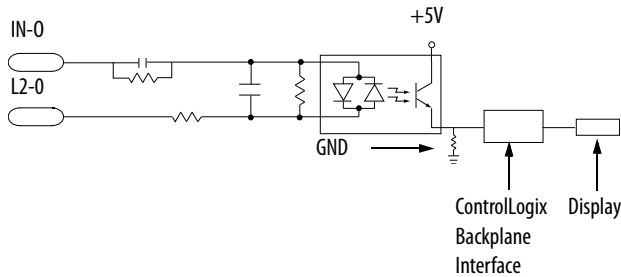
| Certification (when product is marked) <sup>(1)</sup> | 1756-IA16I, 1756-IA16IK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> </ul> European Union 2014/35/EU LVD Directive, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

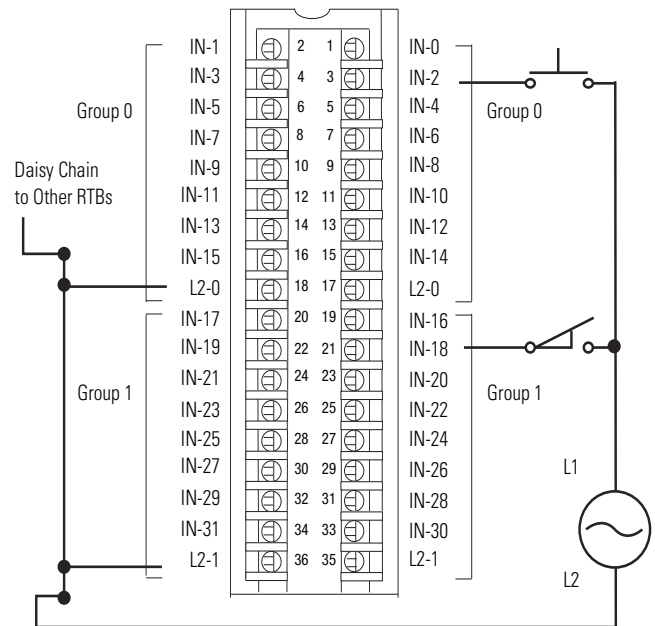
## 1756-IA32, 1756-IA32K

ControlLogix AC (74...132V) input module

**Simplified Schematic**



**1756-IA32, 1756-IA32K**



### Technical Specifications - 1756-IA32, 1756-IA32K

| Attribute                             | 1756-IA32, 1756-IA32K   |
|---------------------------------------|---|
| Inputs                                | 32 (16 points/group)  |
| Voltage category                      | 120V AC 50/60 Hz  |
| Operating voltage range               | 74...132V AC,<br>47...63 Hz   |
| Input voltage, nom                    | 120V AC 50/60 Hz  |
| Input delay time (screw to backplane) |   |
| Off to On                             | Hardware delay: 1.5 ms nom/10 ms max + filter time<br>User-selectable filter time: 1 ms or 2 ms |
| On to Off                             | Hardware delay: 1 ms nom/8 ms max + filter time<br>User-selectable filter time: 9 ms or 18 ms   |
| Current draw @ 5.1V                   | 165 mA  |
| Current draw @ 24V                    | 2 mA  |
| Total backplane power                 | 0.9 W   |
| Power dissipation, max                | 6.1 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 20.8 BTU/hr   |
| Off-state voltage, max                | 20V   |
| Off-state current, max                | 2.5 mA  |
| On-state current, min                 | 5 mA @ 74V AC   |

**Technical Specifications - 1756-IA32, 1756-IA32K**

| Attribute                        | 1756-IA32, 1756-IA32K  |
|----------------------------------|--|
| On-state current, max            | 15 mA @ 132V AC  |
| Inrush current, max              | 390 mA   |
| Input impedance, max             | 14.0 k $\Omega$ @ 132V AC, 60 Hz   |
| Cyclic update time               | 200 $\mu$ s...750 ms   |
| Change of stat                   | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane<br>125V (continuous), basic insulation type, input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category <sup>(1)</sup>     | 1 - on signal ports  |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4   |

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IA32, 1756-IA32K**

| Attribute   | 1756-IA32, 1756-IA32K  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-IA32, 1756-IA32K**

| Attribute                                 | 1756-IA32, 1756-IA32K  |
|---|--|
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports                                 |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz  |

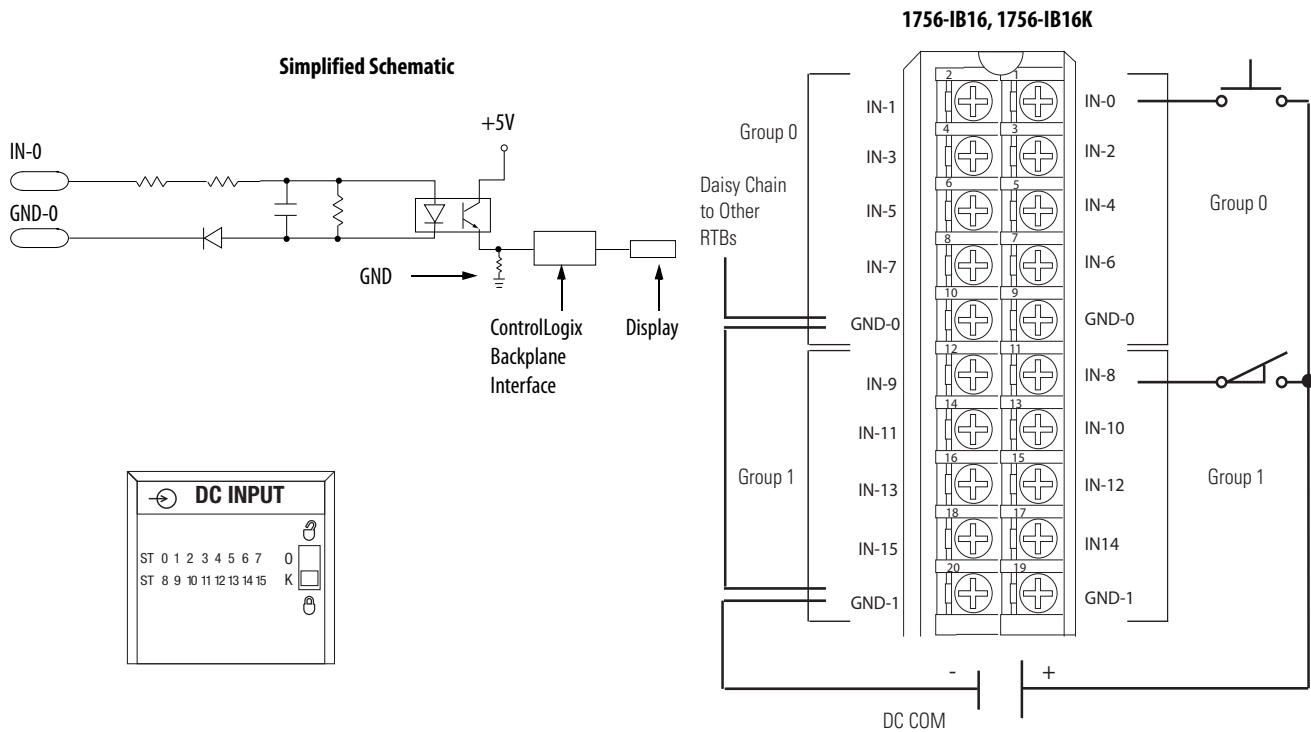
**Certifications - 1756-IA32, 1756-IA32K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IA32, 1756-IA32K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IB16, 1756-IB16K

ControlLogix DC (10...31.2V) input module



### Technical Specifications - 1756-IB16, 1756-IB16K

| Attribute                             | 1756-IB16, 1756-IB16K   |
|---------------------------------------|---|
| Inputs                                | 16 (8 points/group)   |
| Voltage category                      | 12/24V DC sink  |
| Operating voltage range               | 10...31.2V DC   |
| Input voltage, nom                    | 24V DC  |
| Input delay time (screw to backplane) |   |
| Off to On                             | Hardware delay: 290 $\mu$ s nom/1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms  |
| On to Off                             | Hardware delay: 700 $\mu$ s nom/2 ms max + filter time<br>User-selectable filter time: 0, 1, 2, 9, or 18 ms |
| Current draw @ 5.1V                   | 100 mA  |
| Current draw @ 24V                    | 2 mA  |
| Total backplane power                 | 0.56 W  |
| Power dissipation, max                | 5.1 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 17.39 BTU/hr  |
| Off-state voltage, max                | 5V  |
| Off-state current, max                | 1.5 mA  |
| On-state current, min                 | 2 mA @ 10V DC   |
| On-state current, max                 | 10 mA @ 31.2V DC  |



**Technical Specifications - 1756-IB16, 1756-IB16K**

| Attribute                        | 1756-IB16, 1756-IB16K  |
|----------------------------------|--|
| Inrush current, max              | 250 mA peak (decaying to < 37% in 22 ms, without activation)   |
| Input impedance, max             | 3.12 k $\Omega$ @ 31.2V DC   |
| Cyclic update time               | 200 $\mu$ s...750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T3C  |
| IEC temperature code             | T3   |
| Reverse polarity protection      | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB16, 1756-IB16K**

| Attribute   | 1756-IB16, 1756-IB16K                          |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IB16, 1756-IB16K**

| Attribute                                    | 1756-IB16, 1756-IB16K  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . 80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

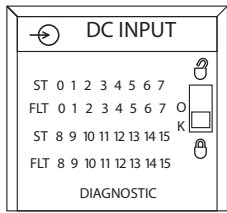
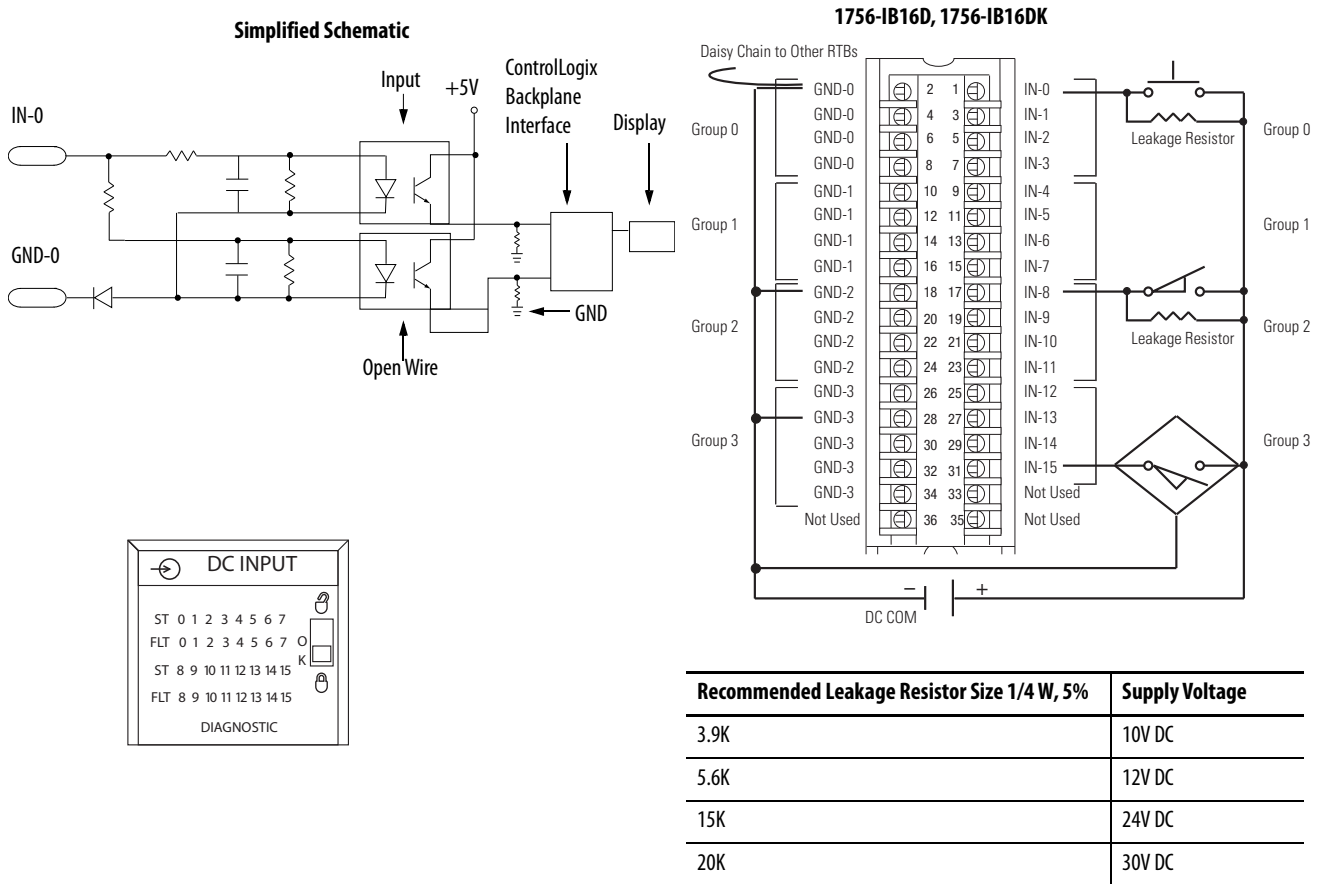
**Certifications - 1756-IB16, 1756-IB16K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IB16, 1756-IB16K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T3 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IB16D, 1756-IB16DK

ControlLogix DC (10...30V) diagnostic input module



### Diagnostic Specifications - 1756-IB16D, 1756-IB16DK

| Attribute                 | 1756-IB16D, 1756-IB16DK              |
|---------------------------|--------------------------------------|
| Open wire                 | Off-state leakage current 1.2 mA min |
| Time stamp of diagnostics | ±1 ms                                |

### Technical Specifications - 1756-IB16D, 1756-IB16DK

| Attribute                             | 1756-IB16D, 1756-IB16DK  |
|---------------------------------------|--|
| Inputs                                | Sixteen diagnostic (4 points/group)  |
| Voltage category                      | 12/24V DC sink   |
| Operating voltage range               | 10...30V DC  |
| Input voltage, nom                    | 24V DC   |
| Input delay time (screw to backplane) |  |
| Off to On                             | Hardware delay: 340 μs nom/1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms        |
| On to Off                             | Hardware delay: 740 μs nom/4 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 9 ms, or 18 ms |

**Technical Specifications - 1756-IB16D, 1756-IB16DK**

| Attribute                        | 1756-IB16D, 1756-IB16DK  |
|----------------------------------|--|
| Current draw @ 5.1V              | 150 mA   |
| Current draw @ 24V               | 3 mA   |
| Total backplane power            | 0.84 W   |
| Power dissipation, max           | 5.8 W @ 60 °C (140 °F)   |
| Thermal dissipation              | 19.78 BTU/hr   |
| Off-state voltage, max           | 5V   |
| Off-state current, max           | 1.5 mA   |
| On-state current, min            | 2 mA @ 10V DC  |
| On-state current, max            | 13 mA @ 30V DC   |
| Inrush current, max              | 250 mA   |
| Input impedance, max             | 2.31 k $\Omega$ @ 30V DC   |
| Cyclic update time               | 200 $\mu$ s . . . 750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T3C  |
| IEC temperature code             | T3   |
| Reverse polarity protection      | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB16D, 1756-IB16DK**

| Attribute  | 1756-IB16D, 1756-IB16DK              |
|--|--------------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 . . . 60 °C (32 . . . 140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)                       |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40 . . . +85 °C (-40 . . . +185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5 . . . 95% noncondensing            |

**Environmental Specifications - 1756-IB16D, 1756-IB16DK**

| Attribute   | 1756-IB16D, 1756-IB16DK  |
|---|--|
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

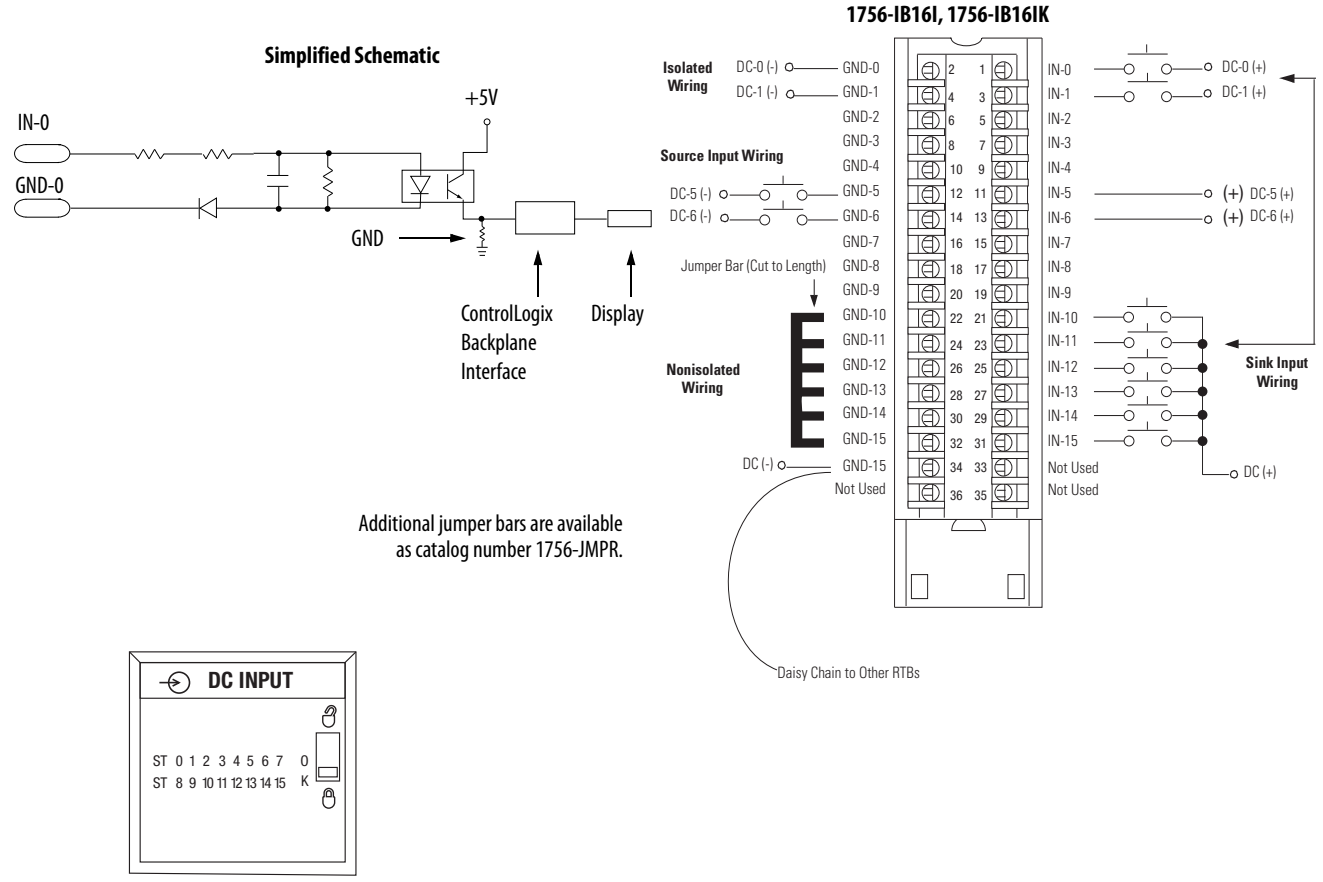
**Certifications - 1756-IB16D, 1756-IB16DK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IB16D, 1756-IB16DK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T3 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-IB16I, 1756-IB16IK

ControlLogix DC (10...30V) isolated input module



**Technical Specifications - 1756-IB16I, 1756-IB16IK**

| Attribute                             | 1756-IB16I, 1756-IB16IK  |
|---------------------------------------|--|
| Inputs                                | 16 individually isolated   |
| Voltage category                      | 12/24V DC sink/source  |
| Operating voltage range               | 10...30V DC  |
| Input voltage, nom                    | 24V DC   |
| Input delay time (screw to backplane) |  |
| Off to On                             | Hardware delay: 1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms                             |
| On to Off                             | Hardware delay: 4 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms                |
| Current draw @ 5.1V                   | 100 mA   |
| Current draw @ 24V                    | 3 mA   |
| Total backplane power                 | 0.58 W   |
| Power dissipation, max                | 5 W @ 60 °C (140 °F)   |
| Thermal dissipation                   | 17.05 BTU/hr   |
| Off-state voltage, max                | 5V   |
| Off-state current, max                | 1.5 mA   |
| On-state current, min                 | 2 mA @ 10V DC  |
| On-state current, max                 | 10 mA @ 30V DC   |
| Inrush current, max                   | 250 mA peak (decaying to < 37% in 22 ms, without activation)   |
| Input impedance, max                  | 3 k $\Omega$ @ 30V DC  |
| Cyclic update time                    | 200 $\mu$ s...750 ms   |
| Change of stat                        | Software configurable  |
| Time stamp of inputs                  | $\pm$ 200 $\mu$ s  |
| Isolation voltage                     | 250V (continuous), basic insulation type, inputs-to-backplane, and input-to-input<br>Routine tested @ 1350V AC for 2 s |
| Module keying                         | Electronic, software configurable  |
| Removable terminal block housing      | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                            | User-defined mechanical  |
| Slot width                            | 1  |
| Wire category                         | 1 <sup>(1)</sup>   |
| Enclosure type                        | None (open-style)  |
| North American temperature code       | T4   |
| IEC temperature code                  | T4   |
| Reverse polarity protection           | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB16I, 1756-IB16IK**

| <b>Attribute</b>   | <b>1756-IB16I, 1756-IB16IK</b>   |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1   | 3 kV   |



**Certifications - 1756-IB16I, 1756-IB16IK**

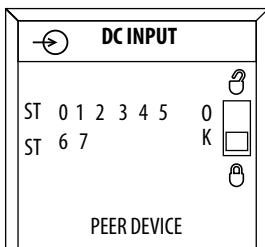
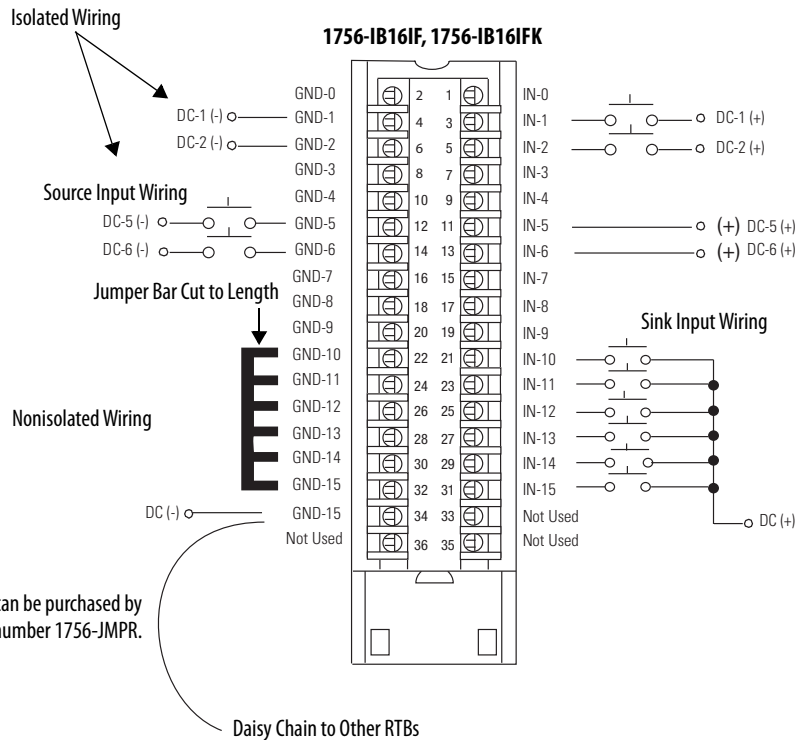
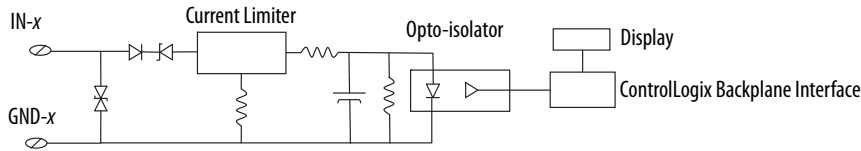
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IB16I, 1756-IB16IK</b>  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with: EN 61000-6-4; Industrial Emissions  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IB16IF, 1756-IB16IFK

ControlLogix DC (10...30V) sinking or sourcing, isolated, fast input module

**Simplified Schematic**



### Technical Specifications - 1756-IB16IF, 1756-IB16IFK

| Attribute               | 1756-IB16IF, 1756-IB16IFK |
|-------------------------|---------------------------|
| Inputs                  | 16 individually isolated  |
| Voltage category        | 12/24V DC sink/source     |
| Operating voltage range | 10...30V DC               |
| Input voltage, nom      | 24V DC                    |

**Technical Specifications - 1756-IB16IF, 1756-IB16IFK**

| Attribute                             | 1756-IB16IF, 1756-IB16IFK   |
|---------------------------------------|---|
| Input delay time (screw to backplane) |   |
| Off to On                             | 14 $\mu$ s nom/23 $\mu$ s max + user-configurable filter time of 0. . . 30,000 $\mu$ s  |
| On to Off                             | 14 $\mu$ s nom/23 $\mu$ s max + user-configurable filter time of 0. . . 30,000 $\mu$ s  |
| Current draw @ 5.1V                   | 275 mA  |
| Current draw @ 24V                    | 3 mA  |
| Total backplane power                 | 1.47 W  |
| Power dissipation                     | 3.8 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 12.97 BTU/hr  |
| Off-state voltage, max                | 5V  |
| Off-state current, max                | 1.5 mA  |
| On-state current, min                 | 2 mA @ 10V DC   |
| On-state current, max                 | 5 mA @ 30V DC   |
| Input impedance, max                  | 6 k $\Omega$ @ 30V DC   |
| Cyclic update time                    | 200 $\mu$ s . . . 750 ms  |
| Change of state                       | Software configurable   |
| Time stamp of inputs                  | $\pm$ 4 $\mu$ s for inputs < 4 kHz<br>$\pm$ 13 $\mu$ s for inputs > 4 kHz   |
| Isolation voltage                     | 250V (continuous), reinforced insulation type, inputs-to-backplane<br>250V (continuous), basic insulation type, input-to-input<br>Type tested @ 2300V AC for 60 s inputs-to-backplane<br>Type tested @ 1500V AC for 60 s input-to-input |
| Module keying                         | Electronic, software configurable   |
| Removable terminal block housing      | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                            | User-defined mechanical   |
| Slot width                            | 1   |
| Wire category                         | 1 on signal ports <sup>(1)</sup>  |
| Enclosure type                        | None (open-style)   |
| North American temperature code       | T4A   |
| IEC temperature code                  | T4  |
| Reverse polarity protection           | Yes   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB16IF, 1756-IB16IFK**

| <b>Attribute</b>   | <b>1756-IB16IF, 1756-IB16IFK</b>   |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-IB16IF, 1756-IB16IFK**

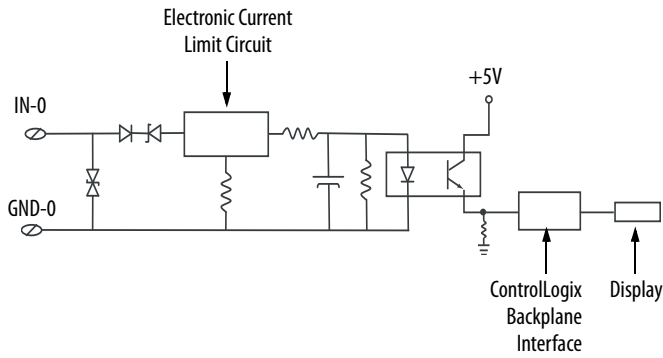
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IB16IF, 1756-IB16IFK</b>  |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

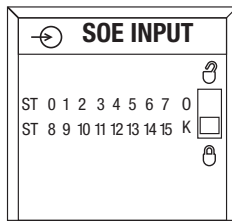
## 1756-IB16ISOE, 1756-IB16ISOEK

ControlLogix DC (10...55V) sequence of events input module

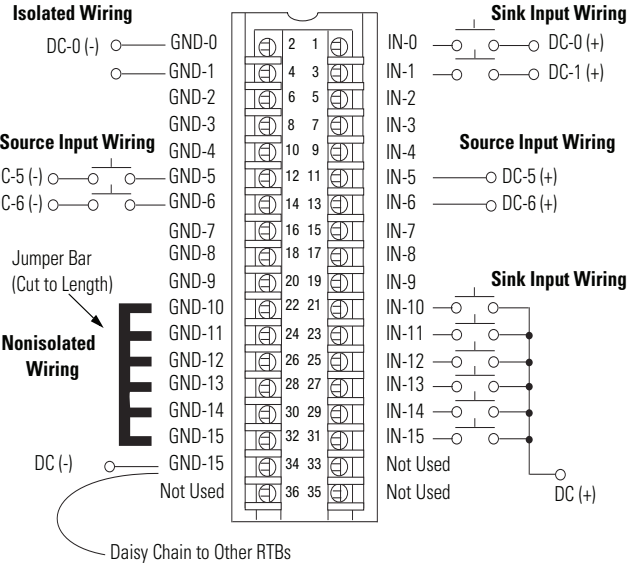
**Simplified Schematic**



Additional jumper bars are available as catalog number 1756-JMPR.



**1756-IB16ISOE, 1756-IB16ISOEK**



### Technical Specifications - 1756-IB16ISOE, 1756-IB16ISOEK

| Attribute  | 1756-IB16ISOE, 1756-IB16ISOEK   |
|--|---|
| Inputs   | 16 individually isolated, sequence of events  |
| Voltage category                                   | 24/48V DC sink/source   |
| Operating voltage range                            | 10...55V DC   |
| Input voltage, nom                                 | 24V DC  |
| Input delay time (screw to backplane)<br>Off to On | Hardware delay: 10 $\mu$ s nom/20 $\mu$ s max<br>+ firmware scan: up to 25 $\mu$ s<br>+ filter time: 0...50 ms<br>+ ASIC delay: 175 $\mu$ s (FIFO) or 625 $\mu$ s (Coordinated System Time per point) |
| On to Off  | Hardware delay: 25 $\mu$ s nom/50 $\mu$ s max<br>+ firmware scan: up to 25 $\mu$ s<br>+ filter time: 0...50 ms<br>+ ASIC delay: 175 $\mu$ s (FIFO) or 625 $\mu$ s (Coordinated System Time per point) |
| Current draw @ 5.1V                                | 320 mA  |
| Current draw @ 24V                                 | 2 mA  |
| Total backplane power                              | 1.7 W   |
| Power dissipation, max                             | 5.5 W @ 60 °C (140 °F)  |

**Technical Specifications - 1756-IB16ISOE, 1756-IB16ISOEK**

| Attribute                       | 1756-IB16ISOE, 1756-IB16ISOEK  |
|---------------------------------|--|
| Thermal dissipation             | 17.22 BTU/hr   |
| Off-state voltage, max          | 5V   |
| Off-state current, max          | 1.5 mA   |
| On-state current, min           | 2.0 mA @ 9V DC   |
| On-state current, nom           | 4.5 mA @ 24...31V DC   |
| On-state current, max           | 5.1 mA @ 48...55V DC   |
| Input impedance, max            | 10.8 k $\Omega$ @ 55V DC   |
| Cyclic update time              | 200 $\mu$ s...750 ms   |
| Change of state                 | Software configurable  |
| Time stamp of inputs            | $\pm$ 100 $\mu$ s  |
| Isolation voltage               | 250V (continuous), basic insulation type, inputs-to-backplane<br>125V (continuous), basic insulation type, input-to-input<br>Routine tested @ 1350V AC for 2 s |
| Module keying                   | Electronic, software configurable  |
| Removable terminal block        | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                      | User-defined mechanical  |
| Slot width                      | 1  |
| Wire category                   | 1 <sup>(1)</sup>   |
| Enclosure type                  | None (open-style)  |
| North American temperature code | T4   |
| IEC temperature code            | T4   |
| Reverse polarity protection     | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB16ISOE, 1756-IB16ISOEK**

| Attribute  | 1756-IB16ISOE, 1756-IB16ISOEK |
|--|-------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)       |
| Temperature, surrounding air, max  | 60 °C (140 °F)                |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)  |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing         |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz             |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                          |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                          |

**Environmental Specifications - 1756-IB16ISOE, 1756-IB16ISOEK**

| Attribute                                    | 1756-IB16ISOE, 1756-IB16ISOEK  |
|--|--|
| Emissions                                    | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80. . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000. . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz. . .80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 2.5 kV   |

**Certifications - 1756-IB16ISOE, 1756-IB16ISOEK**

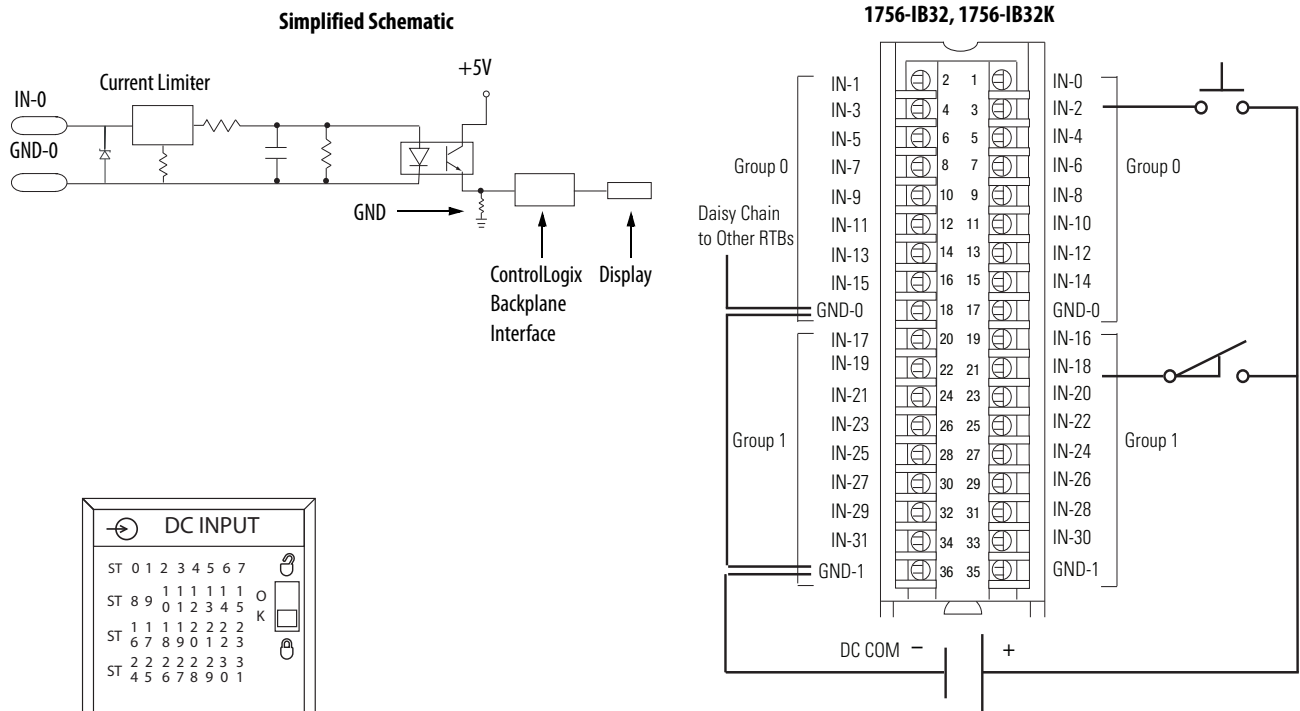
| Certification (when product is marked) <sup>(1)</sup> | 1756-IB16ISOE, 1756-IB16ISOEK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.



## 1756-IB32, 1756-IB32K

ControlLogix DC (10...31.2V) input module



### Technical Specifications - 1756-IB32, 1756-IB32K

| Attribute                             | 1756-IB32, 1756-IB32K  |
|---------------------------------------|--|
| Inputs                                | 32 (16 points/group)   |
| Voltage category                      | 12/24V DC sink   |
| Operating voltage range               | 10. . . 31.2V DC   |
| Input voltage, nom                    | 24V DC   |
| Input delay time (screw to backplane) | Hardware delay: 380 $\mu$ s max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms              |
| Off to On                             |  |
| On to Off                             | Hardware delay: 420 $\mu$ s max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms |
| Current draw @ 5.1V                   | 120 mA   |
| Current draw @ 24V                    | 2 mA   |
| Total backplane power                 | 0.66 W   |
| Power dissipation, max                | 6.2 W @ 60 °C (140 °F)   |
| Thermal dissipation                   | 21.1 BTU/hr @ 60 °C (140 °F)   |
| Off-state voltage, max                | 5V   |
| Off-state current, max                | 2.27 mA  |
| On-state current, min                 | 4.8 mA @ 10V DC  |
| On-state current, max                 | 5.5 mA @ 31.2V DC  |

**Technical Specifications - 1756-IB32, 1756-IB32K**

| Attribute                       | 1756-IB32, 1756-IB32K   |
|---------------------------------|---|
| Inrush current, max             | 250 mA (decaying to < 37% in 22 ms, without activation)   |
| Input impedance, max            | 5.67 k $\Omega$ @ 31.2V DC  |
| Cyclic update time              | 200 $\mu$ s...750 ms  |
| Change of state                 | Software configurable   |
| Time stamp of inputs            | $\pm$ 200 $\mu$ s   |
| Isolation voltage               | 250V (continuous), reinforced insulation type, inputs-to-backplane<br>250V (continuous), basic insulation type, input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                   | Electronic, software configurable   |
| Removable terminal block        | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 1   |
| Wire category                   | 1 - on signal ports <sup>(1)</sup>  |
| Enclosure type                  | None (open-style)   |
| North American temperature code | T4  |
| IEC temperature code            | T4  |
| Reverse polarity protection     | Yes   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IB32, 1756-IB32K**

| Attribute  | 1756-IB32, 1756-IB32K                          |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IB32, 1756-IB32K**

| Attribute                                    | 1756-IB32, 1756-IB32K  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . .80 MHz   |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

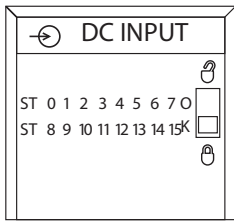
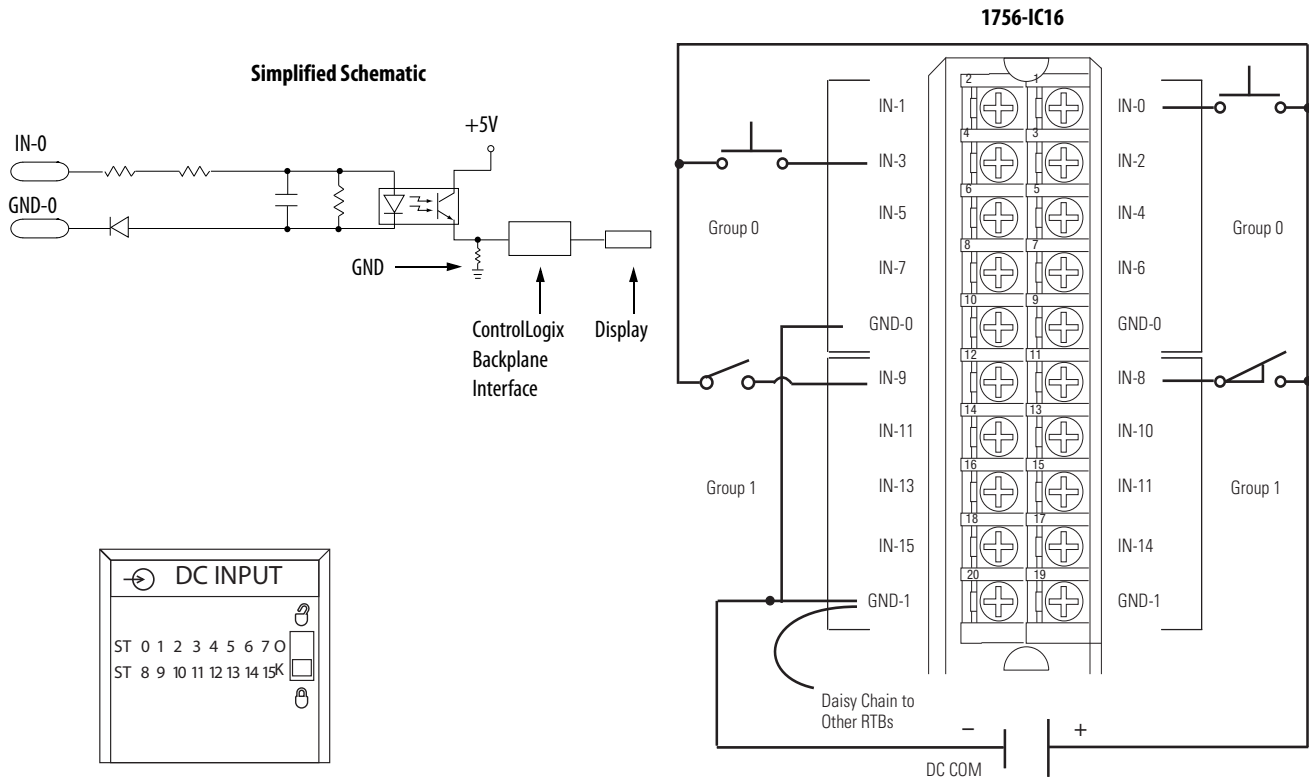
**Certifications - 1756-IB32, 1756-IB32K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IB32, 1756-IB32K   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IC16

ControlLogix DC (30...60V) input module



### Technical Specifications - 1756-IC16

| Attribute                             | 1756-IC16   |
|---------------------------------------|---|
| Inputs                                | 16 (8 points/group)   |
| Voltage category                      | 48V DC sink   |
| Operating voltage range               | 30...55V DC @ 60 °C (140 °F)<br>30...60V DC @ 55 °C (131 °F)  |
| Input voltage, nom                    | 48V DC  |
| Input delay time (screw to backplane) | Hardware delay: 1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms<br>Hardware delay: 4 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms |
| Off to On                             |   |
| On to Off                             |   |
| Current draw @ 5.1V                   | 100 mA  |
| Current draw @ 24V                    | 3 mA  |
| Total backplane power                 | 0.58 W  |
| Power dissipation, max                | 5.2 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 17.73 BTU/hr  |
| Off-state voltage, max                | 10V   |
| Off-state current, max                | 1.5 mA  |
| On-state current, min                 | 2 mA @ 30V DC   |

**Technical Specifications - 1756-IC16 (continued)**

| Attribute                        | 1756-IC16   |
|----------------------------------|---|
| On-state current, max            | 7 mA @ 60V DC   |
| Inrush current, max              | 250 mA  |
| Input impedance, max             | 8.57 k $\Omega$ @ 60V DC  |
| Cyclic update time               | 200 $\mu$ s . . . 750 ms  |
| Change of state                  | Software configurable   |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s   |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane<br>125V (continuous), basic insulation type, input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s, inputs-to-backplane<br>Routine tested @ 924V AC for 2 s, input group-to-group |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4  |
| IEC temperature code             | T4  |
| Reverse polarity protection      | Yes   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IC16**

| Attribute  | 1756-IC16                                      |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 . . . 60 °C (32 . . . 140 °F)                |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40 . . . +85 °C (-40 . . . +185 °F)           |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5 . . . 95% noncondensing                      |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10 . . . 500 Hz                          |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IC16 (continued)**

| Attribute                                    | 1756-IC16  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80. . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000. . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ± 2 kV line-earth (CM) on signal ports  |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz. . .80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

**Certifications - 1756-IC16**

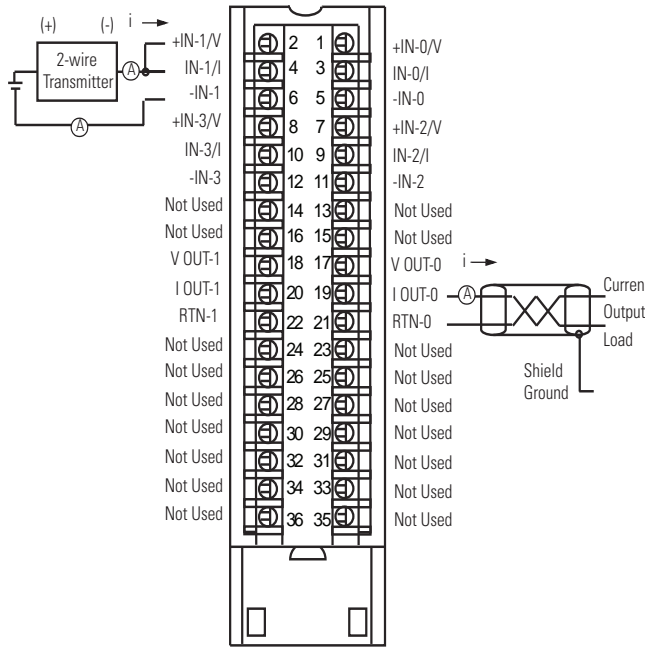
| Certification (when product is marked) <sup>(1)</sup> | 1756-IC16   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IF4FXOF2F, 1756-IF4FXOF2FK

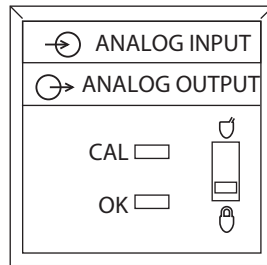
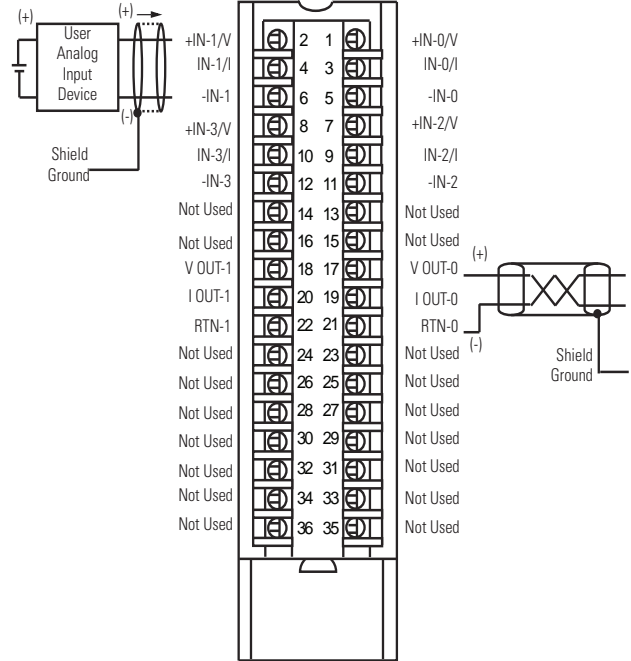
ControlLogix high-speed input/output analog module

**1756-IF4FXOF2F, 1756-IF4FXOF2FK Current**



A = Inline field device (such as a strip chart recorder or meter)

**1756-IF4FXOF2F, 1756-IF4FXOF2FK Voltage**



### Technical Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK

| Attribute                   | 1756-IF4FXOF2F, 1756-IF4FXOF2FK   |
|-----------------------------|---|
| Current draw at 5.1V        | 375 mA  |
| Current draw at 24V         | 100 mA  |
| Voltage and current ratings | Backplane: 375 mA @ 5.1V DC, 100 mA @ 24V DC<br>Analog inputs: -10...+10V, 4...20 mA<br>Analog outputs: -10...+10V, 4...20 mA |
| Power consumption           | 4.3 W   |
| Power dissipation           | Voltage: 4.3 W<br>Current: 4.7 W  |
| Thermal dissipation         | Voltage: 14.66 BTU/hr<br>Current: 16.02 BTU/hr  |
| Data format                 | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |

**Technical Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute                      | 1756-IF4FXOF2F, 1756-IF4FXOF2FK   |
|--------------------------------|---|
| Isolation voltage              | 250V (continuous)<br>Reinforced insulation type, inputs and outputs to backplane<br>No isolation between individual inputs or outputs<br>Type tested at 1860V AC for 60 s   |
| Module keying                  | Electronic, software configurable   |
| Removable terminal block       | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                     | User-defined mechanical   |
| Slot width                     | 1   |
| Wire size                      | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs    | 1756-TBCH: 0.5 Nm (4.4 pound-inches)  |
| Wiring category <sup>(1)</sup> | 2 - on signal ports   |
| Enclosure type                 | None (open-style)   |
| North American temp code       | T4A   |
| ATEX temp code                 | T4  |
| IECEx temperature code         | T4  |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Input Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute                           | 1756-IF4FXOF2F, 1756-IF4FXOF2FK  |
|-------------------------------------|--|
| Number                              | 4 high-speed, submillisecond, differential   |
| Input range                         | ± 10V<br>0...10V<br>0...5V<br>0...20 mA<br>(Overrange indication when exceeded)  |
| Resolution                          | Approx 14 bits across ±10.5V DC (21V total)<br>±10.5V range: 1.3 mV/bit, 14 bit effective<br>0...10.5V range: 1.3 mV/bit, 13 bit effective<br>0...5.25V range: 1.3 mV/bit, 12 bit effective<br>Approx 12 bits across 21 mA<br>0...21 mA range: 5.25 µA/bit |
| Repeatability                       | ±1 Least Significant Bit (LSB) <sup>(1)</sup>  |
| Input impedance                     | Voltage: >1 MΩ<br>Current: 249 Ω   |
| Open circuit detection              | Positive full-scale reading within 1 s   |
| Overvoltage protection              | Voltage: 30V DC<br>Current: 8V AC/DC   |
| Calibrated accuracy @ 25 °C (77 °F) | 0.05% of range immediately after calibration<br>Better than 0.1% of range within calibration interval  |
| Calibration interval                | 12 months  |



**Input Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute                   | 1756-IF4FXOF2F, 1756-IF4FXOF2FK                  |
|-----------------------------|--|
| Gain drift with temperature | Voltage: 25 ppm/°C max<br>Current: 35 ppm/°C max |
| Module error                | 0.2% of range                                    |
| Module scan time            | 300 $\mu$ s min <sup>(2)</sup>                   |
| Input conversion method     | Successive approximation                         |

(1) Repeatability is defined as the stability of the input channel reading when a steady state signal is applied, for example,  $\pm 1$  LSB is one count (1.3 mV) from the nominal reading.

(2) 300  $\mu$ s min for 1756-IF4FXOF2F/B, firmware revision 3.x or greater. 400  $\mu$ s min for 1756-IF4FXOF2F/A, firmware revision 1.x.

**Output Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute                                 | 1756-IF4FXOF2F, 1756-IF4FXOF2FK   |
|---|---|
| Number                                    | Two high-speed voltage or current   |
| Output range                              | $\pm 10$ V<br>0...20 mA   |
| Resolution                                | 13 bits across 21 mA = 2.8 $\mu$ A/bit<br>14 bits across 21.8V = 1.3 mV/bit                           |
| Open circuit detection                    | Current output only (Output must be set to >0.1 mA)   |
| Overvoltage protection                    | 24V DC  |
| Short circuit protection                  | Electronically current limited to 21 mA or less   |
| Drive capability                          | Voltage: >2000 $\Omega$<br>Current: 0...750 $\Omega$  |
| Output settling time                      | < 2 ms to 95% of final value with resistive loads   |
| Calibrated accuracy @ 25 °C (77 °F)       | 0.05% of range immediately after calibration<br>Better than 0.1% of range within calibration interval |
| Calibration interval                      | 12 months   |
| Offset drift                              | 50 $\mu$ V/°C<br>1 $\mu$ A/°C   |
| Gain drift with temperature               | Voltage: 25 ppm/°C max<br>Current: 50 ppm/°C max  |
| Module error                              | Voltage: 0.2% of range<br>Current: 0.3% of range  |
| Update period for all channels (RPI), min | 1 ms  |
| Output conversion method                  | R-Ladder DAC, monotonicity with no missing codes  |

**Environmental Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute  | 1756-IF4FXOF2F, 1756-IF4FXOF2FK            |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F) |
| Temperature, surrounding air, max  | 60 °C (140 °F)                             |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)               |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                      |

**Environmental Specifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

| Attribute   | 1756-IF4FXOF2F, 1756-IF4FXOF2FK   |
|---|---|
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                   | 2 g @ 10...500 Hz   |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g  |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g  |
| Emissions   | IEC 61000-6-4   |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges  |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2700...6000 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±2 kV at 5 kHz and 100 kHz on shielded signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±2 kV line-earth (CM) on shielded signal ports  |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz   |

**Certifications - 1756-IF4FXOF2F, 1756-IF4FXOF2FK**

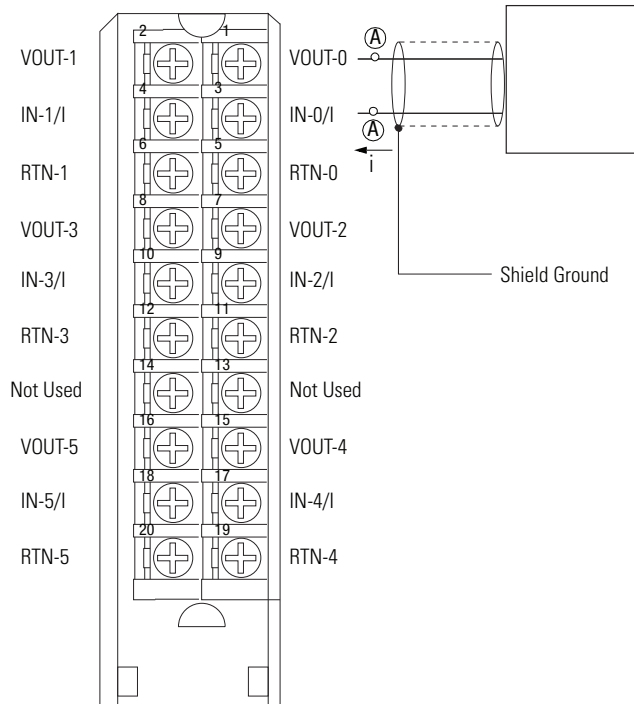
| Certification (when product is marked) <sup>(1)</sup> | 1756-IF4FXOF2F, 1756-IF4FXOF2FK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO15ATEX1482X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 15.0053X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

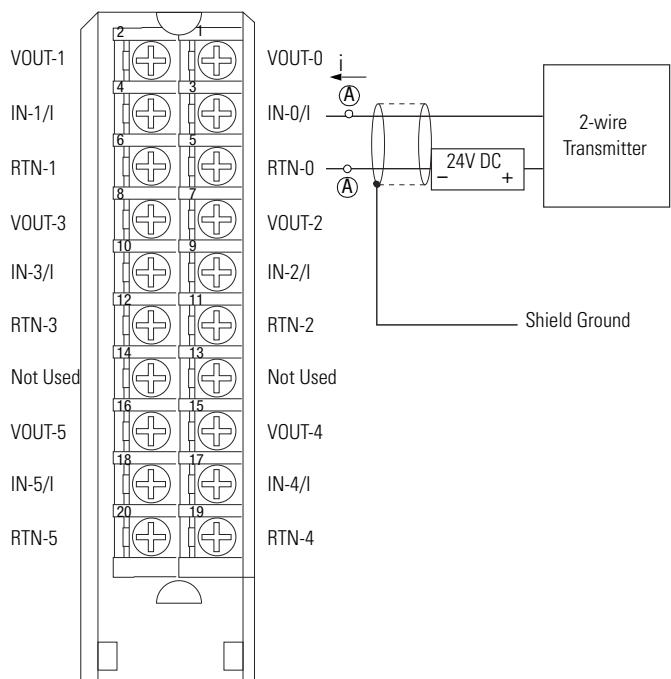
## 1756-IF6CIS

### ControlLogix sourcing current loop analog input module

**1756-IF6CIS 2-wire Transmitter Connected to the Module and the Module Providing 24V DC Loop Power**

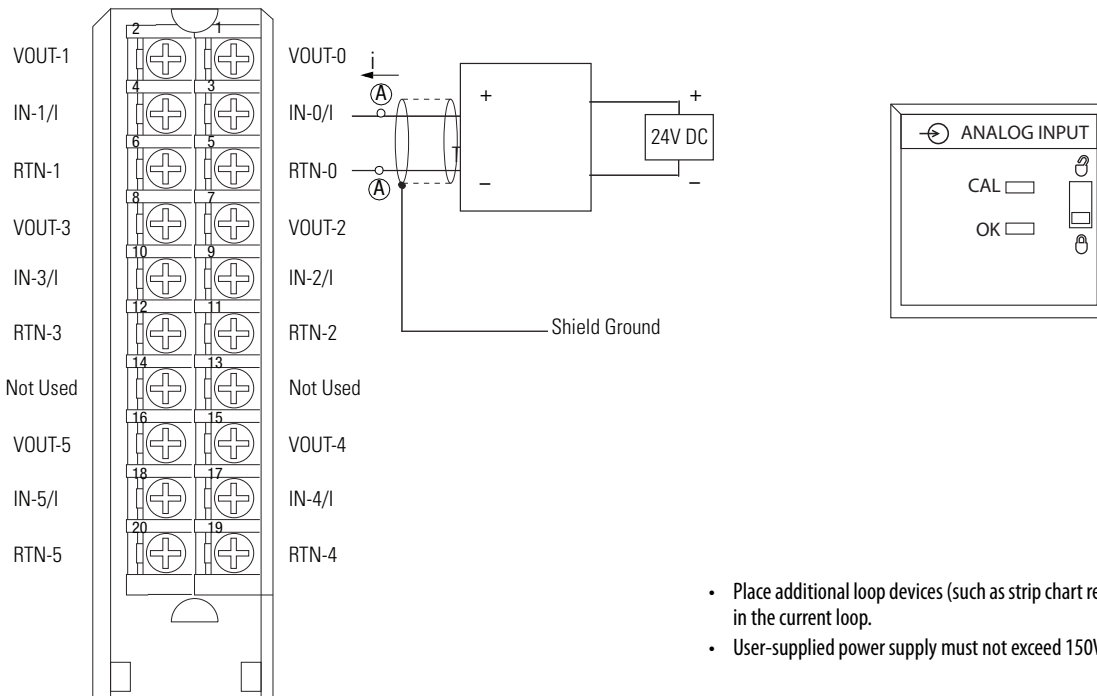


**1756-IF6CIS 2-wire Transmitter Connected to the Module and an External, User-provided Power Supply Providing 24V DC Loop Power**



Place additional loop devices (such as strip chart recorders) at either A location in the current loop.

**1756-IF6CIS 4-wire Transmitter Connected to the Module and an External, User-provided Power Supply Providing 24V DC Loop Power**



- Place additional loop devices (such as strip chart recorders) at either A location in the current loop.
- User-supplied power supply must not exceed 150VA.

**Signal and User Counts - 1756-IF6CIS**

| Range     | Low Signal and User Counts | High Signal and User Counts |
|-----------|----------------------------|-----------------------------|
| 0...20 mA | 0 mA<br>-32768 counts      | 21.09376 mA<br>32767 counts |

**Technical Specifications - 1756-IF6CIS**

| Attribute                              | 1756-IF6CIS  |
|--|--|
| Inputs                                 | 6 individually isolated current sourcing                                 |
| Input range                            | 0...20 mA (overrange indication when exceeded)                           |
| Resolution                             | 16 bits<br>0.34 $\mu$ A/bit  |
| Current draw @ 5.1V                    | 250 mA   |
| Current draw @ 24V                     | 275 mA   |
| Total backplane power                  | 7.9 W  |
| Power dissipation, max                 | 5.1 W @ 60 °C (140 °F)   |
| Thermal dissipation                    | 17.4 BTU/hr  |
| Input impedance                        | 215 $\Omega$ , approx  |
| Sourcing voltage, min                  | 20V DC   |
| Sourcing voltage, max                  | 30V DC   |
| Sourcing current, max                  | Current limited to < 30 mA   |
| Open circuit detection time            | Zero reading within 5 s  |
| Overvoltage protection, max            | 30V AC/DC with PTC and sense resistor                                    |
| Normal mode noise rejection            | 60 dB @ 60 Hz <sup>(1)</sup>   |
| Common mode noise rejection            | 120 dB @ 60 Hz<br>100 dB @ 50 Hz   |
| Channel bandwidth                      | 3...262 Hz (-3 dB) <sup>(1)</sup>  |
| Settling time                          | <80 ms to 5% of full scale <sup>(1)</sup>                                |
| Calibrated accuracy 25 °C (77 °F), nom | Better than 0.1% of range  |
| Calibrated accuracy 25 °C (77 °F), max | 0.025% of range  |
| Calibration interval                   | 12 months  |
| Offset drift                           | 200 nA/°C  |
| Gain drift with temperature, nom       | 17 ppm/°C<br>0.36 $\mu$ A/°C   |
| Gain drift with temperature, max       | 35 ppm/°C max<br>0.74 $\mu$ A/°C max                                     |
| Module error                           | 0.2% of range  |
| Module input scan time, min            | 25 ms min – floating point<br>10 ms min – integer                        |
| Onboard data alarming                  | Yes  |
| Scaling to engineering units           | Yes  |
| Real-time channel sampling             | Yes  |
| Data format                            | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point |
| Module conversion method               | Sigma-Delta  |

**Technical Specifications - 1756-IF6CIS (continued)**

| Attribute                       | 1756-IF6CIS   |
|---------------------------------|---|
| Isolation voltage               | 250V (continuous), basic insulation type, input channels-to-backplane, and input channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                   | Electronic, software configurable   |
| Removable terminal block        | 1756-TBNH<br>1756-TBSH  |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 1   |
| Wire category                   | 2 <sup>(2)</sup>  |
| Enclosure type                  | None (open-style)   |
| North American temperature code | T4A   |
| IEC temperature code            | T4  |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF6CIS**

| Attribute  | 1756-IF6CIS  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5  | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on shielded signal ports   |

**Certifications - 1756-IF6CIS**

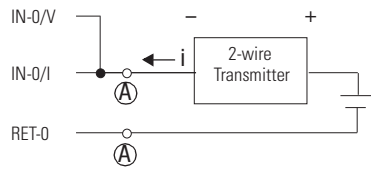
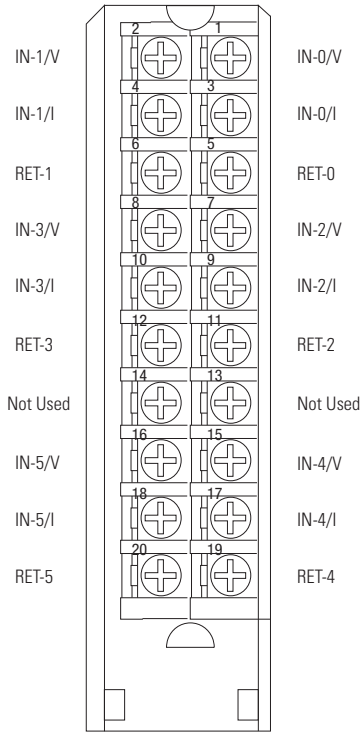
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IF6CIS</b>  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

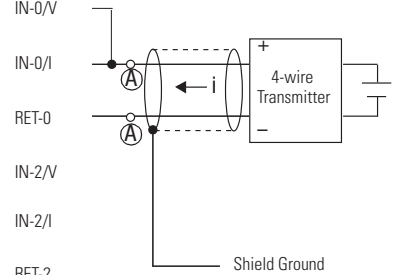
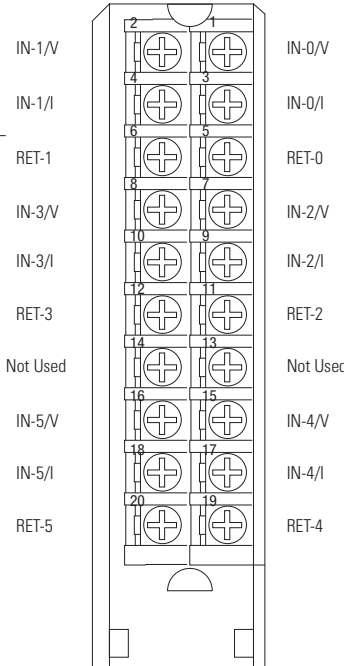
# 1756-IF6I

## ControlLogix isolated voltage/current analog input module

### 1756-IF6I Current 2-wire

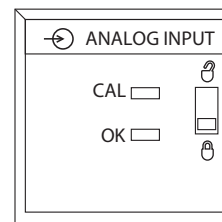
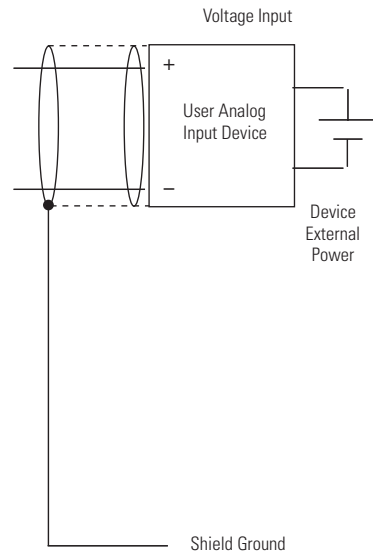
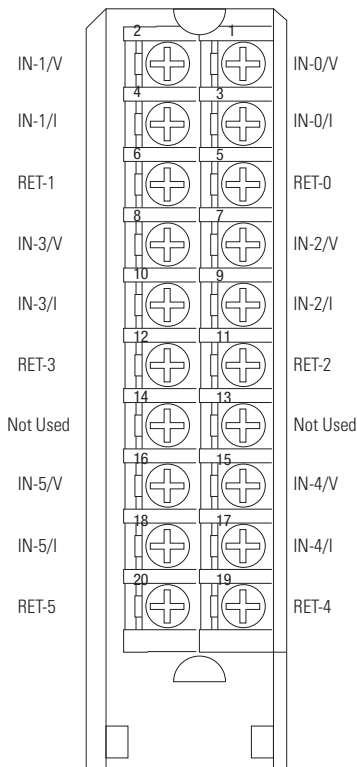


### 1756-IF6I Current 4-wire



Place additional loop devices (such as strip chart recorders) at either A location.

### 1756-IF6I Voltage



**Signal and User Counts - 1756-IF6I**

| Range     | Low Signal and User Counts  | High Signal and User Counts |
|-----------|-----------------------------|-----------------------------|
| ±10V      | -10.54688V<br>-32768 counts | 10.54688V<br>32767 counts   |
| 0...10V   | 0V<br>-32768 counts         | 10.54688V<br>32767 counts   |
| 0...5V    | 0V<br>-32768 counts         | 5.27344V<br>32767 counts    |
| 0...20 mA | 0 mA<br>-32768 counts       | 21.09376V<br>32767 counts   |

**Technical Specifications - 1756-IF6I**

| Attribute                         | 1756-IF6I   |
|-----------------------------------|---|
| Inputs                            | 6 individually isolated   |
| Input range                       | ±10.5V<br>0...10.5V<br>0...5.25V<br>0...21 mA<br>(Overrange indication when exceeded)                                       |
| Resolution                        | 16 bits<br>10.5V: 343 $\mu$ V/bit<br>0...10.5V: 171 $\mu$ V/bit<br>0...5.25V: 86 $\mu$ V/bit<br>0...21 mA: 0.34 $\mu$ A/bit |
| Current draw @ 5.1V               | 250 mA  |
| Current draw @ 24V                | 100 mA  |
| Total backplane power             | 3.7 W   |
| Power dissipation, max            | Voltage: 3.7 W<br>Current: 4.3 W  |
| Thermal dissipation               | Voltage: 12.62 BTU/hr<br>Current: 14.32 BTU/hr  |
| Input impedance                   | Voltage: > 10 M $\Omega$<br>Current: 249 $\Omega$   |
| Open circuit detection time       | Positive full scale reading within 5 s  |
| Overvoltage protection, max       | Voltage: 120V AC/DC<br>Current: 8V AC/DC (with onboard current resistor)  |
| Normal mode noise rejection       | 60 dB @ 60 Hz <sup>(1)</sup>  |
| Common mode noise rejection       | 120 dB @ 60 Hz<br>100 dB @ 50 Hz  |
| Channel bandwidth                 | 15 Hz (-3 dB) <sup>(1)</sup>  |
| Settling time                     | <80 ms to 5% of full scale <sup>(1)</sup>   |
| Calibrated accuracy 25 °C (77 °F) | Better than 0.1% of range   |
| Calibration interval              | 6 months  |
| Offset drift                      | 2 $\mu$ V/°C  |
| Gain drift with temperature       | Voltage: 35 ppm/°C, 80 ppm/°C max<br>Current: 45 ppm/°C, 90 ppm/°C max  |
| Module error                      | 0.54% of range  |



**Technical Specifications - 1756-IF6I (continued)**

| Attribute                       | 1756-IF6I   |
|---------------------------------|---|
| Module input scan time, min     | 25 ms min – floating point<br>10 ms min – integer <sup>(1)</sup>  |
| Onboard data alarming           | Yes   |
| Scaling to engineering units    | Yes   |
| Real-time channel sampling      | Yes   |
| Data format                     | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method        | Sigma-Delta   |
| Isolation voltage               | 250V (continuous), basic insulation type, input channels-to-backplane, and input channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                   | Electronic, software configurable   |
| Removable terminal block        | 1756-TBNH<br>1756-TBSH  |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 1   |
| Wire category                   | 2 <sup>(2)</sup>  |
| Enclosure type                  | None (open-style)   |
| North American temperature code | T4A   |
| IEC temperature code            | T4  |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF6I**

| Attribute  | 1756-IF6I                                      |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IF6I (continued)**

| Attribute                                 | 1756-IF6I  |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . 80 MHz on shielded signal ports   |

**Certifications - 1756-IF6I**

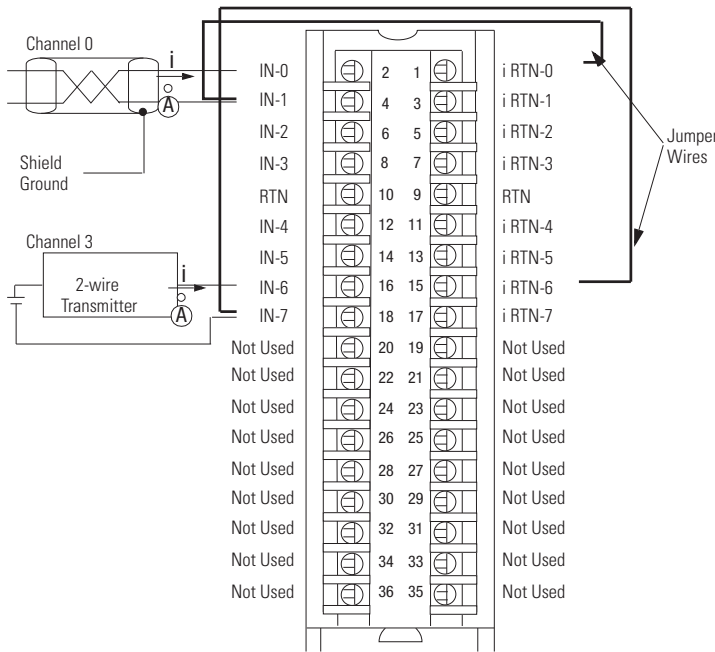
| Certification (when product is marked) <sup>(1)</sup> | 1756-IF6I   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

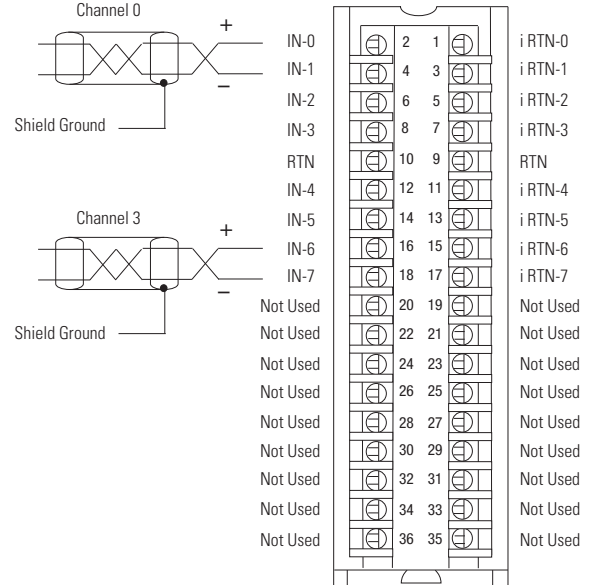
## 1756-IF8, 1756-IF8K

### ControlLogix voltage/current analog input module

**1756-IF8, 1756-IF8K Differential Current**



**1756-IF8, 1756-IF8K Differential Voltage**



- Use this table when wiring your module in Differential mode.

| This channel | Uses these terminals        |
|--------------|-----------------------------|
| Channel 0    | IN-0 (+), IN-1 (-), i RTN-0 |
| Channel 1    | IN-2 (+), IN-3 (-), i RTN-2 |
| Channel 2    | IN-4 (+), IN-5 (-), i RTN-4 |
| Channel 3    | IN-6 (+), IN-7 (-), i RTN-6 |

- All terminals marked RTN are connected internally.
- A 249 Ω current loop resistor is located between IN-x and i RTN-x terminals.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the module accuracy.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

**IMPORTANT:** When operating in 2-channel, High-Speed mode, only use channels 0 and 2.

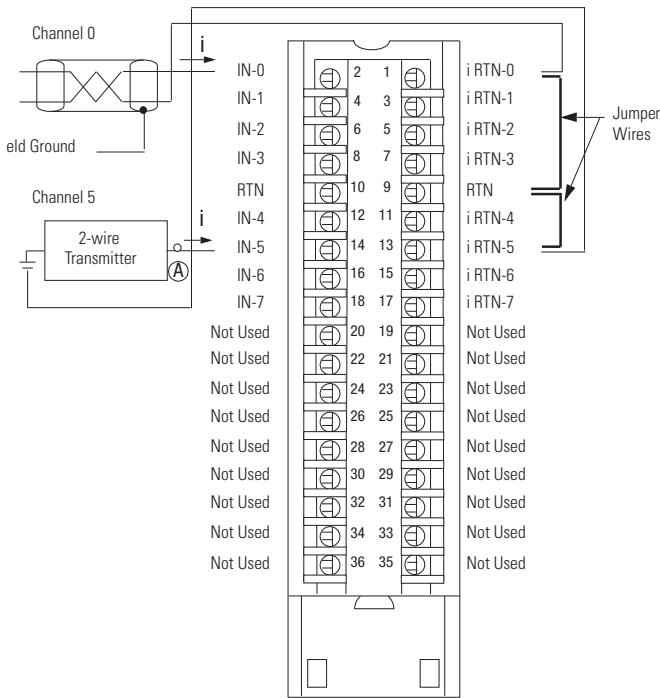
- Use this table when wiring your module in Differential mode.

| This channel | Uses these terminals |
|--------------|----------------------|
| Channel 0    | IN-0 (+), IN-1 (-)   |
| Channel 1    | IN-2 (+), IN-3 (-)   |
| Channel 2    | IN-4 (+), IN-5 (-)   |
| Channel 3    | IN-6 (+), IN-7 (-)   |

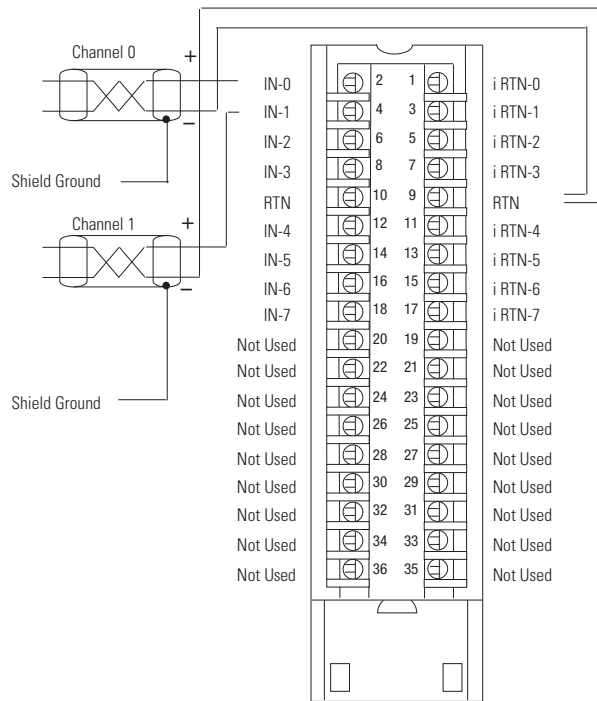
- All terminals marked RTN are connected internally.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the module accuracy.
- Terminals marked RTN or i RTN are not used for differential voltage wiring.

**IMPORTANT:** When operating in 2-channel, High-Speed mode, only use channels 0 and 2.

**1756-IF8, 1756-IF8K Single-ended Current**

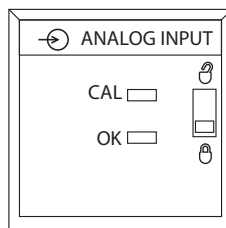


**1756-IF8, 1756-IF8K Single-ended Voltage**



- All terminals marked RTN are connected internally.
- For current applications, all terminals marked iRTN must be wired to terminals marked RTN.
- A 249 Ω current loop resistor is located between IN-x and i RTN-x terminals.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

- All terminals marked RTN are connected internally.
- Terminals marked i RTN are not used for single-ended voltage wiring.



**Technical Specifications - 1756-IF8, 1756-IF8K**

| Attribute                         | 1756-IF8, 1756-IF8K   |
|-----------------------------------|---|
| Inputs                            | Eight single-ended<br>Four differential<br>Two high-speed differential  |
| Input range                       | ±10V<br>0...10V<br>0...5V<br>0...20 mA  |
| Resolution                        | ±10.25V: 320 µV/count (15 bits plus sign bipolar)<br>0...10.25V: 160 µV/count (16 bits)<br>0...5.125V: 80 µV/count (16 bits)<br>0...20.5mA: 0.32 µA/count (16 bits)   |
| Current draw @ 5.1V               | 150 mA  |
| Current draw @ 24V                | 40 mA   |
| Total backplane power             | 1.73 W  |
| Voltage and current ratings       | Backplane: 5.1V DC, 150 mA max, 24V DC, 40 mA max<br>Input voltage range: -10...+10V<br>Input current range: 4...20mA<br>Limited to 100VA   |
| Power consumption                 | 1.73 W  |
| Power dissipation                 | Voltage: 1.73 W<br>Current 2.33 W   |
| Thermal dissipation               | Voltage: 5.88 BTU/hr<br>Current: 7.92 BTU/hr  |
| Input impedance                   | Voltage: >1 MΩ<br>Current: 249 Ω  |
| Open circuit detection time       | Differential voltage: Positive full scale reading within 5 s<br>Single-ended/diff. current: Negative full scale reading within 5 s<br>Single-ended voltage: Even-numbered channels go to positive full scale reading within 5 s, odd-numbered channels go to negative full scale reading within 5 s |
| Overvoltage protection, max       | Voltage: 30V DC<br>Current: 8V DC   |
| Normal mode noise rejection       | >80 dB @ 50/60 Hz <sup>(2)</sup>  |
| Common mode noise rejection       | >100 dB @ 50/60 Hz  |
| Calibrated accuracy 25 °C (77 °F) | Voltage: Better than 0.05% of range<br>Current: Better than 0.15% of range  |
| Calibration interval              | 12 months   |
| Offset drift                      | 45 µV/°C  |
| Gain drift with temperature       | Voltage: 15 ppm/°C<br>Current: 20 ppm/°C  |
| Module error                      | Voltage: 0.1% of range<br>Current: 0.3% of range  |
| Module input scan time, min       | 8 pt single-ended (floating point): 16...488 ms<br>4 pt differential (floating point): 8...244 ms<br>2 pt differential (floating point): 5...122 m <sup>(1)</sup>   |
| Onboard data alarming             | Yes   |
| Scaling to engineering units      | Yes   |
| Real-time channel sampling        | Yes   |

**Technical Specifications - 1756-IF8, 1756-IF8K (continued)**

| Attribute                      | 1756-IF8, 1756-IF8K   |
|--------------------------------|---|
| Data format                    | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method       | Sigma-Delta   |
| Isolation voltage              | 250V (continuous), Reinforced insulation type, Inputs to Backplane.<br>No isolation between individual Inputs.<br>Routine tested at 1350V AC for 2 s  |
| Module keying                  | Electronic, software configurable   |
| Removable terminal block       | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                     | User-defined mechanical   |
| Slot width                     | 1   |
| Wire size                      | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs    | 1756-TBCH: 0.5 N•m (4.4 lb•in)  |
| Wiring category <sup>(1)</sup> | 2 - on signal ports   |
| Enclosure type                 | None (open-style)   |
| North American temp code       | T4A   |
| ATEX temp code                 | T4  |
| IECEx temp code                | T4  |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(2) Notch filter dependent.

**Environmental Specifications - 1756-IF8, 1756-IF8K**

| Attribute   | 1756-IF8, 1756-IF8K                        |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F) |
| Temperature, surrounding air, max   | 60 °C (140 °F)                             |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)               |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                      |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                          |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g                                       |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g                                       |
| Emissions   | IEC 61000-6-4                              |

**Environmental Specifications - 1756-IF8, 1756-IF8K (continued)**

| Attribute                                 | 1756-IF8, 1756-IF8K  |
|---|--|
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-IF8, 1756-IF8K**

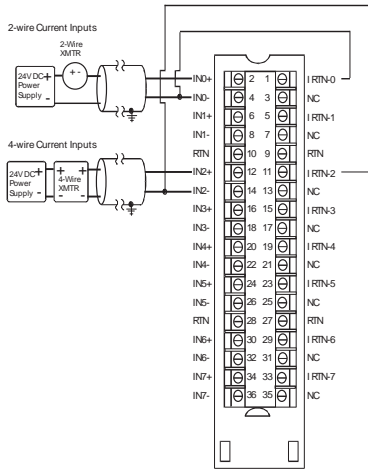
| Certification (when product is marked) <sup>(1)</sup> | 1756-IF8, 1756-IF8K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO15ATEX1482X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 15.0053X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

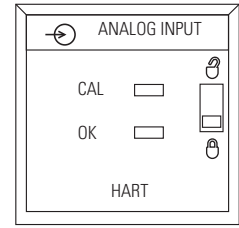
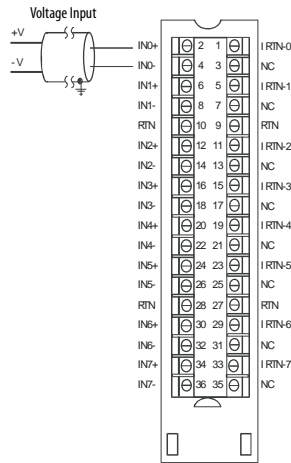
## 1756-IF8H, 1756-IF8HK

ControlLogix voltage/current analog input module with HART protocol

**1756-IF8H, 1756-IF8HK Current**



**1756-IF8H, 1756-IF8HK Voltage**



### Technical Specifications - 1756-IF8H, 1756-IF8HK

| Attribute                    | 1756-IF8H, 1756-IF8HK   |
|------------------------------|---|
| Inputs                       | Eight differential voltage or current inputs, one HART modem per module   |
| Input range                  | ±10V<br>0...5V<br>1...5V<br>0...10V<br>0...20 mA<br>4...20 mA   |
| Resolution                   | 16...21 bits  |
| Voltage and current ratings  | Backplane: 5.1V DC, 300 mA, 24V DC, 135 mA<br>Input voltage range: -10...+10V<br>Input current range: 0...20 mA, 4...20mA |
| Total backplane power        | 4.77 W  |
| Power dissipation            | Voltage: 3.21 W<br>Current: 4.01 W  |
| Thermal dissipation          | Voltage: 11.0 BTU/hr<br>Current: 13.7 BTU/hr  |
| Input impedance              | —   |
| Open circuit detection time  | Positive full scale reading within 5 s  |
| Oversvoltage protection, max | Voltage: 30V DC<br>Current: 8V DC   |
| Normal mode noise rejection  | > 80 dB @ 50/60 Hz  |
| Common mode noise rejection  | > 100 dB @ 50/60 Hz   |
| Calibrated accuracy          | Voltage: Better than 0.05% of range<br>Current: Better than 0.15% of range  |
| Calibration interval         | 12 months   |
| Offset drift                 | 90 µV/°C  |
| Gain drift with temperature  | Voltage: 10 ppm/°C<br>Current: 20 ppm/°C  |



**Technical Specifications - 1756-IF8H, 1756-IF8HK**

| Attribute                    | 1756-IF8H, 1756-IF8HK  |
|------------------------------|--|
| Module error                 | Voltage: 0.1% of range<br>Current: 0.3% of range   |
| Module HART scan time        | Analog: 18...488 ms (filter dependent). HART: typically 1 s per HART channel enabled. Estimate 10 s if all 8 channels have HART enabled. Typically 1 s per HART channel enabled. Estimate 10 s if all 8 channels have HART enabled.<br>Pass through messages, handheld communicators, secondary masters, communication errors, or configuration changes can significantly increase the update time |
| Data format                  | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point   |
| Input conversion method      | Successive approximation   |
| Output conversion method     | R-Ladder DAC, monotonicity with no missing codes   |
| Isolation voltage            | 50V (continuous), Basic insulation type, input channels to backplane<br>No isolation between individual input channels<br>Type tested at 1500V AC for 60 s   |
| Module keying                | Electronic, software configurable  |
| Removable terminal block     | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                   | User-defined mechanical  |
| Slot width                   | 1  |
| Wire size                    | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F, or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max    |
| Terminal block torque specs  | 1756-TBCH 0.5 N·m (4.4 lb·in)  |
| Wire category <sup>(1)</sup> | 2 - on signal ports  |
| Wire type                    | Copper   |
| Enclosure type rating        | None (open-style)  |
| North American temp code     | T5   |
| ATEX temp code               | T4   |
| IECEX temp code              | T4   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF8H, 1756-IF8HK**

| Attribute   | 1756-IF8H, 1756-IF8HK                      |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F) |
| Temperature, surrounding air, max   | 60 °C (140 °F)                             |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)               |

**Environmental Specifications - 1756-IF8H, 1756-IF8HK**

| Attribute   | 1756-IF8H, 1756-IF8HK  |
|---|--|
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat) | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                     | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)      | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                       | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                               | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                     | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                           | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6                              | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-IF8H, 1756-IF8HK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IF8H, 1756-IF8HK  |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO12ATEX1219040X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 16.0109X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

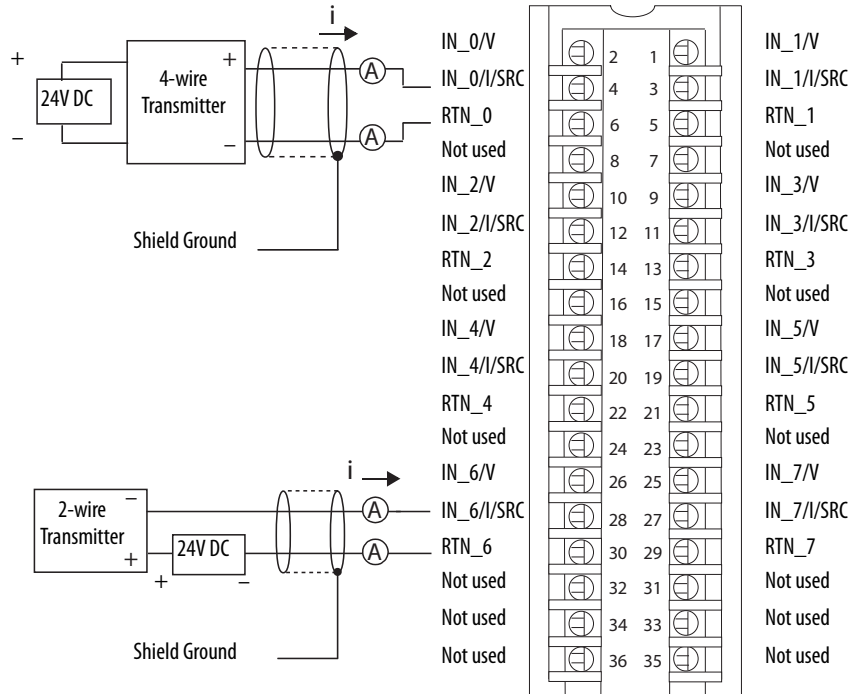
## 1756-IF8I, 1756-IF8IK

ControlLogix isolated voltage/current analog input module.

1756-IF8I, 1756-IF8IK Module Wiring Diagram -Current Mode with External Loop Power

**IMPORTANT:** Remember the following:

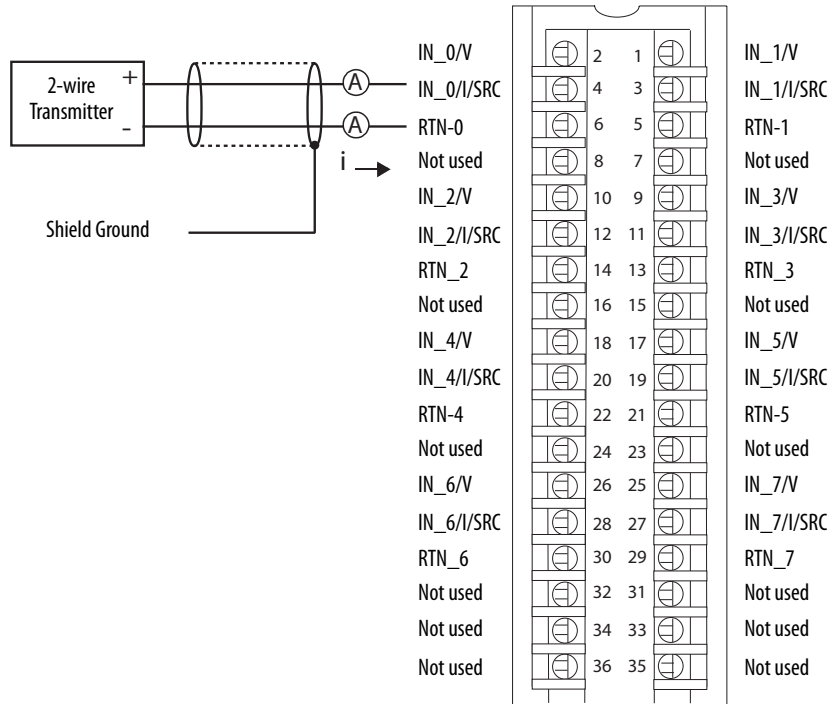
- In this wiring diagram, an external, user-provided power supply provides 24V DC loop power.
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Place additional loop devices, for example, strip chart recorders, at either 'A' location in the current loop.



1756-IF8I, 1756-IF8IK Module Wiring Diagram -Current Mode with Internal Loop Power

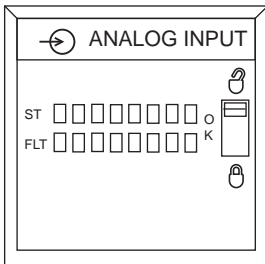
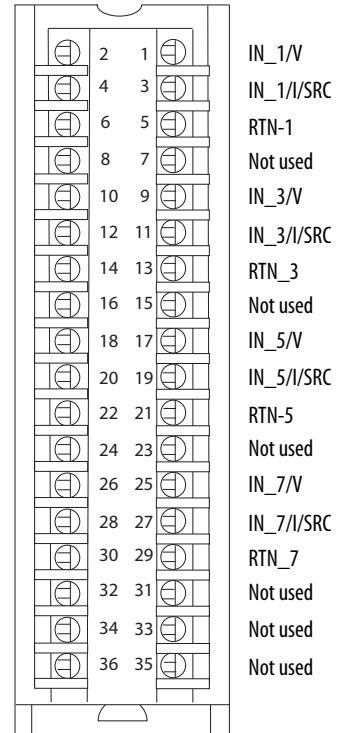
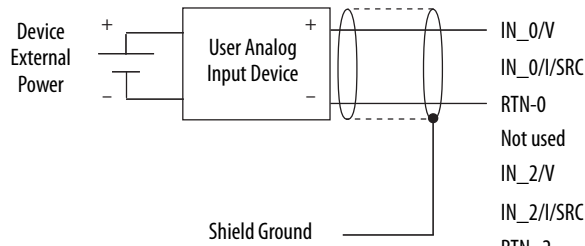
**IMPORTANT:** Remember the following:

- In this wiring diagram, the module provides 24V DC loop power.
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Place additional loop devices, for example, strip chart recorders, at either 'A' location in the current loop.



**1756-IF8I, 1756-IF8IK Module Wiring Diagram - Voltage Mode**

**IMPORTANT:** If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.



**Technical Specifications - 1756-IF8I, 1756-IF8IK**

| Attribute                   | 1756-IF8I, 1756-IF8IK   |
|-----------------------------|---|
| Inputs                      | Eight isolated channels - Any combination of Voltage or Current mode  |
| Voltage and current ratings | Backplane: 5.1V DC 200 mA, 24V DC 400 mA<br>Input Voltage: -10V to +10V, 0V to 10V, 0V to 5V<br>Input Current: 0 mA to 20 mA<br>Output Current: 0 mA to 20 mA |
| Input ranges                | -10...10V<br>0...10V<br>0...5V<br>0...20 mA   |
| Resolution                  | 24-bit<br>±10.5V (1.49 µV/count)<br>0...10.5V (1.49 µV/count)<br>0...5.25V (1.49 µV/count)<br>0...21 mA (2.99 nA/count)                                       |
| Current draw @ 5.1V         | 200 mA  |
| Current draw @ 24V          | Voltage/Non-sourcing Current mode: 150 mA<br>Sourcing Current mode: 400 mA (In Sourcing Current mode, the channel provides loop power.)                       |
| Total backplane power       | Voltage/Non-sourcing Current mode: 4.6 W<br>Sourcing Current mode: 10.6 W   |
| Power dissipation           | Voltage mode: 4.6 W (15.7 BTU/hr)<br>Non-sourcing Current mode: 5.1 W (17.4 BTU/hr)<br>Sourcing Current mode: 7.3 W (24.9 BTU/hr)                             |

**Technical Specifications - 1756-IF8I, 1756-IF8IK**

| Attribute                                | 1756-IF8I, 1756-IF8IK   |
|--|---|
| Thermal dissipation                      | Voltage mode: 15.7 BTU/hr<br>Non-sourcing Current mode: 17.4 BTU/hr<br>Sourcing Current mode: 24.9 BTU/hr   |
| Input impedance, approx                  | Voltage mode: 1 G $\Omega$ (powered); 7500 $\Omega$ (unpowered)<br>Current mode: 125 $\Omega$   |
| Sourcing voltage, min                    | 20V DC  |
| Sourcing voltage, max                    | 36V DC (open circuit)   |
| Sourcing current, max                    | Current Limited < 45 mA (IN_x/I/SRC to RTN_x)   |
| Open circuit detection time              | 5 s   |
| Overvoltage protection, max              | $\pm$ 30V DC  |
| Normal mode noise rejection              | 80 dB @ 60 Hz <sup>(1)</sup>  |
| Common mode noise rejection              | 120 dB @ 50/60 Hz   |
| Channel bandwidth                        | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.   |
| Settling time                            | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.   |
| Calibrated accuracy 25 °C (77 °F)        | 0.05%   |
| Module error over full temperature range | 0.1%  |
| Module input scan time, min              | 1 ms  |
| Onboard data alarming                    | Yes   |
| Scaling to engineering units             | Yes   |
| Real-time channel sampling               | Yes - Rate set by Requested Packet Interval rate  |
| Data format                              | IEEE 32-bit floating point  |
| Module conversion method                 | Sigma-Delta   |
| Isolation voltage                        | 250V (continuous), reinforced insulation type, inputs to backplane<br>250V (continuous), basic insulation type, input to input<br>Type tested at 2300V AC for 60 s, inputs to backplane<br>Type tested at 1500V AC for 60 s, input to input |
| Module keying                            | Electronic, software configurable   |
| Removable terminal block                 | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                               | User-defined mechanical   |
| Slot width                               | 1   |
| Wire size                                | 0.33... 2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire rated at 90 °C (194 °F), or greater, 1.2 mm (3/64 in.) insulation max  |
| Wire category                            | 2 on signal ports <sup>(2)</sup>  |
| Enclosure type                           | None (open-style)   |
| North American temperature code          | T4  |
| IEC temperature code                     | T4  |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF8I, 1756-IF8IK**

| <b>Attribute</b>  | <b>1756-IF8I, 1756-IF8IK</b>   |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±4 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5   | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

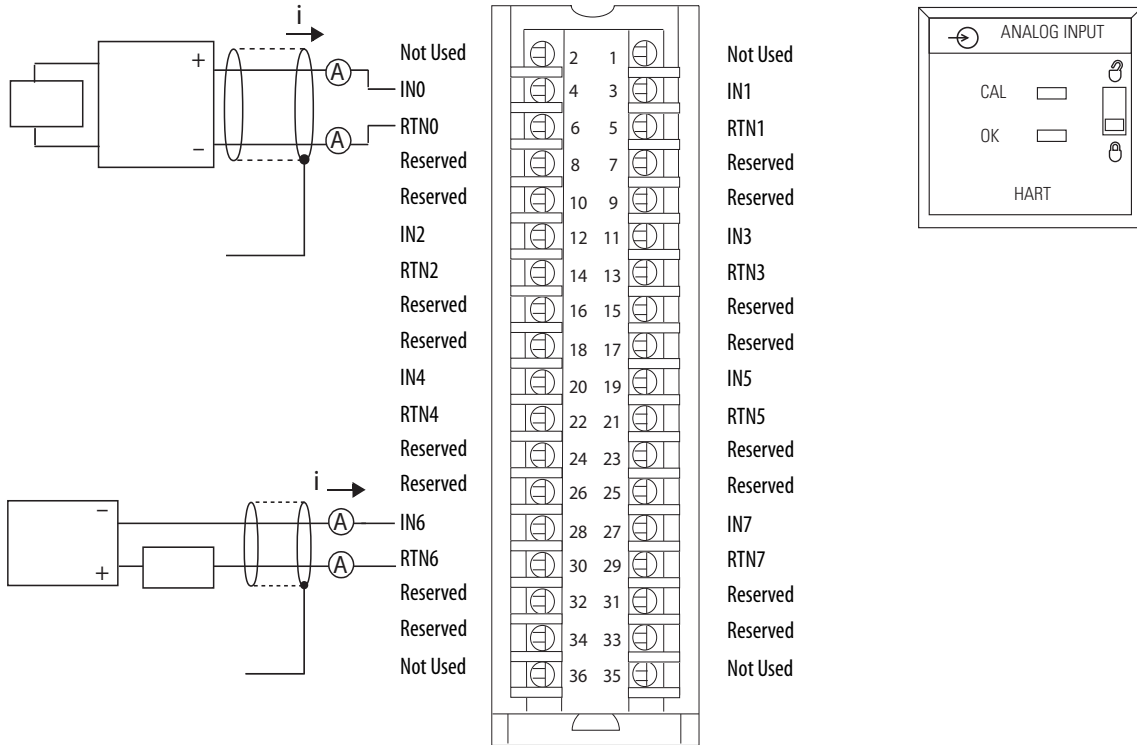
**Certifications - 1756-IF8I, 1756-IF8IK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IF8I, 1756-IF8IK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO13ATEX1325026X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEX UL 14.0008X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IF8IH, 1756-IF8IHK

ControlLogix isolated current analog input module with HART protocol



### Technical Specifications - 1756-IF8IH, 1756-IF8IHK

| Attribute                       | 1756-IF8IH, 1756-IF8IHK  |
|---------------------------------|--|
| Inputs                          | Eight current inputs   |
| Input range                     | 0...20 mA (0...20.58 mA)<br>4...20 mA (3.42...20.58 mA)  |
| Resolution                      | 16...21 bits   |
| Voltage and current ratings     | Backplane: 210 mA @ 5.1V DC, 110 mA @ 24V DC<br>Input voltage range: 5...30V DC<br>Input current range: 0...20 mA, 4...20 mA   |
| Power dissipation within module | 4 W  |
| Inrush current                  | 400 mA @ 5V<br>450 mA @ 24V  |
| Isolation voltage               | 250V (continuous)<br>Reinforced Insulation Type, inputs to backplane.<br>Basic Insulation Type, input to input, and inputs to ground.<br>Type tested at 3535V DC for 60 s, inputs to backplane.<br>Type tested at 2120V DC for 60 s, input to input, and inputs to ground. |
| Input impedance                 | 250 Ω ± 5 Ω  |
| Open circuit detection time     | 5 s (4...20 mA range only)   |
| Input overvoltage protection    | +28.8V DC  |
| Normal mode noise rejection     | > 90 dB @ 50 Hz and 60 Hz with 10 Hz filter<br>> 74 dB @ 50 Hz and 60 Hz with 15 Hz filter<br>> 33 dB @ 50 Hz and > 90 dB @ 60 Hz with 20 Hz filter  |



**Technical Specifications - 1756-IF8IH, 1756-IF8IHK**

| Attribute  | 1756-IF8IH, 1756-IF8IHK   |
|--|---|
| Common mode noise rejection  | > 90 dB @ 50 Hz and 60 Hz (10 Hz, 15 Hz, or 20 Hz filters only)   |
| Calibrated accuracy at 25 °C with HART disabled                    | 0.15 . . . 1.5% of full scale, filter dependent   |
| Calibrated accuracy at 25 °C with HART enabled                     | 1.5% of full scale with 250 Hz filter<br>0.5% of full scale with 100 Hz filter<br>0.2% of full scale with 50 Hz or 60 Hz filter<br>0.15% of full scale with 15 Hz or 20 Hz filter<br>Monotonicity not guaranteed  |
| Calibrated accuracy over full temperature range with HART enabled  | 1.8% of full scale with 250 Hz filter<br>0.8% of full scale with 100 Hz filter<br>0.5% of full scale with 50 Hz or 60 Hz filter<br>0.4% of full scale with 15 Hz or 20 Hz filter<br>Monotonicity not guaranteed   |
| Calibration interval   | 12 months typical   |
| Input offset drift with temperature                                | $\leq 300 \mu\text{A}/^\circ\text{C}$   |
| Gain drift with temperature  | 20 ppm/ $^\circ\text{C}$  |
| Module error over full temperature range with HART disabled        | 0.3% of range (all filters)   |
| Module scan time for all channels - analog, min                    | 18 . . . 488 ms (filter dependent)  |
| Typical module HART dynamic variables update time for all channels | 1 s typical if all channels are HART enabled<br>Pass through messages, handheld communications, secondary masters, communication errors, or configuration changes can significantly increase the update time.   |
| Data format  | 32-bit floating point   |
| Input conversion method  | Sigma-Delta ADC (24-bit converter)  |
| Module keying  | Electronic, software configurable   |
| Removable terminal block   | 1756-TBCH<br>1756-TBS6H   |
| RTB keying   | User-defined mechanical   |
| Slot width   | 1   |
| Wire Size  | 1756-TBCH<br>Single wire connection: 0.33 . . . 2.1 mm <sup>2</sup> (22 . . . 14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33 . . . 2.1 mm <sup>2</sup> (22 . . . 14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs  | 1756-TBCH 0.4 N·m (4. 4 lb·in)  |
| Wire category  | 2 - on signal ports <sup>(1)</sup>  |
| Wire type  | Copper  |
| Enclosure type   | None (open-style)   |
| North American temp code   | T5  |
| ATEX temp code   | T4  |
| IECEX temp code  | T4  |

(1) Use this conductor category information for planning conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF8IH, 1756-IF8IHK**

| <b>Attribute</b>   | <b>1756-IF8IH, 1756-IF8IHK</b>  |
|--|---|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)  |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)  |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing   |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz   |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g  |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g  |
| Emissions  | IEC 61000-6-4   |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges  |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>10V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±2 kV at 5 kHz on signal ports  |
| Surge transient immunity<br>IEC 61000-4-5  | ±2 kV line-earth (CM) on shielded ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz   |

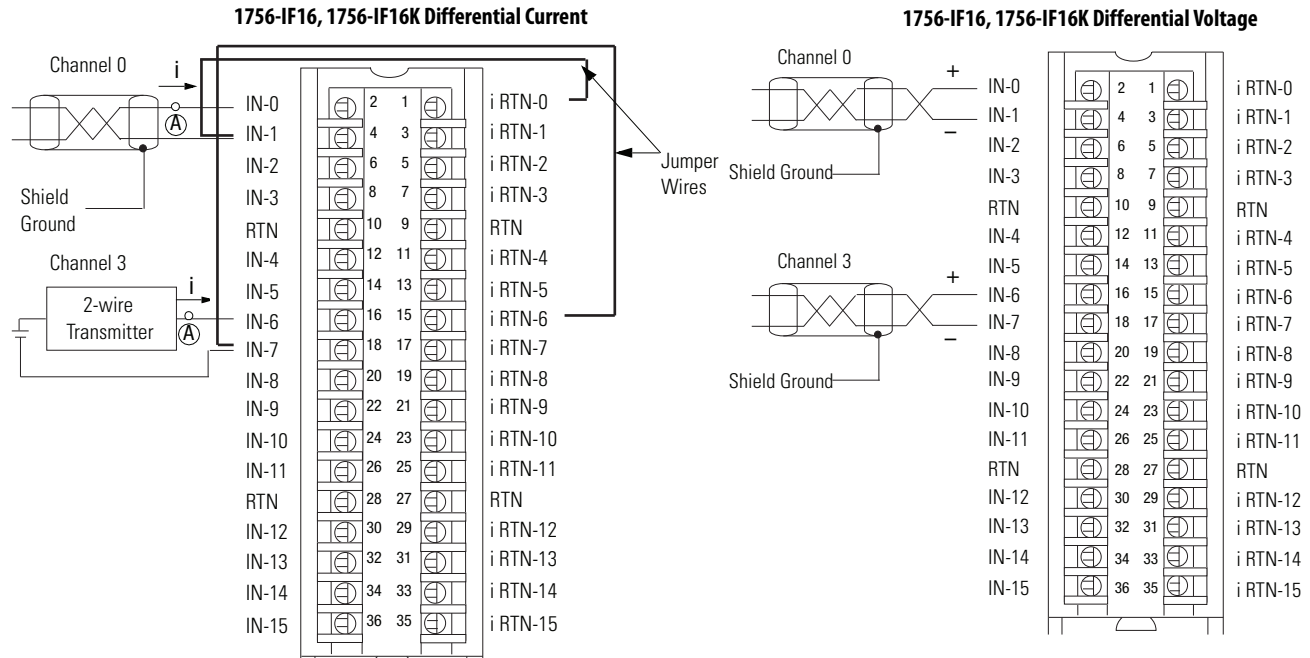
**Certifications - 1756-IF8IH, 1756-IF8IHK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IF8IH, 1756-IF8IHK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584<br>UL Listed for Class I, Division 2 Group A, B, C, D Hazardous Locations, certified for US and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1: Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2: Industrial Immunity</li> <li>• EN 61000-6-4: Industrial Emissions</li> <li>• EN 61131-2: Programmable Controllers (Clause 8, Zone A and B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2: Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4: Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO14ATEX1238X</li> </ul>   |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEx UL 16.0110X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IF16, 1756-IF16K

ControlLogix voltage/current analog input module



Use this table when wiring your module in Differential mode.

| This channel | Uses these terminals           |
|--------------|--------------------------------|
| Channel 0    | IN-0 (+), IN-1 (-), i RTN-0    |
| Channel 1    | IN-2 (+), IN-3 (-), i RTN-2    |
| Channel 2    | IN-4 (+), IN-5 (-), i RTN-4    |
| Channel 3    | IN-6 (+), IN-7 (-), i RTN-6    |
| Channel 4    | IN-8 (+), IN-9 (-), i RTN-8    |
| Channel 5    | IN-10 (+), IN-11 (-), i RTN-10 |
| Channel 6    | IN-12 (+), IN-13 (-), i RTN-12 |
| Channel 7    | IN-14 (+), IN-15 (-), i RTN-14 |

- All terminals marked RTN are connected internally.
- A 249 Ω current loop resistor is located between IN-x and i RTN-x terminals.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the accuracy of the module.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

**IMPORTANT:** When operating in 4-channel, High-Speed mode, only use channels 0, 2, 4, and 6.

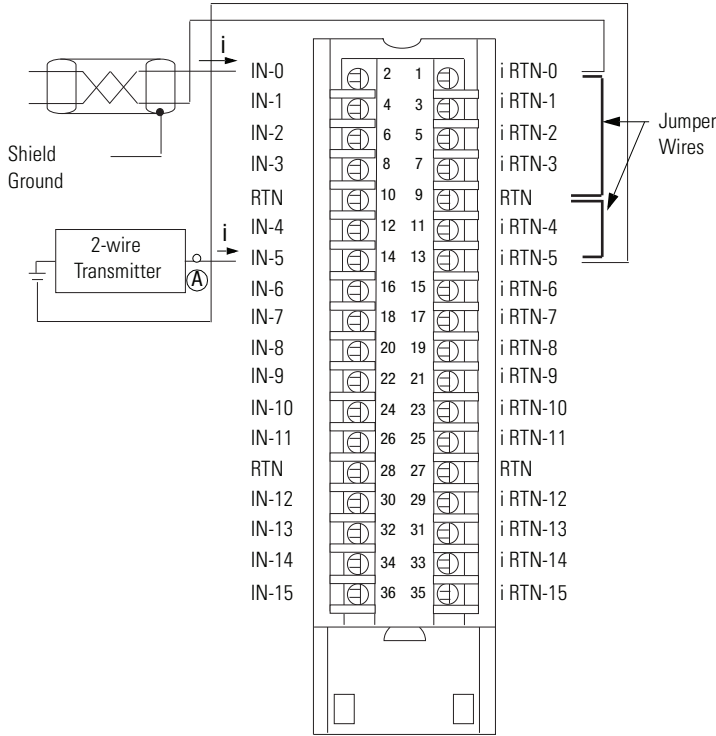
Use this table when wiring your module in Differential mode.

| This channel | Uses these terminals |
|--------------|----------------------|
| Channel 0    | IN-0 (+), IN-1 (-)   |
| Channel 1    | IN-2 (+), IN-3 (-)   |
| Channel 2    | IN-4 (+), IN-5 (-)   |
| Channel 3    | IN-6 (+), IN-7 (-)   |
| Channel 4    | IN-8 (+), IN-9 (-)   |
| Channel 5    | IN-10 (+), IN-11 (-) |
| Channel 6    | IN-12 (+), IN-13 (-) |
| Channel 7    | IN-14 (+), IN-15 (-) |

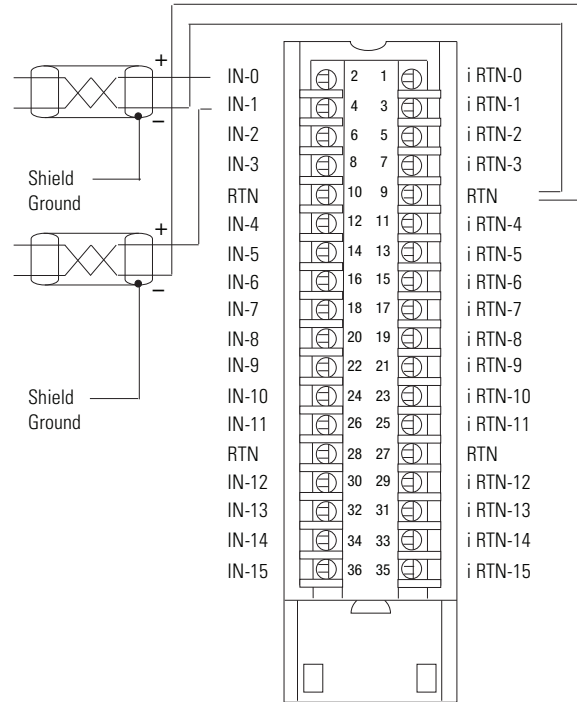
- All terminals marked RTN are connected internally.
- If multiple (+) or multiple (-) terminals are tied together, connect that tie point to an RTN terminal to maintain the accuracy of the module.
- Terminals marked RTN or i RTN are not used for differential voltage wiring.

**IMPORTANT:** When operating in 4-channel, High-Speed mode, only use channels 0, 2, 4, and 6.

**1756-IF16, 1756-IF16K Single-ended Current**

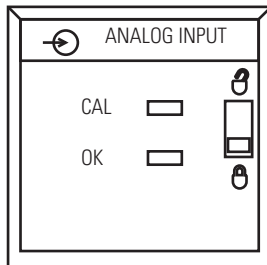


**1756-IF16, 1756-IF16K Single-ended Voltage**



- All terminals marked RTN are connected internally.
- For current applications, all terminals marked i RTN must be wired to terminals marked RTN.
- A 249  $\Omega$  current loop resistor is located between IN-x and iRTN-x terminals.
- Place additional loop devices (such as strip chart recorders) at the A location in the current loop.

- All terminals marked RTN are connected internally.
- Terminals marked i RTN are not used for single-ended voltage wiring.



**Technical Specifications - 1756-IF16, 1756-IF16K**

| Attribute                         | 1756-IF16, 1756-IF16K   |
|-----------------------------------|---|
| Inputs                            | 16 single ended, 8 differential or 4 differential (high speed)  |
| Input range                       | ±10V<br>0...10V<br>0...5V<br>0...20 mA  |
| Resolution                        | 320 µV/count (15 bits + sign bipolar) @ ±10.25V<br>160 µV/count (16 bits) @ 0...10.25V<br>80 µV/count (16 bits) @ 0...5.125V<br>0.32 µA/count (16 bits) @ 0...20.5 mA   |
| Current draw @ 5.1V               | 150 mA  |
| Current draw @ 24V                | 65 mA   |
| Total backplane power             | 2.33 W  |
| Voltage and current ratings       | Backplane: 5.1V DC, 150 mA max 24V DC, 65 mA max<br>Input Voltage Range: -10...+10V<br>Input Current Range: 4...20mA<br>Limited to 100VA  |
| Power consumption                 | 2.3 W   |
| Power dissipation                 | Voltage: 2.3 W<br>Current: 3.9 W  |
| Thermal dissipation               | Voltage: 7.84 BTU/hr<br>Current: 13.3 BTU/hr  |
| Input impedance                   | Voltage: >10 MΩ<br>Current: 249 Ω   |
| Open circuit detection time       | Differential voltage - Positive full scale reading within 5 s<br>Single-ended/differential current - Negative full scale reading within 5 s<br>Single-ended voltage - Even-numbered channels go to positive full scale reading within 5 s, odd-numbered channels go to negative full scale reading within 5 s |
| Overvoltage protection, max       | Voltage: 30V DC<br>Current: 8V DC   |
| Normal mode noise rejection       | >80 dB @ 50/60 Hz <sup>(2)</sup>  |
| Common mode noise rejection       | >100 dB @ 50/60 Hz  |
| Channel bandwidth                 | 15 Hz (-3 dB) <sup>(2)</sup>  |
| Settling time                     | <80 ms to 5% of full scale <sup>(2)</sup>   |
| Calibrated accuracy 25 °C (77 °F) | Voltage: Better than 0.05% of range<br>Current: Better than 0.15% of range  |
| Offset drift                      | 45 µV/°C  |
| Gain drift with temperature       | Voltage: 15 ppm/°C<br>Current: 20 ppm/°C  |
| Module error                      | Voltage: 0.1% of range<br>Current: 0.3% of range  |
| Module input scan time, min       | 16 pt single-ended: 16...488 ms<br>8 pt differential: 8...244 ms<br>4 pt differential: 5...122 ms <sup>(2)</sup>  |
| Onboard data alarming             | Yes   |
| Scaling to engineering units      | Yes   |
| Real-time channel sampling        | Yes   |

**Technical Specifications - 1756-IF16, 1756-IF16K**

| Attribute                    | 1756-IF16, 1756-IF16K   |
|------------------------------|---|
| Data format                  | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method     | Sigma-Delta   |
| Isolation voltage            | 250V (continuous), Reinforced insulation type, Inputs-to-Backplane.<br>No isolation between individual Inputs.<br>Routine tested at 1350V AC for 2 s  |
| Module keying                | Electronic, software configurable   |
| Removable terminal block     | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                   | User-defined mechanical   |
| Slot width                   | 1   |
| Wire size                    | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs  | 1756-TBCH: 0.5 N·m (4.4 lb·in)  |
| Wire category <sup>(1)</sup> | 2 - on signal ports   |
| Enclosure type               | None (open-style)   |
| North American temp code     | T4A   |
| ATEX temp code               | T4  |
| IECEX temp code              | T4  |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(2) Notch filter dependent.

**Environmental Specifications - 1756-IF16, 1756-IF16K**

| Attribute   | 1756-IF16, 1756-IF16K                      |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F) |
| Temperature, surrounding air, max   | 60 °C (140 °F)                             |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)               |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                      |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                          |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g                                       |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g                                       |
| Emissions   | IEC 61000-6-4                              |

**Environmental Specifications - 1756-IF16, 1756-IF16K**

| Attribute                                 | 1756-IF16, 1756-IF16K  |
|---|--|
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-IF16, 1756-IF16K**

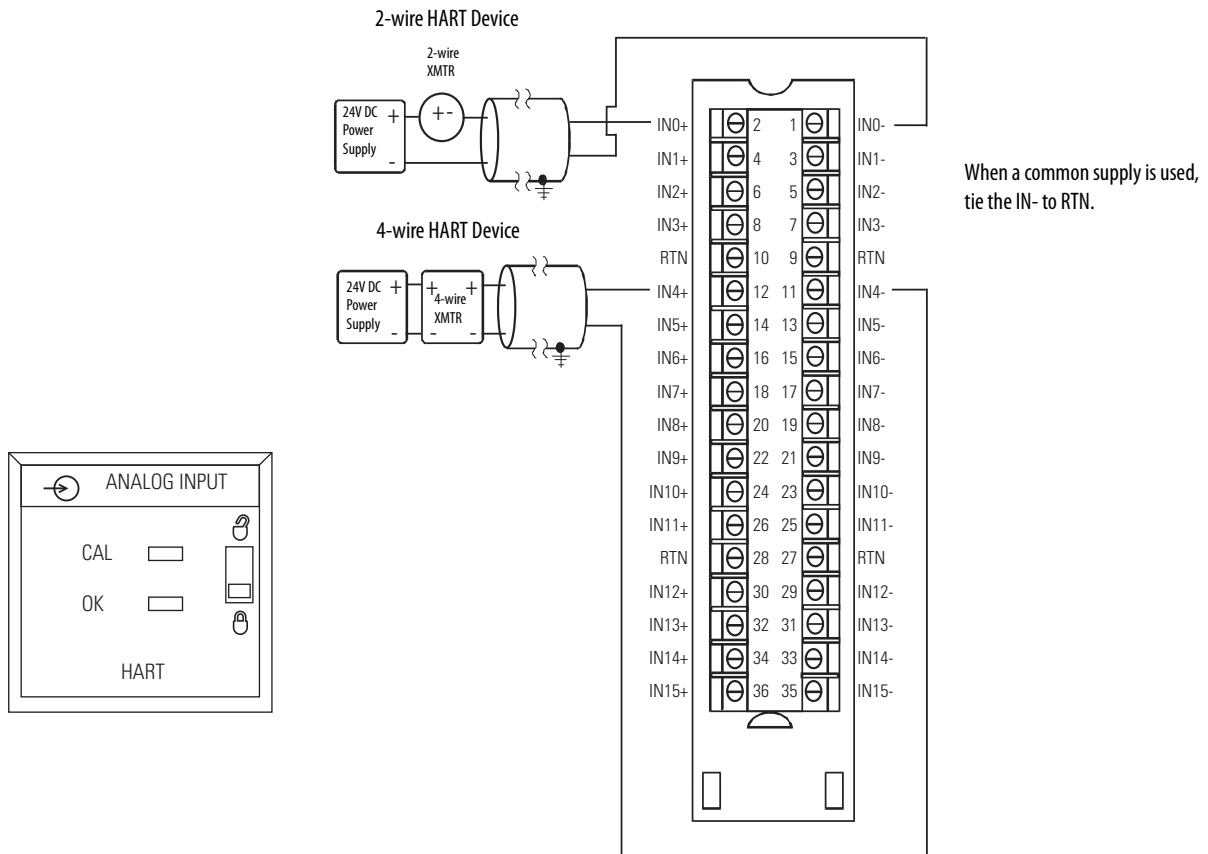
| Certification (when product is marked) <sup>(1)</sup> | 1756-IF16, 1756-IF16K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO15ATEX1482X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 15.0053X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.



## 1756-IF16H, 1756-IF16HK

ControlLogix current analog input module with HART protocol.



### Technical Specifications - 1756-IF16H, 1756-IF16HK

| Attribute                   | 1756-IF16H, 1756-IF16HK  |
|-----------------------------|--|
| Inputs                      | Sixteen differential, current<br>Dedicated HART modem per channel  |
| Input range                 | 0...20 mA<br>4...20 mA   |
| Resolution                  | 16...21 bits   |
| Voltage and current ratings | Backplane: 5.1V DC @ 200 mA, 24V DC @ 125 mA<br>Input current range: 0...20 mA, 4...20 mA  |
| Total backplane power       | 4.02 W   |
| Power dissipation, max      | 6 W  |
| Isolation voltage           | 50V (continuous), Basic insulation type, Input Channels to Backplane<br>No isolation between individual Input Channels<br>Type tested at 1500V DC for 60 s |
| Thermal dissipation         | 12 BTU/hr  |
| Input impedance             | 249 $\Omega$   |
| Open circuit detection time | Positive full scale reading within 5 s   |
| Overvoltage protection, max | 8V DC  |

**Technical Specifications - 1756-IF16H, 1756-IF16HK**

| Attribute                    | 1756-IF16H, 1756-IF16HK   |
|------------------------------|---|
| Normal mode noise rejection  | 74 dB @ 50/60 Hz (15 Hz filter)<br>90 dB @ 60 Hz (20 Hz filter)   |
| Common mode noise rejection  | > 90 dB @ 50/60 Hz (15 Hz and 20 Hz filters only)   |
| Repeatability                | Better than 0.01% of range (15 Hz and 20 Hz filters only)   |
| Calibrated accuracy          | Better than 0.13% of range (all filters)  |
| Calibration interval         | 12 months typical   |
| Offset drift                 | 27 $\mu\text{V}/^\circ\text{C}$   |
| Gain drift with temperature  | 11 ppm/ $^\circ\text{C}$  |
| Module error                 | 0.3% of range   |
| Module input scan time, min  | 11...328 ms (filter dependent)  |
| Module HART scan time        | Estimate 1 s if all channels are HART enabled   |
| Data format                  | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Input conversion method      | Successive approximation  |
| Output conversion method     | R-Ladder DAC, monotonicity with no missing codes  |
| Module keying                | Electronic, software configurable   |
| Removable terminal block     | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                   | User-defined mechanical   |
| Slot width                   | 1   |
| Wire size                    | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque spec   | 1756-TBCH 0.5 N·m (4.4 lb·in)   |
| Wire category <sup>(1)</sup> | 2 - on signal ports   |
| Wire type                    | Copper  |
| Enclosure type rating        | None (open-style)   |
| North American temp code     | T5  |
| ATEX temp code               | T4  |
| IECEx temp code              | T4  |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF16H, 1756-IF16HK**

| <b>Attribute</b>  | <b>1756-IF16H, 1756-IF16HK</b>   |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)   |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock):  | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5   | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

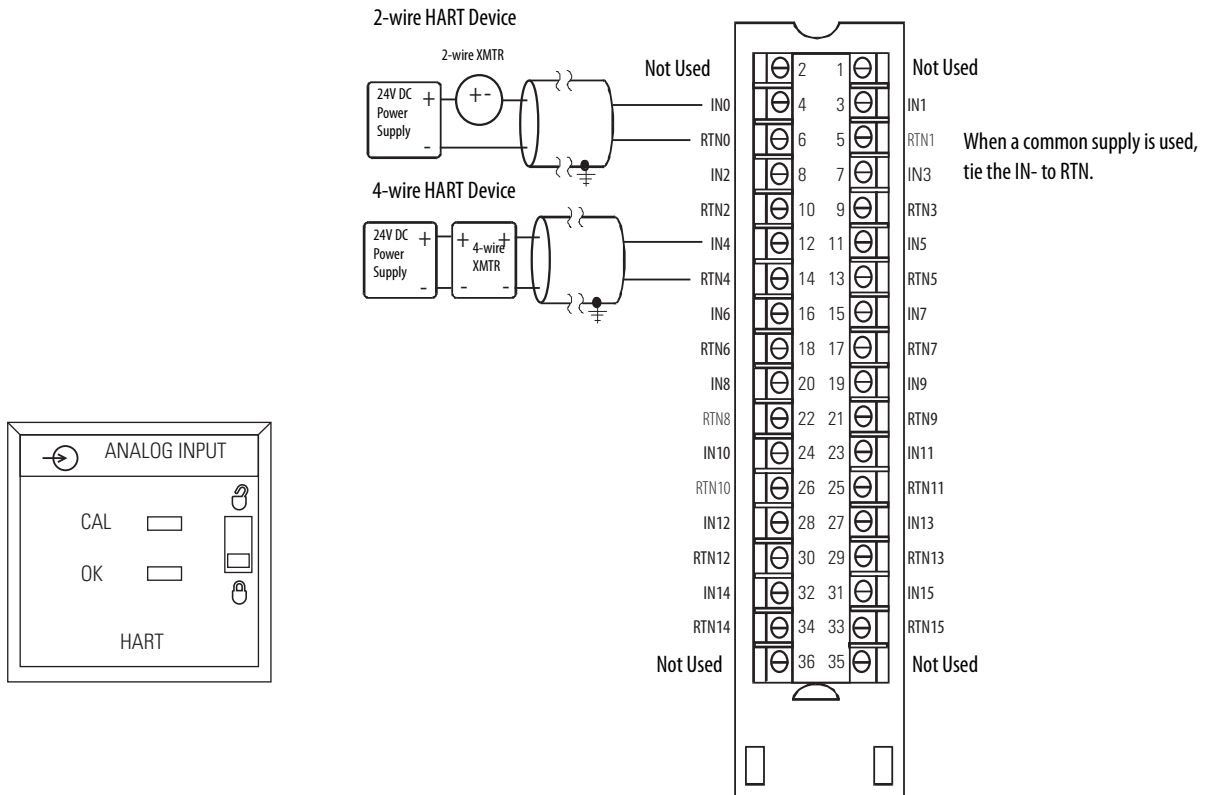
**Certifications - 1756-IF16H, 1756-IF16HK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IF16H, 1756-IF16HK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO12ATEX1219040X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEX UL 16.0109X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IF16IH, 1756-IF16HK

ControlLogix current analog input module with HART protocol



### Technical Specifications - 1756-IF16IH, 1756-IF16HK

| Attribute                                       | 1756-IF16IH, 1756-IF16HK   |
|---|--|
| Voltage and current ratings                     | Backplane: 225 mA @ 5.1V DC, 200 mA @ 24V DC<br>16 Inputs<br>Input current range: 0...20 mA, 4...20 mA                               |
| Resolution                                      | 16...21 bits   |
| Power dissipation                               | 5.30 W   |
| Inrush current                                  | 400 mA @ 5.1V DC<br>450 mA @ 24V DC  |
| Isolation voltage                               | 250V (continuous)<br>Reinforced Insulation Type, inputs to backplane.<br>Basic Insulation Type, input to input, and inputs to ground |
| Input impedance                                 | 250 Ω (±5 Ω)   |
| Open circuit detection time                     | 5 s, 4...20 mA range only  |
| Input overvoltage protection                    | 28.8V DC   |
| Normal mode noise rejection                     | 90 dB @ 50/60 Hz (10 Hz filter)<br>74 dB @ 50/60 Hz (15 Hz filter)<br>33 dB @ 60 Hz, 90 dB @60 Hz (20 Hz filter)                     |
| Common mode noise rejection                     | > 90 dB @ 50/60 Hz (10 Hz, 15 Hz, and 20 Hz filters only)  |
| Calibrated accuracy at 25 °C with HART disabled | 0.15...1.5% of full scale, dependent on selected filter  |

**Technical Specifications - 1756-IF16IH, 1756-IF16IHK**

| Attribute  | 1756-IF16IH, 1756-IF16IHK   |
|--|---|
| Calibrated accuracy at 25 °C with HART enabled                     | 1.5% of full scale with 250 Hz filter<br>0.5% of full scale with 100 Hz filter<br>0.2% of full scale with 50 Hz or 60 Hz filter<br>0.15% of full scale with 15 Hz or 20 Hz filter<br>Monotonicity not guaranteed  |
| Calibrated accuracy over full temperature range with HART enabled  | 1.8% of full scale with 250 Hz filter<br>0.8% of full scale with 100 Hz filter<br>0.5% of full scale with 50 Hz or 60 Hz filter<br>0.4% of full scale with 15 Hz or 20 Hz filter<br>Monotonicity not guaranteed   |
| Calibration interval   | 12 months typical   |
| Input offset drift with temperature                                | 300 $\mu$ A/°C  |
| Gain drift with temperature  | 20 ppm/°C   |
| Module error over full temperature range with HART disabled        | 0.3% of range (all filters)   |
| Module scan time for all channels - analog, min                    | 14...428 ms (filter dependent)  |
| Typical module HART dynamic variables update time for all channels | 1 s typical with no pass through or device information messaging active   |
| Data format  | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Input conversion method  | Sigma-Delta ADC (24-bit converter)  |
| Output conversion method   | Sigma-Delta ADC (24-bit converter)  |
| Module keying  | ASIC does not support module keying   |
| Removable terminal block   | 1756-TBCH<br>1756-TBS6H   |
| RTB keying   | User-defined mechanical   |
| Slot width   | 1   |
| Wire size  | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs  | 1756-TBCH 0.5 N•m (4.4 lb-in)   |
| Wiring category <sup>(1)</sup>                                     | 2 - on signal ports   |
| Wire type  | Copper  |
| Enclosure type rating  | None (open-style)   |
| North American temp code   | T5  |
| ATEX temp code   | T4  |
| IECEx temp code  | T4  |

(1) Use this conductor category information for planning conductor routing. See Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IF16IH, 1756-IF16IHK**

| <b>Attribute</b>  | <b>1756-IF16IH, 1756-IF16IHK</b>   |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)   |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...6000 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5   | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-IF16IH, 1756-IF16IHK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IF16IH, 1756-IF16IHK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO14ATEX1238X</li> </ul>   |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEX UL 16.0110X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

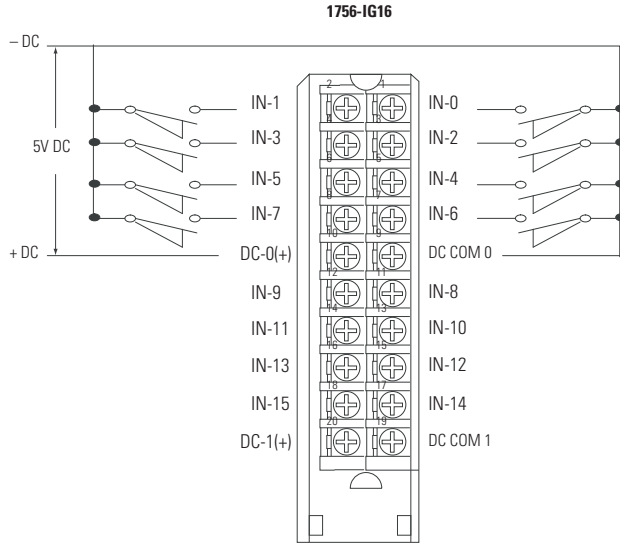
(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.



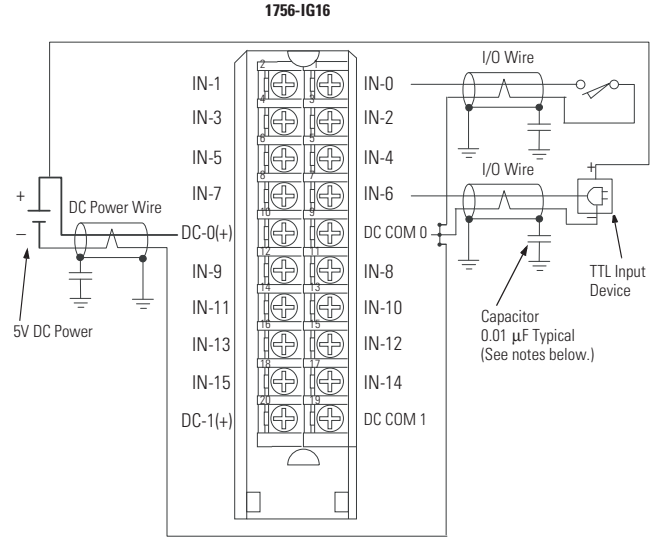
# 1756-IG16

## ControlLogix TTL input module

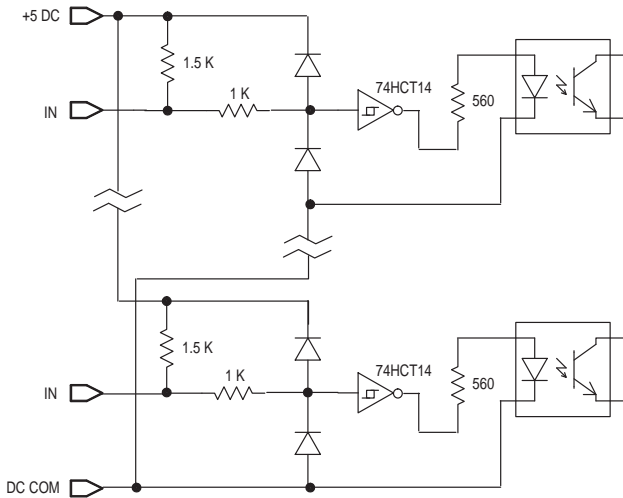
**Standard Wiring**



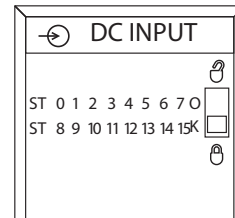
**CE Compliant Wiring**



**Simplified Schematic**



**IMPORTANT:** I/O cables must be shielded type and cable length must be <10 m (32.8 ft) for maximum EMI noise immunity.



### Low to True Format - 1756-IG16

- -0.2...0.8V = Input guaranteed to be in on-state
- 0.8...2.0V = Input state not guaranteed
- 2.0...5.5V = Input guaranteed to be in off-state

**Technical Specifications - 1756-IG16**

| Attribute  | 1756-IG16  |
|--|--|
| Inputs   | 16 (8 points/group)  |
| Voltage category   | 5V DC TTL source (Low=True) <sup>(1)</sup>   |
| Operating voltage range  | 4.5...5.5V DC<br>50 mV P-P ripple max  |
| Input delay time (screw to backplane)<br>Off to On (5-to-0V DC transition) | Hardware delay: 270 $\mu$ s nom/450 $\mu$ s max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms  |
| On to Off (0-to-5V DC transition)  | Hardware delay: 390 $\mu$ s nom/ 700 $\mu$ s max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms  |
| Current draw @ 5.1V  | 110 mA   |
| Current draw @ 24V   | 2 mA   |
| Total backplane power  | 0.61 W   |
| Power dissipation, max   | 1.4 W @ 60 °C (140 °F)   |
| Thermal dissipation  | 4.8 BTU/hr @ 60 °C (140 °F)  |
| Off-state voltage, max   | 2V   |
| Off-state current, max   | 4.1 mA   |
| Input impedance, max   | 1.4 k $\Omega$ min<br>1.5 k $\Omega$ typical   |
| Input current, nom   | 3.7 mA @ 5V DC   |
| Input current, max   | 4.1 mA @ 5V DC   |
| Cyclic update time   | 200 $\mu$ s...750 ms   |
| Change of state  | Software configurable  |
| Time stamp of inputs   | $\pm$ 200 $\mu$ s  |
| Isolation voltage  | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying  | Electronic, software configurable  |
| Removable terminal block housing   | 1756-TBNH<br>1756-TBSH   |
| RTB keying   | User-defined mechanical  |
| Slot width   | 1  |
| Wire category  | 2 <sup>(2)</sup>   |
| Enclosure type   | None (open-style)  |
| North American temperature code  | T5   |
| IEC temperature code   | T5   |
| Reverse polarity protection  | No   |

(1) TTL inputs are inverted (-0.2 to +0.8 = low voltage = True = On.) Use a NOT instruction in your program to convert to traditional True - High logic.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IG16**

| Attribute   | 1756-IG16  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±1 kV at 5 kHz on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

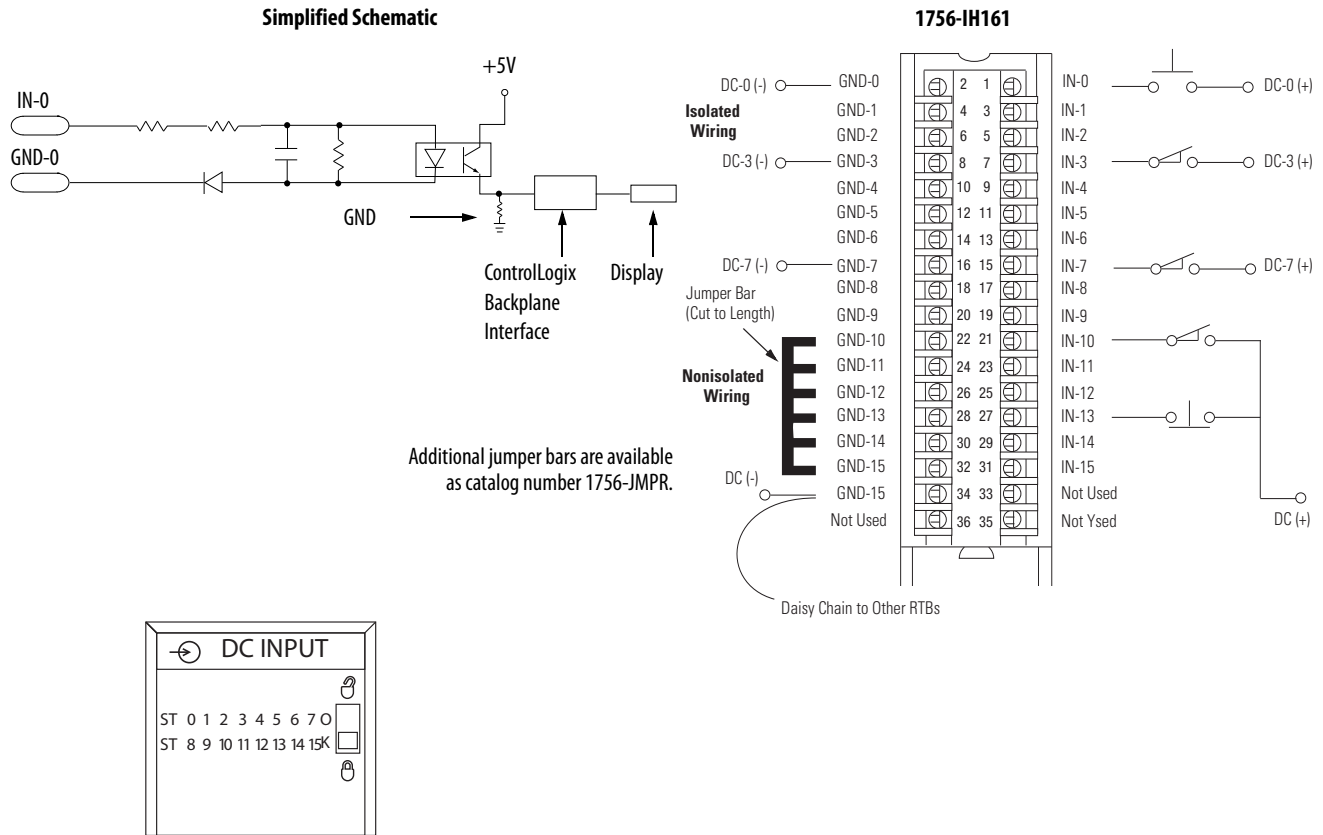
**Certifications - 1756-IG16**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IG16   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T5 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IH16I

ControlLogix 125V DC isolated input module



### Technical Specifications - 1756-IH16I

| Attribute                             | 1756-IH16I  |
|---------------------------------------|---|
| Inputs                                | 16 individually isolated  |
| Voltage category                      | 125V DC sink/source   |
| Operating voltage range               | 90...146V DC <sup>(1)</sup>   |
| Input voltage, nom                    | 125V DC   |
| Input delay time (screw to backplane) |   |
| Off to On                             | Hardware delay: 2 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms              |
| On to Off                             | Hardware delay: 6 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms |
| Current draw @ 5.1V                   | 125 mA  |
| Current draw @ 24V                    | 3 mA  |
| Total backplane power                 | 0.71 W  |
| Power dissipation, max                | 5 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 17.05 BTU/hr  |
| Off-state voltage, max                | 20V DC  |

**Technical Specifications - 1756-IH16I (continued)**

| Attribute                              | 1756-IH16I  |
|--|---|
| Off-state current, max                 | 0.8 mA  |
| On-state current, min                  | 1 mA @ 90V DC   |
| On-state current, max                  | 3 mA @ 146V DC  |
| On-state voltage<br>Derated as follows | 90...146V DC<br>90...146V DC @ 50 °C (122 °F), 12 Channels ON<br>90...132V DC @ 55 °C (131 °F), 14 Channels ON<br>90...125V DC @ 60 °C (140 °F), 16 Channels ON<br>90...146V DC @ 30 °C (86 °F), 16 Channels ON |
| Inrush current, max                    | 250 mA  |
| Input impedance, max                   | 48.67 kΩ @ 146V DC  |
| Cyclic update time                     | 200 μs...750 ms   |
| Change of state                        | Software configurable   |
| Time stamp of inputs                   | ±200 μs   |
| Isolation voltage                      | 250V (continuous), basic insulation type, inputs-to-backplane, and input-to-input<br>Routine tested @ 1350V AC for 2 s  |
| Module keying                          | Electronic, software configurable   |
| Removable terminal block housing       | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                             | User-defined mechanical   |
| Slot width                             | 1   |
| Wire category                          | 1 <sup>(2)</sup>  |
| Enclosure type                         | None (open-style)   |
| North American temperature code        | T4  |
| Reverse polarity protection            | Yes   |

(1) UL certification for 125V nominal. Rockwell Automation specified to the following:

- 90...146V DC @ 50 °C (122 °F), 12 channels on
- 90...132V DC @ 55 °C (131 °F), 14 channels on
- 90...125V DC @ 60 °C (140 °F), 16 channels on
- 90...146V DC @ 30 °C (86 °F), 16 channels on.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IH16I**

| Attribute   | 1756-IH16I                   |
|---|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max   | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz            |

**Environmental Specifications - 1756-IH16I (continued)**

| Attribute   | 1756-IH16I   |
|---|--|
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1                      | 3 kV   |

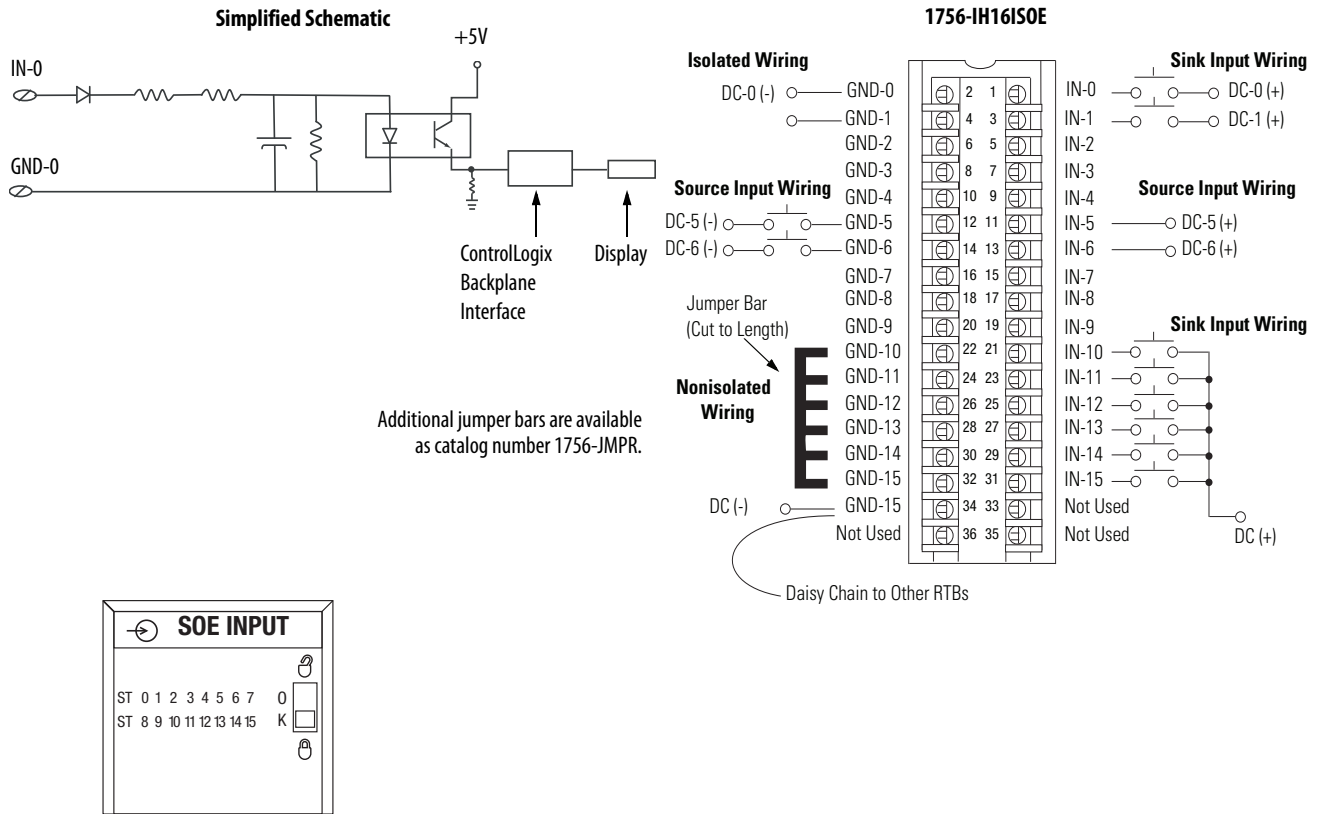
**Certifications - 1756-IH16I**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IH16I  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-IH16ISOE

ControlLogix DC (90...140V) sequence of events input module



## Technical Specifications - 1756-IH16ISOE

| Attribute  | 1756-IH16ISOE  |
|--|--|
| Inputs   | 16 individually isolated, sequence of events   |
| Voltage category                                   | 125V DC sink/source  |
| Operating voltage range                            | 90...140V DC   |
| Input voltage, nom                                 | 125V DC  |
| Input delay time (screw to backplane)<br>Off to On | Hardware delay: 10 μs nom/20 μs max<br>+ firmware scan: up to 25 μs<br>+ filter time: 0...50 ms<br>+ ASIC delay: 175 μs (FIFO) or 625 μs (Coordinated System Time per point) |
| On to Off  | Hardware delay: 50 μs nom/75 μs max<br>+ firmware scan: up to 25 μs<br>+ filter time: 0...50 ms<br>+ ASIC delay: 175 μs (FIFO) or 625 μs (Coordinated System Time per point) |
| Current draw @ 5.1V                                | 275 mA $\bar{S}$   |
| Current draw @ 24V                                 | 2 mA   |
| Total backplane power                              | 1.3 W  |
| Power dissipation, max                             | 5.5 W @ 60 °C (140 °F)   |

**Technical Specifications - 1756-IH16ISOE (continued)**

| Attribute                       | 1756-IH16ISOE   |
|---------------------------------|---|
| Thermal dissipation             | 17.22 BTU/hr  |
| Off-state voltage, max          | 20V   |
| Off-state current, max          | 0.3 mA  |
| On-state current, min           | 1.15 mA @ 90V DC  |
| On-state current, max           | 1.85 mA @ 140V DC   |
| Input impedance, max            | 74.8 k $\Omega$   |
| Cyclic update time              | 200 $\mu$ s...750 ms  |
| Change of state                 | Software configurable   |
| Time stamp of inputs            | $\pm$ 100 $\mu$ s   |
| Isolation voltage               | 250V (continuous), basic insulation type, inputs-to-backplane, and input-to-input<br>Routine tested @ 1350V AC for 2 s, inputs-to-backplane |
| Module keying                   | Electronic, software configurable   |
| Removable terminal block        | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 1   |
| Wire category                   | 1 <sup>(1)</sup>  |
| Enclosure type                  | None (open-style)   |
| North American temperature code | T3C   |
| Reverse polarity protection     | Yes   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IH16ISOE**

| Attribute   | 1756-IH16ISOE                                  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |



**Environmental Specifications - 1756-IH16ISOE (continued)**

| Attribute                                    | 1756-IH16ISOE  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . .80 MHz   |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

**Certifications - 1756-IH16ISOE**

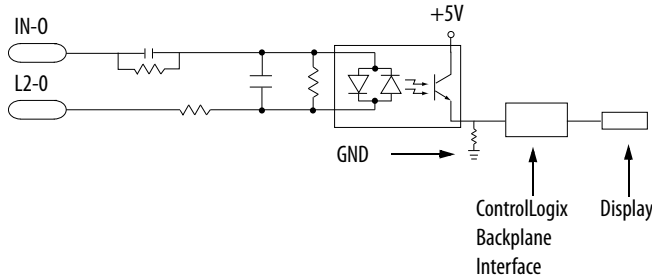
| Certification (when product is marked) <sup>(1)</sup> | 1756-IH16ISOE   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

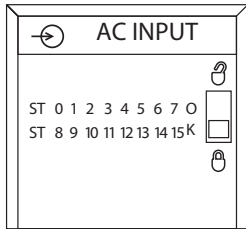
## 1756-IM16I, 1756-IM16IK

ControlLogix 240V AC input module

**Simplified Schematic**

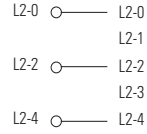


Additional jumper bars are available as catalog number 1756-JMPR.

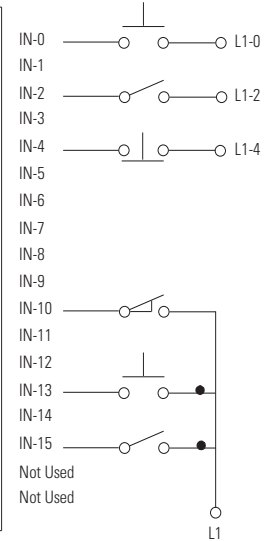
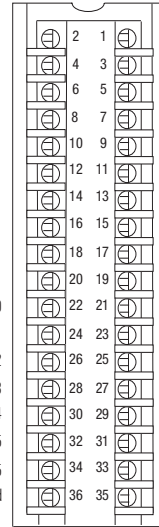
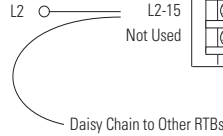


**1756-IM16I, 1756-IM16IK**

Isolated Wiring



Nonisolated Wiring



### Technical Specifications - 1756-IM16I, 1756-IM16IK

| Attribute  | 1756-IM16I, 1756-IM16IK  |
|--|--|
| Inputs   | 16 individually isolated   |
| Voltage category                                   | 240V AC 50/60 Hz   |
| Operating voltage range                            | 159...265V AC,<br>47...63 Hz <sup>(2)</sup>  |
| Input voltage, nom                                 | 240V AC 50/60 Hz   |
| Input delay time (screw to backplane)<br>Off to On | Hardware delay: 10 ms max + filter time<br>User-selectable filter time: 1 ms or 2 ms |
| Onto Off   | Hardware delay: 8 ms max + filter time<br>User-selectable filter time: 9 ms or 18 ms |
| Current draw @ 5.1V                                | 100 mA   |
| Current draw @ 24V                                 | 3 mA   |
| Total backplane power                              | 0.58 W   |
| Power dissipation, max                             | 5.8 W @ 60 °C (140 °F)   |
| Thermal dissipation                                | 19.78 BTU/hr   |
| Off-state voltage, max                             | 40V  |

**Technical Specifications - 1756-IM16I, 1756-IM16IK**

| Attribute                        | 1756-IM16I, 1756-IM16IK   |
|----------------------------------|---|
| Off-state current, max           | 2.5 mA  |
| On-state current, min            | 5 mA @ 159V AC, 60 Hz   |
| On-state current, max            | 13 mA @ 265V AC, 60 Hz  |
| On-state voltage                 | 159...265V AC, 47...63Hz @ 30 °C (86 °F) all channels ON<br>159...265V AC, 47...63Hz @ 40 °C (104 °F) 8 points ON<br>159...253V AC, 47...63Hz @ 45 °C (113 °F) all channels ON<br>159...242V AC, 47...63Hz @ 60 °C (140 °F) all channels ON |
| Inrush current, max              | 250 mA  |
| Input impedance, max             | 20.38 k $\Omega$ @ 265V AC, 60 Hz   |
| Cyclic update time               | 200 $\mu$ s...750 ms  |
| Change of state                  | Software configurable   |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s   |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane, and input-to-input<br>Routine tested @ 1350V AC for 2 s  |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block housing | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category <sup>(1)</sup>     | 1 - on signal ports<br>1 - on power ports   |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(2) UL certification for 240V 50/60 Hz nominal. Rockwell Automation specified to the following:

- 159...265V AC, 47...63Hz @ 30 °C (86 °F) all channels on
- 159...265V AC, 47...63Hz @ 40 °C (104 °F) 8 points on
- 159...253V AC, 47...63Hz @ 45 °C (113 °F) all channels on
- 159...242V AC, 47...63Hz @ 60 °C (140 °F) all channels on.

**Environmental Specifications - 1756-IM16I, 1756-IM16IK**

| Attribute   | 1756-IM16I, 1756-IM16IK      |
|---|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max   | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz            |

**Environmental Specifications - 1756-IM16I, 1756-IM16IK**

| Attribute   | 1756-IM16I, 1756-IM16IK   |
|---|---|
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g  |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g  |
| Emissions   | IEC 61000-6-4   |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges  |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 30 MHz to 1000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on signal ports  |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports  |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz   |

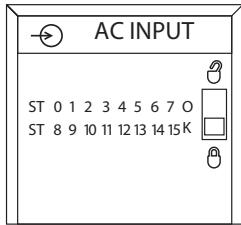
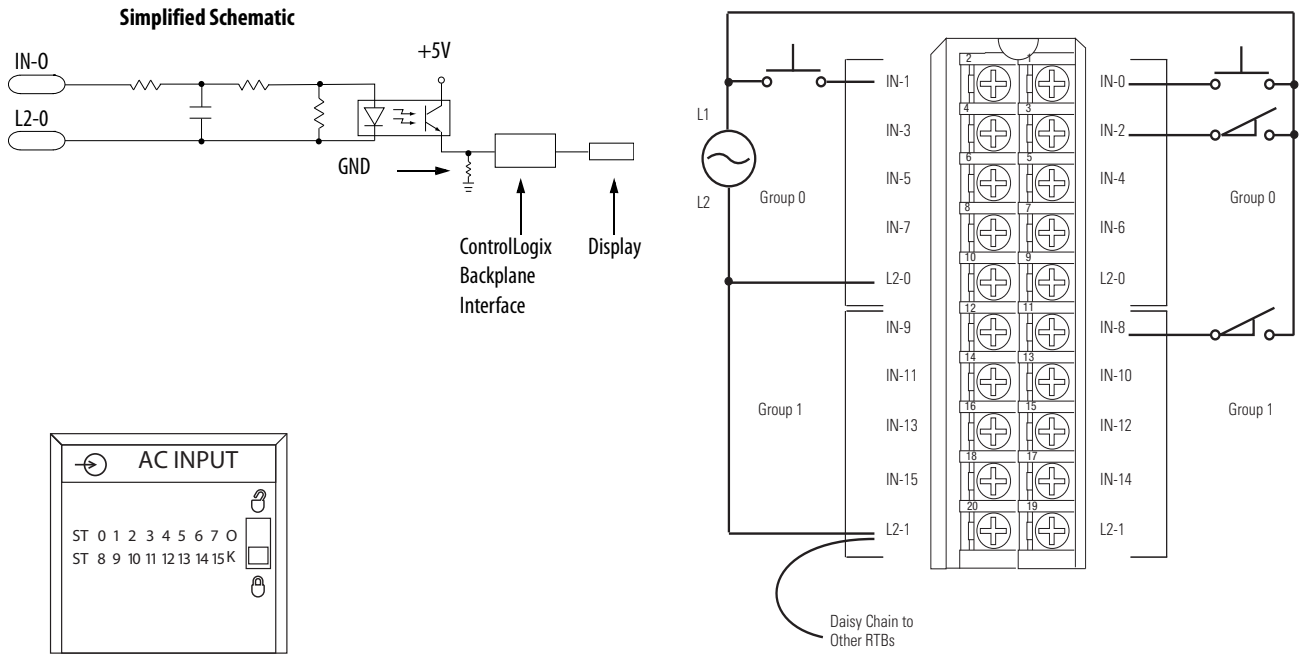
**Certifications - 1756-IM16I, 1756-IM16IK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IM16I, 1756-IM16IK  |
|---|--|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.  |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.   |
| CE  | European Union 89/336/EEC EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> </ul> European Union 2014/35/EU LVD Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IN16

ControlLogix AC (10...30V) input module



### Technical Specifications - 1756-IN16

| Attribute                             | 1756-IN16   |
|---------------------------------------|---|
| Inputs                                | 16 (8 points/group)   |
| Voltage category                      | 24V AC 50/60 Hz   |
| Operating voltage range               | 10...30V AC,<br>47...63 Hz  |
| Input voltage, nom                    | 24V AC 50/60 Hz   |
| Voltage and current ratings           | Backplane:<br>5.1V DC, 135 mA<br>24V DC, 2 mA<br>Inputs:<br>10...30V AC, 50/60Hz 25 mA max  |
| Input delay time (screw to backplane) |   |
| Off to On                             | Hardware delay: 10 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms |
| On to Off                             | Hardware delay: 10 ms max + filter time<br>User-selectable filter time: 9 ms or 18 ms       |
| Current draw @ 5.1V                   | 135 mA  |
| Current draw @ 24V                    | 2 mA  |
| Total backplane power                 | 0.56 W  |
| Power dissipation, max                | 5.1 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 17.39 BTU/hr  |
| Off-state voltage, max                | 5V  |

**Technical Specifications - 1756-IN16 (continued)**

| Attribute                        | 1756-IN16  |
|----------------------------------|--|
| Off-state current, max           | 2.75 mA  |
| On-state current, min            | 5 mA @ 10V AC, 60 Hz   |
| On-state current, max            | 1.2 mA @ 30V AC, 60 Hz   |
| Inrush current, max              | 250 mA   |
| Input impedance, max             | 2.5 k $\Omega$ @ 30V AC, 60 Hz   |
| Cyclic update time               | 200 $\mu$ s . . . 750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested at 1350V AC for 2 s  |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Wire Size                        | 1756-TBNH<br>Single wire connection: 0.33 . . . 2.1 mm <sup>2</sup> (22 . . . 14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max.<br>Double wire connection: 0.33 . . . 1.3 mm <sup>2</sup> (22 . . . 16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max.<br><br>1756-TBSH<br>Single wire connection: 0.33 . . . 2.1 mm <sup>2</sup> (22 . . . 14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max. |
| Terminal block torque specs      | 1756-TBNH 1.36 N·m (12 lb-in)  |
| Slot width                       | 1  |
| Wire category <sup>(1)</sup>     | 1 - on signal ports  |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T3C  |
| ATEX                             | T3   |
| IECEx temperature code           | T3   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IN16**

| Attribute   | 1756-IN16                               |
|---|---|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 °C < Ta < 60 °C (32 °F < Ta < 140 °F) |
| Temperature, surrounding air, max   | 60 °C (140 °F)                          |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40 . . . +85 °C (-40 . . . +185 °F)    |

**Environmental Specifications - 1756-IN16 (continued)**

| Attribute   | 1756-IN16  |
|---|--|
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat) | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                     | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)      | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                       | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                               | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                     | ±4 kV at 5 kHz on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                              | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

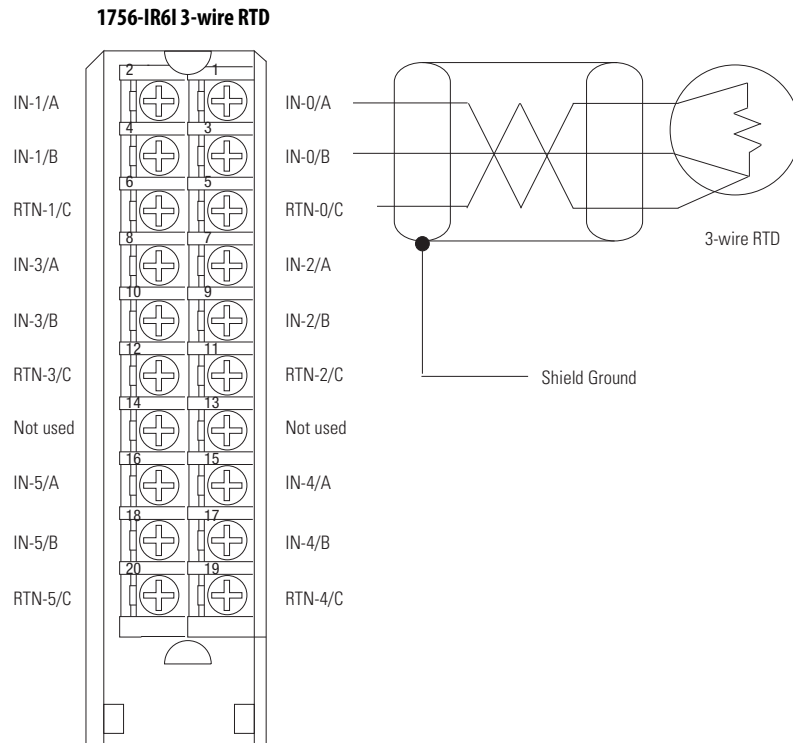
**Certifications - 1756-IN16**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IN16   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T3 Gc</li> <li>DEMKO16ATEX1792X</li> </ul>  |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T3 Gc</li> <li>IECExUL16.0151X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IR6I

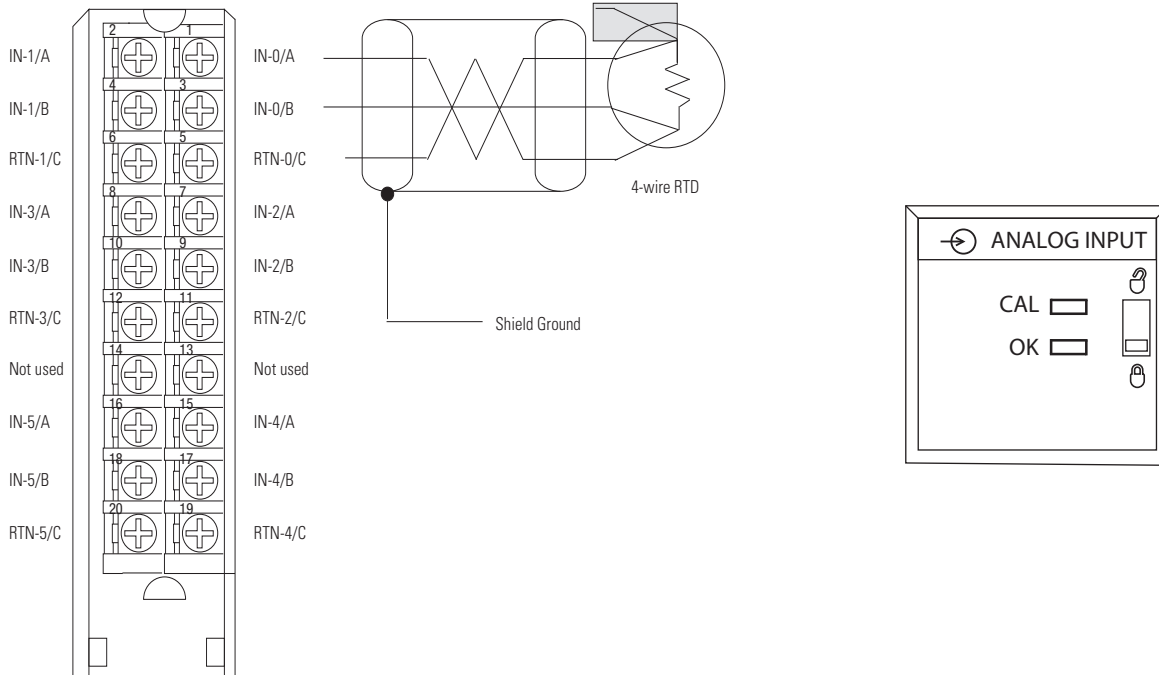
ControlLogix temperature sensing analog input module



**IMPORTANT:** For 2-wire resistor applications including calibration, make sure IN-x/B and RTN-x/C are shorted together as shown.



**1756-IR6I 4-wire RTD**



**Signal and User Counts - 1756-IR6I**

| Range      | Low Signal and User Counts     | High Signal and User Counts |
|------------|--------------------------------|-----------------------------|
| 1...487 Ω  | 0.859068653 Ω<br>-32768 counts | 507.862 Ω<br>32767 counts   |
| 2...1000 Ω | 2 Ω<br>-32768 counts           | 1016.502 Ω<br>32767 counts  |
| 4...2000 Ω | 4 Ω<br>-32768 counts           | 2033.780 Ω<br>32767 counts  |
| 8...4020 Ω | 8 Ω<br>-32768 counts           | 4068.392 Ω<br>32767 counts  |

**Technical Specifications - 1756-IR6I**

| Attribute   | 1756-IR6I   |
|-------------|---|
| Inputs      | 6 individually isolated RTD   |
| Input range | 1...487 Ω<br>2...1000 Ω<br>4...2000 Ω<br>8...4000 Ω   |
| Resolution  | 16 bits<br>1...487 Ω: 7.7 mΩ/bit<br>2...1000 Ω: 15 mΩ/bit<br>4...2000 Ω: 30 mΩ/bit<br>8...4020 Ω: 60 mΩ/bit |

**Technical Specifications - 1756-IR6I (continued)**

| Attribute                        | 1756-IR6I  |
|----------------------------------|--|
| Sensors supported                | 100, 200, 500, 1000 $\Omega$ Platinum, alpha=385<br>100, 200, 500, 1000 $\Omega$ Platinum, alpha=3916<br>120 $\Omega$ Nickel, alpha=672<br>100, 120, 200, 500 $\Omega$ Nickel, alpha=618<br>10 $\Omega$ Copper |
| Current draw @ 5.1V              | 250 mA   |
| Current draw @ 24V               | 125 mA   |
| Total backplane power            | 4.25 W   |
| Power dissipation, max           | 4.3 W  |
| Thermal dissipation              | 14.66 BTU/hr   |
| Open circuit detection time      | Negative full scale reading within 5 s with any combination of lost wires, except input terminal A alone. If input terminal A is lost by itself, the module reads a positive full scale reading within 5 s     |
| Overvoltage protection, max      | 24V AC/DC  |
| Normal mode noise rejection      | 60 dB at 60 Hz <sup>(2)</sup>  |
| Common mode noise rejection      | 120 dB @ 60 Hz<br>100 dB @ 50 Hz   |
| Channel bandwidth                | 15 Hz <sup>(2)</sup>   |
| Settling time                    | <80 ms to 5% of full scale <sup>(2)</sup>  |
| Calibrated accuracy @ 25 °C      | Better than 0.1% of range  |
| Calibration interval             | 6 months   |
| Offset drift                     | 10 M $\Omega$ /°C  |
| Gain drift with temperature, nom | 50 ppm/°C  |
| Gain drift with temperature, max | 90 ppm/°C  |
| Module error                     | 0.54% of range   |
| Module scan time                 | 25 ms min floating point (ohms)<br>50 ms min floating point (temperature)<br>10 ms min integer (ohms) <sup>(2)</sup>   |
| Data format                      | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point   |
| Module conversion method         | Sigma-Delta  |
| Isolation voltage                | 250V (continuous), basic insulation type, input channels-to-backplane, and input channel-to-channel<br>Routine tested at 1350V AC for 2 s  |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category <sup>(1)</sup>     | 2  |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4A  |
| IEC temperature code             | T4   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(2) Notch filter dependent.

**Environmental Specifications - 1756-IR6I**

| <b>Attribute</b>  | <b>1756-IR6I</b>   |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5   | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on shielded signal ports   |

**Certifications - 1756-IR6I**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-IR6I</b>  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

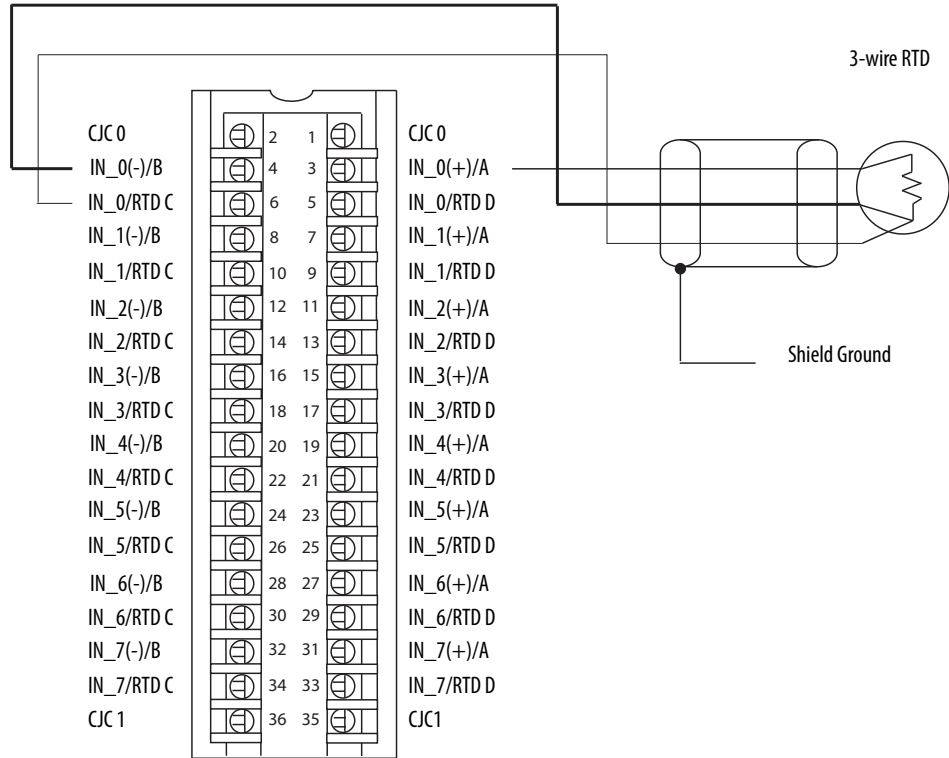
## 1756-IRT8I, 1756-IRT8IK

ControlLogix isolated RTD/Thermocouple analog input module.

### 1756-IRT8I, 1756-IRT8IK Module Wiring Diagram - 3-wire RTD Input

**IMPORTANT:** Remember the following:

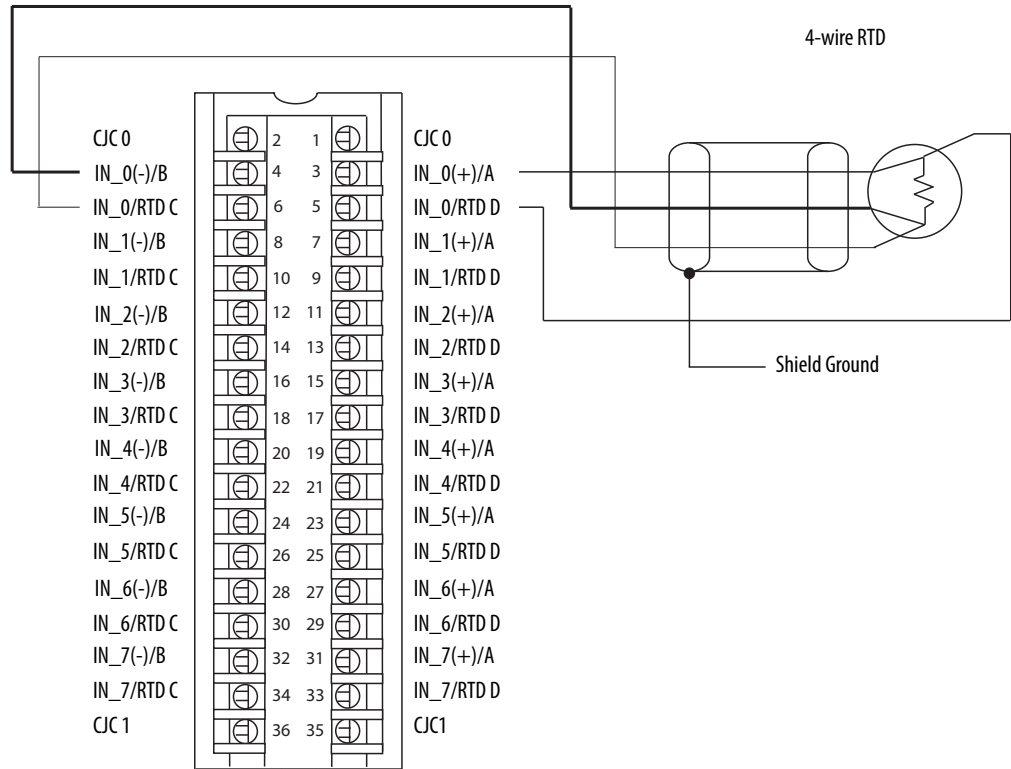
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Terminals 1, 2, 35, and 36 are not used in RTD applications.
- For 2-wire resistor applications including calibration, make sure IN\_x(-)/B and IN\_x/RTD C are shorted together.



### 1756-IRT8I, 1756-IRT8IK Module Wiring Diagram - 4-wire RTD Input

**IMPORTANT:** Remember the following:

- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Terminals 1, 2, 35, and 36 are not used in RTD applications.



**1756-IRT8I, 1756-IRT8IK Module Wiring Diagram - Thermocouple Input**

**IMPORTANT:** Remember the following:

- Connect the white end of the CJC sensor to the even-numbered terminal. Connect the orange end of the CJC sensor to the odd-numbered terminals.

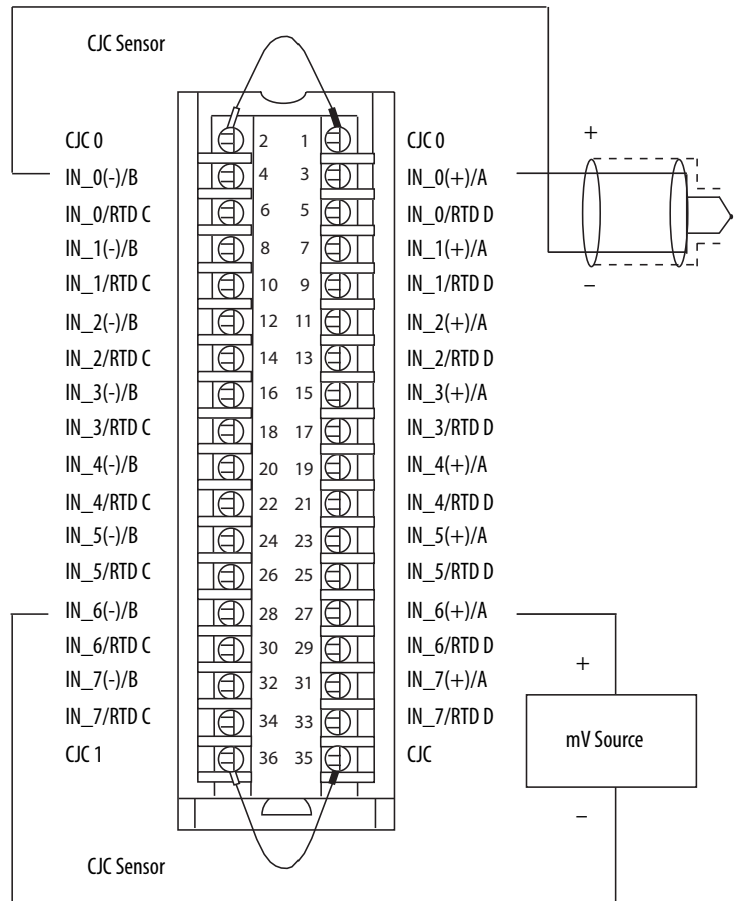
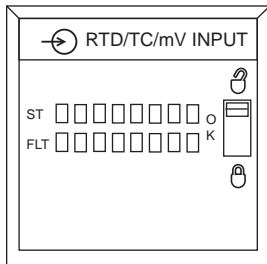
For CJC 0:

- White end - Connected to terminal number 2
- Orange end - Connected to terminal number 1

For CJC 1:

- White end - Connected to terminal number 36
- Orange end - Connected to terminal number 35

- CJC sensors do not come with the module. You must order the sensors, product catalog number 1756-CJC, separately.
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.



**Technical Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute             | 1756-IRT8I, 1756-IRT8IK  |
|-----------------------|--|
| Inputs                | Eight isolated channels - Any combination of RTD or Thermocouple mode<br>Two CJC sensors for Thermocouple use. The CJC sensors, product catalog number 1756-CJC, do not come with the module. You must order the sensors separately. |
| Input range           | 1...500 Ω<br>2...1000 Ω<br>4...2000 Ω<br>8...4000 Ω<br>-100...100 mV   |
| Resolution            | 24 bits<br>0...510 Ω: 0.06 mΩ/count<br>0...1020 Ω: 0.12 mΩ/count<br>0...2040 Ω: 0.25 mΩ/count<br>0...4080 Ω: 0.50 mΩ/count<br>-101...101 mV: 0.01 μV/count   |
| RTD sensors supported | 100, 200, 500, 1000 Ω Platinum, alpha=385<br>100, 200, 500, 1000 Ω Platinum, alpha=3916<br>120 Ω Nickel, alpha=672<br>100, 120, 200, 500 Ω Nickel, alpha=618<br>10 Ω Copper, alpha=427   |

**Technical Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute  | 1756-IRT8I, 1756-IRT8IK   |
|--|---|
| Thermocouple types   | B, C, D, E, J, K, N, R, S, T, TXK/XK (L)  |
| Thermocouple linearization   | ITS-90  |
| Current draw @ 5.1V  | 200 mA  |
| Current draw @ 24V   | 150 mA  |
| Total backplane power  | 4.6 W   |
| Voltage and current ratings  | Backplane: 5.1V DC, 200 mA, 24V DC, 150 mA<br>Input: 1-4000 Ohms, +/-100 mV, Thermocouple; B,C,E,J,K,R,S,T,N,D,L  |
| Power dissipation  | 4.6 W (15.7 BTU/hr) max   |
| Thermal dissipation  | 15.7 BTU/hr   |
| RTD excitation current   | 600 $\mu$ A   |
| Input impedance, approx  | 1 G $\Omega$  |
| Open circuit detection time  | <ul style="list-style-type: none"> <li>Thermocouple input and 3-wire RTD input = 2 s</li> <li>4-wire RTD input = 5 s</li> </ul> <b>IMPORTANT: No Open Circuit Detection</b> when wires are simultaneously disconnected from the IN_x/RTD C and IN_x/RTD D terminals on same channel; where x represents the channel number. |
| Overvoltage protection, max  | $\pm$ 30V DC  |
| Normal mode noise rejection  | 75 dB at 60 Hz <sup>(2)</sup>   |
| Common mode noise rejection  | 125 dB @ 60 Hz 1000 $\Omega$ differential<br>120 dB @ 50 Hz 1000 $\Omega$ differential<br>160 dB @ 600V 100 $\Omega$ differential   |
| Channel bandwidth  | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.   |
| Settling time  | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.   |
| Calibrated accuracy @ 25 °C  | 0.05%   |
| Module error over full temperature range   | 0.1%  |
| Local CJC sensor accuracy  | $\pm$ 0.3 °C  |
| Remote CJC sensor, accuracy  | $\pm$ 0.3 °C  |
| Module input scan time, min  | 1 ms  |
| Data format  | IEEE 32-bit floating point  |
| Module conversion method   | Sigma-Delta   |
| Isolation voltage  | 250V (continuous), reinforced insulation type, inputs to backplane.<br>250V (continuous), basic insulation type, input to input.<br>Type tested at 2300V AC for 60 s, inputs to backplane.<br>Type tested at 1500V AC for 60 s, input to input.   |
| RTD sensor types/temperature range<br>(Each sensor type in a cell supports all temperature ranges in the corresponding column to the right.) |   |
| 100 $\Omega$ PT 385<br>20 $\Omega$ PT 385<br>500 $\Omega$ PT 385<br>1000 $\Omega$ PT 385   | -200...+870 °C (-328...+1598 °F)<br>73...1143 °K<br>132...2058 °R   |

**Technical Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute  | 1756-IRT8I, 1756-IRT8IK  |
|--|--|
| 100 $\Omega$ PT 3916<br>20 $\Omega$ PT 3916<br>500 $\Omega$ PT 3916<br>1000 $\Omega$ PT 3916 | -200...+630 °C (-328...+1166 °F)<br>73...903 °K<br>132...1626 °R   |
| 10 $\Omega$ CU 427   | -200...+260 °C (-328...+500 °F)<br>73...533 °K<br>132...960 °R     |
| 120 $\Omega$ NI 672  | -80...+320 °C (-112...+608 °F)<br>193...593 °K<br>348...1068 °R    |
| 100 $\Omega$ NI 618<br>120 $\Omega$ NI 618<br>200 $\Omega$ NI 618<br>500 $\Omega$ NI 618     | -60...+250 °C (-76...+482 °F)<br>213...523 °K<br>384...942 °R      |
| Thermocouple type/temperature range  |  |
| Thermocouple Type B  | 21...1820 °C (68...3308 °F)<br>293...2093 °K<br>528...3768 °R      |
| Thermocouple Type C  | 0...2320 °C (32...4208 °F)<br>273...2593 °K<br>492...4668 °R       |
| Thermocouple Type D  | 0...2320 °C (32...4208 °F)<br>273...2593 °K<br>492...4668 °R       |
| Thermocouple Type E  | -270...+1000 °C (-454...+1832 °F)<br>3...1273 °K<br>6...2292 °R    |
| Thermocouple Type J  | -210...+1200 °C (-346...+2192 °F)<br>63...1473 °K<br>114...2652 °R |
| Thermocouple Type K  | -270...+1372 °C (-454...+2502 °F)<br>3...1645 °K<br>6...2961 °R    |
| Thermocouple Type N  | -270...+1300 °C (-454...+2372 °F)<br>3...1573 °K<br>6...2832 °R    |
| Thermocouple Type R  | -50...+1768 °C (-58...+3215 °F)<br>223...2041 °K<br>402...3674 °R  |
| Thermocouple Type S  | -50...+1768 °C (-58...+3215 °F)<br>223...2041 °K<br>402...3674 °R  |
| Thermocouple Type T  | -270...+400 °C (-454...+752 °F)<br>3...673 °K<br>6...1212 °R       |
| Thermocouple Type TXK/XK (L)   | -200...+800 °C (-328...+1472 °F)<br>73...1073 °K<br>132...1932 °R  |



**Technical Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute                         | 1756-IRT8I, 1756-IRT8IK   |
|-----------------------------------|---|
| Thermocouple type/resolution, nom |   |
| Type C, R                         | ~0.03 °C (~0.05 °F)   |
| Type B, S                         | ~0.04 °C (~0.07 °F)   |
| Type E, J, K, N, T, TXK/XX (L)    | ~0.01 °C (~0.02 °F)   |
| Type D                            | ~0.02 °C (~0.04 °F)   |
| Module keying                     | Electronic, software configurable   |
| Removable terminal block          | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                        | User-defined mechanical   |
| Slot width                        | 1   |
| Wire size                         | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Wire category <sup>(1)</sup>      | 2 - on signal ports   |
| Enclosure type                    | None (open-style)   |
| North American temperature code   | T4A   |
| ATEX temperature code             | T4  |
| IECEx temperature code            | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(2) Notch filter dependent.

**Environmental Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute   | 1756-IRT8I, 1756-IRT8IK                        |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IRT8I, 1756-IRT8IK**

| Attribute                                 | 1756-IRT8I, 1756-IRT8IK   |
|---|---|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80. . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on shielded signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports  |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz   |

**Certifications - 1756-IRT8I, 1756-IRT8IK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IRT8I, 1756-IRT8IK   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO13ATEX1325026X</li> </ul>   |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 14.0008X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

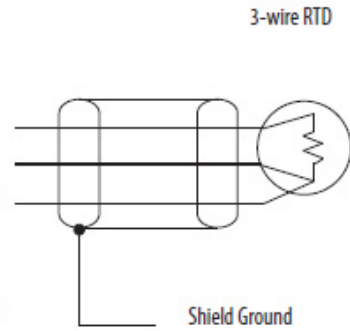
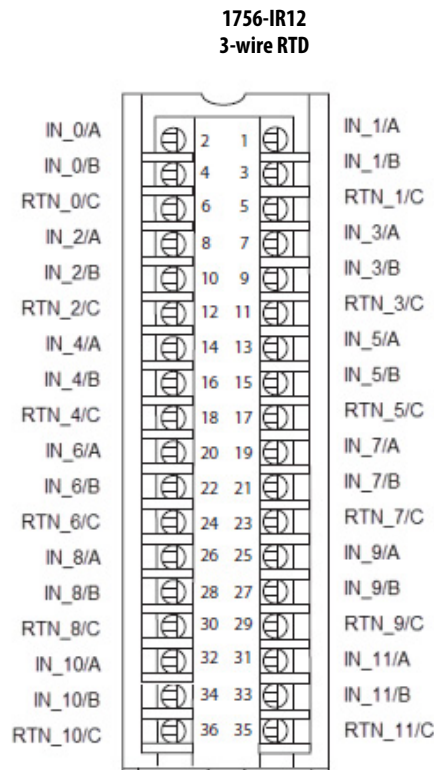
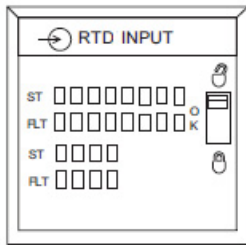
(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IR12, 1756-IR12K

### ControlLogix RTD analog input module

**IMPORTANT:** Remember the following:

- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- For 2-wire resistor applications including calibration, make sure IN\_x/B and RTN\_x/C are shorted together.



### Technical Specifications - 1756-IR12, 1756-IR12K

| Attribute              | 1756-IR12, 1756-IR12K  |
|------------------------|--|
| Inputs                 | Twelve channels RTD mode   |
| Input range            | 1...500 Ω<br>2...1000 Ω<br>4...2000 Ω<br>8...4000 Ω  |
| Resolution             | 24 bits<br>0...510 Ω: 0.06 mΩ/count<br>0...1020 Ω: 0.12 mΩ/count<br>0...2040 Ω: 0.25 mΩ/count<br>0...4080 Ω: 0.50 mΩ/count   |
| RTD sensors supported  | 100, 200, 500, 1000 Ω Platinum, alpha=385<br>100, 200, 500, 1000 Ω Platinum, alpha=3916<br>120 Ω Nickel, alpha=672<br>100, 120, 200, 500 Ω Nickel, alpha=618<br>10 Ω Copper, alpha=427 |
| Current draw @ 5.1V    | 200 mA   |
| Current draw @ 24V     | 70 mA  |
| Total backplane power  | 2.7 W  |
| Power dissipation, max | 2.7 W  |

**Technical Specifications - 1756-IR12, 1756-IR12K**

| Attribute  | 1756-IR12, 1756-IR12K  |
|--|--|
| Thermal dissipation  | 9.2 BTU/hr   |
| RTD excitation current   | 600 $\mu$ A  |
| Overvoltage protection, max  | $\pm$ 30V DC   |
| Common mode noise rejection  | 120 dB @ 60 Hz 1000 $\Omega$ differential<br>100 dB @ 50 Hz 1000 $\Omega$ differential   |
| Channel bandwidth  | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.  |
| Settling time  | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.  |
| Open circuit detection   | Positive full-scale reading within 2 s   |
| Calibrated accuracy @ 25 °C  | 0...510 $\Omega$ range: 0.1%<br>Other $\Omega$ ranges: 0.25%   |
| Module error over full temperature range   | 0...510 $\Omega$ range: 0.2%<br>Other $\Omega$ ranges: 0.5%  |
| Module input scan time, min  | 50 ms  |
| Data format  | IEEE 32-bit floating point   |
| Module conversion method   | Sigma-Delta  |
| Isolation Voltage  | 250V (continuous), reinforced insulation type, inputs to backplane<br>No isolation between individual inputs<br>Type tested at 1800V AC for 60 s |
| RTD sensor types/temperature range<br>(Each sensor type in a cell supports all temperature ranges in the corresponding column to the right.) |  |
| 100 $\Omega$ PT 385<br>20 $\Omega$ PT 385<br>500 $\Omega$ PT 385<br>1000 $\Omega$ PT 385   | -200...+870 °C (-328...+1598 °F)<br>73...1143 °K<br>132...2058 °R  |
| 100 $\Omega$ PT 3916<br>20 $\Omega$ PT 3916<br>500 $\Omega$ PT 3916<br>1000 $\Omega$ PT 3916   | -200...+630 °C (-328...+1166 °F)<br>73...903 °K<br>132...1626 °R   |
| 10 $\Omega$ CU 427   | -200...+260 °C (-328...+500 °F)<br>73...533 °K<br>132...960 °R   |
| 120 $\Omega$ NI 672  | -80...+320 °C (-112...+608 °F)<br>193...593 °K<br>348...1068 °R  |
| 100 $\Omega$ NI 618<br>120 $\Omega$ NI 618<br>200 $\Omega$ NI 618<br>500 $\Omega$ NI 618   | -60...+250 °C (-76...+482 °F)<br>213...523 °K<br>384...942 °R  |
| Module keying  | Electronic, software configurable  |
| Removable terminal block   | 1756-TBCH<br>1756-TBS6H  |
| RTB keying   | User-defined mechanical  |
| Slot width   | 1  |

**Technical Specifications - 1756-IR12, 1756-IR12K**

| Attribute                | 1756-IR12, 1756-IR12K   |
|--------------------------|---|
| Wire size                | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Wire category            | 2 on signal ports <sup>(1)</sup>  |
| Enclosure type           | None (open-style)   |
| North American temp code | T4A   |
| ATEX Temp Code           | T4  |
| IECEx Temp Code          | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IR12, 1756-IR12K**

| Attribute   | 1756-IR12, 1756-IR12K  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions<br>IEC 61000-6-4  | IEC 61000-6-4  |
| ESD Immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF Immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B Immunity<br>IEC 61000-4-4   | ±2 kV at 5/100kHz on shielded ports  |
| Surge Transient Immunity<br>IEC 61000-4-5   | ±2 kV line-earth(CM) on shielded ports   |
| Conducted RF Immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

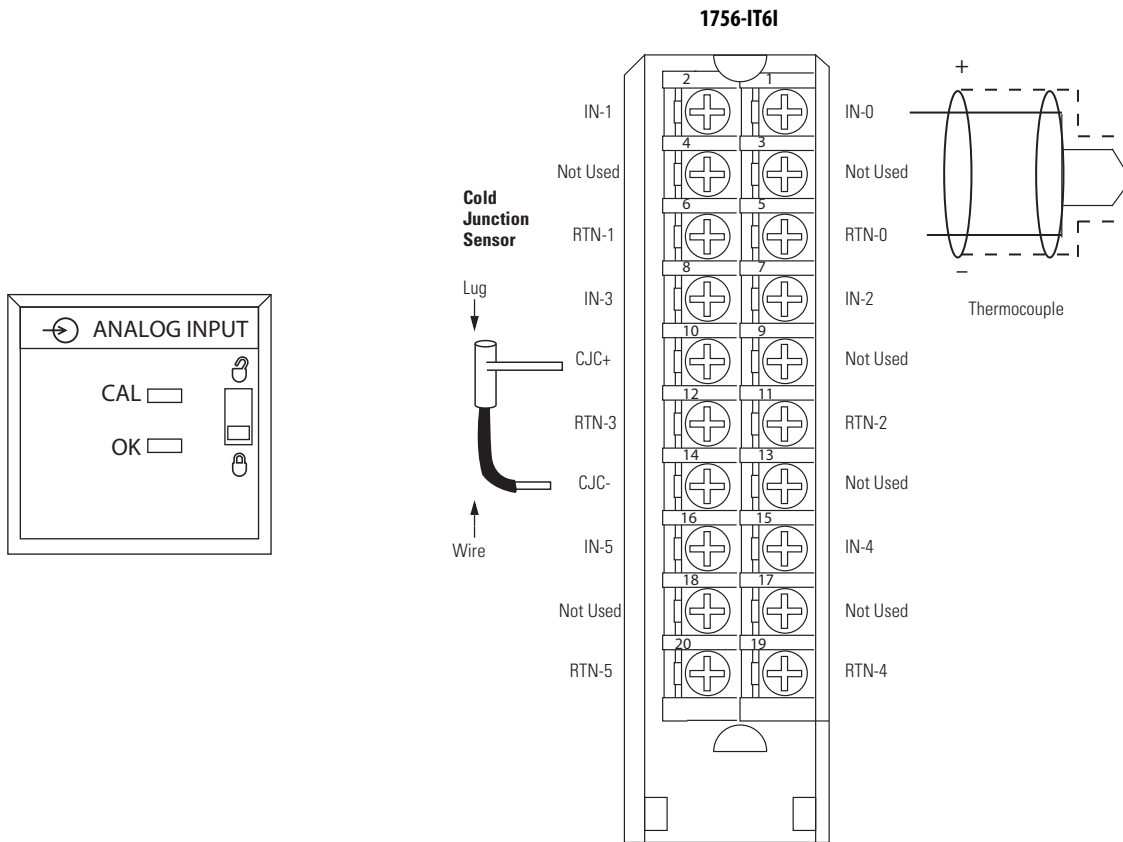
**Certifications - 1756-IR12, 1756-IR12K**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>Description</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61010-2-201; Control Equipment Safety Requirements</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n" II 3 G Ex nA IIC T4 Gc DEMKO15ATEX1482X</li> </ul>   |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" II 3 G Ex nA IIC T4 Gc IECEx UL 15.0053X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-IT6I

ControlLogix temperature sensing analog input module



One CJC, part number 94238301, is shipped with the module. A replacement can be ordered as RP-94238301.

## Signal and User Counts - 1756-IT6I

| Range       | Low Signal and User Counts    | High Signal and User Counts |
|-------------|-------------------------------|-----------------------------|
| -12...30 mV | -15.80323 mV<br>-32768 counts | 31.396 mV<br>32767 counts   |
| -12...78 mV | -15.15836 mV<br>-32768 counts | 79.241 mV<br>32767 counts   |

## Technical Specifications - 1756-IT6I

| Attribute                  | 1756-IT6I   |
|----------------------------|---|
| Inputs                     | Six individually isolated thermocouple<br>1 CJC   |
| Input range                | -12...78 mV<br>-12...30 mV (high-resolution range)  |
| Resolution                 | 16 bits<br>-12...78 mV: 1.4 $\mu$ V/bit (typical)<br>-12...30 mV: 0.7 $\mu$ V/bit (high-resolution range) |
| Thermocouples              | B, E, J, K, R, S, T, N, C, D, L (TXK/XX)  |
| Thermocouple linearization | ITS-90  |

**Technical Specifications - 1756-IT6I (continued)**

| Attribute                        | 1756-IT6I   |
|----------------------------------|---|
| Current draw @ 5.1V              | 250 mA  |
| Current draw @ 24V               | 125 mA  |
| Total backplane power            | 4.3 W   |
| Power dissipation, max           | 4.3 W   |
| Thermal dissipation              | 14.66 BTU/hr  |
| Input impedance                  | >10 M $\Omega$  |
| Open circuit detection time      | Positive full scale reading within 2 s  |
| Overvoltage protection, max      | 120V AC/DC  |
| Normal mode noise rejection      | 60 dB at 60 Hz <sup>(1)</sup>   |
| Common mode noise rejection      | 120 dB @ 60 Hz<br>100 dB @ 50 Hz  |
| Channel bandwidth                | 15 Hz (-3 dB) <sup>(1)</sup>  |
| Settling time                    | <80 ms to 5% of full scale <sup>(1)</sup>   |
| Calibrated accuracy @ 25 °C      | Better than 0.1% of range   |
| Calibration interval             | 6 months  |
| Local CJC sensor accuracy        | $\pm 0.3 \dots 3.2$ °C, depending on channel  |
| Remote CJC sensor accuracy       | $\pm 0.3$ °C  |
| Offset drift                     | 0.5 $\mu$ V/°C  |
| Gain drift with temperature, nom | 65 ppm/°C   |
| Gain drift with temperature, max | 80 ppm/°C   |
| Module error                     | 0.5% of range   |
| Module scan time                 | 25 ms min floating point (millivolt)<br>50 ms min floating point (temperature)<br>10 ms min integer (millivolt) <sup>(1)</sup>            |
| Data format                      | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method         | Sigma-Delta   |
| Isolation voltage                | 250V (continuous), basic insulation type, input channels-to-backplane, and input channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 2 <sup>(2)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |
| IEC temperature code             | T4  |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).



**Thermocouple Ranges - 1756-IT6I**

| Attribute   | 1756-IT6I                         |   |
|---|-----------------------------------|---|
| Thermocouple temperature/millivolt input range      | -12...78 mV range                 | -12...30 mV range                                 |
| Thermocouple Type B                                 | 300...1820 °C (572...3308 °F)     | Full range  |
| Thermocouple Type C                                 | 0...2315 °C (32...4199 °F)        | 0...1725 °C (32...3137 °F)                        |
| Thermocouple Type E                                 | -270...+1000 °C (-454...+1832 °F) | -270...+415 °C (-454...+779 °F)                   |
| Thermocouple Type J                                 | -210...+1200 °C (-346...+2192 °F) | -210...+550 °C (-346...+1022 °F)                  |
| Thermocouple Type K                                 | -270...+1372 °C (-454...+2502 °F) | -270...+725 °C (-454...+1337 °F)                  |
| Thermocouple Type N                                 | -270...+1300 °C (-454...+2372 °F) | -270...+840 °C (-454...+1544 °F)                  |
| Thermocouple Type R                                 | -50...+1768 °C (-58...+3215 °F)   | Full range  |
| Thermocouple Type S                                 | -50...+1768 °C (-58...+3215 °F)   | Full range  |
| Thermocouple Type T                                 | -270...+400 °C (-454...+752 °F)   | Full range  |
| Thermocouple Type D                                 | 0...2320 °C (32...4208 °F)        | 0...1718 °C (32...3124 °F)                        |
| Thermocouple Type L (TXK/XK)                        | -200...+800 °C (-328...+1472 °F)  | 0...200...399 °C (392...750 °F) °C (32...3124 °F) |
| Thermocouple resolution over temperature range, nom | -12...78 mV range                 | -12...30 mV range                                 |
| Type B, R, S, C                                     | ~0.15 °C (~0.28 °F)               | ~0.08 °C (~0.15 °F)                               |
| Type E, J, K, T, N                                  | ~0.05 °C (~0.09 °F)               | ~0.03 °C (~0.05 °F)                               |
| Type D  | ~0.07 °C (~0.13 °F)               | ~0.03 °C (~0.05 °F)                               |
| Type TXK/XK (L)                                     | ~0.02 °C (~0.04 °F)               | ~0.01 °C (~0.02 °F)                               |

**Environmental Specifications - 1756-IT6I**

| Attribute   | 1756-IT6I  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-IT6I (continued)**

| Attribute                                 | 1756-IT6I  |
|---|--|
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz on shielded signal ports |

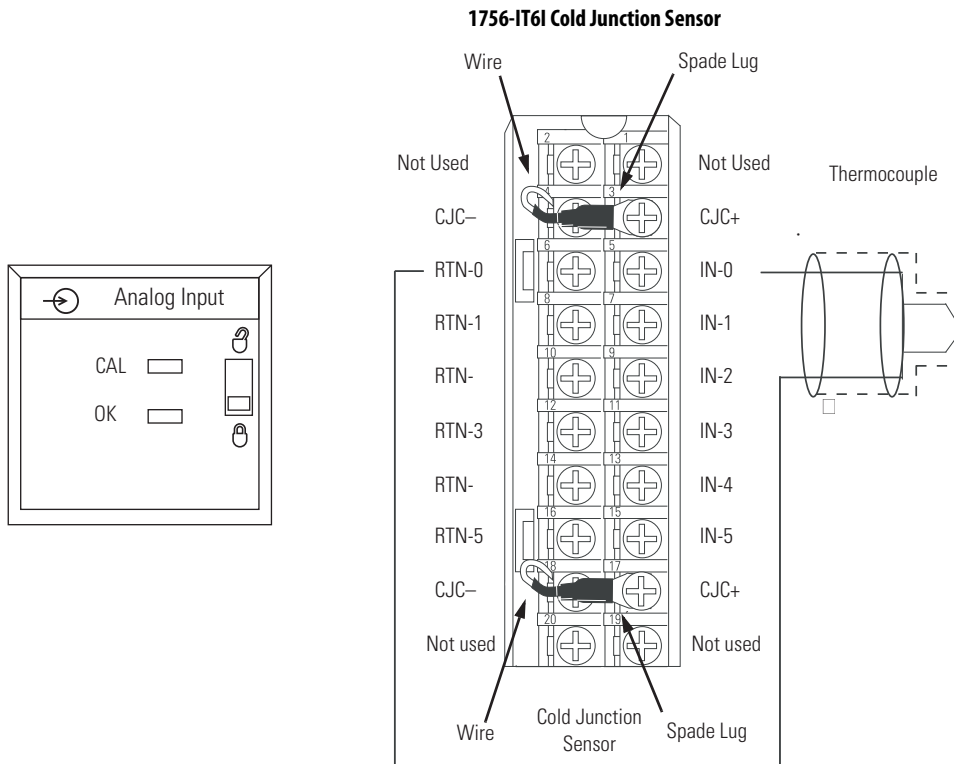
**Certifications - 1756-IT6I**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IT6I   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IT6I2

ControlLogix enhanced thermocouple analog input module



Two CJs, part number 94286501, are shipped with the module. Replacements can be ordered as RP-94286501.

### Signal and User Counts - 1756-IT6I2

| Range       | Low Signal and User Counts    | High Signal and User Counts |
|-------------|-------------------------------|-----------------------------|
| -12...30 mV | -15.80323 mV<br>-32768 counts | 31.396 mV<br>32767 counts   |
| -12...78 mV | -15.15836 mV<br>-32768 counts | 79.241 mV<br>32767 counts   |

### Technical Specifications - 1756-IT6I2

| Attribute                  | 1756-IT6I2   |
|----------------------------|--|
| Inputs                     | Six individually isolated thermocouple<br>2 CJC  |
| Input range                | -12...78 mV (1.4 $\mu$ V per bit)<br>-12...30 mV (0.7 $\mu$ V per bit – high-resolution range) |
| Resolution                 | 16 bits<br>-12...78 mV: 1.4 $\mu$ V/bit<br>-12...30 mV: 0.7 $\mu$ V/bit                        |
| Thermocouples              | B, E, J, K, R, S, T, N, C, D, L (TXK/XX)   |
| Thermocouple linearization | ITS-90   |
| Current draw @ 5.1V        | 200 mA   |
| Current draw @ 24V         | 150 mA   |

**Technical Specifications - 1756-IT6I2 (continued)**

| Attribute                        | 1756-IT6I2  |
|----------------------------------|---|
| Total backplane power            | 4.6 W   |
| Power dissipation, max           | 4.6 W   |
| Thermal dissipation              | 15.7 BTU/hr   |
| Input impedance                  | >10 M $\Omega$  |
| Open circuit detection time      | Positive full scale reading within 2 s  |
| Overvoltage protection, max      | 120V AC/DC  |
| Normal mode noise rejection      | 60 dB at 60 Hz <sup>(1)</sup>   |
| Common mode noise rejection      | 160 dB min, tested @ 600V AC/60 Hz applied with 100 $\Omega$ differential resistance  |
| Channel bandwidth                | 15 Hz <sup>(1)</sup>  |
| Settling time                    | <80 ms to 5% of full scale <sup>(1)</sup>   |
| Calibrated accuracy @ 25 °C      | 0.05% of full range @ 25 °C (77 °F) typical<br>Better than 0.1% of range @ 25 °C (77 °F) worst case                                       |
| Calibration interval             | 12 months   |
| Local CJC sensor accuracy        | $\pm 0.3$ °C  |
| Remote CJC sensor accuracy       | $\pm 0.3$ °C  |
| Offset drift                     | 0.5 $\mu$ V/°C  |
| Gain drift with temperature, nom | 15 ppm/°C<br>1.4 $\mu$ V/°C for -12...78 mV<br>0.6 $\mu$ V/°C for -12...30 mV   |
| Gain drift with temperature, max | 25 ppm/°C<br>2.3 $\mu$ V/°C for -12...78 mV<br>1.1 $\mu$ V/°C for -12...30 mV   |
| Module error                     | 0.15% of range  |
| Module scan time                 | 25 ms min floating point (millivolt)<br>50 ms min floating point (temperature)<br>10 ms min integer (millivolt) <sup>(1)</sup>            |
| Data format                      | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method         | Sigma-Delta   |
| Isolation voltage                | 250V (continuous), basic insulation type, input channels-to-backplane, and input channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block         | 1756-TBNH only  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 2 <sup>(2)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |
| IEC temperature code             | T4  |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Thermocouple Ranges - 1756-IT6I2**

| Attribute   | 1756-IT6I2                        |   |
|---|-----------------------------------|---|
| Thermocouple temperature/millivolt input range      | -12...78 mV range                 | -12...30 mV range                                 |
| Thermocouple Type B                                 | 300...1820 °C (572...3308 °F)     | Full range  |
| Thermocouple Type C                                 | 0...2315 °C (32...4199 °F)        | 0...1725 °C (32...3137 °F)                        |
| Thermocouple Type E                                 | -270...+1000 °C (-454...+1832 °F) | -270...+415 °C (-454...+779 °F)                   |
| Thermocouple Type J                                 | -210...+1200 °C (-346...+2192 °F) | -210...+550 °C (-346...+1022 °F)                  |
| Thermocouple Type K                                 | -270...+1372 °C (-454...+2502 °F) | -270...+725 °C (-454...+1337 °F)                  |
| Thermocouple Type N                                 | -270...+1300 °C (-454...+2372 °F) | -270...+840 °C (-454...+1544 °F)                  |
| Thermocouple Type R                                 | -50...+1768 °C (-58...+3215 °F)   | Full range  |
| Thermocouple Type S                                 | -50...+1768 °C (-58...+3215 °F)   | Full range  |
| Thermocouple Type T                                 | -270...+400 °C (-454...+752 °F)   | Full range  |
| Thermocouple Type D                                 | 0...2320 °C (32...4208 °F)        | 0...1718 °C (32...3124 °F)                        |
| Thermocouple Type L (TXK/XK)                        | -200...+800 °C (-328...+1472 °F)  | 0...200...399 °C (392...750 °F) °C (32...3124 °F) |
| Thermocouple resolution over temperature range, nom | -12...78 mV range                 | -12...30 mV range                                 |
| Type B, R, S, C                                     | ~0.15 °C (~0.28 °F)               | ~0.08 °C (~0.15 °F)                               |
| Type E, J, K, T, N                                  | ~0.05 °C (~0.09 °F)               | ~0.03 °C (~0.05 °F)                               |
| Type D  | ~0.07 °C (~0.13 °F)               | ~0.03 °C (~0.05 °F)                               |
| Type TXK/XK (L)                                     | ~0.02 °C (~0.04 °F)               | ~0.01 °C (~0.02 °F)                               |

**Environmental Specifications - 1756-IT6I2**

| Attribute   | 1756-IT6I2   |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-IT6I2 (continued)**

| Attribute                                 | 1756-IT6I2   |
|---|--|
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz on shielded signal ports |

**Certifications - 1756-IT6I2**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IT6I2  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IT16, 1756-IT16K

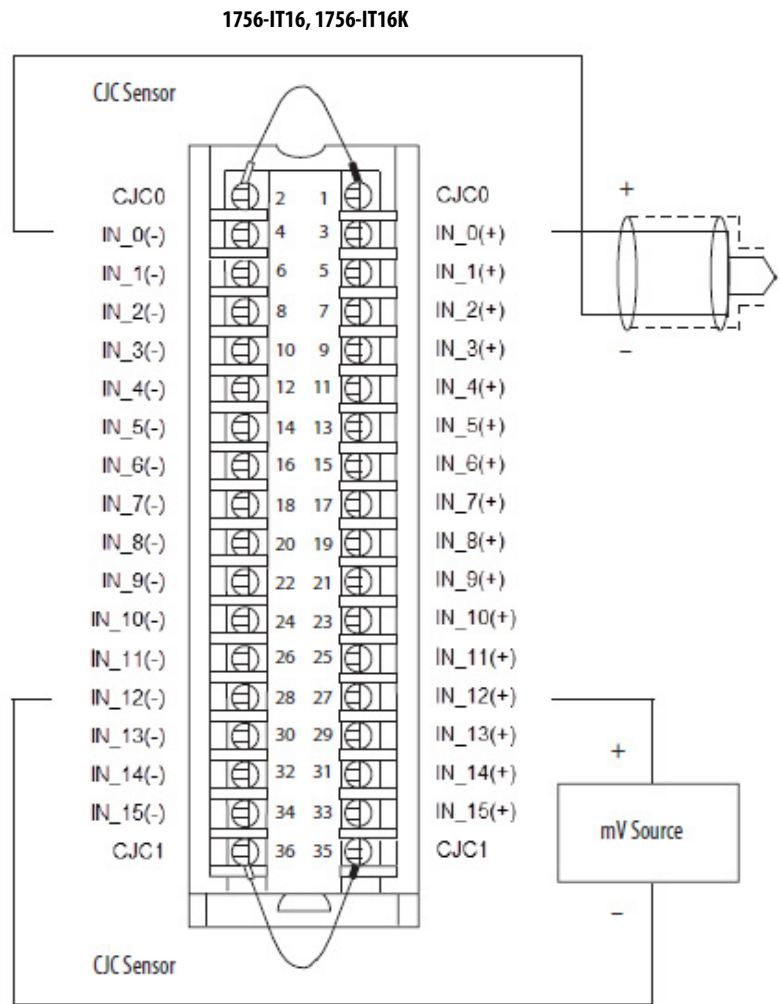
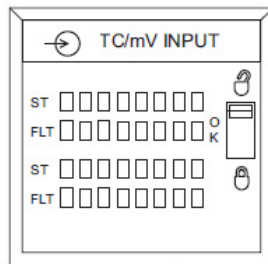
ControlLogix thermocouple analog input module.

**IMPORTANT:** Remember the following:

- Connect the white end of the CJC sensor to the even-numbered terminal. Connect the orange end of the CJC sensor to the odd-numbered terminals.

For CJC 0:

- Orange end - Connected to terminal number 35
- Orange end - Connected to terminal number 35
- Orange end - Connected to terminal number 35
- CJC sensors do not come with the module. You must order the sensors, product catalog number 1756-CJC, separately.
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.



### 1756-IT16, 1756-IT16K - Technical Specifications

| Attribute                  | 1756-IT16, 1756-IT16K   |
|----------------------------|---|
| Inputs                     | 16 channels, thermocouple mode<br>Two CJC sensors for Thermocouple use. The CJC sensors, product catalog number 1756-CJC, do not come with the module. You must order the sensors separately. |
| Input range                | -100...100 mV<br>Max 5VA  |
| Resolution                 | 24 bits<br>-101...101 mV: 0.01 $\mu$ V/count  |
| Thermocouple types         | B, C, D, E, J, K, N, R, S, T, TXK/XK (L)  |
| Thermocouple linearization | ITS-90  |
| Current draw @ 5.1V        | 200 mA  |
| Current draw @ 24V         | 80 mA   |
| Total backplane power      | 3 W   |

**1756-IT16, 1756-IT16K - Technical Specifications (continued)**

| Attribute                                | 1756-IT16, 1756-IT16K  |
|--|--|
| Power dissipation, max                   | 3 W  |
| Thermal dissipation                      | 9.9 BTU/hr   |
| Input impedance, approx                  | 1 G $\Omega$   |
| Overvoltage protection, max              | $\pm$ 30V DC   |
| Normal mode noise rejection              | 75 dB at 60 Hz <sup>(1)</sup>  |
| Common mode noise rejection              | 120 dB @ 60 Hz 1000 $\Omega$ differential<br>100 dB @ 50 Hz 1000 $\Omega$ differential   |
| Channel bandwidth                        | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.  |
| Settling time                            | Notch filter configuration dependent<br>See publication <a href="#">1756-UM540</a> for possible values.  |
| Open circuit detection                   | Positive full-scale reading within 2 s   |
| Calibrated accuracy @ 25 °C              | 0.1%   |
| Module error over full temperature range | 0.2%   |
| Local CJC sensor accuracy                | $\pm$ 0.3 °C   |
| Remote CJC sensor, accuracy              | $\pm$ 0.3 °C   |
| Module input scan time, min              | 50 ms  |
| Data format                              | IEEE 32-bit floating point   |
| Module conversion method                 | Sigma-Delta  |
| Isolation voltage                        | 250V (continuous), reinforced insulation type, inputs to backplane<br>No isolation between individual inputs<br>Type tested at 1800V AC for 60 s |
| Thermocouple type/temperature range      |  |
| Thermocouple Type B                      | 21...1820 °C (68...3308 °F)<br>293...2093 °K<br>528...3768 °R  |
| Thermocouple Type C                      | 0...2320 °C (32...4208 °F)<br>273...2593 °K<br>492...4668 °R   |
| Thermocouple Type D                      | 0...2320 °C (32...4208 °F)<br>273...2593 °K<br>492...4668 °R   |
| Thermocouple Type E                      | -270...+1000 °C (-454...+1832 °F)<br>3...1273 °K<br>6...2292 °R  |
| Thermocouple Type J                      | -210...+1200 °C (-346...+2192 °F)<br>63...1473 °K<br>114...2652 °R   |
| Thermocouple Type K                      | -270...+1372 °C (-454...+2502 °F)<br>3...1645 °K<br>6...2961 °R  |
| Thermocouple Type N                      | -270...+1300 °C (-454...+2372 °F)<br>3...1573 °K<br>6...2832 °R  |



**1756-IT16, 1756-IT16K - Technical Specifications (continued)**

| Attribute                         | 1756-IT16, 1756-IT16K  |
|-----------------------------------|--|
| Thermocouple Type R               | -50...+1768 °C (-58...+3215 °F)<br>223...2041 °K<br>402...3674 °R  |
| Thermocouple Type S               | -50...+1768 °C (-58...+3215 °F)<br>223...2041 °K<br>402...3674 °R  |
| Thermocouple Type T               | -270...+400 °C (-454...+752 °F)<br>3...673 °K<br>6...1212 °R   |
| Thermocouple Type TXK/XK (L)      | -200...+800 °C (-328...+1472 °F)<br>73...1073 °K<br>132...1932 °R  |
| Thermocouple type/resolution, nom |  |
| Type C, R                         | ~0.03 °C (~0.05 °F)  |
| Type B, S                         | ~0.04 °C (~0.07 °F)  |
| Type E, J, K, N, T, TXK/XK (L)    | ~0.01 °C (~0.02 °F)  |
| Type D                            | ~0.02 °C (~0.04 °F)  |
| Module keying                     | Electronic, software configurable  |
| Removable terminal block          | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                        | User-defined mechanical  |
| Slot width                        | 1  |
| Wire size                         | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 90 °C (194 °F) or greater,<br>1.2 mm (3/64 in.) insulation max |
| Wire category                     | 2 on shielded signal ports <sup>(2)</sup>  |
| Enclosure type                    | None (open-style)  |
| Enclosure type rating             | None (open-style)  |
| North American temp code          | T4A  |
| ATEX Temp Code                    | T4   |
| IECEx Temp Code                   | T4   |

(1) Notch filter dependent.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**1756-IT16, 1756-IT16K - Environmental Specifications**

| Attribute   | 1756-IT16, 1756-IT16K  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions<br>IEC 61000-6-4  | IEC 61000-6-4  |
| ESD Immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF Immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B Immunity<br>IEC 61000-4-4   | ±2 kV at 5/100kHz on shielded ports  |
| Surge Transient Immunity<br>IEC 61000-4-5   | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF Immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

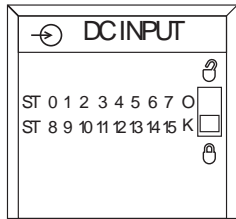
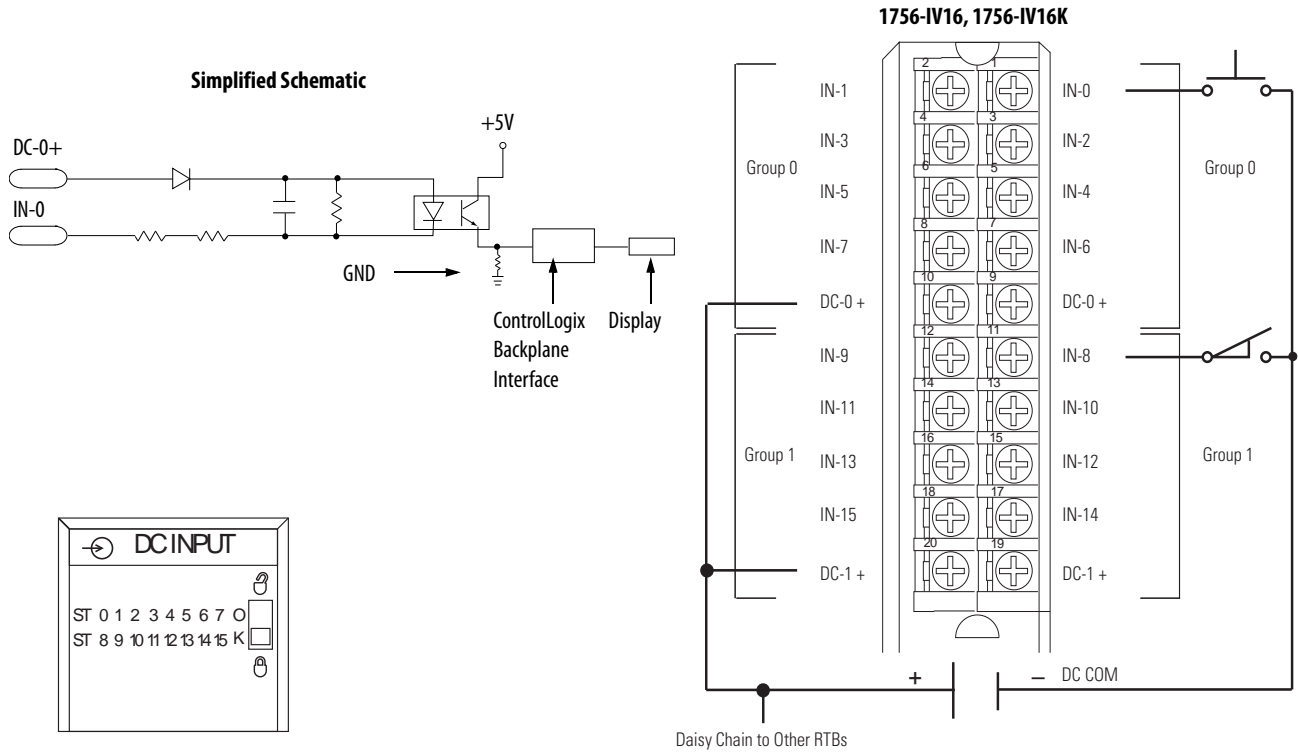
**Certifications - 1756-IT16, 1756-IT16K**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>Description</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61010-2-201; Control Equipment Safety Requirements</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n" II 3 G Ex nA IIC T4 Gc DEMKO15ATEX1482X</li> </ul>   |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n" II 3 G Ex nA IIC T4 Gc IECEx UL 15.0053X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IV16, 1756-IV16K

ControlLogix DC (10...30V) sourcing input module



### Technical Specifications - 1756-IV16, 1756-IV16K

| Attribute  | 1756-IV16, 1756-IV16K   |
|--|---|
| Inputs   | 16 (8 points/group)   |
| Voltage category                                   | 12/24V DC source  |
| Operating voltage range                            | 10...30V DC   |
| Input voltage, nom                                 | 24V DC  |
| Input delay time (screw to backplane)<br>Off to On | Hardware delay: 280 $\mu$ s nom/1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms              |
| On to Off  | Hardware delay: 540 $\mu$ s nom/2 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms |
| Current draw @ 5.1V                                | 110 mA  |
| Current draw @ 24V                                 | 2 mA  |
| Total backplane power                              | 0.61 W  |
| Power dissipation, max                             | 5.41 W @ 60 °C (140 °F)   |
| Thermal dissipation                                | 18.47 BTU/hr  |
| Off-state voltage, max                             | 5V DC   |
| Off-state current, max                             | 1.5 mA  |
| On-state current, min                              | 2 mA @ 10V DC   |
| On-state current, max                              | 10 mA @ 30V DC  |

**Technical Specifications - 1756-IV16, 1756-IV16K**

| Attribute                        | 1756-IV16, 1756-IV16K  |
|----------------------------------|--|
| Inrush current, max              | 250 mA   |
| Input impedance, max             | 3.2 k $\Omega$ @ 30V DC  |
| Cyclic update time               | 200 $\mu$ s . . . 750 ms   |
| Change of state                  | Software configurable  |
| Time stamp of inputs             | $\pm$ 200 $\mu$ s  |
| Isolation voltage                | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Removable terminal block housing | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4A  |
| IEC temperature code             | T4   |
| Reverse polarity protection      | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IV16, 1756-IV16K**

| Attribute   | 1756-IV16, 1756-IV16K                          |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0 . . . 60 °C (32 . . . 140 °F)                |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40 . . . +85 °C (-40 . . . +185 °F)           |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5 . . . 95% noncondensing                      |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10 . . . 500 Hz                          |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-IV16, 1756-IV16K**

| Attribute                                 | 1756-IV16, 1756-IV16K  |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

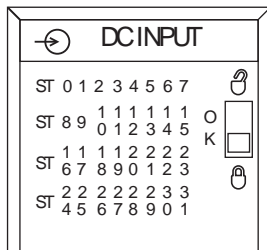
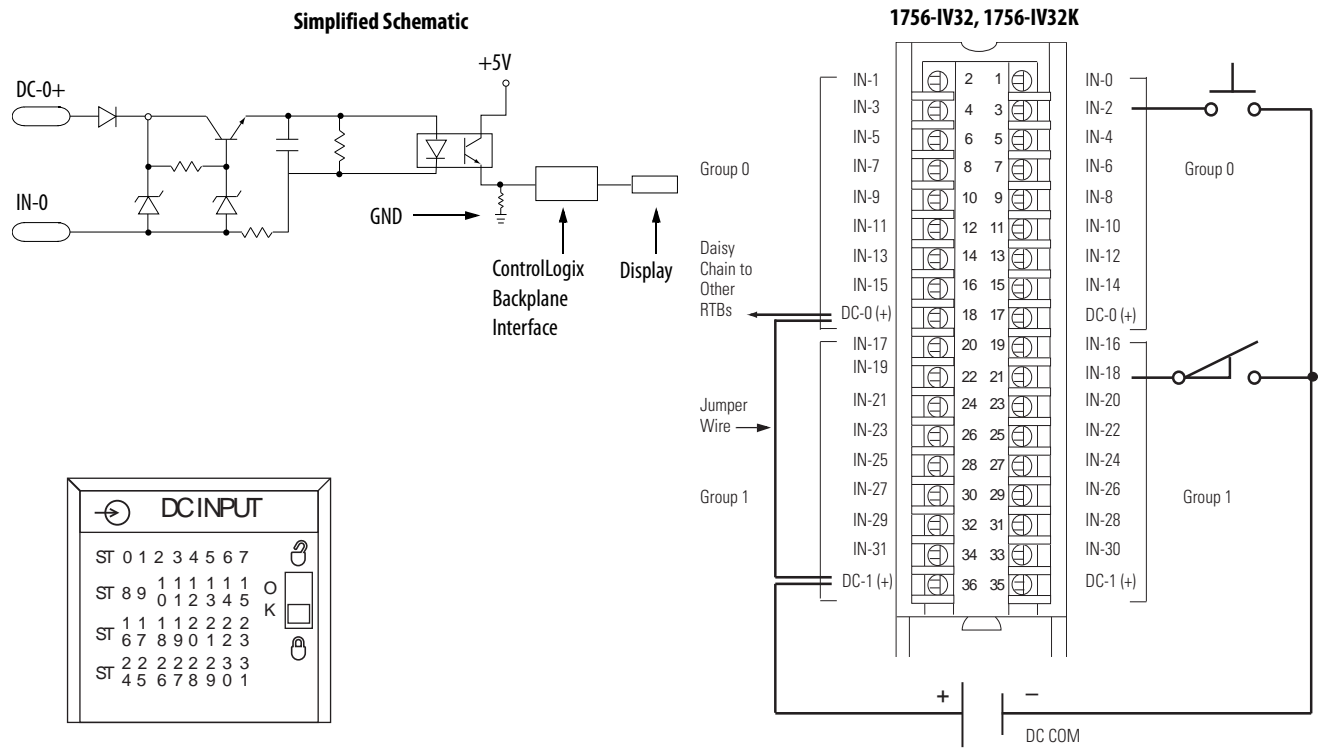
**Certifications - 1756-IV16, 1756-IV16K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IV16, 1756-IV16K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-IV32, 1756-IV32K

ControlLogix DC (10...30V) sourcing input module



### Technical Specifications - 1756-IV32, 1756-IV32K

| Attribute                             | 1756-IV32, 1756-IV32K   |
|---------------------------------------|---|
| Inputs                                | 32 (16 points/group)  |
| Voltage category                      | 12/24V DC source  |
| Operating voltage range               | 10...30V DC   |
| Input voltage, nom                    | 24V DC  |
| Input delay time (screw to backplane) |   |
| Off to On                             | Hardware delay: 350 $\mu$ s nom/1 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, or 2 ms              |
| On to Off                             | Hardware delay: 540 $\mu$ s nom/2 ms max + filter time<br>User-selectable filter time: 0 ms, 1 ms, 2 ms, 9 ms, or 18 ms |
| Current draw @ 5.1V                   | 120 mA  |
| Current draw @ 24V                    | 2 mA  |
| Total backplane power                 | 0.66 W  |
| Power dissipation, max                | 4.1 W @ 60 °C (140 °F)  |
| Thermal dissipation                   | 14 BTU/hr @ 60 °C (140 °F)  |
| Off-state voltage, max                | 5V  |
| Off-state current, max                | 1.5 mA  |
| On-state current, min                 | 2 mA @ 10V DC   |
| On-state current, max                 | 3.5 mA @ 30V DC   |

**Technical Specifications - 1756-IV32, 1756-IV32K**

| Attribute                       | 1756-IV32, 1756-IV32K  |
|---------------------------------|--|
| Inrush current, max             | 250 mA (decaying to <37% in 22 ms, without activation)   |
| Input impedance, max            | 8.6 k $\Omega$ @ 30V DC  |
| Cyclic update time              | 200 $\mu$ s...750 ms   |
| Change of state                 | Software configurable  |
| Time stamp of inputs            | $\pm$ 200 $\mu$ s  |
| Isolation voltage               | 250V (continuous), basic insulation type, inputs-to-backplane, and input group-to-group<br>No isolation between individual group inputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                   | Electronic, software configurable  |
| Removable terminal block        | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                      | User-defined mechanical  |
| Slot width                      | 1  |
| Wire category                   | 1 - on signal ports <sup>(1)</sup>   |
| Enclosure type                  | None (open-style)  |
| North American temperature code | T4A  |
| IEC temperature code            | T4   |
| Reverse polarity protection     | Yes  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-IV32, 1756-IV32K**

| Attribute   | 1756-IV32, 1756-IV32K                          |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max   | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges |



**Environmental Specifications - 1756-IV32, 1756-IV32K**

| Attribute                                 | 1756-IV32, 1756-IV32K  |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1k Hz sine-wave 80% AM from 80 . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . 80 MHz  |

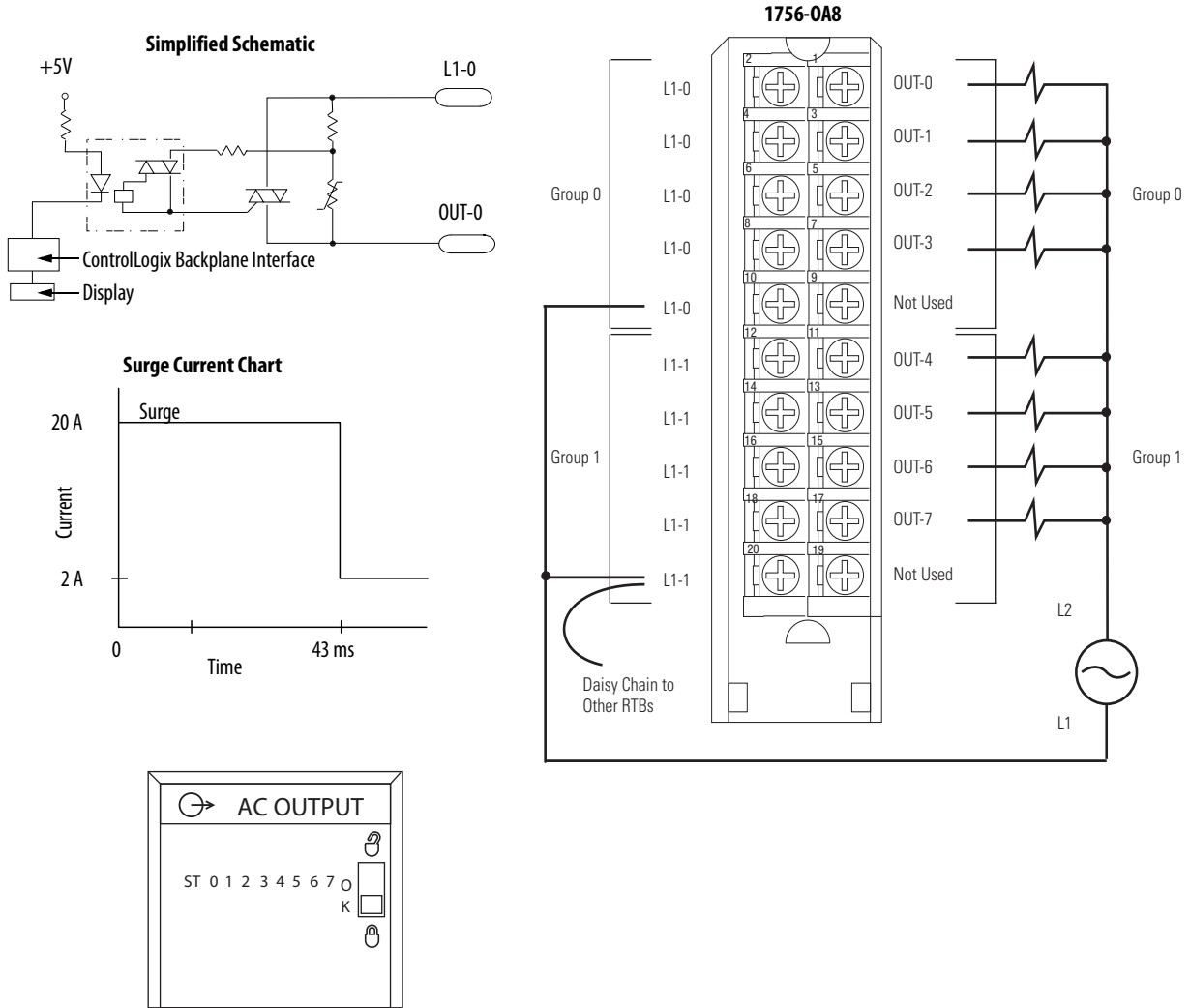
**Certifications - 1756-IV32, 1756-IV32K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-IV32, 1756-IV32K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0A8

ControlLogix 120/240V AC output module



### Technical Specifications - 1756-0A8

| Attribute                              | 1756-0A8                        |
|--|---------------------------------|
| Outputs                                | 8 (4 points/group)              |
| Pilot duty                             | 2 A                             |
| Voltage category                       | 120/240V AC 50/60 Hz            |
| Operating voltage range <sup>(1)</sup> | 74...265V AC<br>47...63 Hz      |
| Output delay time                      |                                 |
| Off to On                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz |
| On to Off                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz |
| Current draw @ 5.1V                    | 200 mA                          |
| Current draw @ 24V                     | 2 mA                            |
| Total backplane power                  | 1.07 W                          |

**Technical Specifications - 1756-0A8 (continued)**

| Attribute                        | 1756-0A8  |
|----------------------------------|---|
| Power dissipation, max           | 5.1 W @ 60 °C (140 °F)  |
| Thermal dissipation              | 17.39 BTU/hr  |
| Off-state leakage current, max   | 3 mA per point  |
| On-state voltage drop, max       | 1.5V peak @ 2 A<br>6V peak @ <50 mA   |
| Current per point, max           | 2 A @ 60 °C (140 °F) linear derating  |
| Current per module, max          | 5 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point          | 20 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Load current, min                | 10 mA per point   |
| Commutating voltage              | 4V/μs for loads > 50 mA<br>0.2V/μs for loads < 50 mA <sup>(2)</sup>   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Inhibit voltage, max             | Zero crossing 60V peak  |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs   |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(3)</sup>  |
| Enclosure type                   | None (open style)   |
| North American temperature code  | T4A   |

(1) UL certification for 120/240V 50/60 Hz nominal. Rockwell Automation specified to 74...265, 47...63 Hz.

(2) The commutating dv/dt of the output voltage (OUTPUT to L2) should not exceed 0.2V/μs for loads under 50 mA. The commutating dv/dt rating of the module for loads 50...500 mA (OUTPUT to L2) is 4V/μs maximum. If the commutating dv/dt rating of the TRIAC is exceeded, the TRIAC could latch on. If the commutating dv/dt rating is exceeded in the 10...50 mA range, a resistor can be added across the output and L2. The purpose of this resistor is to increase the total output current to 50 mA ( $I=V/R$ ). At 50 mA and above, the module has a higher commutating dv/dt rating. When adding a resistor for the output to L2, be sure it is rated for the power that it dissipates ( $P=(V^2)/R$ ). If the commutating dv/dt rating is exceeded in the 50...500 mA range, the L1 AC waveform could be at fault. Be sure that the waveform is a good sinusoid, void of any anomalies such as distorted, or flattened sections.

(3) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0A8**

| <b>Attribute</b>   | <b>1756-0A8</b>  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-0A8**

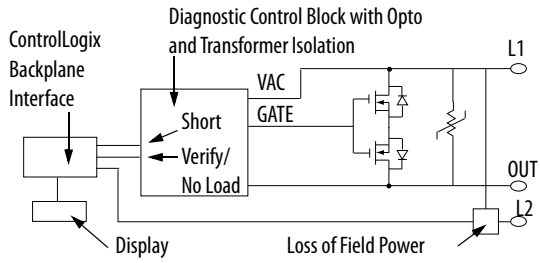
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-0A8</b>   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

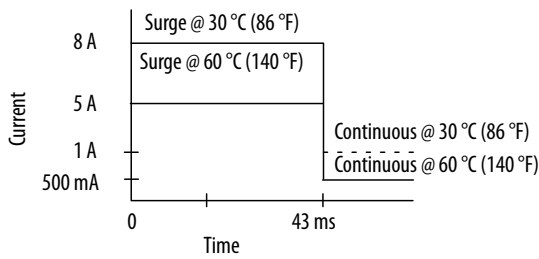
# 1756-0A8D

## ControlLogix 120V AC diagnostic output module

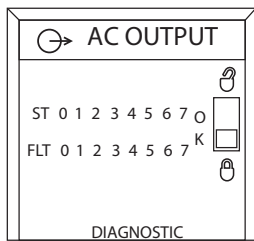
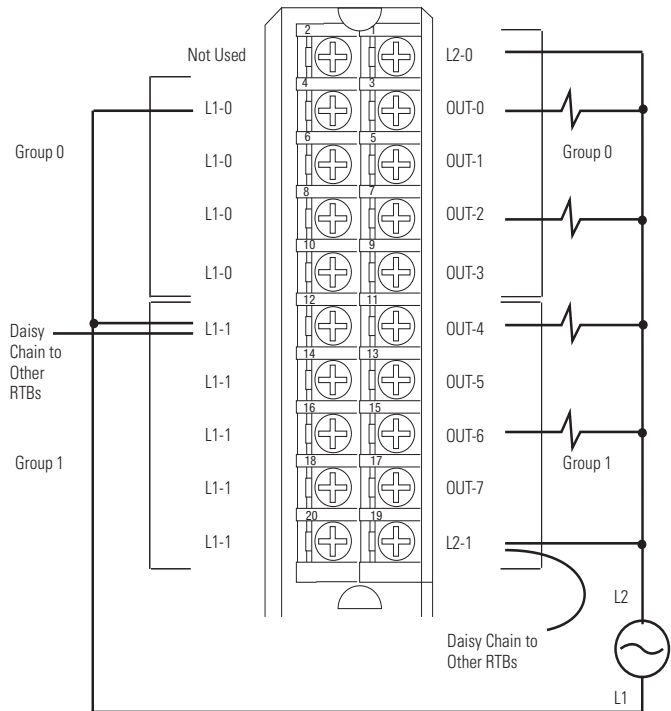
### Simplified Schematic



### Surge Current Chart



### 1756-0A8D



### Diagnostic Specifications - 1756-0A8D

| Attribute                     | 1756-0A8D   |
|-------------------------------|---|
| Short trip, min               | 12 A for 500 $\mu$ s  |
| No load                       | Off-state detection only                                      |
| Output verification           | On-state detection only                                       |
| Pulse test                    | Configurable maximum width and max time delay from zero cross |
| Field power loss (zero cross) | Detects at 25V peak min (firmware phase locked loop)          |
| Time stamp of diagnostics     | $\pm$ 1 ms  |

**Technical Specifications - 1756-0A8D**

| Attribute                              | 1756-0A8D   |
|--|---|
| Outputs                                | 8 diagnostic, electronic fusing (4 points/group)  |
| Voltage category                       | 120V AC 50/60 Hz  |
| Operating voltage range <sup>(1)</sup> | 74...132V AC<br>47...63 Hz  |
| Output delay time                      |   |
| Off to On                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| On to Off                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| Current draw @ 5.1V                    | 175 mA  |
| Current draw @ 24V                     | 250 mA  |
| Total backplane power                  | 6.89 W  |
| Power dissipation, max                 | 5.3 W @ 60 °C (140 °F)  |
| Thermal dissipation                    | 18.0 BTU/hr   |
| Off-state leakage current, max         | 3 mA per point  |
| On-state voltage drop, max             | 2.5V peak @ 0.5 A<br>3V peak @ 1 A  |
| Current per point, max                 | 1 A @ 30 °C (86 °F) linear derating<br>0.5 A @ 60 °C (140 °F) linear derating   |
| Current per module, max                | 8 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point                | 8 A for 43 ms per point, repeatable every 2 s @ 30 °C (86 °F)<br>5 A for 43 ms per point, repeatable every 1 s @ 60 °C (140 °F)   |
| Load current, min                      | 10 mA per point   |
| Scheduled outputs                      | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point         | Hold last state, On or Off (Off is default)   |
| States in Program mode per point       | Hold last state, On or Off (Off is default)   |
| Isolation voltage                      | 125V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1200V AC for 2 s |
| Inhibit voltage, max                   | Zero crossing 25V peak  |
| Module keying                          | Electronic, software configurable   |
| Fusing                                 | Electronically fused per point  |
| Removable terminal block               | 1756-TBNH<br>1756-TBSH  |
| RTB keying                             | User-defined mechanical   |
| Slot width                             | 1   |
| Wire size                              | 0.33... 2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire rated at 90 °C (194 °F), or greater, 1.2 mm <sup>2</sup> (3/64 in.) insulation max                      |
| Wire category <sup>(2)</sup>           | 1 - on signal ports   |
| Enclosure type                         | None (open style)   |
| North American temperature code        | T4A   |

(1) UL certification for 120V 50/60 Hz nominal. Rockwell Automation specified to 74...132V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0A8D**

| Attribute   | 1756-0A8D  |
|---|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)   | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max   | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test N/A, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)   | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)   | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2   | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3   | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4   | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5   | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6  | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

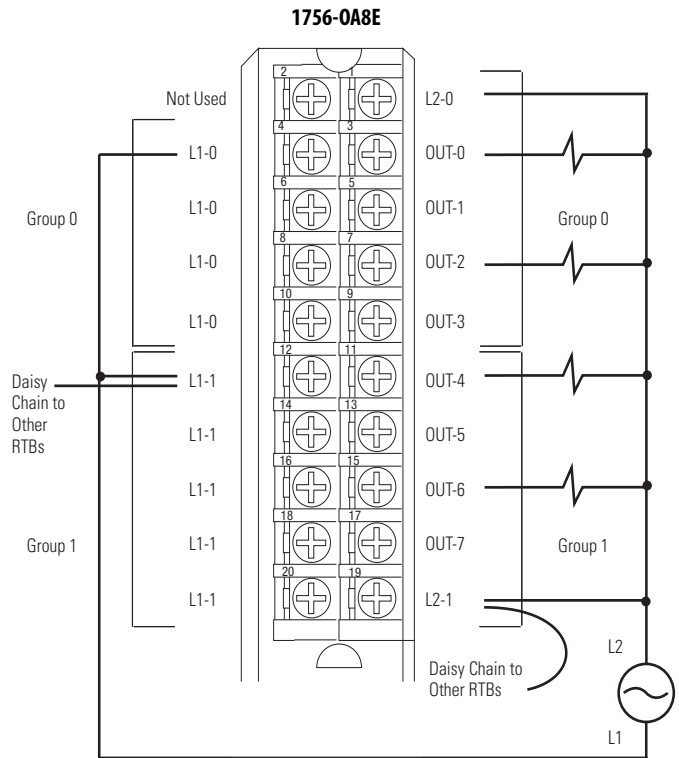
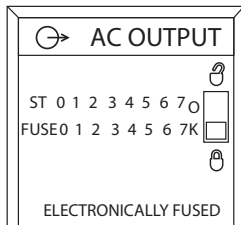
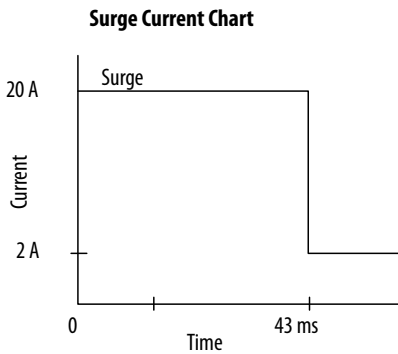
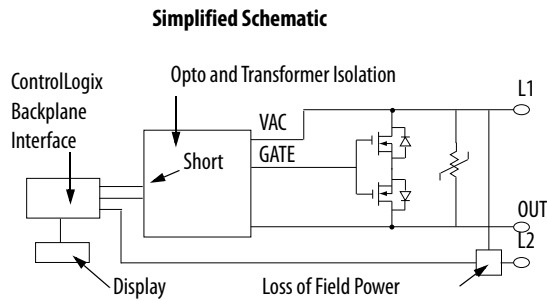
**Certifications - 1756-0A8D**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0A8D   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0A8E

ControlLogix 120V AC electronically fused output module



### Diagnostic Specifications - 1756-0A8E

| Attribute                     | 1756-0A8E  |
|-------------------------------|--|
| Short trip, min               | >20 A for 100 ms                                     |
| Field power loss (zero cross) | Detects at 25V peak min (firmware phase locked loop) |
| Time stamp of diagnostics     | ±1 ms  |

### Technical Specifications - 1756-0A8E

| Attribute                              | 1756-0A8E                                    |
|--|--|
| Outputs                                | Eight electronic fusings (four points/group) |
| Pilot duty                             | Yes  |
| Voltage category                       | 120V AC 50/60 Hz                             |
| Operating voltage range <sup>(1)</sup> | 74...132V AC<br>47...63 Hz                   |



**Technical Specifications - 1756-0A8E (continued)**

| Attribute                        | 1756-0A8E   |
|----------------------------------|---|
| Output delay time                |   |
| Off to On                        | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| On to Off                        | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| Current draw @ 5.1V              | 200 mA  |
| Current draw @ 24V               | 250 mA  |
| Total backplane power            | 7.02 W  |
| Power dissipation, max           | 5.5 W @ 60 °C (140 °F)  |
| Thermal dissipation              | 18.76 BTU/hr  |
| Off-state leakage current, max   | 3 mA per point  |
| On-state voltage drop, max       | 4V peak @ 2 A   |
| Current per point, max           | 2 A @ 60 °C (140 °F)  |
| Current per group, max           | 4 A @ 30 °C (86 °F) linear derating<br>2 A @ 60 °C (140 °F) linear derating   |
| Current per module, max          | 8 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point          | 20 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Load current, min                | 10 mA per point   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (default is Off)   |
| States in Program mode per point | Hold last state, On or Off (default is Off)   |
| Isolation voltage                | 125V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1200V AC for 2 s |
| Inhibit voltage, max             | Zero crossing 25V peak  |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Electronically fused per point  |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category <sup>(2)</sup>     | 1 - on signal ports   |
| Enclosure type                   | None (open style)   |
| North American temperature code  | T4A   |

(1) UL certification for 120V 50/60Hz nominal. Rockwell Automation specified to 74...132V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0A8E**

| Attribute  | 1756-0A8E  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM at 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line(DM) and ±2 kV line-earth(CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

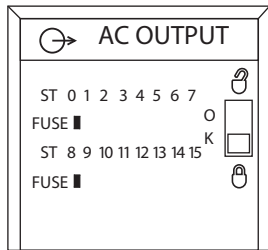
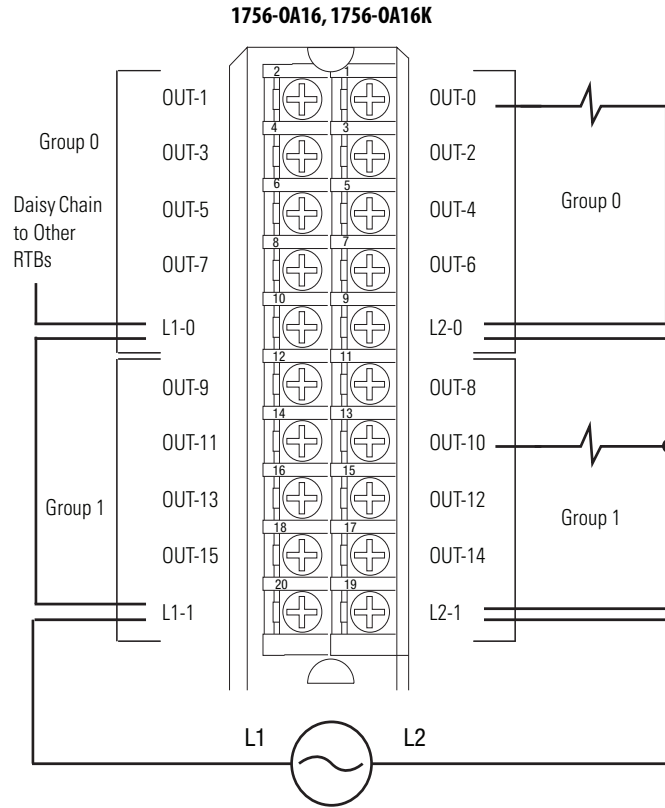
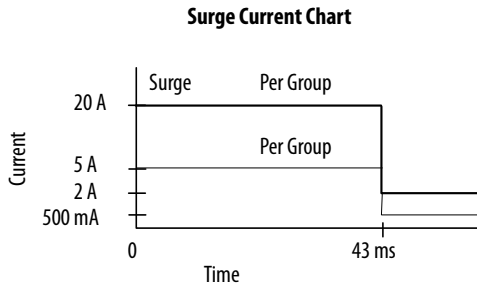
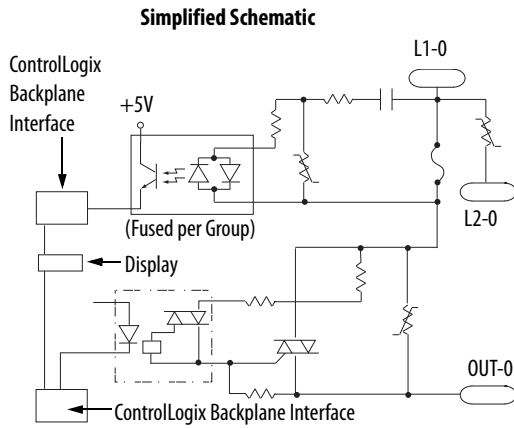
**Certifications - 1756-0A8E**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0A8E  |
|---|--|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.  |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0A16, 1756-0A16K

ControlLogix 120/240V AC output module



### Diagnostic Specifications - 1756-0A16, 1756-0A16K

| Attribute                 | 1756-0A16, 1756-0A16K        |
|---------------------------|------------------------------|
| Time stamp of diagnostics | ±1 ms                        |
| Fuse blown                | One fuse and indicator/group |

**Technical Specifications - 1756-0A16, 1756-0A16K**

| <b>Attribute</b>                       | <b>1756-0A16, 1756-0A16K</b>   |
|--|--|
| Outputs                                | 16 mechanically fused/group (8 points/group)   |
| Pilot duty                             | 0.5 A  |
| Voltage category                       | 120/240V AC 50/60 Hz   |
| Operating voltage range <sup>(1)</sup> | 74...265V AC<br>47...63 Hz   |
| Output delay time                      |  |
| Off to On                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz  |
| On to Off                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz  |
| Current draw @ 5.1V                    | 400 mA   |
| Current draw @ 24V                     | 2 mA   |
| Total backplane power                  | 2.1 W  |
| Power dissipation, max                 | 6.5 W @ 60 °C (140 °F)   |
| Thermal dissipation                    | 22.17 BTU/hr   |
| Off-state leakage current, max         | 3 mA per point   |
| On-state voltage drop, max             | 1.5V @ 0.5 A<br>5.7V @ load current < 50 mA  |
| Current per point, max                 | 0.5 A @ 60 °C (140 °F)   |
| Current per group, max                 | 2 A @ 60 °C (140 °F)   |
| Current per module, max                | 4 A @ 60 °C (140 °F)   |
| Surge current per point                | 5 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Surge current per group                | 15 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)  |
| Load current, min                      | 10 mA per point  |
| Commutating voltage                    | 4 V/μs for loads > 50 mA<br>0.2 V/μs for loads < 50 mA <sup>(3)</sup>  |
| Scheduled outputs                      | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point         | Hold last state, On or Off (Off is default)  |
| States in Program mode per point       | Hold last state, On or Off (Off is default)  |
| Isolation voltage                      | 250V (continuous), basic insulation type, outputs to backplane, and output to output<br>Routine tested at 1350V AC for 2 s                                 |
| Inhibit voltage, max                   | Zero crossing 60V peak   |
| Module keying                          | Electronic, software configurable  |
| Fusing                                 | Mechanically fused/group, 3.15 A @ 250V AC slow blow, 1500 A interruption current, Littelfuse p/n H2153.15   |
| Removable terminal block               | 1756-TBNH<br>1756-TBSH   |
| RTB keying                             | User-defined mechanical  |
| Slot width                             | 1  |
| Wire size                              | 0.33... 2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire rated at 90 °C (194 °F), or greater, 1.2 mm <sup>2</sup> (3/64 in.) insulation max |

**Technical Specifications - 1756-0A16, 1756-0A16K**

| Attribute                       | 1756-0A16, 1756-0A16K |
|---------------------------------|-----------------------|
| Wire category <sup>(2)</sup>    | 1 - on signal ports   |
| Enclosure type                  | None (open style)     |
| North American temperature code | T4                    |

- (1) UL certification for 120/240V 50/60 Hz nominal. Rockwell Automation specified to 74...265V, 47...63 Hz.
- (2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).
- (3) The commutating dv/dt of the output voltage (OUTPUT to L2) should not exceed 0.2V/ $\mu$ s for loads under 50 mA. The commutating dv/dt rating of the module for loads 50...500 mA (OUTPUT to L2) is 4V/ $\mu$ s maximum. If the commutating dv/dt rating of the TRIAC is exceeded, the TRIAC could latch on. If the commutating dv/dt rating is exceeded in the 10...50 mA range, a resistor can be added AC across the output and L2. The purpose of this resistor is to increase the total output current to 50 mA ( $I=V/R$ ). At 50 mA and above, the module has a higher commutating dv/dt rating. When adding a resistor for the output to L2, be sure it is rated for the power that it dissipates ( $P=(V^{**2})/R$ ). If the commutating dv/dt rating is exceeded in the 50...500 mA range, the L1 AC waveform could be at fault. Be sure that the waveform is a good sinusoid, void of any anomalies such as distorted, or flattened sections.

**Environmental Specifications - 1756-0A16, 1756-0A16K**

| Attribute  | 1756-0A16, 1756-0A16K  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | $\pm$ 4 kV at 5 kHz on signal ports  |
| Surge transient immunity<br>IEC 61000-4-5  | $\pm$ 1 kV line-line (DM) and $\pm$ 2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1   | 3 kV   |

**Certifications - 1756-0A16, 1756-0A16K**

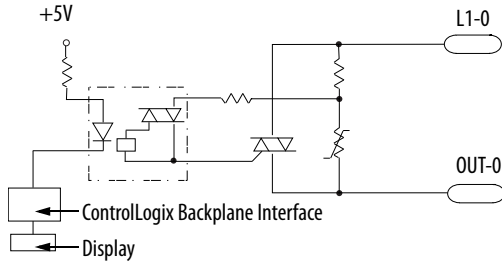
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-0A16, 1756-0A16K</b>  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

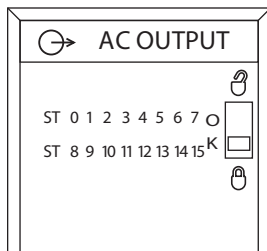
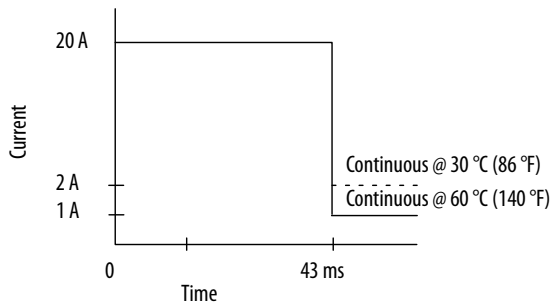
# 1756-0A16I, 1756-0A16IK

ControlLogix 120/240V AC isolated output module

### Simplified Schematic

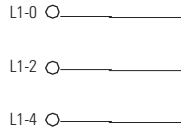


### Surge Current Chart

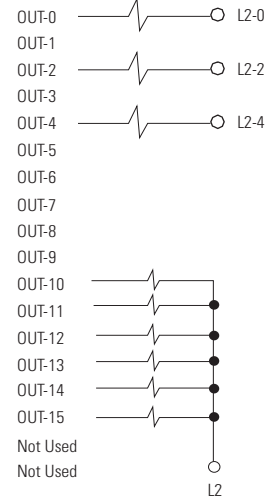
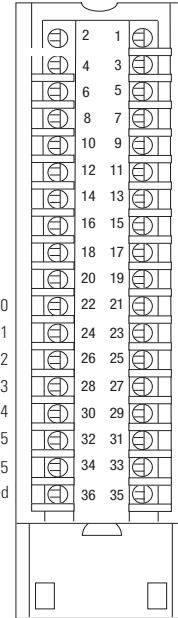
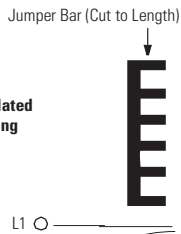


### 1756-0A16I, 1756-0A16IK

#### Isolated Wiring



#### Nonisolated Wiring



Daisy Chain to Other RTBs

Additional jumper bars are available as catalog number 1756-JMPR.

### Technical Specifications - 1756-0A16I, 1756-0A16IK

| Attribute                              | 1756-0A16I, 1756-0A16IK         |
|--|---------------------------------|
| Outputs                                | 16 individually isolated        |
| Pilot duty                             | Yes                             |
| Voltage category                       | 120/240V AC 50/60 Hz            |
| Operating voltage range <sup>(1)</sup> | 74...265V AC<br>47...63 Hz      |
| Output delay time                      |                                 |
| Off to On                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz |
| On to Off                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz |
| Current draw @ 5.1V                    | 300 mA                          |
| Current draw @ 24V                     | 2.5 mA                          |
| Total backplane power                  | 1.59 W                          |
| Power dissipation, max                 | 5.5 W @ 60 °C (140 °F)          |

**Technical Specifications - 1756-0A16I, 1756-0A16IK**

| Attribute                        | 1756-0A16I, 1756-0A16IK   |
|----------------------------------|---|
| Thermal dissipation              | 18.76 BTU/hr  |
| Off-state leakage current, max   | 3 mA per point  |
| On-state voltage drop, max       | 1.5V peak @ 2 A<br>6V peak @ load current < 50 mA   |
| Current per point, max           | 2 A @ 30 °C (86 °F) linear derating<br>1 A @ 60 °C (140 °F) linear derating   |
| Current per module, max          | 5 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point          | 20 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Load current, min                | 10 mA per point   |
| Commutating voltage              | 4 V/μs for loads > 50 mA<br>0.2 V/μs for loads < 50 mA <sup>(2)</sup>   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Inhibit voltage, max             | Zero crossing 60V peak  |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs   |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(3)</sup>  |
| Enclosure type                   | None (open style)   |
| North American temperature code  | T4A   |

- UL certification for 120/240V 50/60 Hz nominal. Rockwell Automation specified to 74...265V, 47...63 Hz.
- The commutating dv/dt of the output voltage (OUTPUT to L2) should not exceed 0.2V/μs for loads under 50 mA. The commutating dv/dt rating of the module for loads 50...500 mA (OUTPUT to L2) is 4V/μs maximum. If the commutating dv/dt rating of the TRIAC is exceeded, the TRIAC could latch on. If the commutating dv/dt rating is exceeded in the 10...50 mA range, a resistor can be added AC across the output and L2. The purpose of this resistor is to increase the total output current to 50 mA ( $I=V/R$ ). At 50 mA and above, the module has a higher commutating dv/dt rating. When adding a resistor for the output to L2, be sure it is rated for the power that it dissipates ( $P=(V^{**2})/R$ ). If the commutating dv/dt rating is exceeded in the 50...500 mA range, the L1 AC waveform could be at fault. Be sure that the waveform is a good sinusoid, void of any anomalies such as distorted, or flattened sections.
- Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0A16I, 1756-0A16IK**

| Attribute  | 1756-0A16I, 1756-0A16IK      |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |



**Environmental Specifications - 1756-0A16I, 1756-0A16IK**

| Attribute   | 1756-0A16I, 1756-0A16IK  |
|---|--|
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat) | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                     | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)      | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                       | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                               | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                     | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                           | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                              | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1                        | 3 kV   |

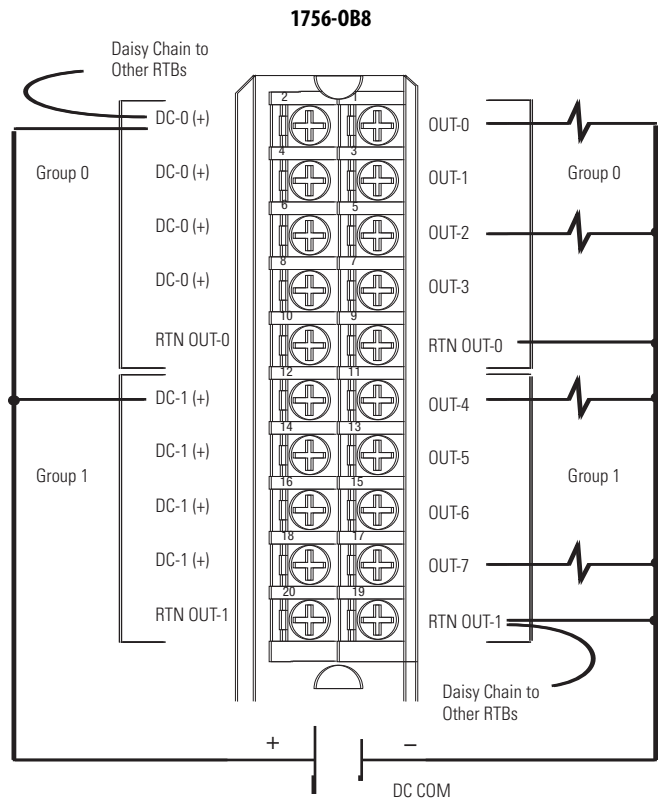
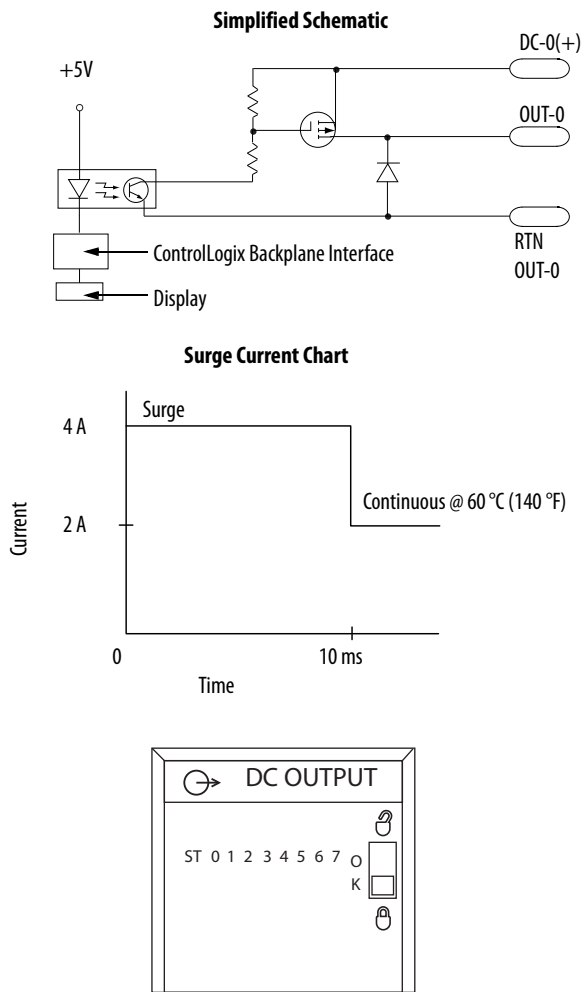
**Certifications - 1756-0A16I, 1756-0A16IK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0A16I, 1756-0A16IK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0B8

ControlLogix DC (10...30V) output module



### Technical Specifications - 1756-0B8

| Attribute               | 1756-0B8               |
|-------------------------|------------------------|
| Outputs                 | 8 (4 points/common)    |
| Pilot duty              | Yes                    |
| Voltage category        | 12/24V DC source       |
| Operating voltage range | 10...30V DC            |
| Output delay time       |                        |
| Off to On               | 1 ms max               |
| On to Off               | 2 ms max               |
| Current draw @ 5.1V     | 165 mA                 |
| Current draw @ 24V      | 2 mA                   |
| Total backplane power   | 0.89 W                 |
| Power dissipation, max  | 2.5 W @ 60 °C (140 °F) |
| Thermal dissipation     | 8.53 BTU/hr            |

**Technical Specifications - 1756-OB8 (continued)**

| Attribute                        | 1756-OB8  |
|----------------------------------|---|
| Off-state leakage current, max   | 1 mA per point  |
| On-state voltage drop, max       | 1.2V DC @ 2 A   |
| Current per point, max           | 2 A @ 60 °C (140 °F)  |
| Current per module, max          | 8 A @ 60 °C (140 °F)  |
| Surge current per point          | 4 A for 10 ms each, repeatable every 1 s @ 60 °C (140 °F)   |
| Load current, min                | 2 mA per point  |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs   |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH  |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |
| IEC temperature code             | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB8**

| Attribute  | 1756-OB8                     |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |
| Emissions  | IEC 61000-6-4                |

**Environmental Specifications - 1756-0B8 (continued)**

| Attribute                                 | 1756-0B8   |
|---|--|
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz  |

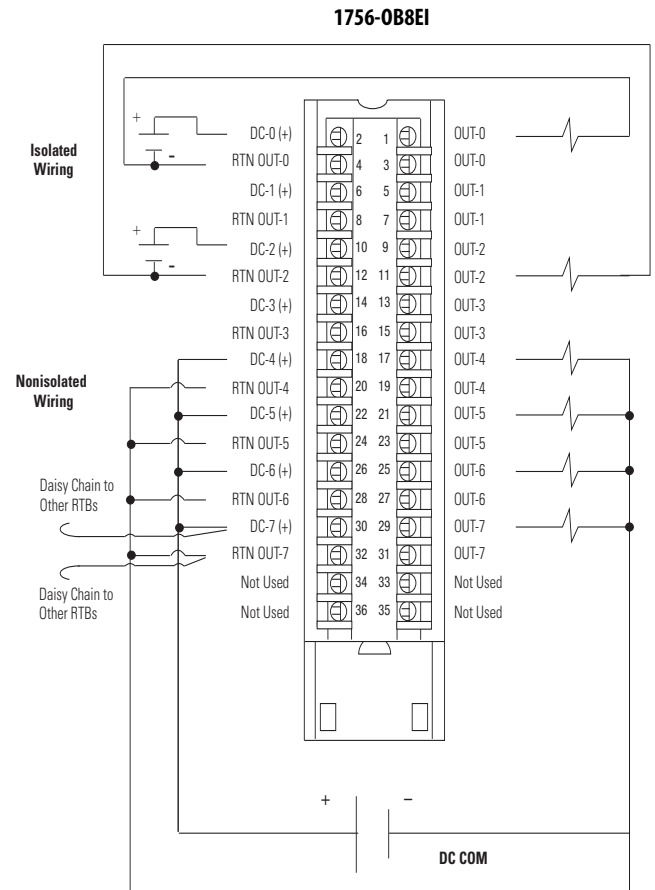
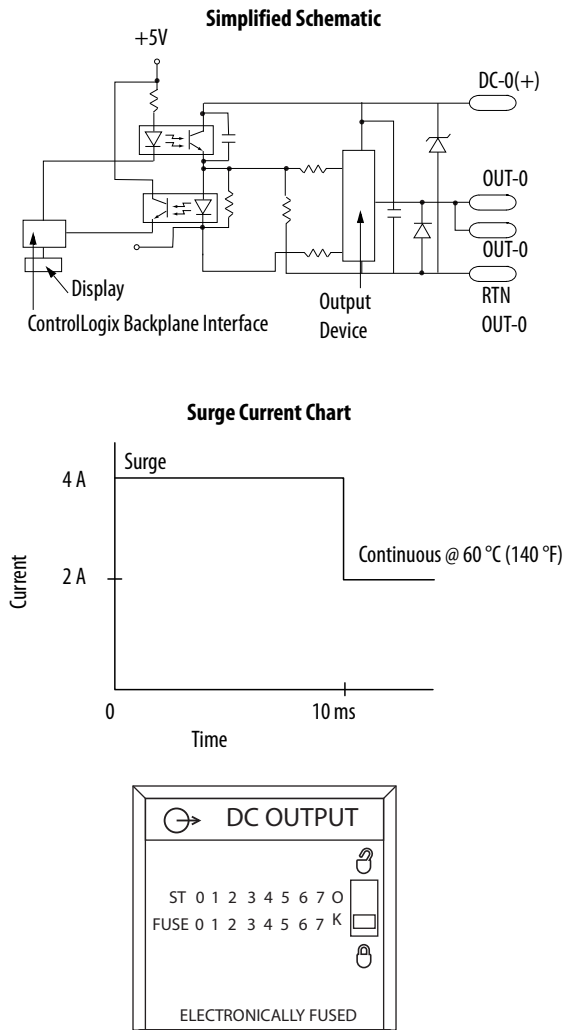
**Certifications - 1756-0B8**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0B8  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-OB8EI

ControlLogix DC (10...30V) electronically fused, isolated output module



### Diagnostic Specifications - 1756-OB8EI

| Attribute                 | 1756-OB8EI  |
|---------------------------|---|
| Short trip                | > 4.5 A for 500 μs max (output on, then short)<br>> 4.5 A for 1.5 ms max (output on into short) |
| Time stamp of diagnostics | ±1 ms   |

### Technical Specifications - 1756-OB8EI

| Attribute               | 1756-OB8EI              |
|-------------------------|-------------------------|
| Outputs                 | 8 individually isolated |
| Pilot duty              | Yes                     |
| Voltage category        | 12/24V DC source        |
| Operating voltage range | 10...30V DC             |

**Technical Specifications - 1756-OB8EI (continued)**

| Attribute                        | 1756-OB8EI  |
|----------------------------------|---|
| Output delay time                |   |
| Off to On                        | 1 ms max  |
| On to Off                        | 5 ms max  |
| Current draw @ 5.1V              | 250 mA  |
| Current draw @ 24V               | 2 mA  |
| Total backplane power            | 1.30 W  |
| Power dissipation, max           | 4.7 W @ 60 °C (140 °F)  |
| Thermal dissipation              | 16.03 BTU/hr  |
| Off-state leakage current, max   | 1 mA per point  |
| On-state voltage drop, max       | 1.2V DC @ 2 A   |
| Current per point, max           | 2 A @ 60 °C (140 °F)  |
| Current per module, max          | 10 A @ 60 °C (140 °F)<br>16 A @ 55 °C (131 °F) linear derating  |
| Surge current per point          | 4 A for 10 ms each, repeatable every 2 s  |
| Load current, min                | 3 mA  |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Electronically fused per point  |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |
| IEC temperature code             | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB8EI**

| Attribute  | 1756-OB8EI                   |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |

**Environmental Specifications - 1756-0B8EI (continued)**

| Attribute   | 1756-0B8EI   |
|---|--|
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat) | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)                     | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)      | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                       | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                               | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                     | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                           | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                              | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

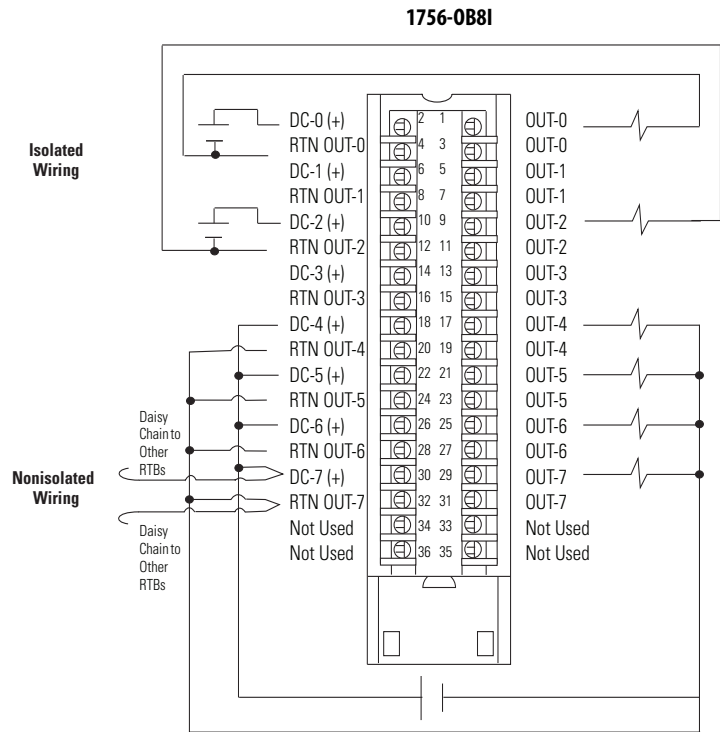
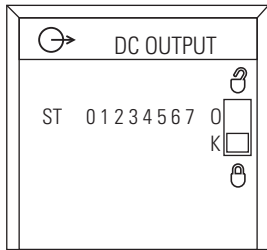
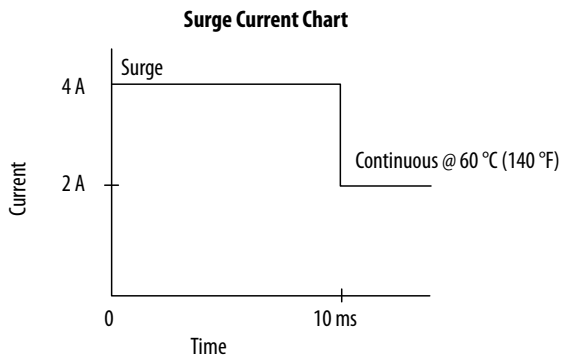
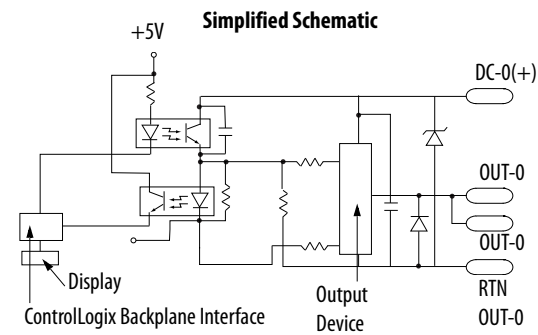
**Certifications - 1756-0B8EI**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0B8EI  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0B8I

ControlLogix DC (10...30V) isolated output module



### Technical Specifications - 1756-0B8I

| Attribute               | 1756-0B8I               |
|-------------------------|-------------------------|
| Outputs                 | 8 individually isolated |
| Pilot duty              | Yes                     |
| Voltage category        | 12/24V DC source        |
| Operating voltage range | 10...30V DC             |
| Output delay time       |                         |
| Off to On               | 1 ms max                |
| On to Off               | 2 ms max                |
| Current draw @ 5.1V     | 165 mA                  |
| Current draw @ 24V      | 2 mA                    |
| Total backplane power   | 0.89 W                  |
| Power dissipation, max  | 4.6 W @ 60 °C (140 °F)  |



**Technical Specifications - 1756-OB8I (continued)**

| Attribute                        | 1756-OB8I  |
|----------------------------------|--|
| Thermal dissipation              | 15.70 BTU/hr   |
| Off-state leakage current, max   | 0.5 mA per point   |
| On-state voltage drop, max       | 0.5V DC @ 2 A  |
| Current per point, max           | 2 A @ 60 °C (140 °F)   |
| Current per module, max          | 16 A @ 60 °C (140 °F)  |
| Surge current per point          | 4 A for 10 ms each, repeatable every 1 s @ 60 °C (140 °F)  |
| Load current, min                | 2 mA   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)  |
| States in Program mode per point | Hold last state, On or Off (Off is default)  |
| Isolation voltage                | 250V (continuous), reinforced insulation type, outputs-to-backplane<br>250V (continuous), basic insulation type, output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs.   |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4A  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB8I**

| Attribute  | 1756-OB8I                    |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |
| Emissions  | IEC 61000-6-4                |

**Environmental Specifications - 1756-0B8I (continued)**

| Attribute                                 | 1756-0B8I  |
|---|--|
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8kV air discharges  |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1k Hz sine-wave 80% AM from 2000 . . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz  |

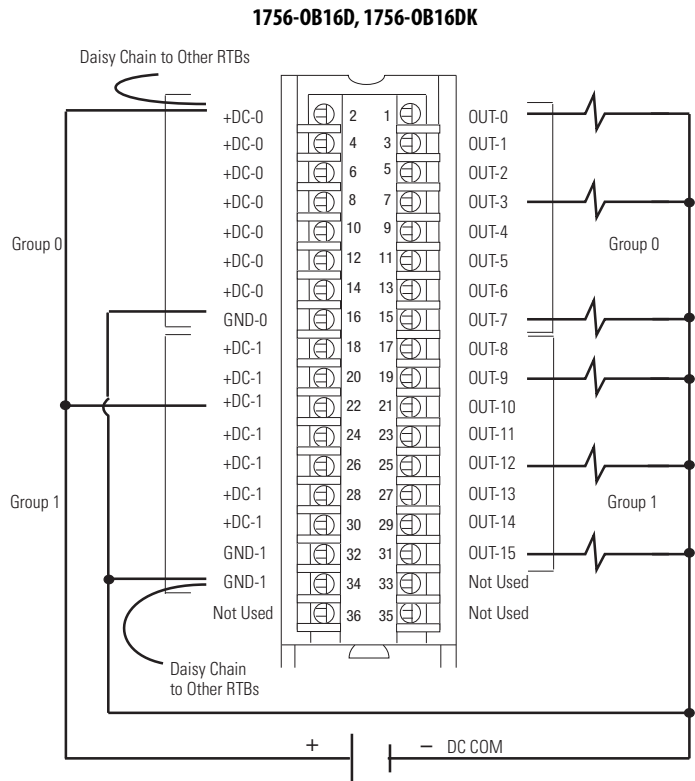
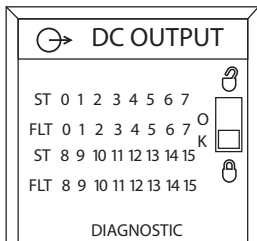
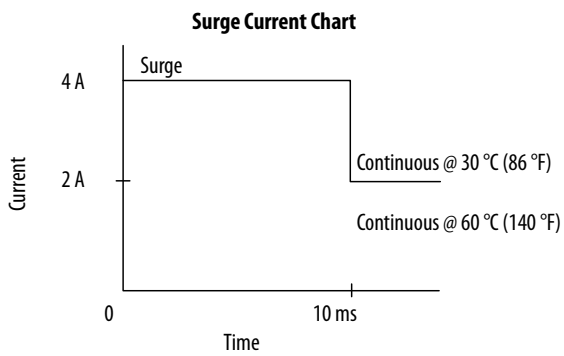
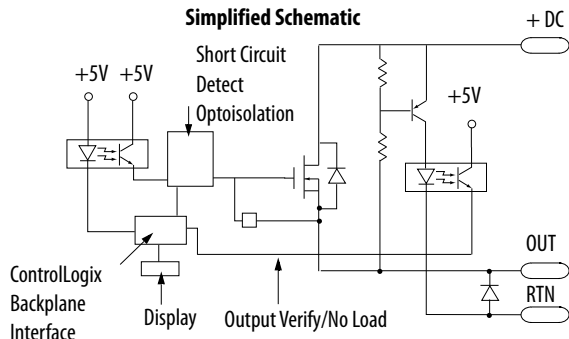
**Certifications - 1756-0B8I**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0B8I   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-OB16D, 1756-OB16DK

ControlLogix DC (19.2...30V) diagnostic output module



### Diagnostic Specifications - 1756-OB16D, 1756-OB16DK

| Attribute                 | 1756-OB16D, 1756-OB16DK                     |
|---------------------------|---|
| Short trip                | 8 A for 180 ms, min<br>10 A for 120 ms, min |
| No load                   | Off-state detection only                    |
| Output verification       | On-state detection only                     |
| Pulse test                | Configurable maximum pulse width            |
| Time stamp of diagnostics | ±1 ms                                       |

**Technical Specifications - 1756-OB16D, 1756-OB16DK**

| <b>Attribute</b>                         | <b>1756-OB16D, 1756-OB16DK</b>  |
|--|---|
| Outputs                                  | 16 diagnostic (8 points/group)  |
| Pilot duty (DC-135Q)                     | 2A @ 30°C (86 °F)<br>1A @ 60°C (140 °F)   |
| Voltage category                         | 24V DC source   |
| Operating voltage range                  | 19.2...30V DC   |
| Output delay time                        |   |
| Off to On                                | 60 µs nom/1 ms max  |
| On to Off                                | 630 µs nom/5 ms max   |
| Current draw @ 5.1V                      | 250 mA  |
| Current draw @ 24V                       | 140 mA  |
| Total backplane power                    | 4.64 W  |
| Power dissipation, max                   | 3.3 W @ 60 °C (140 °F)  |
| Thermal dissipation                      | 11.25 BTU/hr  |
| Off-state leakage current per point, max | 1 mA per point  |
| On-state voltage drop, max               | 1.2V DC @ 2 A   |
| Current per point, max                   | 2 A @ 30 °C (86 °F) linear derating<br>1 A @ 60 °C (140 °F) linear derating   |
| Current per module, max                  | 8 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point                  | 4 A for 10 ms per point, repeatable every 1 s   |
| Load current, min                        | 3 mA per point  |
| Scheduled outputs                        | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point           | Hold last state, On or Off (Off is default)   |
| States in Program mode per point         | Hold last state, On or Off (Off is default)   |
| Isolation voltage                        | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                            | Electronic, software configurable   |
| Fusing                                   | Electronically fused per point  |
| Removable terminal block                 | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                               | User-defined mechanical   |
| Slot width                               | 1   |
| Wire category                            | 1 <sup>(1)</sup>  |
| Enclosure type                           | None (open-style)   |
| North American temperature code          | T4A   |
| IEC temperature code                     | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16D, 1756-OB16DK**

| <b>Attribute</b>   | <b>1756-OB16D, 1756-OB16DK</b>   |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1k Hz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

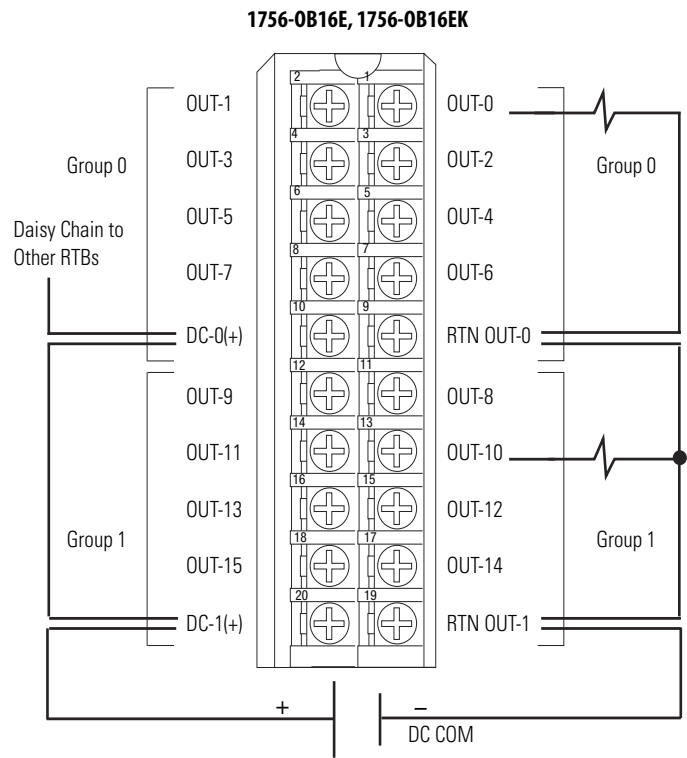
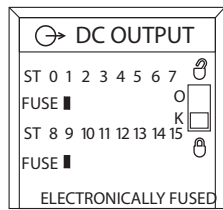
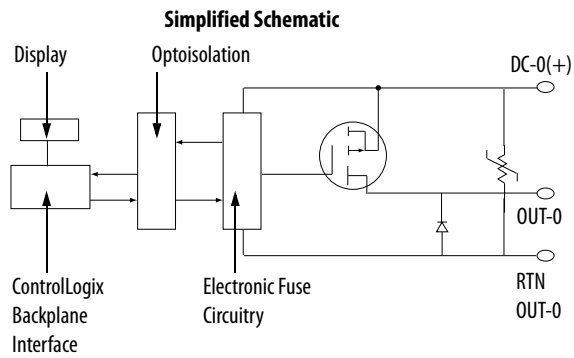
**Certifications - 1756-OB16D, 1756-OB16DK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-OB16D, 1756-OB16DK</b>  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2004/108/EC EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements</li> <li>• II 3 G Ex nA IIC T4 X</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

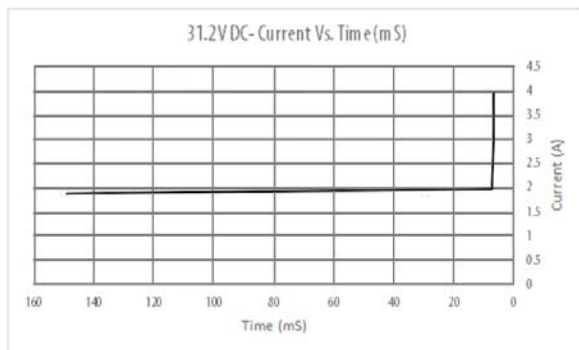
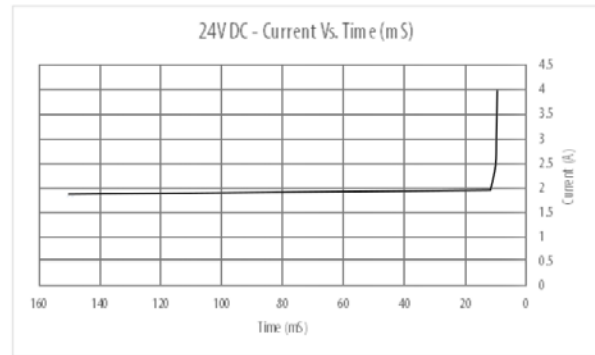
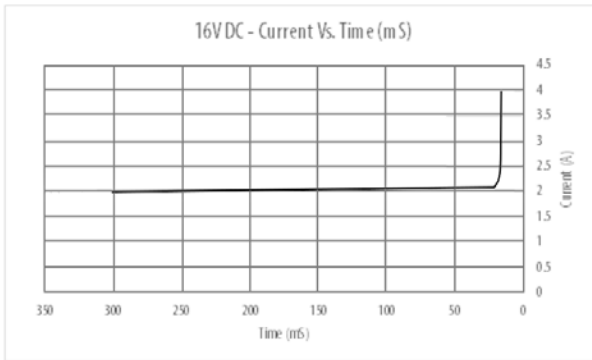
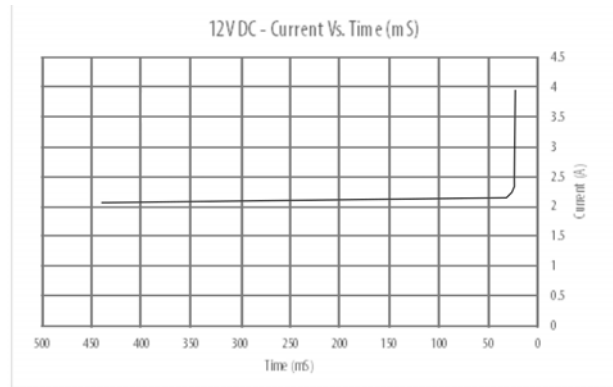
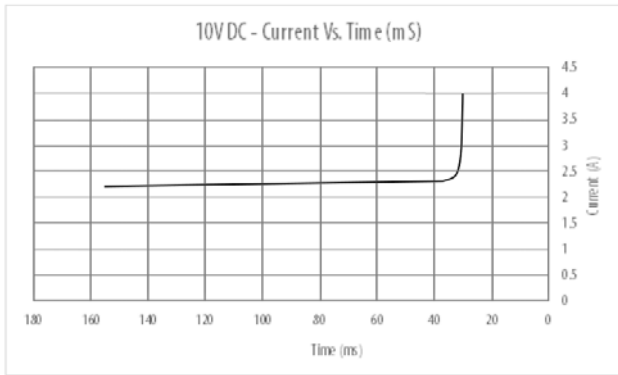
(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-OB16E, 1756-OB16EK

ControlLogix DC (10...31.2V) electronically fused output module



**Surge Current Charts**



**Technical Specifications - 1756-OB16E, 1756-OB16EK**

| Attribute               | 1756-OB16E, 1756-OB16EK                  |
|-------------------------|--|
| Outputs                 | 16 electronically fused (8 points/group) |
| Voltage category        | 12/24V DC source                         |
| Operating voltage range | 10...31.2V DC                            |
| Output delay time       |  |
| Off to On               | 70 $\mu$ s nom/1 ms max                  |
| On to Off               | 360 $\mu$ s nom/1 ms max                 |
| Current draw @ 5.1V     | 250 mA                                   |
| Current draw @ 24V      | 2 mA                                     |
| Total backplane power   | 1.32 W                                   |
| Power dissipation, max  | 4.1 W @ 60 °C (140 °F)                   |



**Technical Specifications - 1756-OB16E, 1756-OB16EK**

| Attribute                                | 1756-OB16E, 1756-OB16EK   |
|--|---|
| Thermal dissipation                      | 13.98 BTU/hr  |
| Off-state leakage current per point, max | 1 mA per point  |
| On-state voltage drop, max               | 400 mV DC @ 1 A   |
| Current per point, max                   | 1 A @ 60 °C (140 °F)  |
| Current per module, max                  | 8 A @ 60 °C (140 °F)  |
| Surge current per point, typical         | 2 A for 10 ms per point, repeatable every 2 s @ 0 °C (32 °F) @ 24V DC   |
| Load current, min                        | 3 mA per point  |
| Scheduled outputs                        | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point           | Hold last state, On or Off (Off is default)   |
| States in Program mode per point         | Hold last state, On or Off (Off is default)   |
| Isolation voltage                        | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                            | Electronic, software configurable   |
| Fusing                                   | Electronically fused per group  |
| Removable terminal block                 | 1756-TBNH<br>1756-TBSH  |
| RTB keying                               | User-defined mechanical   |
| Slot width                               | 1   |
| Wire category                            | 1 <sup>(1)</sup>  |
| Enclosure type                           | None (open-style)   |
| North American temperature code          | T4  |
| IEC temperature code                     | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16E, 1756-OB16EK**

| Attribute  | 1756-OB16E, 1756-OB16EK      |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |

**Environmental Specifications - 1756-OB16E, 1756-OB16EK**

| Attribute                                    | 1756-OB16E, 1756-OB16EK  |
|--|--|
| Emissions                                    | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . .80 MHz   |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

**Certifications - 1756-OB16E, 1756-OB16EK**

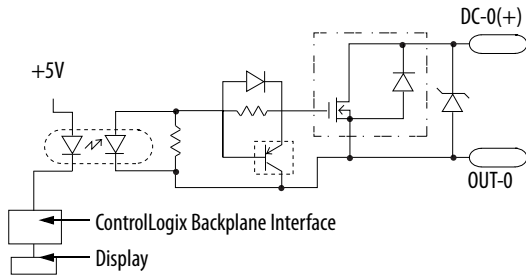
| Certification (when product is marked) <sup>(1)</sup> | 1756-OB16E, 1756-OB16EK   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

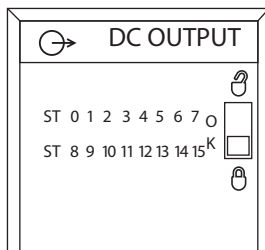
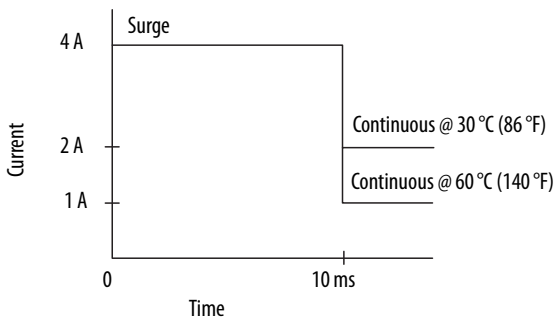
# 1756-0B16I

ControlLogix 24V DC isolated output module

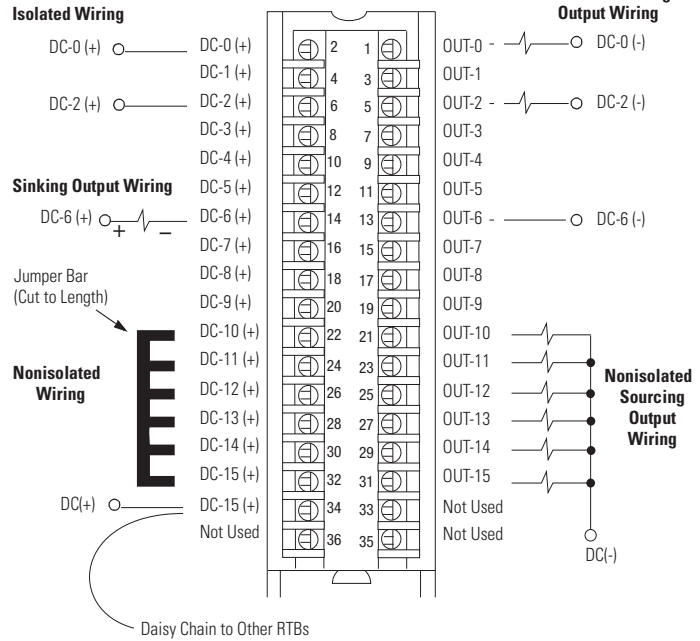
**Simplified Schematic**



**Surge Current Chart**



**1756-0B16I**



Additional jumper bars are available as catalog number 1756-JMPR.

## Technical Specifications - 1756-0B16I

| Attribute                              | 1756-0B16I               |
|--|--------------------------|
| Outputs                                | 16 individually isolated |
| Pilot duty                             | 2 A (DC-135Q)            |
| Voltage category                       | 12/24V DC sink/source    |
| Operating voltage range <sup>(1)</sup> | 10...30V DC              |
| Output delay time                      |                          |
| Off to On                              | 1 ms max                 |
| On to Off                              | 2 ms max                 |
| Current draw @ 5.1V                    | 350 mA                   |
| Current draw @ 24V                     | 2.5 mA                   |
| Total backplane power                  | 1.8 W                    |
| Power dissipation, max                 | 3.6 W @ 60 °C (140 °F)   |

**Technical Specifications - 1756-OB16I (continued)**

| Attribute                                | 1756-OB16I  |
|--|---|
| Thermal dissipation                      | 12.28 BTU/hr  |
| Off-state leakage current per point, max | 0.5 mA per point  |
| On-state voltage drop, max               | 1.2V DC @ 2 A   |
| Current per point, max                   | 2 A @ 30 °C (86 °F)<br>1 A @ 60 °C (140 °F) (linear derating)   |
| Current per module, max                  | 8 A @ 30 °C (86 °F)<br>4 A @ 60 °C (140 °F) (linear derating)   |
| Surge current per point                  | 4 A for 10 ms per point, repeatable every 2 s   |
| Load current, min                        | 1 mA per point  |
| Scheduled outputs                        | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point           | Hold last state, On or Off (Off is default)   |
| States in Program mode per point         | Hold last state, On or Off (Off is default)   |
| Isolation voltage                        | 250V (continuous), basic insulation type, outputs-to-backplane<br>125V (continuous), basic insulation type, output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Module keying                            | Electronic, software configurable   |
| Fusing                                   | Not protected. A fused IFM is recommended to help protect outputs.  |
| Removable terminal block                 | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                               | User-defined mechanical   |
| Slot width                               | 1   |
| Wire category                            | 1 <sup>(2)</sup>  |
| Enclosure type                           | None (open-style)   |
| North American temperature code          | T4A   |
| IEC temperature code                     | T4  |

(1) UL certification for 24V DC nominal. Rockwell Automation specified to 10...30V DC.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16I**

| Attribute  | 1756-OB16I                   |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |

**Environmental Specifications - 1756-OB16I (continued)**

| Attribute   | 1756-OB16I   |
|---|--|
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

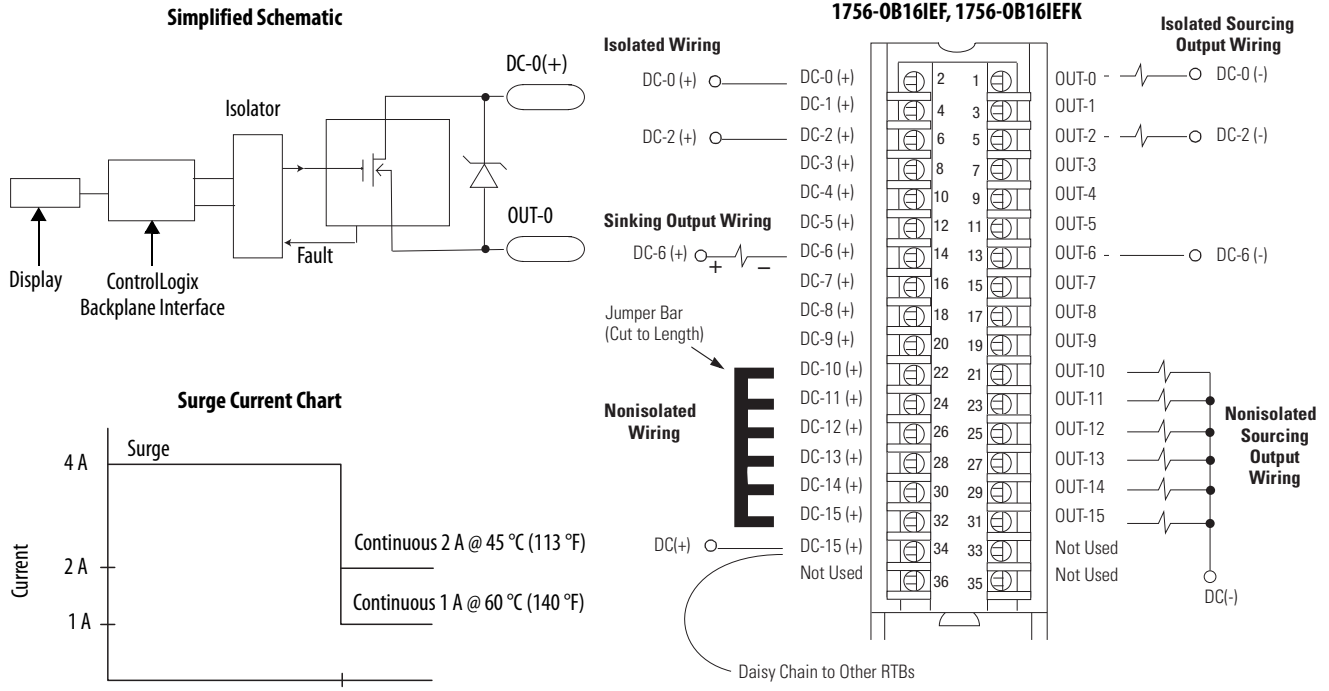
**Certifications - 1756-OB16I**

| Certification (when product is marked) <sup>(1)</sup> | 1756-OB16I  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

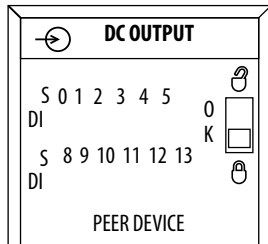
(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-OB16IEF, 1756-OB16IEFK

ControlLogix DC (10...30V) electronically protected, sinking, or sourcing, isolated, fast output module



Additional jumper bars can be purchased by using catalog number 1756-JMPR.



### Technical Specifications - 1756-OB16IEF, 1756-OB16IEFK

| Attribute                              | 1756-OB16IEF, 1756-OB16IEFK |
|--|-----------------------------|
| Outputs                                | 16 individually isolated    |
| Pilot duty                             | 4 A inrush                  |
| Voltage category                       | 12/24V DC sink/source       |
| Operating voltage range                | 10...30V DC                 |
| Output delay time (backplane to screw) |                             |
| Off to On                              | 14 μs nom/23 μs max         |
| On to Off                              | 14 μs nom/23 μs max         |
| PWM cycle time                         | 1 ms min/1 hour max         |
| PWM On time                            | 200 μs min/1 hour max       |
| PWM On time accuracy                   | ± 20 μs                     |

**Technical Specifications - 1756-OB16IEF, 1756-OB16IEFK**

| Attribute                                       | 1756-OB16IEF, 1756-OB16IEFK   |
|---|---|
| Current draw @ 5.1V                             | 320 mA  |
| Current draw @ 24V                              | 3 mA  |
| Total backplane power                           | 1.7 W   |
| Power dissipation                               | 4.9 W max (16 channels @ 1 A or 4 channels @ 2 A)   |
| Thermal dissipation                             | 16.71 BTU/hr  |
| Off-state leakage current per point, max        | < 0.1 mA per point  |
| On-state voltage drop, max                      | 0.2V DC @ 1 A<br>0.4V DC @ 2 A  |
| Current per point, max                          | 2 A @ 45 °C (113 °F) 4 channels max<br>1 A @ 60 °C (140 °F)   |
| Current per module, max                         | 16 A @ 60 °C (140 °F) 1 A max per channel<br>8 A @ 45 °C (113 °F) 2 A max per channel   |
| Surge current per point                         | 4 A for 10 ms per point, repeatable every 2 s   |
| Load current, min                               | 1 mA per point  |
| Scheduled outputs                               | CIP Sync™ only  |
| States in Fault mode per point                  | Hold last state, On or Off (Off is default)   |
| Duration of Fault mode per point                | 1, 2, 5, 10 s, Forever (Forever is default)   |
| Final state after Fault mode duration per point | On or Off (default is Off)  |
| States in Program mode per point                | Hold last state, On or Off (default is Off)   |
| Isolation voltage                               | 250V (continuous), reinforced insulation type, outputs-to-backplane<br>250V (continuous), basic insulation type, output-to-output<br>Type tested at 2300V AC for 60 s outputs-to-backplane<br>Type tested at 1500V AC for 60 s output-to-output |
| Module keying                                   | Electronic, software configurable   |
| Fusing  | Electronically fused per point  |
| Reverse polarity protection                     | No  |
| Removable terminal block                        | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                                      | User-defined mechanical   |
| Slot width                                      | 1   |
| Wire category                                   | 1 on signal ports <sup>(1)</sup>  |
| Enclosure type                                  | None (open-style)   |
| North American temperature code                 | T4  |
| IEC temperature code                            | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16IEF, 1756-OB16IEFK**

| Attribute  | 1756-OB16IEF, 1756-OB16IEFK  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-OB16IEF, 1756-OB16IEFK**

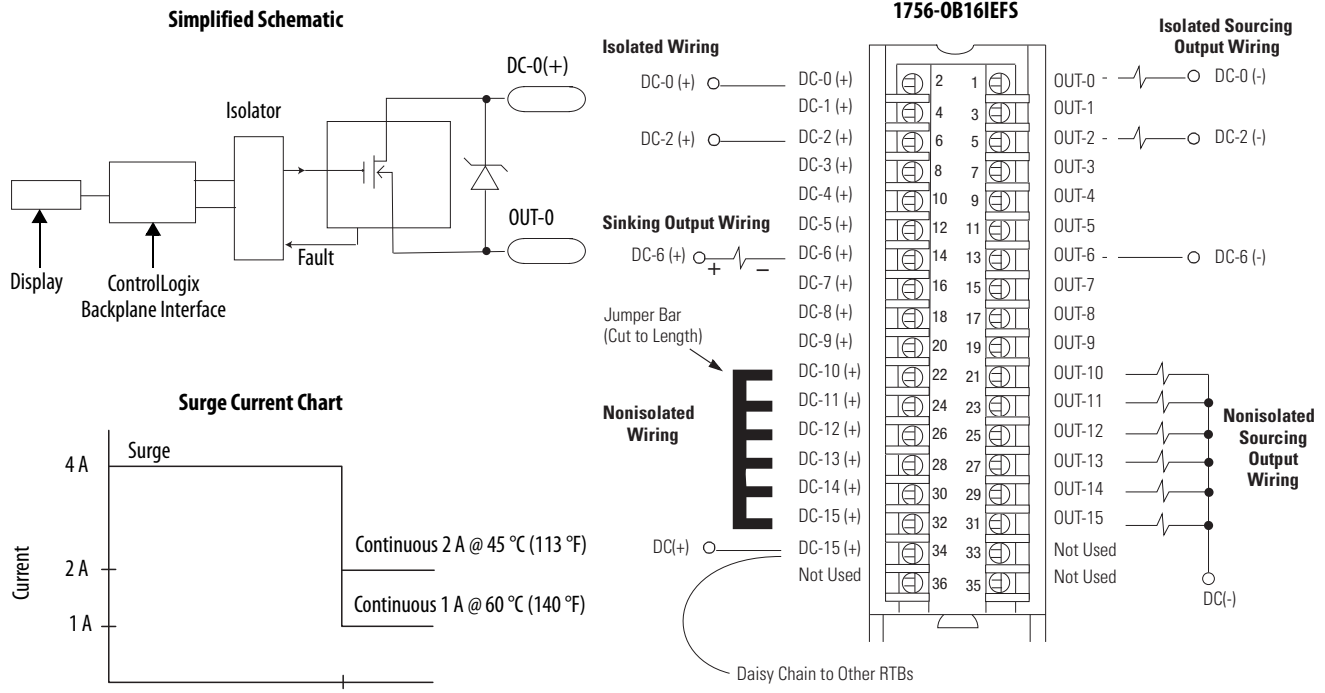
| Certification (when product is marked) <sup>(1)</sup> | 1756-OB16IEF, 1756-OB16IEFK   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

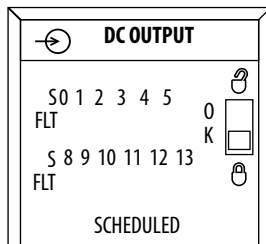


## 1756-OB16IEFS

ControlLogix DC (10...30V) scheduled, electronically protected, sinking, or sourcing, isolated, fast output module



Additional jumper bars can be purchased by using catalog number 1756-JMPR.



### Technical Specifications - 1756-OB16IEFS

| Attribute  | 1756-OB16IEFS  |
|--|--|
| Outputs  | 16 scheduled, individually isolated  |
| Pilot duty   | 4 A inrush   |
| Voltage category                                   | 12/24V DC sink/source  |
| Operating voltage range                            | 10...30V DC  |
| Unscheduled output delay time (backplane to screw) |  |
| Off to On  | 14 μs nom/23 μs max  |
| On to Off  | 14 μs nom/23 μs max  |
| Schedule accuracy                                  | ± 10 μs nom when all components are synchronized to the current CIP Sync Grandmaster |
| PWM cycle time                                     | 1 ms min/1 hour max  |
| PWM On time  | 200 μs min/1 hour max  |

**Technical Specifications - 1756-OB16IEFS (continued)**

| Attribute                                       | 1756-OB16IEFS   |
|---|---|
| PWM On-time accuracy                            | ± 20 µs   |
| Current draw @ 5.1V                             | 320 mA  |
| Current draw @ 24V                              | 3 mA  |
| Total backplane power                           | 1.7 W   |
| Power dissipation                               | 4.9 W max (16 channels @ 1 A or 4 channels @ 2 A)   |
| Thermal dissipation                             | 16.71 BTU/hr  |
| Off-state leakage current per point, max        | < 0.1 mA per point  |
| On-state voltage drop, max                      | 0.2V DC @ 1 A<br>0.4V DC @ 2 A  |
| Current per point, max                          | 2 A @ 45 °C (113 °F) 4 channels max<br>1 A @ 60 °C (140 °F)   |
| Current per module, max                         | 16 A @ 60 °C (140 °F) 1 A max per channel<br>8 A @ 45 °C (113 °F) 2 A max per channel   |
| Surge current per point                         | 4 A for 10 ms per point, repeatable every 2 s   |
| Load current, min                               | 1 mA per point  |
| Scheduled outputs                               | CIP Sync only   |
| States in Fault mode per point                  | Hold last state, On or Off (Off is default)   |
| Duration of Fault mode per point                | 1, 2, 5, 10 s, Forever (Forever is default)   |
| Final state after Fault mode duration per point | On or Off (default is Off)  |
| States in Program mode per point                | Hold last state, On or Off (default is Off)   |
| Isolation voltage                               | 250V (continuous), reinforced insulation type, outputs-to-backplane<br>250V (continuous), basic insulation type, output-to-output<br>Type tested at 2300V AC for 60 s outputs-to-backplane<br>Type tested at 1500V AC for 60 s output-to-output |
| Module keying                                   | Electronic, software configurable   |
| Fusing  | Electronically fused per point  |
| Reverse polarity protection                     | No  |
| Removable terminal block                        | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                                      | User-defined mechanical   |
| Slot width                                      | 1   |
| Wire category                                   | 1 on signal ports <sup>(1)</sup>  |
| Enclosure type                                  | None (open-style)   |
| North American temperature code                 | T4  |
| IEC temperature code                            | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16IEFS**

| Attribute  | 1756-OB16IEFS  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-OB16IEFS**

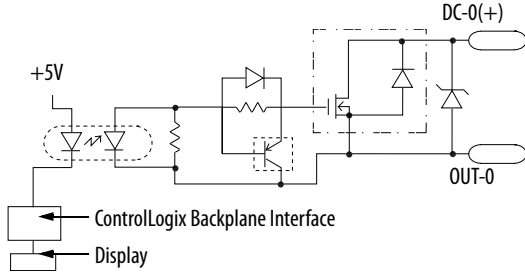
| Certification (when product is marked) <sup>(1)</sup> | 1756-OB16IEFS   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

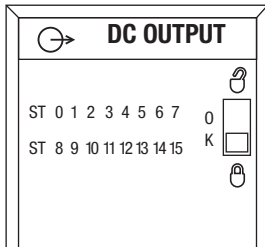
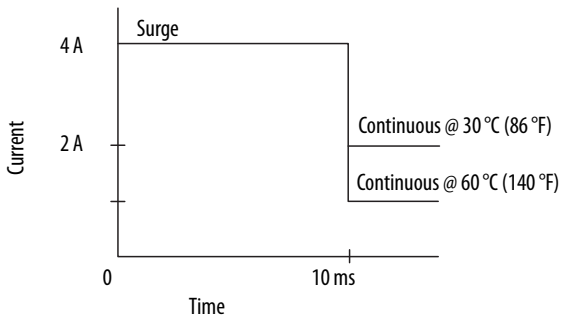
# 1756-0B16IS

ControlLogix 24V DC scheduled, isolated output module

**Simplified Schematic**

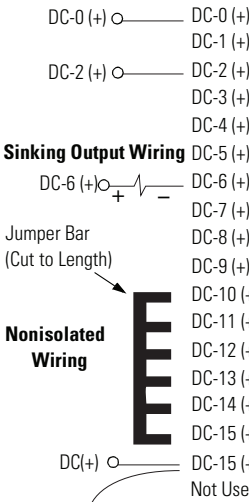


**Surge Current Chart**

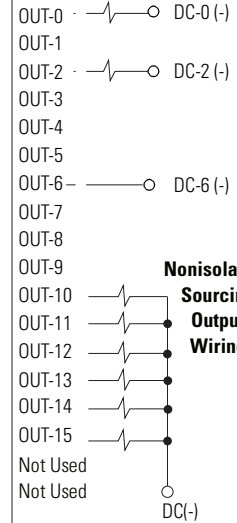


**1756-0B16IS**

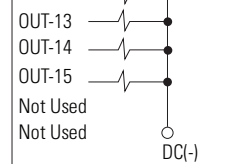
**Isolated Wiring**



**Isolated Sourcing Output Wiring**



**Nonisolated Sourcing Output Wiring**



Daisy Chain to Other RTBs

Additional jumper bars are available as catalog number 1756-JMPR.

## Technical Specifications - 1756-0B16IS

| Attribute                              | 1756-0B16IS                           |
|--|---------------------------------------|
| Outputs                                | 16 individually isolated, 8 scheduled |
| Pilot duty                             | 2 A (DC-13SQ)                         |
| Voltage category                       | 12/24V DC sink/source                 |
| Operating voltage range <sup>(1)</sup> | 10...30V DC                           |
| Output delay time                      |                                       |
| Off to On                              | 1 ms max                              |
| On to Off                              | 2 ms max                              |
| Current draw @ 5.1V                    | 350 mA                                |
| Current draw @ 24V                     | 2.5 mA                                |
| Total backplane power                  | 1.8 W                                 |
| Power dissipation, max                 | 3.6 W @ 60 °C (140 °F)                |
| Thermal dissipation                    | 12.28 BTU/hr                          |

**Technical Specifications - 1756-OB16IS (continued)**

| Attribute                                | 1756-OB16IS  |
|--|--|
| Off-state leakage current per point, max | 0.5 mA per point   |
| On-state voltage drop, max               | 1.2V DC @ 2 A  |
| Current per point, max                   | 2 A @ 30 °C (86 °F)<br>1 A @ 60 °C (140 °F) (linear derating)  |
| Current per module, max                  | 8 A @ 30 °C (86 °F)<br>4 A @ 60 °C (140 °F) (linear derating)  |
| Surge current per point                  | 4 A for 10 ms per point, repeatable every 2 s  |
| Load current, min                        | 1 mA per point   |
| Scheduled outputs                        | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point           | Hold last state, On or Off (Off is default)  |
| States in Program mode per point         | Hold last state, On or Off (Off is default)  |
| Isolation voltage                        | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s  |
| Module keying                            | Electronic, software configurable  |
| Fusing                                   | Not protected. A fused IFM can be used to help protect outputs. See publication <a href="#">1492-TD008</a> . However, the ControlLogix system has been agency certified using only the ControlLogix RTBs, that is, 1756-TBCH, 1756-TBNH, 1756-TBSH, and 1756-TBS6H. Any application that requires agency certification of the ControlLogix system that uses other wiring termination methods can require application-specific approval by the certifying agency. |
| Removable terminal block                 | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                               | User-defined mechanical  |
| Slot width                               | 1  |
| Wire category                            | 1 <sup>(2)</sup>   |
| Wire type                                | Copper   |
| Enclosure type                           | None (open-style)  |
| North American temperature code          | T4A  |
| IEC temperature code                     | T4   |

(1) UL certification for 24V DC nominal. Rockwell Automation specified to 10...30V DC

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB16IS**

| Attribute  | 1756-OB16IS                  |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |

**Environmental Specifications - 1756-OB16IS (continued)**

| Attribute   | 1756-OB16IS  |
|---|--|
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

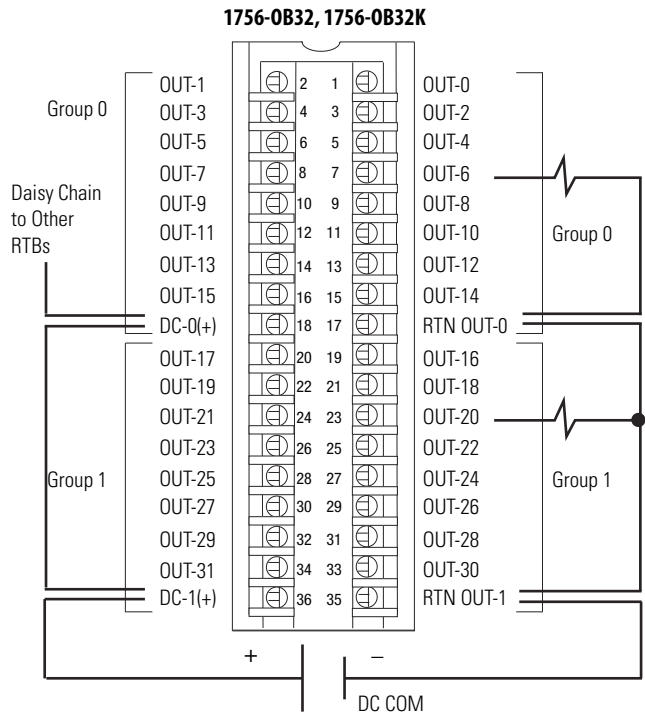
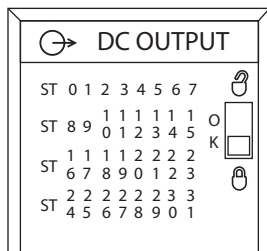
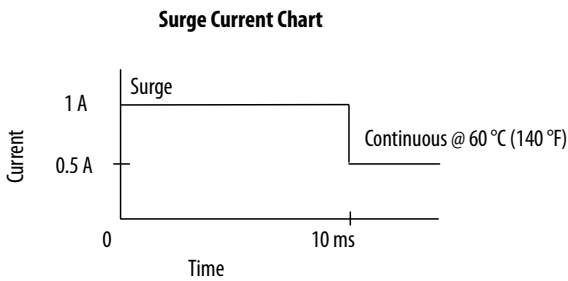
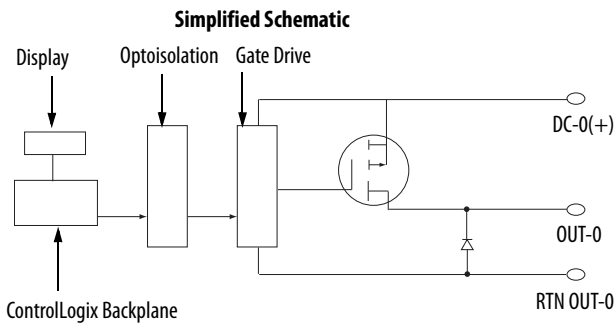
**Certifications - 1756-OB16IS**

| Certification (when product is marked) <sup>(1)</sup> | 1756-OB16IS   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-OB32, 1756-OB32K

ControlLogix DC (10...31.2V) output module



### Technical Specifications - 1756-OB32, 1756-OB32K

| Attribute                                | 1756-OB32, 1756-OB32K    |
|--|--------------------------|
| Outputs                                  | 32 (16 points/group)     |
| Voltage category                         | 12/24V DC source         |
| Operating voltage range                  | 10...31.2V DC            |
| Output delay time                        |                          |
| Off to On                                | 60 $\mu$ s nom/1 ms max  |
| On to Off                                | 200 $\mu$ s nom/1 ms max |
| Current draw @ 5.1V                      | 300 mA                   |
| Current draw @ 24V                       | 2 mA                     |
| Total backplane power                    | 1.58 W                   |
| Power dissipation, max                   | 4.8 W @ 60 °C (140 °F)   |
| Thermal dissipation                      | 16.37 BTU/hr             |
| Off-state leakage current per point, max | 0.5 mA per point         |
| On-state voltage drop, max               | 200 mV DC @ 0.5 A        |

**Technical Specifications - 1756-OB32, 1756-OB32K**

| Attribute                        | 1756-OB32, 1756-OB32K  |
|----------------------------------|--|
| Current per point, max           | 0.5 A @ 50 °C (122 °F) linear derating<br>0.35 A @ 60 °C (140 °F)  |
| Current per module, max          | 16 A @ 50 °C (122 °F) linear derating<br>10 A @ 60 °C (140 °F)   |
| Surge current per point, max     | 1 A for 10 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Load current, min                | 3 mA per point   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)  |
| States in Program mode per point | Hold last state, On or Off (Off is default)  |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s  |
| Module keying                    | Electronic, software configurable  |
| Fusing                           | Not protected. A fused IFM can be used to help protect outputs. See publication <a href="#">1492-TD008</a> . However, the ControlLogix system has been agency certified using only the ControlLogix RTBs, that is, 1756-TBCH, 1756-TBNH, 1756-TBSH, and 1756-TBS6H. Any application that requires agency certification of the ControlLogix system that uses other wiring termination methods can require application-specific approval by the certifying agency. |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T3C  |
| IEC temperature code             | T3   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OB32, 1756-OB32K**

| Attribute  | 1756-OB32, 1756-OB32K        |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |



**Environmental Specifications - 1756-0B32, 1756-0B32K**

| Attribute                                 | 1756-0B32, 1756-0B32K  |
|---|--|
| Emissions                                 | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

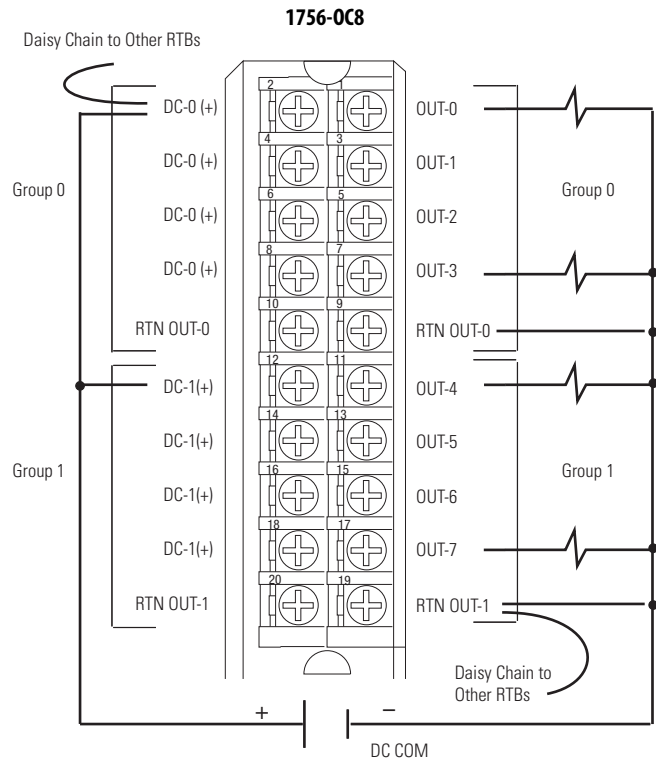
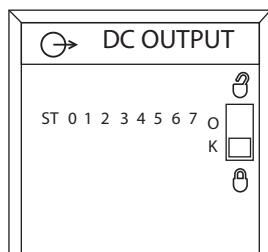
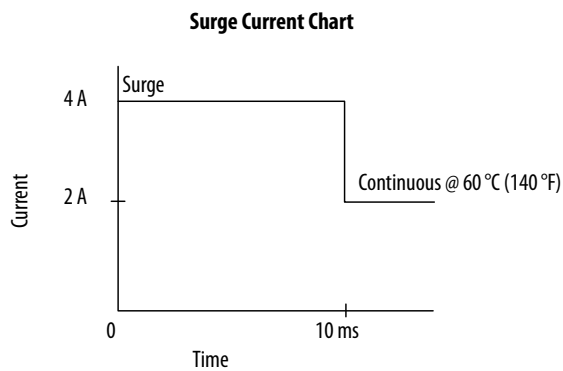
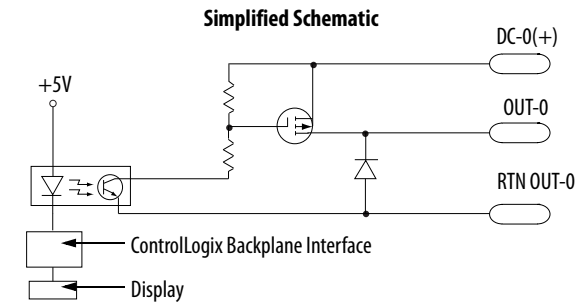
**Certifications - 1756-0B32**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0B32, 1756-0B32K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T3 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0C8

ControlLogix DC (30...60V) output module



### Technical Specifications - 1756-0C8

| Attribute               | 1756-0C8               |
|-------------------------|------------------------|
| Outputs                 | 8 (4 points/group)     |
| Pilot duty              | 2 A                    |
| Voltage category        | 48V DC source          |
| Operating voltage range | 30...60V DC            |
| Output delay time       |                        |
| Off to On               | 1 ms, max              |
| On to Off               | 2 ms, max              |
| Current draw @ 5.1V     | 165 mA                 |
| Current draw @ 24V      | 2 mA                   |
| Total backplane power   | 0.89 W                 |
| Power dissipation, max  | 4.9 W @ 60 °C (140 °F) |

**Technical Specifications - 1756-OC8 (continued)**

| Attribute                        | 1756-OC8   |
|----------------------------------|--|
| Thermal dissipation              | 16.71 BTU/hr   |
| Off-state leakage current, max   | 1 mA per point   |
| On-state voltage drop, max       | 2V DC @ 2 A  |
| Current per point, max           | 2 A @ 60 °C (140 °F)   |
| Current per module, max          | 8 A @ 60 °C (140 °F)   |
| Surge current per point          | 4 A for 10 ms per point, repeatable every 1 s @ 60 °C (140 °F)   |
| Load current, min                | 2 mA per point   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)  |
| States in Program mode per point | Hold last state, On or Off (Off is default)  |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested at 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable  |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs  |
| Removable terminal block         | 1756-TBNH<br>1756-TBSH   |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4   |
| IEC temperature code             | T4   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OC8**

| Attribute  | 1756-OC8                     |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |

**Environmental Specifications - 1756-0C8 (continued)**

| Attribute                                 | 1756-0C8   |
|---|--|
| Emissions                                 | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80. . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000. . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz. . .80 MHz  |

**Certifications - 1756-0C8**

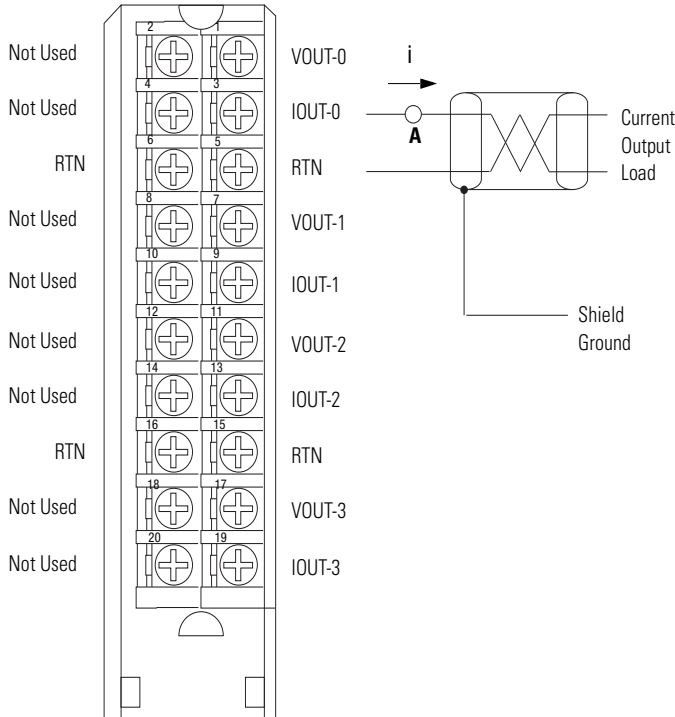
| Certification (when product is marked) <sup>(1)</sup> | 1756-0C8  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

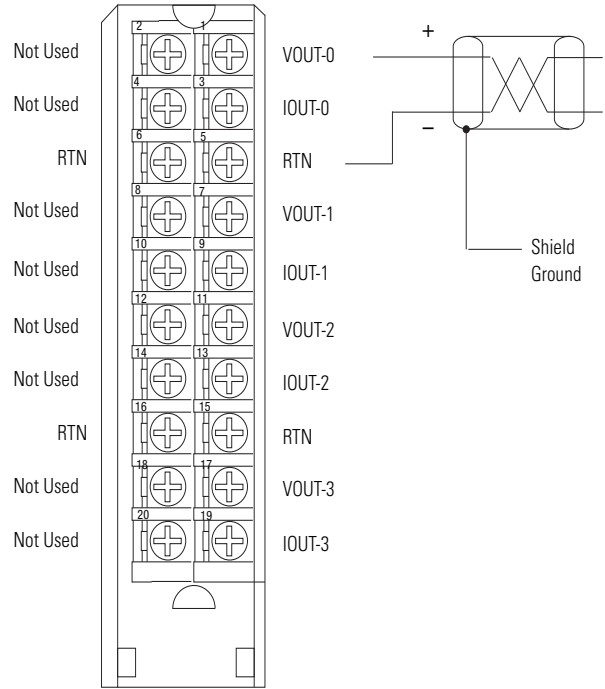
## 1756-0F4, 1756-0F4K

ControlLogix voltage/current output analog module

**1756-0F4, 1756-0F4K Current**

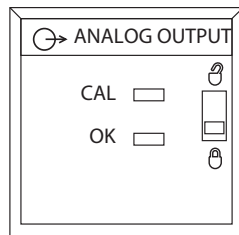


**1756-0F4, 1756-0F4K Voltage**



- Place additional loop devices (such as strip chart recorders) at the A location noted in the drawing.
- All terminals marked RTN are connected internally.

All terminals marked RTN are connected internally.



### Signal and User Counts - 1756-0F4, 1756-0F4K

| Range     | Low Signal and User Counts | High Signal and User Counts |
|-----------|----------------------------|-----------------------------|
| 0...20 mA | 0 mA<br>-32768 counts      | 21.2916 mA<br>32767 counts  |
| ±10V      | -10.4336V<br>-32768 counts | 10.4336V<br>32767 counts    |

**Technical Specifications - 1756-OF4, 1756-OF4K**

| <b>Attribute</b>            | <b>1756-OF4, 1756-OF4K</b>   |
|-----------------------------|--|
| Outputs                     | Four voltage or current outputs  |
| Output range                | ±10V<br>4...20 mA  |
| Resolution                  | Voltage: 15 bits across 10.5V, 320 µV/bit<br>Current: 15 bits across 21 mA, 650 nA/bit   |
| Voltage and current ratings | Backplane: 5.1V DC, 150 mA max 24V DC, 210 mA max<br>Output voltage: -10...+10V<br>Output current: 4...20 mA   |
| Current draw @ 5.1V         | 150 mA   |
| Current draw @ 24V          | 120 mA   |
| Total backplane power       | 5.8 W  |
| Power consumption           | 3.7 W backplane power  |
| Power dissipation, max      | 3.7 W to 2.4 W; 0 ohm to 750 ohm load  |
| Thermal dissipation         | 10.91 BTU/hr   |
| Open circuit detection      | Current output only (Output must be set to >0.1 mA)  |
| Overvoltage protection      | 24V DC   |
| Short circuit protection    | Electronically current limited to 21 mA or less  |
| Drive capability            | Voltage: >2000 Ω<br>Current: 0...750 Ω   |
| Settling time               | <2 ms to 95% of final value with resistive loads   |
| Calibrated accuracy         | Better than 0.05% of range from 4...21 mA, -10.4...10.4V   |
| Calibration interval        | 12 months typical  |
| Offset drift                | 50 µV/°C<br>100 nA/°C  |
| Gain drift with temperature | Voltage: 25 ppm/°C, 520 µV/°C<br>Current: 50 ppm/°C, 1050 µA/°C  |
| Module error                | Voltage: 0.15% of range<br>Current: 0.3% of range  |
| Module scan time            | 12 ms floating point<br>8 ms integer   |
| Data format                 | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point   |
| Module conversion method    | R-Ladder DAC, monotonicity with no missing codes   |
| Isolation voltage           | 250V (continuous), Reinforced insulation type, Output Channels to Backplane<br>No isolation between individual Output Channels<br>Routine tested at 1350V AC for 2 s |
| Module keying               | Electronic, software configurable  |
| Removable terminal block    | 1756-TBNH<br>1756-TBSH   |
| RTB keying                  | User-defined mechanical  |
| Slot width                  | 1  |

**Technical Specifications - 1756-OF4, 1756-OF4K**

| Attribute                      | 1756-OF4, 1756-OF4K   |
|--------------------------------|---|
| Wire size                      | <p>1756-TBNH<br/>Single wire connection: 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max.<br/>Double wire connection: 0.33...1.3 mm<sup>2</sup> (22...16 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max.<br/>Do not wire more than two conductors on any terminal.</p> <p>1756-TBSH<br/>Single wire connection: 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max.<br/>Do not wire multiple conductors on any terminal.</p> |
| Terminal block torque specs    | 1756-TBNH: 1.36 N•m (12 lb•in)  |
| Wiring category <sup>(1)</sup> | 1 - on signal ports   |
| Enclosure type                 | None (open-style)   |
| North American temp code       | T4A   |
| ATEX temp code                 | T4  |
| IECEx temp code                | T4  |

(1) Use this conductor category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF4, 1756-OF4K**

| Attribute  | 1756-OF4, 1756-OF4K  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < 60 °C (+32 °F < Ta < +140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-OF4, 1756-OF4K**

| Attribute                                 | 1756-OF4, 1756-OF4K  |
|---|--|
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports                                 |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz  |

**Certifications - 1756-OF4, 1756-OF4K**

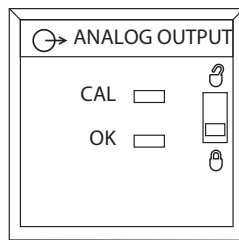
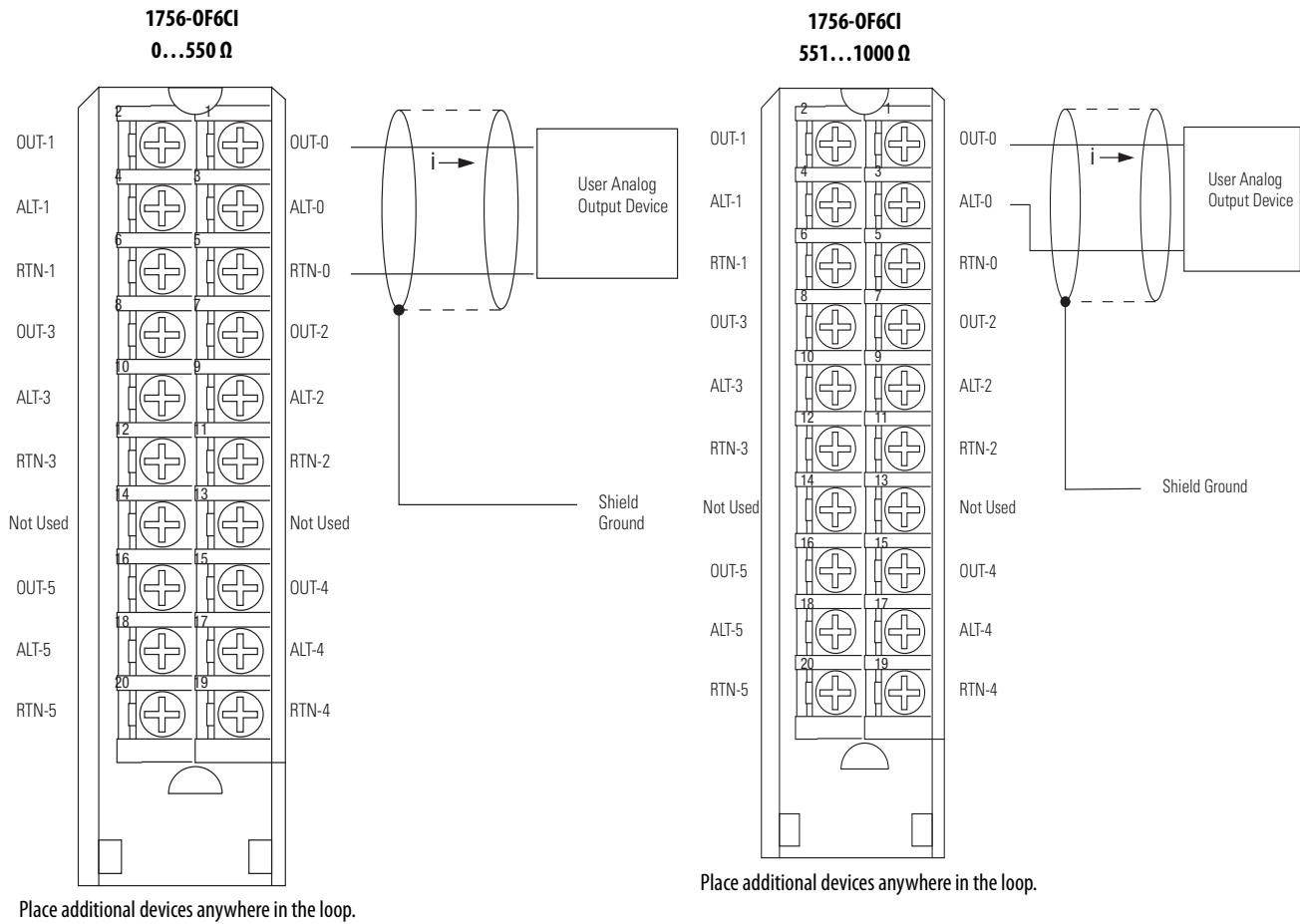
| Certification (when product is marked) <sup>(1)</sup> | 1756-OF4, 1756-OF4K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.



# 1756-0F6CI

ControlLogix current loop output analog module



## Signal and User Counts - 1756-0F6CI

| Range     | Low Signal and User Counts | High Signal and User Counts |
|-----------|----------------------------|-----------------------------|
| 0...21 mA | 0 mA<br>-32768 counts      | 21.074 mA<br>32767 counts   |

**Technical Specifications - 1756-OF6CI**

| <b>Attribute</b>                    | <b>1756-OF6CI</b>   |
|-------------------------------------|---|
| Outputs                             | 6 individually isolated   |
| Output range                        | 0...21 mA   |
| Resolution                          | 13 bits across 21 mA (2.7 $\mu$ A)  |
| Current draw @ 5.1V                 | 250 mA for 0...550 $\Omega$ loads terminated on OUTs and RTNs<br>250 mA for 551...1000 $\Omega$ loads terminated on OUTs and ALTs           |
| Current draw @ 24V                  | 225 mA for 0...550 $\Omega$ loads terminated on OUTs and RTNs<br>300 mA for 551...1000 $\Omega$ loads terminated on OUTs and ALTs           |
| Total backplane power               | 6.7 W for 0...550 $\Omega$ range<br>8.5 W for 551...1000 $\Omega$ range   |
| Power dissipation, max              | 5.5 W (0...550 $\Omega$ loads)<br>6.1 W (551...1000 $\Omega$ loads)   |
| Thermal dissipation                 | 18.76 BTU/hr (0...550 $\Omega$ loads)<br>20.80 BTU/hr (551...1000 $\Omega$ loads)   |
| Open circuit detection              | None  |
| Overvoltage protection              | 24V DC  |
| Short circuit protection            | Electronically current limited to 21 mA or less   |
| Drive capability                    | 0...1000 $\Omega$<br>Separate field terminations for 0...550 $\Omega$ and 551...1000 $\Omega$   |
| Settling time                       | < 2 ms to 95% of final value with resistive loads   |
| Calibrated accuracy @ 25 °C (77 °F) | Better than 0.1% of range from 4...21 mA  |
| Calibration interval                | 6 months typical  |
| Offset drift                        | 1 $\mu$ A/°C typical  |
| Gain drift with temperature, nom    | 60 ppm/°C   |
| Gain drift with temperature, max    | 100 ppm/°C  |
| Module error                        | 0.6% of range   |
| Module scan time, max               | 25 ms floating point<br>10 ms integer   |
| Data format                         | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method            | R-Ladder DAC, monotonicity with no missing codes  |
| Isolation voltage                   | 250V (continuous), basic insulation type, output channels-to-backplane, and output channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                       | Electronic, software configurable   |
| Removable terminal block            | 1756-TBNH<br>1756-TBSH  |
| RTB keying                          | User-defined mechanical   |
| Slot width                          | 1   |
| Wire category <sup>(1)</sup>        | 2   |
| Enclosure type                      | None (open-style)   |
| North American temperature code     | T4A   |
| IEC temperature code                | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF6CI**

| <b>Attribute</b>   | <b>1756-OF6CI</b>  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5  | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on shielded signal ports   |

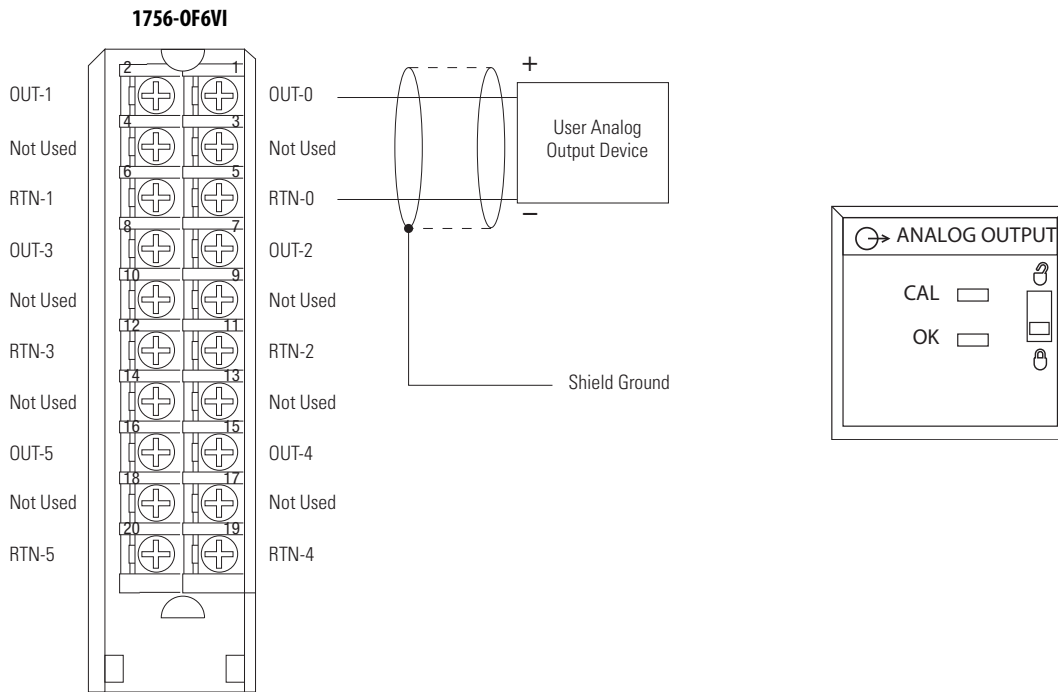
**Certifications - 1756-OF6CI**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-OF6CI</b>   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0F6VI

ControlLogix voltage loop output analog module



Place additional devices anywhere in the loop.

### Signal and User Counts - 1756-0F6VI

| Range | Low Signal and User Counts | High Signal and User Counts |
|-------|----------------------------|-----------------------------|
| ±10V  | -10.517V<br>-32768 counts  | 10.517V<br>32767 counts     |

### Technical Specifications - 1756-0F6VI

| Attribute                | 1756-0F6VI  |
|--------------------------|---|
| Outputs                  | 6 individually isolated   |
| Output range             | ± 10.5V   |
| Resolution               | 14 bits across 21V (1.3 mV)<br>(13 bits across 10.5V +sign bit) |
| Current draw @ 5.1V      | 250 mA  |
| Current draw @ 24V       | 175 mA  |
| Total backplane power    | 5.5 W   |
| Power dissipation, max   | 4.85 W  |
| Thermal dissipation      | 16.54 BTU/hr  |
| Output impedance         | <1 Ω  |
| Open circuit detection   | None  |
| Overvoltage protection   | 24V DC  |
| Short circuit protection | Electronically current limited                                  |
| Drive capability         | > 1000 Ω loads, 10 mA   |

**Technical Specifications - 1756-OF6VI (continued)**

| Attribute                           | 1756-OF6VI  |
|-------------------------------------|---|
| Settling time                       | < 2 ms to 95% of final value with resistive loads   |
| Calibrated accuracy @ 25 °C (77 °F) | Better than 0.1% of range   |
| Calibration interval                | 6 months typical  |
| Offset drift                        | 60 $\mu$ V/°C typical   |
| Gain drift with temperature, nom    | 50 ppm/°C   |
| Gain drift with temperature, max    | 80 ppm/°C   |
| Module error                        | 0.5% of range   |
| Module scan time, max               | 25 ms floating point<br>10 ms integer   |
| Data format                         | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Module conversion method            | R-Ladder DAC, monotonicity with no missing codes  |
| Isolation voltage                   | 250V (continuous), basic insulation type, output channels-to-backplane, and output channel-to-channel<br>Routine tested at 1350V AC for 2 s |
| Module keying                       | Electronic, software configurable   |
| Removable terminal block            | 1756-TBNH<br>1756-TBSH  |
| RTB keying                          | User-defined mechanical   |
| Slot width                          | 1   |
| Wire category                       | 2 <sup>(1)</sup>  |
| Enclosure                           | None (open-style)   |
| North American temperature code     | T4A   |
| IEC temperature code                | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF6VI**

| Attribute  | 1756-OF6VI                   |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g                         |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g                         |
| Emissions  | IEC 61000-6-4                |

**Environmental Specifications - 1756-0F6VI (continued)**

| Attribute                                 | 1756-0F6VI   |
|---|--|
| ESD immunity<br>IEC 61000-4-2             | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±2 kV at 5 kHz on shielded signal ports  |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports   |
| Conducted RF Immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz on shielded signal ports   |

**Certifications - 1756-0F6VI**

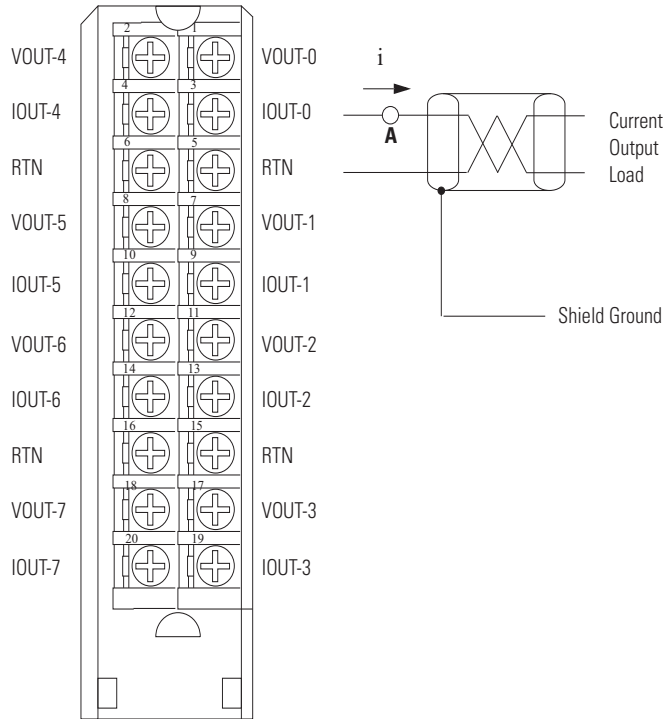
| Certification (when product is marked) <sup>(1)</sup> | 1756-0F6VI  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

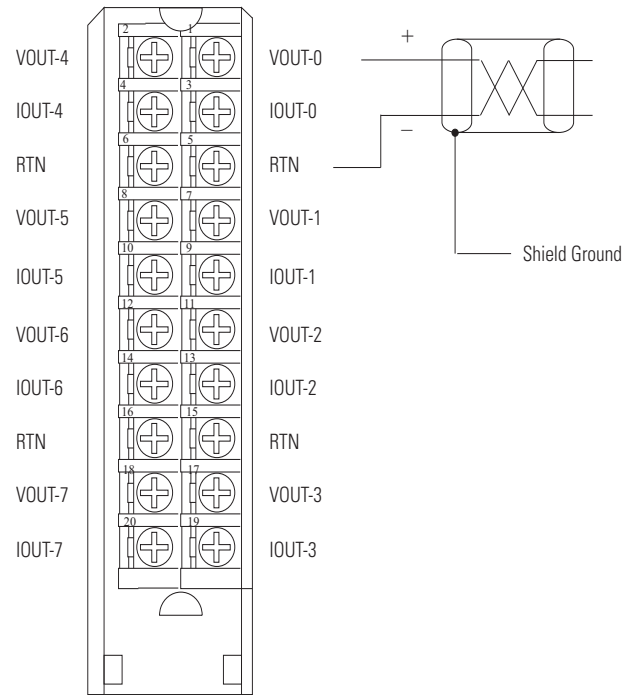
## 1756-OF8, 1756-OF8K

ControlLogix voltage/current output analog module

**1756-OF8, 1756-OF8K Current**

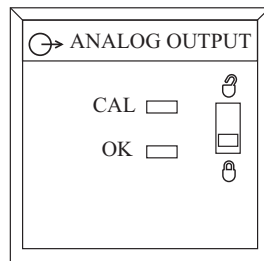


**1756-OF8, 1756-OF8K Voltage**



- Place additional loop devices (such as strip chart recorders) at the A location noted in the drawing.
- All terminals marked RTN are connected internally.

All terminals marked RTN are connected internally.



### Signal and User Counts - 1756-OF8, 1756-OF8K

| Range     | Low Signal and User Counts | High Signal and User Counts |
|-----------|----------------------------|-----------------------------|
| 0...20 mA | 0 mA<br>-32768 counts      | 21.2916 mA<br>32767 counts  |
| ±10V      | -10.4336V<br>-32768 counts | 10.4336V<br>32767 counts    |



**Technical Specifications - 1756-OF8, 1756-OF8K**

| <b>Attribute</b>                    | <b>1756-OF8, 1756-OF8K</b>   |
|-------------------------------------|--|
| Outputs                             | Eight voltages or current  |
| Output range                        | ± 10V<br>0...20 mA   |
| Resolution                          | 15 bits across 21 mA - 650 nA/bit<br>15 bits across 10.4V - 320 µV/bit   |
| Current draw @ 5.1V                 | 150 mA   |
| Current draw @ 24V                  | 210 mA   |
| Total backplane power               | 5.8 W  |
| Voltage and current ratings         | Backplane: 5.1V DC, 150 mA max, 24V DC, 210 mA max<br>Output Voltage: -10...+10V<br>Output Current: 4...20mA   |
| Power consumption                   | 5.8 W backplane power  |
| Power dissipation                   | 5.8 W to 3.15 W; 0 ohm to 750 ohm loads  |
| Thermal dissipation                 | 16.78 BTU/hr   |
| Open circuit detection              | Current output only (Output must be set to >0.1 mA)  |
| Overvoltage protection              | 24V DC   |
| Short circuit protection            | Electronically current limited to 21 mA or less  |
| Drive capability                    | Voltage: > 2000 Ω<br>Current: 0...750 Ω  |
| Settling time                       | < 2 ms to 95% of final value with resistive loads  |
| Calibrated accuracy @ 25 °C (77 °F) | Better than 0.05% of range from 4...21 mA, -10.4...10.4V   |
| Calibration interval                | 12 months typical  |
| Offset drift                        | 50 µV/°C typical (Voltage mode)<br>0.1 µA/°C typical (Current mode)  |
| Gain drift with temperature, max    | Voltage: 25 ppm/°C max<br>Current: 50 ppm/°C max   |
| Module error                        | Voltage: 0.15% of range<br>Current: 0.3% of range  |
| Module scan time, min               | 12 ms floating point<br>8 ms integer   |
| Data format                         | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point   |
| Module conversion method            | R-Ladder DAC, monotonicity with no missing codes   |
| Isolation voltage                   | 250V (continuous), Reinforced insulation type, Output Channels to Backplane<br>No isolation between individual Output Channels<br>Routine tested at 1350V AC for 2 s |
| Module keying                       | Electronic, software configurable  |
| Removable terminal block            | 1756-TBNH<br>1756-TBSH   |
| RTB keying                          | User-defined mechanical  |
| Slot width                          | 1  |

**Technical Specifications - 1756-OF8, 1756-OF8K**

| Attribute                      | 1756-OF8, 1756-OF8K  |
|--------------------------------|--|
| Wire size                      | <p>1756-TBNH<br/>Single wire connection: 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max.<br/>Double wire connection: 0.33...1.3 mm<sup>2</sup> (22...16 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max.<br/>Do not wire more than two conductors on any terminal.</p> <p>1756-TBSH<br/>Single wire connection, 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid, or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max.<br/>Do not wire multiple conductors on any terminal.</p> |
| Terminal block torque specs    | 1756-TBNH: 1.36 N•m (12 lb•in)   |
| Wiring category <sup>(1)</sup> | 1 - on signal ports  |
| Enclosure type                 | None (open-style)  |
| North American temp code       | T4A  |
| ATEX temp code                 | T4   |
| IECEx temp code                | T4   |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF8, 1756-OF8K**

| Attribute  | 1756-OF8, 1756-OF8K  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)   |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-OF8, 1756-OF8K**

| Attribute                                 | 1756-OF8, 1756-OF8K  |
|---|--|
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports                                 |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz  |

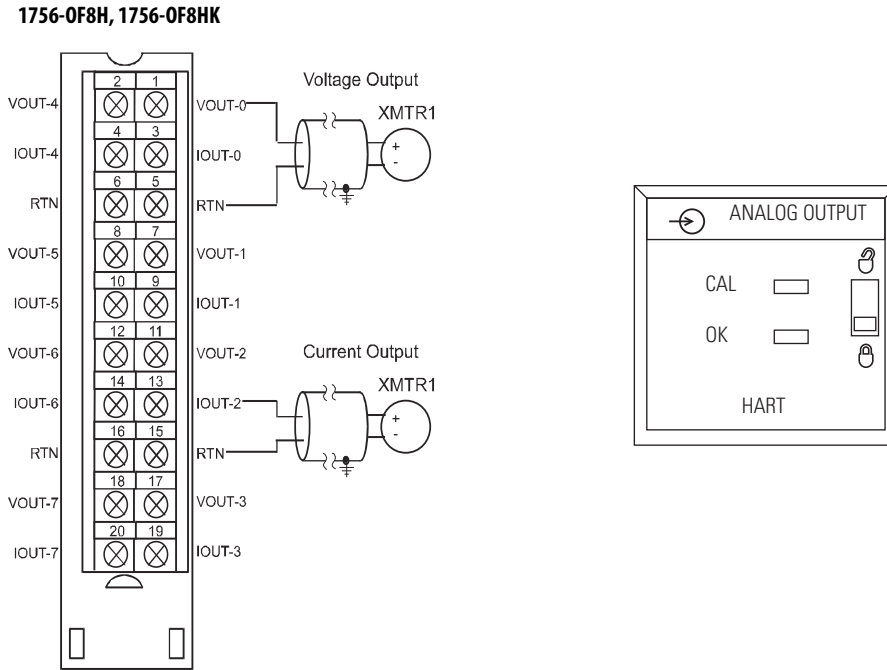
**Certifications - 1756-OF8, 1756-OF8K**

| Certification (when product is marked) <sup>(1)</sup> | 1756-OF8, 1756-OF8K   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>EN 61010-2-201; Control Equipment Safety Requirements</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-0; General Requirements</li> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO15ATEX1482X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECEX UL 15.0053X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0F8H, 1756-0F8HK

ControlLogix voltage/current output analog module with HART protocol



### Signal and User Counts - 1756-0F8H, 1756-0F8HK

| Range     | Low Signal and User Counts | High Signal and User Counts |
|-----------|----------------------------|-----------------------------|
| 0...20 mA | 0 mA<br>-32768 counts      | 21.2916 mA<br>32767 counts  |
| ±10V      | -10.4336V<br>-32768 counts | 10.4336V<br>32767 counts    |

### Technical Specifications - 1756-0F8H, 1756-0F8HK

| Attribute                   | 1756-0F8H, 1756-0F8HK  |
|-----------------------------|--|
| Outputs                     | Eight voltages or current, one HART modem per module   |
| Output range                | ±10V<br>0...20 mA<br>4...20 mA   |
| Resolution                  | 15...16 bits for all ranges  |
| Voltage and current ratings | Backplane: 5.1V DC, 230 mA, 24V DC, 230 mA<br>Output voltage range: -10...10.4V<br>Output current range: 0...20 mA, 4...20 mA                                |
| Total backplane power       | 6.54 W   |
| Power dissipation           | 4.92 W   |
| Thermal dissipation         | 16.78 BTU/hr   |
| Isolation voltage           | 50V (continuous), Basic insulation type, Output Channels to Backplane<br>No isolation between individual output Channels<br>Type tested at 1500V AC for 60 s |

**Technical Specifications - 1756-OF8H, 1756-OF8HK**

| Attribute  | 1756-OF8H, 1756-OF8HK   |
|--|---|
| Output impedance                                       | –   |
| Open circuit detection time                            | Current output only (output must be set to < 0.1 mA)  |
| Oversvoltage protection, max                           | ±24V DC   |
| Drive capability                                       | –   |
| Load reactance, max                                    | Voltage: 1 $\mu$ F<br>Current: 10 $\mu$ H   |
| Settling time  | Current (no HART): < 23 ms to 95% with resistive loads<br>Current (with HART): < 37 ms to 95% with resistive loads<br>Voltage: < 8.5 ms to 95% with resistive loads   |
| Calibrated accuracy @ 25 °C (77 °F) with HART disabled | Voltage: Better than 0.1% of range<br>Current: Better than 0.15% of range   |
| Calibration interval                                   | 12 months typical   |
| Offset drift   | 100 $\mu$ V/°C typical<br>200 nA/°C typical   |
| Gain drift with temperature                            | Voltage: 20 ppm/°C<br>Current: 35 ppm/°C  |
| Module error   | Voltage: 0.15% of range<br>Current: 0.3% of range   |
| Module HART scan time                                  | Analog: 12 ms, min, floating point.<br>HART: typically 1 s per HART channel enabled. Estimate 10 s if all 8 channels have HART enabled.<br>Pass through messages, handheld communicators, secondary masters, communication errors, or configuration changes can significantly increase the update time  |
| Data format  | Integer mode (left justified, 2 s complement) IEEE 32-bit floating point  |
| Input conversion method                                | Successive approximation  |
| Output conversion method                               | R-Ladder DAC, monotonicity with no missing codes  |
| Module keying  | Electronic, software configurable   |
| Removable terminal block                               | 1756-TBNH<br>1756-TBSH  |
| RTB keying   | User-defined mechanical   |
| Slot width   | 1   |
| Wire size  | 1756-TBNH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Double wire connection: 0.33...1.3 mm <sup>2</sup> (22...16 AWG) solid or stranded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBSH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs                            | 1756-TBNH 1.36 N•m (12 lb-in)   |
| Wire category <sup>(1)</sup>                           | 2 - on signal ports   |
| Wire type  | Copper  |
| Enclosure type rating                                  | None (open-style)   |

**Technical Specifications - 1756-OF8H, 1756-OF8HK**

| Attribute                | 1756-OF8H, 1756-OF8HK |
|--------------------------|-----------------------|
| North American temp code | T4                    |
| ATEX temp code           | T4                    |
| IECEx temp code          | T4                    |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF8H, 1756-OF8HK**

| Attribute  | 1756-OF8H, 1756-OF8HK  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)   |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>1V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±2 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±2 kV line-earth (CM) on shielded ports  |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-OF8H, 1756-OF8HK**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-OF8H, 1756-OF8HK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4: Industrial Emissions  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO12ATEX1219040X</li> </ul>  |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEX UL 16.0109X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

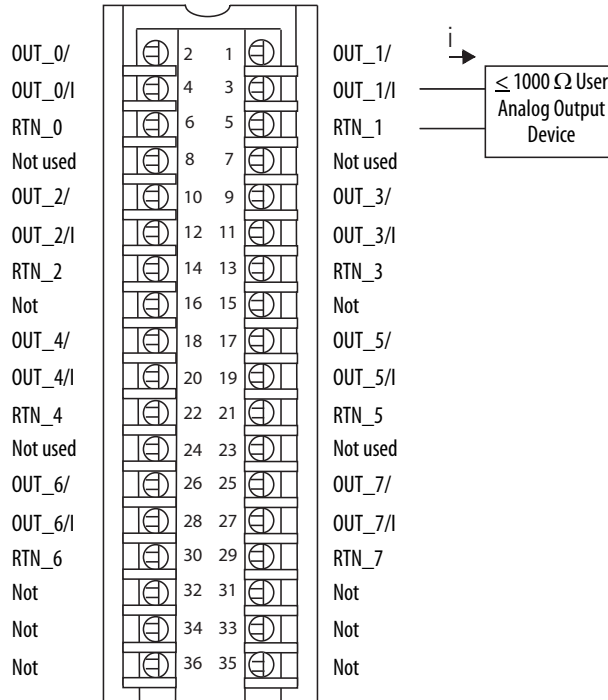
## 1756-0F8I, 1756-0F8IK

ControlLogix isolated voltage/current output analog module.

### 1756-0F8I, 1756-0F8IK Module Wiring Diagram - Current Mode

**IMPORTANT:** Remember the following:

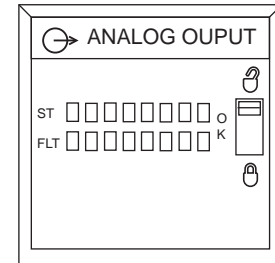
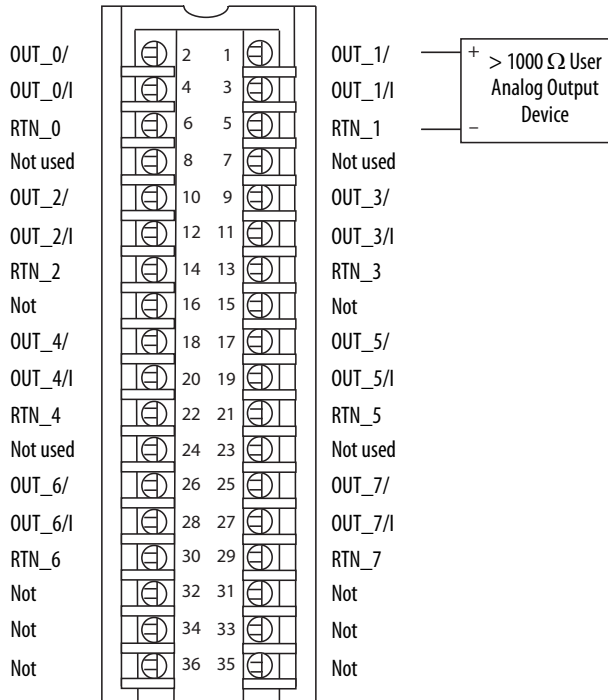
- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Place additional devices anywhere in the loop.



### 1756-0F8I, 1756-0F8IK Module Wiring Diagram - Voltage Mode

**IMPORTANT:** Remember the following:

- If separate power sources are used, do not exceed the specific isolation voltage as listed in the specifications.
- Place additional devices anywhere in the loop.





**Technical Specifications - 1756-OF8I, 1756-OF8IK**

| Attribute                                | 1756-OF8I, 1756-OF8IK  |
|--|--|
| Outputs                                  | Eight isolated channels - Any combination of voltage or current mode   |
| Output range                             | -10...10V<br>0...10V<br>0...5V<br>0...20 mA  |
| Resolution                               | 16-bit<br>±10.5V (0.32 mV/count)<br>0...10.5V (0.16 mV/count)<br>0...5.25V (0.08 mV/count)<br>0...21 mA (0.32 µA/count)  |
| Current draw @ 5.1V                      | 200 mA   |
| Current draw @ 24V                       | Voltage or Current mode with 250 Ω loads = 220 mA<br>Current mode with 500 Ω loads = 275 mA<br>Current mode with 750 Ω loads = 340 mA<br>Current mode with 1000 Ω loads = 385 mA   |
| Total backplane power                    | Voltage mode = 6.3 W<br>Current mode with 250 Ω loads = 6.3 W<br>Current mode with 500 Ω loads = 7.6 W<br>Current mode with 750 Ω loads = 9.2 W<br>Current mode with 1000 Ω loads = 10.2 W   |
| Power dissipation                        | Voltage mode: 5.4 W (18.4 BTU/hr)<br>Current mode with 250 Ω loads: 5.4 W (18.4 BTU/hr)<br>Current mode with 500 Ω loads: 5.8 W (19.8 BTU/hr)<br>Current mode with 750 Ω loads: 6.5 W (22.2 BTU/hr)<br>Current mode with 1000 Ω loads: 6.7 W (22.9 BTU/hr) |
| Thermal dissipation                      | Voltage mode = 18.4 BTU/hr<br>Current mode with 250 Ω loads = 18.4 BTU/hr<br>Current mode with 500 Ω loads = 19.8 BTU/hr<br>Current mode with 750 Ω loads = 22.2 BTU/hr<br>Current mode with 1000 Ω loads = 22.9 BTU/hr                                    |
| Output impedance                         | 46 Ω (Current output)  |
| Open circuit detection                   | Current output = Yes   |
| Short circuit detection                  | Voltage output = Yes   |
| Overvoltage protection                   | ±30V DC (voltage/current)  |
| Drive capability                         | Current output = 0...1000 Ω<br>Voltage output = >1000 Ω  |
| Settling time                            | < 2 ms to 95% of final value with Resistive loads  |
| Calibrated accuracy @ 25 °C (77 °F)      | 0.05%  |
| Module error over full temperature range | 0.1%   |
| Module scan time, min                    | 1 ms   |
| Data format                              | IEEE 32-bit floating point   |
| Module conversion method                 | R-Ladder DAC, monotonicity with no missing codes   |

**Technical Specifications - 1756-OF8I, 1756-OF8IK**

| Attribute                       | 1756-OF8I, 1756-OF8IK   |
|---------------------------------|---|
| Isolation voltage               | 250V (continuous), reinforced insulation type, outputs to backplane<br>250V (continuous), basic insulation type, output to output<br>Type tested at 2300V AC for 60 s, outputs to backplane<br>Type tested at 1500V AC for 60 s, output to output |
| Module keying                   | Electronic, software configurable   |
| Removable terminal block        | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 1   |
| Wire size                       | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 90 °C (194 °F) or greater,<br>1.2 mm (3/64 in.) insulation max  |
| Wire category <sup>(1)</sup>    | 2 - on signal ports   |
| Enclosure type                  | None (open-style)   |
| North American temperature code | T4  |
| IEC temperature code            | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF8I, 1756-OF8IK**

| Attribute  | 1756-OF8I, 1756-OF8IK  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |

**Environmental Specifications - 1756-OF8I, 1756-OF8IK**

| Attribute                                 | 1756-OF8I, 1756-OF8IK   |
|---|---|
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on shielded signal ports                       |
| Surge transient immunity<br>IEC 61000-4-5 | ±2 kV line-earth (CM) on shielded signal ports                |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz |

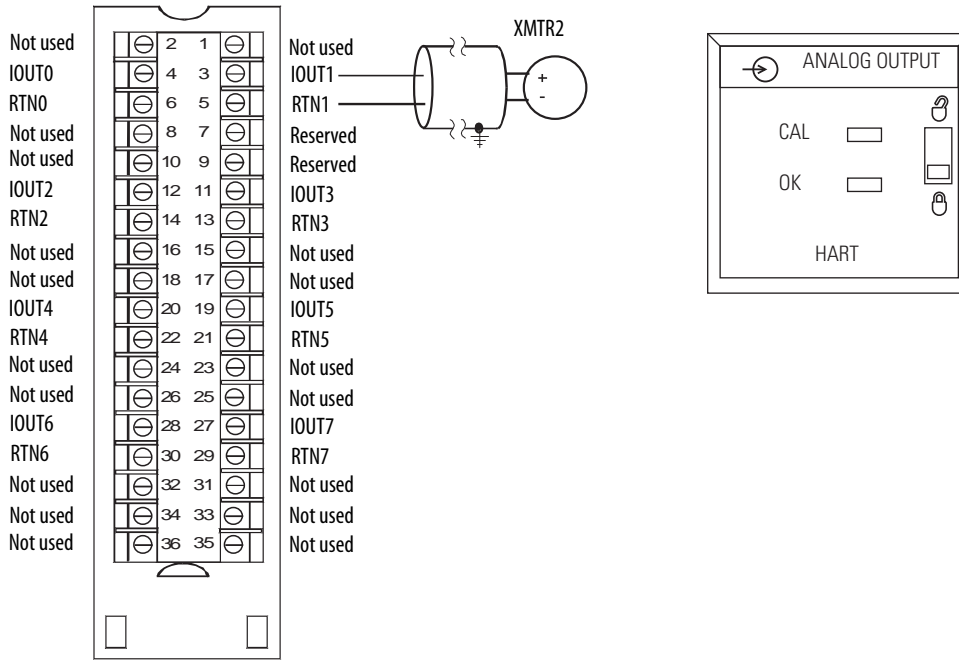
**Certifications - 1756-OF8I, 1756-OF8IK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-OF8I, 1756-OF8IK   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMK013ATEX1325026X</li> </ul>   |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEx UL 14.0008X</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0F8IH, 1756-0F8IHK

ControlLogix isolated HART current analog output module



### Signal and User Counts - 1756-0F8IH, 1756-0F8IHK

| Range     | Low Signal | High Signal |
|-----------|------------|-------------|
| 0...21 mA | 0 mA       | 21.2916 mA  |

### Technical Specifications - 1756-0F8IH, 1756-0F8IHK

| Attribute                       | 1756-0F8IH, 1756-0F8IHK   |
|---------------------------------|---|
| Outputs                         | 8 current   |
| Output range                    | 0...20 mA<br>4...20 mA  |
| Resolution                      | 15 bits across 24 mA, 732 nA per bit  |
| Voltage and current ratings     | Backplane: 220 mA @ 5.1V DC, 360 mA @ 24V DC<br>Output voltage range: 5...30V DC<br>Output current range: 0...20 mA, 4...20 mA                      |
| Current draw @ 24V              | 400 mA (estimated)  |
| Power dissipation, max          | 6.5 W nominal<br>(< 6.4 W with 50 Ω load on all channels)<br>(< 6.5 W with 250 Ω load on all channels)<br>(< 6.7 W with 750 Ω load on all channels) |
| Open circuit detection          | Current output only (output must be set >= 0.1 mA)  |
| Overvoltage protection, max     | ±24V DC   |
| Output short circuit protection | Current electronically limited to <= 21 mA with no damage   |
| Drive capability                | 50...750 Ω with short circuit survival  |
| Load reactance, max             | 10 μH   |

**Technical Specifications - 1756-OF8IH, 1756-OF8IHK**

| Attribute                           | 1756-OF8IH, 1756-OF8IHK   |
|-------------------------------------|---|
| Settling time                       | HART not enabled: < 23 ms to 95% with resistive loads<br>HART enabled: < 100 ms to 95% with resistive loads   |
| Calibrated accuracy @ 25 °C (77 °F) | 0.15% @ 4...20 mA   |
| Calibration interval                | 12 months typical   |
| Offset drift                        | ±3 ppm of full scale range/°C (72 nA/°C typical)  |
| Gain drift with temperature         | ±4 ppm of full scale range/°C   |
| Module error                        | 0.3% @ 4...20 mA  |
| Module scan time                    | Estimate 1 s if all channels are HART enabled<br>Pass through messages, handheld communications, secondary masters, communication errors, or configuration changes can significantly increase the update time.  |
| Data format                         | IEEE 32-bit floating point  |
| Output conversion method            | R-Ladder DAC  |
| Isolation voltage                   | 250V (continuous)<br>Reinforced Insulation Type, outputs to backplane.<br>Basic Insulation Type, output to output, and outputs to ground.<br>Type tested at 3535V DC for 60 s, outputs to backplane.<br>Type tested at 2120V DC for 60 s, output to output, and outputs to ground.  |
| Module keying                       | Electronic, software configurable   |
| Removable terminal block            | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                          | User-defined mechanical   |
| Slot width                          | 1   |
| Wire size                           | 1756-TBCH<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max<br><br>1756-TBS6H<br>Single wire connection: 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire, rated at 105 °C (221 °F) or greater, 1.2 mm (3/64 in.) insulation max |
| Terminal block torque specs         | 1756-TBCH 0.5 N·m (4.4 lb·in)   |
| Wiring category <sup>(1)</sup>      | 2 - on signal ports   |
| Wire type                           | Copper  |
| Enclosure type rating               | None (open-style)   |
| North American temp code            | T4A   |
| ATEX temp code                      | T4  |
| IECEx temp code                     | T4  |

(1) Use this Conductor Category information for planning conductor routing. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OF8IH, 1756-OF8IHK**

| <b>Attribute</b>   | <b>1756-OF8IH, 1756-OF8IHK</b>  |
|--|---|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < +60 °C (+32 °F < Ta < +140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)  |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)  |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing   |
| Vibration (operating)<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz   |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g  |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g  |
| Emissions  | IEC 61000-6-4   |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges  |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz square wave 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz square wave 50% Pulse 100% AM @ 1890 MHz<br>10V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±2 kV @ 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±2 kV line-earth (CM) on shielded ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz   |

**Certifications - 1756-OF8IH, 1756-OF8IHK**

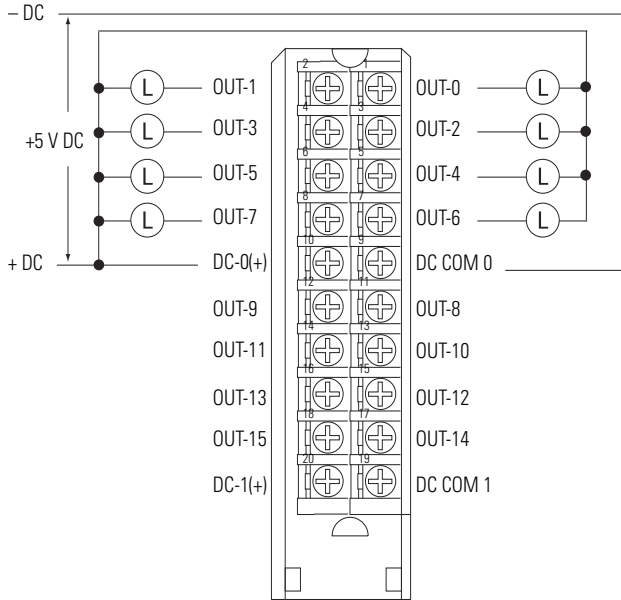
| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-OF8IH, 1756-OF8IHK</b>   |
|---|--|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A and B)</li> </ul> European Union 2014/35/EU LVD, compliant with: <ul style="list-style-type: none"> <li>• EN 61131-2; Programmable Controllers (Clause 11)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-0; General Requirements</li> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• DEMKO14ATEX1238X</li> </ul>   |
| IECEX   | IECEX System, compliant with: <ul style="list-style-type: none"> <li>• IEC 60079-0; General Requirements</li> <li>• IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• II 3 G Ex nA IIC T4 Gc</li> <li>• IECEX UL 16.0110X</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

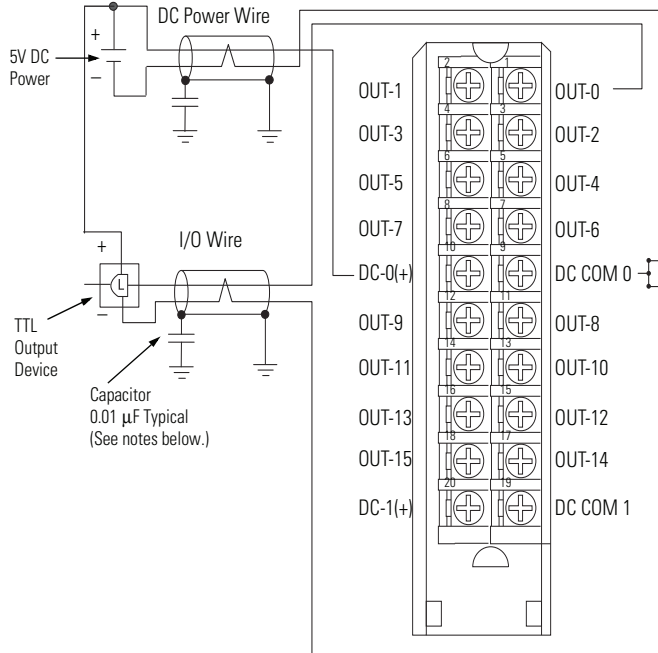
## 1756-0G16

### ControlLogix TTL output module

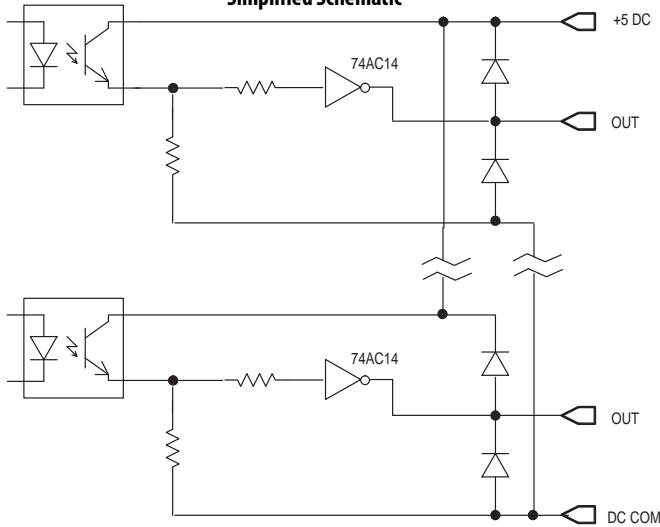
**1756-0G16 Standard Wiring**



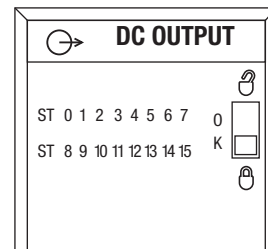
**1756-0G16 CE Compliant Wiring**



**Simplified Schematic**



**IMPORTANT:** I/O cables must be shielded type and cable length must be <10 m (32.8 ft) for maximum EMI noise immunity.



#### Low to True Format - 1756-0G16

- 0...0.4V DC = Output guaranteed to be in on-state
- 0.4...4.5V DC = Output state not guaranteed
- 4.5...5.5V DC = Output guaranteed to be in off-state



**Technical Specifications - 1756-0G16**

| <b>Attribute</b>   | <b>1756-0G16</b>  |
|--|---|
| Outputs  | 16 (8 points/group)   |
| Voltage category   | 5V DC TTL (Low=True) <sup>(1)</sup>   |
| Operating voltage range  | 4.5...5.5V DC source, 50 mV P-P ripple max  |
| Output delay time (resistive load)<br>Off to On (5V-to-0V DC transition)<br>On to Off (0V-to-5V DC transition) | 45 µs nom/450 µs max<br>145 µs nom/700 µs max   |
| Current draw @ 5.1V  | 210 mA  |
| Current draw @ 24V   | 2 mA  |
| Total backplane power  | 1.12 W  |
| Power dissipation, max   | 1.5 W @ 60 °C (140 °F)  |
| Thermal dissipation  | 5.2 BTU/hr @ 60 °C (140 °F)   |
| Off-state leakage current per point, max   | 0.1 mA per point  |
| On-state voltage drop, max   | 0.4V DC   |
| Continuous current, max  | 24 mA   |
| Load current per point, max  | 24 mA   |
| Load current per module, max   | 384 mA  |
| Load current   | 0.15 mA   |
| Scheduled outputs  | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point   | Hold last state, On or Off (Off is default)   |
| Isolation voltage  | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying  | Electronic, software configurable   |
| Fusing   | Not protected. A fused IFM is recommended to help protect outputs.  |
| Removable terminal block   | 1756-TBNH<br>1756-TBSH  |
| RTB keying   | User-defined mechanical   |
| Slot width   | 1   |
| Wire category  | 2 <sup>(2)</sup>  |
| Enclosure type   | None (open-style)   |
| North American temperature code  | T5  |
| IEC temperature code   | T5  |

(1) TTL outputs are inverted (0 to +0.4V DC = low voltage = True = On.) Use a NOT instruction in your program to convert to traditional True - High logic.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0G16**

| Attribute  | 1756-0G16  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

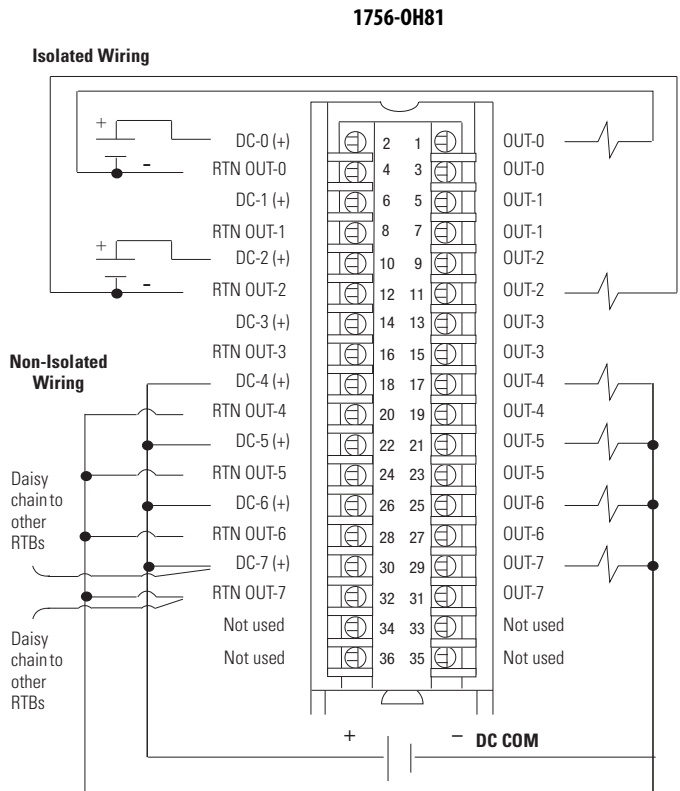
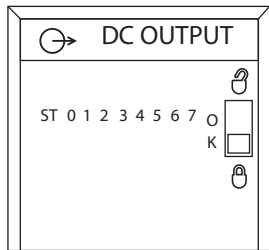
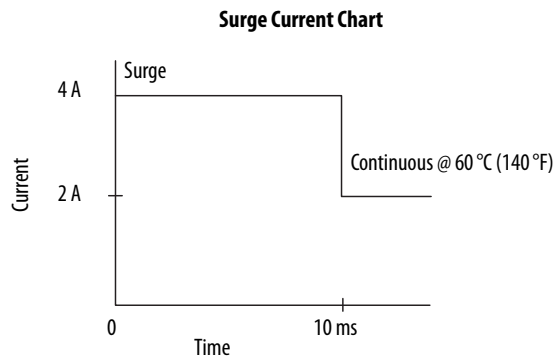
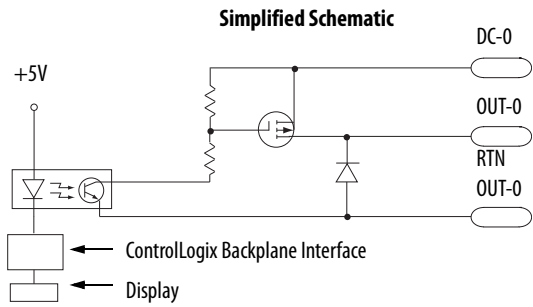
**Certifications - 1756-0G16**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0G16  |
|---|--|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.  |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.   |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions  |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T5 X Gc</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-0H8I

ControlLogix DC (90...146V) isolated output module



## Technical Specifications - 1756-0H8I

| Attribute                      | 1756-0H8I               |
|--------------------------------|-------------------------|
| Outputs                        | 8 individually isolated |
| Voltage category               | 120V DC sink/source     |
| Operating voltage range        | 90...146V DC            |
| Output delay time              |                         |
| Off to On                      | 2 ms max                |
| On to Off                      | 2 ms max                |
| Current draw @ 5.1V            | 210 mA                  |
| Current draw @ 24V             | 2 mA                    |
| Total backplane power          | 1.11 W                  |
| Power dissipation, max         | 3.3 W @ 60°C (140°F)    |
| Thermal dissipation            | 11.25 BTU/hr            |
| Off-state leakage current, max | 1 mA per point          |

**Technical Specifications - 1756-OH8I (continued)**

| Attribute                        | 1756-OH8I   |
|----------------------------------|---|
| On-state voltage drop, max       | 2V DC @ 2 A   |
| Current per point, max           | 2 A @ 60 °C (140 °F)  |
| Current per module, max          | 8 A @ 60 °C (140 °F)  |
| Surge current per point          | 4 A for 10 ms per point, repeatable every 1 s @ 60 °C (140 °F)  |
| Load current, min                | 2 mA per point  |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs.  |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-OH8I**

| Attribute  | 1756-OH8I                                      |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-OH8I (continued)**

| Attribute                                 | 1756-OH8I  |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>1V/m with 1 kHz sine-wave 80% AM from 2000 . . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . .80 MHz   |

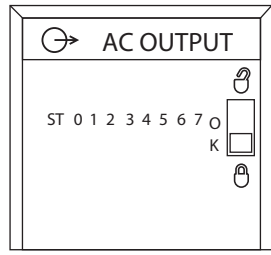
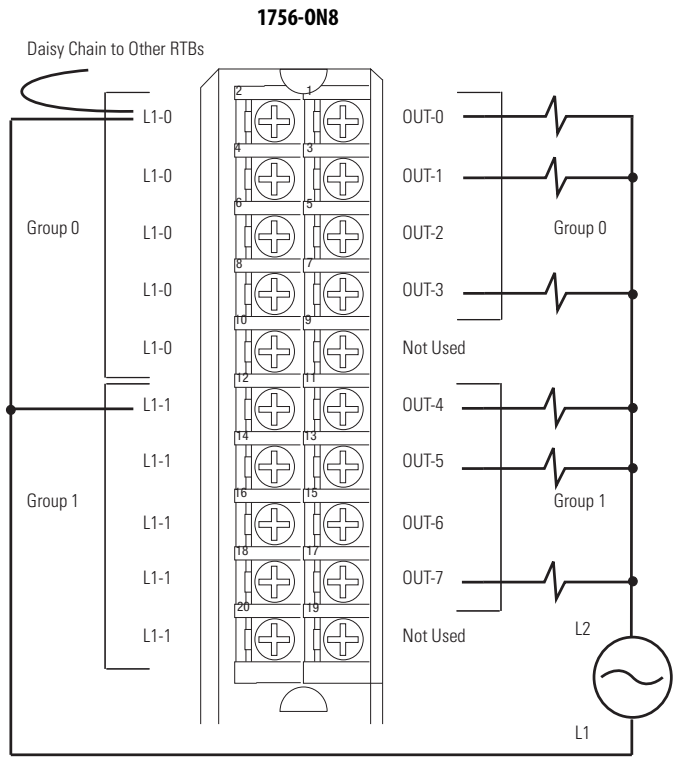
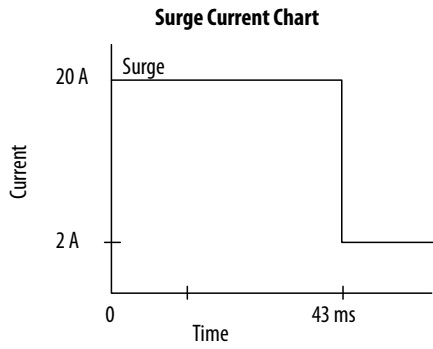
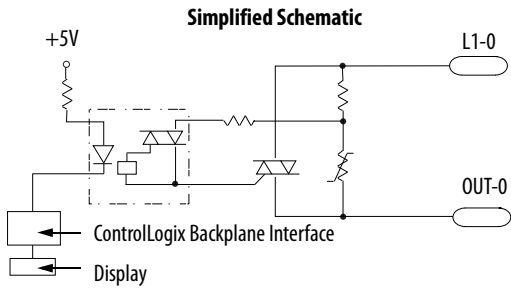
**Certifications - 1756-OH8I**

| Certification (when product is marked) <sup>(1)</sup> | 1756-OH8I   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification (when product is marked) link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-0N8

## ControlLogix 24V AC output module



**Technical Specifications - 1756-ON8**

| Attribute                              | 1756-ON8  |
|--|---|
| Outputs                                | 8 (4 points/group)  |
| Voltage category                       | 24V AC 50/60 Hz   |
| Operating voltage range <sup>(1)</sup> | 10...30V AC, current >50 mA, 47...63Hz<br>16...30V AC, current <50 mA, 47...63Hz  |
| Output delay time<br>Off to On         | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| On to Off                              | 9.3 ms @ 60 Hz<br>11 ms @ 50 Hz   |
| Voltage and current ratings            | Backplane: 5.1V DC, 200 mA<br>24V DC, 2 mA<br>Output:<br>10...30V AC, 50/60Hz, 2 A Pilot Duty (DC-13/SQ)<br>MDL: 5A/4A 30 °C/60 °C  |
| Current draw @ 5.1V                    | 200 mA  |
| Current draw @ 24V                     | 2 mA  |
| Total backplane power                  | 1.07 W  |
| Power dissipation, max                 | 5.1 W @ 60 °C (140 °F)  |
| Thermal dissipation                    | 17.39 BTU/hr  |
| Off-state leakage current, max         | 3 mA per point  |
| On-state voltage drop, max             | 1.5V peak @ 2 A<br>6V peak @ load current < 50 mA   |
| Current per point, max                 | 2 A @ 60 °C (140 °F)  |
| Current per module, max                | 5 A @ 30 °C (86 °F) linear derating<br>4 A @ 60 °C (140 °F) linear derating   |
| Surge current per point                | 20 A for 43 ms per point, repeatable every 2 s @ 60 °C (140 °F)   |
| Load current, min                      | 10 mA per point   |
| Commutating voltage                    | 4 V/μs for loads > 50 mA<br>0.2 V/μs for loads < 50 mA <sup>(3)</sup>   |
| Scheduled outputs                      | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point         | Hold last state, On or Off (Off is default)   |
| States in Program mode per point       | Hold last state, On or Off (Off is default)   |
| Isolation voltage                      | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                          | Electronic, software configurable   |
| Fusing                                 | Not protected. A fused IFM is recommended to help protect outputs.  |
| Removable terminal block               | 1756-TBNH<br>1756-TBSH  |
| RTB keying                             | User-defined mechanical   |
| Slot width                             | 1   |

**Technical Specifications - 1756-ON8 (continued)**

| Attribute                       | 1756-ON8  |
|---------------------------------|---|
| Wire size                       | <p>1756-TBNH<br/>Single wire connection: 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max.<br/>Double wire connection: 0.33...1.3 mm<sup>2</sup> (22...16 AWG) solid or stranded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm (3/64 in.) insulation max.</p> <p>1756-TBSH<br/>Single wire connection: 0.33...2.1 mm<sup>2</sup> (22...14 AWG) solid or stranded shielded copper wire rated at 105 °C (221 °F), or greater, 1.2 mm<sup>2</sup> (3/64 in.) insulation max.</p> |
| Terminal block torque specs     | 1756-TBNH 1.36 N·m (12 lb-in)   |
| Wire category <sup>(2)</sup>    | 1 - on signal ports   |
| Enclosure type                  | None (open style)   |
| North American temperature code | T4A   |
| ATEX temperature code           | T4  |
| IECEx temperature code          | T4  |

(1) UL certification for 24V 50/60 Hz nominal. Rockwell Automation specified to 10...30V, 47...63 Hz.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

(3) The commutating dv/dt of the output voltage (OUTPUT to L2) should not exceed 0.2V/μs for loads under 50 mA. The commutating dv/dt rating of the module for loads 50...500 mA (OUTPUT to L2) is 4V/μs maximum. If the commutating dv/dt rating of the TRIAC is exceeded, the TRIAC could latch on. If the commutating dv/dt rating is exceeded in the 10...50 mA range, a resistor can be added AC across the output and L2. The purpose of this resistor is to increase the total output current to 50 mA ( $I=V/R$ ). At 50 mA and above, the module has a higher commutating dv/dt rating. When adding a resistor for the output to L2, be sure it is rated for the power that it dissipates ( $P=(V**2)/R$ ). If the commutating dv/dt rating is exceeded in the 50...500 mA range, the L1 AC waveform could be at fault. Be sure that the waveform is a good sinusoid, void of any anomalies such as distorted, or flattened sections.

**Environmental Specifications - 1756-ON8**

| Attribute  | 1756-ON8                                       |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0 °C < Ta < 60 °C (32 °F < Ta < 140 °F)        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 30 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |



**Environmental Specifications - 1756-ON8 (continued)**

| Attribute                              | 1756-ON8   |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80. . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000. . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4        | ±4 kV at 5 kHz on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6 | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz. . .80 MHz  |

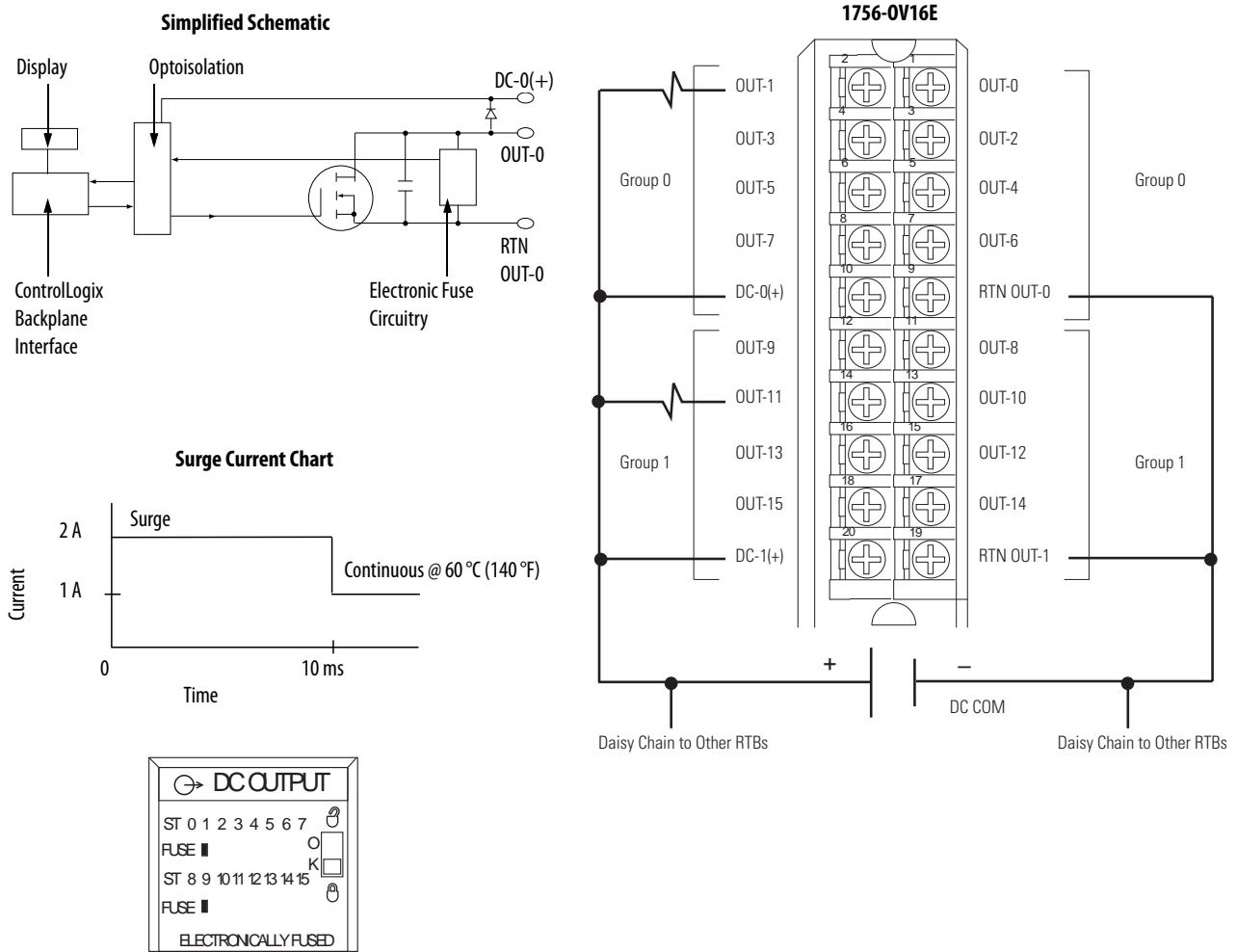
**Certifications - 1756-ON8**

| Certification (when product is marked) <sup>(1)</sup> | 1756-ON8  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>DEMKO16ATEX1792X</li> </ul>   |
| IECEx   | IECEx System, compliant with: <ul style="list-style-type: none"> <li>IEC 60079-0; General Requirements</li> <li>IEC 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>II 3 G Ex nA IIC T4 Gc</li> <li>IECExUL16.0151X</li> </ul>   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-0V16E

ControlLogix DC (10...30V) electronically fused, sinking output module



### Diagnostic Specifications - 1756-0V16E

| Attribute                 | 1756-0V16E  |
|---------------------------|---|
| Short trip                | 5 A for 20 ms @ 24V DC (output on, then short)<br>5 A for 20 ms @ 24V DC (output on into short) |
| Time stamp of diagnostics | ±1 ms   |

### Technical Specifications - 1756-0V16E

| Attribute         | 1756-0V16E                               |
|-------------------|--|
| Outputs           | 16 electronically fused (8 points/group) |
| Pilot duty        | 1 A (DC-13/SR)                           |
| Voltage category  | 12/24V DC sink                           |
| Output delay time |  |
| Off to On         | 75 µs nom/1 ms max                       |
| On to Off         | 360 µs nom/1 ms max                      |

**Technical Specifications - 1756-0V16E (continued)**

| Attribute                                | 1756-0V16E  |
|--|---|
| Operating voltage range                  | 10...30V DC   |
| Current draw @ 5.1V                      | 210 mA  |
| Current draw @ 24V                       | 2 mA  |
| Total backplane power                    | 1.12 W  |
| Power dissipation, max                   | 6.72 W @ 60 °C (140 °F)   |
| Thermal dissipation                      | 22.94 BTU/hr  |
| Off-state leakage current per point, max | 1 mA per point  |
| On-state voltage drop, max               | 700 mV DC @ 1 A   |
| Current per point, max                   | 1 A @ 60 °C (140 °F)  |
| Current per module, max                  | 8 A @ 60 °C (140 °F)  |
| Surge current per point                  | 2 A for 10 ms per Point, repeatable every 2 s @ 60 °C (140 °F)  |
| Load current, min                        | 2 mA per point  |
| Scheduled outputs                        | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point           | Hold last state, On or Off (Off is default)   |
| States in Program mode per point         | Hold last state, On or Off (Off is default)   |
| Isolation voltage                        | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                            | Electronic, software configurable   |
| Fusing                                   | Electronically fused per group  |
| Removable terminal block                 | 1756-TBNH<br>1756-TBSH  |
| RTB keying                               | User-defined mechanical   |
| Slot width                               | 1   |
| Wire category                            | 1 <sup>(1)</sup>  |
| Enclosure type                           | None (open-style)   |
| North American temperature code          | T4  |
| IEC temperature code                     | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0V16E**

| <b>Attribute</b>   | <b>1756-0V16E</b>  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

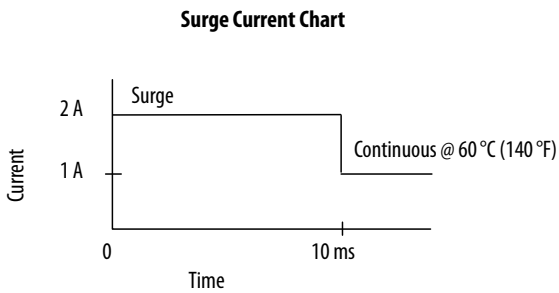
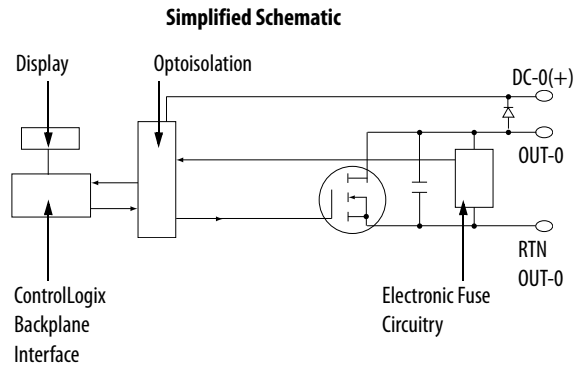
**Certifications - 1756-0V16E**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-0V16E</b>   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

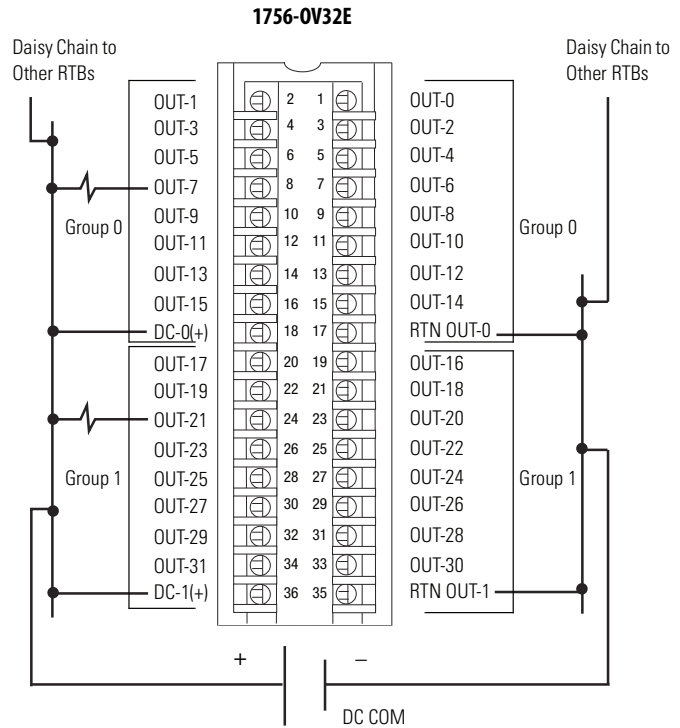
## 1756-0V32E

ControlLogix DC (10...30V) electronically fused, sinking output module



| DC OUTPUT |   |   |   |   |   |   |   |   |   |  |
|-----------|---|---|---|---|---|---|---|---|---|--|
| ST        | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | F |  |
| ST        | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | O |  |
| ST        | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | K |  |
| ST        | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | F |  |
| ST        | 2 | 2 | 2 | 2 | 2 | 3 | 3 |   |   |  |
| ST        | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |   |  |

**ELECTRONIC FUSING**



### Diagnostic Specifications - 1756-0V32E

| Attribute                 | 1756-0V32E  |
|---------------------------|---|
| Short trip                | 5 A for 20 ms @ 24V DC (output on then short)<br>5 A for 20 ms @ 24V DC (output into short) |
| Time stamp of diagnostics | ±1 ms   |

**Technical Specifications - 1756-OV32E**

| Attribute                                   | 1756-OV32E  |
|---|---|
| Outputs                                     | 32 electronically fused (16 points/group)   |
| Voltage category                            | 12/24V DC sink  |
| Operating voltage range                     | 10...30V DC   |
| Output delay time (24V to 0V DC transition) |   |
| Off to On                                   | 75 $\mu$ s nom/300 $\mu$ s max  |
| On to Off                                   | 230 $\mu$ s nom/1 ms max  |
| Current draw @ 5.1V                         | 390 mA  |
| Current draw @ 24V                          | 2 mA  |
| Total backplane power                       | 2.04 W  |
| Power dissipation, max                      | 5.88 W @ 60 °C (140 °F)   |
| Thermal dissipation                         | 20.1 BTU/hr   |
| Off-state leakage current per point, max    | 1 mA per point  |
| On-state voltage drop, max                  | 350 mV DC @ 0.5 A   |
| Current per point, max                      | 0.5 A @ 50 °C (122 °F) linear derating<br>0.35 A @ 60 °C (140 °F)   |
| Current per group, max                      | 8 A @ 50 °C (122 °F) linear derating<br>5 A @ 60 °C (140 °F)  |
| Current per module, max                     | 16 A @ 50 °C (122 °F) linear derating<br>10 A @ 60 °C (140 °F)  |
| Surge current per point                     | 2 A for 10 ms per point, repeatable every 2 s @ 60 °C (140 °F)  |
| Load current, min                           | 2 mA per output   |
| Scheduled outputs                           | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point              | Hold last state, On or Off (Off is default)   |
| States in Program mode per point            | Hold last state, On or Off (Off is default)   |
| Isolation voltage                           | 250V (continuous), basic insulation type, outputs-to-backplane, and output group-to-group<br>No isolation between individual group outputs<br>Routine tested @ 1350V AC for 2 s |
| Module keying                               | Electronic, software configurable   |
| Fusing                                      | Electronically fused per group  |
| Removable terminal block                    | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                                  | User-defined mechanical   |
| Slot width                                  | 1   |
| Wire category                               | 1 <sup>(1)</sup>  |
| Enclosure type                              | None (open-style)   |
| North American temperature code             | T4  |
| IEC temperature code                        | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0V32E**

| <b>Attribute</b>   | <b>1756-0V32E</b>  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |



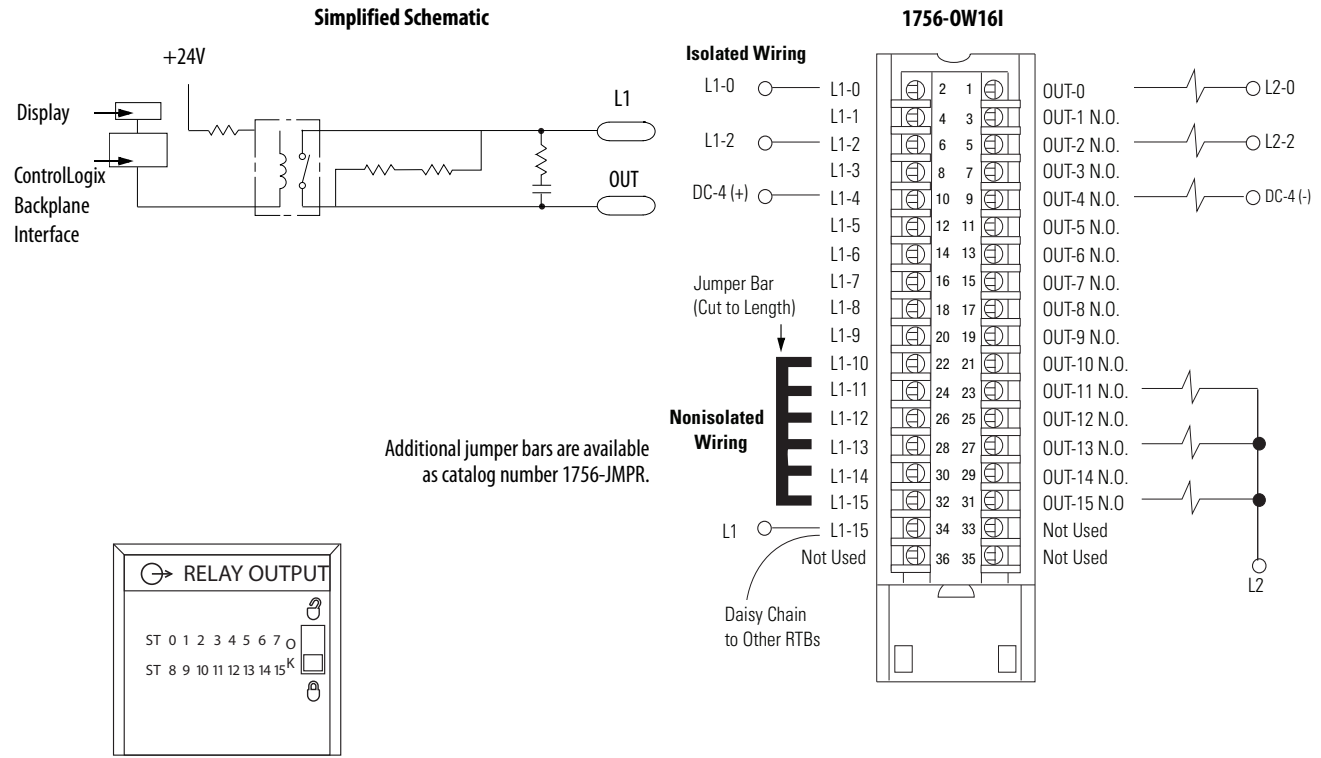
**Certifications - 1756-0V32E**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-0V32E</b>   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IICT4 X Gc</li> </ul>  |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-0W16I

ControlLogix AC (10...240V) DC (5...125V) isolated contact module



## Technical Specifications - 1756-0W16I

| Attribute                                | 1756-0W16I  |
|--|---|
| Outputs                                  | 16 N.O. individually isolated   |
| Pilot duty                               | C300/R150   |
| Operating voltage range                  | 5...125V DC<br>10...240V AC   |
| Output voltage range (load dependent)    | 1 A @ 5...30V DC<br>0.5 A @ 48V DC<br>0.22 A @ 125V DC<br>1.5 A @ 120V AC 50/60 Hz<br>0.75 A @ 240V AC 50/60 Hz |
| Output delay time                        |   |
| Off to On                                | 10 ms max   |
| On to Off                                | 10 ms max   |
| Current draw @ 5.1V                      | 150 mA  |
| Current draw @ 24V                       | 150 mA  |
| Total backplane power                    | 4.4 W   |
| Power dissipation, max                   | 4.5 W @ 60 °C (140 °F)  |
| Thermal dissipation                      | 15.35 BTU/hr  |
| Off-state leakage current per point, max | 1.5 mA per point  |
| Minimum load current                     | 10 mA per point   |
| Initial contact resistance, max          | 100 mΩ @ 6V 1 A   |

**Technical Specifications - 1756-0W16I (continued)**

| Attribute                        | 1756-0W16I   |
|----------------------------------|--|
| Switching frequency, max         | 1 operation/3 s (0.3 Hz at rated load)   |
| Bounce time, mean                | 1.2 ms   |
| Expected contact life            | 300 kHz resistive<br>100 kHz inductive   |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time  |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)  |
| States in Program mode per point | Hold last state, On or Off (Off is default)  |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s  |
| Module keying                    | Electronic, software configurable  |
| Fusing                           | Not protected. A fused IFM can be used to help protect outputs. See publication <a href="#">1492-TD008</a> . However, the ControlLogix system has been agency certified using only the ControlLogix RTBs, that is, 1756-TBCH, 1756-TBNH, 1756-TBSH, and 1756-TBS6H. Any application that requires agency certification of the ControlLogix system using other wiring termination methods can require application-specific approval by the certifying agency. |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H  |
| RTB keying                       | User-defined mechanical  |
| Slot width                       | 1  |
| Wire category                    | 1 <sup>(1)</sup>   |
| Enclosure type                   | None (open-style)  |
| North American temperature code  | T4A  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0W16I**

| Attribute  | 1756-0W16I                                     |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-0W161 (continued)**

| Attribute                                    | 1756-0W161   |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . 80 MHz  |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

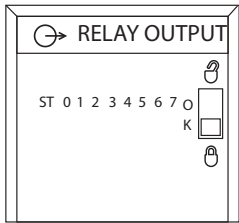
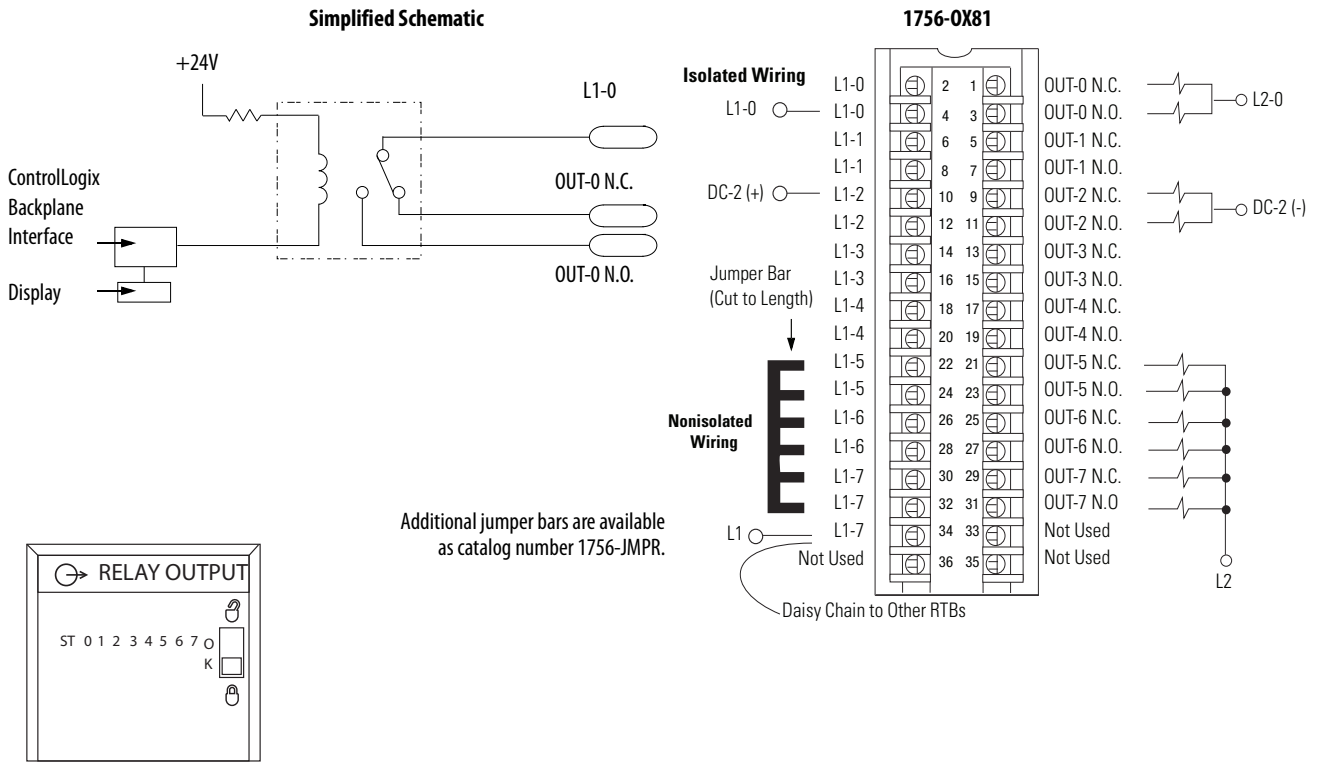
**Certifications - 1756-0W161**

| Certification (when product is marked) <sup>(1)</sup> | 1756-0W161  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-0X8I

ControlLogix AC (10...240V) DC (5...125V) isolated contact module



## Technical Specifications - 1756-0X8I

| Attribute                                | 1756-0X8I  |
|--|--|
| Outputs                                  | 8 N.O.<br>8 N.C. individually isolated (two points per group)  |
| Pilot duty                               | C300/R150  |
| Operating voltage range                  | 5...125V DC<br>10...240V AC  |
| Contact current rating                   | 1 A @ 5...30V DC<br>0.5 A @ 48V DC<br>0.22 A @ 125V DC<br>1.5 A @ 120V AC 50/60 Hz<br>0.75 A @ 240VAC 50/60 Hz |
| Output delay time                        |  |
| Off to On                                | 13 ms max  |
| On to Off                                | 13 ms max  |
| Current draw @ 5.1V                      | 100 mA   |
| Current draw @ 24V                       | 100 mA   |
| Total backplane power                    | 2.9 W  |
| Power dissipation, max                   | 3.1 W @ 60 °C (140 °F)   |
| Thermal dissipation                      | 10.57 BTU/hr   |
| Off-state leakage current per point, max | 0 mA   |
| Minimum load current                     | 10 mA per point  |

**Technical Specifications - 1756-0X8I (continued)**

| Attribute                        | 1756-0X8I   |
|----------------------------------|---|
| Initial contact resistance, max  | 100 m $\Omega$ @ 6V 1 A   |
| Switching frequency, max         | 1 operation/3 s (0.3 Hz at rated load)  |
| Bounce time, mean                | 1.2 ms  |
| Expected contact life            | 300 kHz resistive<br>100 kHz inductive  |
| Scheduled outputs                | Synchronization within 16.7 s max, reference to the Coordinated System Time   |
| States in Fault mode per point   | Hold last state, On or Off (Off is default)   |
| States in Program mode per point | Hold last state, On or Off (Off is default)   |
| Isolation voltage                | 250V (continuous), basic insulation type, outputs-to-backplane, and output-to-output<br>Routine tested @ 1350V AC for 2 s |
| Module keying                    | Electronic, software configurable   |
| Fusing                           | Not protected. A fused IFM is recommended to help protect outputs.  |
| Removable terminal block         | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-0X8I**

| Attribute  | 1756-0X8I                                      |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-0X8I (continued)**

| Attribute                                    | 1756-0X8I  |
|--|--|
| Radiated RF immunity<br>IEC 61000-4-3        | 10V/m with 1 kHz sine-wave 80% AM from 80 . . .2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . .2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4              | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5    | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6       | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . .80 MHz   |
| Oscillatory surge withstand<br>IEEE C37.90.1 | 3 kV   |

**Certifications - 1756-0X8I**

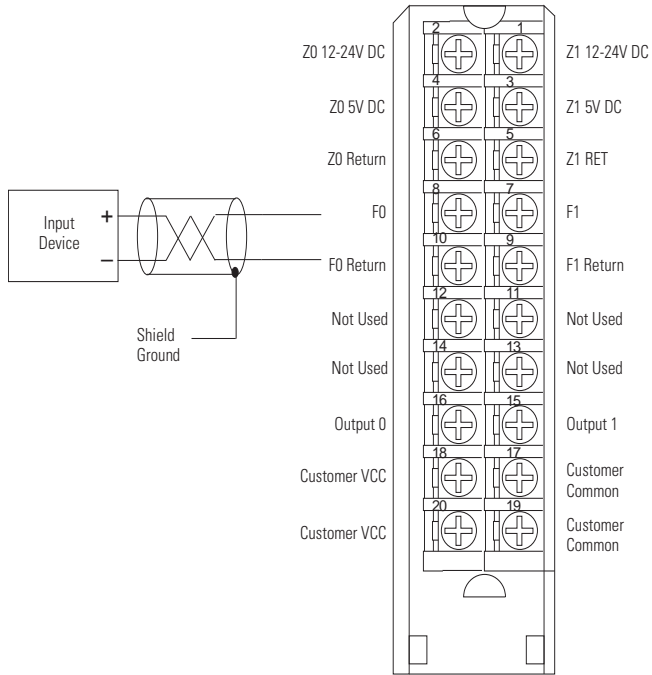
| Certification (when product is marked) <sup>(1)</sup> | 1756-0X8I   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| FM  | FM Approved Equipment for use in Class I Division 2 Group A,B,C,D Hazardous Locations   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

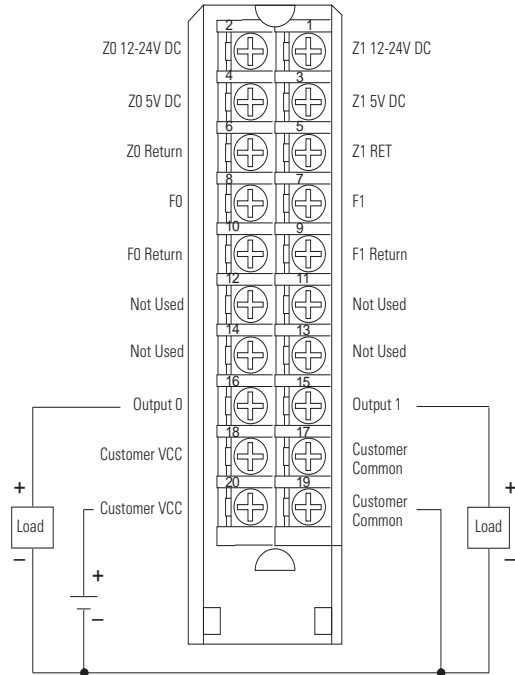
## 1756-CFM

ControlLogix configurable flowmeter module

**1756-CFM Standard Magnetic Pickup**



**1756-CFM Standard Output**

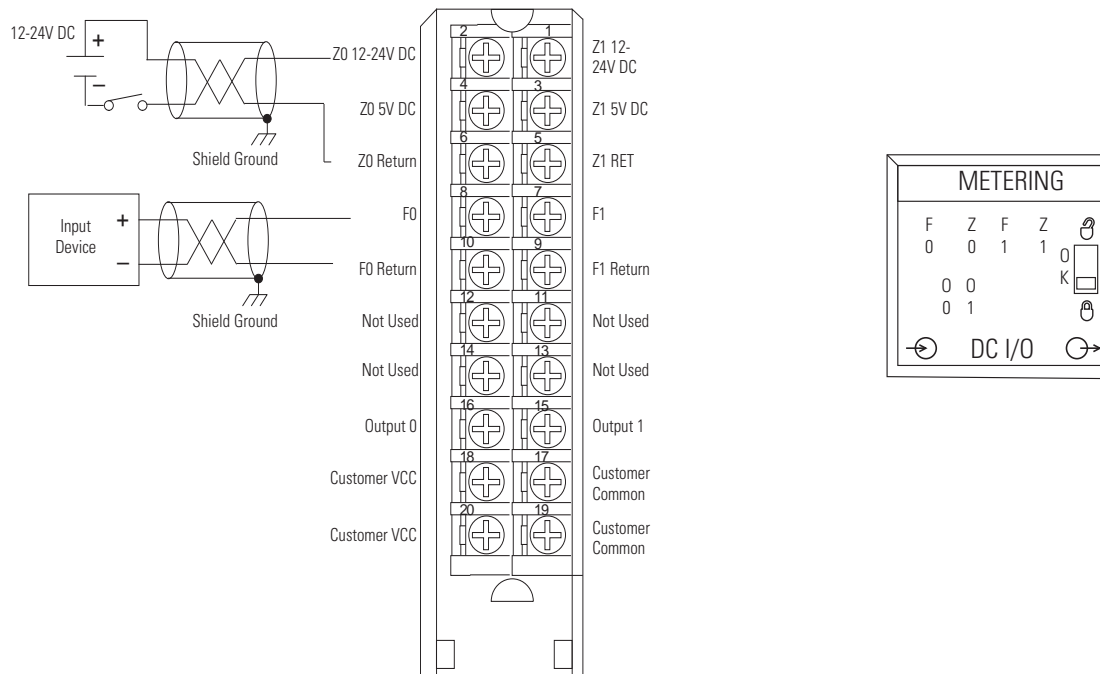


This wiring diagram can be used in applications with 50 mV (magnetic pickup), 1.3V (TTL), or 4V (preamp level) thresholds. You must use the Studio 5000 Logix Designer® application to choose the appropriate threshold level for your specific application.



The 1756-CFM module provides Totalizer mode for metering applications, or high-speed frequency measurements for speed or rate control applications, on two channels connected to flowmeters.

### 1756-CFM Standard Prover/Store Count



- Detectors 1 and 2 must be wired in parallel.
- Customer VCC can be used to power detectors. In this case, though, the maximum current on the wiring arm must be less than 4 A.
- This wiring example shows a 12-24V DC standard prover that is connected to the module. If you use a 5V DC standard prover, make sure that the positive wire is connected to the 5V terminal (such as Z0 5V DC).

### Technical Specifications - 1756-CFM

| Attribute                | 1756-CFM  |
|--------------------------|---|
| Inputs                   | 4 (2 per channel)   |
| Inputs per channel       | Two flowmeters (F) inputs used for all modes<br>Two gate inputs used in Totalizer mode for prover/store count   |
| Outputs                  | 2 current sourcing  |
| Current draw at 5.1V     | 300 mA  |
| Current draw at 24V      | 16 mA   |
| Total backplane power    | 1.7 W   |
| Power dissipation, max   | 6 W @ 60 °C (140 °F)  |
| Thermal dissipation      | 20.4 BTU/hr   |
| Isolation voltage        | 250V (continuous), reinforced insulation type, I/O-to-backplane<br>250V (continuous), basic insulation type, I/O group-to-group<br>Routine tested at 1900V DC for 2 s |
| Module keying            | Electronic, software configurable   |
| Removable terminal block | 1756-TBNH<br>1756-TBSH  |
| RTB keying               | User-defined mechanical   |

**Technical Specifications - 1756-CFM (continued)**

| Attribute                       | 1756-CFM   |
|---------------------------------|--|
| Slot width                      | 1  |
| Wire category                   | 2 on signal ports<br>1 on power ports <sup>(1)</sup> |
| Enclosure type                  | None (open-style)                                    |
| North American temperature code | T4   |
| Totalizer fill and prover       | Yes  |
| High resolution, max            | 100 kHz  |
| Frequency                       | 0.0005 Hz resolution                                 |
| Reverse polarity protection     | Outputs only   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Input Specifications - 1756-CFM**

| Attributes                                    | 1756-CFM   |
|---|--|
| Inputs  | 4 (2 per channel)  |
| Inputs per channel                            | Two flowmeters (F) inputs used for all modes<br>Two gate inputs used in Totalizer mode for prover/store count  |
| Count range, max                              | 2, 147, 483, 647   |
| Input frequency, max                          | 100 kHz @ flowmeter inputs (overrange occurs at 100 kHz)   |
| Flowmeter input voltage                       | ±30V, selectable input thresholds of 50 mV, 1.3V, and 4V:<br>• ±30V peak unterminated open circuit voltage, magnetic pickup<br>• TTL compatible, input voltage >1.3V DC is Logic 1 and -0.7...1.3V DC is Logic 0<br>• 12...24V DC powered preamp output, 4V DC threshold |
| Flowmeter input impedance                     | 5 kΩ ±30% resistive  |
| Filtering (inputs F0 & F1)                    | Firmware selectable: High-speed 100 kHz or low-pass filter for frequencies < 70 Hz   |
| Gate input voltage range                      | 5V operation: 4.5...5.5V DC<br>12/24V operation: 10...26.4V DC   |
| Gate input on-state current, min              | 4 mA   |
| Gate input on-state current, nom              | 15 mA  |
| Mechanical filter debouncing (Z0 & Z1 Inputs) | Software selectable  |
| Input sampling period                         | User selectable  |

**Output Specifications - 1756-CFM**

| Attribute                                | 1756-CFM   |
|--|--|
| Outputs                                  | 2 current sourcing   |
| Output voltage source                    | Customer supplied  |
| Output voltage range, nom <sup>(1)</sup> | 5V operation: 4.5...5.5V DC for 3...20 mA load per point<br>12/24V operation: 10...31.2V DC for 40 mA...1 A load per point |
| Output type                              | IEC 1 A 24V DC   |
| Output Current per point <sup>(1)</sup>  | 1 A @ 10...31.2V DC<br>20 mA @ 4.5...5.5V DC <sup>(2)</sup>  |
| Surge current                            | 2 A for 50 ms, repeatable every 2 s  |
| Off-state leakage current, max           | < 300 μA @ 31.2V DC  |
| On-state voltage drop, max               | 0.6 Ω x current  |

**Output Specifications - 1756-CFM (continued)**

| Attribute                          | 1756-CFM  |
|------------------------------------|---|
| Output control                     | Any number of outputs is assignable to any of two flowmeter channels<br>Each output can have 2 "turn-on" and "turn-off" preset values |
| Output switching time              | < 50 $\mu$ s turn on, <300 $\mu$ s turn off<br>Outputs triggered by Total; all other "turn-on" and "turn-off" times <1 ms             |
| Overload current                   | Electronic (< 4 A)  |
| Output short circuit protection    | Electronic (No indication of fault. Remove overload and toggle output on/off to restore.)   |
| Output reverse polarity protection | Yes (If wired incorrectly, module outputs can be permanently disabled.)   |

(1) UL rating for 24V DC, 24VA.

(2) All outputs can be on simultaneously without derating.

**Environmental Specifications - 1756-CFM**

| Attribute  | 1756-CFM   |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1k Hz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | $\pm$ 4 kV at 5 kHz on unshielded output and power ports<br>$\pm$ 4 kV at 5 kHz on shielded input ports  |
| Surge transient immunity<br>IEC 61000-4-5  | $\pm$ 1 kV line-line (DM) and $\pm$ 2 kV line-earth (CM) on unshielded output and power ports<br>$\pm$ 2 kV line-earth (CM) on shielded input ports  |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on shielded signal ports   |

**Certifications - 1756-CFM**

| <b>Certification (when product is marked)<sup>(1)</sup></b> | <b>1756-CFM</b>   |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-CMS1B1, 1756-CMS1C1

ControlLogix Compute modules are chassis-based modules that let you communicate directly with a ControlLogix 5570 or ControlLogix 5580 controller via the system backplane and over a network. The Compute modules offer an embedded Microsoft® Windows 10 or Linux operating system within which you can create custom applications while utilizing an application programming interface (API).

### Technical Specifications - 1756-CMS1B1, 1756-CMS1C1

| Attribute                        | 1756-CMS1B1  | 1756-CMS1C1               |
|----------------------------------|--|---------------------------|
| Solid state drive (SSD) capacity | 32 GB  |                           |
| Embedded operating system        | Windows 10 IoT Enterprise LTSB 64 bit  | Linux 32 bit (Debian 8.9) |
| Onboard memory                   | 4 GB   |                           |
| Voltage and current ratings      | 5.1V DC @ 1.40 A   |                           |
| Power consumption                | 7 W  |                           |
| Power dissipation, max           | 7 W  |                           |
| Thermal dissipation              | 23.88 BTU/hr   |                           |
| Replacement battery              | Panasonic Type BR1225A coin type lithium battery - Commercially available                          |                           |
| Weight, approx                   | 0.394 kg (0.868 lb)  |                           |
| Slot width                       | 1  |                           |
| Module location                  | ControlLogix chassis, any slot   |                           |
| Chassis                          | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17 Series B, Series C                                  |                           |
| Wire size                        | Ethernet connections<br>Ethernet cabling and installation according to IEC 61918 and IEC 61784-5-2 |                           |
| Wiring category <sup>(1)</sup>   | 3 - on USB port<br>2 - on Ethernet ports   |                           |
| North American temperature code  | T5   |                           |
| Enclosure type rating            | None (open-style)  |                           |

(1) Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

### Environmental Specifications - 1756-CMS1B1, 1756-CMS1C1

| Attribute  | 1756-CMS1B1, 1756-CMS1C1   |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | Series C Chassis: -25 °C < Ta < +60 °C (-13 °F < Ta < +140 °F)<br>Series B Chassis: -25 °C < Ta < +50 °C (-13 °F < Ta < +122 °F) |
| Temperature, surrounding air, max  | Series C Chassis: 60 °C (140 °F)<br>Series B Chassis: 50 °C (122 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test Db, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |

**Environmental Specifications - 1756-CMS1B1, 1756-CMS1C1 (continued)**

| Attribute   | 1756-CMS1B1, 1756-CMS1C1   |
|---|--|
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 30 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 4 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±2 kV at 5 kHz on Ethernet ports   |
| Surge transient immunity<br>IEC 61000-4-5                         | ±2 kV line-earth (CM) on Ethernet ports  |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

**Certifications - 1756-CMS1B1, 1756-CMS1C1**

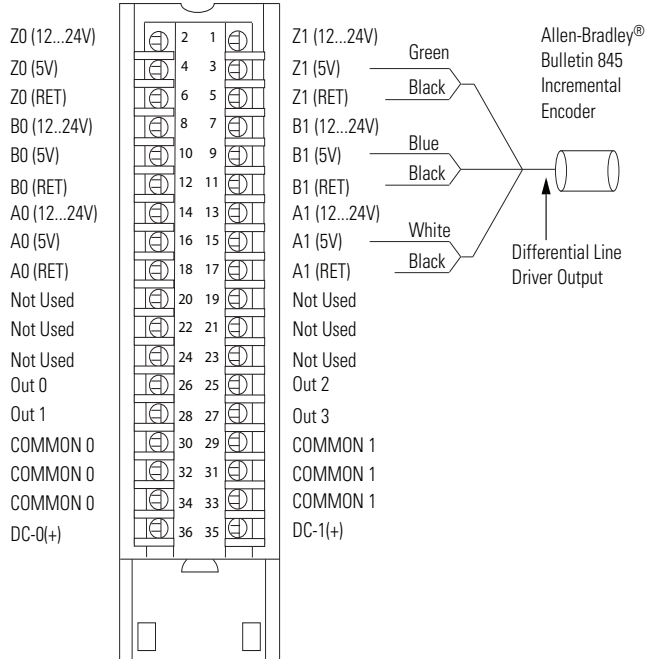
| Certification (when product is marked) <sup>(1)</sup> | 1756-CMS1B1, 1756-CMS1C1   |
|---|--|
| c-UL-us   | UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2011/65/EU RoHS, compliant with: <ul style="list-style-type: none"> <li>• EN 50581; Technical documentation</li> </ul> |
| RCM   | Australian Radiocommunications Act, compliant with: <ul style="list-style-type: none"> <li>• EN 61000-6-4; Industrial Emissions</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation  |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

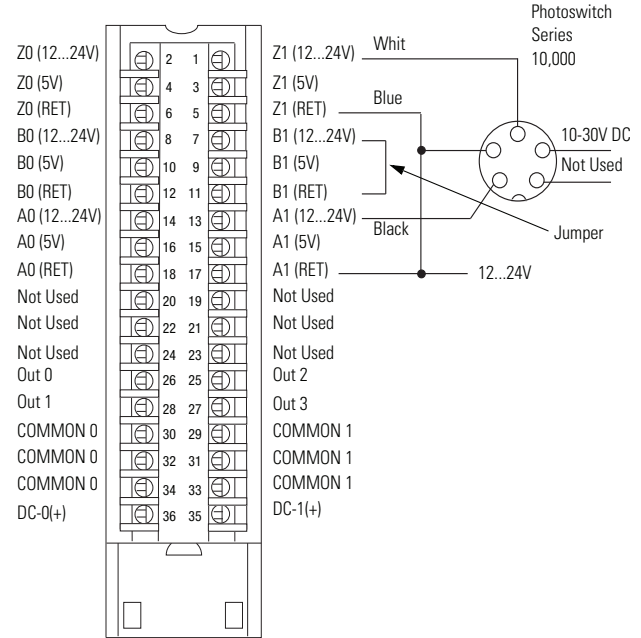
# 1756-HSC

## ControlLogix high-speed counter module

### 1756-HSC to Allen-Bradley® 845 Incremental Encoder

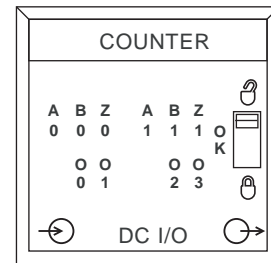
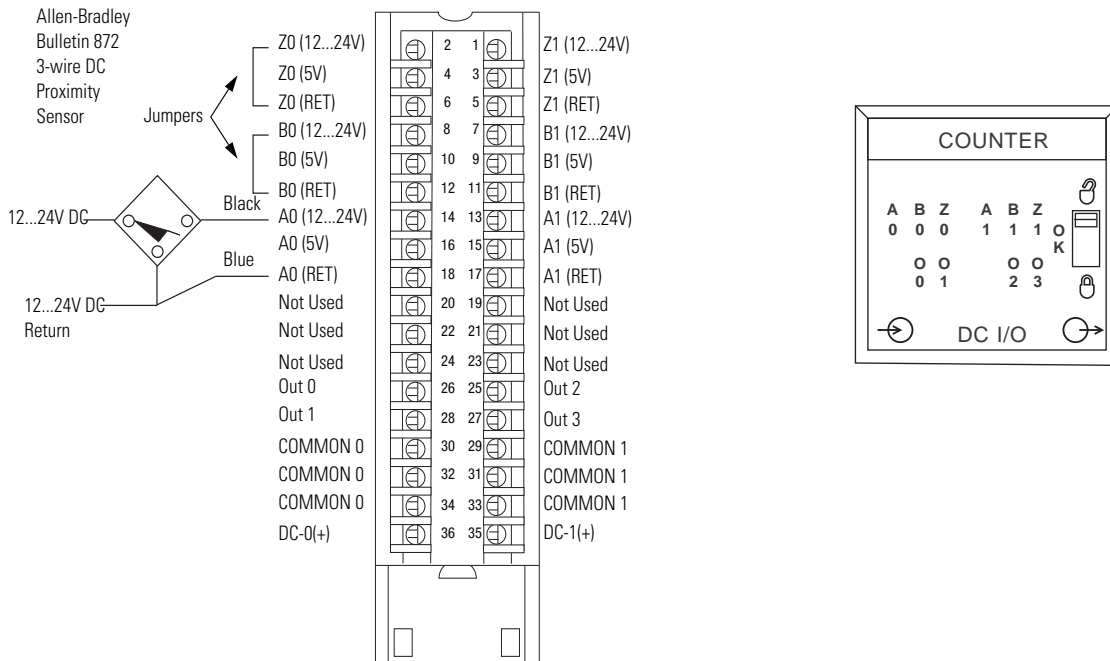


### 1756-HSC to Allen-Bradley Series 10,000 Photoelectric Sensor



The 1756-HSC module provides four high-speed, output-switching, on-off windows. The module uses pulses for counting and frequency.

### 1756-HSC to Allen-Bradley 872 3-wire DC Proximity Sensor



**Technical Specifications - 1756-HSC**

| Attribute                              | 1756-HSC  |
|--|---|
| Number of counters                     | 2   |
| Inputs per counter                     | 3 (A, B, Z for gate/reset)  |
| Outputs                                | 4 (2 points/group)  |
| Operating voltage range <sup>(1)</sup> | 5V operation: 4.5...5.5V DC<br>12/24V operation: 10...26.4V DC  |
| Current draw at 5.1V                   | 300 mA  |
| Current draw at 24V                    | 3 mA  |
| Total backplane power                  | 1.6 W   |
| Power dissipation, max                 | 5.6 W @ 60 °C (140 °F)  |
| Thermal dissipation                    | 19.1 BTU/hr   |
| Isolation voltage                      | 125V (continuous), basic insulation type, input group-to-backplane<br>30V (continuous), basic insulation type, input group-to-input group<br>Routine tested at 1900V DC for 2 s |
| Module keying                          | Electronic, software configurable   |
| Removable terminal block               | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                             | User-defined mechanical   |
| Slot width                             | 1   |
| Wire category                          | 2 on signal ports<br>1 on power ports <sup>(2)</sup>  |
| Enclosure type                         | None (open-style)   |
| North American temperature code        | T4  |
| IEC temperature code                   | T4  |

(1) UL rating is 24V DC.

(2) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Input Specifications - 1756-HSC**

| Attribute               | 1756-HSC  |
|-------------------------|---|
| Number of counters      | 2   |
| Inputs per counter      | 3 (A, B, Z for gate/reset)  |
| Input frequency, max    | 1 MHz in counter modes (A input)<br>500 kHz in rate measurement mode (A input)<br>250 kHz in encoder mode (A/B inputs, X1 or X4)<br>70 Hz with filter enabled |
| Count range             | 0...16,777,214  |
| Counting frequency, max | 1000 kHz  |
| Input current, min      | 4 mA  |
| Input current, nom      | 15 mA   |



**Output Specifications - 1756-HSC**

| Attribute                                       | 1756-HSC  |
|---|---|
| Outputs   | 4 (2 per common)  |
| Output delay time<br>Off to On<br>On to Off     | 20 $\mu$ s nom/50 $\mu$ s max<br>60 $\mu$ s nom/300 $\mu$ s max   |
| Off-state leakage current per point, max        | 300 $\mu$ A   |
| On-state voltage drop, max                      | 0.55V   |
| Output current rating, per point <sup>(1)</sup> | 20 mA @ 4.5...5.5V DC<br>1.0 A @ 10...31.2V DC  |
| Current limit                                   | < 4 A   |
| Surge current per point                         | 2 A for 10 ms every 1 s @ 60 °C (140 °F)  |
| Load current per point, min                     | 5V operation: 3 mA<br>12/24V operation: 40 mA   |
| Output control                                  | Up to two outputs are assigned to each counter channel<br>Each output can have two 'turn-on' and 'turn-off' preset values |
| Short circuit protection                        | Electronic (Remove overload and toggle On/Off to restore.)  |
| Reverse polarity protection                     | Yes (If wired incorrectly, module outputs can be permanently disabled.)   |
| Counter, max                                    | 1 MHz   |
| Rate measurement, max                           | 500 kHz   |
| Encoder, max                                    | 250 kHz   |
| Debounce filter, max                            | 70 Hz   |

(1) UL rating is 24V DC, 24VA.

**Environmental Specifications - 1756-HSC**

| Attribute  | 1756-HSC                                       |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)                        |
| Temperature, surrounding air, max  | 60 °C (140 °F)                                 |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)                   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing                          |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz                              |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4                                  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges |

**Environmental Specifications - 1756-HSC (continued)**

| Attribute                                 | 1756-HSC   |
|---|--|
| Radiated RF immunity<br>IEC 61000-4-3     | 10V/m with 1 kHz sine-wave 80% AM from 80 . . . 2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000 . . . 2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4           | ±4 kV at 5 kHz on power ports<br>±4 kV at 5 kHz on signal ports  |
| Surge transient immunity<br>IEC 61000-4-5 | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on power ports<br>±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports<br>±2 kV line-earth (CM) on shielded ports   |
| Conducted RF immunity<br>IEC 61000-4-6    | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz . . . 80 MHz on shielded signal ports   |

**Certifications - 1756-HSC**

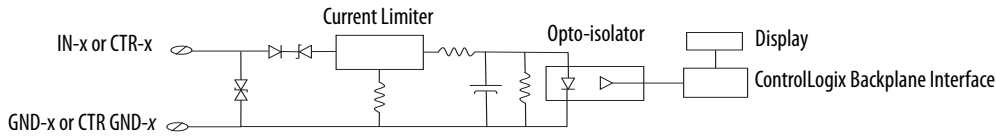
| Certification (when product is marked) <sup>(1)</sup> | 1756-HSC  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with:<br>Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

# 1756-LSC8XIB8I, 1756-LSC8XIB8IK

ControlLogix 10...30V low-speed counter module

### Simplified Schematic



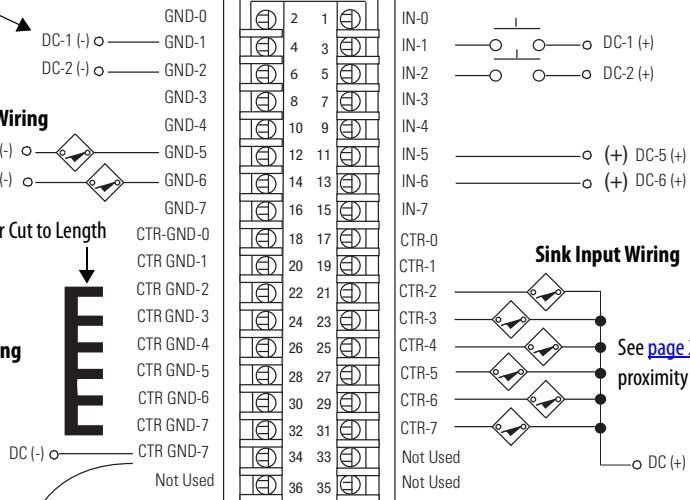
### Isolated Wiring

### Source Input Wiring

### Jumper Bar Cut to Length

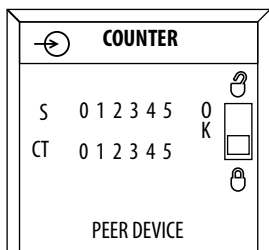
### Nonisolated Wiring

### 1756-LSC8XIB8I, 1756-LSC8XIB8IK

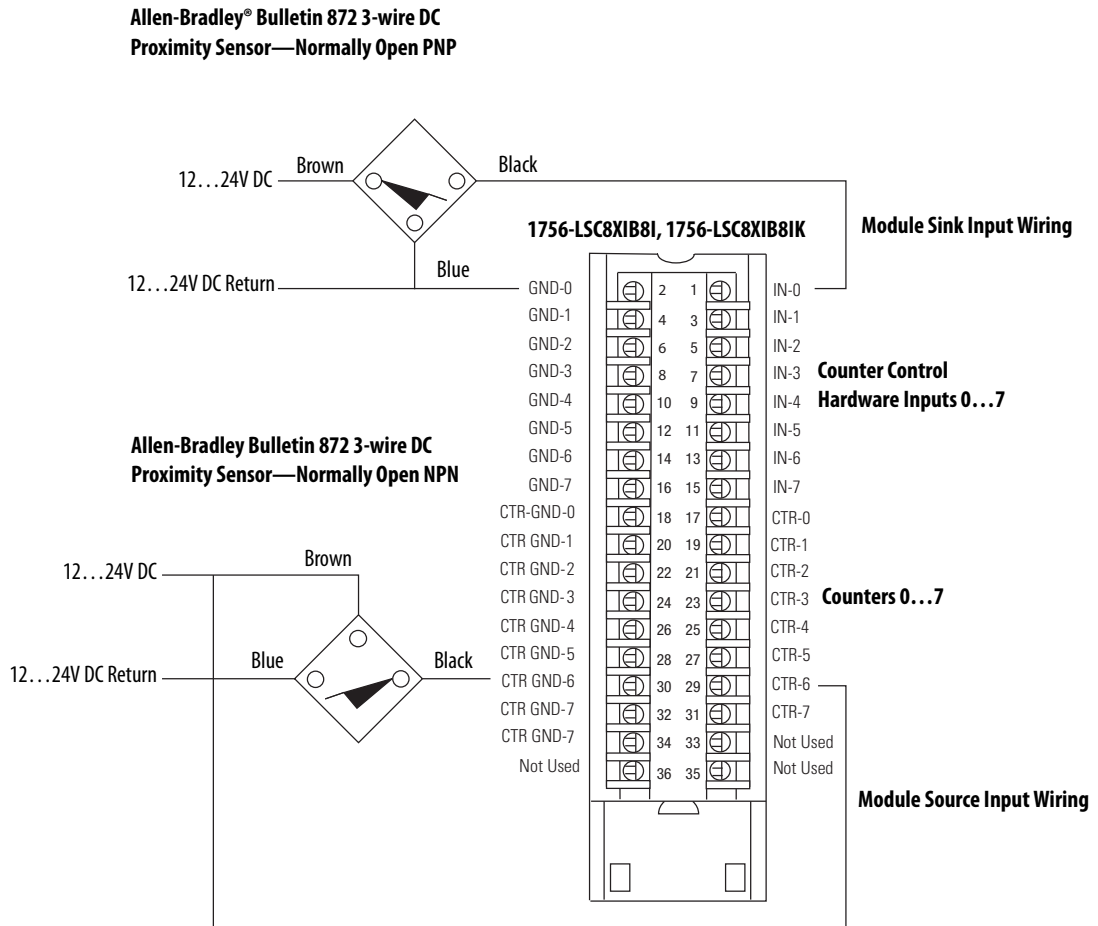


Additional jumper bars can be purchased by using catalog number 1756-JMPR.

Daisy Chain to Other RTBs



The following diagram shows how to wire a proximity sensor to the module's eight counters or eight hardware inputs. Counters use incoming pulses for counts and frequency with two user-configurable On/Off windows per counter. Hardware inputs provide standard input or counter-control functionality.



**Counter Specifications - 1756-LSC8XIB8I, 1756-LSC8XIB8IK**

| Attribute               | 1756-LSC8XIB8I, 1756-LSC8XIB8IK         |
|-------------------------|---|
| Number of counters      | 8 individually isolated                 |
| Counting frequency, max | 40 kHz                                  |
| Count range             | 0...2,147,483,648 (31-bit counter)      |
| Voltage category        | 12/24V DC sink/source                   |
| Operating voltage range | 10...30V DC                             |
| Off-state voltage, max  | 5V                                      |
| Off-state current, max  | 1.5 mA                                  |
| On-state current, min   | 2 mA @ 10V DC                           |
| On-state current, max   | 5 mA @ 30V DC                           |
| Change of state         | Enter or exit user-configurable windows |

**Hardware Input Specifications - 1756-LSC8XIB8I, 1756-LSC8XIB8IK**

| Attribute                             | 1756-LSC8XIB8I, 1756-LSC8XIB8IK   |
|---------------------------------------|---|
| Inputs                                | 8 individually isolated, standard input or counter-control functionality            |
| Voltage category                      | 12/24V DC sink/source   |
| Operating voltage range               | 10...30V DC   |
| Input voltage, nom                    | 24V DC  |
| Input delay time (screw to backplane) |   |
| Off to On                             | 14 $\mu$ s nom/23 $\mu$ s max + user-configurable filter time of 0...30,000 $\mu$ s |
| On to Off                             | 14 $\mu$ s nom/23 $\mu$ s max + user-configurable filter time of 0...30,000 $\mu$ s |
| Off-state voltage, max                | 5V  |
| Off-state current, max                | 1.5 mA  |
| On-state current, min                 | 2 mA @ 10V DC   |
| On-state current, max                 | 5 mA @ 30V DC   |
| Change of state                       | Any transition  |

**Module Specifications - 1756-LSC8XIB8I, 1756-LSC8XIB8IK**

| Attribute                        | 1756-LSC8XIB8I, 1756-LSC8XIB8IK   |
|----------------------------------|---|
| Current draw @ 5.1V              | 275 mA  |
| Current draw @ 24V               | 3 mA  |
| Total backplane power            | 1.47 W  |
| Power dissipation                | 3.8 W @ 60 °C (140 °F)  |
| Thermal dissipation              | 12.97 BTU/hr  |
| Input impedance, max             | Six k $\Omega$ @ 30V DC   |
| Cyclic update time               | 200 $\mu$ s...750 ms  |
| Isolation voltage                | 250V (continuous), reinforced insulation type, inputs-to-backplane<br>250V (continuous), basic insulation type, input-to-input<br>Type tested @ 2300V AC for 60 s inputs-to-backplane<br>Type tested @ 1500V AC for 60 s input-to-input |
| Module keying                    | Electronic, software configurable   |
| Removable terminal block housing | 1756-TBCH<br>1756-TBS6H   |
| RTB keying                       | User-defined mechanical   |
| Slot width                       | 1   |
| Wire category                    | 1 on signal ports <sup>(1)</sup>  |
| Enclosure type                   | None (open-style)   |
| North American temperature code  | T4A   |
| IEC temperature code             | T4  |
| Reverse polarity protection      | Yes   |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Environmental Specifications - 1756-LSC8XIB8I, 1756-LSC8XIB8IK**

| Attribute  | 1756-LSC8XIB8I, 1756-LSC8XIB8IK  |
|--|--|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)  |
| Temperature, surrounding air, max  | 60 °C (140 °F)   |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F)   |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing  |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz  |
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)   | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)  | 50 g   |
| Emissions  | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2  | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3  | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4  | ±4 kV at 5 kHz on signal ports   |
| Surge transient immunity<br>IEC 61000-4-5  | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on signal ports   |
| Conducted RF immunity<br>IEC 61000-4-6   | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz  |

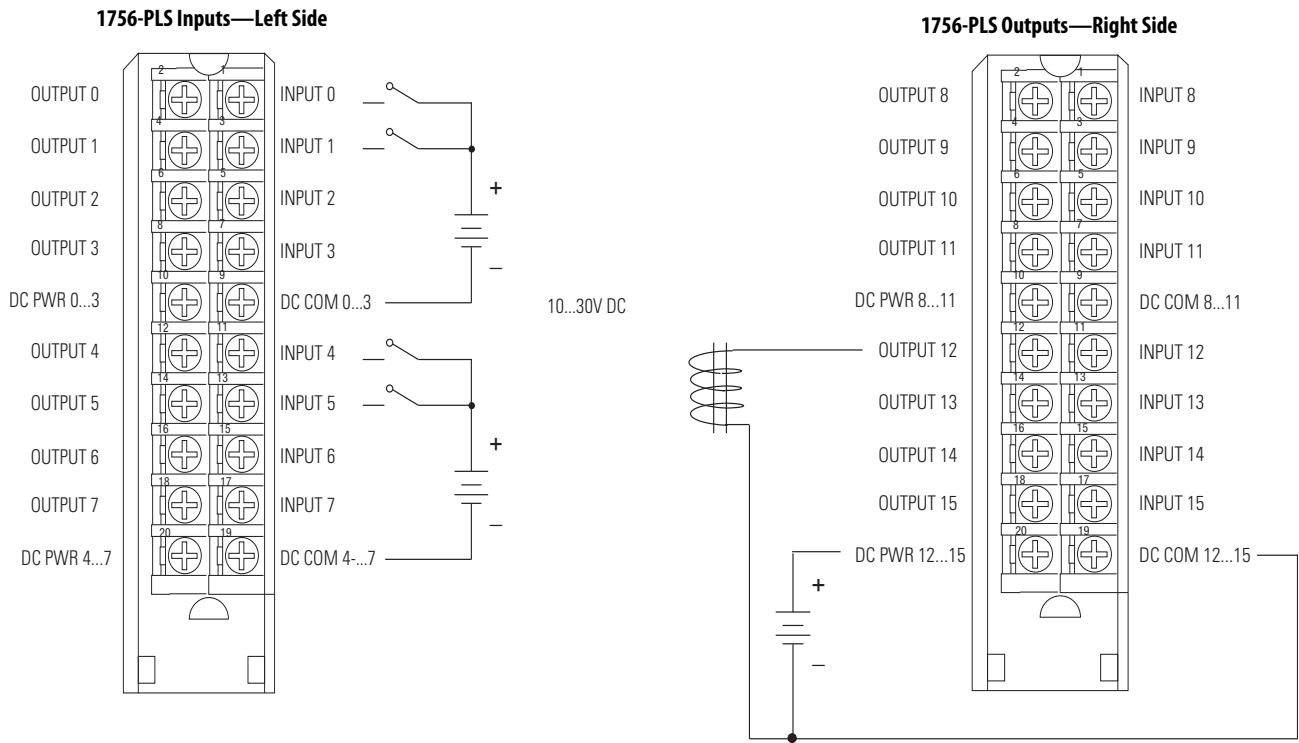
**Certifications - 1756-LSC8XIB8I, 1756-LSC8XIB8IK**

| Certification (when product is marked) <sup>(1)</sup> | 1756-LSC8XIB8I, 1756-LSC8XIB8IK   |
|---|---|
| c-UL-us   | UL Listed Industrial Control Equipment, certified for US and Canada. See UL File E65584.<br>UL Listed for Class I, Division 2 Group A,B,C,D Hazardous Locations, certified for U.S. and Canada. See UL File E194810.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>EN 61000-6-2; Industrial Immunity</li> <li>EN 61000-6-4; Industrial Emissions</li> <li>EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| KC  | Korean Registration of Broadcasting and Communications Equipment, compliant with Article 58-2 of Radio Waves Act, Clause 3  |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

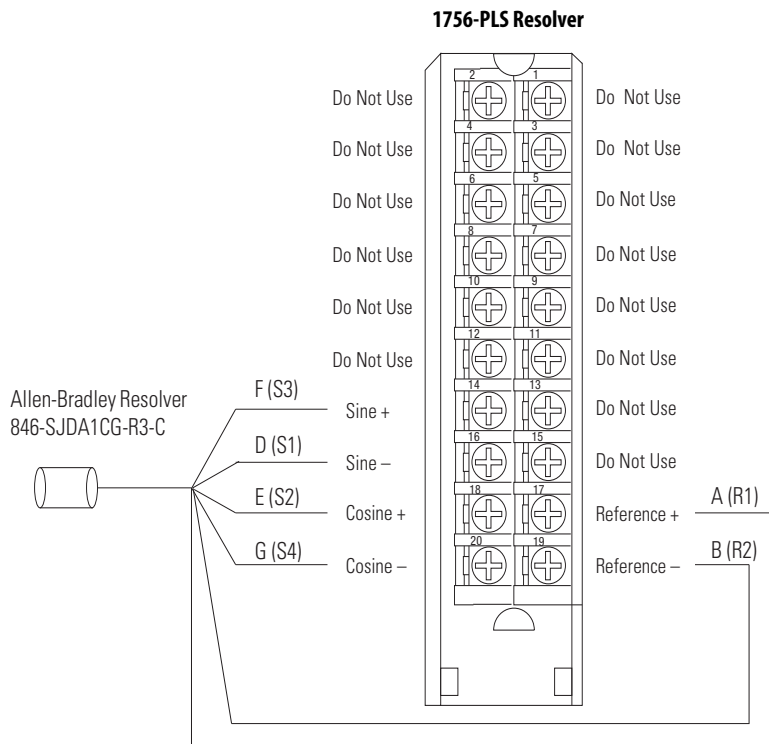
(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## 1756-PLS

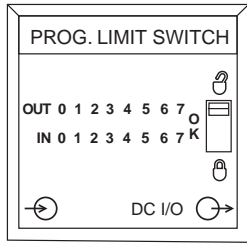
ControlLogix programmable limit switch module



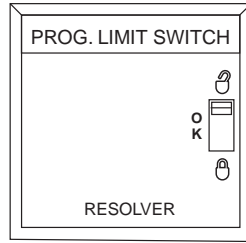
The 1756-PLS module supports enhanced packaging applications. The module requires three contiguous slots in the chassis.



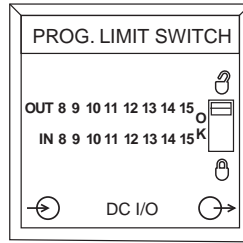
**Indicator for Left Slot I/O Module**



**Indicator for Left Resolver Module**



**Indicator for Right Slot I/O Module**



**Technical Specifications - 1756-PLS**

| Attribute                       | 1756-PLS  |
|---------------------------------|---|
| Module configuration            | Left section: Two groups of four outputs and four inputs each<br>Center section: resolver interface and I/O control<br>Right section: Two groups of four outputs and four inputs each |
| Current draw at 5.1V            | 1 A   |
| Current draw at 24V             | 125 mA  |
| Total backplane power           | 8.1 W   |
| Power dissipation, nom          | 22.62 W @ 30 °C (86 °F)<br>18.22 W @ 60 °C (140 °F)   |
| Power dissipation, max          | 25.7 W @ 30 °C (86 °F)<br>21.3 W @ 60 °C (140 °F)   |
| Thermal dissipation, nom        | 77.23 BTU/hr @ 30 °C (86 °F)<br>62.2 BTU/hr @ 60 °C (140 °F)  |
| Thermal dissipation, max        | 87.74 BTU/hr @ 30 °C (86 °F)<br>72.72 BTU/hr @ 60 °C (140 °F)   |
| Isolation voltage               | 250V (continuous), basic insulation type, I/O-to-backplane, I/O group-to-group, resolver-to-backplane, and resolver-to-I/O<br>Routine tested at 1900V DC for 2 s                      |
| Removable terminal block        | Requires 3 RTBs: 1756-TBNH or 1756-TBSH   |
| RTB keying                      | User-defined mechanical   |
| Slot width                      | 3   |
| Wire category                   | 2 on signal ports<br>1 on power ports <sup>(1)</sup>  |
| Enclosure type                  | None (open style)   |
| North American temperature code | T4  |
| IEC temperature code            | T4  |

(1) Use this conductor category information for planning conductor routing as described in the system-level installation manual. See the Industrial Automation Wiring and Grounding Guidelines, publication [1770-4.1](#).

**Resolver Specifications - 1756-PLS**

| Attribute           | 1756-PLS   |
|---------------------|--|
| Resolver location   | Center section   |
| Compatible resolver | Allen-Bradley resolver 846-SJxxx-R3-x (x = customer options)   |
| Resolver interface  | 2V rms, reference output (differential pair)<br>2V rms, sine, and cosine inputs (two differential pairs) |
| Reference voltage   | 2V rms ±20%  |



**Resolver Specifications - 1756-PLS (continued)**

| Attribute             | 1756-PLS                            |
|-----------------------|-------------------------------------|
| Reference frequency   | 5 kHz $\pm$ 20%                     |
| Digital resolution    | 12 bits (4096 counts from hardware) |
| Angular resolution    | 0.088°/bit                          |
| Digital count range   | 0...4095 (decimal)                  |
| Maximum tracking rate | $\pm$ 1800 RPM                      |
| Repeatability         | $\pm$ 0.0488% of full scale         |
| Accuracy              | $\pm$ 0.0976% of full scale         |

**Input Specifications - 1756-PLS**

| Attribute  | 1756-PLS   |
|--|--|
| Inputs   | 16 (2 groups of 4 per I/O section)                             |
| Voltage category                                   | 12/24V DC  |
| Operating voltage range <sup>(1)</sup>             | 10.8...31.2V DC  |
| Input delay time (screw to backplane)<br>Off to On | < 15 $\mu$ s @ 30 °C (86 °F)<br>< 150 $\mu$ s @ 60 °C (140 °F) |
| On to Off  | < 30 $\mu$ s @ 30 °C (86 °F)<br>< 200 $\mu$ s @ 60 °C (140 °F) |
| Power dissipation, inputs, nom                     | 1.86 W @ 60 °C (140 °F)  |
| Power dissipation, inputs, max                     | 2.8 W @ 60 °C (140 °F)   |
| Thermal dissipation, inputs, nom                   | 6.35 BTU/hr  |
| Thermal dissipation, inputs, max                   | 9.56 BTU/hr  |
| On-state voltage, min                              | 10V DC   |
| On-state voltage, nom                              | 10.8...26.4V DC  |
| On-state voltage, max                              | 31.2V DC   |
| Off-state voltage, max                             | 5V DC  |
| Off-state current, max                             | 1.5 mA   |
| On-state current, min                              | 3 mA   |
| On-state current, max                              | 10 mA  |
| Input impedance, max                               | 3.3 k $\Omega$ @ 24V DC  |
| Reverse polarity protection                        | Yes  |

(1) UL certification for 24V DC nominal. Rockwell Automation specified to 10.8...31.2V DC.

**Output Specifications - 1756-PLS**

| Attribute                              | 1756-PLS                           |
|--|------------------------------------|
| Outputs                                | 16 (2 groups of 4 per I/O section) |
| Voltage category                       | 12/24V DC                          |
| Operating voltage range <sup>(1)</sup> | 10...31.2V DC                      |
| Output delay time<br>Off to On         | < 15 $\mu$ s @ 60 °C (140 °F)      |
| On to Off                              | < 25 $\mu$ s @ 60 °C (140 °F)      |

**Output Specifications - 1756-PLS (continued)**

| Attribute   | 1756-PLS   |
|---|--|
| Power dissipation, outputs, nom                   | 5.4 W @ 30 °C (86 °F)<br>3.2 W @ 60 °C (140 °F)                                    |
| Power dissipation, outputs, max                   | 6 W @ 30 °C (86 °F)<br>3.8 W @ 60 °C (140 °F)                                      |
| Thermal dissipation, outputs, nom                 | 18.43 BTU/hr @ 30 °C (86 °F)<br>10.93 BTU/hr @ 60 °C (140 °F)                      |
| Thermal dissipation, outputs, max                 | 21.48 BTU/hr @ 30 °C (86 °F)<br>11.93 BTU/hr @ 60 °C (140 °F)                      |
| Output power dissipation/slot thermal dissipation | 3.2 W @ 60 °C (140 °F)<br>10.93 BTU/hr @ 60 °C (140 °F)                            |
| Off-state leakage current per point, nom          | <10 µA @ 60 °C (140 °F)  |
| Off-state leakage current per point, max          | 300 mA @ 60 °C (140 °F)  |
| On-state voltage, min                             | 10V DC   |
| On-state voltage, nom                             | 10.8...26.4V DC  |
| On-state voltage, max                             | 31.2V DC   |
| Output voltage drop, max                          | 0.55V DC   |
| Current per point, max                            | 1 A @ 30 °C <sup>(2)</sup> (86 °F)   |
| Current per group, max                            | 4 A @ 30 °C <sup>(3)</sup> (86 °F)   |
| Current per module, max                           | 8 A @ 30 °C <sup>(4)</sup> (86 °F)   |
| Current limit                                     | < 4 A  |
| Surge current per point                           | 2 A for 10 ms every 1 s @ 60 °C (140 °F)   |
| Load current per point, min                       | 40 mA  |
| Output switching time                             | Switching 1 A @ 24V DC   |
| Short circuit protection                          | Electronic (No indication of fault. Remove load and toggle on/off to restore.)     |
| Reverse polarity protection                       | Yes, current limited. (If wired incorrectly, outputs can be permanently disabled.) |

(1) UL certification for 24V DC nominal. Rockwell Automation specified to 10.8...31.2V DC.

(2) Derate 16.7 mA/°C above 30 °C (86 °F): 0.5 A @ 60 °C (140 °F).

(3) Derate 66.8 mA/°C above 30 °C (86 °F): 2 A @ 60 °C (140 °F).

(4) Derate 133.6 mA/°C above 30 °C (86 °F): 4 A @ 60 °C (140 °F).

**Environmental Specifications - 1756-PLS**

| Attribute  | 1756-PLS                     |
|--|------------------------------|
| Temperature, operating<br>IEC 60068-2-1 (Test Ad, Operating Cold),<br>IEC 60068-2-2 (Test Bd, Operating Dry Heat),<br>IEC 60068-2-14 (Test Nb, Operating Thermal Shock)  | 0...60 °C (32...140 °F)      |
| Temperature, surrounding air, max  | 60 °C (140 °F)               |
| Temperature, nonoperating<br>IEC 60068-2-1 (Test Ab, Unpackaged Nonoperating Cold),<br>IEC 60068-2-2 (Test Bb, Unpackaged Nonoperating Dry Heat),<br>IEC 60068-2-14 (Test Na, Unpackaged Nonoperating Thermal Shock) | -40...+85 °C (-40...+185 °F) |
| Relative humidity<br>IEC 60068-2-30 (Test dB, Unpackaged Damp Heat)  | 5...95% noncondensing        |
| Vibration<br>IEC 60068-2-6 (Test Fc, Operating)  | 2 g @ 10...500 Hz            |

**Environmental Specifications - 1756-PLS (continued)**

| Attribute   | 1756-PLS   |
|---|--|
| Shock, operating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock)    | 30 g   |
| Shock, nonoperating<br>IEC 60068-2-27 (Test Ea, Unpackaged Shock) | 50 g   |
| Emissions   | IEC 61000-6-4  |
| ESD immunity<br>IEC 61000-4-2                                     | 6 kV contact discharges<br>8 kV air discharges   |
| Radiated RF immunity<br>IEC 61000-4-3                             | 10V/m with 1 kHz sine-wave 80% AM from 80...2000 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 900 MHz<br>10V/m with 200 Hz 50% Pulse 100% AM @ 1890 MHz<br>3V/m with 1 kHz sine-wave 80% AM from 2000...2700 MHz |
| EFT/B immunity<br>IEC 61000-4-4                                   | ±4 kV at 5 kHz on unshielded I/O and power ports<br>±2 kV at 5 kHz on shielded resolver ports  |
| Surge transient immunity<br>IEC 61000-4-5                         | ±1 kV line-line (DM) and ±2 kV line-earth (CM) on unshielded I/O and power ports<br>±2 kV line-earth (CM) on shielded resolver ports   |
| Conducted RF immunity<br>IEC 61000-4-6                            | 10V rms with 1 kHz sine-wave 80% AM from 150 kHz...80 MHz on shielded signal ports   |

**Certifications - 1756-PLS**

| Certification (when product is marked) <sup>(1)</sup> | 1756-PLS  |
|---|---|
| UL  | UL Listed Industrial Control Equipment. See UL File E65584.   |
| CSA   | CSA Certified Process Control Equipment. See CSA File LR54689C.<br>CSA Certified Process Control Equipment for Class I, Division 2 Group A,B,C,D Hazardous Locations. See CSA File LR69960C.  |
| CE  | European Union 2014/30/EU EMC Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 61326-1; Meas./Control/Lab., Industrial Requirements</li> <li>• EN 61000-6-2; Industrial Immunity</li> <li>• EN 61000-6-4; Industrial Emissions</li> <li>• EN 61131-2; Programmable Controllers (Clause 8, Zone A &amp; B)</li> </ul> European Union 2014/35/EU LVD, compliant with:<br>EN 61131-2; Programmable Controllers (Clause 11) |
| RCM   | Australian Radiocommunications Act, compliant with:<br>EN 61000-6-4; Industrial Emissions   |
| Ex  | European Union 2014/34/EU ATEX Directive, compliant with: <ul style="list-style-type: none"> <li>• EN 60079-15; Potentially Explosive Atmospheres, Protection "n"</li> <li>• EN 60079-0; General Requirements II 3 G Ex nA IIC T4 X Gc</li> </ul>   |
| EAC   | Russian Customs Union TR CU 020/2011 EMC Technical Regulation<br>Russian Customs Union TR CU 004/2011 LV Technical Regulation   |

(1) See the Product Certification link at [rok.auto/certifications](http://rok.auto/certifications) for Declarations of Conformity, Certificates, and other certification details.

## ControlLogix I/O Accessories

Place 1756 I/O modules in any slot in a 1756 chassis. Each chassis requires a power supply.

| Product                 | Cat. No.   |
|-------------------------|--|
| Chassis                 | 1756-A4, 1756-A7, 1756-A10, 1756-A13, 1756-A17                               |
| Power supply, standard  | 1756-PA72/C, 1756-PA75/B, 1756-PB72/C, 1756-PB75/B, 1756-PC75/B, 1756-PH75/B |
| Power supply, redundant | 1756-PA75R, 1756-PB75R, 1756-PSCA2<br>1756-CPR2 cable                        |

- For more information on chassis specifications, see ControlLogix Chassis Specifications Technical Data, publication [1756-TD006](#).
- For more information on power supply specifications, see ControlLogix Power Supply Specifications Technical Data, publication [1756-TD005](#).
- For more information on how to choose the right power supply for your application, see the additional product documentation, for example, a user manual, for your 1756 ControlLogix I/O module.

## 1756 Removable Terminal Blocks



Removable terminal blocks (RTBs) provide a flexible interconnection between your plant wiring and 1756 I/O modules. The RTB plugs into the front of the I/O module. The type of module determines which RTB you need. You can choose screw-clamp or spring-clamp RTBs.

RTBs are not shipped with I/O modules. You must order them separately. The standard housing on the front of the wiring arm is not deep enough for 2.5 mm<sup>2</sup> (14 AWG) wiring. If you plan to use 2.5 mm<sup>2</sup> (14 AWG) wiring, also order the extended housing.



**ATTENTION:** If separate power sources are used, do not exceed the specified isolation voltage: referring to the specifications for each individual module on the preceding pages.

### RTB Specifications - 1756-TBNH, 1756-TBSH, 1756-TBCH, 1756-TBS6H, 1756-TBE

| Attribute                | 1756-TBNH  | 1756-TBSH   | 1756-TBCH  | 1756-TBS6H  | 1756-TBE                              |
|--------------------------|--|---|--|---|---------------------------------------|
| Description              | 20-position NEMA screw-clamp removable block   | 20-pin spring-clamp removable terminal block with standard housing  | 36-pin cage-clamp removable terminal block with standard housing   | 36-pin spring-clamp removable terminal block with standard housing  | Extended depth terminal block housing |
| Screw torque             | 1.36 N•m (12 lb•in)  | –   | 0.5 N•m (4.4 lb•in)  | –   | –                                     |
| Wire size <sup>(1)</sup> | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Do not wire more than two conductors on any single terminal. | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Do not wire multiple conductors on any single terminal. | Single wire connection:<br>0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Double wire connection:<br>0.33...1.3 mm <sup>2</sup> (22...16 AWG) solid or stranded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Do not wire more than two conductors on any single terminal. | 0.33...2.1 mm <sup>2</sup> (22...14 AWG) solid or stranded copper wire, rated at 90 °C (194 °F) or greater, 1.2 mm (3/64 in.) insulation max<br>Do not wire multiple conductors on any single terminal. |                                       |
| Screwdriver width        | 8 mm (5/16 in.) Max  | –   | 3.2 mm (1/8 in.)   | –   | –                                     |

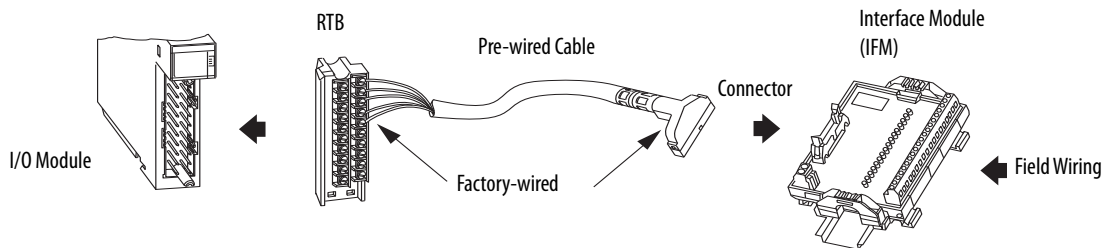
(1) Maximum wire size requires extended housing, catalog number 1756-TBE.

## Wiring Systems



As an alternative to buying RTBs and connecting the wires yourself, you can buy a wiring system of the following:

- Interface modules (IFMs) that provide the output terminal blocks for digital I/O modules. Use the pre-wired cables that match the I/O module to the IFM.
- Analog interface modules (AIFMs) that provide the output terminal blocks for analog I/O modules. Use the pre-wired cables that match the I/O module to the AIFM.
- I/O module-ready cables. One end of the cable assembly is an RTB that plugs into the front of the I/O module. The other end has individually color-coded conductors that connect to a standard terminal block.



## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource   | Description   |
|--|---|
| ControlLogix System User Manual, publication <a href="#">1756-UM001</a>                              | Provides information on how to use a ControlLogix system.                           |
| ControlLogix 5580 Controllers User Manual, publication <a href="#">1756-UM543</a>                    | Provides information on how to use a ControlLogix 5580 controllers.                 |
| Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a>          | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, <a href="http://rok.auto/certifications">rok.auto/certifications</a> | Provides declarations of conformity, certificates, and other certification details. |

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley Distributor or Rockwell Automation sales representative.

**Notes:**

# Rockwell Automation Support

Use the following resources to access support information.

|   |   |  |
|---|---|--|
| <b>Technical Support Center</b>                         | Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.                     | <a href="http://www.rockwellautomation.com/knowledgebase">www.rockwellautomation.com/knowledgebase</a>   |
| <b>Local Technical Support Phone Numbers</b>            | Locate the phone number for your country.   | <a href="http://www.rockwellautomation.com/global/support/get-support-now.page">www.rockwellautomation.com/global/support/get-support-now.page</a> |
| <b>Direct Dial Codes</b>                                | Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer. | <a href="http://www.rockwellautomation.com/global/support/direct-dial.page">www.rockwellautomation.com/global/support/direct-dial.page</a>         |
| <b>Literature Library</b>                               | Installation Instructions, Manuals, Brochures, and Technical Data.  | <a href="http://www.rockwellautomation.com/literature">www.rockwellautomation.com/literature</a>   |
| <b>Product Compatibility and Download Center (PCDC)</b> | Get help determining how products interact, check features and capabilities, and find associated firmware.            | <a href="http://www.rockwellautomation.com/global/support/pcdc.page">www.rockwellautomation.com/global/support/pcdc.page</a>                       |

## Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at [http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002\\_-en-e.pdf](http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf).

## Rockwell Automation Support

For technical support, visit <http://www.rockwellautomation.com/support/overview.page>.

Rockwell Automation maintains current product environmental information on its website at <http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page>.

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Publication 1756-TD002K-EN-E - January 2019

Supersedes Publication 1756-TD002J-EN-E - November 2016

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