Installation Instructions

Original Instructions

Allen-Bradley

Stratix 6000 Ethernet Managed Switches

Catalog Numbers 1783-EMS08T, 1783-EMS04T

Allen-Bradley · Rockwell Software

Rockwell Automation

Summary of Changes

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

Topic	Page
ATEX certification and temp code	5, 19
China RoHS table	7
ATTENTION statement about using shielded Ethernet cables	13

ATTENTION: Environment and Enclosure

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in EN/IEC 60664-1), at altitudes up to 2000 m (6562 ft) without derating.

This equipment is not intended for use in residential environments and may not provide adequate protection to radio communication services in such environments.

This equipment is supplied as open-type equipment for indoor use. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The enclosure must have suitable flame-retardant properties to prevent or minimize the spread of flame, complying with a flame spread rating of 5VA or be approved for the application if nonmetallic. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain more information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

In addition to this publication, see the following publications:

- Publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines, for more additional installation requirements
- NEMA 250 and IEC 60529, as applicable, for explanations of the degrees of protection provided by different types of enclosures

ATTENTION: Read this document and the documents listed in the Additional Resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

ATTENTION: Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

In case of malfunction or damage, no attempts at repair should be made. The module should be returned to the manufacturer for repair. Do not dismantle the module.

ATTENTION: This equipment is certified for use only within the surrounding air temperature range of 0…60 °C (32…140 °F). The equipment must not be used outside of this range.

ATTENTION: Electrical Safety Considerations

Power to this equipment must be supplied from a source compliant with the following:

- Class 2 approved to UL1310
- SELV source approved to EN/IEC60950-1, EN/IEC61010-2-201 or EN/IEC62368-1 (ES1)

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations.	Informations sur l'utilisation de cet équipement en environnements dangereux.
Products marked "CL I, DIV 2, GP A, B, C, D" are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest "T" number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.	Les produits marqués "CL I, DIV 2, GP A, B, C, D" ne conviennent qu'à une utilisation en environnements de Classe I Division 2 Groupes A, B, C, D dangereux et non dangereux. Chaque produit est livré avec des marquages sur sa plaque d'identification qui indiquent le code de température pour les environnements dangereux. Lorsque plusieurs produits sont combinés dans un système, le code de température le plus défavorable (code de température le plus faible) peut être utilisé pour déterminer le code de température global du système. Les combinaisons d'équipements dans le système sont sujettes à inspection par les autorités locales qualifiées au moment de l'installation.
EXPLOSION HAZARD - • Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous. • Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product. • Substitution of components may impair suitability for Class I, Division 2. • If this product contains batteries, they must only be changed in an area known to be nonhazardous.	**RISQUE D'EXPLOSION –** • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher l'équipement. • Couper le courant ou s'assurer que l'environnement est classé non dangereux avant de débrancher les connecteurs. Fixer tous les connecteurs externes reliés à cet équipement à l'aide de vis, loquets coulissants, connecteurs filetés ou autres moyens fournis avec ce produit. • La substitution de composants peut rendre cet équipement inadapté à une utilisation en environnement de Classe I, Division 2. • S'assurer que l'environnement est classé non dangereux avant de changer les piles.

European Hazardous Location Approval

The following applies to products marked C E ⟨Ex⟩ II 3 G:

- Are Equipment Group II, Equipment Category 3, and comply with the Essential Health and Safety Requirements relating to the design and construction of such equipment given in Annex II to Directive 94/9/EC. See the EC Declaration of Conformity at http://www.rockwellautomation.com/products/certification for details.

- The type of protection is <Ex ic nA IIC T4 Gc> according to EN 60079-15 and EN 60079-11.

- Comply to Standards <EN 60079-0:2012, EN 60079-15:2010, EN60079-11:2012>, reference certificate number <ITS09ATEX46141U>.

- Are intended for use in areas in which explosive atmospheres caused by gases, vapors, mists, or air are unlikely to occur, or are likely to occur only infrequently and for short periods. Such locations correspond to Zone 2 classification according to ATEX directive 1999/92/EC.

WARNING: Special Conditions for Safe Use

- This equipment is not resistant to sunlight or other sources of UV radiation.

- This equipment shall be mounted in an ATEX Zone 2 certified enclosure with a minimum ingress protection rating of at least IP54 (as defined in EN 60529) and used in an environment of not more than Pollution Degree 2 (as defined in EN 60664-1) when applied in Zone 2 environments. The enclosure must be accessible only by the use of a tool.

- This equipment shall be used within its specified ratings defined by Rockwell Automation®.

- Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140% of the rated voltage when applied in Zone 2 environments.

- The instructions in the user manual shall be observed.

- Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.

ATTENTION: Prevent Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

WARNING: If you connect or disconnect the communications cable with power applied to this module or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations.

Be sure that power is removed or the area is nonhazardous before proceeding.

WARNING: If you connect or disconnect wiring while the field-side power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

At the end of its life, this equipment should be collected separately from any unsorted municipal waste.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
印刷电路板组件	x	o	o	o	o	o
金属部件	x	o	o	o	o	o
塑料部件	o	o	o	o	o	o
本表格依据SJ/T 11364的规定编制。						
O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。						
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。						
(企业可在此处，根据实际情况对上表中打"X"的技术原因进行进一步说明。)						

Name and Content of Hazardous Substances in Product

Component Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Printed circuit board assemblies	X	0	0	0	0	0
Metal components	X	0	0	0	0	0
Plastic Components	0	0	0	0	0	0

This table is made per guidance of SJ/T 11364.

O: Indicates that this hazardous substance contained in all of the homogeneous materials for the part is below the limit requirement in GB/T 26572.

X: Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in GB/T 26572.

(According to actual situation, extra explanations can be given here for the technical reasons of items with "X".)
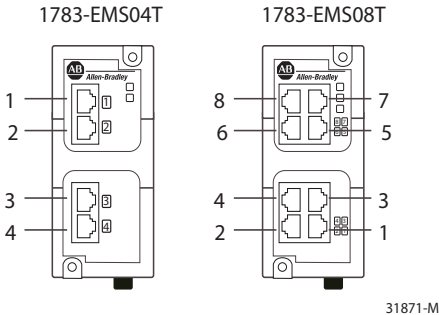
About the Switch

The Stratix 6000™ switch provides real-time access to network data through the Logix control system. The switch integrates into Logix programs and update tags automatically.

Use the switch to help continuously monitor your network and implement changes.

The figure shows Ethernet port identification for the 1783-EMS08T 8-port and the 1783-EMS04T 4-port switches.

Ethernet Port Identification

31871-M

Install the Switch

Mount the switch in the vertical position only, as shown. We do not recommend horizontal mounting due to thermal considerations. When mounting, follow these guidelines:

- Provide 50 mm (2 in.) of space on all sides for adequate heat dissipation.

- Leave 100 mm (4 in.) for installation and removal for the fiber-optic port on the bottom of the 1783-EMS08T switch.

| **IMPORTANT**	Use care with the plastic DIN-rail clip.

DIN Rail Mounting

Read this section to install and remove a switch that uses DIN rail mounting.

Install the Switch

To install the switch on DIN rail, proceed as follows.

1. Mount your DIN rail.
2. Snap the DIN rail latch into the closed position.
3. Hook the top slot over the DIN rail and push the switch into position on the DIN rail.
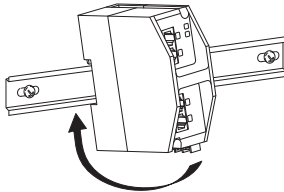
Remove the Switch

To remove the switch from DIN rail, proceed as follows.

1. Place a screwdriver in the DIN rail latch at the bottom of the switch.

2. Hold the switch and pry downward on the latch until the switch is released from the DIN rail.
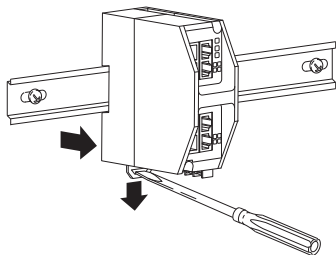
Panel Mounting

To panel mount a switch, create a mounting template. Refer to the following figure, which shows a 1783-EMS08T switch with a small form-factor pluggable (SFP) module installed.

Provide 15 mm (0.6 in.) clearance for DIN rail latch movement during installation and removal. Dimensions in the figure are in mm (in.). These views are not actual size.

52.07 (2.05)

107 (4.21)

118 (4.64)

12 (0.47)

12 (0.47)   27.7 (1.09)   SFP Module Installed

88.9 (3.50)
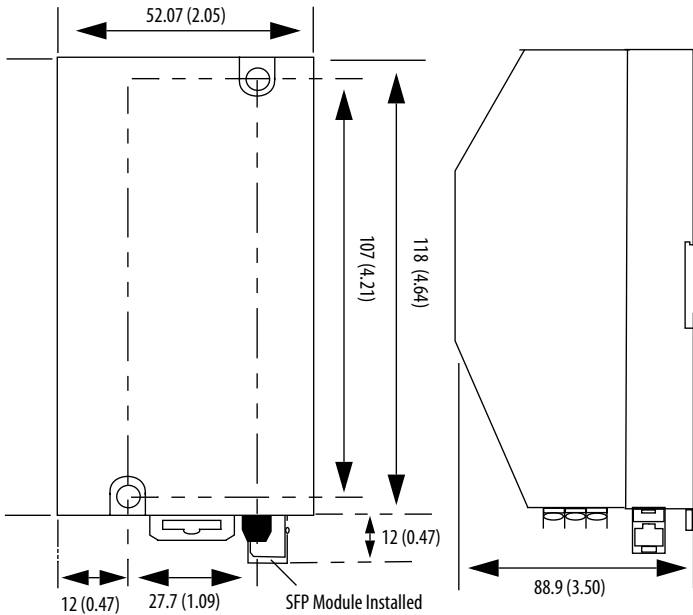
Wire the Switch

Read this section for information about external power supply wiring.

Provide low voltage DC power to the switch by using the screw terminals at the bottom of the switch.
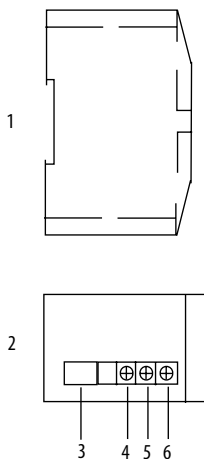
Item	Description	Item	Description
1	Side view	4	Ground
2	Bottom view	5	DC-
3	Fiber-optic SFP slot (1783-EMS08T switch only)	6	DC +

Follow these steps to wire the switch.

1. Be sure that power to the power supply is turned off.

2. Be sure that you have the proper gauge of wire for your power supply.

3. Strip approximately 0.9 mm (0.35 in.) from each end of the wire.

4. Use a Phillips screwdriver to loosen the screw terminals on the terminal strip at the bottom of the switch.

5. Connect DC+ (24V DC nominal) from the power supply to the DC+ terminal and tighten the screw.

6. Connect DC- (0V DC) from the power supply to the DC- terminal and tighten the screw.

7. Connect functional earth ground to the ground terminal and tighten the screw.

   See the grounding considerations on page 15.

8. Pull gently on the wires to verify that the connections are secure.

Connect the Copper Ethernet Ports

Follow these steps to connect the copper Ethernet ports on the switch.

1. Locate the copper Ethernet RJ45 ports on the switch.

2. Connect one end of an Ethernet cable to one of the copper ports on the switch.

3. Connect the other end of the Ethernet cable to a device in your Ethernet network.

ATTENTION: When using shielded Ethernet cables, be sure to follow the guidelines for use of shielded cable, especially the guidelines for eliminating ground loops. The guidelines are documented in the ODVA EtherNet/IP Media Planning & Installation Manual available on the ODVA website at https://www.odva.org/Publication-Download. If the guidelines are not followed, catastrophic damage to the switch can occur.

Install an Optional SFP Module

⚠️ **ATTENTION:** (Applies only to 1783-EMS08T switches with optional SFP). Under certain conditions, viewing the optical port may expose the eye to hazard. When viewed under some conditions, the optical port may expose the eye beyond the maximum permissible exposure recommendations.

⚠️ **ATTENTION:** (Applies only to 1783-EMS08T switches with optional SFP). Class 1 laser product. Laser radiation is present when the system is open and interlocks bypassed. Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

You can install a 1G fiber small form-factor pluggable (SFP) module into the fiber-optic Ethernet slot on the bottom to the 1783-EMS08T switch. To install the SFP module, grasp the module on the sides and insert it into the slot until you feel the connector snap into place.

For detailed instructions on installing, removing, and connecting to SFP modules, see the documentation that shipped with the SFP module.

Available SFP modules include the following:

- 1783-SFP1GSX - 1000Base-SX multi-mode fiber transceiver
- 1783-SFP1GLX - 1000Base-LX single-mode fiber transceiver
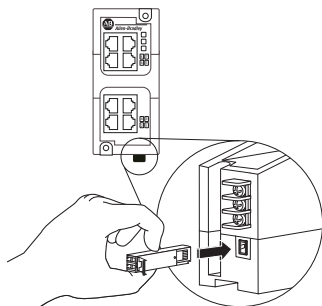
31877-M

> ⚠ **ATTENTION:** If the SFP module cannot be fully inserted, stop! Do not force the module into the slot. Rotate the SFP module 180 degrees and try again.

> **IMPORTANT** The 1783-EMS08T switch supports only 1G fiber SFP modules.

Connect the Fiber-optic Ethernet Port

To connect the fiber-optic Ethernet port (on the SFP) in the 1783-EMS08T switch after inserting the SFP module, follow these steps.

1. Connect the duplex LC connector end of the fiber-optic cable, in the proper orientation, to the fiber-optic Ethernet port on the SFP module.

   The SFP module is installed at the bottom of the switch. See Install an Optional SFP Module.

2. Connect the other end of the cable to a device in your network or to another switch.

Grounding Considerations

This product is intended to be mounted to a well-grounded mounting surface such as a metal panel. The functional earth ground connection to the product is through the specified pin on the DC connection terminals.

> **IMPORTANT** The ground connection is required at the grounding pin on the DC connection terminals.

See publication 1770-4.1, Industrial Automation Wiring and Grounding Guidelines, for additional information.
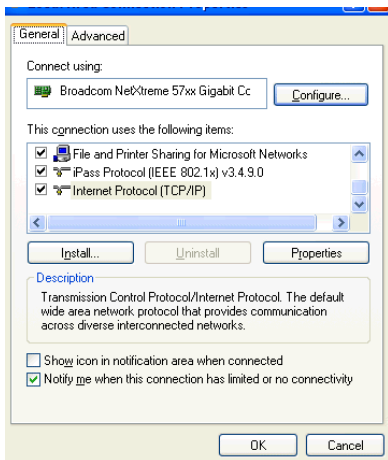
Use the Switch

To start using your switch, follow this procedure. For information about the status indicators on the switch, refer to the Stratix 6000 Ethernet Managed Switch User Manual, publication 1783-UM001.

1. Connect to the LAN card in your computer by using a patch or cross-over cable, and then do the following.

    a. Choose Start > Settings > Network Connections and right-click Local Area Connection and Properties.
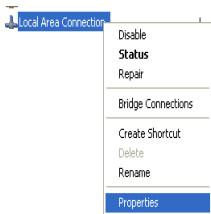
    b. From the Local Area Connection Properties menu, check Ethernet Protocol (TCP/IP), and click Properties.

c. From the Ethernet Protocol (TCP/IP) Properties menu, change the IP address to 192.168.1.3 and subnet mask to 255.255.255.0.
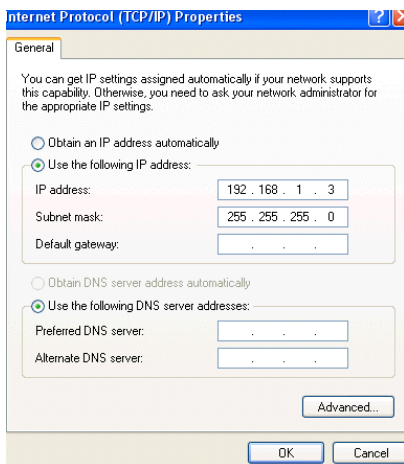
2. Connect to the switch via a Web browser by using these steps.

   a. Open a browser window.

   b. Enter the default IP address of 192.168.1.1 in the address bar, press Enter, and note the following defaults:

   • User name is blank.

   • Password is PASSWORD.

3. Configure the switch.

   You can get complete configuration instructions by clicking the link to view the embedded manual.

4. If the switch is to scan in a Logix5000™ program, refer to the appropriate section of your embedded manual.

Specifications

Stratix 6000 Ethernet Managed Switches

Attribute	1783-EMS08T	1783-EMS04T
Power requirements	250 mA @ 24V DC (12…48V DC) Class 2/SELV	100 mA @ 24V DC (12…48 V DC) Class 2/SELV
Power dissipation	5.8 W	2.6 W
Thermal dissipation	24.6 BTU/hr @ 60 °C (140 °F) max	
Network ports	8 RJ45 10/100 full/half duplex ports, optional SFP transceiver port	4 RJ45 10/100 full/half duplex ports
Protocols	TCP/IP, EtherNet/IP, Telnet, Http, DHCP, BOOTP, FTP, IGMP, SMTP	
Indicators	16 port indicators, 3 status indicators	8 port indicators, 2 status indicators
EtherNet/IP features	MAC ID management, bandwidth alarming, port control, link status, scaled bandwidth information, connections active	
Switch features	VLAN, IGMP snooping, IGMP query V1 and V2, DHCP server, BOOTP server, QoS, port mirroring	IGMP snooping, IGMP query V1 and V2, DHCP server, BOOTP server, QoS, port mirroring
Options	1 gigabyte fiber optic transceiver	—
Voltage variation	IEC 61000-4-29: 10 ms interruption on DC supply ports	
Enclosure type rating	None (open-style)	
Inrush current, max	2.2 A	
Isolation voltage	50V (continuous), basic insulation type, power to ground and power to network channels No isolation between individual network channels Routine tested at 707V AC for 1 s	

Stratix 6000 Ethernet Managed Switches (Continued)

Attribute	1783-EMS08T	1783-EMS04T
Wire size	Ethernet connections: RJ45 connector according to IEC 60603-7, 2 or 4 pair Category 5e minimum cable according to TIA 568-B.1 or Category 5 cable according to ISO/IEC 24702 DC Power connections: 0.33…3.3 mm^2 (22...12 AWG) solid or stranded copper wire rated at 75 ℃ (167 ℉) or greater, 1.2 mm (3/64 in.) insulation max Functional Ground connection: 3.3 mm^2 (12 AWG) solid or stranded copper wire rated at 75 ℃ (167 ℉) or greater	
Terminal block torque	DC power and functional ground conections: 1.36 Nm (12 lb-in)	
Fiber optic Ethernet data rate[1]	1000 Mbps[1]	—
Fiber optic connecting mode[1]	Full duplex[1]	—
Fiber optic connector type[1]	LC[1]	—
Wiring category[2] [3]	2 - on power ports 2 - on communication ports	
North American temp code	T4	
ATEX temp code	T4	

(1) Available when you purchase an optional SFP module.

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

(3) Use this Conductor Category information for planning conductor routing as described in the appropriate system-level installation manual.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Stratix Ethernet Device Specifications Technical Data, publication 1783-TD001	Provides specification information for the switches.
EtherNet/IP Industrial Protocol White Paper, publication ENET-WP001	Describes how to implement services and data objects on a TCP/UDP/IP based Ethernet network.
Stratix 6000 Ethernet Managed Switch User Manual, publication 1783-UM001	Describes how to configure and use the switch.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.rockwellautomation.com/global/certification/overview.page	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at
http://www.rockwellautomation.com/global/literature-library/overview.page.
To order paper copies of technical documentation, contact your local
Allen-Bradley distributor or Rockwell Automation sales representative.

Rockwell Automation Support

For technical support, visit http://www.rockwellautomation.com/support/overview.page.