

Contrans I_remote Interface modules

Product Catalog



- Bus-capable input/output modules
- Redundant PLC or DCS coupling
- HART capable via FSK jack and FSK bus
- Automatic self-monitoring
- Well-outlined instrumentation due to plug-in modules

instrumentation

understanding measurement analysis control integration **optimization**

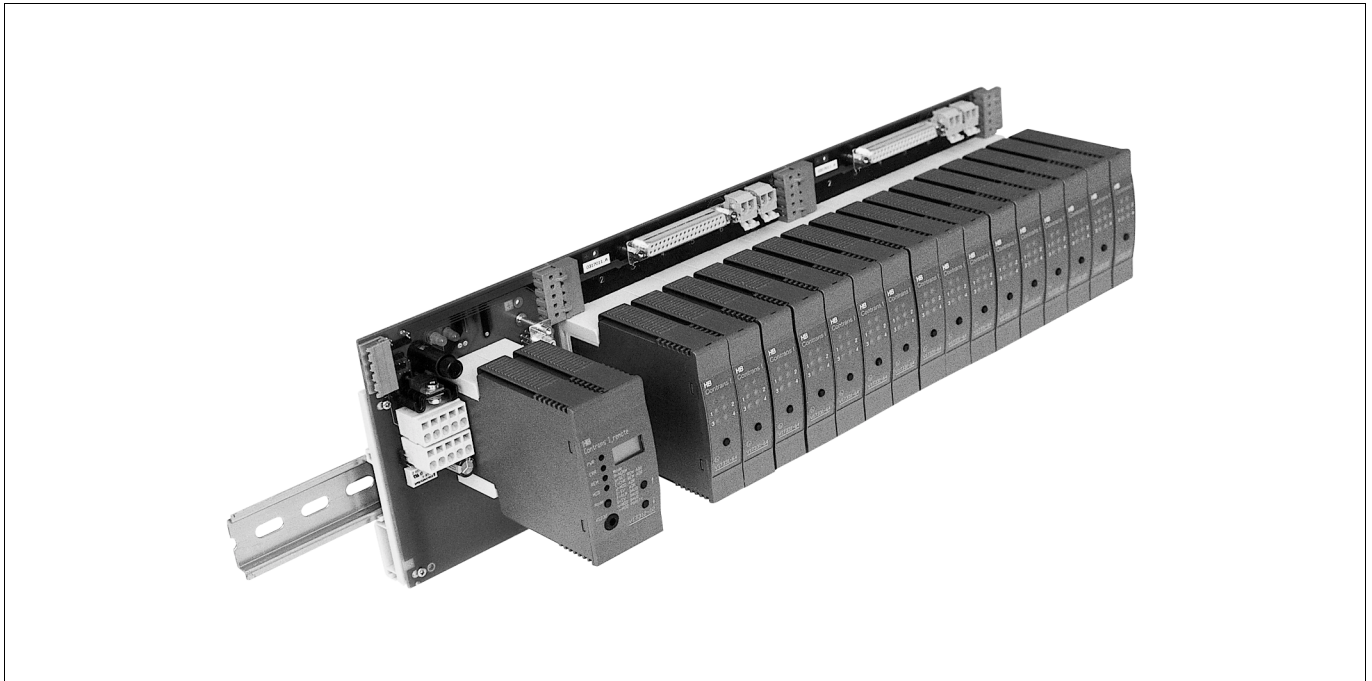


Contrans I_remote Interface modules

Catalog 17.2 EN

	Page
Description of the interface modules	6
Program overview	10
General data	11
Installation requirements	11
Binary modules	
Binary input	13
Binary output	17
Analog modules	
Analog input	21
Temperature input	25
Analog output	27
Gateways	
PROFIBUS gateway	32
Modbus gateway	34
Backplanes	
Power supply terminal	38
Gateway for backplane	39
Backplane 8-fold	40
Accessories	
FSK bus amplifier	41
Socket	42
Power supply	43
Dimensional drawings	44
Mounting and installation instructions	
Safety instructions	46
Encoding	48

Contrans I_remote Interface modules with field bus connection



- Bus-capable input/output modules for mounting in sub-distribution box or switching cabinet
- Direct or redundant coupling to ever DCS or PLC via exchangeable gateways
- Compatible with existing intelligent sensors and actuators
- Reduced service and installation costs through well-outlined instrumentation with pluggable modules
- Economical even with reduced number of channels
- High operation safety and availability, including high disturbance immunity
- Automatic self-monitoring and error diagnostics
- Enhanced system accuracy through digital transmission alarm signalling units

Introduction

In the field of automation and process engineering, required field signals have to be often collected from far-strewn subplants. With the conventional point-to-point wiring technique, which as a rule involves the transmission of signals via 2 lines, long lengths of cable and a lot of distribution boxes and marshalling unit are required.

Often than not the functionality of the input and output modules of PLC's or DCS are insufficient, an additional signal matching level becomes necessary. This could be the case, for instance, when transmitter power supply, electrical isolation, impedance surges or intrinsically safe signal circuits for hazardous areas are indis-

pensable. It is especially for such cases the company has developed the process interface program Contrans I (Catalog 17.1 EN). In order to reduce the planning and wiring expenditure, pre-wired module racks for 16 pluggable function modules have been provided. The power is supply centrally. A system cable with plug-in terminals at both ends enables the direct connection of all modules to the input/output modules of the control unit.

The consequent development of the above module racks to an open field bus system has produced the product program **Contrans I_remote**, described in the present Catalog 17.2 EN. All input and output modules have a bus-capable design, which enables connection via a bus coupler with the open field bus.

Thanks to the modular design and the easy matching to the applied field bus protocol, Contrans I_remote is a flexible extension of the I/O level for your DCS/PLC. The planning and wiring expenditure is greatly reduced. Furthermore, marshalling, input and output modules of the control unit become unnecessary and these features make substantial savings possible.

Description

Contrans I_remote provides all the necessary modules for matching the field signal. These include analog inputs for feeding the transmitter or for reading off analog field signals, temperature inputs, analog outputs for controlling electrical actuators and positioners, binary input and output units.

In every Contrans I_remote module, field signals are amplified, electrically isolated and converted in a CI-internal bus with the help of a micro-controller. The gateway communicates with the modules (Fig. 1) by way of this serial bus.

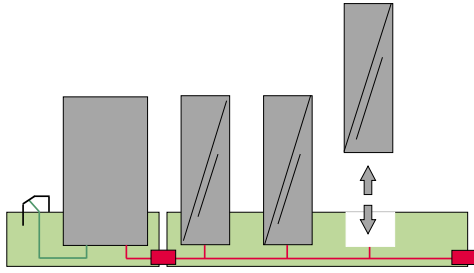


Fig. 1: Functional diagram of a Contrans I_remote stand-alone unit (extendable up to 125 modules per unit)

The gateway takes over the conversion of the signals sent to it in a standardized field bus protocol. The higher-level distributed control system or controllers communicate via this external field bus with the gateways. Every gateway contains a complete process diagram of all connected field signals.

The wiring in the sub-transmission box or switching cabinet is effected with the help of backplanes which can be snap-fitted onto DIN mounting rails (Fig. 2). The multi-channel backplanes contain the field unit terminals and special slots for the function modules. The field signals can be aligned in any order, since the functionality is later determined by the pinout of the respective module. The marshalling, i.e. the assignment of the field signals is later accomplished per software. Power supply and the internal bus signal are further transmitted by means of laterally positioned connectors. A further backplane carries the gateway with the bus plug. The power terminal module takes care of the power supply of the Contrans I_remote stand-alone unit.

Up to 125 1-, 2- or 4-channel modules can thus be connected to the gateway. Gateways and the post-connected function modules represented a node. More higher number of subscribers can be obtained by assembling further Contrans I_remote nodes. The cycle time for the internal serial bus is 20 ms for 400 binary signals or 50 ms for 100 analog signals.

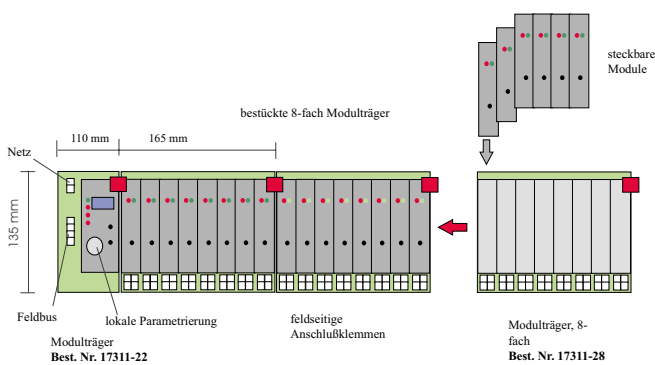


Fig. 2: Schematic setup of Contrans I_remote

The number of nodes (gateway), the bus length and cycle time of the external bus structure depend on the bus system used. Each Contrans I_remote gateway stands for one subscriber (Fig. 3). Bigger distances and greater numbers of subscribers are possible with FOC's and repeaters.

Technical characteristics

Bus-capable input and output modules. Contrans I-remote provides a platform for galvanically separating signal processing components. Among these are analog modules for feeding intelligent transmitters, for measuring temperature and for controlling actuators such as positioners or servodrives. Switch amplifiers for proximity switches to EN 50227 (NAMUR) or transistor inputs are used to process binary input signals. Binary outputs are relay modules or are used in intrinsically safe applications as solenoid drivers for feeding and controlling intrinsically safe solenoid valves. All module types are also available in intrinsically safe versions. Modules with or without intrinsic safety can be operated on a gateway.

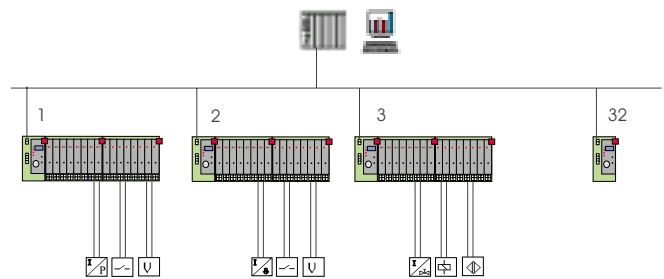


Fig. 3: Interconnection of Contrans I_remote

Direct coupling of PLC or DCS to any bus system. the modular system structure of Contrans I_remote enables easy matching of any desired field bus protocol. The gateway is here the link between the input and output modules and the PLC or DCS. It takes over the transfer of the internal bus protocol of the input and output modules into the external bus protocol. This ensures the direct coupling to the bus system used for PLC and DCS. Later matching of the field bus protocol to future standards becomes easy by just changing the gateway. Already provided are link-up possibilities for PROFIBUS-DP and Modbus.

Compatibility with existing intelligent sensors and actuators. All important measured variables and error states of existing field units using the HART protocol can be processed with Contrans I_remote modules for analog signals. This is also possible for the FSK bus (Fig. 4). With this possibility, a system-wide consistency is achieved right to the sensor and actuator level, enabling the complete functional volume of the smart multi-functional units of the PC to be directly evaluated. Apart from the internal parameters, almost all intelligent sensors and actuators supply other additional parameters. For example, intelligent positioners have end-position feedback and position feedback signals, which can also be called up in addition to the output signal. Of course the entire parameter settings of the field units can also be conducted via the Contrans I_remote modules with the support of a PC human interface. A point to point communication via hand-held terminal is also possible.

Contrans I_remote

Interface modules with field bus connection

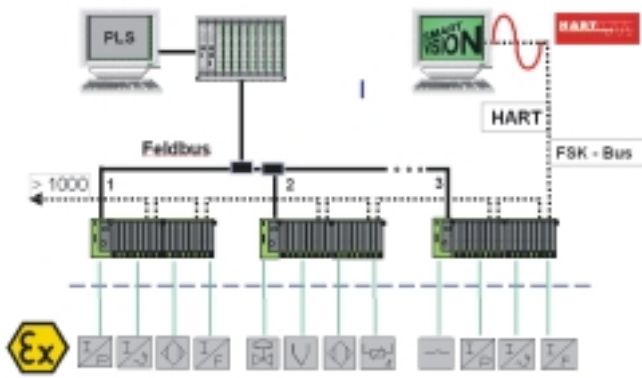


Fig. 4: Communication via HART protocol and FSK bus

Reduced service and installation costs. During installation, the wiring is done on backplanes which are snap-fitted onto DIN mounting rails. The required functional module is then plugged into the socket at the appropriate place. Since the module itself does not contain any wiring elements, the entire wiring can only be done with the help of a module rack, without a module. This greatly simplifies the mounting exercise, since the modules are matched to the wiring and vice-versa. Wiring errors are avoided, thanks to the well-outlined and systematic terminal layout.

The front-panel LED's on the modules for power supply, communication, error and switching states make commissioning and servicing easy. Since all nodes can be commissioned independently of each other, the system structure remains simple and clear-cut.

The modules are configured by means of SMART VISION_remote. This software package, which runs under Windows, was developed according to the GMA guidelines. During initial installation, each added module is integrated into the cyclical data inter-rogation feature of the gateway after being assigned with an address.

The gateway permanently provides a copy of all module configurations. Eventual module faults are recognized and signalled to the higher-level system. All it takes is to plug a substitute module with the bus address 0 in place of the defective one. The bus link recognizes the module change and assigns the exchanged module to the parameter configuration of the defective module. Manual parameter configuration is not necessary, the amount of work required in case of servicing is reduced to a minimum. On top of that, no system knowledge is required. The distribution of addresses and other simple basic functions can be undertaken at easy without a PC, via the locally provided manual control elements of the gateway.

Module exchange without disturbing bus operation and without undoing the wiring. The plug-in module design dispenses completely with wiring elements. To exchange modules, there is therefore no need to undo the wiring. All modules can be exchanged without disturbing the bus operation, since the internal bus is not interrupted during the module exchange.

Cost-saving. The special requirements made on the signal conditioning can only be fulfilled in several areas of process engineering with the help of separate interface modules. The work involved in such an exercise can be greatly reduced by using the field bus technique, i.e. by shifting the functionalities to the field. Owing to the timely digitalization of the field signals, the input and output modules of the PLC and DCS become unnecessary. Besides saving space in the control room, work and expenditure for wiring are greatly reduced.

The classical point-to-point wiring is only necessary between the input and output modules mounted in the sub-distributor and the sensors for actuators respectively. In contrast to that, the point-to-point wiring of the control sections and the complicated routing through the field bus become superfluous. With the absence of complete wiring, the risk of wrong wiring during the commissioning phase is greatly reduced. Altogether, the planning and documentation work required by conventional transmission technology also becomes greatly simplified.

The input and output modules of Contrans I_remote can also be used as an Ex-isolating point when it comes to applications in hazardous areas.

Also cost-effective for a reduced number of channels. The low channel input and output modules can be plugged in any sequential order. This ensures optimal matching of the required channels to the number of channels really required. Multi-wired trunk cables can be directly assigned to the input and output modules without having to sort out the signal lines before that. A separate terminal connection is no longer required, because the trunk cable can be directly connected to the terminals of the standard socket.

High operation safety and interference immunity. The sensors and actuators to be connected are supplied with power directly from the modules. The wiring of a separate power supply unit is therefore not required. The highest possible degree of safety and interference immunity are guaranteed by the short-circuit-free inputs and outputs which are galvanically separated from bus and power supply.

Contrans I_remote has a sophisticated redundancy concept. if need be, every node can be also equipped with an additional gateway, in order to establish a redundant connection to the DCS. The additional gateway permanently monitors the function of the first bus and takes over control, if need be. Further, a failure of the centrally supplied power is signalled back via a relay. Redundant power supply is also possible.

Enhanced system accuracy. The accuracy of conventional current circuits is impaired by converters in ex-buffer stages or I/O modules, as well as by external interferences. With Contrans I_remote, contrary to this classical transmission technique, the field signals are already digitalized in the field and further transmitted to the higher-level system, free of falsification.

Type overview

To build up a bus node, at least one single-source unit V17311-221/222, one coupling module V17312-11/12 with an additional coupling module backplane V17311-21 and one backplane for each group of 8 modules are required. Optionally, type V17312-11 can be used as a gateway for PROFIBUS-DP or type V17312-12 for the transmission per Modbus.

A configuration cable V11598-0317090 and a configuration software SMART VISION_remote V63111-7957784 is used to configure the Contrans I_remote.

The following tasks can be solved with the input/output modules of the Contrans I_remote family.

Binary inputs: The binary input modules evaluate the switching state and supply the coupled sensors with power. The Switch Amplifier Type V17331-64 is designed for the connection of mechanical contacts or initiators in hazardous areas according to EN 50227 (NAMUR). The input Type V17331-24 is suitable for evaluating the switching states of simple contacts outside hazardous areas. Both binary input modules are of four-channel design.

Binary outputs: Using Type V17332-12 of the two-channel relay output unit, it is possible to connect externally fed currents up to 2 A. The single-channel binary output (Solenoid Diver Type V17332-61) is used to supply and control intrinsically safe solenoid valves in hazardous areas.

Analog inputs: Provided are single-channel and double-channel analog inputs for the transmitter power supply or for the digitalization of measuring currents. The single-channel Analog Input of Type V17351-62 has an intrinsically safe input. It is suitable for supplying power to HART transmitters. The HART signal is located on the non-Ex side and makes point-to-point communication with the transmitter possible.

A separate parameter setting bus can also be optionally installed via the connection of the FSK bus amplifier or multiplexer.

The universal temperature transmitter Type V17352-61 is designed for connection to temperature sensors with Pt 100 sensors or thermocouples of Types K, R, S, B, J, T and E.

Analog outputs: Types V17353-61 and V17353-62 for controlling I/P converters or positioners. Type V17353-62 transmits the HART signals in the non-hazardous areas and permits apart from the point-to-point communication, the installation of a separate parameter bus.

Contrans I_remote
Interface modules with field bus connection

Program overview		Digital input			Digital output			Analog input			Temperature input			Analog output		
		V17331-24	V17331-64	V17336-62	V17332-12	V17332-52	V17332-61	V17351-24	V17351-62	V17351-64	V17352-61			V17353-61	V17353-62	
General functions	Signal direction	→			→			→			→			→		
	Number of channels	4	4	1	2	2	1	2	1	2	1			1	1	
	Supply function							●	●	●						
	HART communication, p-t-p, Multiplexer								●						●	
	Line-break monitoring		●	●			●	●	●	●	●			●	●	
	Short-circuit monitoring		●	●			●	●	●	●				●	●	
Field connection	EEx		●	●		●	●		●	●	●			●	●	
	Switching contact	●	●	●												
	NAMUR transmitter		●	●												
	Contactor				●											
	Display				●	●	●							●	●	
	Alarm				●	●	●									
	Solenoid valve, Ex						●									
	Transmitter							●	●	●						
	Pt 100										●					
	Thermocouples										●					
	I/P converter													●	●	
	Current, 0...20 mA							●	●	●				●	●	
	Current, 4...20 mA							●	●	●				●	●	
	Frequency, 0.3...1500 Hz			●												

General data

Mounting
outside the hazardous area

Mounting orientation
vertical or horizontal

Storage temperature
-25...85 °C

Operating temperature
-20...60 °C; vertical mounting: -20...55 °C
(vertical mounting: vertical top-hat rail)

Relative humidity
< 85 %, 3K3 to IEC 721, part 3-3, no condensation

Explosion protection

Process inputs or outputs
EEx ia IIC or EEx ia IIB or EEx ib ...

The backplanes and connection parts of Contrans I_remote should be erected in such a way that at least the type of protection IP 20, according to IEC 529, is assured.

Housing

Material
Polycarbonate

Fire protection class
V2 to UL 94 (DIN IEC 707)

Colour

Module	RAL 7043, dark grey
Socket	
Backplane	RAL 7035, light grey

Mechanical features

Transport/shoc
30 g, 18 ms, 2M2 to DIN IEC 721, part 3-2

Function/Vibrations
2 g / ± 0.15 mm / 5...150 Hz / 3 x 5 cycles
2 g / 10 mm / 1...35 Hz / 3 x 1 cycle
3M2 to DIN IEC 721, part 3-3

Functional data

Behaviour of analog modules
Features for reference conditions to DIN IEC 770

Electromagnetic compatibility
DIN EN 50082-1 (1993), DIN EN 50082 (1995) are met
NAMUR recommendation NE 21 is met

Functional modification through jumpers
The respective Data Sheets and flow charts give information on the function of the delivered devices and their matching possibilities.

Installation requirements

Contrans I_remote

Software	SMART VISION_remote
Hardware	Configuration cable Power supply terminal Gateway backplane Gateway Backplane 8-fold I/O modules

FSK-Bus

Software	SMART VISION
Hardware	FSK modem FSK bus amplifier

Binary modules

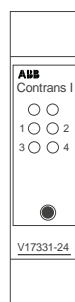
Binary input

Binary input contact	4 channels	V17331-24
Switch amplifier Ex	4 channels	V17331-64
Frequency input Ex	1 channel	V17336-62

Binary input contact 4 channels

V17331-24

- Connection of switching contacts with integrated power supply
- Electrical isolation of input and bus/EC
- 4-channel, common reference potential

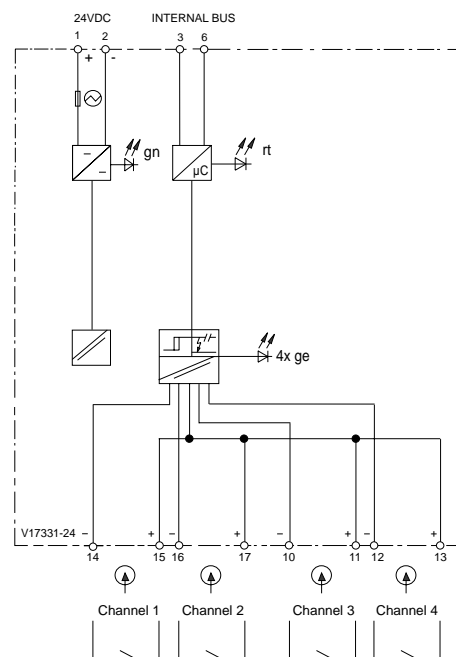


Input

Characteristics	connection of passive contacts
No-load voltage	approx. 24 V DC
Short-circuit current	approx. 2 mA
Overlap	approx. 0.2 mA
Switching frequency	< 10 Hz

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error (for exact specification see LED 1)
red, flashing	bus error
LED 1, LED 2, LED 3, LED 4	
off	input not active, input open
yellow	input active, contact/switch closed
When LED lights up red it applies to LED 1	
off	ROM/RAM error/EEPROM error
yellow	communication error
Test voltage	2.3 kV inputs – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1.1 W
Current drain	approx. 46 mA for 24 V DC



Switch amplifier Ex 4 channels

V17331-64



- Connection of initiators, proximity switches
- Electrical isolation between inputs and bus/EC
- Wire break and short-circuit monitoring, can be switched off via parameter setting
- 4-channel, common reference potential for all inputs
- Input EEx ia IIC

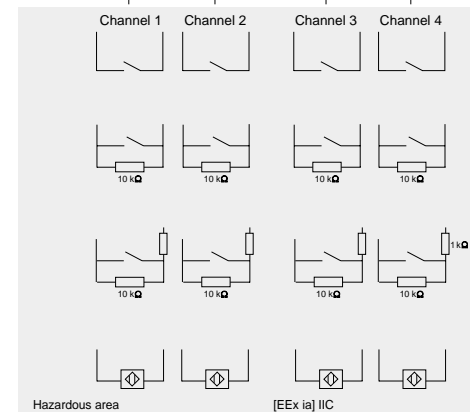
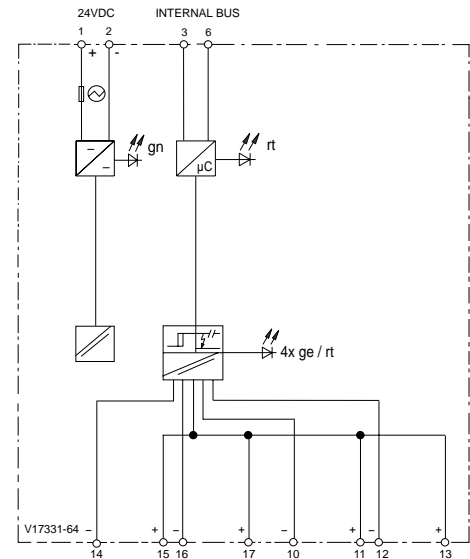


Input

Reference data	to EN 50227, NAMUR																							
No-load voltage	approx. 8 V DC																							
Short-circuit current	approx. 8 mA																							
Switching point in range	1.2...2.1 mA																							
Overlap	approx. 0.2 mA																							
Switching frequency	< 10 Hz																							
Line break monitoring	< 100 μ A																							
Short-circuit monitoring	> 6 mA																							
Explosion protection	[EEx ia] IIC																							
Certificate of conformity	BAS-No. Ex-97.D.2145 X																							
Max. short-circuit current I_o	16 mA																							
Max. voltage U_o	9.6 V																							
Max. performance P_o	38 mW																							
Permitted connection values per circuit	<table border="1"> <thead> <tr> <th></th> <th>[EEx ia]</th> <th></th> <th>[EEx ib]</th> <th></th> </tr> <tr> <th></th> <th>IIB</th> <th>IIC</th> <th>IIB</th> <th>IIC</th> </tr> </thead> <tbody> <tr> <td>Permitted external inductance</td> <td>$L_a < 6$ mH</td> <td>5 mH</td> <td>530 mH</td> <td>140 mH</td> </tr> <tr> <td>Permitted external capacitance</td> <td>$C_a < 2600$ nF</td> <td>670 nF</td> <td>41 μF</td> <td>4800 nF</td> </tr> </tbody> </table>					[EEx ia]		[EEx ib]			IIB	IIC	IIB	IIC	Permitted external inductance	$L_a < 6$ mH	5 mH	530 mH	140 mH	Permitted external capacitance	$C_a < 2600$ nF	670 nF	41 μ F	4800 nF
	[EEx ia]		[EEx ib]																					
	IIB	IIC	IIB	IIC																				
Permitted external inductance	$L_a < 6$ mH	5 mH	530 mH	140 mH																				
Permitted external capacitance	$C_a < 2600$ nF	670 nF	41 μ F	4800 nF																				
For the interconnection of several current circuits see certificate of conformity																								

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	(for exact specification see LED 1) bus error
LED 1, LED 2, LED 3, LED 4	
yellow/red	
off	input not active, input open
yellow	input active, contact/switch closed
red, flashing	line break or line short-circuit of the field circuit
When LED lights red up it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV inputs – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1 W
Current drain	approx. 39 mA for 24 V DC

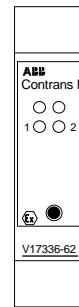


Frequency input Ex 1 channel

V17336-62

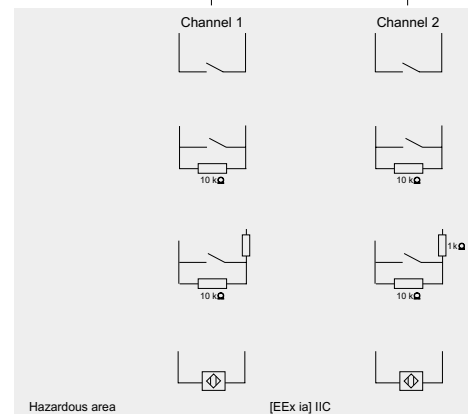
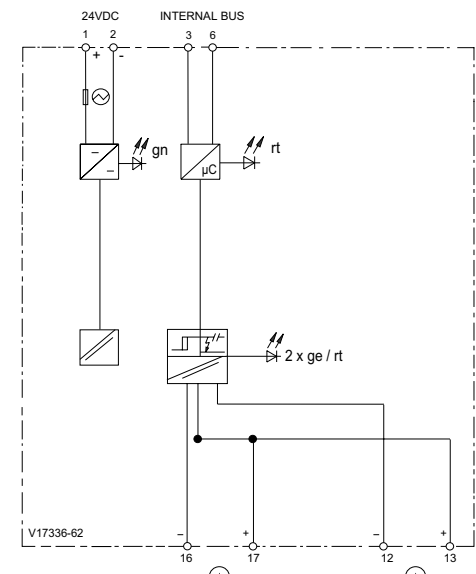


- Frequency, pulse and flow measuring
- With detection of the direction of rotation
- With rev control
- With deadlock control
- Wire break and short-circuit monitoring
- Input EEx ia IIC



Input

Reference data	to DIN 19234, NAMUR																							
No-load voltage	approx. 8 V DC																							
Short-circuit current	approx. 8 mA																							
Switching point in range	1.2...2.1 mA																							
Overlap	approx. 0.2 mA																							
Switching frequency	< 10 Hz																							
Line break monitoring	< 100 μ A																							
Short-circuit monitoring	> 6 mA																							
Explosion protection	[EEx ia] IIC																							
Certificate of conformity	BAS-No. Ex-97.D.2145 X																							
Max. short-circuit current I_o	16 mA																							
Max. voltage U_o	9.6 V																							
Max. performance P_o	38 mW																							
Permitted connection values per circuit	<table border="1"> <thead> <tr> <th></th> <th colspan="2">[EEx ia]</th> <th colspan="2">[EEx ib]</th> </tr> <tr> <th></th> <th>IIB</th> <th>IIC</th> <th>IIB</th> <th>IIC</th> </tr> </thead> <tbody> <tr> <td>Permitted external inductance</td> <td>$L_a < 6$ mH</td> <td>5 mH</td> <td>530 mH</td> <td>140 mH</td> </tr> <tr> <td>Permitted external capacitance</td> <td>$C_a < 2600$ nF</td> <td>670 nF</td> <td>41 μF</td> <td>4800 nF</td> </tr> </tbody> </table>					[EEx ia]		[EEx ib]			IIB	IIC	IIB	IIC	Permitted external inductance	$L_a < 6$ mH	5 mH	530 mH	140 mH	Permitted external capacitance	$C_a < 2600$ nF	670 nF	41 μ F	4800 nF
	[EEx ia]		[EEx ib]																					
	IIB	IIC	IIB	IIC																				
Permitted external inductance	$L_a < 6$ mH	5 mH	530 mH	140 mH																				
Permitted external capacitance	$C_a < 2600$ nF	670 nF	41 μ F	4800 nF																				
For the interconnection of several current circuits see certificate of conformity																								
Test voltage	2.3 kV inputs – bus/EC																							
Power supply																								
Rated voltage	approx. 20...30 V DC																							
Power consumption	approx. 1 W																							
Current drain	approx. 39 mA for 24 V DC																							
Connection layout																								
Frequency input	channel 1	PIN 16 (-)	PIN 17 (+)																					
Auxiliary input	channel 2	PIN 12 (-)	PIN 13 (+)																					
Notes:	The frequency input can also be used as an pulse converter.																							
Configuration	via the Software SMART VISION_remote																							



Binary modules

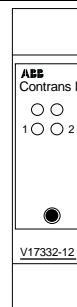
Binary output

Binary output contact	2 channels	V17332-12
Binary output Ex, contact	2 channels	V17332-52
Solenoid drive Ex	1 channel	V17332-61

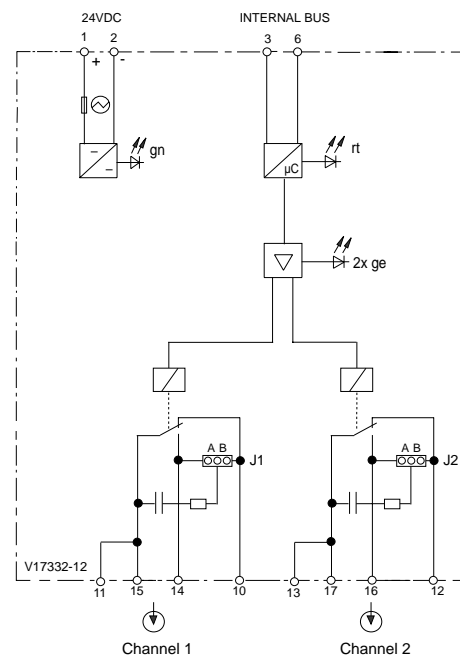
Binary output contact 2 channels

V17332-12

- Current output for controlling contactors
- Relay outputs with changeover contacts
- Electrical isolation of outputs, of outputs and bus/EC
- 2-channel
- Spark-quenching fuses 100 Ω/22 nF built-in



Output	⊕ ↓
Contact data	250 V AC, 1 A $\cos\phi > 0.7$ 30 V DC, 2 A, resistive load
Switching frequency	< 10 Hz
Switching cycles	> 10^6
Spark-quenching fuse	100 Ω/22 nF per channel can be switched off or changed to NO or NC contact via jumper
Starting or drop delay	< 10 ms
Contact material	AgCdO
General data	
Displays	
LED green green, flashing	power supply on set the subscribers address
LED red red, flashing	hardware error (for exact specification see LED 1) bus error
LED 1, LED 2 off yellow	output not active, relay drop output active, relay pick-up
When LED lights up red it applies to LED 1 off yellow	ROM/RAM error/EEPROM error communication error
Test voltage	2.3 kV outputs – bus/EC 2.3 kV output 1 – output 2
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 0.9 W
Current drain	approx. 38 mA for 24 V DC

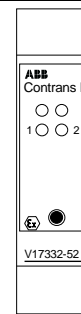


Binary output Ex, contact 2 channels

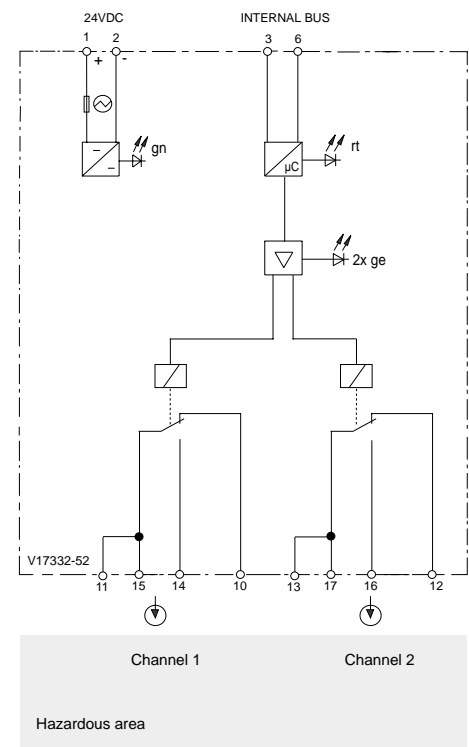
V17332-52



- Current output for controlling contactors
- Relay outputs with changeover contacts
- Electrical isolation of outputs, of outputs and bus/EC
- 2-channel
- Contact outputs EEx ia IIC



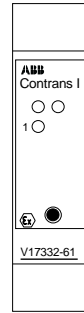
Output	⊕ ↓
Contact data	250 V AC, 1 A $\cos\phi > 0.7$ 30 V DC, 2 A, resistive load
Switching frequency	< 10 Hz
Switching cycles	> 10^6
Spark-quenching fuse	100 Ω /22 nF per channel can be switched off or changed to NO or NC contact via jumper
Starting or drop delay	< 10 ms
Contact material	Ag alloy with gold plating
Explosion protection	
Certificate of conformity	PTB-Nr. Ex-97.D.2108 X
Contact current circuits for connection to intrinsically safe circuits with the following max. values which are determined by the contacts:	$U_i = 55 \text{ V}$ $I_i = 800 \text{ mA}$ $U_i = 40 \text{ V}$ $I_i = 1.5 \text{ A}$ $U_i = 37 \text{ V}$ $I_i = 2 \text{ A}$
The intrinsically safe maximum values are determined by the connected and certified circuits. The intrinsically safe contact circuits are electrically isolated from the no-intrinsically safe currents up to a rated voltage peak value of 375 V.	



General data	
Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error (for exact specification see LED 1)
red, flashing	bus error
LED 1, LED 2	
off	output not active, relay drop
yellow	output active, relay pick-up
When LED lights up red it applies to LED 1	
off	ROM/RAM error/EEPROM error
yellow	communication error
Test voltage	2.3 kV outputs – bus/EC 2.3 kV output 1 – output 2
Power supply	⊕
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1 W
Current drain	approx. 39 mA for 24 V DC



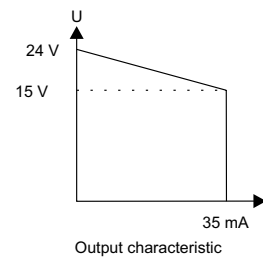
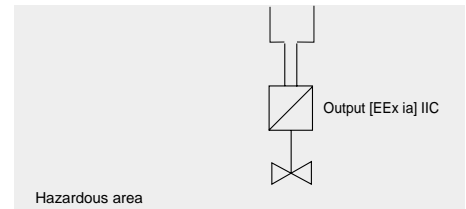
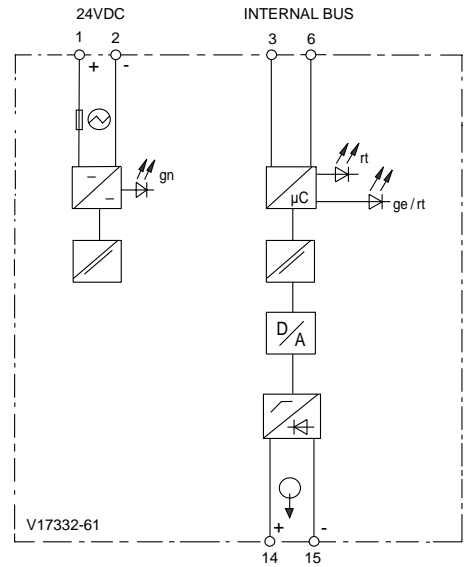
- Connection of intrinsically safe solenoid valves, displays, alarms
- Short-circuit and sensor break monitoring
- Electrical isolation between outputs and bus/EC
- 1-channel
- Output EEx ia IIC



Output	⊕ ↓
No-load voltage	< 24 V (19.2 for 20 mA)
Effective current	< 35 mA
Internal resistance	240 Ω
Switching frequency	< 10 Hz
Sensor-break monitoring	< 0.5 mA
Short-circuit monitoring	< 1 V
Explosion protection	[EEx ia]
Certificate of conformity	PTB-Nr. Ex-98.D.2099 X
Max. short-circuit current I _o	110 mA
Max. voltage U _o	26 V
Max. performance P _o	715 mW
Permitted connection values	[EEx ia] IIB IIC
Permitted external inductance	L _a < 12 mH 3 mH
Permitted external capacitance	C _a < 770 μF 99 nF

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	(for exact specification see LED 1) bus error
LED 1 yellow/red	
off	output not active
yellow	output active
red, flashing	line-break or line short-circuit of the field loop
When LED lights up red it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV outputs – bus/EC
Power supply	⊙
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1 W
Current drain	approx. 40 mA for 24 V DC



Analog modules

Analog input

Loop powered supply	2 channels		V17351-24
Loop powered supply Ex	1 channel	HART	V17351-62
Loop powered supply Ex	2 channels		V17351-64

Loop powered supply 2 channels

V17351-24

- Power supply for 2-wire transmitter for 4...20 mA
- Switch amplifier input for 0/4...20 mA
- Power supply for 3-wire transmitter for 0/4...20 mA
- Short-circuit and line-break monitoring for power feed functions, can be switched off via parameter setting
- Electrical isolation between inputs and bus/EC
- 2-channel, common reference potential for all inputs



Input

Input current	0/4...20 mA
Supply voltage	≥ 15 V for 20 mA, short-circuit proof
Input resistance	> 250 Ω for HART communication via FSK modem
Input resistance isolating driver	approx. 42 Ω
Residual ripple	< 100 mV ss
Level of line short-circuit (KS)	≥ 24 mA
Level of line-break (LB)	≤ 2 mA

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	bus error
LED 1, LED 2	
off	input error-free
red, flashing	line-break or line short-circuit of the field loop

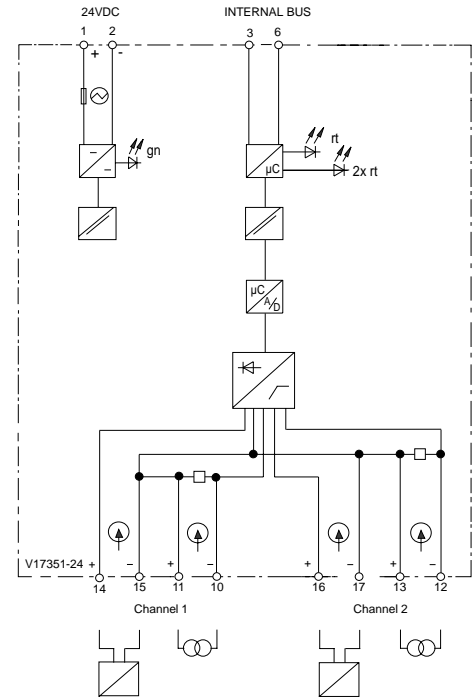
Test voltage 2.3 kV inputs – bus/EC

Power supply

Rated voltage	approx. 20...30 V DC
Power consumption f. 2 x 20 mA	approx. 1.85 W; P _{max.} in case: 1.85 W – 2 x 0.3 W ≈ 1.25 W
Current drain	approx. 78 mA for 24 V DC

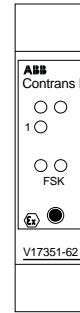
Characteristics at rated conditions

Accuracy	< 0.1% of the span
Temperature effect	< 0.05 % / 10 K of the span
Response time	≤ 120 ms (1% rest error)





- Power supply for 2-wire transmitter for 4...20 mA
- Isolating driver input for 0/4...20 mA
- Power supply for 3-wire transmitter for 0/4...20 mA
- Short-circuit and line-break monitoring for power feed functions, can be switched off via parameter setting
- Electrical isolation between inputs and bus/EC
- 1-channel
- Transmission of HART signals into non-hazardous area
- Input EEx ia IIC

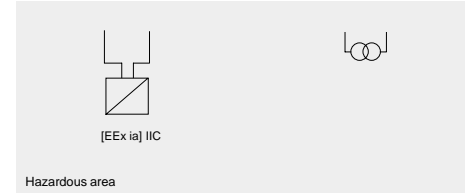
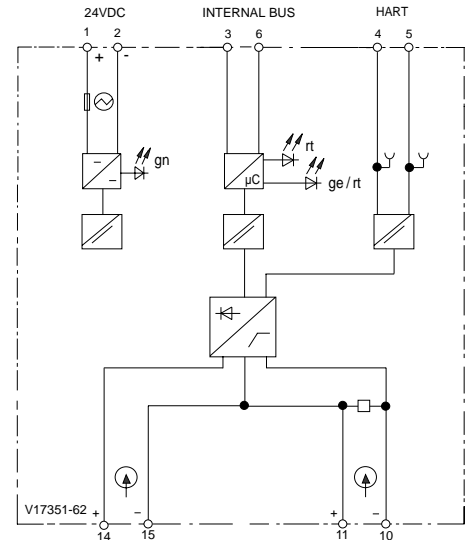


Input

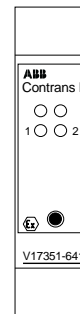
Input current	4...20 mA for transmitter connection in 2-wire technique			
Supply voltage	≥ 15 V for 20 mA, short-circuit proof			
Input resistance Isolating driver	105 Ω			
Residual ripple	< 100 mV ss			
Level of line short-circuit (KS)	≥ 25 mA, common status: overranging + short-circuit signal			
Level of line break (LB)	≤ 50 μA			
Explosion protection	[EEx ia] IIC			
Certificate of conformity	BAS-No. Ex-97.D.2289 X			
Max. short-circuit current I _o	93 mA			
Max. voltage U _o	25.4 V			
Max. performance P _o	570 mW			
Permitted connection values	[EEx ia]	IIA	IIB	IIC
Permitted external inductance	L _a	33.0 mH	16.5 mH	4.2 mH
Permitted external capacitance	C _a	2.82 μF	0.81 μF	105 nF

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	(for exact specification see LED 1) bus error
LED 1	
off	input error-free
red, flashing	line-break or line short-circuit of the field loop
When LED lights up red it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV input – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	P _{ges} ≈ 1.4 W; P _{int} ≈ 1.1 W; in case of short-circuit at input approx. 2 W
Current drain	approx. 58.3 mA for 24 V DC
Characteristics at rated conditions	
Accuracy at 20 °C	< 0.1% of the span
Temperature effect	< 0.05 % / 10 K of the span
Response time	≤ 100 ms (1% rest error)
Test jacks	for HART point-to-point communication in front panel
FSK bus	via FSK bus amplifier
Accessories	FSK bus amplifier V17191-16 FSK modem (see List 63)



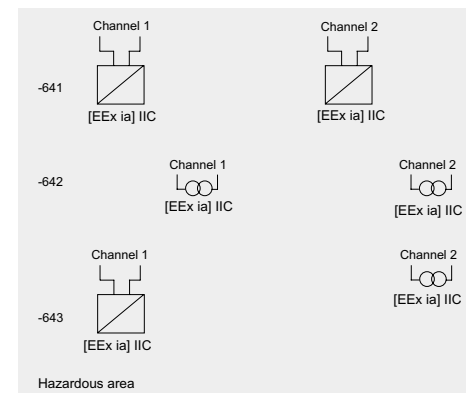
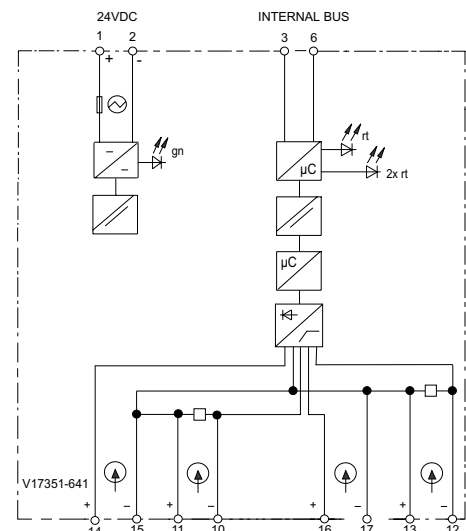
- Power supply for 2-wire transmitter for 4...20 mA
- Isolating driver input for 0/4...20 mA
- Power supply for 3-wire transmitter for 0/4...20 mA
- Short-circuit and line-break monitoring for power feed functions, can be switched off via parameter setting
- Electrical isolation between inputs and bus/EC
- 2-channel, common reference potential of all inputs
- Input EEx ia IIC



Input			
Input current	0/4...20 mA		
Supply voltage	≥ 15 V for 20 mA, short-circuit proof		
Input resistance	> 250 Ω for HART communication via FSK modem		
Input resistance Isolating driver	approx. 42 Ω		
Residual ripple	< 100 mV ss		
Type	Input	line-break	line short-circuit
V17351-641	4...20 mA	≤ 2 mA	≥ 24 mA
V17351-642	0/4...20 mA	- / ≤ 2 mA	≥ 24 mA
V17351-643	K1: 4...20 mA K2: 0/4...20 mA	≤ 2 mA - / ≤ 2 mA	≥ 24 mA ≥ 24 mA

Explosion protection Ex II(1)G [EEx ia] IIC			
Certificate of conformity	PTB-No. ATEX 2209 X	Isol. driver input	
Höchstwerte	2-wire	3-wire	input
Max. short-circuit current I _o	93 mA	93 mA	0.7 mA
Max. voltage U _o	25.2 V	25.2 V	3.5 V
Max. performance P _o	585 mW	585 mW	0.6 mW
Perm. connection values 2-wire	[EEx ia]	IIB	IIC
Permitted external inductance	L _a <	2 mH	1 mH
Permitted external capacitance	C _a <	390 nF	63 nF

General data	
Displays	
LED green green, flashing	power supply on set the subscribers address
LED red red, flashing	hardware error bus error
LED 1 off red, flashing	input error-free line-break or line short-circuit of the field loop
Test voltage	2.3 kV inputs – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1.85 W; P _{max.} in case: 1.85 W – 2 x 0.3 W ≈ 1.25 W
Current drain	approx. 78 mA for 24 V DC
Characteristics at rated conditions	
Accuracy at 20 °C	< 0.1% of the span
Temperature effect	< 0.05 % / 10 K of the span
Response time	≤ 120 ms (1% rest error)



Analog modules

Temperature input

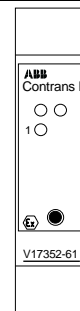
Temperature input Ex

1 channel

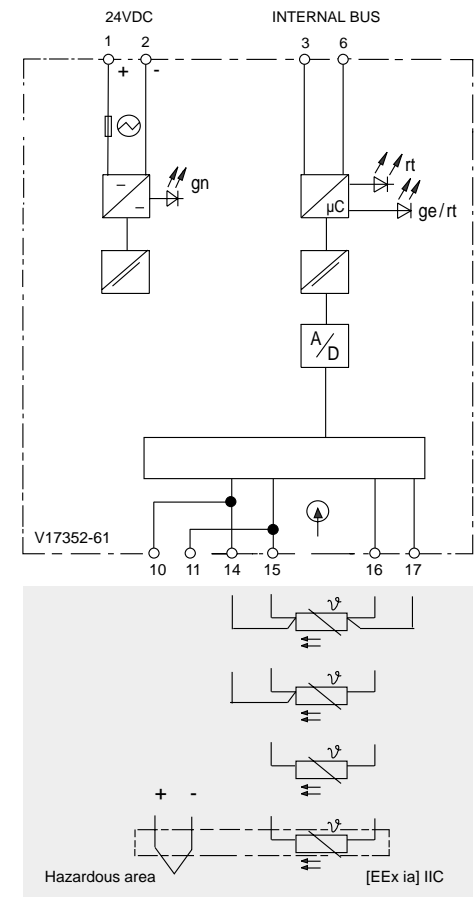
V17352-61



- Transmitter for Pt100 to DIN IEC 751 and thermocouples B, E, J, K, L, N, R, S, T to DIN IEC 584
- Pt100 in 2-, 3- or 4-wire technique
- Line-break monitoring
- Internal reference junction compensation via Pt100 connected through terminal
- Electrical isolation between input and bus/EC
- 1-channel
- Input EEx ia IIC



Input	
Line resistance	> 50 Ω / wire for Pt100, 4-wire < 10 Ω / wire for Pt100, 3-wire < 10 Ω / feed and return conductor for Pt100 / Ni100, 2-wire technique
Explosion protection	[EEx ia] IIC
Certificate of conformity	BAS 99 ATEX 7184 X
Max. short-circuit current I _o	33 mA
Max. voltage U _o	11 V
Max. performance P _o	90 mW
Permitted connection values	[EEx ia] IIA IIB IIC
Permitted external inductance	L _a < 240 mH 120 mH 31 mH
Permitted external capacitance	C _a < 60 μF 13.8 μF 1.97 μF
General data	
Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	(for exact specification see LED 1) bus error
LED 1 yellow/red	input error-free
off	line-break or line short-circuit of the field loop
red, flashing	
When LED lights up red it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV input – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 0.8 W
Current drain	approx. 33.3 mA for 24 V DC
Characteristics at rated conditions	
Calibrated accuracy	± (0.01 % of MV in K + 0.05 % of span + 0.1 K) (Pt100, 4-wire) ± (0.05 % of MV in K + 0.05 % of span + 1 K) (thermocouple incl. 0.8 K for reference junction)
Temperature effect	
Pt100	± (0.0015 % of MV in K + 0.006 % of span) / K
Thermocouples	± (0.02 K + 0.004 % of MV in K + 0.006 % of span) / K
Effect of the supply voltage	< 0.001 % of span
Response time	≤ 50 ms



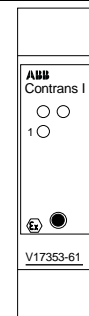
Analog modules

Analog output

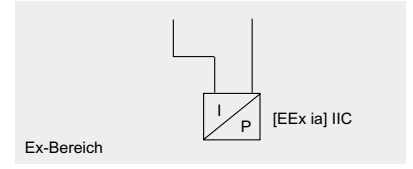
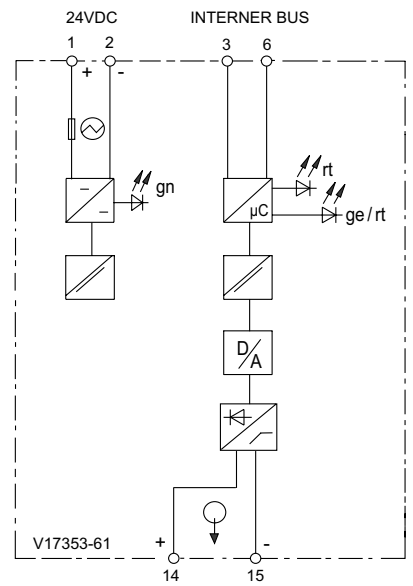
Analog output Ex	1 channel		V17353-61
Analog output Ex	1 channel	HART	V17353-62



- Output signals 0/4...20 mA for actuators
- Line-break monitoring, short-circuit monitoring, can be switched-off via parameter configuration
- Electrical isolation between outputs and bus/EC
- 1-channel
- Output EEx ia IIC

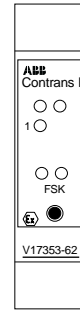


Output	⊕ ↓
Output current	0/4... 20 mA
Load voltage	≥ 14.2 V for 22.7 mA ≥ 15 V for 20 mA
Load	0 Ω...(30 Ω)...750 Ω, 0 Ω only if short-circuit monitoring is off
Residual ripple	< 0.25 %
Level of line short-circuit (KS)	$R_a < 30 \Omega$ (switched-off per software at $I_a = 0...20 \text{ mA}$)
Level of line-break (LB)	$R_a > 820 \Omega$
Explosion protection	[EEx ia] IIC
Certificate of conformity	PTB-No. Ex-97.D.2206 X
Max. short-circuit current I_o	91 mA
Max. voltage U_o	24.2 V
Max. performance P_o	547 mW
Permitted connection values	[EEx ia] IIB IIC
Permitted external inductance	$L_a < 18 \text{ mH}$ 4.9 mH
Permitted external capacitance	$C_a < 0.91 \mu\text{F}$ 122 nF
General data	
Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error (for exact specification see LED 1)
red, flashing	bus error
LED 1 yellow/red	
off	input error-free
red, flashing	line-break or line short-circuit of the field loop
When LED lights up red it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV output – bus/EC
Power supply	⊕
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1.3 W
Current drain	approx. 54.2 mA for 24 V DC
Characteristics at rated conditions	
Accuracy at 20 °C	< 0.1 % of the span
Temperature effect	< 0.1 % / 10 K of the span
Load effect	< 0.1 % (0...750 Ω)
Response time	< 400 ms





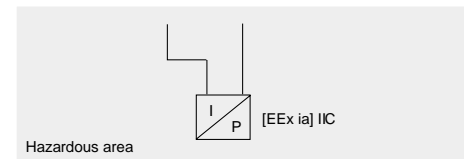
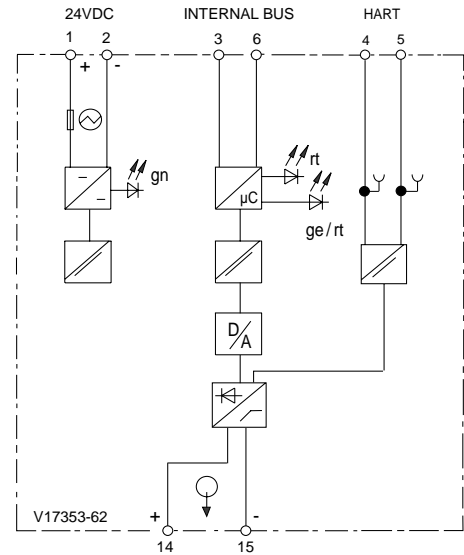
- Output signals 0/4...20 mA for actuators
- Line-break monitoring, short-circuit monitoring, can be switched-off via parameter configuration
- Electrical isolation between outputs and bus/EC
- Transmission of HART signals into the non-hazardous area, test jacks for FSK signal
- 1-channel
- Output EEx ia IIC



Output	⊕ ↓
Output current	0/4... 20 mA
Load voltage	≥ 14.2 V for 22.7 mA ≥ 15 V for 20 mA
Load	0 Ω...(30 Ω)...750 Ω, 0 Ω only if short-circuit monitoring is off
Residual ripple	< 0.25 %
Level of line short-circuit (KS)	$R_a < 30 \Omega$
Level of line-break (LB)	$R_a > 820 \Omega$
Explosion protection	[EEx ia] IIC
Certificate of conformity	PTB-No. Ex-97.D.2206 X
Max. short-circuit current I_o	91 mA
Max. voltage U_o	24.2 V
Max. performance P_o	547 mW
Permitted connection values	[EEx ia] IIB IIC
Permitted external inductance	$L_a < 18 \text{ mH}$ 4.9 mH
Permitted external capacitance	$C_a < 0.91 \mu\text{F}$ 122 nF

General data

Displays	
LED green	power supply on
green, flashing	set the subscribers address
LED red	hardware error
red, flashing	(for exact specification see LED 1) bus error
LED 1 yellow/red	input error-free
off	line-break or line short-circuit of the field loop
red, flashing	
When LED lights up red it applies to LED 1	
off	ROM/RAM error
red	EEPROM error
yellow	communication error
Test voltage	2.3 kV output – bus/EC
Power supply	
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 1.3 W
Current drain	approx. 54.2 mA for 24 V DC
Characteristics at rated conditions	
Accuracy at 20 °C	< 0.1% of the span
Temperature effect	< 0.1 % / 10 K of the span
Load effect	< 0.1% (0...750 Ω)
Response time	< 400 ms
Test jacks	for HART point-to-point communication in the front panel
FSK bus	via FSK bus amplifier
Accessories	FSK bus amplifier V17191-16 FSK modem (see List 63)



Gateways

Gateways

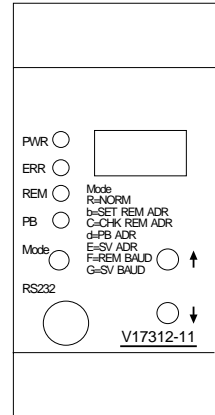
PROFIBUS gateway

V17312-11

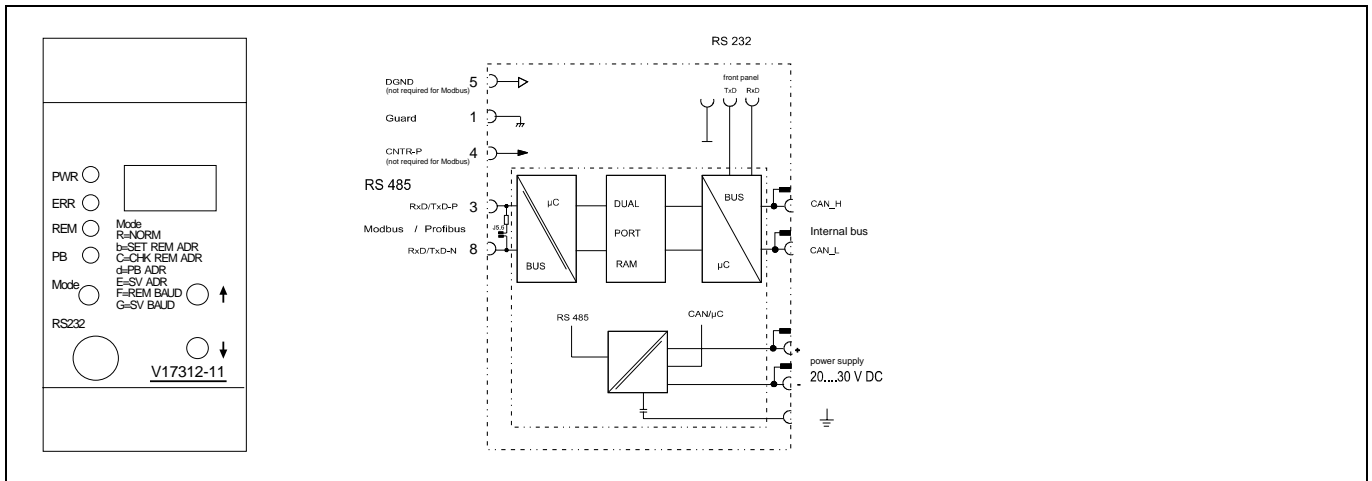
Modbus gateway

V17312-12

- PROFIBUS-DP
- Coupling of the internal CAN bus to external PROFIBUS
- Standard PROFIBUS RS 485 interface routed to backplane
- Front panel RS 232 connection to configuration/monitoring of the remote-control system
- PROFIBUS-DP redundant via two coupling modules
- Electrical isolation between PROFIBUS and EC, CAN bus
- Connection of up to 125 Contrans I_remote modules via backplane
- 2 jumpers for matching to PROFIBUS terminal impedance

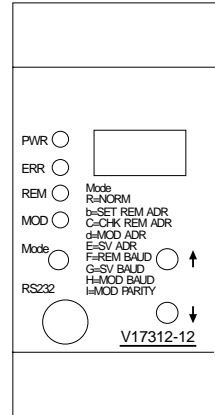


Input	⬆
Internal bus	CAN protocol via backplane for up to 125 subscribers
Cycle time	approx. 55 ms at operation of 125 binary modules approx. 65 ms at operation of 125 analog modules
Output	⬇
Field bus	Profibus to EN 50170, interface RS 485
Parameter interface	Front panel RS 232 for connection of PC via adapter, socket outlet: jack plug 3.5 mm Ø 3pole
Redundancy	Possible by using second coupling module. Operation state "active and passive coupling module". Active coupling module CAN address 1; passive coupling module CAN address 2; mutual monitoring and function takeover of coupling module in case of fault of other coupling module
General data	
Ambient temperature	-20...+60 °C
Test voltage	500 V between Profibus and CAN bus, EC
Weight	180 g
Dimensions	W x H, 55 mm x 134 mm, Depth 126 mm, incl. backplane
Power supply	⊙
Rated voltage	approx. 20...30 V DC
Residual ripple	< 10 % ss
Power consumption	approx. 3.2 W
Current drain	approx. 130 mA for 24 V DC
LED's	
PWR Power	green power supply on
ERR Error	red internal error (see REM display)
	red, flashing internal CAN bus- or unit error
PB PROFIBUS	yellow Profibus in normal operation
	red internal error (see REM display)
	red, flashing no Profibus communication
REM Remote	Specification of the internal error if ERR and PB not permanently red
	off internal CAN bus in differential mode, normal state
	red, flashing internal CAN bus in common mode, redundancy failure
	Specification of the internal error if ERR is permanently red
	off internal interface error
	red RAM, ROM, EEPROM error
	Specification of the internal error if PB is permanently red
	off internal interface error
	red RAM, ROM error
Bus terminal impedance	symmetrical can be matched via jumpers 5 and 6, 390 Ω – 150 Ω – 390 Ω
Accessories	Configuration cable 11598-0317090

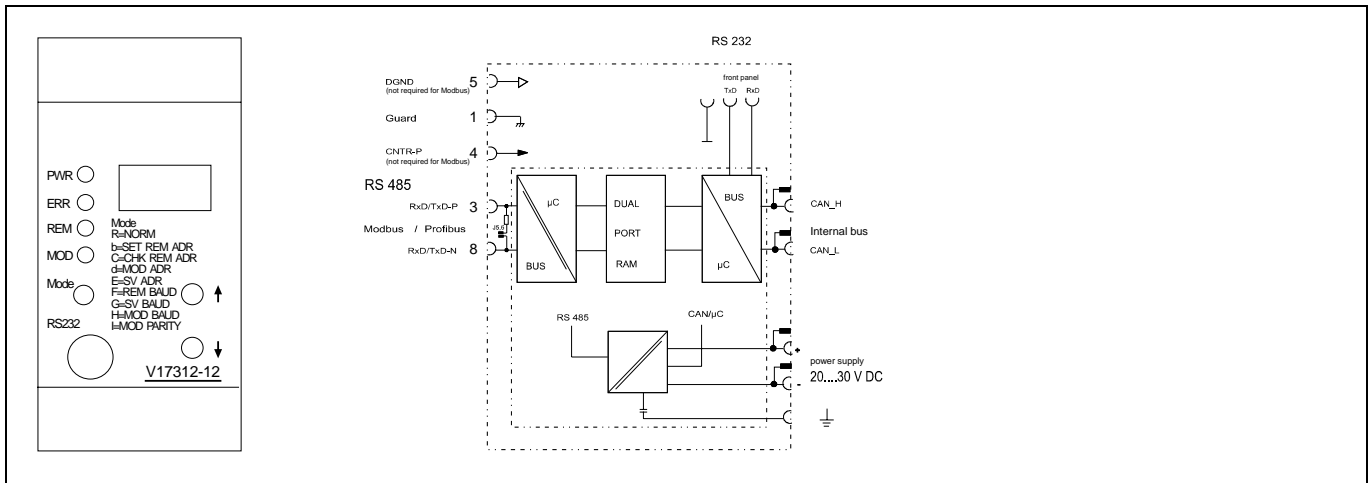


Front panel controls	
LC display	31/2-digit
Key „Mode“	“Up“ ↑, “Down“ ↓ for setting the operation states. The first 3 positions of the display show status, address or parameter. The last position shows the operation states described in the section on on operation:
Operation	The configuration, addressing, commissioning and troubleshooting are effected with PC and the human interface SMART VISION via the front-panel RS 232 interface. Limited operation without PC is possible with the manual control elements of the coupling module and the modules.
A = NORM	Normal operation: In case of error, the display alternatingly displays the address of the faulty unit and its error code. With the ↑ and ↓ keys, the addresses of other faulty units can be displayed. If display goes off, no more error.
b = SET REM ADR	Addressing of the input and output modules: A free address is displayed. Using the ↑ and ↓ keys, the address can be modified. Already assigned and invalid address are not displayed. If the key on the front panel of the module to be addressed is pressed for more than 5 s, the module takes over the displayed address. Acknowledgement is signalled by a short flashing of the green LED.
C = CHK REM ADR	Address check of the input and output modules: With the help of the ↑ and ↓ keys, the address can be displayed. The green LED of the module involved begins to flash. Vice versa, by pressing the module key for a short time (< 5 s), the selected address is displayed in the coupling module.
d = PB ADR	Selecting and displaying the Profibus and coupling module addresses: With the help of the ↑ and ↓ keys, the address is selected on screen. If the mode key is pressed for more than 5 s, the adjusted address is accepted.
E = SV ADR	Selecting and displaying the address for communication with SMART VISION_remote: With the help of the ↑ and ↓ keys, the address is selected on screen. If the mode key is pressed for more than 5 s, the adjusted address is accepted.
F = REM BAUD	Selecting and displaying the baud rate in the input and output module: With the help of the ↑ and ↓ keys, the code numeral for the baud rate is selected on screen. If the mode key is pressed for more than 5 s, the selected baud rate is accepted.
G = SV BAUD	Selecting and displaying the baud rate for communication with SMART VISION_remote: With the help of the ↑ and ↓ keys, the code numeral for the baud rate is selected on screen. If the mode key is pressed for more than 5 s, the selected baud rate is accepted. Further parameters of the module and of the coupling module can be selected with PC and SMART VISION_remote.
GSD file	http://www.profibus.com abb 9650 Revision V.1.8
Configuration	All the configuration settings will be done with the software tool SMART VISION_remote. The configuration will be taken into the gateway via download.

- **Modbus**
- **Coupling of the internal CAN bus to external Modbus**
- **Standard Modbus RS 485 interface routed to backplane**
- **Front panel RS 232 connection to configuration/monitoring of the remote-control system**
- **Modbus redundant via two coupling modules**
- **Electrical isolation between Modbus and EC, CAN bus**
- **Connection of up to 125 Contrans I_remote modules via backplane**
- **2 jumpers for matching to Modbus terminal impedance**



Input	⤴
Internal bus	CAN protocol via backplane for up to 125 subscribers
Cycle time	approx. 55 ms at operation of 125 binary modules approx. 65 ms at operation of 125 analog modules
Output	⤵
Field bus	Modbus, RTU profile, interface RS 485
Parameter interface	Front panel RS 232 for connection of PC via adapter, socket outlet: jack plug 3.5 mm Ø 3pole
Redundancy	Possible by using second coupling module. Operation state "active and passive coupling module". Active coupling module CAN address 1; passive coupling module CAN address 2; mutual monitoring and function takeover of coupling module in case of fault of other coupling module
General data	
Ambient temperature	-20...+60 °C
Test voltage	500 V between Modbus and EC, CAN bus
Weight	180 g
Dimensions	W x H, 55 mm x 134 mm, Depth 126 mm, incl. backplane
Power supply	⊖
Rated voltage	approx. 20...30 V DC
Residual ripple	< 10 % ss
Power consumption	approx. 3 W
Current drain	approx. 125 mA for 24 V DC
LED's	
PWR Power	green power supply on
ERR Error	red internal error (see REM display)
	red, flashing internal CAN bus- or unit error
PB Modbus	yellow Modbus in normal operation
	red internal error (see REM display)
	red, flashing no Modbus communication
REM Remote	Specification of the internal error if ERR and MOD not permanently red
	off internal CAN bus in differential mode, normal state
	red, flashing internal CAN bus in common mode, redundancy failure
	Specification of the internal error if ERR is permanently red
	off internal interface error
	red RAM, ROM, EEPROM error
	Specification of the internal error if MOD is permanently red
	off internal interface error
	red RAM, ROM error
Bus terminal impedance	symmetrical can be matched via jumpers 5 and 6, 390 Ω – 150 Ω – 390 Ω
Accessories	Configuration cable 11598-0317090



Front panel controls	
LC display	31/2-digit
Key „Mode“	“Up“ ↑, “Down“ ↓ for setting the operation states. The first 3 positions of the display show status, address or parameter. The last position shows the operation states described in the section on on operation:
Operation	The configuration, addressing, commissioning and troubleshooting are effected with PC and the human interface SMART VISION via the front-panel RS 232 interface. Limited operation without PC is possible with the manual control elements of the coupling module and the modules.
A = NORM	Normal operation: In case of error, the display alternatingly displays the address of the faulty unit and its error code. With the ↑ and ↓ keys, the addresses of other faulty units can be displayed. If display goes off, no more error.
b = SET REM ADR	Addressing of the input and output modules: A free address is displayed. Using the ↑ and ↓ keys, the address can be modified. Already assigned and invalid address are not displayed. If the key on the front panel of the module to be addressed is pressed for more than 5 s, the module takes over the displayed address. Acknowledgement is signalled by a short flashing of the green LED.
C = CHK REM ADR	Address check of the input and output modules: With the help of the ↑ and ↓ keys, the address can be displayed. The green LED of the module involved begins to flash. Vice versa, by pressing the module key for a short time (< 5 s), the selected address is displayed in the coupling module.
d = MOD ADR	Selecting and displaying the Profibus and coupling module addresses: With the help of the ↑ and ↓ keys, the address is selected on screen. If the mode key is pressed for more than 5 s, the adjusted address is accepted.
E = SV ADR	Selecting and displaying the address for communication with SMART VISION_remote: With the help of the ↑ and ↓ keys, the address is selected on screen. If the mode key is pressed for more than 5 s, the adjusted address is accepted.
F = REM BAUD	Selecting and displaying the baud rate in the input and output module: With the help of the ↑ and ↓ keys, the code numeral for the baud rate is selected on screen. If the mode key is pressed for more than 5 s, the selected baud rate is accepted.
G = SV BAUD	Selecting and displaying the baud rate for communication with SMART VISION_remote: With the help of the ↑ and ↓ keys, the code numeral for the baud rate is selected on screen.
H = MOD BAUD	Selecting and displaying the baud rate for communication with Modbus: With the help of the ↑ and ↓ keys, the code numeral for the baud rate is selected on screen. If the mode key is pressed for more than 5 s, the selected baud rate is accepted.
I = MOD PARITY	Selecting and displaying the parity for Modbus communication.
Configuration	Further parameters of the module and of the coupling module can be selected with PC and SMART VISION_remote. All the configuration settings will be done with the software tool SMART VISION_remote. The configuration will be taken into the gateway via download.

Backplanes

Backplanes

Power supply terminal	2 channels	V17311-22_
Gateway for backplane	for Contrans I_remote backplane	V17331-21
Backplane 8fold	for Contrans I_remote I/O modules	V17311-28

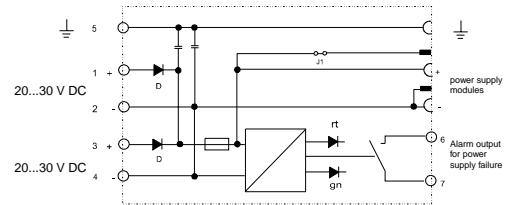
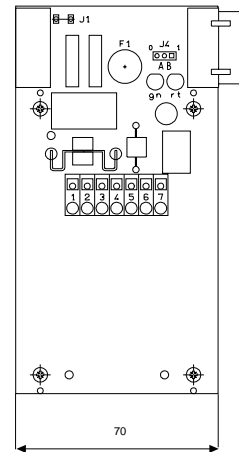
Accessories

FSK bus amplifier		V17191-16
Socket		V17111-11
Power supply		V17212-1_0

Dimensional drawings

<ul style="list-style-type: none"> ■ Power supply for all modules ■ Two-sided coupling of the internal CAN bus ■ Terminals for power supply and signal contacts ■ Optional redundant connections for power supply ■ Fuse protection for up to 64 input and output modules ■ LED's for display of power supply 	
Nominal voltage	20...30 V DC 20.8...30.5 V DC for redundant-capable power feed
Fuse protection	T 6.3 A, 5 × 20 mm exchangeable T 3.15 A for redundant-capable power feed
Bus plug-in contacts	2 × 24 V, 2 × CAN bus, 1 × functional earthing backplane connectible on two sides
Current load	max. 10 A
Connection terminals for	2 × 24 V DC functional earthing RS 232 voltage drop feedback signal by relay
Relay contacts	50 V UC, 0.5 A, 10 W, 10 VA $\cos\phi \geq 0.7$
Connection technique	cage clamp spring terminal
Rated terminal cross-section	0.08 mm ² ...2.5 mm ² / AWG 26-14"
Type of protection	IP 00
Protection class	to EN 61010
Safe electrical isolation	to EN 50020 for U = 375 V (peak value against adjacent backplanes)
Test voltage	2.3 kV against adjacent backplanes to EN 61010
Mounting	on 35 mm standard rail to EN 50022 outside the hazardous area
Dimensions	W × H: 70 mm × 134 mm; Depth: 50 mm without mounting rail
Input and output modules per backplanes	
Number	less than 64 modules can be connected
number	120 at medium current intake 52 mA/module 64 at medium current intake 50 mA/module and redundance-capable power feed
Please bear in mind during planing: I/O power intake ≤ rated fuse current	
Catalog numbers for versions	
V17311-221	without redundance-capable power feed
V17311-222	with redundance-capable power feed
Power supply	terminals 1, 2 terminals 3, 4 (redundant power feed)
Functional earthing	terminal 5
Signal output	terminals 6, 7 (in case of supply voltage failure)
Internal CAN bus and EC	5-pin backplane connector

Power supply terminal

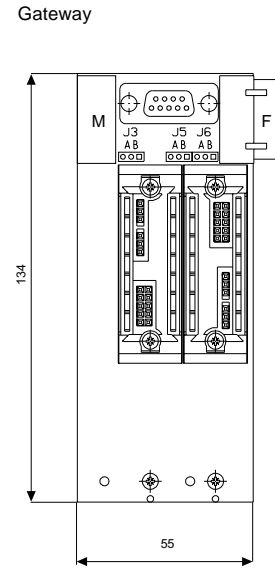


Power supply with backplane V17311-221/22
D diodes only for redundant power feed with V17311-222

Jumper J1: Switched-off of positive (+) supply voltage for left side of the backplane when used as optional power supply module (without coupling module)

- For mounting the Contrans I_remote gateway
- Two-sided coupling of the internal CAN bus
- Two-sided coupling for internal power supply

Rated voltage	20...30 V DC
Fusing	none
Internal bus plug contacts	2 x 24 V, 2 x CAN bus, 1 x reserve backplane connectible on both sides
Power load	max. 10 A
External bus	RS 485
Connection technique	D-SUB 9-pin
Type of protection	IP 00
Protection class	to EN 61010
Test voltage	2.3 kV against adjacent backplanes to EN 61010
Mounting	on 35 mm standard rail to EN 50022 outside the hazardous area
Dimensions	W x H: 55 mm x 134 mm; Depth: 126 mm for plugged I/O module without mounting rail

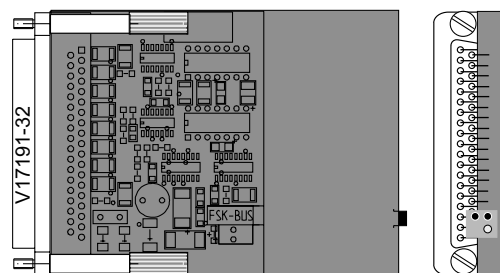


Backplane 8-fold for Contrans I_remote I/O modules

V17311-28

<ul style="list-style-type: none"> ■ For mounting the Contrans I_remote modules ■ Two-sided coupling of the internal CAN bus ■ Two-sided coupling for internal powers supply ■ 8 terminals per module field section ■ Optionally useful plug connectors for FSK bus amplifier 		
Rated voltage	20...30 V DC	
Fusing	none	
Bus plug contacts	2 x 24 V, 2 x CAN bus, 1 x reserve backplane connectible on both sides	
Power load	max. 10 A	
Field current circuits	250 V AC/DC	
Connection technique	2 x 4-pin cage clamp spring terminal p. module	
Rated terminal cross-section	0.08 mm ² ...2.5 mm ² / AWG 26-14"	
Terminals	10, 11, 12, 13 14, 15, 16, 17	
Type of protection	IP 00	
Protection class	to EN 61010	
Safe electrical isolation	to EN 50020 for U = 375 V (peak value) for field connectors	
Test voltage	2.3 kV against adjacent backplanes to EN 61010 2.3 kV against adjacent field current circuits	
Mounting	on 35 mm standard rail to EN 50022 outside the hazardous area	
Dimensions	W x H: 162.6 mm x 134 mm; Depth: 126 mm for plugged I/O module without mounting rail	
Accessories	FSK bus amplifier V17191-16 for plugging onto 37-pin D subconnector (only when using modules V17351-62 and V17353-62) FSK modem (see List 63)	
System cable	connection cable for backplane 8-fold COMBICON 0.5 m F/F-17392-0317087 Connection cable for backplane 8-fold COMBICON 0.5 m M/F-17392-0317088 Connection cable for backplane 8-fold COMBICON 0.5 m M/M-17392-0317089	

- FSK bus design Contrans I_remote
- Bidirectional transmission of FSK signals according to HART protocol
- Cost-effective centralized operation
- Communication with intelligent field units via SMART VISION



Output (FSK bus)	
Interconnection per FSK bus	max. 100 FSK bus amplifier
Signal level	min. 140 mVss...2,0 Vss max.
Line length	max. 1000 m

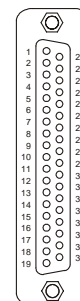
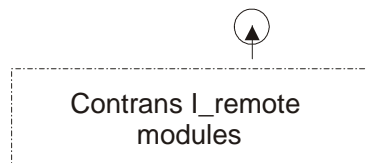
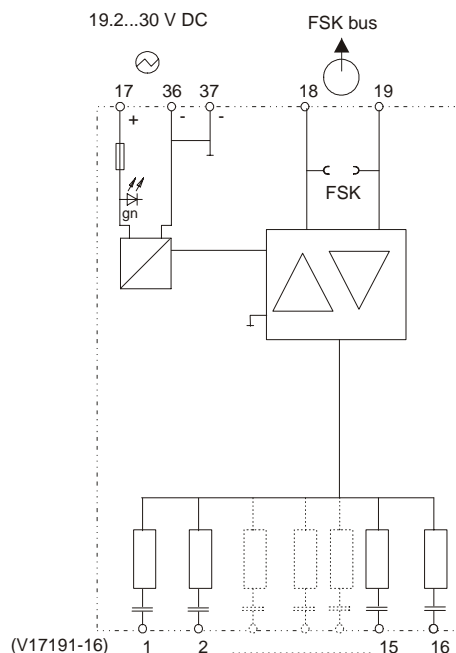
Input	
Signal level	min. 140 mVss...2,0 Vss max.
Baud rate	1200 bit/s
Line length	max. 2 m

General data	
Transmission frequency	logical 1: 1200 Hz ± 1 % logical 0: 2200 Hz ± 1 %
Display	green LED, power supply "On"
Max. ambient temperature	-20...+60 °C
Weight	90 g
Power supply	
Connection	terminals 1(+); 2(-)
Rated voltage	approx. 20...30 V DC
Power consumption	approx. 0.8 W

Notice:
The FSK bus is operated with the help of the software SMART VISION. Field units which are participated on the FSK bus are addressed via a bus code. During the first commissioning, it must be ensured that the bus code has been set to point operation. This means connecting the modem to the terminals of the respective Contrans I_remote module.

With this FSK bus amplifier it's possible, to use up to 8 modules of type V17353-62 or V17351-62 on a 8old backplane type V17311-28.

Accessories for the FSK bus communication:
– FSK modem with connection cable, Catalog No. 11491-0343705



- For mounting Contrans I_remote modules
- For Ex and non-Ex modules
- For setting the CAN bus address 0

Connection

Power supply	terminals 1(+), 2(-)
Connection technique	6-pin double-tiered terminals (cage clamp spring)
Rated terminal cross-section	0.08...2.5 mm ² / AWG 26...14"
	single copper wiring, stranded with/without wire end ferrule ¹⁾

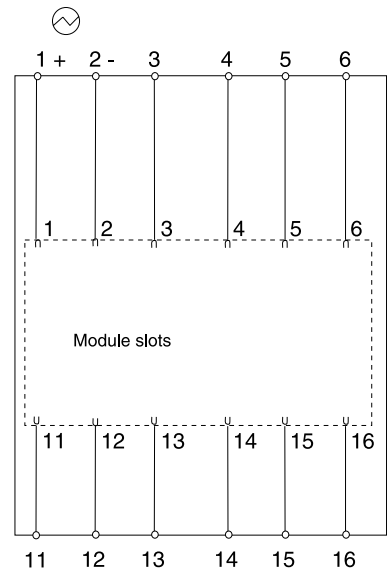
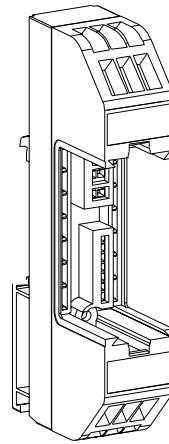
Power supply voltage

Voltage input	20...30 V DC
---------------	--------------

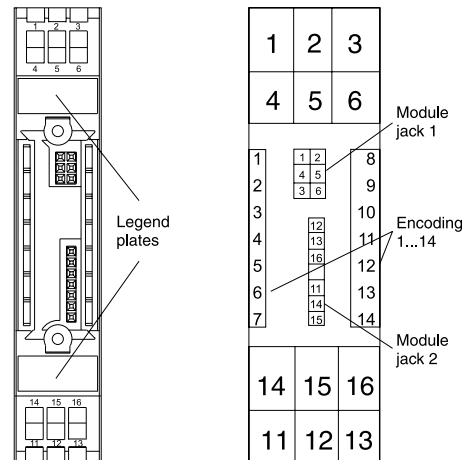
General data

Mounting location	can be snap-fitted onto 35 mm standard rail to DIN EN 50022
Protected to DIN 40050	IP 20
Protection class	II (to EN 61010)
Test voltage	3.7 kV terminals 1...6 – 11...16 2.3 kV terminals 1, 2 – 4, 5 – 3, 6 1.35 kV terminals 11, 14, 15 – 12, 13, 16
Colour	RAL 7035
Material	Polycarbonate
Weight	50 g
Description:	The socket can be used to set the CAN bus address to 0. For this action it is necessary to power the module with 24 V DC and to press the push button on front of the module.

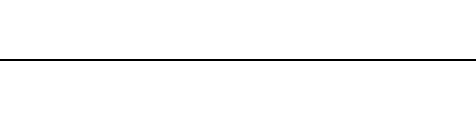
¹⁾ With wire end ferrules max. 1.5 mm²



System connection



Field connection



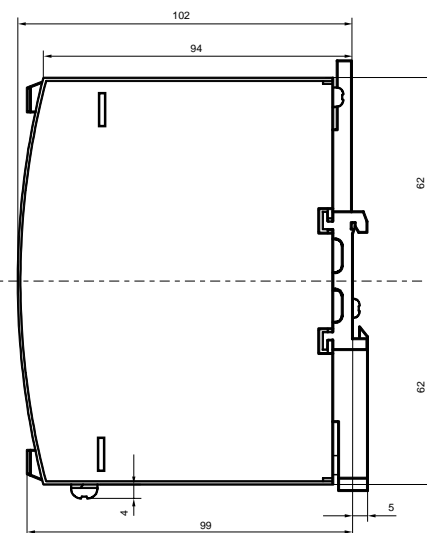
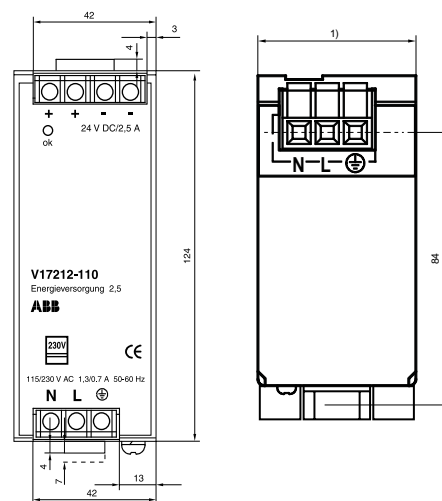
- Power supply for Contrans I modules
- Termination at front
- Top-hat rail mounting

Input	⏚
Input voltage	115/230 V AC +15 %, -20 % selectable
Alternating voltage	47...63 Hz; 1.3/0.7 A
Direct voltage	100...375 V DC at 50 % output current
External circuit breaker	10 A (characteristic B proposed)
Internal fuse	not reachable

Output	⏚	
Rated voltage	24 V DC +5 %; -1 %	
Type	output current	Buffer time
V17212-110	2.5 A	> 20 ms
V17212-120	5 A	> 37 ms
V17212-130	10 A	> 20 ms
Tolerance	better than 1 %	
Residual ripple	< 25 mV (peak-to-peak)	
Operating control display	LED switch off at < 12 V output voltage	

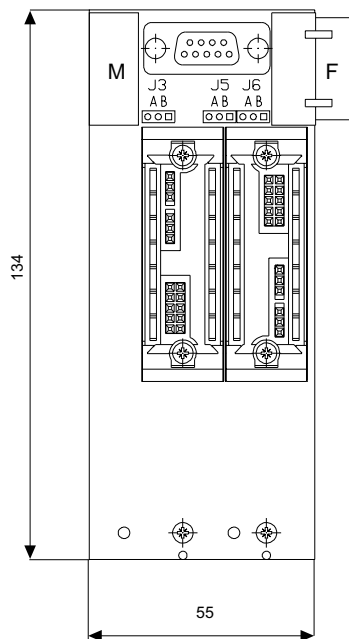
General data	
LED display	Power supply "On"
Electrical connections	Screw terminals at front, input at bottom, output at top
Protection class	IP 20
Distance between 2 supplies	approx. 25 mm
Mounting type	at 35 mm DIN rail, acc. DIN EN 50 022
Weight	
Type V17212-110	406 g
Type V17212-120	620 g
Type V17212-130	1050 g

Performance under reference conditions	
Max. ambient temperature	-10...+60 °C

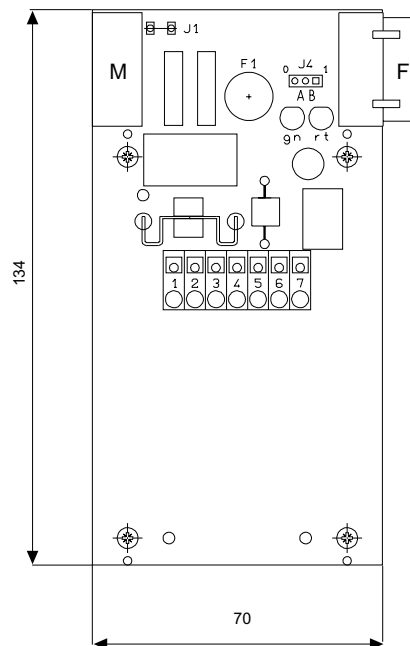


Dimensional drawings

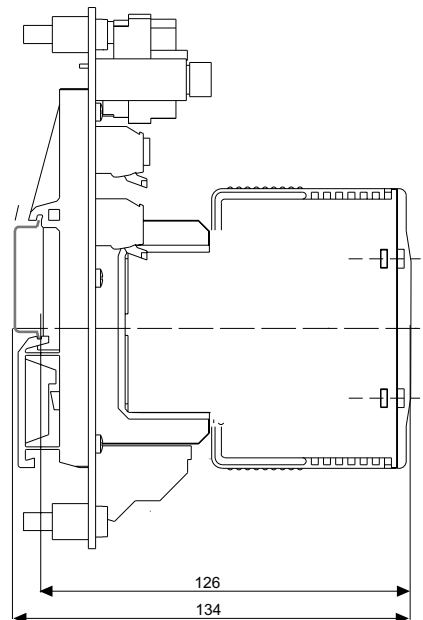
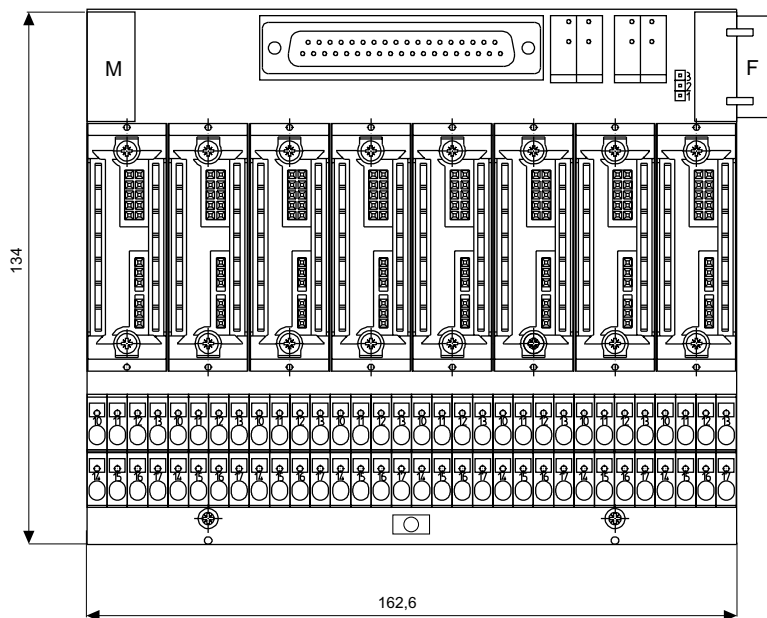
Gateway for backplane
V17331-21



Power supply terminal V17311-221
or V17311-222



Backplane for I/O modules
V17331-28



Legend:

- M = Male/Stecker
- F = Female/Buchse

Mounting and installation instructions

Safety instructions

Page 46

Encoding

Page 48

Safety instructions

Correct and safe operation of Contrans I_remote presupposes that appropriate transportation and storage, expert installation and commissioning as well as correct operation and meticulous maintenance have taken place.

Only those persons conversant with the installation, commissioning, operation and maintenance of similar apparatuses and who possess the necessary qualifications are allowed to work on Contrans I_remote.

The components of Contrans I_remote have been designed and tested in accordance with EN 61010-1 or DIN VDE 0411, Part 1 "Safety requirements for process control, instrumentation and laboratory devices", overvoltage category II, pollution class 2 and have been supplied in a safe condition.

In order to retain this condition and to ensure safe operation, the safety instructions in this operating manual bearing the headline "Caution" must be observed. Otherwise, persons can be endangered and the Contrans I_remote components themselves, as well as other equipment and facilities, can be damaged.

- Before plugging the module into the socket, care must be taken to ensure that the socket circuitry agrees with the rated voltages of the module connecting diagram. For voltages higher than 50 V AC or 120 V DC the terminals or socket must be marked or coded with the rated voltage. Please pay attention to the encoding or marking as stated in the "Mounting and installation instructions".
- For voltage variables greater than 50 V AC / 120 V DC, the length of the insulating material for the connecting wires must be 5...6 mm. Use wire end ferrules of this length for flexible lines.

- When using units belonging to the protection class III, it must be ascertained that the intended power supply source has a functional extra-low voltage with electrical separation, as stipulated by the valid regulations.
- When the apparatus is connected to its supply, terminals may be live, and the opening of covers or removal of parts except those to which access can be gained by hand is likely to expose live parts.
- The apparatus shall be disconnected from all voltage sources before it is opened for any operations. Operations on the opened apparatus under voltage must only be performed by an expert who is aware of the hazard involved.
- Whenever it is likely that protection has been impaired, the apparatus shall be made inoperative and be secured against any unintended operation.

Apart from the technical documentation in this catalog, the following must also be observed:

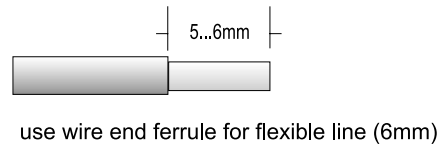
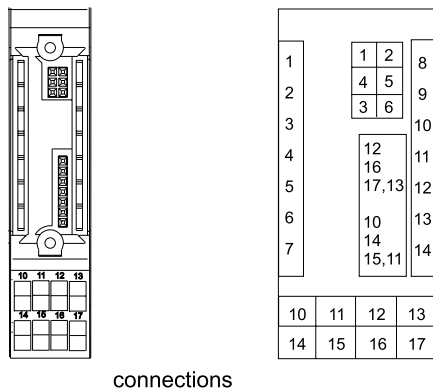
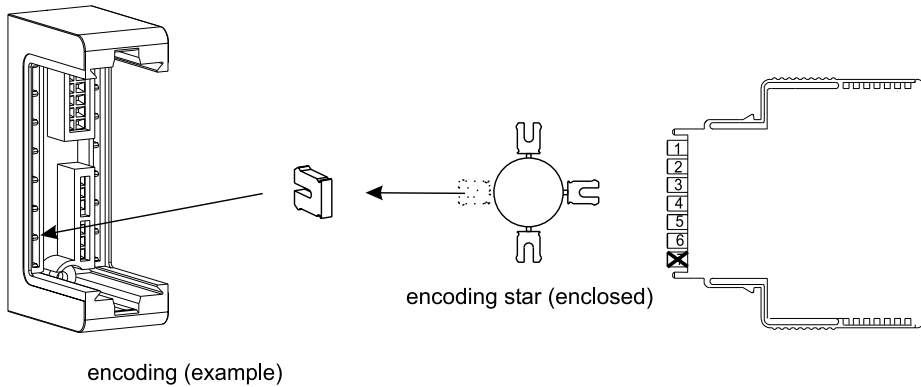
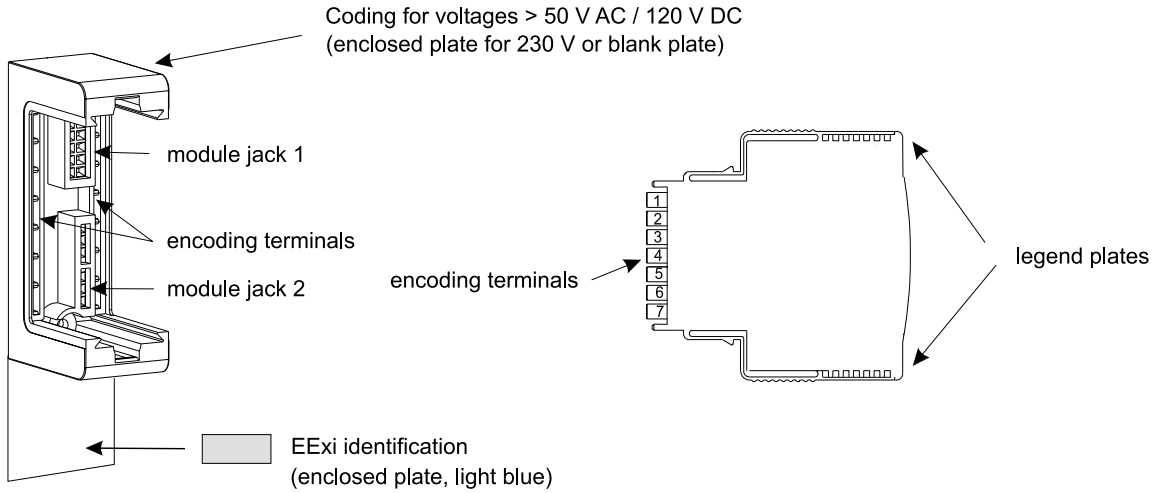
- the safety regulations pertaining to the installation and operation of electrical systems,
- the directives and guidelines on explosion protection.

If the information supplied in this catalog should prove to be insufficient in any point, the company will be delighted to give you more information.

Safety instructions

Before plugging the module into the socket care must be taken to ensure that the socket circuitry agrees with that of the connection diagram. Please pay attention to the coding or marking as stated in the "Mounting and Installation Instructions" in Catalog 17.2 EN.

For voltages higher than 50 V AC / 120 V DC the socket must be marked or coded.



Encoding

Encoding

Encoding the modules prevents inadvertent interchanging of functions.

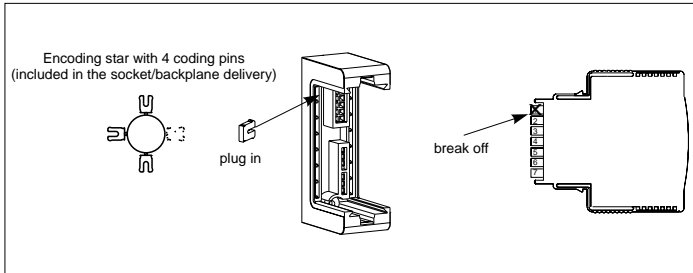


Fig. 1: Example of encoding (Type V17331-1x)

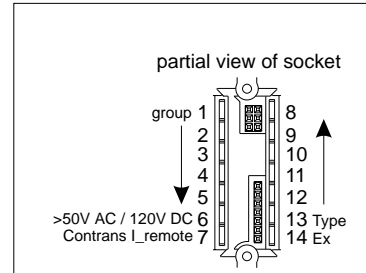


Fig. 2: Functional diagram for encoding (suggestion)

Encoding (suggestion)														
	1	2	3	4	5	6	Contrans_remote	8	9	10	11	12	13	Ex
V17331-24	x						x						x	
V17331-64	x						x						x	x
V17336-62	x						x					x		x
V17332-12		x					x						x	
V17332-52		x					x						x	x
V17332-61		x					x					x		x
V17351-24			x				x						x	
V17351-62			x				x					x		x
V17351-64			x				x						x	x
V17352-61				x			x						x	x
V17353-61					x		x					x		x
V17353-62					x		x				x			x



ABB Automation Products GmbH
Borsigstrasse 2, D-63755 Alzenau
Phone +49(0)6023 92-0, Fax +49(0)6023 92-3430
<http://www.abb.com/automation>

04/17.2 EN 10.00