MTL1000 range of signal conditioners

CROUSE-HINDS SERIES

For reliable, high quality process communications

EATON
Powering Business Worldwide

D-Ex Instruments
Galvanické oddělovače MTL1000

The new MTL1000 range of signal conditioning isolators

complement our intrinsic safety products to provide a complete interface solution

Reduced installation costs
Increased reliability
Single source supply

Introduction to signal conditioning

With process plants now spread over wide areas and the demand for more information, the transfer of electrical signals present many challenges. High power devices mixed in with low level signal transfer generates an environment which has an adverse effect on the ability to control and measure the processes.

Signal conditioning makes a major contribution to resolving issues such as varying grounding potentials, reducing signal noise and eliminating earth loops. It also protects sensitive control equipment from dangerous voltages. All these benefits add up to reduced down time, fewer failures, greater product yield and significant cost savings.

Signal conversion to a common type allows the use of standard interface and control cards.

Many different signals from sensors such as thermocouples, RTDs, position monitors, pressure and flow monitors all need to be handled. Converting them to the same signal type allows the control system card choice to be simplified and fewer installed. Higher level signals are also less susceptible to noise and interference so by limiting the distances the low level signals travel reduces these effects.

Eaton is already well known for its hazardous area MTL intrinsic safety and MTL process IO portfolio, but signal conditioning is used in many additional industrial processes.

We have applied our expertise to the MTL1000 range of signal conditioning isolators, making Eaton your first choice as a trusted, single source of supply for all of your interface requirements.

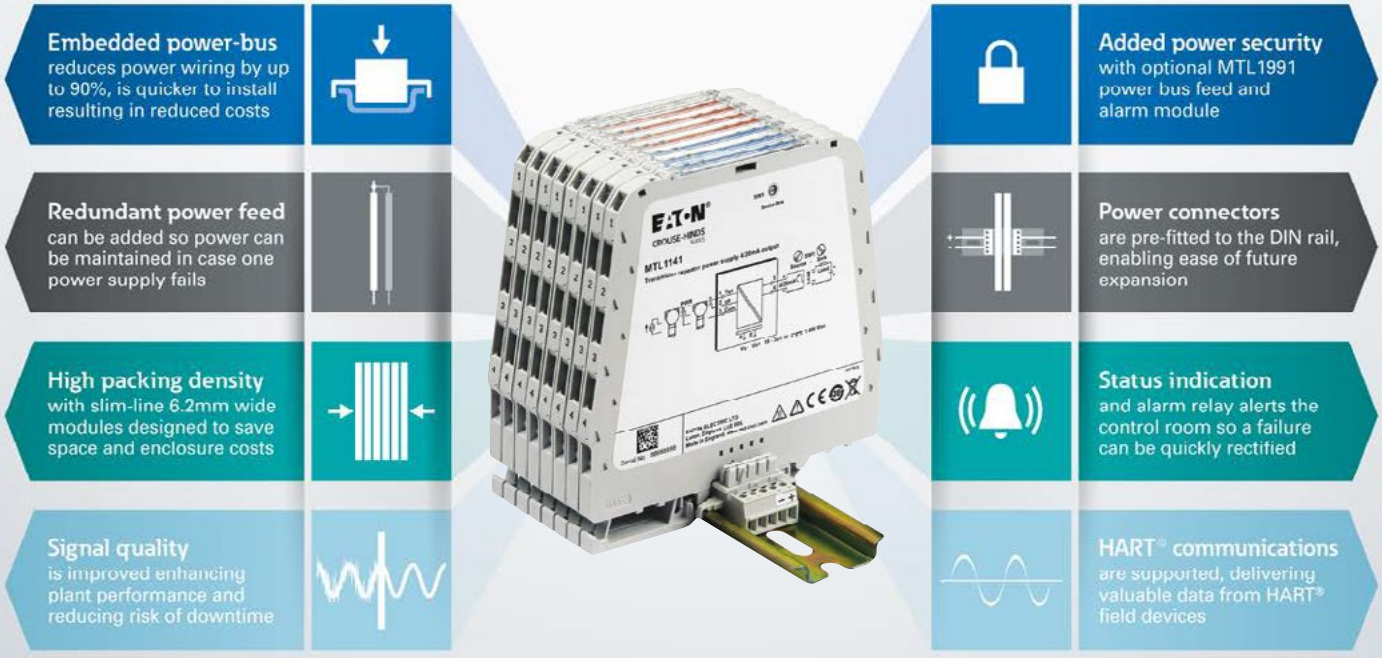
Protecting field instruments and control systems for safe, reliable process communications

www.mtl-inst.com/product/mtl1000_range
www.dex.cz/produkt/mtl1000/

The new MTL1000 range of modules and accessories

is designed for use with process connected systems

Key Features

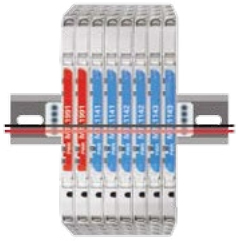


The MTL1000 range is easy to install, its slim-line design enables high packing density; its power-bus feature significantly reduces installation costs; and you can now source all your interface requirements from a single trusted provider.

MTL1000 power options

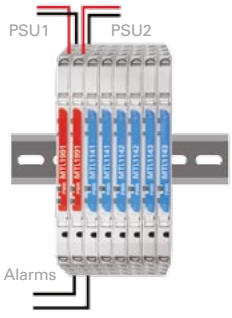
Embedded power-bus

The MTL1000 incorporates the use of an embedded power bus in the DIN-rail. This provides power directly to the modules, reducing the amount of wiring upon installation. The power bus connectors simply plug together and can be expanded to accommodate the required number of isolators. Spare positions can be easily installed for future expansion.

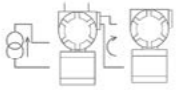
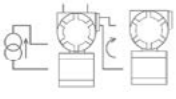


MTL1991 power feed and alarm module

The MTL1991 offers an alternative to feeding power directly onto the power-bus. For added power security the MTL1991 module option features an alarm output for instant notification of power failure. The addition of another MTL1991 module delivers redundant power feeds, thus increasing system availability.



Selection guide

Application	Catalogue number	Description	Width	Power-bus
	MTL1141	4-20mA Tx repeater PSU	6.2mm	Required
	MTL1142	4-20mA Tx repeater PSU HART	6.2mm	Required
	MTL1143	1 in 2 out Tx repeater	6.2mm	Required
Ver I/I	MTL1144	V/I to current repeater, loop powered	6.2mm	Loop powered
I/I (outputs)	MTL1145 *	4-20mA loop powered current repeater	6.2mm	Loop powered
THC 	MTL1171	THC converter - 4-20mA/1-5V (type J or K)	6.2mm	Required
RTD 	MTL1172	RTD converter - 4-20mA/1-5V (PT100)	6.2mm	Required
POT 	MTL1173	Potentiometer - 4-20mA/1-5V 100Ω to 100kΩ	6.2mm	Required
Switch / Prox inputs	MTL1211	1ch Switch isolator, Namur/contact I/P, 2 outputs Rep/LFD	6.2mm	Required
V/I I/V V/V I/I	MTL1249	Input 0-1V, 0-5V, 0-10V, 1-5V, 0-20mA, 4-20mA Output 0-5V, 0-10V, 1-5V, 0-20mA, 4-20mA	6.2mm	Required
THC 	MTL1271	THC converter (type J or K) - loop powered	6.2mm	Loop powered
RTD 	MTL1272	RTD converter (PT100) - loop powered	6.2mm	Loop powered
Trip amplifiers    	MTL1321 *	0-10V/0-20mA trip amp, c/o contact out	17mm	Optional
	MTL1341 *	4-20mA trip amp - 2SP with current repeat	17mm	Optional
	MTL1371 *	THC trip amp - 2SP with current repeat	17mm	Optional
	MTL1372 *	RTD trip amp - 2SP with current repeat	17mm	Optional
	MTL1373 *	Potentiometer - 2SP with current repeat	17mm	Optional
Power	MTL1991	Power feed module and alarm module	6.2mm	Required

* For future release

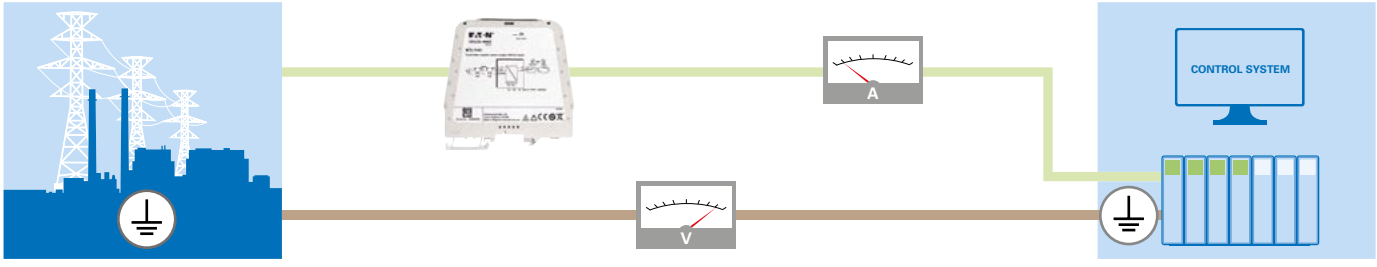
Industries

Traditionally, customers in petrochem, chemical and process use signal conditioning in many areas of their plant, in addition to intrinsic safety. Safe area applications such as the utilities require signal isolation and conditioning to ensure safe, smooth and reliable process communications.

Applications

Elimination of grounding fault currents

Where high power devices are installed significant ground potential differences can occur across the plant, especially under fault conditions. Without isolation these fault currents and voltages can severely damage system control equipment. Signal isolation eliminates damage under these conditions thus keeping the process and plant operational.



Signal conversion

Many types of signals in the control of a plant exist. Conversion to a common type reduces the number of system card types and quantity that are required. Converting low level signals also improves signal quality and gives better control.

Noise reduction

Machinery is a major source of noise and interference. Signal isolation and conditioning reduces the effects of this interference on the process signals. This in turn will improve product yield and reduce operating costs.

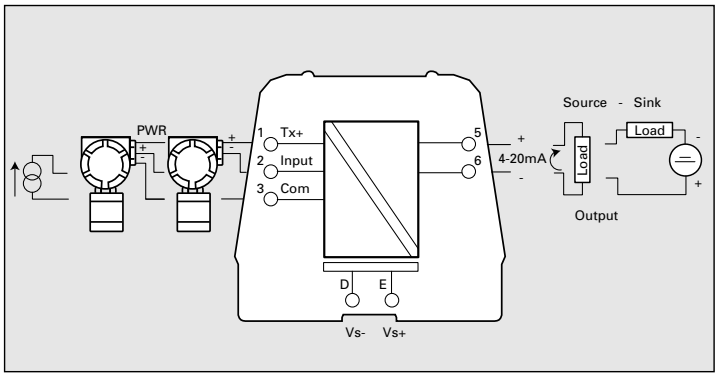
Signal repeat

There are many instances where signals need to be transmitted to more than one area of the plant or measuring elements. Signal duplication with isolation provides the means to achieve this whilst maintaining isolation between the plant equipment.

MTL1141 Transmitter Power Supply

1 Channel, for 2/4-wire transmitters

The MTL1141 is a Single Channel Analogue Input isolator with current source or current sink output (switch selectable).
Power for this module is supplied via the power bus embedded in the DIN rail.
The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules.
The **MTL1991** is used to feed power onto the bus.



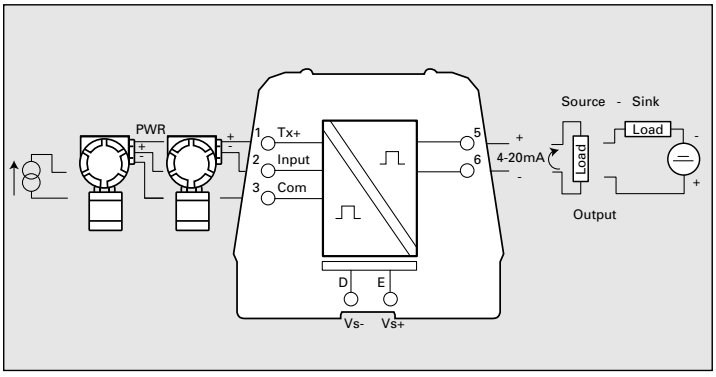
Terminals	Function
1	Tx+
2	Input
3	Common
5	Output +
6	Output -
D	Power supply -ve
E	Power supply +ve

SPECIFICATION see also common specification	
Number of channels	One, with 1 fully floating output
Location of Transmitter	Safe area
Input and output signal range	4 to 20mA
Under/Over-range	<3.0mA to >23mA
System output load resistance (source mode)	@ 20mA: 0 to 520Ω @ 24mA: 0 to 430Ω
Power supply voltage	18V to 32V DC
Output voltage (field power supply)	≥16.5V at 20mA
Transfer Accuracy at 20 °C	Transmitter powering mode: < ±20µA
Temperature drift	<2µA/°C (-20 to +60°C)
Maximum current consumption (with 20mA signal)	51mA @ 24V dc
Maximum power dissipation within unit	<0.7W @ 24V dc
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1142 Transmitter Power Supply

1 Channel, Smart for 2/4-wire transmitters

The **MTL1142** is a Single Channel Analogue Input isolator with current source or current sink output (switch selectable). HART communication is provided for Smart two wire transmitters. The transmitter can be interrogated either from the operator station or by a hand-held communicator (HHC).
Power for this module is supplied via the power bus embedded in the DIN rail.
The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules.
The **MTL1991** is used to feed power onto the bus.



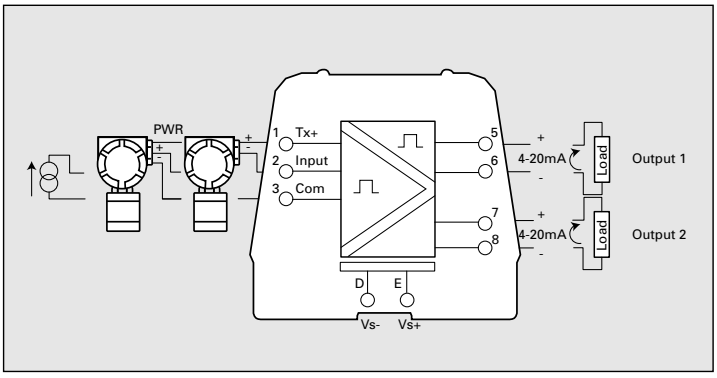
Terminals	Function
1	Tx+
2	Input
3	Common
5	Output + (with HART)
6	Output - (with HART)
D	Power supply -ve
E	Power supply +ve

SPECIFICATION see also common specification	
Number of channels	One, with 1 fully floating output
Location of Transmitter	Safe area
Input and output signal range	4 to 20mA Output current source or sink, switch selectable
Under/Over-range	<3.0mA to >23mA
System output load resistance (source mode)	@ 20mA: 0 to 440Ω @ 24mA: 0 to 360Ω
Power supply voltage	18V to 32V DC
Output voltage (field power supply)	≥16.5V at 20mA
Transfer Accuracy at 20 °C	Transmitter powering mode: < ±20µA
Temperature drift	<2µA/°C (-20 to +60°C)
Maximum current consumption (with 20mA signal)	52mA @ 24V dc
Maximum power dissipation within unit	<0.7W @ 24V dc
Digital Signal Bandwidth	Approx. 3dB @ 1KHz to 2.2KHz
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1143 Transmitter Power Supply with Repeat Output

1 Channel, Smart for 2/4-wire transmitters

The **MTL1143** is a Single Channel Analogue Input isolator with dual outputs. HART communication is provided for Smart two wire transmitters via Output 1. The transmitter can be interrogated either from the operator station or by a hand-held communicator (HHC). Power for this module is supplied via the power bus embedded in the DIN rail.
The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules. The **MTL1991** is used to feed power onto the bus.



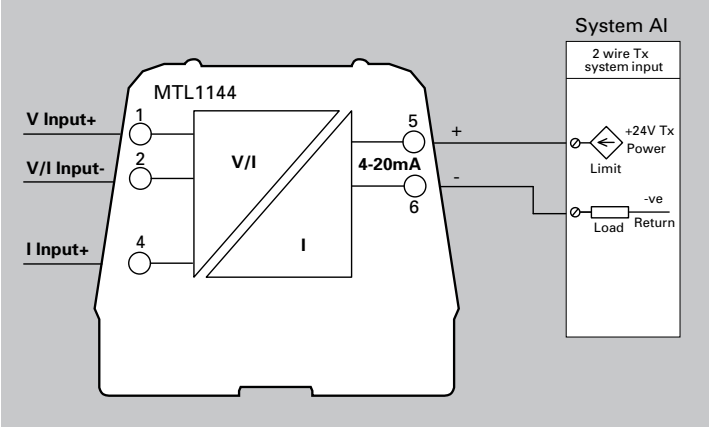
Terminals	Function
1	Tx+
2	Input
3	Common
5	Output + (with HART)
6	Output - (with HART)
7	Repeat Output +
8	Repeat Output -
D	Power supply -ve
E	Power supply +ve

SPECIFICATION see also common specification	
Number of channels	One, with 2 fully floating outputs
Location of Transmitter	Safe area
Input and output signal range	4 to 20mA
Under/Over-range	<3.0mA to >23mA
System output load resistance (source mode)	@ 20mA: O/P1 0 to 330Ω, O/P2 0 to 380Ω @ 24mA: O/P1 0 to 270Ω, O/P2 0 to 300Ω
Power supply voltage	18V to 32V DC
Transmitter supply voltage (field power supply)	≥16.5V at 20mA
Transfer Accuracy at 20 °C	Transmitter powering mode: < ±20µA
Temperature drift	<2µA/°C (-20 to +60°C)
Maximum current consumption (with 20mA signal)	53mA @ 24V dc
Maximum power dissipation within unit	<0.85W @ 24V dc
Digital Signal Bandwidth	Approx. 3dB @ 1KHz to 2.2KHz
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1144 voltage/current input isolator

1 channel for 1V/5V/10V and 20mA inputs

The **MTL1144** is a single channel signal converter which can accept 0-1V, 0-5V, 1-5V, 0-10V, 0-20mA and 4-20mA inputs and converts the signal to 4-20mA for connection to a powered system input. Ranges are selected by the user using switches on the module.



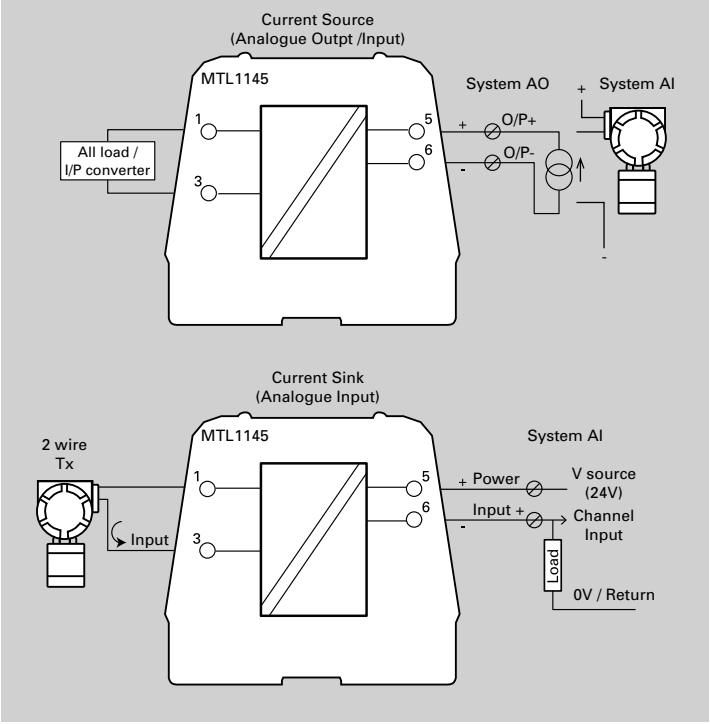
Terminals	Function
1	V Input +
2	V/I input -
4	I input +
5	Current sink+
6	Current sink-

SPECIFICATION See also common specification	
Number of channels	One, with fully floating input and output
Location of equipment	Safe area
Input signal ranges	0-100mV, 0-1V, 0-5V, 1-5V, 0-10V, 0-20mA, 4-20mA
Range selection	Via switches, refer to instructions
Output signal ranges	4-20mA, current sink, maximum load 50 (Vs - 17) Ω
Over-range	>103%
Field input resistance	>100KΩ voltage input, 20Ω current input
Response time	20mS
Transfer Accuracy at 20 °C	0.2% (0.4% 100mV range)
Temperature drift	<0.01% /°C
Power supply voltage	18V to 32V DC
Maximum power dissipation within unit	<0.6W @ 32V dc with 250Ω load
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1145
loop powered current repeater

1 channel for 4-20mA analogue outputs/inputs

The **MTL1145** is a single channel isolator which accepts a 4-20mA output source, isolates and repeats the signal. The repeated signal is loop powered from the original signal source. (Source mode). Alternatively a loop powered transmitter may be powered via the isolator from a 2 wire system input. (Sink mode)

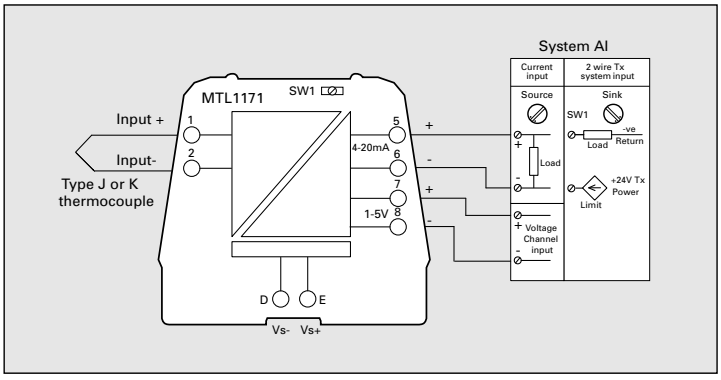


Terminals	Current Source Mode	Current Sink Mode
1	Output +	Sink input +
3	Output -	Sink return
5	Current input +	Sink output +
6	Current input -	Sink output -

SPECIFICATION See also common specification	
Number of channels	One with fully floating output
Location of equipment	Safe area
Input signal	0-22mA
Output signal	0-22mA
Output voltage available	Input voltage – 7.5V max
Over-range	>110%
Response time	5mS
Transfer Accuracy at 20 °C	±50µA 100-400Ω load and ±60µA 400-600Ω load source mode, ±150µA sink mode
Temperature drift	<0.01% /°C
Power supply voltage	10V to 32V DC
Maximum power dissipation within unit	<0.16W
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1171 thermocouple input converter

1 channel for type J and K thermocouple sensors



The MTL1171 is a single channel thermocouple input converter with 4-20mA and 1-5V outputs. Input ranges are switch selectable.

Power for this module is supplied via the power bus embedded in the DIN rail.
The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules.

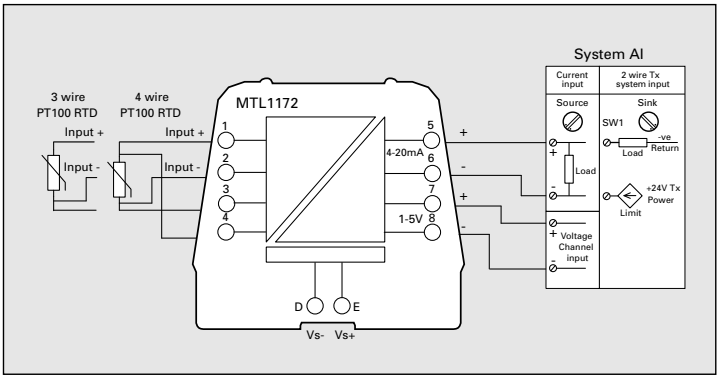
The **MTL1991** or PBUS02 is used to feed power onto the bus.

Terminals	Function
1	Input +
2	Input -
5	Current Output +/ Current Sink -
6	Current Output - / Current Sink +
7	Voltage Output +
8	Voltage Output -
D	Power supply -ve
E	Power supply +ve

SPECIFICATION see also common specification	
Number of channels	One, with fully floating outputs
Location of sensor	Safe area
Input range	Type J or K thermocouple with 15 switch selectable ranges
Output range	1-5V or 4-20mA current source or sink
Open wire detection	Switch selectable, upscale/downscale drive
Transfer accuracy	0.1% of span typical, 0.2% max
Temperature effect	0.01% / °C
Current consumption	37mA @ 24V current output. 13mA @ 24V voltage output
Power dissipation	0.9W @ 24V
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1172
resistance temperature device input converter

1 channel for PT100 type RTD sensors



The MTL1172 is a single channel RTD converter with 4-20mA and 1-5V outputs. Input ranges are switch selectable.

Power for this module is supplied via the power bus embedded in the DIN rail.

The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules.

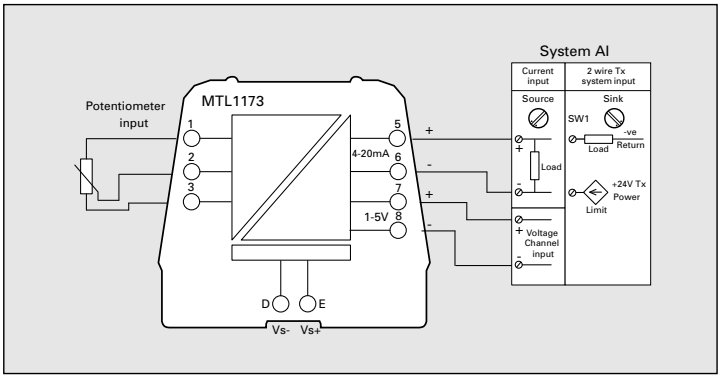
The MTL1991 or PBUS02 is used to feed power onto the bus.

Terminals	Function
1	Input +
2	Input -
3	3 wire - / 4 wire -
4	4 wire +
5	Current Output + / Current Sink -
6	Current Output - / Current Sink +
7	Voltage Output +
8	Voltage Output -
D	Power supply -ve
E	Power supply +ve

SPECIFICATION see also common specification	
Number of channels	One, with fully floating outputs
Location of sensor	Safe area
Input range	15 switch selectable ranges, see instruction manual
Output range	Current output 4-20mA or voltage output 1-5V
Open wire detection	Switch selectable, upscale/downscale drive
Transfer accuracy	0.1% of span typical, 0.2% max
Temperature effect	0.01% / °C
Current consumption	37mA @ 24V current output. 13mA @ 24V voltage output
Power dissipation	0.9W @ 24V
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1173 potentiometer input converter

1 channel for 3 wire potentiometers



The MTL1173 is a single channel potentiometer converter with 4-20mA and 1-5V outputs

Power for this module is supplied via the power bus embedded in the DIN rail.

The PBUS6.2 kit must be ordered separately. 10 x 2 way power clips are provided to power 20 modules.

The MTL1991 or PBUS02 is used to feed power onto the bus.

Terminals	Function
1	Potentiometer end
2	Potentiometer wiper
3	Potentiometer end
5	Current Output + / Current Sink -
6	Current Output - / Current sink+
7	Voltage Output +
8	Voltage Output -
D	Power supply -ve
E	Power supply +ve

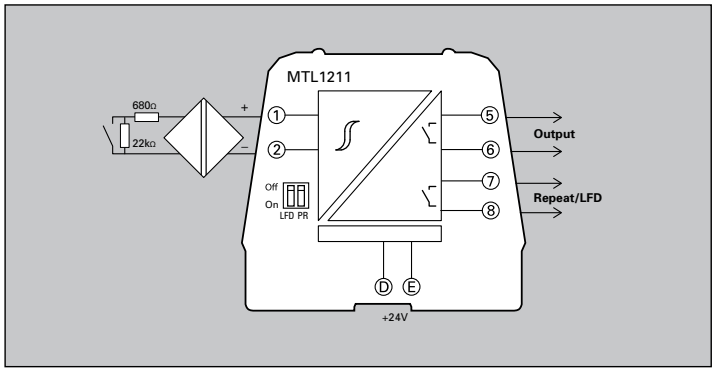
SPECIFICATION see also common specification	
Number of channels	One, with fully floating outputs
Location of sensor	Safe area
Input potentiometer resistance	100Ω to 100kΩ
Output range	Current output 4-20mA or voltage output 1-5V
Transfer accuracy	>1KΩ 0.2% max < 1KΩ 2% max
Temperature effect	0.01% / °C
Current consumption	37mA @ 24V current output. 13mA @ 24V voltage output
Power dissipation	0.9W @ 24V
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1211 switch / proximity detector

with line fault detection

The **MTL1211** is a single channel switch or proximity detector isolator with the option to select line fault detection or a repeat output. Switches are used to select phase reversal or the repeat output.

Power for this module is supplied via the power bus embedded in the DIN rail in conjunction with the power bus accessories.



Terminals	Function
1	Input (+)
2	Input (-)
5	Output
6	Output

Terminals	Function
7	Repeat Output / LFD alarm
8	Repeat Output / LFD alarm
D	Power supply -ve
E	Power supply +ve

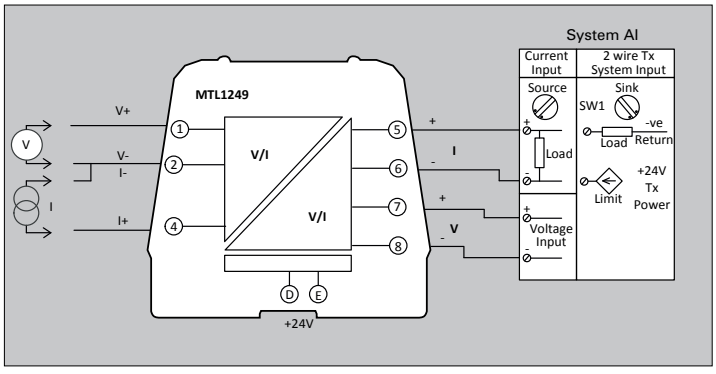
SPECIFICATION See also common specification	
Number of channels	One, with fully floating input and outputs
Location of equipment	Safe area
Input signal	Dry contact or inputs conforming to BS EN60947-5-6:2001, standards for proximity detectors (NAMUR)
Voltage to sensor	7-9V dc from 1kΩ ±10%
Input/output characteristics	Normal Phase - Output closed if input >2.1mA (<2kΩ in input circuit), Output open if input <1.2mA (>10kΩ in input circuit). Hysteresis 200µA (650Ω nominal)
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Response time	20mS
Line fault detection (LFD) when used	User selectable via switches on the side of the unit. Line faults are indicated by an LED. The Output relay is de-energised if an input line fault is detected. Open-circuit alarm on if Iin <50uA, Open-circuit alarm off if Iin >250uA Short-circuit alarm on if Rin <100Ω, Short circuit alarm off if Rin >360Ω *Note: resistor must be fitted when using LFD with contact inputs 500Ω to 1kΩ in series with the switch and 20kΩ to 25kΩ in parallel with the switch.*
LED indicators	Green: power indication, Yellow: Channel status, on when relay energised Red: LFD status, on when line fault detected
Power supply voltage.	18V to 32V DC
Maximum current consumption	16mA at 24V dc
Power dissipation within unit	0.4W at 24V
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac) 1500V between relay contacts and other circuits

MTL1249 signal converter

voltage / current

The **MTL1249** is a single channel signal conditioner which can accept voltage or current inputs and provide a voltage or current output. The signal levels are selected by the user using switches on the module.

Power for this module is supplied via the power bus embedded in the DIN rail in conjunction with the power bus accessories.



Terminals	Function
1	Voltage input (+)
2	Voltage / Current Input -
4	Current input +

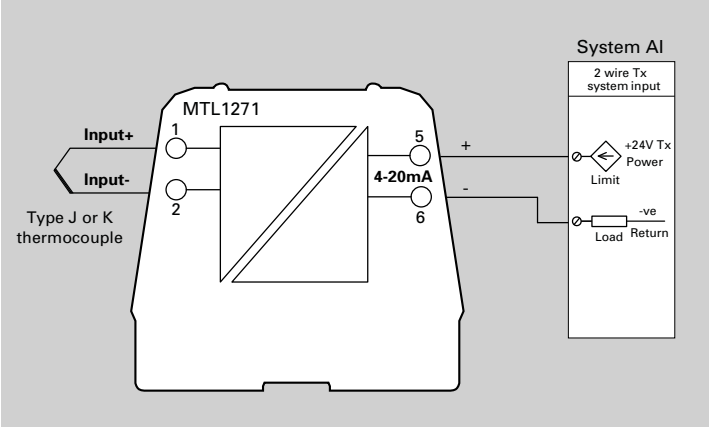
Terminals	Function
5	Current Output +
6	Current output -
7	Voltage output +
8	Voltage output -
D	Power supply -ve
E	Power supply +ve

SPECIFICATION See also common specification	
Number of channels	One, with fully floating input and outputs
Location of equipment	Safe area
Input signal ranges	0-100mV, 0-1V, 0-5V, 0-10V, 1-5V, 0-20mA, 4-20mA
Output signal ranges	0-5V, 1-5V, 0-10V, 2-10V, 0-20mA, 4-20mA, sink or source
Over-range	>103%
Field input resistance	Current mode 25Ω Voltage mode >100kΩ
System output load	Current mode @ 20mA: 0 to 550Ω Voltage mode 10kΩ (output impedance <150Ω)
Response time	20mS
Transfer Accuracy at 20 °C	0.2% (0.4% 100mV input)
Temperature drift	<0.01% of span/°C
Power supply voltage,	18V to 32V DC
Maximum current consumption (with 20mA signal)	38mA @ 24V dc
Maximum power dissipation within unit	<1W @ 24V dc
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1271
loop powered thermocouple converter

1 channel for type J and K thermocouple sensors

The **MTL1271** is a single channel signal converter which can accept type J or K thermocouple inputs and converts the signal to 4-20mA for connection to a powered system input. Ranges are selected by the user using switches on the module.



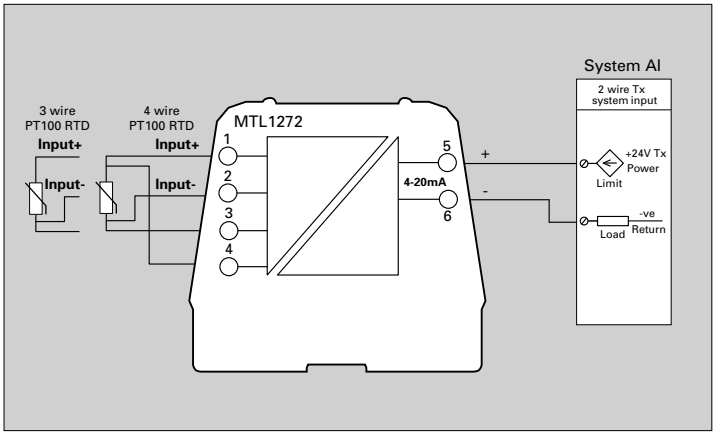
Terminals	Function
1	Input +
2	Input -
5	Current sink+
6	Current sink-

SPECIFICATION See also common specification	
Number of channels	One, with fully floating input and output
Location of equipment	Safe area
Input signal	Type J or K thermocouples
Range selection	Via switches, refer to instructions
Output signal	4-20mA, current sink, maximum load 50 (Vs- 17) Ω
Over-range	>103%
Field input resistance	>100KΩ
Cold Junction Compensation accuracy	±1°C
Response time	500mS
Transfer Accuracy at 20 °C	+/- ((0.65/Span)+(0.001)) x100%
Temperature drift	<0.01% /°C
Power supply voltage	18V to 32V DC
Maximum power dissipation within unit	<0.6W @ 32V dc with 250Ω load
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1272
resistance temperature device input converter

1 channel for PT100 type RTD sensors

The **MTL1272** is a single channel signal converter which can accept PT100 RTD inputs and converts the signal to 4-20mA for connection to a powered system input. Ranges are selected by the user using switches on the module.

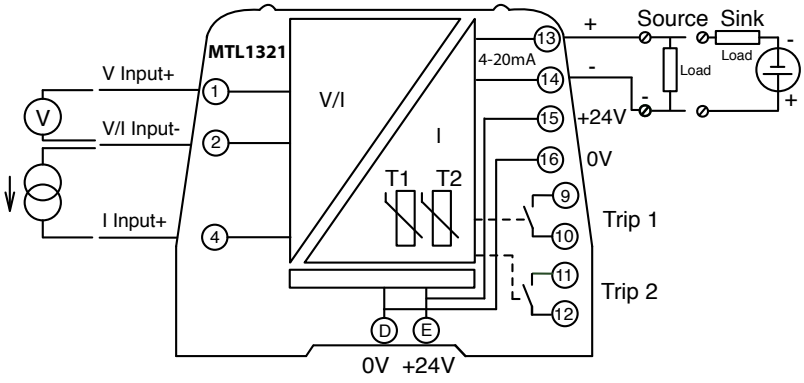


Terminals	Function
1	Input +
2	Input -
3	3 wire - / 4 wire -
4	4 wire +
5	Current sink+
6	Current sink-

SPECIFICATION See also common specification	
Number of channels	One, with fully floating input and output
Location of equipment	Safe area
Input signal	PT100 RTD sensors, 3 or 4 wire connection
Range selection	Via switches, refer to instructions
Output signal	4-20mA, current sink, maximum load 50 (Vs- 17) Ω
Over-range	>103%
Field input resistance	>100KΩ
Response time	500mS
Transfer Accuracy at 20 °C	+/-((0.25/Span)+0.001)) x100%
Temperature drift	<0.01% /°C
Power supply voltage	18V to 32V DC
Maximum power dissipation within unit	<0.6W @ 32V dc with 250Ω load
Isolation	250V ac or dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

MTL1321
0-10V / 0-20mA Trip Amplifier

1 channel voltage/ current input with 2 alarm outputs



The MTL1321 converts current or voltage inputs to 0/4-20mA in a source or sink mode. There are 2 trip amplifiers provided with level settings. The module may be powered directly or via the PBUS17.5 power feed in the DIN rail

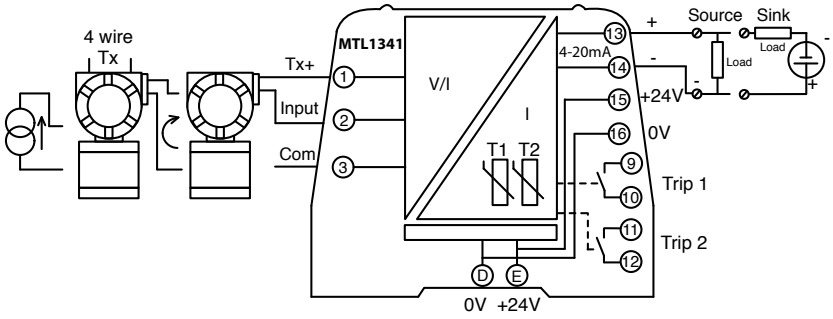
Terminals	Function
1	Voltage input +
2	Voltage/current input -
4	Current input +
9	Trip 1 contact (NO)
10	Trip 1 contact
11	Trip 2 contact (NO)
12	Trip 2 contact
13	Output +
14	Output -
15, E	Power supply +ve
16, D	Power supply -ve

SPECIFICATION see also common specification	
Number of channels	One, with fully floating output
Location of sensor	Safe area
Input signal ranges	0-1V, 0-5V, 0-10V, 1-5V, 0-20mA, 4-20mA
Output signal	0-20mA, 4-20mA
Over-range	>22mA
Field input resistance	Current mode 10Ω, Voltage mode >100kΩ
Output load resistance (source mode)	@20mA 270Ω
Response time	20mS
Transfer Accuracy at 20 °C	0.2% (0.4% 100mV input)
Temperature drift	<0.01% of span/°C
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Current consumption	75mA max, 55mA typical @24V
Power dissipation	0.85W (with 20mA signal)
Isolation	250V ac or dc between power, field and system circuits. (tested to 1100Vac)

MTL1341
Transmitter repeater and Trip Amplifier

1 channel for 4-20mA analogue inputs with 2 alarm outputs

The MTL1341 converts 2 or 4 wire transmitter current inputs to 4-20mA in a source or sink mode. There are 2 trip amplifiers provided with high or low level settings. The module may be powered directly or via the PBUS17.5 power feed in the DIN rail

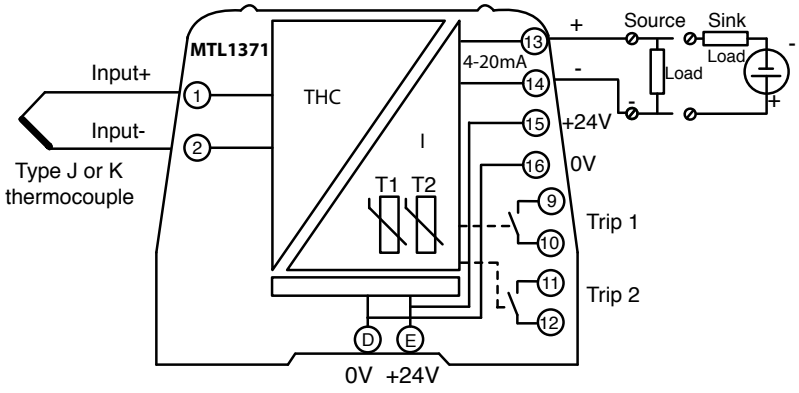


Terminals	Function
1	Transmitter power
2	Current input
3	Common
9	Trip 1 contact (NO)
10	Trip 1 contact
11	Trip 2 contact (NO)
12	Trip 2 contact
13	Output +
14	Output -
15, E	Power supply +ve
16, D	Power supply -ve

SPECIFICATION see also common specification	
Number of channels	One, with fully floating output
Location of transmitter	Safe area
Input and Output signal ranges	4-20mA
Under / overrange	0 to 23.5mA
Output load resistance (source mode)	@20mA 270Ω
Field input resistance terminals 2 and 3	<15Ω
Output voltage field power supply	>17V @20mA
Transfer Accuracy at 20 °C	0.2%
Temperature drift	<0.01% of span/°C
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Current consumption	80mA max, 55mA typical @24V
Power dissipation	1.3Wmax with 20mA signal
Isolation	250V ac or dc between power, field and system circuits. (tested to 1100Vac)

MTL1371
Thermocouple input converter and trip amplifier

1 channel for Type J/K THC sensors, 2 alarm outputs



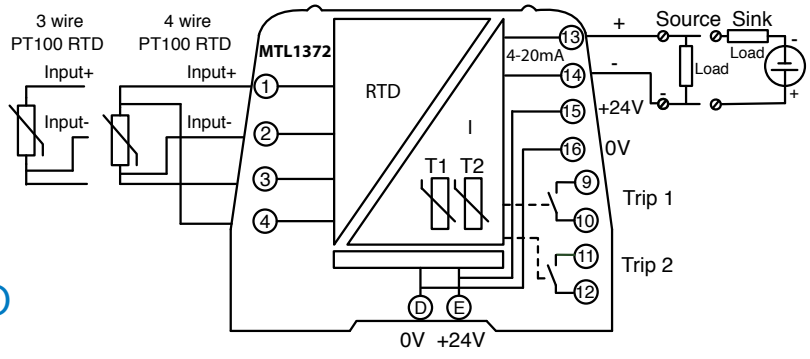
The MTL1371 is a single channel signal converter which can accept type J or K thermocouple inputs and converts the signal to 4-20mA , Ranges are selected by the user using switches on the module. 2 trip amplifiers are also provided with level settings. The module may be powered directly or via the PBUS17.5 power feed in the DIN rail.

Terminals	Function
1	Input +
2	Input -
9	Trip 1 contact (NO)
10	Trip 1 contact
11	Trip 2 contact (NO)
12	Trip 2 contact
13	Output +
14	Output -
15, E	Power supply +ve
16, D	Power supply -ve

SPECIFICATION see also common specification	
Number of channels	One with fully floating input and output
Location of equipment	Safe area
Input signal	Type J or K thermocouple
Range selection	Via switches, refer to instructions
Output signal	4-20mA, current source or current sink
Field input resistance	>100KΩ
Cold Junction Compensation accuracy	±1°C
Response time	500mS
Transfer Accuracy at 20 °C	0.2%
Temperature drift	<0.01% /°C
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Current consumption	80mA max, 55mA typical @24V
Power dissipation	0.85W (with 20mA signal)
Isolation	250V ac or dc between power, field and system circuits. (tested to 1100Vac)

MTL1372
RTD device input converter and trip amplifier

1 channel for PT100 type RTD sensors, 2 alarm outputs



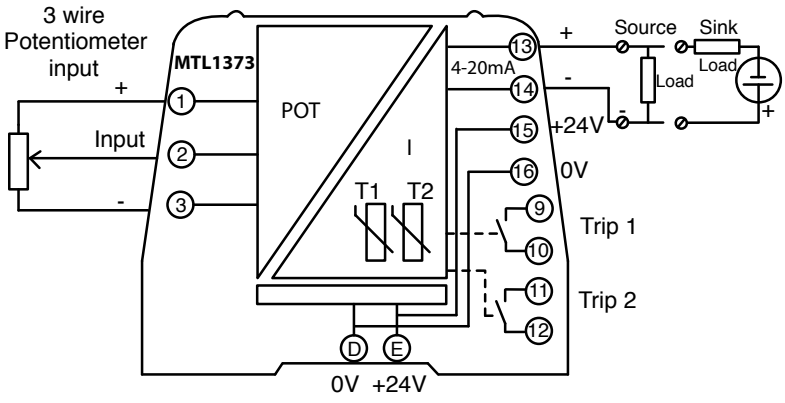
The MTL1372 is a single channel signal converter which can accept PT100 RTD inputs and converts the signal to 4-20mA. Ranges are selected by the user using switches on the module. 2 trip amplifiers are also provided with level settings. The module may be powered directly or via the PBUS17.5 power feed in the DIN rail.

Terminals	Function
1	Input +
2	Input -
3	3 wire - / 4 wire -
4	4 wire +
9	Trip 1 contact (NO)
10	Trip 1 contact
11	Trip 2 contact (NO)
12	Trip 2 contact
13	Output +
14	Output -
15, E	Power supply +ve
16, D	Power supply -ve

SPECIFICATION see also common specification	
Number of channels	One with fully floating input and output
Location of equipment	Safe area
Input signal	PT100 RTD sensors, 3 or 4 wire connection
Range selection	Via switches, refer to instructions
Output signal	4-20mA, current source or current sink
Over-range	>22mA
Response time	500mS
Transfer accuracy at 20 °C	0.2%
Temperature drift	<0.01% /°C
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Current consumption	80mA max, 55mA typical @24V
Power dissipation	0.6W
Isolation	250V ac or dc between power, field and system circuits. (tested to 1100Vac)

MTL1373 Potentiometer input converter and trip amplifer

1 channel for 3 wire potentiometer sensors, 2 alarm outputs



The MTL1373 is a single channel signal converter which can accept a potentiometer input and converts the signal to 4-20mA.
Potentiometers between 100Ω and 100kΩ can be connected. 2 trip amplifiers are also provided with level settings. The module may be powered directly or via the PBUS17.5 power feed in the DIN rail.

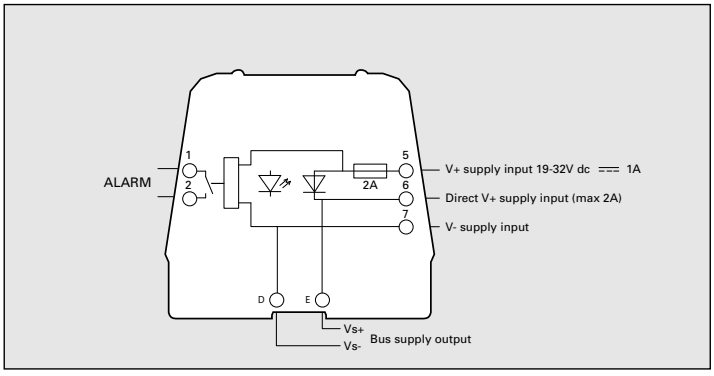
Terminals	Function
1	Input +
2	Wiper
3	Input -
9	Trip 1 contact (NO)
10	Trip 1 contact
11	Trip 2 contact (NO)
12	Trip 2 contact
13	Output +
14	Output -
15, E	Power supply +ve
16, D	Power supply -ve

SPECIFICATION see also common specification	
Number of channels	One with fully floating input and output
Location of equipment	Safe area
Input signal	3 wire potentiometer, 100Ω to 100Ω resistance
Output signal	4-20mA, current source or current sink
Over-range	None
Field input resistance	>100KΩ
Transfer accuracy at 20 °C	0.2%
Temperature drift	<0.01% /°C
Relay characteristics	Contact rating: 250V ac, 2A cosØ >0.7, 340V dc, 2A resistive load
Current consumption	80mA max, 55mA typical @24V
Power dissipation	0.6W
Isolation	250V ac or dc between power, field and system circuits. (tested to 1100Vac)

MTL1991 Power Feed and Alarm Module

MTL1000 power bus module

The **MTL1991** provides the power supply feed to the power bus for the **MTL1000** series isolators. A relay alarm contact and LED indicate power supply status. 2 modules may be used to provide a redundant power feed to the power bus when feeding power via terminal 5 with a maximum load of 1A. For single power feed use terminal 6, the maximum recommended load is 2A.



Terminals	Function
1	Alarm
2	Alarm
5	Power supply input +ve
6	Power bus repeat +ve
7	Power supply input -ve
D	Power bus -ve
E	Power bus +ve

SPECIFICATION see also common specification

Power supply voltage	19V to 32V DC
Relay contact rating	40V 0.5A max resistive
Maximum power dissipation	<1W (power via terminal 5) <0.3W (power via terminal 6)

MTL1000
Common Specifications

Terminals
Accept conductors of up to 2.5mm² stranded or single-core

Power supply voltage,
18V to 32V DC SELV

Isolation
250Vac and dc functional isolation between power, field and system circuits. (Tested to 1100Vac)

Location of units
Safe area

Mounting
T-section 35mm DIN rail (7.5mm or 15mm) to EN 50022

Ambient temperature limits
-20 to +60°C (-6 to +140°F) operating
-40 to +80°C (-40 to +176°F) storage

Humidity
5 to 95% relative humidity

Weight
120g

EMC
EN61326 and NE21*

*For 20mS power interruption compliance a suitable power supply must be used.

Dimensions

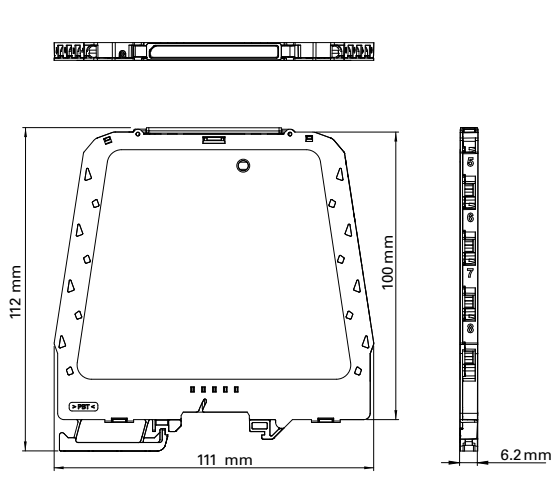


Fig. 1 MTL1000

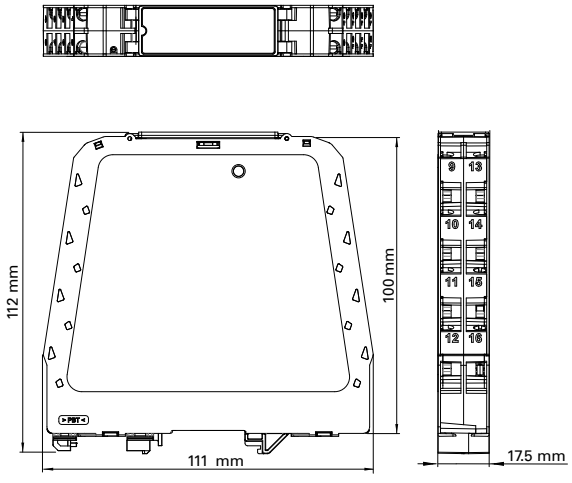


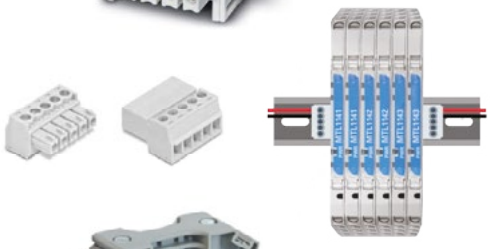
Fig. 2 MTL1300

Accessories

PBUS6.2 DIN rail power bus connector for 2 module positions (pack of 10)
Required for all powered modules, must be ordered separately.

PBUS17.5 DIN power rail bus connector for 1 module position (pack of 10)

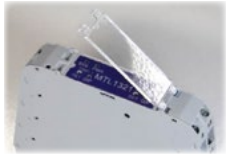
PBUS02 Power bus, direct connection terminals (1 set)
Used for a single power supply feed directly into the power bus. Max current capacity 8A (Typically 150 modules)



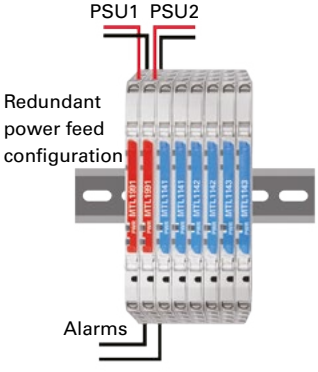
PBUS03 Module end stop clamp

TH1000 Module tagging holder (pack of 20)

TH1300 Module tagging holder for MTL13xx (pack of 10)



MTL1991 Power feed and alarm module (see separate specification sheet. For single or dual power feeds with power monitor alarm. Maximum load 1A (typically 20 modules)



EATON Crouse-Hinds series

The safety you rely on.

See the complete MTL product portfolio at **www.dex.cz**

D-Ex Instruments

Zastoupení pro Českou republiku:
D-Ex Instruments, s. r. o.
Optátova 37 • 637 00 Brno
Tel.: +420 541 423 223 • Fax: +420 541 423 219
E-mail: mtl@dex.cz • http://www.dex.cz

Zastoupení pro Slovenskou republiku:
D-Ex Instruments, s. r. o.
Pražská 11 • 811 04 Bratislava
Tel: +421(02)/5729 7421 • Fax: +421(02)/5729 7424
E-mail: mtl@dex.sk • http://www.dex.sk

Powering Business Worldwide

ZL-B-SIGCON-EN-0617
DEXMTL-05/2019-v3

Eaton Electric Limited,
Great Marlings, Butterfield, Luton
Beds, LU2 8DL, UK.
Tel: + 44 (0)1582 723633 Fax: + 44 (0)1582 422283
E-mail: mtlenquiry@eaton.com
www.mtl-inst.com