

MTL1000 range of signal conditioners

**CROUSE-HINDS**  
SERIES

For reliable, high quality  
process communications



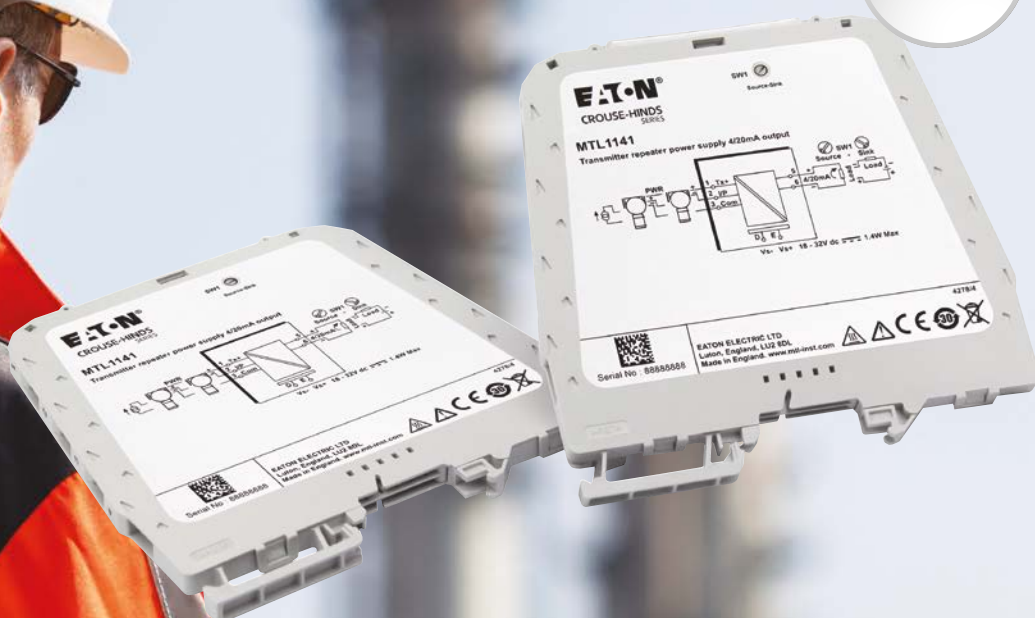
**EATON**

*Powering Business Worldwide*

# The new MTL1000 range of signal conditioning isolators

complement our intrinsic safety products to provide a complete interface solution

New



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

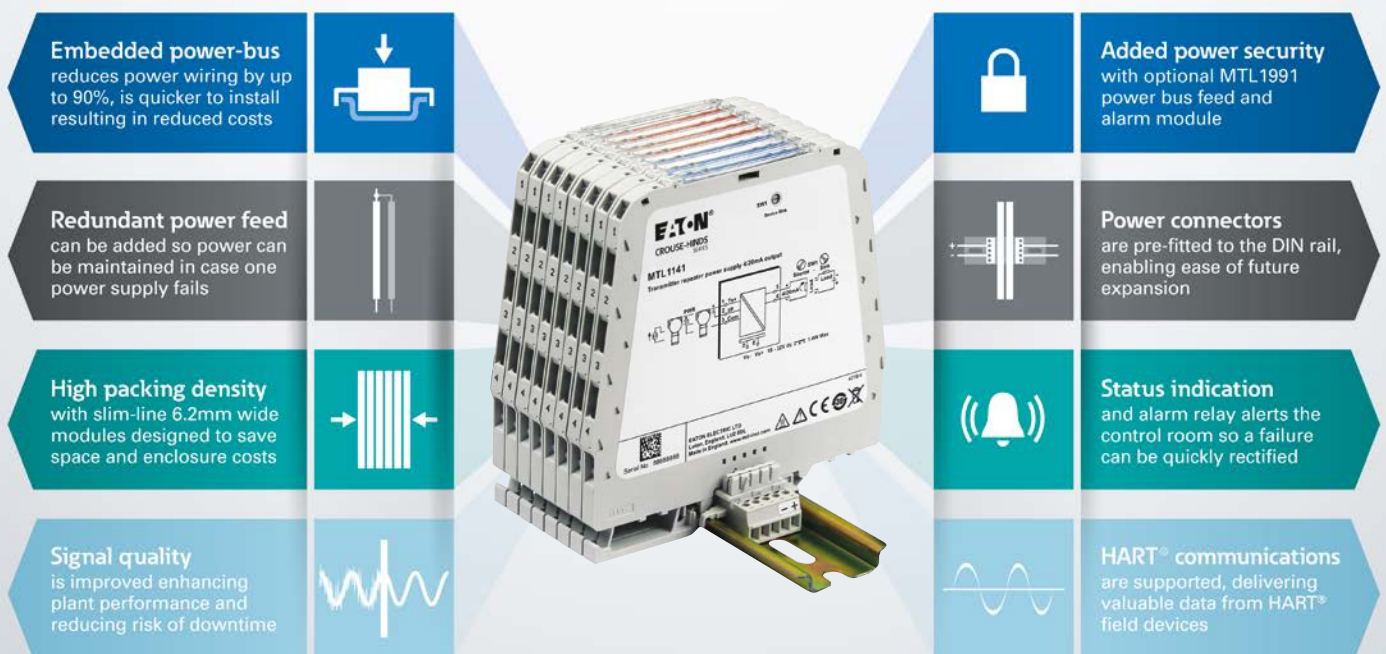
[www.mtl-inst.com](http://www.mtl-inst.com)  
[mtlenquiry@eaton.com](mailto:mtlenquiry@eaton.com)



# The new MTL1000 range of modules and accessories

is designed for use with process connected systems

## Key Features



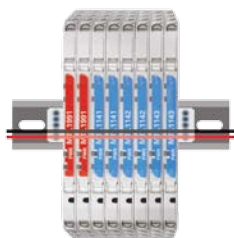
The **MTL1000 range** is easy to install, its slim-line design enables high packing density; its power-bus feature significantly reduces installation costs; and you can now source all your interface requirements from a single trusted provider.



# 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

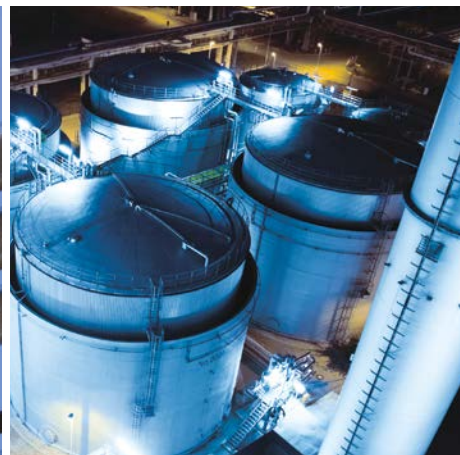
Application	Catalogue number	Description	Width	Power-bus
	MTL1141	4-20mA Tx repeater PSU	6.2mm	Required
	MTL1142	4-20mA Tx repeater PSU HART	6.2mm	Required
	MTL1143	1 in 2 out Tx repeater	6.2mm	Required
	MTL1144	V/I to current repeater, loop powered	6.2mm	Loop powered
I/I (outputs)	MTL1145 *	4-20mA loop 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.

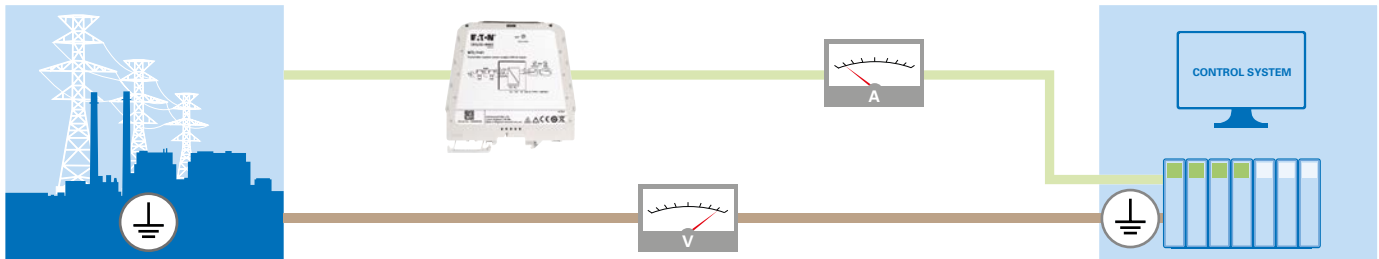




# Applications

## 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.



# MTL1000

## Common Specifications

### Terminals

Accept conductors of up to 2.5mm<sup>2</sup> 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

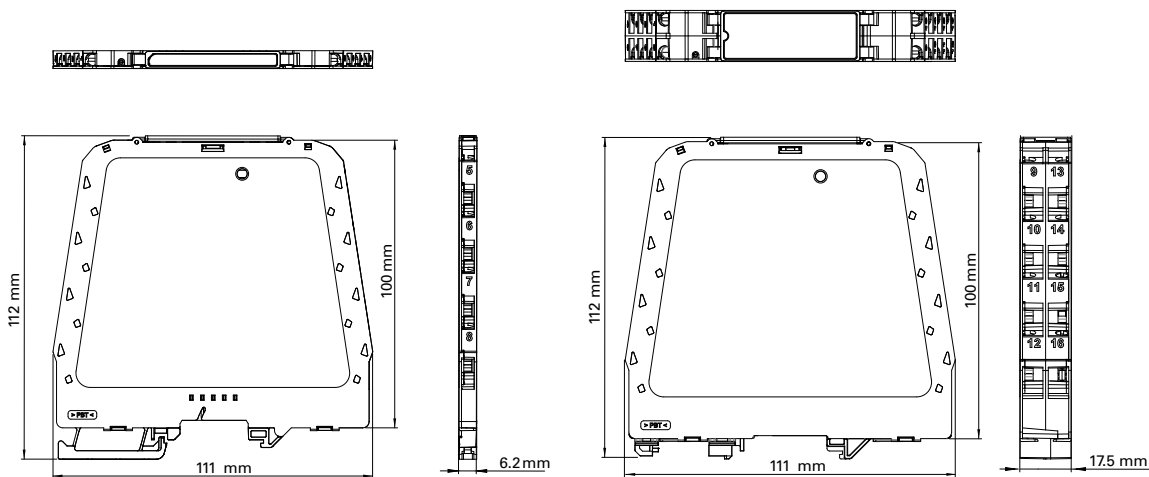


Fig. 1 MTL1000

Fig. 2 MTL1300

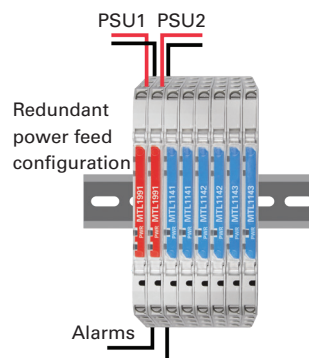
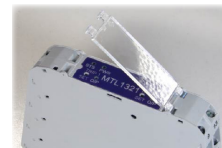
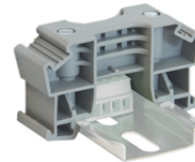
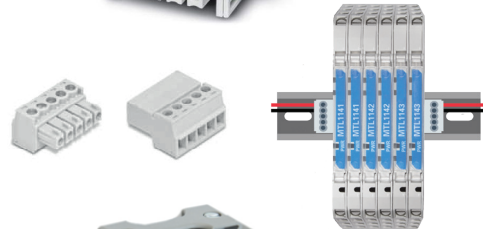
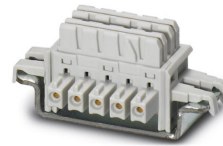


# MTL1000 Common Specifications

November 2018

## 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 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](mailto:mtlenquiry@eaton.com)  
[www.mtl-inst.com](http://www.mtl-inst.com)

© 2018 Eaton  
All Rights Reserved  
Publication No. EPS1000 Rev 7 201118  
November 2018

**EUROPE (EMEA):**  
+44 (0)1582 723633  
[mtlenquiry@eaton.com](mailto:mtlenquiry@eaton.com)

**THE AMERICAS:**  
+1 800 835 7075  
[mtl-us-info@eaton.com](mailto:mtl-us-info@eaton.com)

**ASIA-PACIFIC:**  
+65 6645 9864 / 9865  
[sales.mtlsing@eaton.com](mailto:sales.mtlsing@eaton.com)

The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.