

MTL1000 range

Signal conditioning interfaces

The MTL1000 products are designed to provide signal isolation and signal conversion between equipment and areas of a process plant.

Signal isolation eliminates or reduces the risk of earth loops, surges and noise, all of which can result in loss of signal integrity or damage to equipment.

In addition, some modules offer the ability to convert signal types to provide level compatibility between system components.



The MTL1000 range of modules and accessories is designed for use with process connected systems. It consists of compact isolating interface modules mounted on 35mm DIN rail. Power is provided through a DIN rail mounted power bus, to which, the isolator module is plugged into when clipped onto the DIN rail. Power is supplied to the isolators via a dedicated power feed module which also provides current limit protection in the event of a fault.

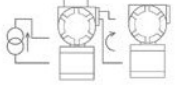




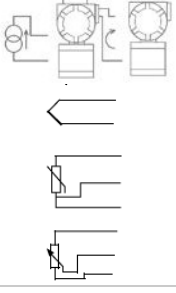
The MTL1000 range modules provide power and status information via LEDs on the top of the module. Where module configuration is required, then switches are accessed by the user through the side cover.

The NEW MTL1000 range of signal conditioning isolators and accessories are designed to help protect field instruments and control systems to provide safe, reliable and high-quality process communications. This cost-effective solution offers significant savings with its embedded DIN-rail mounted power-bus and compact design.

The optional MTL1991 power-bus feed and alarm module offers added power security with the application of dual power feeds with individual supply monitoring.

- Embedded power-bus reduces power wiring up to 90%
- High packing density with 6.2mm wide slimline modules
- Redundant power feed option for increased availability
- Status indication and alarm relay for quick maintenance
- Improved signal quality enhances plant performance

MTL1000 range product/application selection table

| 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 100 Ω to 100k Ω | 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 |

MTL1141 Transmitter Power Supply

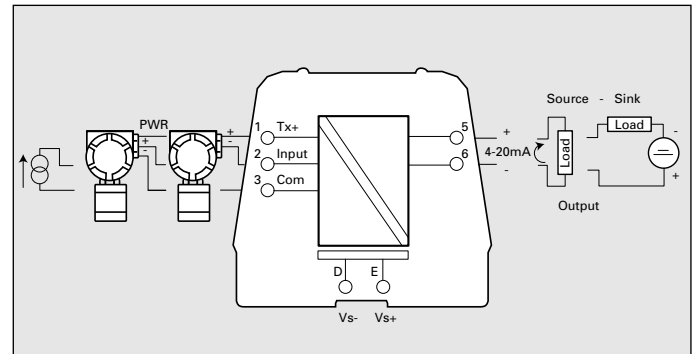
1 Channel, for 2/4-wire transmitters

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.



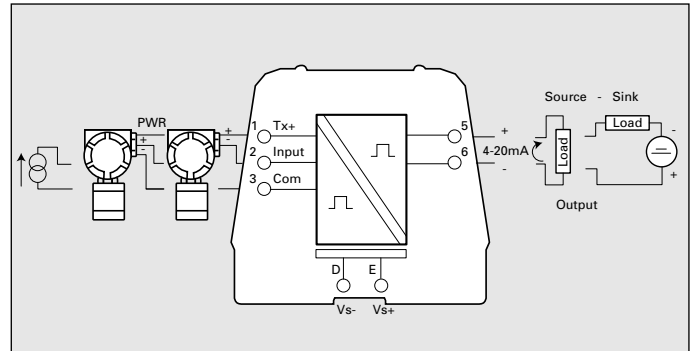
| Terminals | Function |
|-----------|------------------|
| 1 | Tx+ |
| 2 | Input |
| 3 | Common |
| 5 | Output + |
| 6 | Output - |
| D | Power supply -ve |
| E | Power supply +ve |

| 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.



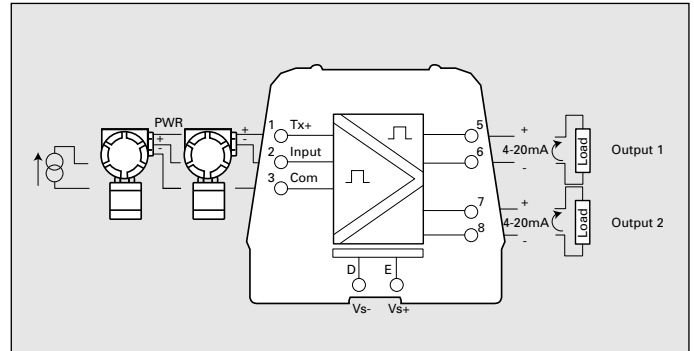
| Terminals | Function |
|-----------|----------------------|
| 1 | Tx+ |
| 2 | Input |
| 3 | Common |
| 5 | Output + (with HART) |
| 6 | Output - (with HART) |
| D | Power supply -ve |
| E | Power supply +ve |

| 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 |

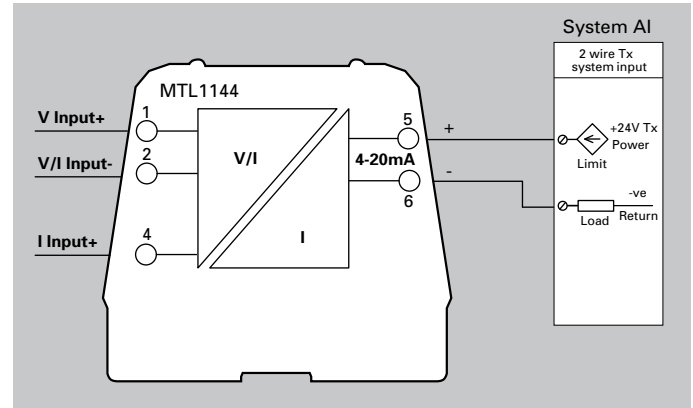
| SPECIFICATION | see also common specification |
|---|--|
| Number of channels | One, with 2 fully floating outputs |
| Location of Transmitter | Safe area |
| Input and output signal range | 4 to 20mA |
| Under/Over-range | <3.0mA to >23mA |
| System output load resistance (source mode) | @ 20mA: O/P1 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- |

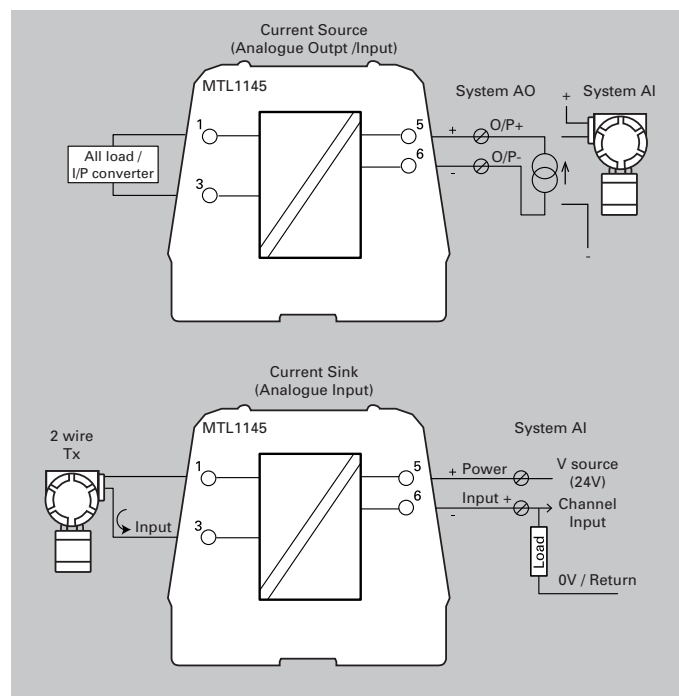
| SPECIFICATION | |
|---------------------------------------|--|
| See also common specification | |
| Number of channels | One, with fully floating input and output |
| Location of equipment | Safe area |
| Input signal ranges | 0-100mV, 0-1V, 0-5V, 1-5V, 0-10V, 0-20mA, 4-20mA |
| Range selection | 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)

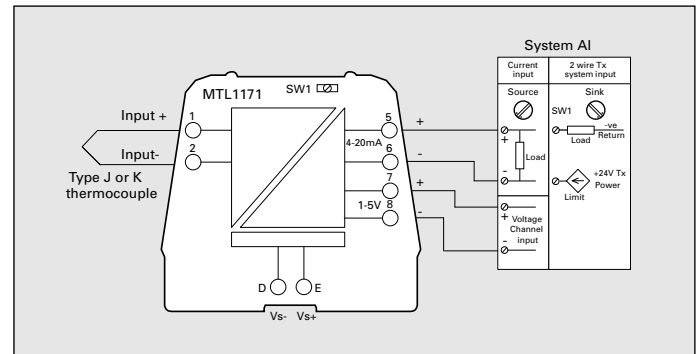


| Terminals | Current Source Mode | Current Sink Mode |
|-----------|---------------------|-------------------|
| 1 | Output + | Sink input + |
| 3 | Output - | Sink return |
| 5 | Current input + | Sink output + |
| 6 | Current input - | Sink output - |

| 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.

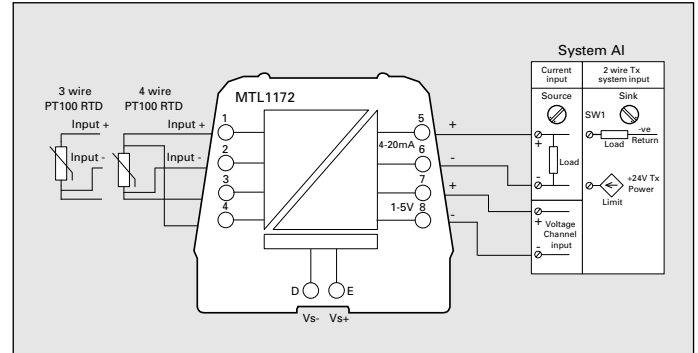
| Terminals | Function |
|-----------|-----------------------------------|
| 1 | Input + |
| 2 | Input - |
| 5 | Current Output +/- Current Sink - |
| 6 | Current Output - / Current Sink + |
| 7 | Voltage Output + |
| 8 | Voltage Output - |
| D | Power supply -ve |
| E | Power supply +ve |

| 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.

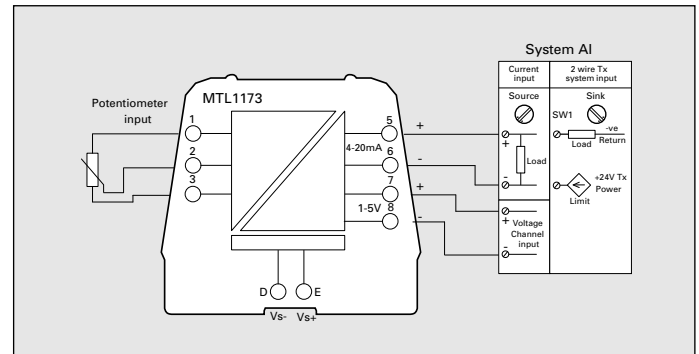
The **MTL1991** or PBUS02 is used to feed power onto the bus.

| 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.

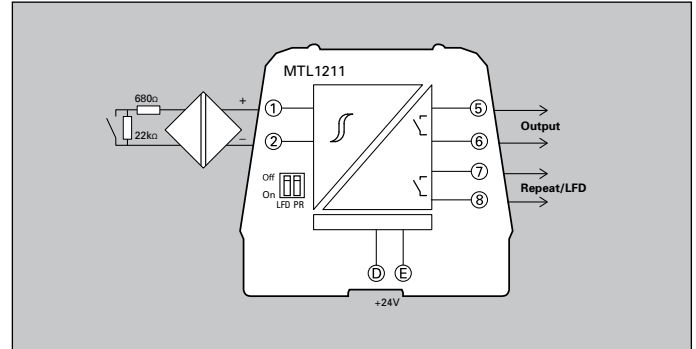
| Terminals | Function |
|-----------|-----------------------------------|
| 1 | Potentiometer end |
| 2 | Potentiometer wiper |
| 3 | Potentiometer end |
| 5 | Current Output + / Current Sink - |
| 6 | Current Output - / Current sink+ |
| 7 | Voltage Output + |
| 8 | Voltage Output - |
| D | Power supply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

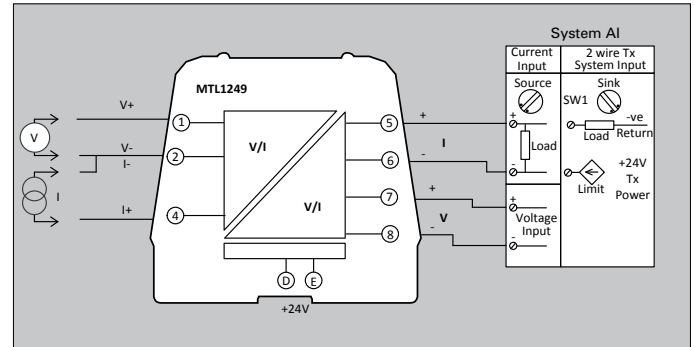
| SPECIFICATION | |
|---|---|
| See also common specification | |
| Number of channels | One, with fully floating input and outputs |
| Location of equipment | Safe area |
| Input signal | Dry contact or inputs conforming to BS EN60947-5-6:2001, standards for proximity detectors (NAMUR) |
| Voltage to sensor | 7-9V dc from $1k\Omega \pm 10\%$ |
| Input/output characteristics | Normal Phase - Output closed if input $>2.1mA$ ($<2k\Omega$ in input circuit), Output open if input $<1.2mA$ ($>10k\Omega$ in input circuit). Hysteresis $200\mu A$ (650Ω nominal) |
| Relay characteristics | Contact rating: 250V ac, 2A $\cos\phi >0.7$, 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 $I_{lin} <50\mu A$, Open-circuit alarm off if $I_{lin} >250\mu A$ Short-circuit alarm on if $R_{in} <100\Omega$, Short circuit alarm off if $R_{in} >360\Omega$ <i>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.</i> |
| 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) |



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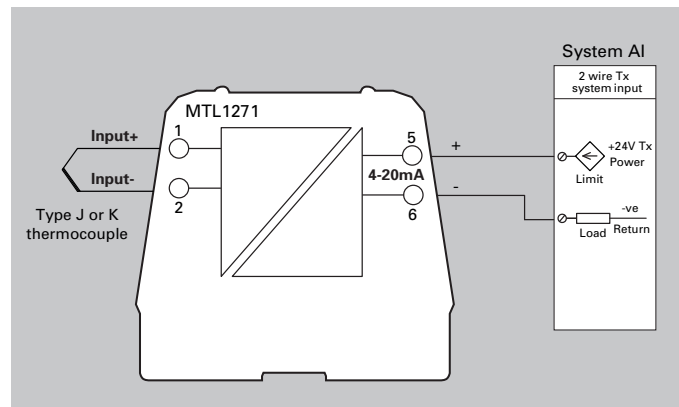
The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

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- |

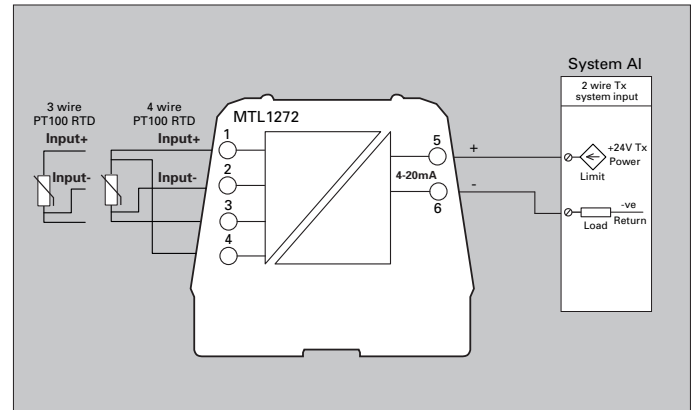
| SPECIFICATION | |
|---------------------------------------|--|
| See also common specification | |
| Number of channels | One, with fully floating input and output |
| Location of equipment | Safe area |
| Input signal | Type J or K thermocouples |
| Range selection | Via switches, refer to instructions |
| 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- |

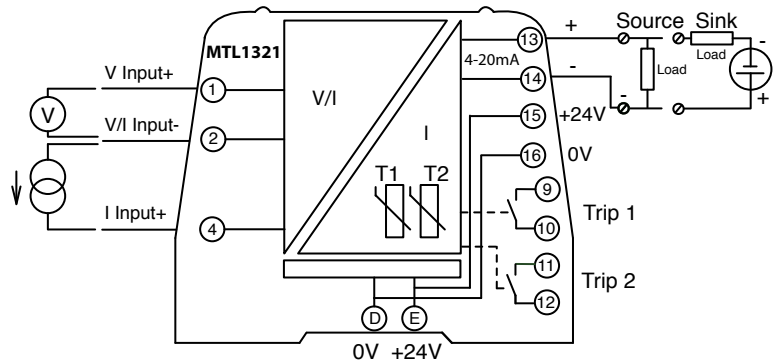
| SPECIFICATION | |
|---------------------------------------|--|
| See also common specification | |
| Number of channels | One, with fully floating input and output |
| Location of equipment | Safe area |
| Input signal | PT100 RTD sensors, 3 or 4 wire connection |
| Range selection | Via switches, 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 |

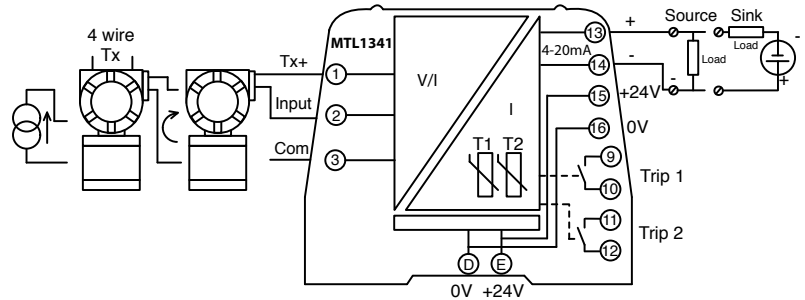
| SPECIFICATION | see also common specification |
|--------------------------------------|---|
| Number of channels | One, with fully floating output |
| Location of sensor | Safe area |
| Input signal ranges | 0-1V, 0-5V, 0-10V, 1-5V, 0-20mA, 4-20mA |
| Output signal | 0-20mA, 4-20mA |
| Over-range | >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 |

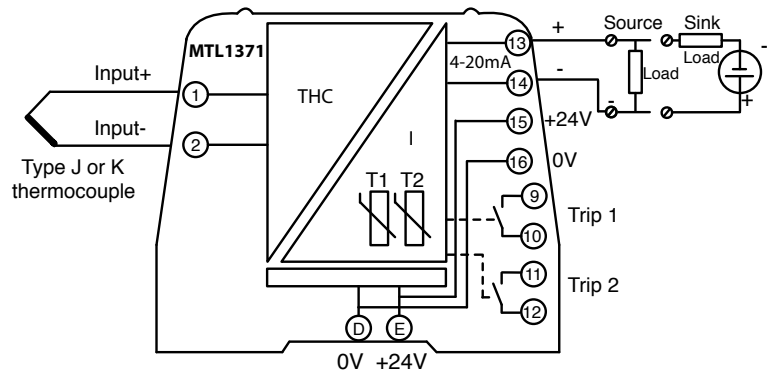
| SPECIFICATION see also common specification | |
|---|--|
| Number of channels | One, with fully floating output |
| Location of transmitter | Safe area |
| Input and Output signal ranges | 4-20mA |
| Under / overrange | 0 to 23.5mA |
| Output load resistance (source mode) | @20mA 270Ω |
| Field input 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.



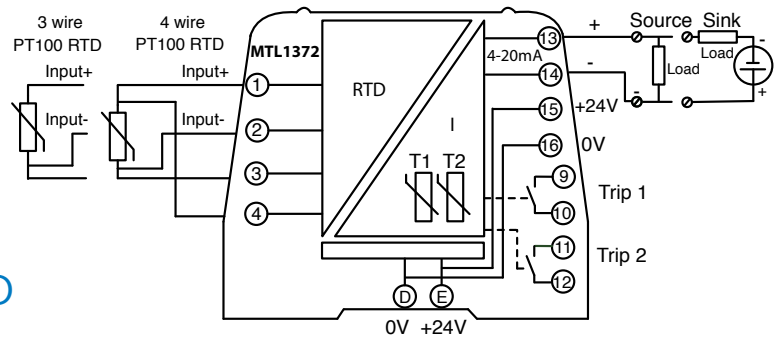
| Terminals | Function |
|-----------|---------------------|
| 1 | Input + |
| 2 | Input - |
| 9 | Trip 1 contact (NO) |
| 10 | Trip 1 contact |
| 11 | Trip 2 contact (NO) |
| 12 | Trip 2 contact |
| 13 | Output + |
| 14 | Output - |
| 15, E | Power supply +ve |
| 16, D | Power supply -ve |

| 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.



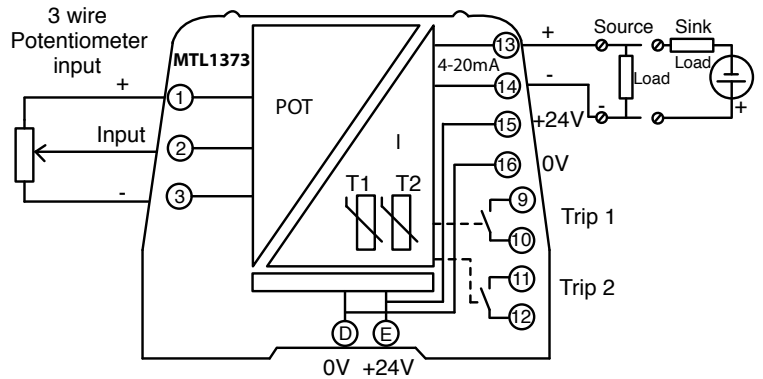
| Terminals | Function |
|-----------|---------------------|
| 1 | Input + |
| 2 | Input - |
| 3 | 3 wire - / 4 wire - |
| 4 | 4 wire + |
| 9 | Trip 1 contact (NO) |
| 10 | Trip 1 contact |
| 11 | Trip 2 contact (NO) |
| 12 | Trip 2 contact |
| 13 | Output + |
| 14 | Output - |
| 15, E | Power supply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

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.



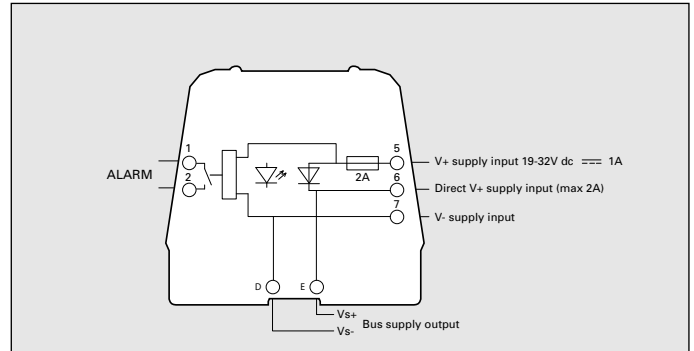
| Terminals | Function |
|-----------|---------------------|
| 1 | Input + |
| 2 | Wiper |
| 3 | Input - |
| 9 | Trip 1 contact (NO) |
| 10 | Trip 1 contact |
| 11 | Trip 2 contact (NO) |
| 12 | Trip 2 contact |
| 13 | Output + |
| 14 | Output - |
| 15, E | Power supply +ve |
| 16, D | Power supply -ve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

| 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 100kΩ 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

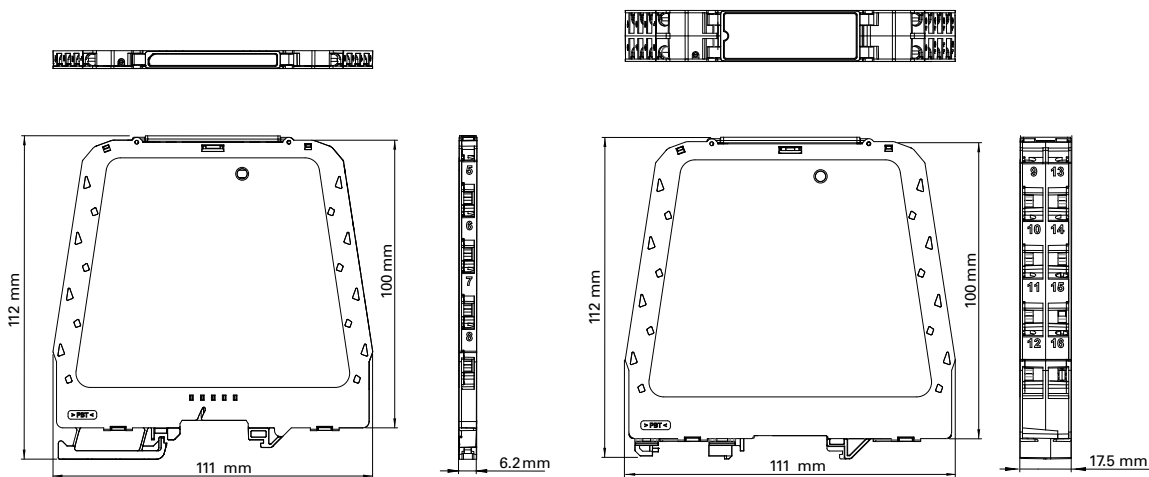


Fig. 1 MTL1000

Fig. 2 MTL1300

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)

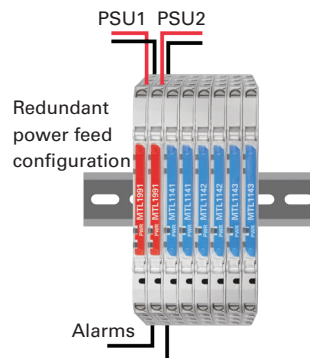
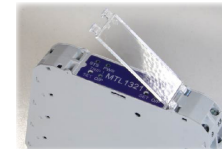
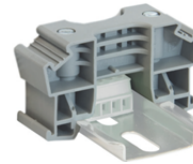
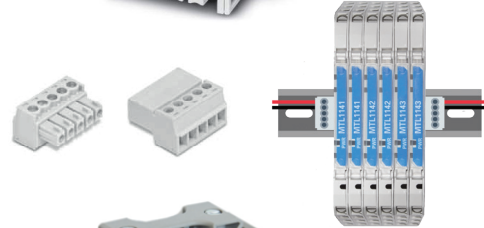
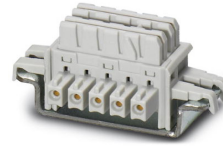
- PBUS02** Power bus, direct connection terminals (1 set)
Used for a single power supply feed directly into the power bus. Max current capacity 8A (Typically 150 modules)

- 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)



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