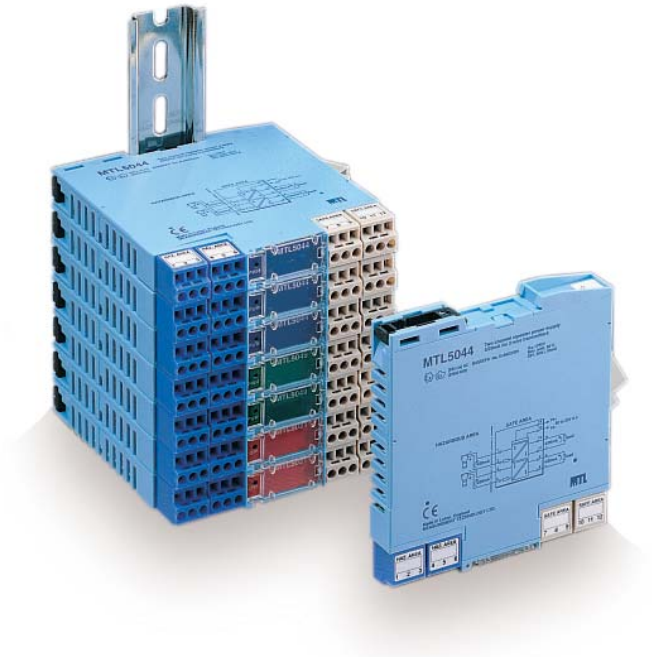
isolating IS interface units

MTL5000 SERIES



- **Straightforward 'clip-on' DIN-rail mounting**
- **Low cost per channel**
- **High packing densities**
- **Simplified installation and maintenance using plug-in connectors**

MTL5000 Series makes system planning and installation as simple as possible; providing all common functions, so that most installations can be designed easily around it.

The MTL5000 clips quickly onto DIN rail, so it is compatible with the industry-standard mounting system. Wiring is simplified by plug-in safe- and hazardous-area connectors, and a power plug which accepts a power bus; it all leads to quicker insertion, fewer wiring errors and trouble-free, tidier installations.

Where space is at a premium, high packing densities are essential. With a unit width of 16mm, and with many units providing multiple channels (and hence a lower cost per channel), the MTL5000 Series takes up a minimum of space – which leaves more for other process control equipment.

Where older installations are being updated, there may be a need for more channels – but within the existing space. The MTL5000 Series can provide the answer, fitting extra units and channels into a space formerly occupied by bulkier isolators.

The MTL5000 Series is designed for reliability. It builds on the proven success of the MTL2000, 3000 and 4000 Series to bring the benefits of new developments in galvanic isolation. It is designed from the outset to meet all relevant European Directives.

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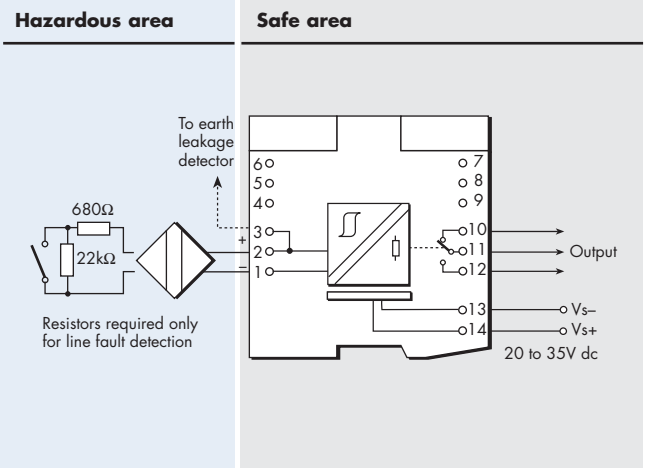
Aug 2008

MTL5011B SWITCH/ PROXIMITY DETECTOR INTERFACE

single-channel, with line fault detection and phase reversal

CE

The MTL5011B enables a safe-area load to be controlled by a switch or proximity detector located in a hazardous area. A relay output is provided. Phase reversal control allows an alarm condition to be signalled for either state of the sensor. A selectable line fault detect (LFD) facility detects an open or short circuit in the field circuit.



SPECIFICATION

See also common specification

Number of channels
One

Location of switch
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detector
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
One relay with changeover contacts

Hazardous-area input
Input conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7 to 9V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output energised (de-energised) if I_{in} >2.1mA or R_{in} <2kΩ
output de-energised (energised) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 200µA, typical

Line fault detection (LFD)
User-selectable, via switches on the top of unit. Line faults are indicated by an LED. A detected line fault de-energises the relay.
Open-circuit alarm on if I_{in}<100µA
Open-circuit alarm off if I_{in}>250µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
User-selectable, via switches on the top of unit.

Relay type
Single-pole changeover relay

Note: reactive loads must be adequately suppressed

Relay characteristics
Response time: 10ms maximum
Contact rating: 250V ac, 2A, cosø >0.7
40V dc, 2A, resistive load

Terminal	Function
1	Input –ve
2	Input +ve
3	Earth leakage detection
10	Normally-closed contact
11	Common
12	Normally-open contact
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: status of channel (on when outputs are energised)
Red: LFD indication (on when line fault detected)

Maximum current consumption
40mA at 20V
35mA at 24V
25mA at 35V

Maximum power dissipation
0.75W at 24V
0.8W at 35V

Isolation
250V ac or dc between power supply, hazardous-area circuits and relay outputs

Safety description (each channel)
10.5V, 800Ω, 14mA, U_m = 250V rms or dc

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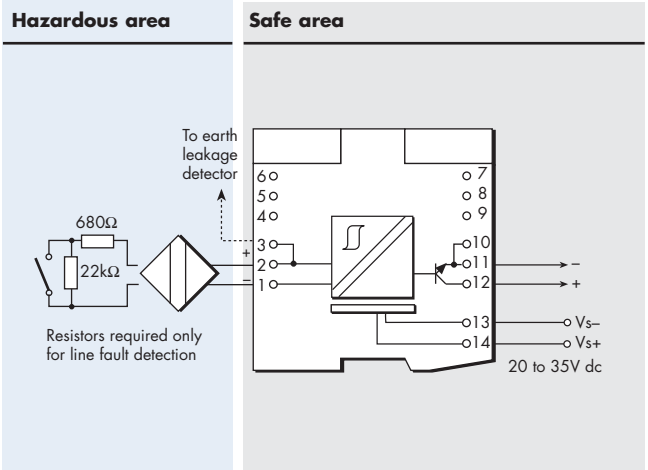
MTL5012 SWITCH/ PROXIMITY DETECTOR INTERFACE

single-channel, with line fault detection and phase reversal

CE

The MTL5012 enables a solid-state output in the safe area to be controlled by a switch or proximity detector located in the hazardous area. Independent output phase reversal and line fault detection are provided.



SPECIFICATION

See also common specification

Number of channels
One

Location of switch
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detector
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Floating solid-state output compatible with logic circuits

Hazardous-area input
Input conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7 to 9V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output on (off) if I_{in} >2.1mA or R_{in} <2kΩ
output off (on) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 200µA, typical

Line fault detection (LFD)
User-selectable. Line faults are indicated by an LED. A detected line fault switches off the output.
Open-circuit alarm on if I_{in}<50µA
Open-circuit alarm off if I_{in}>150µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
User-selectable

Output characteristics

Operating frequency:	dc to 5kHz
Max. off-state voltage:	35V
Max. off-state leakage current:	10µA
Max. on-state voltage drop:	1 + (0.13 x current in mA) V
Max. on-state current:	50mA

Terminal	Function
1	Input –ve
2	Input +ve
3	Earth leakage detection
10, 11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: status (on when output is on)
Red: LFD indication (on when line fault detected)

Maximum current consumption
28mA at 20V
30mA at 24V
32mA at 35V

Maximum power dissipation
0.8W at 24V
1.2W at 35V

Isolation
250V ac or dc between power supply, input and output

Safety description
10.5V, 800Ω, 14mA, U_m = 250V rms or dc

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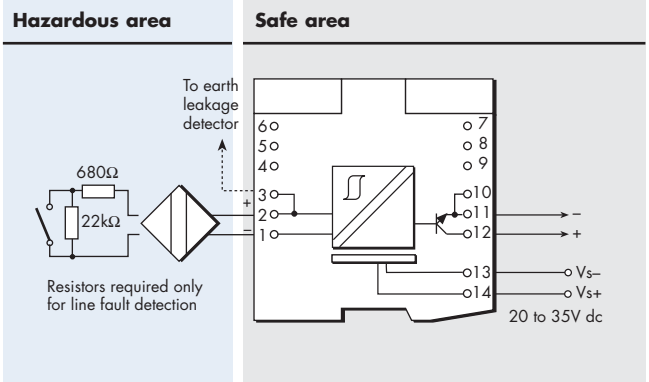
MTL5012S

solid-state output with phase reversal and line fault detection for use with United Electric One series 2-wire sensor/switch

CE

The MTL5012S enables a solid-state output in the safe area to be controlled by a switch or United Electric One series 2-wire sensor located in the hazardous area. Independent output phase reversal and line fault detection are provided.



SPECIFICATION

See also common specification

Number of channels
One

Location of switch
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of sensor
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Floating solid-state output compatible with logic circuits

Hazardous-area input
Designed to match United Electric One series 2-wire sensors

Voltage applied to sensor
7 to 9V from 500Ω ±10%

Input/output characteristics
Normal (reverse) phase:
output on (off) if I_{in} >3.8mA or R_{in} <1.3kΩ
output off (on) if I_{in} <2.5mA or R_{in} >3.1kΩ
Hysteresis: 0.5mA, typical

Line fault detection (LFD)
User-selectable. Line faults are indicated by an LED. A detected line fault switches off the output.
Open-circuit alarm on if I_{in}<50µA
Open-circuit alarm off if I_{in}>150µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
User-selectable

Output characteristics

Operating frequency:	dc to 5kHz
Max. off-state voltage:	35V
Max. off-state leakage current:	10µA
Max. on-state voltage drop:	1 + (0.13 x current in mA) V
Max. on-state current:	50mA

Terminal	Function
1	Input –ve
2	Input +ve
3	Earth leakage detection
10, 11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: status (on when output is on)
Red: LFD indication (on when line fault detected)

Maximum current consumption
33mA at 20V
35mA at 24V
38mA at 35V

Maximum power dissipation
0.9W at 24V
1.4W at 35V

Isolation
250V ac or dc between power supply, input and output

Safety description
10.5V, 480Ω, 22mA, U_m = 250V rms or dc

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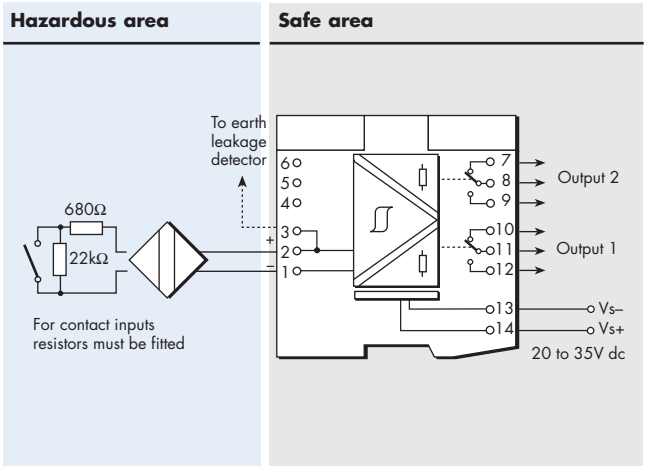
MTL5014 SWITCH/ PROXIMITY DETECTOR INTERFACE

single-channel, dual-output, with phase reversal and line fault detection

CE

The MTL5014 enables two safe-area loads to be controlled by a single switch or proximity detector located in the hazardous area. The safe-area interface has two changeover relays: output 1 and output 2. The output 1 relay reflects the status of the input and may be configured to operate in reverse phase. The output 2 relay may be configured either to repeat (slave) the output 1 relay, or to act as a line integrity monitor. A selectable line-fault-detect (LFD) facility enables an open- or short- circuit fault to be detected in the field wiring.



SPECIFICATION

See also common specification

Number of channels
One

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detectors
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Two relays with changeover contacts

Hazardous-area input
One input conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7.0 to 9.0V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output energised (de-energised) if I_{in} >2.1mA or R_{in} <2kΩ
output de-energised (energised) if I_{in} <1.2mA or R_{in} <10kΩ
Hysteresis: 250µA typical

Phase reversal
User selectable

Relay type
Single pole, changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics
Response time: 10ms maximum
Contact rating: 250V ac, 2A, cosø >0.7
40V dc, 2A, resistive load
Contact life expectancy: 3 x 10^5 operations at maximum load

Line fault detection (LFD)
User selectable: Off or On
A detected line fault de-energises Output 1 relay
Open circuit alarm on if Iin< 100µA
Short circuit alarm on if Iin > 6.5mA
Note: For contact input, resistors must be fitted
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Output 2 mode
User selectable: Slave or LFD mode
In LFD mode, a line fault de-energises Output 2 relay
Open circuit alarm on if Iin < 100µA
Short circuit alarm on if Iin > 6.5mA
See note above on use of resistors
In Slave mode output 2 repeats output 1

Power supply failure protection
Relays de-energised if supply fails

Terminal	Function
1	Input –ve
2	Input +ve
3	Earth leakage detection
7	Normally closed (output 2)
8	Common (output 2)
9	Normally open (output 2)
10	Normally closed (output 1)
11	Common (output 1)
12	Normally open (output 1)
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: illuminated when output 1 is energised
Red: illuminated when LFD is selected and there is an open or short circuit in the field wiring

Supply voltage
20 to 35V dc

Maximum current consumption
45mA at 24V
50mA at 20V
35mA at 35V

Maximum power dissipation within unit
1.1W at 24V
1.3W at 35V

Safety description
10.5V, 800Ω, 14mA, U_m= 250V rms or dc

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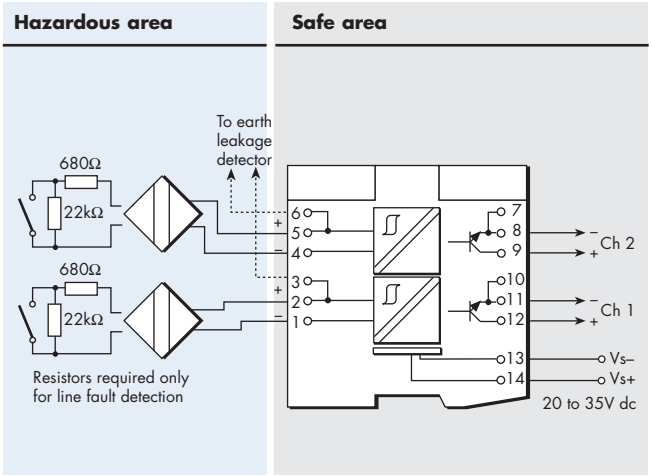
MTL5015 SWITCH/ PROXIMITY DETECTOR INTERFACE

two-channel, with line fault detection and phase reversal

CE

The MTL5015 enables two solid-state outputs in the safe area to be controlled by two switches or proximity detectors located in the hazardous area. Independent output phase reversal and line fault detection are provided for each output.



SPECIFICATION

See also common specification

Number of channels
Two

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detectors
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area outputs
Floating solid-state outputs compatible with logic circuits

Hazardous-area inputs
Inputs conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7 to 9V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output on (off) if I_{in} >2.1mA or R_{in} <2kΩ
output off (on) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 200µA, typical

Line fault detection (LFD)
User-selectable. Line faults are indicated by an LED for each channel. A detected line fault switches off the output.
Open-circuit alarm on if I_{in}<50µA
Open-circuit alarm off if I_{in}>150µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
Independent for each channel, user-selectable

Output characteristics

Operating frequency:	dc to 5kHz
Max. off-state voltage:	35V
Max. off-state leakage current:	10µA
Max. on-state voltage drop:	1 + (0.13 x current in mA) V
Max. on-state current:	50mA

Terminal	Function
1	Input –ve (Ch 1)
2	Input +ve (Ch 1)
3	Earth leakage detection
4	Input –ve (Ch 2)
5	Input +ve (Ch 2)
6	Earth leakage detection
8	Output –ve (Ch 2)
9	Output +ve (Ch 2)
10, 11	Output –ve (Ch 1)
12	Output +ve (Ch 1)
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: two: status of each channel (on when outputs are on)
Red: two: LFD indication for each channel (on when line fault detected)

Maximum current consumption
42mA at 20V
44mA at 24V
46mA at 35V

Maximum power dissipation
1.1W at 24V
1.6W at 35V

Isolation
250V ac or dc between power supply, hazardous-area circuits and each output. 30V between hazardous-area circuits.

Safety description (each channel)
10.5V, 800Ω, 14mA, U_m = 250V rms or dc

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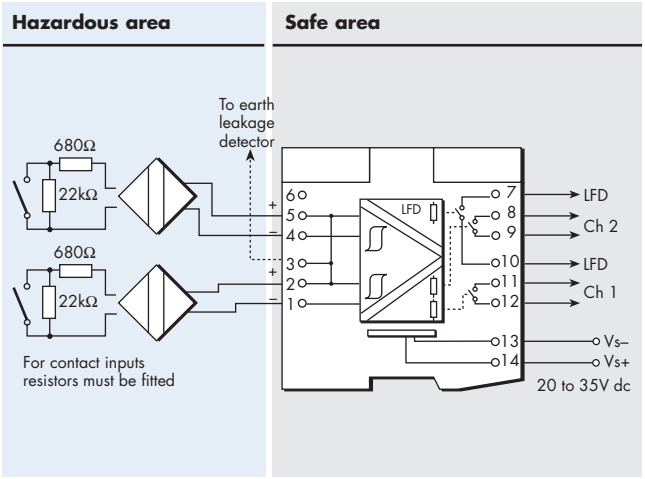
MTL5017 SWITCH/ PROXIMITY DETECTOR INTERFACE

two-channel, with line fault detection and phase reversal

CE

The MTL5017 enables two safe-area loads to be controlled by two switches or proximity detectors located in a hazardous area. Two single-pole relay outputs are provided. Independent phase reversal control is available on each channel, allowing an alarm condition (output open) to be signalled for either state of the sensor. The automatic line fault detect (LFD) facility detects an open or short circuit in either field circuit.



SPECIFICATION

See also common specification

Number of channels
Two

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detectors
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Two relays with normally-open contacts signal status of input
An additional relay signals line faults

Hazardous-area input
Two inputs conforming to NAMUR/DIN 19234 standards for proximity detectors
Resistors must be fitted externally to contact inputs: 500Ω to 1kΩ in series with the switch, 20kΩ to 25kΩ in parallel with the switch.

Voltage applied to sensor
7.0 to 9.0V from 1kΩ ±10%

Output characteristics
Normal (reverse) phase:
output relay closed (open) if I_{in} >2.1mA or R_{in} <2kΩ
output relay open (closed) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 250µA typical

Line fault detection (LFD)
Line faults are indicated by an LED and a safe-area relay. When a line fault is detected, the relay opens and the LED lights.
Open-circuit alarm on if I_{in}<100µA
Open-circuit alarm off if I_{in}>250µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: For contact input, resistors must be fitted
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
Independent on each channel, selected by switches on the base of the unit

Relay type
Single-pole, normally-open contacts.
Note: reactive loads must be adequately suppressed.

Relay characteristics
Response time: 2ms maximum
Contact rating: 10VA, 45mA, 250V ac
10W, 0.5A, 220V dc
Contact life expectancy: 10^7 operations at maximum load

Terminal	Function
1	Input –ve (channel 1)
2	Input +ve (channel 1)
3	Earth leakage detection
4	Input –ve (channel 2)
5	Input +ve (channel 2)
7	Line fault detection
8	Output (channel 2)
9	Output (channel 2)
10	Line fault detection
11	Output (channel 1)
12	Output (channel 1)
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: two: status of each channel, on when output relay is closed
Red: two: line fault detected in channel 1/channel 2

Supply voltage
20 to 35V dc

Maximum current consumption
50mA at 24V
55mA at 20V
40mA at 35V

Maximum power dissipation within unit
1.1W at 24V
1.25W at 35V

Safety description (each channel)
10.5V, 800Ω, 14mA, U_m = 250V rms or dc

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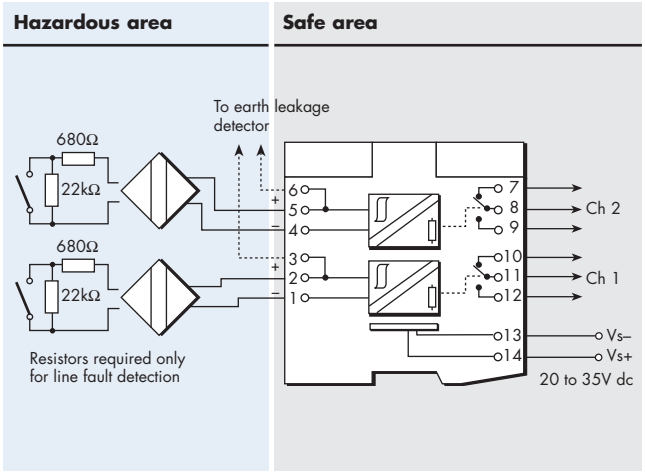
MTL5018 SWITCH/ PROXIMITY DETECTOR INTERFACE

two-channel, with line fault detection and phase reversal

CE

The MTL5018 enables two safe-area loads to be controlled by two switches or proximity detectors located in a hazardous area. Two relay outputs are provided. Independent phase reversal control allows an alarm condition to be signalled for either state of the sensor. A selectable line fault detect (LFD) facility detects an open or short circuit in either field circuit.



SPECIFICATION

See also common specification

Number of channels
Two

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detector
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Two relays with changeover contacts

Hazardous-area inputs
Inputs conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7 to 9V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output energised (de-energised) if I_{in} >2.1mA or R_{in} <2kΩ
output de-energised (energised) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 200µA, typical

Line fault detection (LFD)
User-selectable via switches on the top of the unit. Line faults are indicated by an LED for each channel. A detected line fault de-energises the relay.
Open-circuit alarm on if I_{in}<100µA
Open-circuit alarm off if I_{in}>250µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
Independent for each channel, user-selectable

Relay type
Single pole, changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics

Response time:	10ms maximum
Contact rating:	250V ac, 2A, cosø >0.7
	40V dc, 2A, resistive load

Terminal	Function
1	Input –ve (Ch 1)
2	Input +ve (Ch 1)
3	Earth leakage detection
4	Input –ve (Ch 2)
5	Input +ve (Ch 2)
6	Earth leakage detection
7	Normally-closed contact (Ch 2)
8	Common (Ch 2)
9	Normally-open contact (Ch 2)
10	Normally-closed contact (Ch 1)
11	Common (Ch 1)
12	Normally-open contact (Ch 1)
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: two: status of each channel (on when outputs are energised)
Red: two: LFD indication for each channel (on when line fault detected)

Maximum current consumption
60mA at 20V
60mA at 24V
40mA at 35V

Maximum power dissipation
1.4W at 24V
1.5W at 35V

Isolation
250V ac or dc between power supply, hazardous-area circuits and relay outputs

Safety description (each channel)
10.5V, 800Ω, 14mA, U_m= 250V rms or dc

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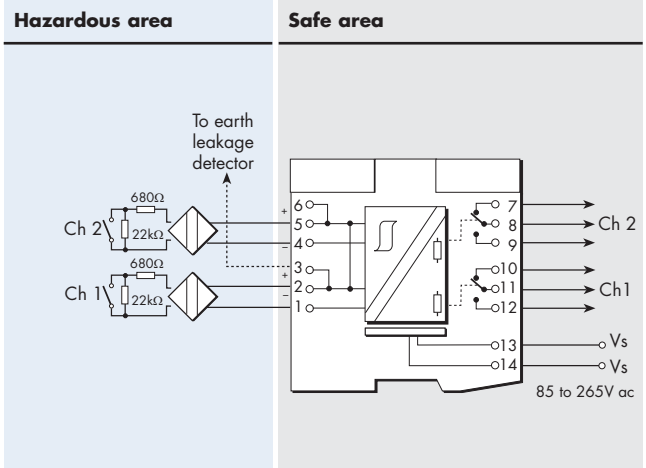
Aug 2008

MTL5018AC SWITCH/ PROXIMITY DETECTOR INTERFACE

two-channel, with line fault detection and phase reversal

CE

The MTL5018ac enables two safe-area loads to be controlled by two switches or proximity detectors located in a hazardous area. Two relay outputs are provided. Independent phase reversal control allows an alarm condition to be signalled for either state of the sensor. A selectable line fault detect (LFD) facility detects an open or short circuit in either field circuit.



SPECIFICATION

See also common specification

Number of channels
Two

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detector
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Two relays with changeover contacts

Hazardous-area inputs
Inputs conforming to NAMUR/DIN 19234 standards for proximity detectors

Voltage applied to sensor
7 to 9V from 1kΩ ±10%

Input/output characteristics
Normal (reverse) phase:
output energised (de-energised) if I_{in} >2.1mA or R_{in} <2kΩ
output de-energised (energised) if I_{in} <1.2mA or R_{in} >10kΩ
Hysteresis: 200µA, typical

Line fault detection (LFD)
User-selectable via switches on the top of the unit. Line faults are indicated by an LED for each channel. A detected line fault de-energises the relay.
Open-circuit alarm on if I_{in}<100µA
Open-circuit alarm off if I_{in}>250µA
Short-circuit alarm on if R_{in}<100Ω
Short-circuit alarm off if R_{in}>360Ω

Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Phase reversal
Independent for each channel, user-selectable

Relay type
Single pole, changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics

Response time:	10ms maximum
Contact rating:	250V ac, 2A, cosø >0.7
	40V dc, 2A, resistive load

Terminal	Function
1	Input –ve (Ch 1)
2	Input +ve (Ch 1)
3	Earth leakage detection
4	Input –ve (Ch 2)
5	Input +ve (Ch 2)
6	Earth leakage detection
7	Normally-closed contact (Ch 2)
8	Common (Ch 2)
9	Normally-open contact (Ch 2)
10	Normally-closed contact (Ch 1)
11	Common (Ch 1)
12	Normally-open contact (Ch 1)
13	AC Supply
14	AC Supply

LED indicators
Green: power indication
Yellow: two: status of each channel (on when outputs are energised)
Red: two: LFD indication for each channel (on when line fault detected)

Maximum power dissipation
<2.5W

Isolation
250V ac or dc between power supply, hazardous-area circuits and relay outputs

Safety description (each channel)
10.5V, 800Ω, 14mA, U_m= 250V rms or dc

Power Supply
85 to 265V ac
45 to 65 Hz

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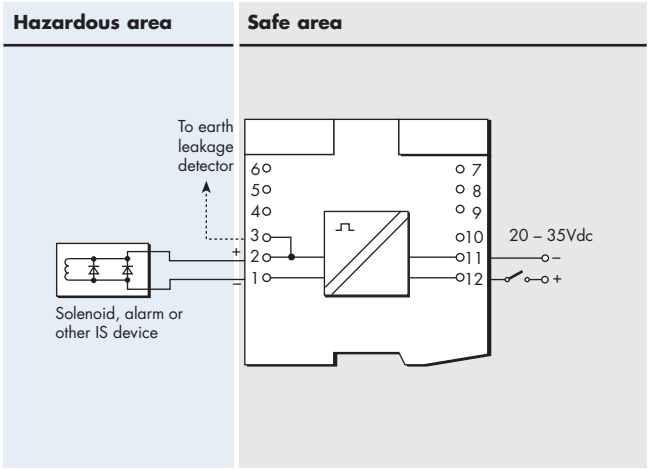
May 2006

MTL5021 SOLENOID/ ALARM DRIVER

loop-powered, IIC

CE

The MTL5021 enables a device located in the hazardous area to be controlled by a switch in the safe area. The MTL5021 can drive a certified intrinsically safe low-power load, as well as non-energy-storing simple apparatus such as an LED. The unit's input/output isolation allows the control switch to be connected into either side of the 24V dc supply circuit.



SPECIFICATION

See also common specification

Number of channels

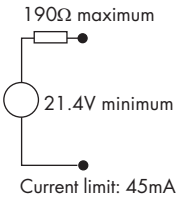
One

Location of load

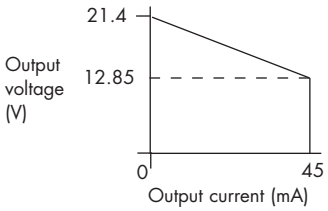
Zone 0, IIC, T4–-6 hazardous area if suitably certified

Div. 1, Group A hazardous location

Equivalent circuit



Minimum output voltage



Terminal	Function
1	Output –ve
2	Output +ve
3	Earth leakage detection
11	Supply –ve
12	Supply +ve

LED indicator

Yellow: status

Input voltage

20 to 35V dc

Hazardous-area output

Minimum output voltage: 12.85V at 45mA

Maximum output voltage: 24V from 170Ω

Current limit: 45mA

Maximum current consumption (with 45mA output)

90mA at 24V

110mA at 20 to 35V dc

Maximum power dissipation within unit

1.4W at 24V typical

1.8W at 35V maximum

Safety description

25V, 170Ω, 147mA, U_m = 250V rms or dc

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Aug 2008

MTL5022 SOLENOID/ ALARM DRIVER

loop-powered, IIB

CE

The MTL5022 enables a device located in the hazardous area to be controlled by a switch or voltage change in the safe area. The MTL5022 can drive any certified intrinsically safe low-power load, as well as non-energy-storing simple apparatus such as an LED. The unit's input/output isolation allows the control switch to be connected into either side of the 24V dc supply circuit.

SPECIFICATION

See also common specification

Number of channels

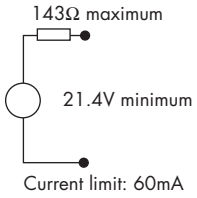
One

Location of load

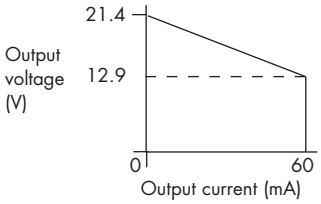
Zone 0, IIB, T4–6 hazardous area if suitably certified

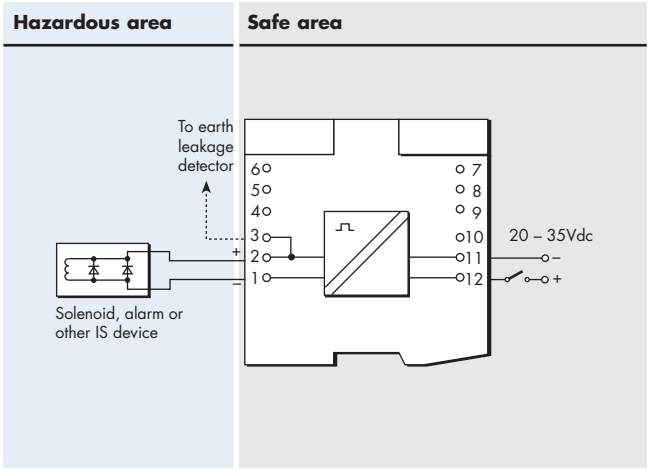
Div. 1, Group C hazardous location

Equivalent circuit



Minimum output voltage





Terminal	Function
1	Output –ve
2	Output +ve
3	Earth leakage detection
11	Supply –ve
12	Supply +ve

LED indicator

Yellow: status

Input voltage

20 to 35V dc

Hazardous-area output

Minimum output voltage: 12.9V at 60mA

Maximum output voltage: 24V from 133Ω

Current limit: 60mA

Maximum current consumption (with 60mA output)

115mA at 24V, typical

135mA at 20 to 35V dc, maximum

Maximum power dissipation within unit

1.5W at 24V

2.1W at 35V

Safety description

25V, 135Ω, 185mA, U_m = 250V rms or dc

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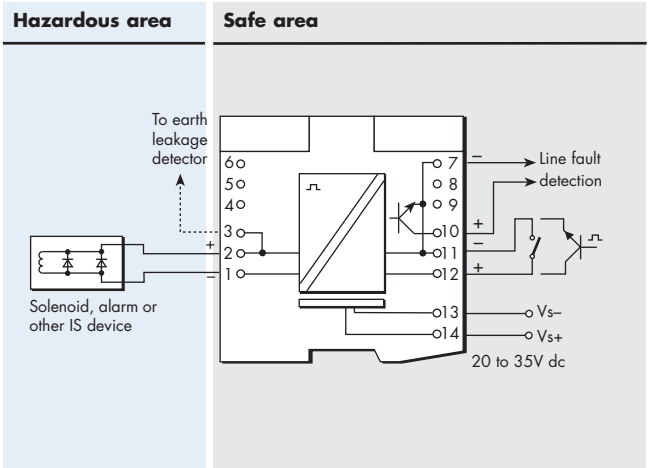
Aug 2008

MTL5023 SOLENOID/ ALARM DRIVER

powered, with line fault detection and phase reversal

CE

The MTL5023 enables a device located in the hazardous area to be controlled by a volt-free contact or logic signal in the safe area. It is suitable for driving loads such as solenoids, alarms and other low-powered devices. A line fault is signalled in the safe area by a solid-state switch which de-energises if a field line is open- or short-circuited.



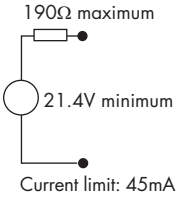
SPECIFICATION

See also common specification

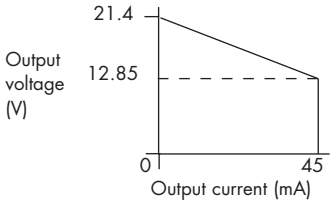
Number of channels
One

Location of load
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Equivalent circuit



Minimum output voltage



Hazardous-area output

Minimum voltage:	12.85V at 45mA
Maximum voltage:	25V
Current limit :	45mA

Output ripple
100mV peak-to-peak maximum

Control input
Normal (reverse) phase: Output turns on (off) if input switch closed, transistor on or <1.4V applied across terminals 12 and 11
Output turns off (on) if input switch open,
transistor off or >4.5V applied across terminals 12 and 11

Output response time
Within 10% of final value within 50ms

Line fault detection
Open or short circuit in the field de-energises solid-state line-fault signal.
No line fault will be signalled while the field-circuit impedance stays within the range 50Ω to 7kΩ.

Line fault signal characteristics

Maximum off-state voltage:	35V
Maximum off-state leakage current:	10µA
Maximum on-state voltage drop:	[1 + (0.08 x current in mA)] V
Maximum on-state current:	50mA

Phase reversal
Selected via a switch on the base of the module

Terminal	Function
1	Output –ve
2	Output +ve
3	Earth leakage detection
7	Line fault signal –ve
10	Line fault signal +ve
11	Control –ve
12	Control +ve
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication
Yellow: status, on when output circuit is active
Red: line fault detected

Supply voltage
20 to 35V dc

Maximum current consumption
100mA at 24V
120mA at 20V
80mA at 35V

Maximum power dissipation within unit
1.4W with typical solenoid valve, output on
2.0W worst case

Safety description
25V, 170Ω, 147mA, U_m = 250V rms or dc

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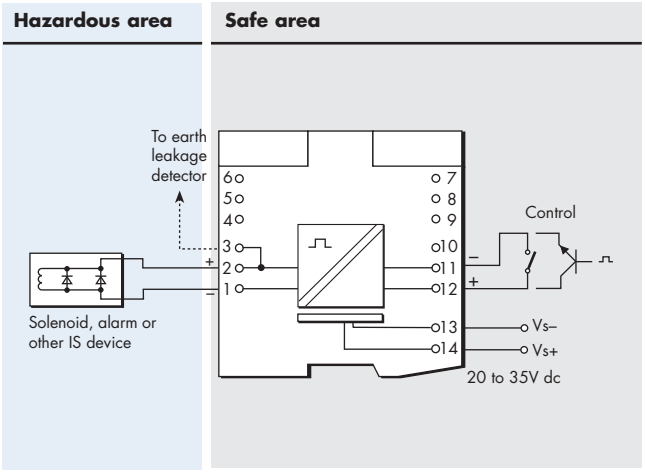
Jan 2006

MTL5024 SOLENOID/ ALARM DRIVER

powered, logic drive with phase reversal

CE

The MTL5024 allows an on/off device in a hazardous area to be controlled by a volt-free contact or logic signal in the safe area. The MTL5024 is suitable for driving loads such as solenoids, alarms, LEDs and other low-powered devices certified as intrinsically safe or classified as non-energy-storing simple apparatus. A phase reversal switch enables the user to select which phase of input signal will drive the output on.



SPECIFICATION

See also common specification

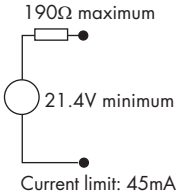
Number of channels

One

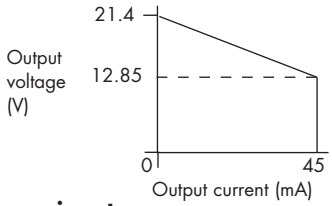
Location of load

Zone 0, IIC, T4–6 hazardous location if suitably certified
Div. 1, Group A hazardous location

Equivalent circuit



Minimum output voltage



Safe-area input

Suitable for switch contacts, an open-collector transistor or logic drive.

Normal (reverse) phase: output on (off) if switch closed, transistor on or <1.4V applied to input
output off (on) if switch open, transistor off or >4.5V applied to input

Hazardous-area output

Minimum output voltage: 12.85V at 45mA
Maximum output voltage: 25V
Current limit : 45mA

Phase reversal

Selected by a switch on the base of the module

Terminal	Function
1	Output –ve
2	Output +ve
3	Earth leakage detection
11	Control –ve
12	Control +ve
13	Supply –ve
14	Supply +ve

LED indicators

Green: power indication
Yellow: status

Supply voltage

20 to 35V dc

Maximum current consumption

100mA at 24V
120mA at 20V dc
75mA at 35V dc

Maximum power dissipation within unit

1.4W with typical solenoid valve, output on
2.0W worst case

Safety description

25V, 170Ω, 147mA, Um = 250V rms or dc

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Aug 2008

MTL5025 SOLENOID/ ALARM DRIVER

low-current loop-powered, IIC

CE

The MTL5025 enables an on/off device located in the hazardous area to be controlled by a switch or voltage change in the safe area. It can drive any certified intrinsically safe low-power load, as well as non-energy-storing simple apparatus such as an LED.

SPECIFICATION

See also common specification

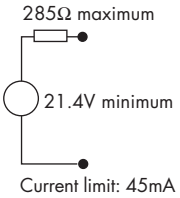
Number of channels

One

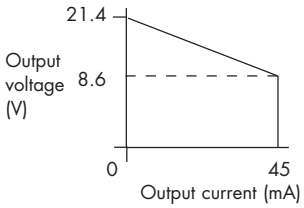
Location of load

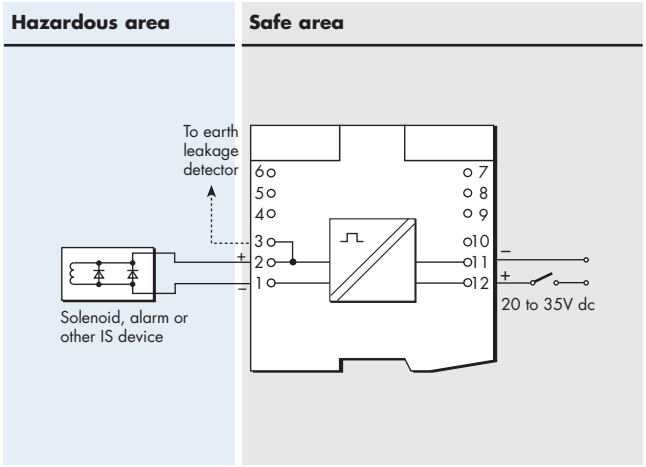
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Equivalent circuit



Minimum output voltage





Terminal	Function
1	Output –ve
2	Output +ve
3	Earth leakage detection
11	Supply –ve
12	Supply +ve

LED indicator

Yellow: status

Hazardous-area output

Minimum output voltage: 8.6V at 45mA
Maximum output voltage: 24V from 269Ω
Current limit : 45mA

Input voltage

20 to 35V dc

Maximum current consumption (with 45mA output)

90mA at 24V
110mA, 20 to 35V dc

Maximum power dissipation within unit

1.6W at 24V
2.0W at 35V

Safety description

25V, 269Ω, 93mA, U_m = 250V rms or dc

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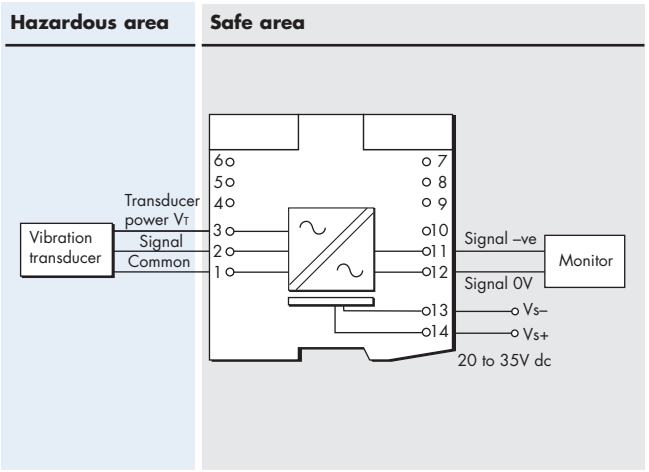
June 2004

MTL5031 VIBRATION TRANSDUCER INTERFACE

CE

The MTL5031 repeats a signal from a vibration sensor in a hazardous area, providing an output for a monitoring system in the safe area. The interface is compatible with 3-wire eddy-current probes and accelerometers.



SPECIFICATION

See also common specification

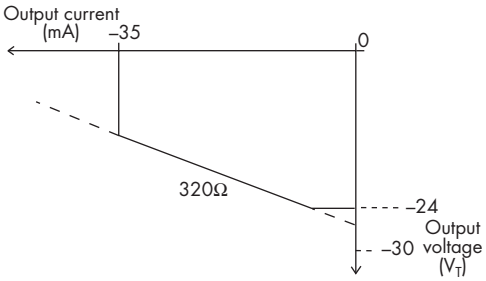
Number of channels
One

Location of signal source
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Output impedance
(terminals 11 and 12): <20Ω

Hazardous-area input
Input impedance
(terminals 1 and 2): 10kΩ –1%, +2%

Transducer supply voltage (terminals 3 and 1)



Signal range (terminals 1 and 2, 11 and 12)
Minimum –20V, maximum –0.5V, for dc transfer error <±100mV

DC transfer accuracy at 20°C
<±100mV

AC transfer accuracy at 20°C
0Hz to 1kHz: ±1%
1kHz to 10kHz: –5% to +1%
10kHz to 20kHz: –10% to +1%

Temperature coefficient
±50ppm/°C (10 to 65°C)
±100ppm/°C (–20 to 10°C)

Voltage bandwidth
–3dB at 43kHz (typical)

Phase response
<14µs, equivalent to:
–1° at 200Hz
–3° at 600Hz
–5° at 1kHz
–50° at 10kHz
–100° at 20kHz

Terminal	Function
1	Common
2	Signal
3	Transducer power VT
11	Signal –ve
12	Signal 0V
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with 22mA transducer load)
80mA at 24V
88mA at 20V
63mA at 35V

Maximum power dissipation within unit
<1.7W

Safety description
Terminals 3 to 1
26.6V, 94mA, 0.66W
Terminals 2 to 1
Non-energy-storing apparatus ≤1.2V, ≤0.1A, ≤20µJ and ≤25mW

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Aug 2008

MTL5032 PULSE ISOLATOR

CE

The MTL5032 isolates pulses from a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in a hazardous area.

SPECIFICATION

See also common specification

Number of channels
One

Location of switch
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

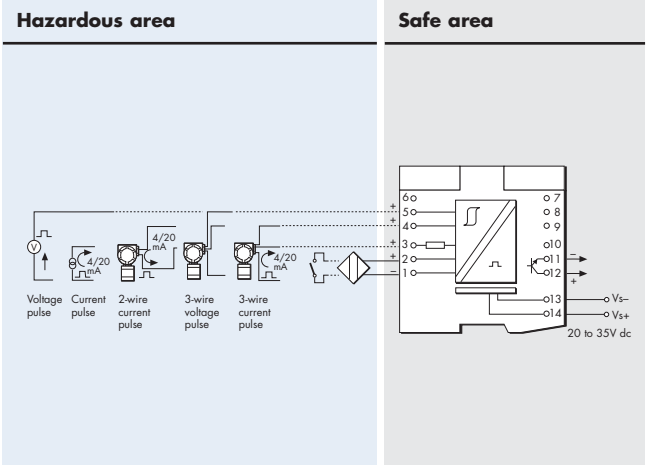
Location of proximity detector or transmitter
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Maximum off-state values: V = 35V, I = 10µA
Maximum on-state current: 50mA
Voltage drop: [1 + (0.1 x current in mA)] V
Output off if supply fails

Hazardous-area input
Switch: output-on (off) if switch closed (open)
Proximity detector: meets NAMUR and DIN 19234 standards
Pulse (I): Supply 16.5V dc at 20mA,
Short-circuit current 24mA
Output on (off) >8.9mA (<6.8mA)
Switching hysteresis: 0.5mA typical
Pulse (V): Input impedance >10kΩ
Switching point voltage (V_{sp}): 3, 6 or 12V (selectable)
Output on (off) if input >1.2 x V_{sp} (<0.8 x V_{sp})
Switching hysteresis: 0.11 x V_{sp} typical

Pulse width
High: 10µs minimum
Low: 10µs minimum

Frequency range
0 to 50kHz



Terminal	Function
1	Common –ve
2	Proximity detector +ve
3	Current +ve
4	Transmitter +ve
5	Voltage +ve
11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

LED indicators
Green: power indication
Yellow: status

Supply voltage
20 to 35V dc

Maximum current consumption
65mA at 24V dc
70mA at 20V dc
55mA at 35V dc

Maximum power dissipation within unit
1.35W at 24V
1.75W at 35V

Safety description

Terminals 2 to 1
10.5V, 800Ω, 14mA

Terminals 5 to 4 and 1
28V, 94mA, 0.65W

Terminals 4 to 3 and 1
28V, 300Ω, 93mA

Terminal 3 to 1
Non-energy-storing apparatus ≤1.2V, ≤0.1A, ≤20µJ and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

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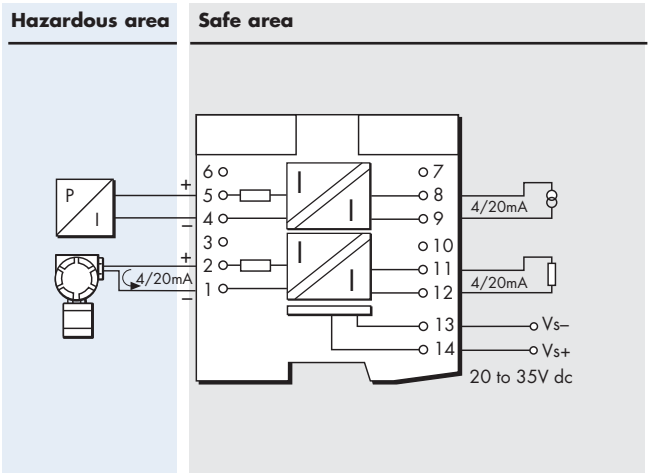
Aug 2008

MTL5040 LOOP ISOLATOR

two channel 4/20 mA

CE

MTL5040 provides a fully floating dc supply for energising a conventional 2-wire 4/20mA transmitter located in a hazardous-area and repeats the current in another floating circuit to drive a safe-area load. It also passes on a 4/20mA or 0/20mA signal from a controller located in the safe-area to a load in the hazardous-area.



SPECIFICATION

See also common specification

Number of channels
Two

Location of tranmitter and load
Zone 0, IIC, T4–T6 hazardous area if suitably certified Div 1, Group A, hazardous location

Channel 1- Transmitter (analogue input)

Safe-area output

Signal range:	4 to 20mA
Over/under range:	0 to 24mA
Safe-area load resistance:	0 to 550Ω
Safe-area circuit output resistance:	>2MΩ

Hazardous-area input

Signal range:	0 to 24mA (including over-range)
Transmitter voltage:	16.5V at 20mA

Channel 2- Driver (analogue output)

Safe-area input

Signal range:	4 to 20mA
Over/under range:	0 to 24mA

Hazardous-area output

Maximum load resistance:	550Ω (11V at 20mA)

Hazardous-area circuit output resistance:
>2MΩ

Input voltage drop
<4V at 20mA

Input and output circuit ripple
<40µA peak-to-peak

Transfer accuracy at 20°C
Better than 20µA (typically 5µA)

Temperature drift
<1µA/°C (4 to 20mA)

Response time
Settles to within 10% of final value within typically 250µs

Terminal	Function
1	Input –ve (transmitter), ch1
2	Input +ve (transmitter), ch 1
4	Output –ve (driver), ch2
5	Output +ve (driver, ch2
8	Input –ve (driver), ch2
9	Input +ve (driver), ch2
11	Output –ve (transmitter), ch1
12	Output +ve (transmitter), ch1
13	Supply –ve
14	Supply +ve

LED indicator
Green: provided for power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with 20mA signal)
95mA at 24V
110mA at 20V
70mA at 35V

Maximum power dissipation within unit (with 20mA signal)
1.6W at 24V
1.8W at 35V

Isolation
250V ac between safe circuits, hazardous circuits and power supply circuits

Safety description
28V, 300Ω, 93mA; U_m=250V rms or dc

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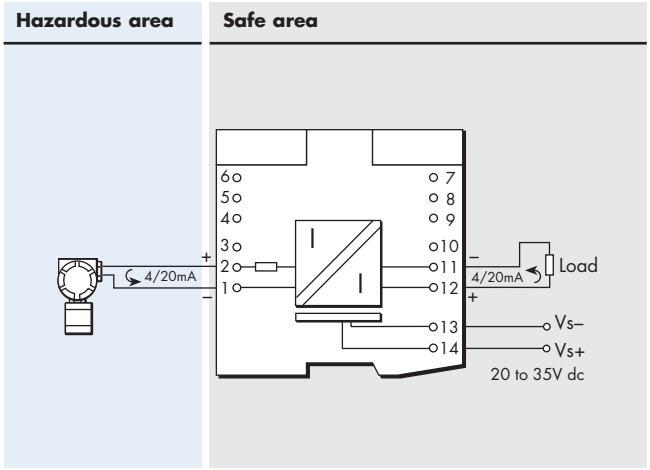
Aug 2008

MTL5041 REPEATER POWER SUPPLY

4/20mA, for 2-wire transmitters

CE

The MTL5041 provides a fully-floating dc supply for energising a conventional 2-wire 4/20mA transmitter which is located in a hazardous area and repeats the current in another floating circuit to drive a safe-area load.



SPECIFICATION

See also common specification

Number of channels
One

Location of transmitter
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Signal range: 4 to 20mA
Over/under-range: 0 to 24mA
Safe-area load resistance: 0 to 1kΩ
Safe-area circuit output resistance: >2MΩ

Safe-area circuit ripple
<125µA peak-to-peak

Hazardous-area input
Signal range: 0 to 24mA (including over-range)
Transmitter voltage: 16.5V at 20mA

Transfer accuracy at 20°C
Better than 20µA (typically 5µA)

Temperature drift
<1µA/°C

Response time
Settles to within 10% of final value within 250µs

Terminal	Function
1	Input –ve
2	Input +ve
11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with 20mA signal)
70mA at 24V
85mA at 20V
55mA at 35V

Maximum power dissipation within unit (with 20mA signal)
1.2W at 24V

Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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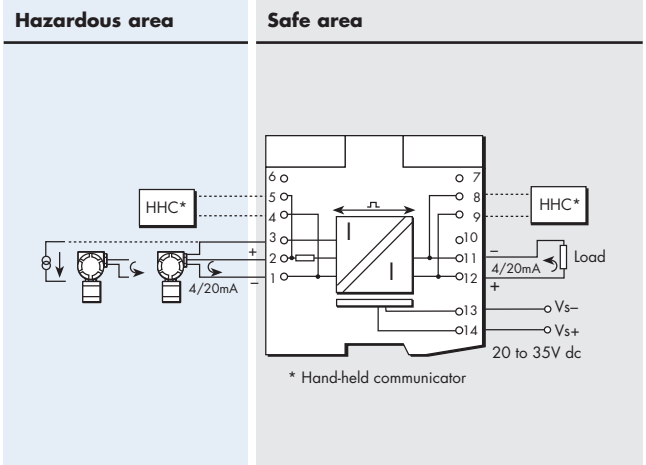
Aug 2008

MTL5042 REPEATER POWER SUPPLY

4/20mA, smart, for 2- or 3-wire transmitters

CE

The MTL5042 provides a fully-floating dc supply for energising a conventional 2- or 3-wire 4/20mA transmitter which is located in a hazardous area, and repeats the current in another floating circuit to drive a safe-area load. For smart 2-wire transmitters, the unit allows bi-directional communications signals superimposed on the 4/20mA signal.



SPECIFICATION

See also common specification

Number of channels
One

Location of transmitter
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output

Signal range:	4 to 20mA
Under/over-range:	0 to 24mA
Safe-area load resistance:	0 to 600Ω
Safe-area circuit output resistance:	>2MΩ

Safe-area circuit ripple
<40µA peak-to-peak

Hazardous-area input

Signal range:	0 to 24mA (including over-range)
Transmitter voltage:	16.5V at 20mA

Transfer accuracy at 20°C
Better than 10µA

Temperature drift
<0.5µA/°C

Response time
Settles to within 10% of final value within 40µs

Digital signal bandwidth
10Hz to 12kHz

Communications supported
HART®
Honeywell DE
Foxboro
Yokogawa Brain

Terminal	Function	
1	Current input	
2	Transmitter supply +ve	
3	Common	
4	Optional HHC –ve	HAZ4-6 connector reqd
5	Optional HHC +ve	HAZ4-6 connector reqd
8	Optional HHC –ve	SAF7-9 connector reqd
9	Optional HHC +ve	SAF7-9 connector reqd
11	Output –ve	
12	Output +ve	
13	Supply –ve	
14	Supply +ve	

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with 20mA signal)
75mA at 24V
85mA at 20V
55mA at 35V

Maximum power dissipation within unit (with 20mA signal)
1.3W at 24V

Safety description

Terminals 2 to 1 and 3:
28V, 300Ω, 93mA; U_m = 250V rms or dc

Terminals 1 to 3:
Non-energy-storing apparatus ≤1.2V, ≤0.1A, ≤20µJ and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

Note: Terminals 1 and 3 only support HART® communications in one direction from field device to safe-area connections 11 and 12

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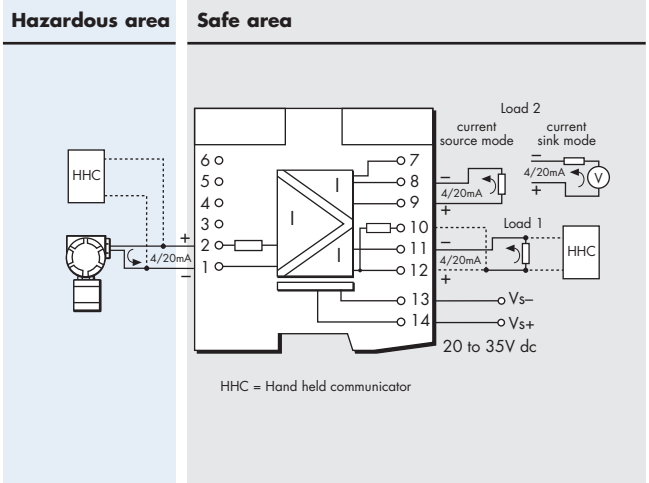
Aug 2008

MTL5043 REPEATER POWER SUPPLY

dual output, 4/20mA, for 2-wire 'smart' transmitters

CE

The MTL5043 provides a fully floating dc supply for engergising a conventional 2-wire 4/20mA 'smart' transmitter which is located in a hazardous area, and repeats the current in two floating circuits to drive two safe-area loads. HART is repeated through channel 1 only for bi-directional communication.



SPECIFICATION

See also common specification

Number of channels
One

Location of transmitter
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area outputs
Signal range: 4 to 20mA
Over/under-range: 0 to 24mA (load ch1 <250Ω, ch2 <450Ω)
(21mA with max load below)
Safe-area load resistance: ch1: 0 - 350Ω (terminals 11 & 12)
ch1: 0 - 130Ω (terminals 10 & 11)
Safe-area load resistance: ch2: 0 - 550Ω
Safe-area load resistance: ch2 current sink 1kΩ (max voltage 30V)
Safe-area circuit output resistance: >2MΩ

Safe-area circuit ripple
<125µA peak-to-peak

Hazardous-area input
Signal range: 0 to 24mA (including over-range)
Transmitter voltage: 15.5V at 20mA

Transfer accuracy at 20°C
Better than 20µA (typically <5µA)

Temperature drift
<0.5µA/°C

Response time
Both outputs settle to within 10% of final value within 500µs
Digital signal bandwidth: 400Hz to 4kHz

Communication supported
HART®

Terminal	Function
1	Input –ve } HHC
2	Input +ve } HHC
7	Output –ve (ch2 passive current sink)
8	Output –ve (ch2 Active/+ve current sink)
9	Output +ve (ch2 Active)
10	Output +ve (ch1 via 220W for HART Apps)
11	Output –ve (ch1)
12	Output +ve (ch1)
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with two 20mA signals)
100mA at 24V
120mA at 20V
80mA at 35V

Maximum power dissipation within unit (with two 20mA signals)
1.7W at 24V

Isolation
250V ac or dc between power supply, input and outputs

Safety description
U_o = 28V, I_o = 93mA, P_o = 0.65W
Um = 253V rms.

N. B. MTL5043 marked Baseefa 03ATEX0584 pass HART and are fully compliant with this spec. Modules carrying the BAS01ATEX7154 or Ex97D2248 certification, do not pass HART, are not fitted with a current sink output on terminal 7 nor a 220 series resistor on terminal 10.

HART® is a registered trademark of the HART Communication Foundation

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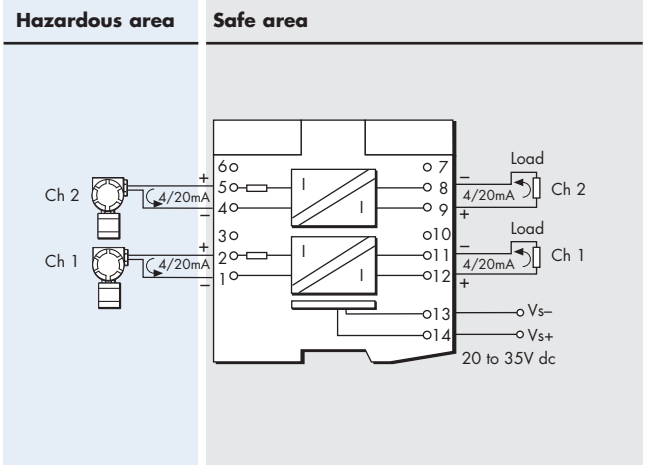
Aug 2008

MTL5044 REPEATER POWER SUPPLY

two-channel, 4/20mA, for 2-wire transmitters

CE

The MTL5044 provides a fully-floating dc supply for energising two conventional 2-wire 4/20mA transmitters which are located in a hazardous area, and repeats the current in two floating circuits to drive two safe-area loads.



SPECIFICATION

See also common specification

Number of channels
Two

Location of transmitters
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area output
Signal range: 4 to 20mA
Over/under range: 0 to 24mA
Safe-area load resistance: 0 to 550Ω
Safe-area circuit output resistance: >2MΩ

Safe-area circuit ripple
<125µA peak-to-peak

Hazardous-area input
Signal range: 0 to 24mA (including over-range)
Transmitter voltage: 16.5V at 20mA

Transfer accuracy at 20°C
Better than 20µA (typically 5µA)

Temperature drift
<1µA/°C

Response time
Settles to within 10% of final value within 250µs

Terminal	Function
1	Input –ve (channel 1)
2	Input +ve (channel 1)
4	Input –ve (channel 2)
5	Input +ve (channel 2)
8	Output –ve (channel 2)
9	Output +ve channel 2)
11	Output –ve (channel 1)
12	Output +ve (channel 1)
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with two 20mA signals)
110mA at 24V
130mA at 20V
80mA at 35V

Maximum power dissipation within unit (with two 20mA signals)
1.5W at 24V

Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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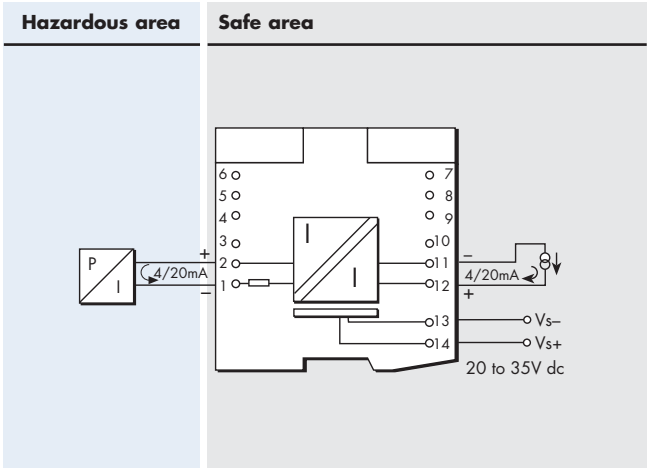
Aug 2008

MTL5045 ISOLATING DRIVER

4/20mA

CE

The MTL5045 isolates and passes on a 4/20mA signal from a controller located in the safe area to a load of up to 800Ω in the hazardous area. It has a high output capacity of 16V at 20mA combined with a low (4V) drop across its input terminals and excellent accuracy.



SPECIFICATION

See also common specification

Number of channels
One
Location of load
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location
Safe-area input
Signal range: 4 to 20mA
Under/over range: 0 to 24mA
Hazardous-area output
Maximum load resistance: 800Ω (16V at 20mA)
Output resistance
>2MΩ
Input voltage drop
<4V at 20mA
Input and output circuit ripple
<40µA peak-to-peak
Transfer accuracy at 20°C
Better than 20µA
Temperature drift
<1µA/°C
Response time
Settles to within 10% of final value within 250µs

Terminal	Function
1	Output –ve
2	Output +ve
11	Input –ve
12	Input +ve
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication
Supply voltage
20 to 35V dc
Maximum current consumption
50mA at 24V
60mA at 20V
40mA at 35V
Maximum power dissipation within unit (with 20mA signal)
1.0W at 24V
1.1W at 35V
Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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MTL5046 ISOLATING DRIVER

4/20mA, smart,
with line fault detection

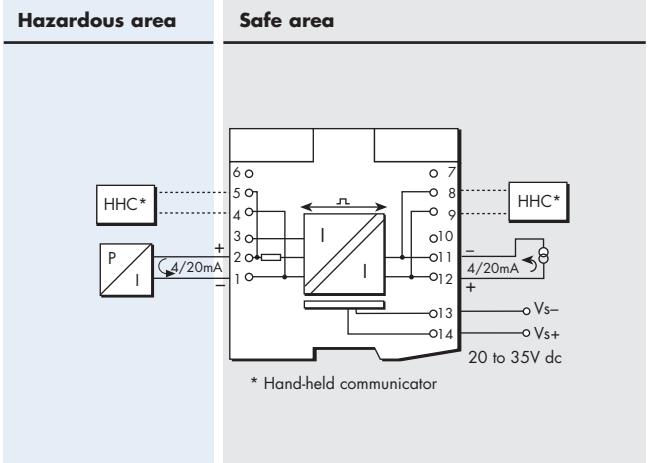
CE

The MTL5046 accepts a 4/20mA signal from a controller located in the safe area to drive a load in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. A line fault detection (LFD) facility is also provided.

SPECIFICATION

See also common specification

Number of channels
One
Location of load
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location
Safe-area input
Signal range: 4 to 20mA
Under/over-range: 1 to 24mA
Hazardous-area output
Load resistance: minimum 100Ω
maximum 800Ω (16V at 20mA)
Digital signal bandwidth
500Hz to 10kHz
Output resistance
>2MΩ
Input and output circuit ripple
<40µA peak-to-peak
Transfer accuracy at 20°C
Better than 10µA
Input voltage drop
<4V at 20mA
Response time
Settles to within 10% of final value within 100µs
Temperature drift
<0.5µA/°C
Line fault detection (LFD)
Signalled by an impedance change in the safe-area loop. When a line fault occurs, the impedance between pins 11 and 12 is >100kΩ.



Terminal	Function	
1	Output –ve	
2	Output +ve	
4	Optional HHC –ve	HAZ 4-6 connector required
5	Optional HHC +ve	
8	Optional HHC –ve	SAF 7-9 connector required
9	Optional HHC +ve	
11	Input –ve	
12	Input +ve	
13	Supply –ve	
14	Supply +ve	

LED indicator
Green: power indication
Supply voltage
20 to 35V dc
Maximum current consumption (with 20mA signal)
65mA at 24V
75mA at 20V
50mA at 35V
Maximum power dissipation within unit (with 20mA signal)
1.5W at 24V
1.6W at 35V
Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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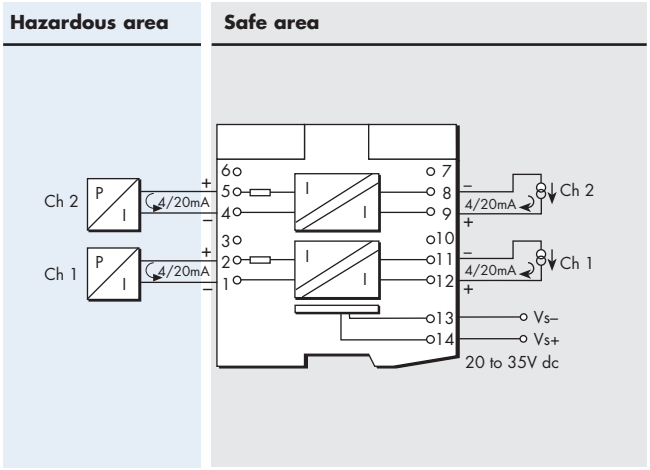
MTL5049 ISOLATING DRIVER

two-channel, 4/20mA

CE

The MTL5049 isolates and passes on two 4/20mA signals from a controller located in the safe area to two loads located in the hazardous area.



SPECIFICATION

See also common specification

Number of channels
Two

Location of loads
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Safe-area input
Signal range: 4 to 20mA
Under/over range: 0 to 24mA

Hazardous-area output
Load resistance: maximum 550Ω (11V at 20mA)

Output resistance
>2MΩ

Input and output circuit ripple
<40µA peak-to-peak

Transfer accuracy at 20°C
Better than 20µA

Input voltage drop
<4V at 20mA

Response time
Settles to within 10% of final value within 250µs

Temperature drift
<1µA/°C

Terminal	Function
1	Output –ve (channel 1)
2	Output +ve (channel 1)
4	Output –ve (channel 2)
5	Output +ve (channel 2)
8	Input –ve (channel 2)
9	Input +ve (channel 2)
11	Input –ve (channel 1)
12	Input +ve (channel 1)
13	Supply –ve
14	Supply +ve

LED indicator
Green: power indication

Supply voltage
20 to 35V dc

Maximum current consumption (with two 20mA signals)
65mA at 24V
75mA at 20V
50mA at 35V

Maximum power dissipation within unit (with two 20mA signals)
1.4W at 24V
1.5W at 35V

Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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Aug 2008

MTL5051 SERIAL-DATA COMMS ISOLATOR

CE

The MTL5051 provides bi-directional serial data communication from a computer system in safe area to instrumentation in a hazardous area. It is used to provide a fully floating dc supply for, and serial data communications to: MTL643, MTL644, MTL646 and MTL647 IS text displays, other IS instrumentation, keyboards or a mouse. It can also be used for data communications across a hazardous area.

SPECIFICATION

See also common specification

Location of field equipment
Zone 0, IIC, T4-6 hazardous area
Div 1, Group A hazardous location

Safe-area signal
RS232 or RS422

Hazardous-area signal

MTL640 Series mode:
To hazardous area: 3V signal superimposed on 12V (nominal) supply
From hazardous area: 5mA signal superimposed on quiescent current

Across hazardous area communications mode:
To hazardous area: 10mA current source
From hazardous area: 10mA current source

IS RS232/TTL devices mode:
To hazardous area: RS232-compatible signal levels
From hazardous area: TTL/RS232 signals

LED Indicators
Green: power indication

Max. power dissipation within unit
1.7W at 24V, 25mA load

Maximum power consumption (25mA load)
At Vs=20V, 105mA
At Vs=24V, 90mA
At Vs=35V, 70mA

Comms bandwidth
643/4 mode 1200 to 9600 baud
Other modes up to 19.2 kbaud

Safety description

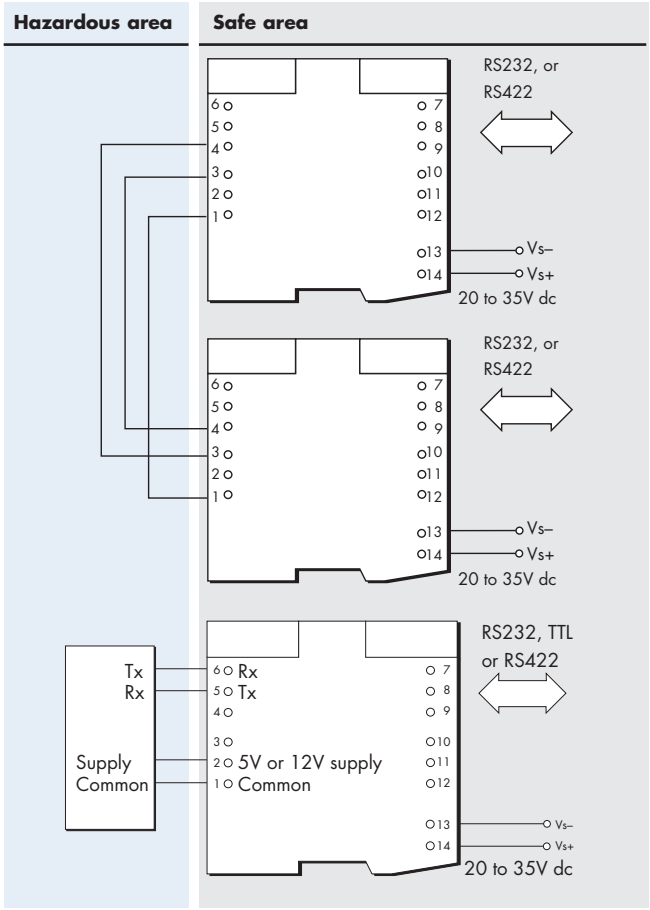
Terminals 1,2,3,4 only	14V,	800mW,	192mA
Terminals 1,3,4 only	14V,	350mW,	88mA
Terminals 1,2,3 only	14V,	450mW,	108mA
Terminals 1,5,6 only	15V,	70mW,	35mA
Terminals 1,2,5,6 only	20V,	460mW,	139mA
Terminals 1,2,3,4,5,6 only	20V,	810mW,	227mA

Hazardous area supply terminal 2

+12V mode	12.0V ± 5% (load <23mA)
+12V mode	8.0V min (load >23 to <50mA)
+5V	5.6V ± 5% (load >23 to <50mA)

Hazardous Interfacing
See MTL640 Series for details of interfacing with MTL643, MTL644, MTL646 and MTL647 IS text displays.

Across hazardous areas communications mode
The MTL5051 is used in pairs to transfer bi-directional full-duplex data across hazardous areas, as shown above. Current switching is used to minimise the bandwidth-limiting effects of long cables.



MTL5051 Terminals	MTL640 mode	Comms mode	Other IS devices
1	Common	Common	Common
2	V signal	-	5V/12V
3	I return	Rx	-
4	-	Tx	-
5	-	-	Tx
6	-	-	Rx
Switch			
1a	ON	OFF	OFF
1b	ON	ON	OFF/ON

Terminals	RS232 mode	TTL mode	RS422 mode
7	-	-	Rx –
8	-	-	Rx +
9	-	Tx	Tx +
10	Tx	-	Tx –
11	Common	Common	Common
12	Rx	Rx	-
13	Supply – ve	Supply – ve	Supply –ve
14	Supply +ve	Supply +ve	Supply +ve
Switch			
2a	OFF	ON	ON
2b	ON	OFF	OFF

Interfacing to an IS keyboard, mouse or other device
Communicating with RS232-level interfaces, such as an IS keyboard, mouse, etc. is achieved by using one or more MTL5051 units as required by the device. (TTL level interfaces are also accommodated by the TTL-compatibility feature of RS232 receivers.) The supply to the IS equipment may be selected to be either 5V or 12V by switch on top of unit.

Note: the normal RS232 limitations of bandwidth versus cable length are applicable. As a rule of thumb, speed(baud) x length(metres) < 150,000.

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Aug 2008

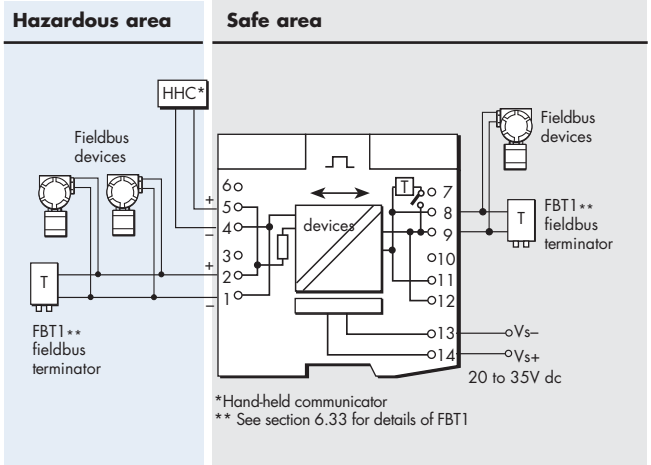
MTL5053 ISOLATOR/ POWER SUPPLY

31.25kbit/s fieldbus

CE

The MTL5053 has been specifically developed to extend 31.25kbit/s (H1) fieldbus networks into hazardous areas. It provides power and communication to devices powered through the signal conductors. For installations in which the safe-area bus length is small an internal terminator can be enabled by a switch on top of the module.

The MTL5053 complies with requirements of Fieldbus Foundation™ specified power supply Type 133† (IS power supply).



SPECIFICATION

See also common specification

Location of fieldbus device(s)
Zone 0, IIC, T4–6 hazardous area if suitably certified

Hazardous-area fieldbus power supply
18.4V ± 2%
105Ω ±3% dc impedance
80mA maximum current

Maximum cable length
Determined by IS requirements, depending on other devices attached and maximum acceptable voltage drop along cable

Digital signal transmission
Compatible with 31.25kbit/s fieldbus systems and complies with fieldbus standards†

Supply voltage
20 to 35Vdc

LED indicator
Green: one provided for power indication

Power requirement, Vs, with 80mA output load
135mA typical at 24V
105mA at 35V

Power dissipation within unit, with 80mA output load
2.3W typical at 24V
2.6W maximum at 35V

Note: To allow adequate heat dissipation under all likely thermal conditions, it is recommended that MTL5053's are installed on a horizontal DIN-rail mounted on a vertical surface with a 10mm space between adjacent units. MTL MS010 10mm DIN-rail module spacers are available for this purpose.*

** If an MTL5053 is mounted in a non-optimum orientation, the maximum operating temperature is reduced to 45°C.*

Isolation
250V ac between safe- and hazardous-area circuits and power supply

Safety description

Terminals 1 and 2
22V, 102Ω, 216mA; U_m = 250V rms or dc

Terminal	Function
1	Hazardous-area fieldbus device(s) connection –ve
2	Hazardous-area fieldbus device(s) connection +ve
4	Optional HHC connection –ve
5	Optional HHC connection +ve
8 & 11	Safe-area fieldbus device(s) connection –ve
9 & 12	Safe-area fieldbus device(s) connection +ve
13	Supply –ve
14	Supply +ve

Note: To assist the process of terminating cable screens, screw terminals have been provided in terminals 3, 6, 7 and 10. Please note, however, that there is no internal connection for these terminals so they are not earthed.

† The applicable fieldbus specifications and standards are: Foundation fieldbus™ 31.25kbit/s Physical Layer Profile Specification, document FF-816, IEC 61158-2: 1993 and ISA-S50.02-1992 for 31.25kbit/s fieldbus systems

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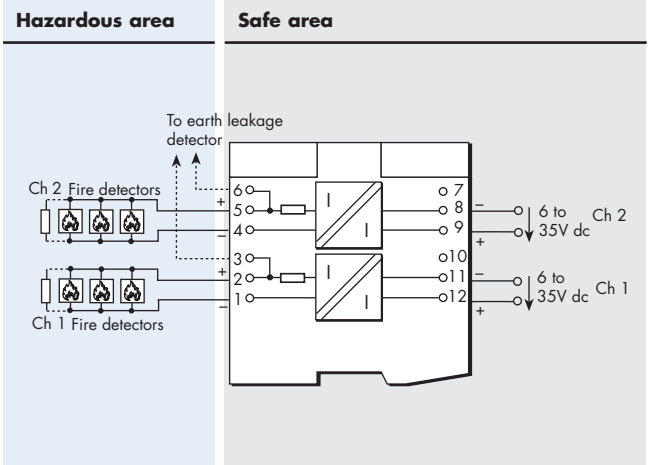
Aug 2008

MTL5061 FIRE/SMOKE DETECTOR INTERFACE

two-channel, loop-powered

CE

The MTL5061 is a loop-powered two-channel interface for use with conventional fire and smoke detectors located in hazardous areas. In operation, the triggering of a detector causes a corresponding change in the safe-area circuit. The unit has reverse input polarity protection, while 'non-fail' earth fault detection on either line can be provided by connecting an earth leakage detector to terminals 3 or 6.



SPECIFICATION

See also common specification

Number of channels
Two

Location of detectors
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location

Current range
1 to 40mA, nominal

Integral input polarity protection
Input circuit protected against reverse polarity

'No-fail' earth fault protection (optional)
Enabled by connecting terminals 3 and 6 to the MTL4220 earth leakage detector. If a fault on either line of each channel is proclaimed: unit continues working.
Note:1. The earth leakage detector introduces a 100µA, 1Hz ripple to the field circuit.

Minimum output voltage V_{out} at 20°C
whichever is the lower of:
V_{in} – (0.38 x current in mA) – 2V or
21V – (0.35 x current in mA)

Response time to step input
Settles to within 500µA of final value within 30ms

Hazardous-area output
Maximum output voltage 28V from 300Ω

Transfer accuracy at 20°C
Better than 400µA

Temperature drift
<10µA/°C (–20 to 60°C)

Terminal	Function
1	Output –ve (channel 1)
2	Output +ve (channel 1)
3	Earth leakage detection (channel 1)
4	Output –ve (channel 2)
5	Output +ve (channel 2)
6	Earth leakage detection (channel 2)
8	Input –ve (channel 2)
9	Input +ve (channel 2)
11	Input –ve (channel 1)
12	Input +ve (channel 1)

Loop supply voltage
6 to 35V dc

Quiescent safe-area current at 20°C
(hazardous-area terminals open-circuit)
<400µA/ channel, Vin = 24V dc

Maximum power dissipation within unit
0.7W at 24V with 40mA signal (each channel)
1.2W at 35V with 40mA signal (each channel)

Safety description
28V, 300Ω, 93mA; U_m = 250V rms or dc

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Aug 2008

MTL5074 TEMPERATURE CONVERTER

THC or RTD input

CE

The MTL5074 converts a low-level dc signal from a temperature sensor mounted in a hazardous area into a 4/20mA current for driving a safe-area load. Software selectable features include linearisation, ranging, monitoring, testing and tagging for eight thermocouple types and 2-, 3- or 4-wire RTDs. For thermocouples requiring cold-junction compensation, the HAZ-CJC plug can be ordered with the product, and includes an integral CJC sensor.

SPECIFICATION

See also common specification

Number of channels
One
Signal source
Types J, K, T, E, R, S, B or N THCs to BS 4937
EMF input
2/3/4-wire platinum RTDs to BS 1904/DIN43760 (100Ω at 0°C)
Location of signal source
Zone 0, IIC, T4 hazardous area
Div.1, Group A, hazardous location
Input signal range
–75 to +75mV, or 0 to 400Ω (Input impedance 10MΩ)
Input signal span
3 to 150mV, or 10 to 400Ω
RTD excitation current
200µA nominal
Cold junction compensation
Automatic or selectable
Cold junction compensation error
≤1.0°C
Common mode rejection
120dB for 240V at 50Hz or 60Hz
Series mode rejection
40dB for 50Hz or 60Hz
Calibration accuracy (at 20°C)
(includes hysteresis, non-linearity and repeatability)

Inputs:	
mV/THC:	±15µV or ±0.05% of input value (whichever is greater)
RTD:	±80mΩ
Output:	±11µA

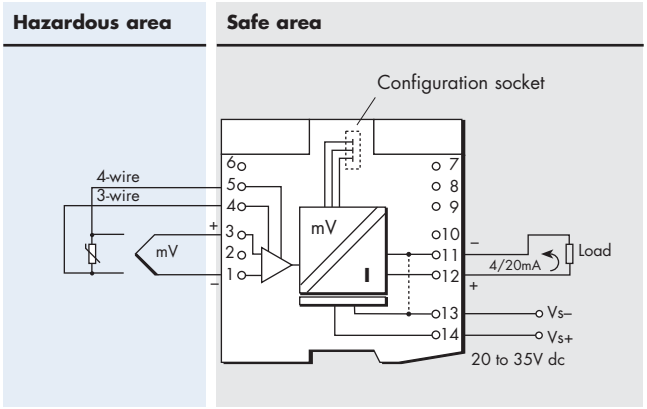
Temperature drift (typical)

Inputs:	
mV/THC:	±0.003% of input value/°C
RTD:	±7mΩ/°C
Output:	±0.6µA/°C

Example of calibration accuracy and temperature drift (RTD input)

Span:	250Ω
Accuracy:	± (0.08/250 + 11/16000) x 100% =0.1% of span
Temperature drift:	± (0.007/250 x 16000 + 0.6) µA/°C = ±1.0µA/°C

Safety drive on sensor burnout
Upscale, downscale, or off
Output range
4 to 20mA nominal (direct or reverse)
Maximum load resistance
600Ω
LED indicator
Green: one provided for power and status indication
Power requirement, Vs with 20mA signal
68mA at 24V
82mA at 20V
52mA at 35V
Power dissipation within unit with 20mA signal
1.5W at 24V
1.6W at 35V



Terminal	Function
1	THC/EMF/RTD input –ve
3	THC/EMF/RTD input +ve
4	3-wire RTD input –ve
5	4-wire RTD input +ve
11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

Isolation
250V ac between safe- and hazardous-area circuits and power supply
Safety description
Terminals 1 and 3
i) Without CJ plug
V_{out} = 1.1V
I_{out} = 7mA
P_{out} = 2mW
Non-energy-storing apparatus ≤1.2V, ≤0.1A, ≤20µJ and ≤25mW. Can be connected without further certification into any IS loop with open-circuit voltage not more than 10V.
ii) With CJ plug
V_{out} = 6.6V, I_{out} = 10mA
P_{out} = 17mW
Terminals 1 and 3, 4 and 5
V_{out} = 6.6V, I_{out} = 76mA
P_{out} = 0.13W
Configuration socket (CON6)
V_{out} = 8.3V, I_{out} = 15mA
P_{out} = 26mW
Standard configuration

Input type	RTD, 3-wire
Linearisation	enabled
CJ Compensation	disabled
Units	°C
Damping/Smoothing value	0 seconds/0 seconds
Output zero	0°C
Output span	250°C
Tag and description fields	blank
Open circuit alarm	set high (upscale)
Transmitter failure alarm	set low (downscale)
CJ failure alarm	set low (downscale)
Line frequency	50Hz

Configurator
A personal computer running MTL PCS45 software with a PCL45 interface.

TO ORDER, specify:

MTL5074	Includes HAZ-CJC signal plug (with internal CJC sensor). For use with thermocouple, mV or RTD inputs.
MTL5074-RTD	Includes standard HAZ1-3 signal plug. For use with mV or RTD inputs. (Can be used with thermocouples with cold-junction compensation if HAZ-CJC plug is fitted.)
HAZ-CJC	Hazardous-area signal plug for terminals 1 to 3 including cold-junction compensation sensor.

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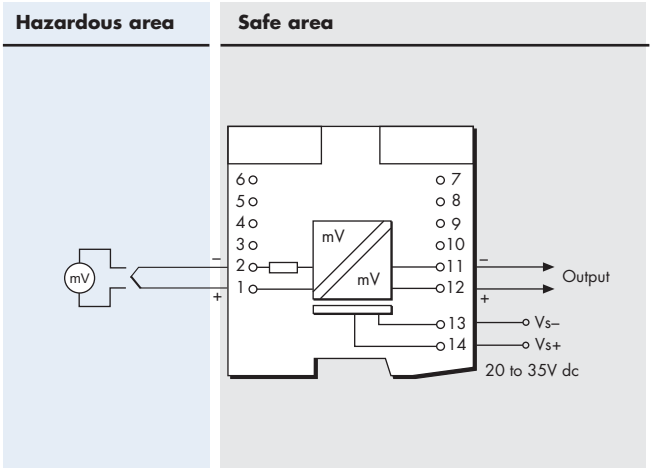
Aug 2008

MTL5081 MILLIVOLT/ THERMOCOUPLE ISOLATOR

CE

MTL5081 takes a low-level dc signal from a voltage source in a hazardous area, isolates it and passes it to a receiving instrument located in the safe area. The module is intended for use with thermocouples utilising external cold junction compensation. A switch located on top of the module enables or disables the safety drive in the event of thermocouple burnout or cable breakage; a second switch permits the selection of upscale or downscale drive as required.



SPECIFICATION

See also common specification

Number of channels
One

Signal source
Any dc millivolt source

Location of millivolt source
Zone 0, IIC, T4–T6 hazardous area if suitably certified
Div 1, Group A, hazardous location

Input and output signal range
0 to ±50mV, overrange to ±55mV

Output resistance
60Ω nominal

Transfer accuracy
Linearity and repeatability <0.05% of reading or ±5µV, whichever is the greater

Temperature drift
±(2µV + 0.002% of input) per °C

Response time
Settles to within 10% of final value within typically150µs

Frequency response
DC to 4kHz

Safety drive on THC burnout
Two switches on top of the module enable or disable the safety drive and select upscale or downscale drive

Terminal	Function
1	THC/mV input –ve
2	THC/mV input +ve
11	Output –ve
12	Output +ve
13	Supply –ve
14	Supply +ve

LED indicator
Green: provided for power indication

Power requirement, Vs
20mA max, 20 to 35V dc

Maximum power dissipation within unit
0.5W at 24V
0.7W at 35V

Isolation
250V ac between safe circuits, hazardous circuits and power supply circuits

Safety description

Terminals 1 and 2
Non-energy-storing apparatus (≤1.2V, ≤0.1A, ≤20µJ and ≤25mW). Can be connected without further certification into any IS loop with an open circuit voltage <28V.

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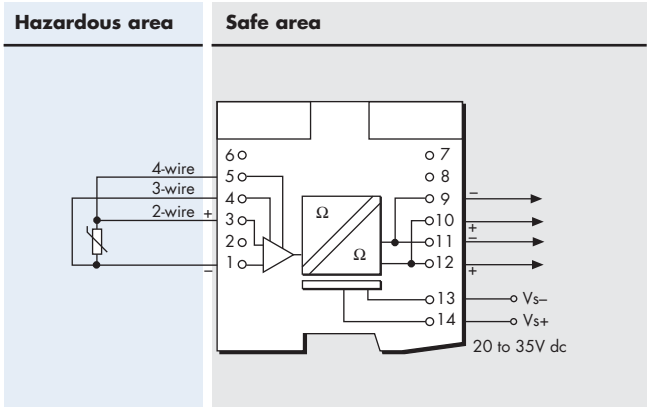
Aug 2008

MTL5082 RESISTANCE ISOLATOR

CE

The MTL5082 connects to a 2-, 3-, or 4-wire resistance temperature device (RTD) or other resistance located in a hazardous area, isolates it and repeats the resistance to a monitoring system in the safe area. The module is intended typically (but not exclusively) for use with Pt100 3-wire RTDs. Switches located on top of the module allow selection of 2-, 3-, or 4-wire RTD connection. The MTL5082 should be considered as an alternative, non-configurable MTL5074, for use in RTD applications where a resistance input is preferred or needed instead of 4/20mA. The design is notable for its ease of use and repeatability. The number of wires which can be connected on the safe-area side of the unit is independent of the number of wires which can be connected on the hazardous-area side. The module drives upscale in the case of open-circuit detection.



Terminal	Function
1	RTD input –ve
3	RTD input +ve
4	3-wire RTD input –ve
5	4-wire RTD input +ve
9	RTD output –ve
10	RTD output +ve
11	RTD output –ve
12	RTD output +ve
13	Supply –ve
14	Supply +ve

SPECIFICATION

See also common specification

Number of channels
One

Location of RTD
Zone 0, IIC, T4 hazardous area
Div 1, Group A hazardous location

Resistance source
2-, 3-, or 4-wire* RTDs to BS 1904/DIN 43760 (100Ω at 0°C)
*user selectable by switches located on top of the module (factory set for 3-wire)

Resistance range
10Ω to 400Ω

RTD excitation current
200µA nominal

Output configuration
2, 3 or 4 wires (independent of mode selected for hazardous-area terminals)

Output range
10Ω to 400Ω (from a 100µA to 5mA source)

Temperature drift
±10mΩ/C° typical (0.01%/°C @ 100Ω)

Response time
To within 4% of final value within 1s

Safety drive on open-circuit sensor
Upscale to 420Ω nominal

Transfer accuracy

Input		Output accuracy								
		At excitation current of								
		0.2mA			0.5mA			1 to 5mA		
Temp. °C	Pt100 resist. Ω	Ω	Ω, % Input	°C	Ω	Ω, % input	°C	Ω	Ω, % input	°C
-	10.0	0.25	2.5%	0.65	0.24	2.4%	0.62	0.23	2.3%	0.60
-200	18.5	0.26	1.4%	0.68	0.24	1.3%	0.62	0.23	1.2%	0.60
-100	60.3	0.28	0.5%	0.73	0.24	0.4%	0.62	0.23	0.4%	0.60
0	100.0	0.31	0.3%	0.81	0.24	0.2%	0.62	0.23	0.2%	0.60
100	138.5	0.34	0.2%	0.88	0.24	0.2%	0.62	0.23	0.2%	0.60
200	175.8	0.37	0.2%	0.96	0.25	0.1%	0.65	0.23	0.1%	0.60
400	247.0	0.44	0.2%	1.14	0.26	0.1%	0.68	0.23	0.1%	0.60
600	313.6	0.51	0.2%	1.32	0.27	0.1%	0.70	0.24	0.1%	0.62
-	400.0	0.59	0.1%	1.53	0.28	0.1%	0.73	0.24	0.1%	0.62

LED indicator
Green: one provided for power and status indication

Power requirements, Vs
55mA at 24V
65mA at 20V
45mA at 35V

Maximum power dissipation within unit
1.4W at 24V
1.6W at 35V

Isolation
250V ac between safe- and hazardous-area circuits and power supply

Safety description

Terminals 1 and 3
U_o = 1.1V
I_o = 4mA
P_o = 1mW

These terminals meet clause 5.4 of EN50020 : 1994 'simple apparatus' (U ≤ 1.5V, I ≤ 0.1A, P ≤ 25mW) and can be connected without further certification into any IS loop with open circuit voltage of not more than 10V. For higher voltages contact MTL. See certificate for further details.

Terminals 1 and 3 and 4 and 5
U_o = 6.6V
I_o = 27mA
P_o = 50mW

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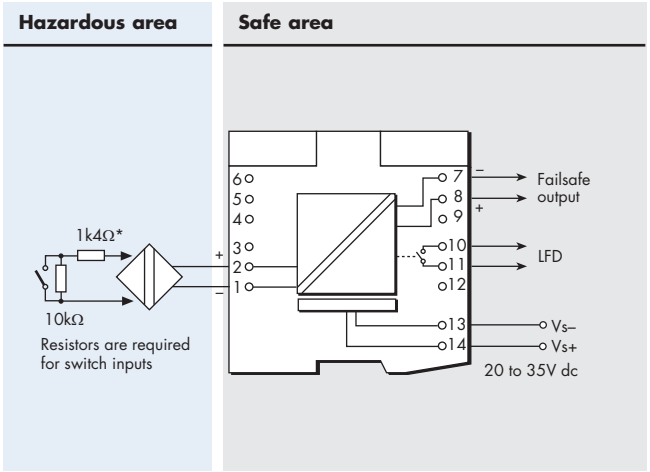
Aug 2008

MTL5113P FAILSAFE SWITCH/PROXIMITY DETECTOR INTERFACE

with LFD

CE

With the MTL5113P, a fail-safe switch/proximity detector located in the hazardous area can control an isolated fail-safe electronic output. The MTL5113P unit also provides line-fault detection alarm contacts. The MTL5113P is for use with P + F TÜV approved fail-safe sensors.



Terminal	Function
1	Input –ve
2	Input +ve
7	Output –ve
8	Output +ve
10	LFD
11	LFD
13	Supply –ve
14	Supply +ve

** Series resistor should be in the range 1k3Ω to 1k5Ω*

SPECIFICATION

See also common specification

Number of channels
One

Location of switches
Zone 0, IIC, T6 hazardous area
Div. 1, Group A hazardous location

Location of proximity detector
Zone 0, IIC, T4–6, hazardous location
Div 1, Group A, hazardous location

Voltage applied to sensor
8.6V dc max from 1kΩ

Input/output characteristics

Input value in sensor circuit	Fail-safe output	Operation	LFD contacts
2.9mA < Is < 3.9mA	ON	Normal	CLOSED
Is < 1.9mA & Is > 5.1mA	OFF	Normal	CLOSED
Is < 50µA	OFF	Broken line	OPEN
Is > 6.6mA	OFF	Shorted line	OPEN

Note: Is = sensor current

Fail-safe electronic output
Output on: > 22.8V
Output off: 0V dc, max <5V dc
Load: 2.4kΩ to 10kΩ
Maximum on-state current: 11mA
Short-circuit current: 25mA

Line fault detection (LFD)
Relay output for line fault (contacts open when line fault detected)
Switch characteristics: 0.3A 110V ac/dc, 1A 30V dc, 30W/33VA

LED indicators
Yellow: one provided for output status, ON when fail-safe output is energised
Green: one provided for power indication
Red: one provided for LFD, ON when line fault is detected

Power requirements, Vs
80mA at 20V dc
70mA at 24V dc
65mA at 35V dc

Isolation
253V ac between safe- and hazardous-area circuits

Power dissipation within unit
1.4W at 20V dc
1.5W at 24V dc
2.0W at 35V dc

Safety description
U_o=9.7V, I_o30mA, P_o70mW, Ci=33nF, Li=0mH, Um=253V

Weight
160g approx.

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Jul 2008

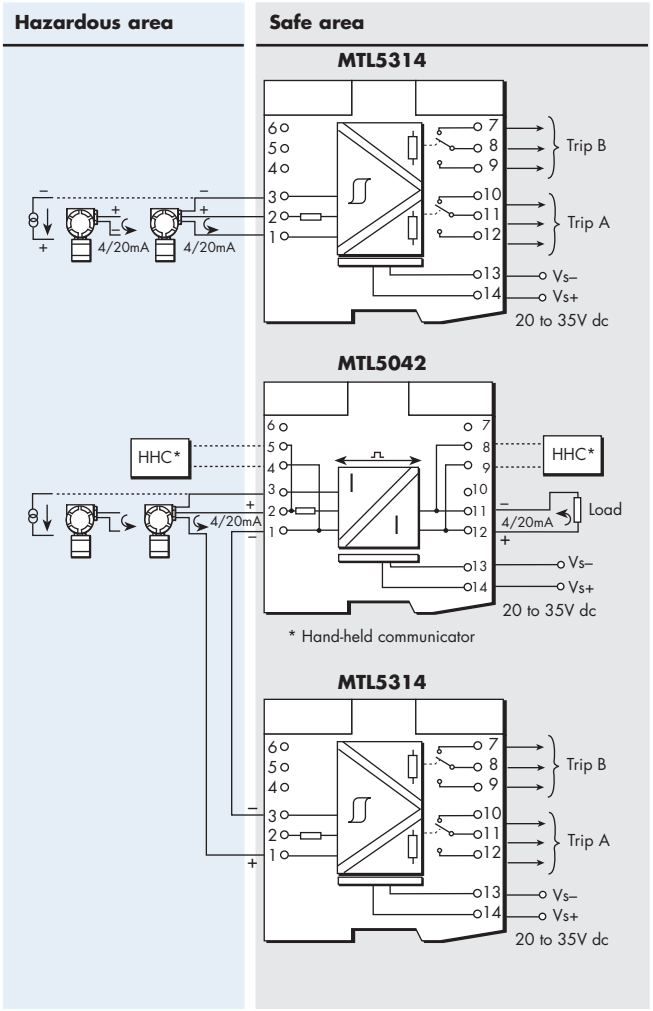
MTL5314 TRIP AMPLIFIER

4/20mA, for 2- or 3-wire transmitters

CE

The MTL5314 connects to a 2- or 3-wire 4/20mA transmitter or current source located in the hazardous area. It supplies one or two configurable alarm signals to the safe area via changeover relays. Each relay may be configured individually to signal an alarm condition (relay de-energised) when the input signal is greater than or less than a pre-set value.

In addition, the MTL5314 can be connected in series to the hazardous-area side of an MTL5042 4/20mA repeater power supply (or equivalent device) to provide two trip alarm outputs direct from the transmitter signal (see schematic diagram). Looping the transmitter signal through the MTL5314 (via terminals 1 and 3) does not affect HART® communications.



SPECIFICATION

See also common specification

Number of channels
One, with two configurable alarms

Location of field equipment
Zone 0, IIC, T4–T6 hazardous area, if suitably certified
Div 1, Group A, hazardous location

Safe-area output
Two relays with changeover contacts

Hazardous-area input
Signal range: 0 to 24mA
(including over-range)

Voltage available for transmitter (terminals 1 and 2)
>17V at 20mA

Current input (terminals 1 to 3)
Input resistance 25Ω maximum

Response time
<75ms

Trip-points
Trip-points can be adjusted by the user via multiturn potentiometers accessible on the top of the unit.

Trip-point range	0.5 to 22mA
Effective resolution	20µA
Trip-point drift with temperature	1.5µA/°C max.
Hysteresis	min 1% of trip-point range max 1.7% of trip-point range

Relay type
Single pole, changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics

Contact rating	250V ac, 2A, cosø >0.7 40V dc, 2A, resistive load
Contact life expectancy	$3.3x10^5$ operations

LED indicators
Power LED green, illuminated when the power is connected to the module
Status LED yellow, one per trip, illuminated when relay is energised (not tripped)

Supply voltage
20 to 35V dc

Maximum current consumption (with 20mA signal)
85mA at 24V
100mA at 20V
60mA at 35V

Maximum power dissipation within the unit (with 20mA signal)
1.7W at 24V
1.8W at 35V

Terminal	Function
1	Current input
2	Transmitter supply +ve
3	Common
7	Trip B (NC)
8	Trip B (COM)
9	Trip B (NO)
10	Trip A (NC)
11	Trip A (COM)
12	Trip A (NO)
13	Supply –ve
14	Supply +ve

Safety description

Terminals 2 to 1 and 3	28V, 300Ω, 93mA
Terminals 1 and 3	These terminals meet clause 5.4 of EN50020 : 1994 and have the following parameters: U ≤ 1.5V, I ≤ 0.1A, P ≤ 25mW. They can be connected without further certification into an IS loop with open circuit voltage of not more than 28V. See certificate for further details.

HART® is a registered trademark of the HART Communication Foundation.

See also MTL5000 Series cable parameters and approvals

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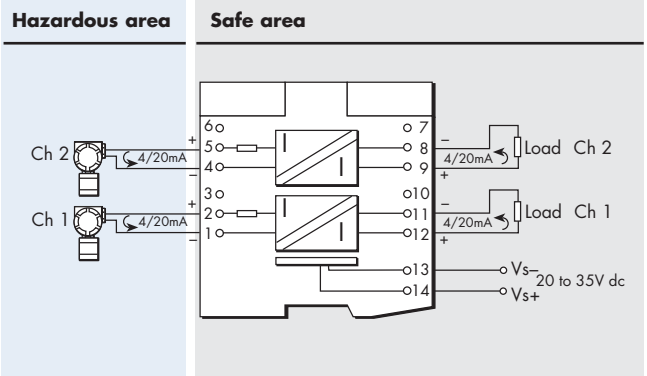
Aug 2008

MTL5344 REPEATER POWER SUPPLY

two channel, for 2 wire transmitters

CE

The MTL5344 provides a fully floating dc supply for energising two conventional 2 wire 4/20mA transmitters located in the hazardous area, and repeats the current in other circuits to drive safe-area loads.



SPECIFICATION

See also common specification

Number of channels
Two

Location of transmitters
Zone 1, IIC, T4-6, hazardous area if suitably certified

Safe-area output

Signal range:	4 to 20mA
Over / under range:	0 to 20.1mA
Safe-area load resistance:	0 to 550Ω
Safe-area output resistance:	2MΩ

Safe-area circuit ripple
<125µA peak-to-peak

Hazardous-area input
Signal range: 0-20 1mA (including over-range)
Transmitter voltage: >14V at 20mA

Transfer accuracy at 20°C
Better than 20µA (typically 5µA)

Temperature drift
<1µA/°C

Response time
Settles within 10% of final value within 250µs

Terminal	Function
1	Input -ve(channel 1)
2	Input +ve(channel 1)
4	Input -ve(channel 2)
5	Input +ve(channel 2)
8	Output -ve(channel 2)
9	Output +ve(channel 2)
11	Output -ve(channel 1)
12	Output +ve(channel 1)
13	Supply -ve
14	Supply +ve

LED indicator
Green: one provided for power indication

Supply voltage
20 to 35V dc

Power requirement, Vs
122mA at 24V
150mA at 20V
90mA at 35V

Power dissipation within unit
2.0W max

Isolation
250V between safe and hazardous area circuits, and power supply.

Safety description

Terminals 1 and 2 or 4 and 5
[EExib] IIC
U_o = 19V, I_o = 24mA (non-linear), P_o = 450mW
[(C_o = 120nF, L_o = 3mH) Group IIC]
U_m=253V rms or dc

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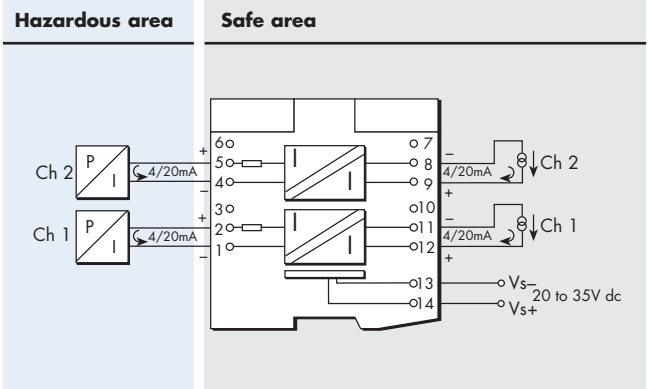
Aug 2008

MTL5349 ISOLATING DRIVER

two channel, 4/20mA

CE

The MTL5349 isolates and passes on two 4/20mA signals from a controller located in the safe-area to two loads located in the hazardous-area.



SPECIFICATION

See also common specification

Number of channels
Two

Location of transmitters
Zone 0, IIC, T4-6, hazardous area if suitably certified

Safe-area input
Signal range: 4 to 20mA
Over / under range: 0 to 24mA

Hazardous-area output
Load resistance: maximum 530Ω (20.1mA max)
(Signal range: 0-24mA if output load <360Ω)

Output resistance
>2MΩ

Input and output circuit ripple
<40μA peak to peak

Transfer accuracy at 20°C
Better than 20μA

Input voltage drop
<4V at 20mA

Temperature drift
<1μA/°C

Response time
Settles within 10% of final value within 250μs

Terminal	Function
1	Input -ve(channel 1)
2	Input +ve(channel 1)
4	Input -ve(channel 2)
5	Input +ve(channel 2)
8	Output -ve(channel 2)
9	Output +ve(channel 2)
11	Output -ve(channel 1)
12	Output +ve(channel 1)
13	Supply -ve
14	Supply +ve

LED indicator
Green: one provided for power indication

Supply voltage
20 to 35V dc

Power requirement, Vs
67mA at 24V
80mA at 20V
50mA at 35V

Power dissipation within unit
1.5Wmax at 24V dc

Isolation
250V between safe and hazardous area circuits, and power supply.

Safety description
U_o = 17V, I_o = 50mA, P_o = 0.3W, U_m=253V rms or dc

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Aug 2008

MTL5991 24V DC POWER SUPPLY

The MTL5991 provides a convenient source of power for MTL5000 series units in locations where a dc supply is not readily available. The 2A capability at 24V dc is sufficient to drive at least 13 MTL5000 series modules, or more in appropriate combinations. The wide mains power supply range makes this unit universally applicable.

SPECIFICATION

Power supply
85 to 264V ac
47 to 63Hz

Power dissipation within unit
7.2W @ 2A

Mounting
35mm DIN (top hat) rail

Output voltage
24V dc nom
(23.64 min/24.36 max)

Output current
2A maximum
(1.7A with <105V ac input)

LED indicators
Green: Power

Weight
310g

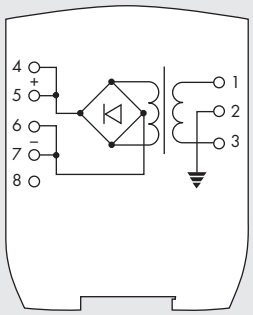
Ambient temperature
Operating temperature –10°C to +50°C
Storage temperature –40°C to +85°C

Dimensions
Height (above rail) 107mm
Width 90mm
Rail length required 38mm

Terminals
Cage clamp type accommodating conductors up to 2.5mm^2, stranded or single-core

Note: Segregation between hazardous and safe area wiring must be maintained.

Safe area



Terminal	Function
1	AC line
2	Earth
3	AC neutral
4	+24V
5	+24V
6	0V
7	0V
8	Do not use

MTL5000 unit	Current Drawn mA (Vs=24V)	Maximum number of units
MTL5011B	35	46
MTL5012	30	53
MTL5014	45	36
MTl5015	44	36
MTL5017	50	32
MTL5018	60	27
MTL5023	100	16
MTL5024	100	16
MTL5031	80	20
MTL5032	65	25
MTL5040	95	17
MTL5041	70	23
MTL5042	75	21
MTL5044	110	15
MTL5045	50	32
MTL5046	65	25
MTL5049	65	25
MTL5051	90	18
MTL5073	57	28
MTL5074	68	24
MTL5081	20	80
MTL5082	55	29
MTL5113	70	23
MTL5114	60	27
MTL5314	85	19
MTL5344	122	14
MTL5349	67	25

Note: The maximum current draw from the load unit is taken at 24V. The maximum current drawn from the MTL5991 was taken to be 1.6A

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Nov 2004

MTL5995 FIELDBUS POWER SUPPLY

31.25kbit/s fieldbus

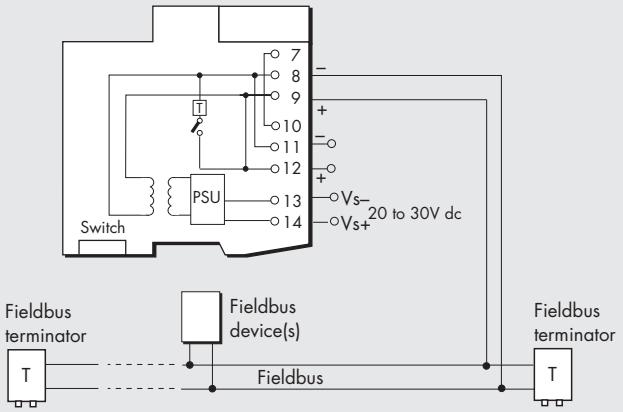
CE

The MTL5995 is a general purpose power supply unit designed for use in 31.25kbit/s (H1) fieldbus systems. The MTL5995 complies with the requirements of Fieldbus Foundation™ power supply Type 131† (non-IS supply intended for feeding an IS barrier).

To comply with fieldbus standards, each bus must be terminated at both ends. MTL's FBT1-IS or FCS-MBT fieldbus terminators can be supplied for this purpose or, for installations in which the MTL5995 is located at one end of the fieldbus trunk, it includes an internal terminator which is switch enabled.

When designing a fieldbus segment the total current consumption of the fieldbus devices should be calculated for normal operation. This should be within the range of the published design current for the power supply. For the MTL5995 power supply, the current limit is at least 20mA higher than the maximum design current. This provides a margin for inrush current when a new device is added to the network. Therefore, with a fieldbus loaded with its maximum design current, a fieldbus device can be disconnected and reconnected without the risk that other devices on the bus will reset.

Safe or Division 2/Zone 2 hazardous area



Terminal	Function
7	Internally linked to 10
8 & 11	Fieldbus device(s) connection –ve
9 & 12	Fieldbus device(s) connection +ve
10	Internally linked to 7
13	Supply –ve
14	Supply +ve

Note: Terminals 7 and 10 are linked internally to assist in the process of terminating cable screens.

SPECIFICATION

See also common specification

OUTPUT

Voltage
19V±2%
<2Ω dc impedance

Design current
0 to 350mA,

Current limit
>370mA

Output ripple
Complies with clause 22.6.2 of the fieldbus standards† for output current >10mA.

Internal termination
Selected by a switch in the base of the unit.

INPUT

Supply voltage
20 to 30V dc -20°C to +60°C

Power requirement, with 350mA output load
420mA typical at 24V
370mA typical at 30V
520mA typical at 20V

Power dissipation within unit, with 350mA output load
3.4W typical at 24V
4.5W maximum at 30V

Note: To allow adequate heat dissipation under all likely thermal conditions, it is recommended that MTL5995s are installed on DIN-rail with a 10mm space between adjacent units. MTL MS010 10mm DIN-rail module spacers are available for this purpose.

LED indicator
Green: one provided for power indication

† *The applicable fieldbus specifications and standards are: Foundation™ Fieldbus 31.25kbit/s Physical Layer Profile Specification, document FF-816, IEC 61158-2: 1993 and ISA-S50.02-1992 for 31.25kbit/s fieldbus*

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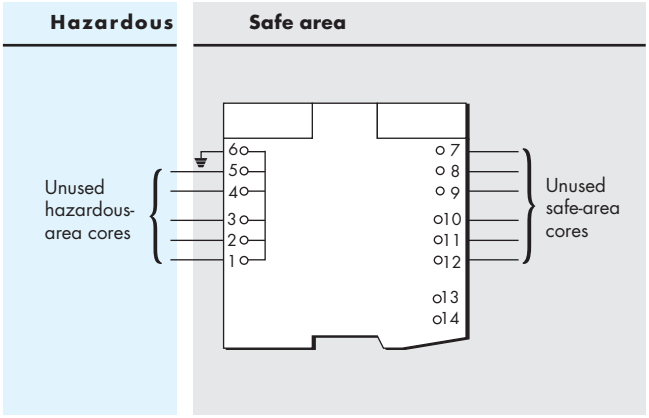
Aug 2008

MTL5099 DUMMY ISOLATOR

The MTL5099 is used with other MTL5000 Series units to provide termination and earthing facilities for, unused cable cores from hazardous areas.



Terminal	Function
1	Hazardous-area core
2	Hazardous-area core
3	Hazardous-area core
4	Hazardous-area core
5	Hazardous-area core
6	Earth
7	Safe-area core
8	Safe-area core
9	Safe-area core
10	Safe-area core
11	Safe-area core
12	Safe-area core

MTL5000 SERIES COMMON SPECIFICATION

CE

Connectors

Each MTL5000 unit is supplied with signal and power connectors, as applicable.

When using crimp ferrules for the hazardous and non-hazardous (safe) signal connectors the metal tube length should be 12mm and the wire trim length 14mm. For the power connectors the metal tube length should be 10mm and the wire trim length 12mm.

See INM5000 for recommended ferrules.

Isolation

250V rms between input, output and power supply terminals, tested at 1500V rms minimum between safe- and hazardous-area terminals. MTL5073, output and power supply not isolated.

Location of units

Safe area

Terminals

Accommodate conductors of up to 2.5mm^2 stranded or single-core

Mounting

On 35mm (top hat) rail to :
EN 50022–35 x 7.5; BS 5584;
35 x 27 x 7.3 DIN 46277

Ambient temperature limits

–20 to +60°C (–6 to +140°F) operating
–40 to +80°C (–40 to +176°F) storage

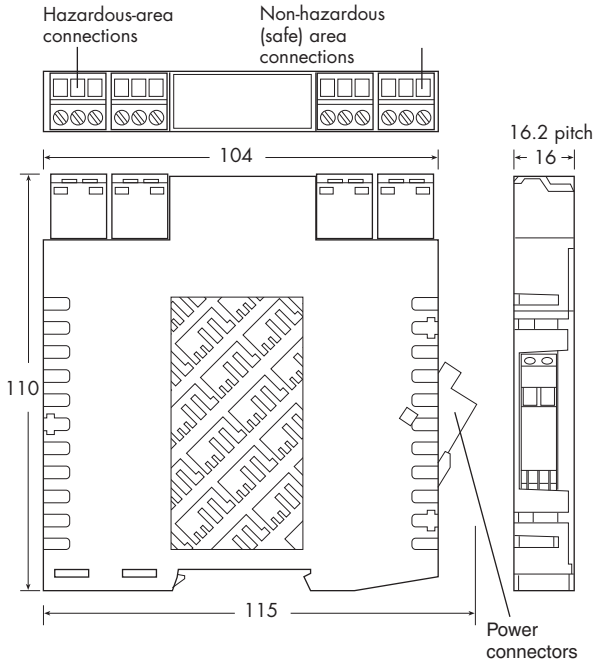
Humidity

5 to 95% relative humidity

Weight

110g approx (except where indicated)

DIMENSIONS



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Aug 2008

CABLE PARAMETERS

	Baseefa					FM		
Module	**Group**	**µF**	**mH**	**or**	**µH/Ω**	**Group**	**µF**	**mH**
MTL5011B/5012 5014/5015/ 5018	IIC	2.41	175		983	A+B	2.4	165
	IIB	16.8	680		1333	C	7.2	495
	IIA	75	1000		1333	D	19.2	1000
MTL5017	IIC	2.41	175		983	A+B	2.4	165
	IIB	16.8	680		1333	C	7.2	495
	IIA	75	1000		1333	D	19.2	1320
MTL5021/ 5023/5024	IIC	0.11	1.30		40	A+B	0.17	1.32
	IIB	0.84	3.90		159	C	0.51	3.96
	IIA	2.97	10.4		328	D	1.36	10.56
MTL5022	IIB	0.84	4.55		131	C	0.51	3.96
	IIA	2.97	9.08		265	D	1.36	10.56
MTL5025	IIC	0.11	4.3		63	A+B	0.17	4.2
	IIB	0.84	17.72		235	C	0.51	12.6
	IIA	2.97	36.02		497	D	1.36	33.6
MTL5031	IIC	0.094	4.21		58	A+B	0.13	4.2
	IIB	0.73	17.37		219	C	0.39	12.6
	IIA	2.42	35.29		463	D	1.04	33.6
MTL5032 terminals 2 to 1	IIC	2.41	175		983	A+B	2.4	165
	IIB	16.8	680		1333	C	7.2	495
	IIA	75	1000		1333	D	19.2	1320
terminals 4 and 3 to 1	IIC	0.083	1.45		55	A+B	0.13	1.54
	IIB	0.65	7.2		210	C	0.39	4.71
	IIA	2.15	14.4		444	D	1.04	12.56
terminals 5 and 4 to 1	IIC	0.083	3.05		55	A+B	0.13	4.2
	IIB	0.65	9.15		210	C	0.39	12.6
	IIA	2.15	24.4		444	D	1.04	33.6
terminals 3 to 1	IIC	0.083	3.05		55	A+B	1000	13.8
	IIB	0.65	9.15		210	C	1000	41.4
	IIA	2.15	24.4		444	D	1000	110
MTL5040	IIC	0.083	4.3		56	A+B	0.083	4.3
	IIB	0.65	17.7		210	C	0.65	17.7
	IIA	2.15	36		444	D	2.15	36
MTL5041/5042/ 5044/5045/ 5049/5061	IIC	0.083	3.05		55	A+B	0.13	4.2
	IIB	0.65	9.15		210	C	0.39	12.6
	IIA	2.15	24.4		444	D	1.04	33.6
MTL5043	IIC	0.083	3.05		55	A+B	0.14	4.3
	IIB	0.65	9.15		210	C	0.43	17.3
	IIA	2.15	24.4		444	D	1.14	34.2
MTL5046	IIC	0.083	3.05		55	A+B	0.13	4.2
	IIB	0.65	9.15		210	C	0.39	12.6
	IIA	2.15	24.4		444	D	1.04	34.2
MTL5051	Consult MTL					Consult MTL		
MTL5053	IIC	0.165	0.26		31	A+B	0.26	0.84
	IIB	1.14	0.79		132	C	0.78	3.48
	IIA	4.20	2.12		266	D	2.09	6.40
MTL5074 terminals 1 & 3 and 4 & 5	IIC	22	6.42		288	A+B	0.26	6.0
	IIB	500	25.6		1057	C	0.78	18.0
	IIA	1000	53.0		2228	D	2.08	48.0
terminals 1 & 3 only	IIC	–	–		–	A+B	1000	1000
	IIB	–	–		–	C	1000	1000
	IIA	–	–		–	D	1000	1000
MTL5081	IIC	100	15		2,972	A+B	100	15
	IIB	1,000	60		11,889	C	1,000	60
	IIA	1,000	120		23,779	D	1,000	120
MTL5082 terminals 1 & 3 and 4 & 5	IIC	22.0	48.7		322	A+B	22	48.7
	IIB	500	178.4		1,250	C	500	178.4
	IIA	1,000	363.7		1,705	D	1000	363.7
terminals 1 & 3 only	IIC	22.0	48.7		322	A+B	13.5	153.5
	IIB	500	178.4		1,250	C	240	591.4
	IIA	1,000	363.7		1,705	D	1000	1000
MTL5113P	IIC	3.46	39		475	A+B	–	–
	IIB	23.96	145		1829	C	–	–
	IIA	169.96	299		3093	D	–	–
MTL5314	IIC	0.08	4.3		56	A+B	0.083	4.3
	IIB	0.65	17.7		210	C	0.65	17.7
	IIA	2.15	36		444	D	2.15	36
MTL5344	IIC	120	3.0		–	A+B	–	–
	IIB	360	9.0		–	C	–	–
MTL5349	IIC	0.375	14.64		118	A+B	–	–
	IIB	2.2	55.4		433	C	–	–
	IIA	9.0	116.9		870	D	–	–

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Region (Authority)	Australia (SA)	Canada (CSA)	China (NEPSI)	CIS (VNIIVE)	Czech Republic (FTZU)	Hungary (BKI)	Japan (TIIS)	Lloyds Register	Poland (KDB)	UK (BASEEFA to CENELEC/ATEX standards)	UK (BASEEFA) Systems (to CENELEC standards)	UK (MECS) Mines	UK (MECS) Mines System	USA (FM)	USA (UL)
Standard	AS2380.1/7 82.5-78	C22.2 No.157	GB3836-1/-7 GOST227	EN 50020	EN 50020 EN 50020	MSZ EN 50014 & 50020	New Gijyutukijyun		PN-83/E-08110 PN-84/E-08107 BS 5501: Pts 1&7-1977	EN 50014 EN 50020 BS 5501: Pt 9 1982	EN 50039 BS 5501: Pts	EN 50020 1980	EN 50039	3610 Entity	UL913 UL1604
Approved for	Ex (ia) IIC	Class I, II, III Div.1 Gps A–G	Ex (ia) IIC	Ex ia IIC	Ex ia IIC III G [EEx ia] IIC	EEx ia IIC T4	Ex ia IIC		EEx ia IIC	[EEx ia] IIC Ex ia IIB (for MTL5022)	Ex ia IIC T4 or T6*	[EEx ia] I (Tamb 65°C)	EEx ia I	Class I, II, III, Div.1, 2, Gps A–G IS circuits. Units can also be sited in Class I, II, III, Div.2 in appropriate enclosures (except MTL5022)	Class I, II, III, Div.1, 2, Gps A–G IS circuits. Units can also be sited in Class I, II, III, Div.2 in appropriate enclosures (except MTL5022)
Model No.	**Certificate/file no.**							** T6 for switches or if the hazardous-area device is suitably certified*							
MTL5011B	Ex3499X	1000852		D.00C.421	99Ex0776X	Ex-98.C.090		97.00134		BAS01ATEX7147	Ex96D2411			J.I.1D8A9.AX	E120058
MTL5012		1000852			98Ex0238			97.00134(EI)		BAS01ATEX7145	Ex97D2267			J.I.6D1A9.AX	E120058
MTL5014		1000852			98Ex0239	Ex-98.C.090		97.00134(EI)		BAS01ATEX7144	Ex97D2293			J.I.6D1A9.AX	E120058
MTL5015		1000852			98Ex0238			97.00134(EI)		BAS01ATEX7145	Ex97D2267			J.I.6D1A9.AX	E120058
MTL5017	Ex2247X	LR 36637	GYJ00108	D.00C.421	99Ex0776X	Ex-98.C.090		97.00134	No.96.470W	BAS01ATEX7146	Ex95C2232			J.I.2Z7A9.AX	E120058
MTL5018	Ex3499X	1000852		D.00C.421	99Ex0776X	Ex-98.C.090	C13276	97.00134		BAS01ATEX7147	Ex96D2411			J.I.1D8A9.AX	E120058
MTL5018ac										*Pending*				*Pending*	
MTL5021	Ex2265X	LR 36637-99	GYJ00108	D.99C.398	99Ex0777X	Ex-98.C.090	C13279	97.00134	No.96.466W	BAS01ATEX7148	Ex95D2427			J.I.3Z9A8.AX	E120058
MTL5022		LR 36637-99	GYJ00108	D.99C.398	99Ex0777X	Ex-98.C.090		97.00134	No.96.465W	BAS01ATEX7149	Ex95D2429			J.I.3Z9A8.AX	E120058
MTL5023	Ex2265X	1000852		D.99C.398		Ex-98.C.090		97.00134		BAS01ATEX7150	Ex96D2316			J.I.3Z1A8.AX	E120058
MTL5024	Ex2265X	1000852				Ex-98.C.090		97.00134		BAS01ATEX7150	Ex96D2316			J.I.3Z1A8.AX	E120058
MTL5025	Ex2265X	LR 36637-99	GYJ00108		99Ex0777X	Ex-98.C.090		97.00134	No.96.466W	BAS01ATEX7148	Ex95D2427			J.I.3Z9A8.AX	E120058
MTL5031	Ex2350X	1000852	GYJ00108		99Ex0835	Ex-98.C.090		97.00134	No.96.480W	BAS01ATEX7151	Ex96D2133			J.I.3Z1A8.AX	E120058
MTL5032	Ex2362X	1000852	GYJ00108	D.99C.397	99Ex0778X	Ex-98.C.090	C13280 (IIC) C13450 (IIB)	97.00134	No.96.481W	BAS01ATEX7152	Ex95D2417			J.I.3Z1A8.AX	E120058
MTL5040		1000852		D.99C.396	99Ex0836			97.00134(EI)		BAS98ATEX2227	Ex98E2228			J.I.3005457	E120058
MTL5041	Ex2264X	LR 36637-97	GYJ00108	D.99C.396	99Ex0779X	Ex-98.C.090		97.00134	No.96.468W	BAS01ATEX7155	Ex95D2340			J.I.3Z9A8.AX	E120058
MTL5042	Ex2264X	LR 36637-97	GYJ00108	D.99C.396	99Ex0780X	Ex-98.C.090	C13277	97.00134	No.96.467W	BAS01ATEX7153	Ex95D2342			J.I.3Z9A8.AX	E120058
MTL5043										Baseefa03 ATEX0584					
MTL5044	Ex2264X	LR 36637-97	GYJ00108	D.99C.396	99Ex0779X	Ex-98.C.090	C15209	97.00134	No.96.468W	BAS01ATEX7155	Ex95D2340			J.I.3Z9A8.AX	E120058
MTL5045	Ex2254X	LR 36637-98	GYJ00108	D.99C.396	99Ex0781X	Ex-98.C.090		97.00134	No.96.469W	BAS01ATEX7157	Ex95C2290	96D7059	96D7060	J.I.3Z9A8.AX	E120058
MTL5046				D.99C.396	99Ex0837	Ex-98.C.090	C13304	97.00134	No.00.099W	BAS01ATEX7156	Ex96D2484			J.I.1D8A9.AX	E120058
MTL5049	Ex2254X	LR 36637-98	GYJ00108		99Ex0781X	Ex-98.C.090	C13296	97.00134	No.96.469W	BAS01ATEX7157	Ex95C2290	96D7059	96D7060	J.I.3Z9A8.AX	E120058
MTL5051				D.99C.397	99Ex0519			97.00134(EI)		BAS01ATEX7158	Ex97D2010			J.I.3000682	E120058
MTL5053				D.99C.397	99Ex0838			97.00134(EI)		BAS01ATEX7159	Ex97D2307			J.I.6D1A9.AX	E120058
MTL5061				D.00C.492	97Ex0071	Ex-98.C.090		97.00134		BAS01ATEX7160	Ex96D2427			J.I.1D8A9.AX	E120058
MTL5073	Ex2323X				99Ex0839	Ex-98.C.090		97.00134	No.96.471W	BAS01ATEX7161	Ex96D2235			J.I.3Z1A8.AX	E120058
MTL5074				D.00C.437	99Ex0839		C13278	97.00134(EI)		BAS01ATEX7161	Ex96D2235			J.I.6D1A9.AX	E120058
MTL5081								97.00134(EI)		BAS99ATEX7069	BAS99ATEX7069/1			J.I.3005457	E120058
MTL5082								97.00134(EI)		BAS99ATEX7085	Ex99E2086			J.I.3005457	E120058
MTL5314						Ex-98.C.090		97.00134(EI)		BAS98ATEX7136	BAS98ATEX7136/2			J.I.3005457	E120058
MTL5995		1080987						97.00134(EI)						J.I.3006373	

MTL5000 SERIES ACCESSORIES

MTL5000 Series isolators mount quickly and easily onto standard DIN rail. A comprehensive range of accessories simplifies earthing and tagging arrangements.

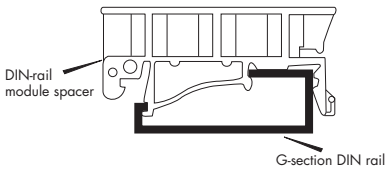
MOUNTING

THR2 DIN rail,1m length

DIN rail to EN50022; BS5584; DIN46277

MS010 DIN rail module spacer, 10mm, pack of 5

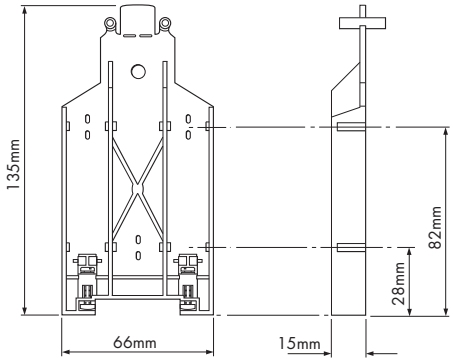
Grey spacer, one required between each MTL5995 and any adjacent module on a DIN rail, to provide 10mm air-circulation space between modules



EARTH RAIL AND TAG STRIP

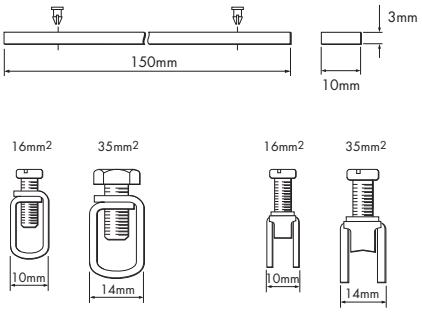
IMB57 Insulating mounting block

One required at each end of a tagging strip/earth rail. Suitable for low-profile (7.5mm) and high-profile (15mm) symmetrical



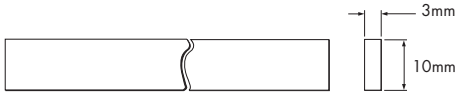
ERB57S Earth-rail bracket, straight

Nickel-plated; supplied with two push fasteners, one (14mm, 35mm^2) earth-rail clamp and one (10mm, 16mm^2) earth clamp.

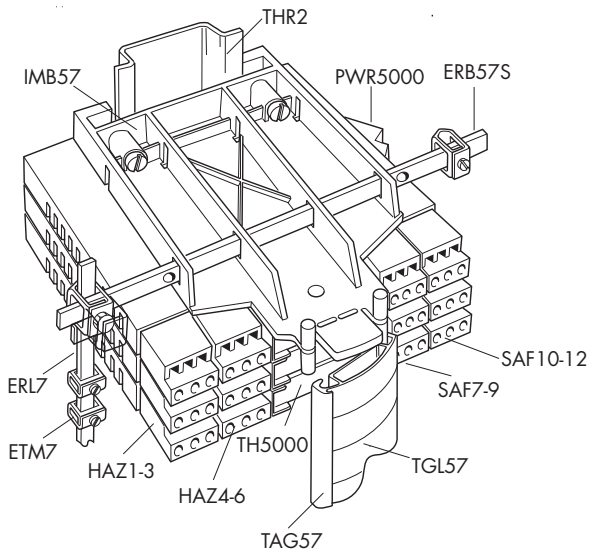


ERL7 Earth rail, 1m length

Nickel-plated; may be cut to length.

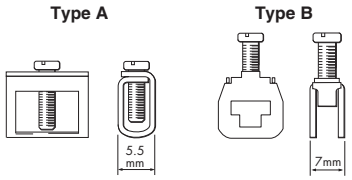


MOUNTING DETAILS



ETM7 Earth terminal, bag of 50

For terminating cable screens and 0V returns on the ERL7 earth rail. For cables ≤ 4mm^2. Exact dimension dependent on manufacturer.



TAG57 Tagging strip, 1m length

Cut to size. Supplied with reversible tagging strip label suitable for either MTL5000 or MTL7000 Series module spacing.

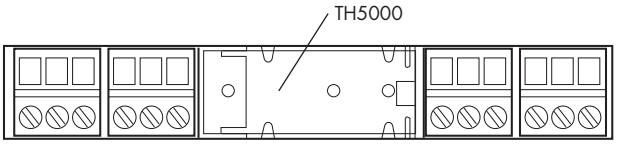
TGL57 Tagging strip labels, set of 10 x 0.5m

Spares replacement, for use with TAG57 tagging strip. Labels are reversible - one side for MTL5000, the other for MTL7000.

INDIVIDUAL ISOLATOR IDENTIFICATION

TH5000 tag holders

Each isolatormay be fitted with a tag holder, as shown below. Order TH5000, pack of 20.



CONNECTORS

Each MTL5000 unit is supplied with signal and power connectors, as applicable.

Spares replacement connectors are available separately; see ordering information.

See also
'MTL5000 Series powerbus kits'

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E-mail: enquiry@mtl-inst.com **Web site: www.mtl-inst.com**

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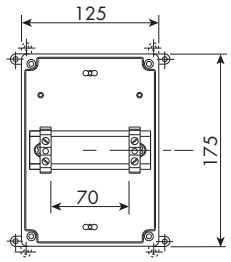
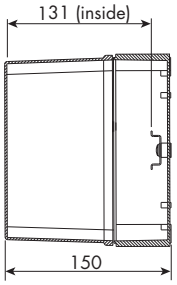
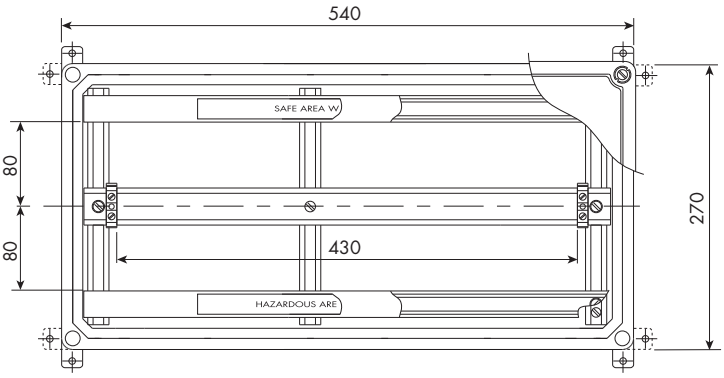
MTL5000 SERIES ENCLOSURES

DIMENSIONS (mm) AND MOUNTING

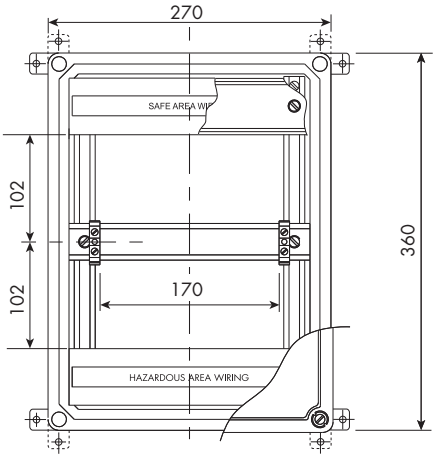


DX070

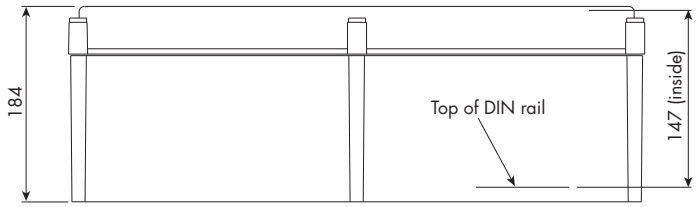


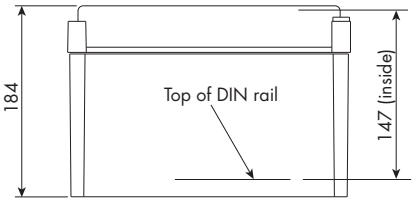


DX430



DX170





SPECIFICATION

Construction

Glass reinforced polycarbonate base - DX070
Glass reinforced polyester base - DX170, DX430
Transparent polycarbonate lid

Protection

Dust-tight and water-jet proof to IEC529:IP65

Lid fixing

Captive fixing screws

Weight (excluding barriers/isolators) kg

DX070	0.8
DX170	2.6
DX430	4.1

Items provided

DIN rail - fitted
ETL7000 Earth terminals (2 x) - fitted
"Take care IS" front adhesive label
Cable trunking (except DX070)
Note: Barriers or isolators are not included.

Mounting

Wall fixing lugs provided. For further details refer to INM5000.

Tagging and earth rail

Accommodates MTL5000 Series accessories.

Permitted location

- Safe (non-hazardous) area

Note: N. America/Canada - Enclosures are rated NEMA 4X so can be used in Class 1, Division 2 (gases) location, but check with local requirements and ensure all cable entries also conform. Additional warning label will be required on or near the enclosure, see installation details. Not suitable for Class II or III, Division 2 hazardous locations.

Approximate capacities (on DIN rail between earth terminals)

	Number of `MTL5000 isolators	
DX070	4	(2)*
DX170	10	(8)*
DX430	26	(24)*

** Use these figures when IMB57 mounting blocks for tagging/earth are included.*

Ambient temperature limits

Dependent on units fitted. See instruction manual INM5000.

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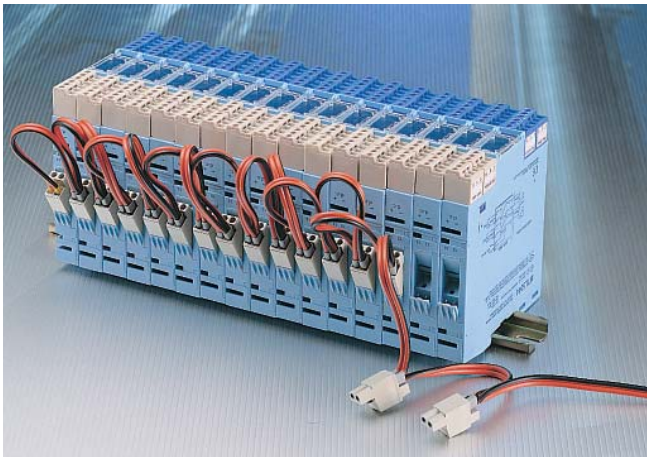
MTL5000 SERIES POWERBUS KITS

PB - 8T,16T,24T,32T



The MTL5000 Series powerbus kit enables quick and easy wiring to power up to 32 MTL 5000 Series modules using a standard 24V power supply. Each powerbus kit includes 4 single ferrules, 4 twin ferrules and 2 insulation displacement connectors (Scotchlok).

SPECIFICATION

Available in 4 different lengths:

PB - 8T	= 8 connectors and loops
PB - 16T	= 16 connectors and loops
PB - 24T	= 24 connectors and loops
PB - 32T	= 32 connectors and loops

CABLE PARAMETERS

Insulation material :
PVC

Conductor :
24 strands of 0.2mm dia (0.75mm^2) standard copper

Insulation thickness :
0.5 to 0.8 mm

Current rating :
12A max

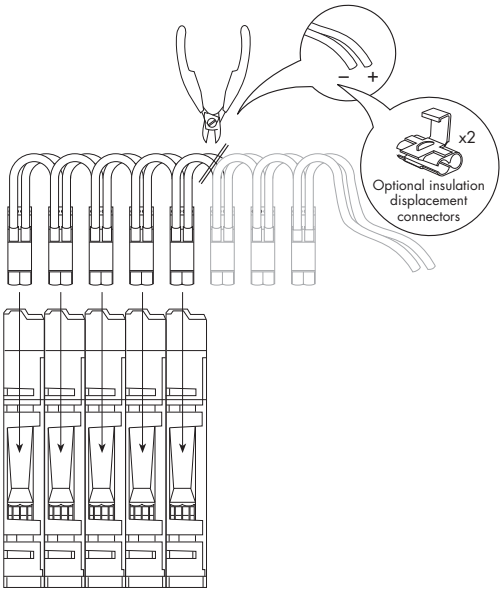
Operating temperature range :
- 20°C to +60°C

Max voltage drop on 32 modules drawing 130mA max :
0.5V

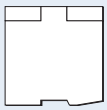
CHOOSING A POWERBUS

Choose a powerbus where the number of power plugs is greater than or equal to the number of isolators to be powered and if necessary cut the powerbus to the required number of terminations.

Note: To reduce the risk of excessive voltage drop or overcurrent do not connect powerbuses in series.



ORDERING INFORMATION



MTL5000 Series isolators
Specify part number: eg, **MTL5011B**
MTL5073/4: see data sheet for specific ordering instructions

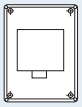
FBT1	Fieldbus terminator

Mounting accessories

THR2	1m length of DIN rail to EN 50022; BS 5584; DIN 46277
MS010	DIN-rail module spacer, 10mm (pack of 5)

Earth-rail and tag strip accessories

IMB57	Insulating mounting block
ERB57S	Earth-rail bracket, straight
ERL7	Earth-rail, 1m length
ETM7	Earth terminal, bag of 50
TAG57	Tagging strip, 1m length
TGL57	Tagging strip labels, set of 10 x 0.5m



Enclosures

DX070	Enclosure for MTL5000 x 4
DX170	Enclosure for MTL5000 x 10
DX430	Enclosure for MTL5000 x 26

Individual isolator identification

TH5000	Tag holder (Pack of 20)

Connectors

HAZ1-3	Hazardous-area plug, terminals 1, 2 and 3
HAZ4-6	Hazardous-area plug, terminals 4, 5 and 6
HAZ-CJC	Hazardous-area plug, terminals 1 and 3 with cold-junction sensor
PWR5000	Power connector, terminals 13 and 14
SAF7-9	Safe-area plug, terminals 7, 8 and 9
SAF10-12	Safe-area plug, terminals 10, 11 and 12
PB-8T	Powerbus Kit for up to 8 isolators
PB-16T	Powerbus Kit for up to 16 isolators
PB-24T	Powerbus Kit for up to 24 isolators
PB-32T	Powerbus Kit for up to 32 isolators

Configurator (MTL5073/4)

PCC73	Configurator (PC interface and software)
PCS45/PCL45	Configurator (PC interface and software)

Literature

INM5000	MTL5000 Series instruction manual

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