Technical data
MTL intrinsic safety solutions

MTL5500 range

Intrinsically safe galvanic isolators

- **3-port isolation as standard**
- **Highest module/channel packing densities**
- **Low power dissipation**
- **Quick install and release mechanism**
- **Multi-channel I/O modules**
- **Broken line monitoring**
- **Compatible with preceding MTL isolator range for pluggable replacements**
- **Various models assessed for use in Functional Safety applicatons**

Eaton's latest generation of MTL IS interfaces utilises an innovative "One-Core" technology to ensure the highest quality and availability while maintaining maximum flexibility at lowest cost. Incorporating advanced circuit design, a common set of components and innovative isolating transformer construction, they achieve a significant reduction in power consumption while increasing channel packing densities. The compact, 16mm wide design reduces weight and gives exceptionally high packing density. They build on the proven success of the MTL2000, 3000, 4000 and 5000 range to bring the benefits of new developments in galvanic isolation without compromising the reliability of the designs from which they have evolved.

The reduced power consumption and high efficiency enable high signal density to be achieved together with improved freedom in cabinet layout and design. Easy integration with the input/output assemblies of control or safety instrumentation systems not only simplifies project engineering but also reduces installation and maintenance costs.

A multiway connector to the backplane provides safe-area and power supply connections, while hazardous-area connections plug into the front of the module, simplifing installation and maintenance and reducing time, cost, and the risk of errors.

The DIN-rail mounting MTL5500 range meets the needs of the IS interface market for "application focussed" projects, ranging from single instrument loops, through to fully equipped cabinets, across all industries where hazardous areas exist.

The MTL5500 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.

Line fault detection (LFD) facilities are provided across the range of I/O functions; on the switch/proximity detectors, the MTL5523 solenoid/alarm drivers and the isolating drivers. Analogue input units such as the MTL5541/5544 provide line fault detection by repeating o/c or s/c currents to the safe-area control system.

Status LEDs, configuration switches and ports are located on the top or side of individual modules, as appropriate, for easy access.

In addition to their use in IS circuits, specific models within the MTL4500 and MTL5500 range have been assessed and approved for use in Functional Safety applications. These have been verified under the certified Functional Safety Management (FSM) programme implemented by our MTL product line.

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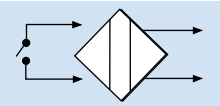
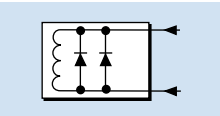
ISOLATOR FUNCTION SELECTOR

Digital Input



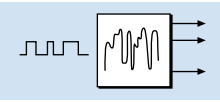
MTL5500 (DIN-rail)	Channels	FSM	Function
MTL5501-SR	1	√	fail-safe solid-state output + LFD alarm
MTL5510	4		switch/prox input, solid-state output
MTL5510B	4		multi-function switch/prox input, solid-state output
MTL5511	1	√	switch/prox input, c/o relay output
MTL5513	2		switch/prox input, solid-state output
MTL5514	1	√	switch/prox input, relay + LFD
MTL5514D	1	√	switch/prox input, dual output relay
MTL5516C	2	√	switch/prox input, c/o relay + LFD outputs
MTL5517	2	√	switch/prox input, relay + LFD outputs

Digital Output



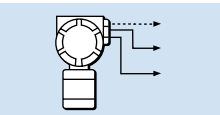
MTL5521	1	√	loop powered solenoid driver
MTL5522	1	√	loop powered solenoid driver, IIB
MTL5523	1	√	solenoid driver with LFD
MTL5523V (VL)	1	√	solenoid driver with LFD, IIC
MTL5524	1	√	switch operated solenoid driver
MTL5525	1	√	switch operated solenoid driver, low power
MTL5526	2		switch operated relay

Pulse & Vibration



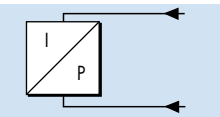
MTL5531	1	√	vibration probe interface
MTL5532	1		pulse isolator, digital or analogue output

Analogue Input



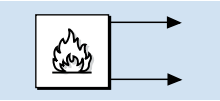
MTL5541	1	√	2/3 wire transmitter repeater
MTL5541A	1	√	transmitter repeater, passive input
MTL5541AS	1	√	transmitter repeater, passive input, current sink
MTL5541S	1	√	2/3 wire transmitter repeater, current sink
MTL5544	2	√	2/3 wire transmitter repeater
MTL5544A	2	√	transmitter repeater, passive input
MTL5544AS	2	√	transmitter repeater, passive input, current sink
MTL5544S	2	√	2/3 wire transmitter repeater, current sink
MTL5544D	1	√	2/3 wire transmitter repeater, dual output

Analogue Output



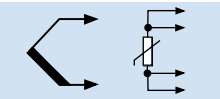
MTL5546	1	√	4-20mA smart isolating driver + LFD
MTL5546Y	1	√	4-20mA smart isolating driver + oc LFD
MTL5549	2	√	4-20mA smart isolating driver + LFD
MTL5549Y	2	√	4-20mA smart isolating driver + oc LFD

Fire & Smoke



MTL5561	2	√	loop-powered, for fire and smoke detectors

Temperature Input



MTL5573	1		temperature converter, THC or RTD
MTL5575	1		temperature converter, THC or RTD
MTL5576-RTD	2		temperature converter, RTD
MTL5576-THC	2		temperature converter, THC
MTL5581	1		mV/mV isolator
MTL5582B	1	√	RTD/RTD isolator

General

MTL5599	–		dummy module

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MTL5501-SR
FAIL-SAFE SWITCH/PROXIMITY-DETECTOR INTERFACE
with LFD

With the MTL5501-SR, a fail-safe switch/proximity detector located in the hazardous area can control an isolated fail-safe electronic output. The MTL5501-SR also provides relay alarm contacts to signal line-fault conditions. The MTL5501-SR is for use with approved fail-safe sensors in loops that require operation up to SIL3 according to the functional safety standard IEC 61508.

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 circuits	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
Rs < 100Ω	OFF	Shorted line	OPEN

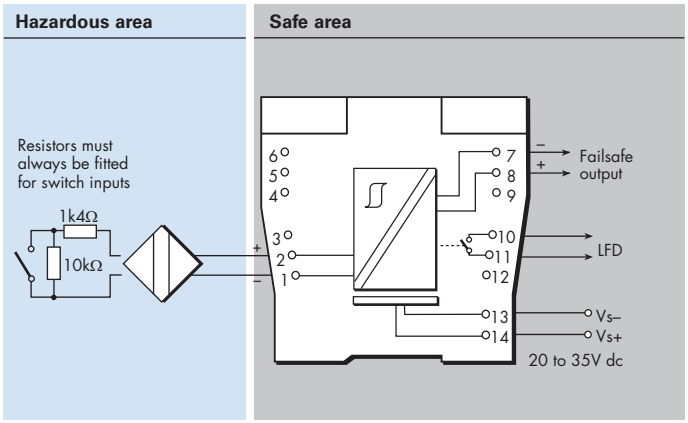
Note: Is = sensor current

Fail-safe electronic output
Output on: 24V nominal
Output off: 0V dc, max < 5V dc
Load: 750Ω to 10kΩ
Maximum on-state current: 25mA (at 750Ω)
Short-circuit current: 30mA

Line fault detection (LFD)
LFD relay output: contacts open when line fault detected
Switch characteristics: 0.3A 110V ac/dc; 1A 35V dc; 30W/33VA

LED indicators
Green: power indication
Yellow: channel status, on when fail-safe output energised
Red: LFD indication, flashing when line fault detected

MTL5501-SR



Power requirements, Vs

@ Supply voltage	750Ω load	typ. load
20V dc	100mA	70mA
24V dc	90mA	60mA
35V dc	65mA	45mA

Power dissipation within unit

@ Supply voltage	750Ω load	typ. load
20V dc	1232mW	1160mW
24V dc	1392mW	1200mW
35V dc	1507mW	1335mW

Safety description
U_o = ±9.7V, I_o = 30mA, P_o = 0.07W, C_i = 0nF, L_i = 0mH
U_m = 253V

SIL capable
Highest level in single in-line subsystem - SIL3 (in accordance with IEC61508-2)
See data on MTL web site and refer to the safety manual.

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MTL5510
SWITCH/ PROXIMITY DETECTOR INTERFACE
4-channel, digital input

The MTL5510 enables four solid-state outputs in the safe area to be controlled by up to four switches or proximity detectors located in a hazardous area. Each pair of output transistors shares a common terminal and can switch +ve or –ve polarity signals. A range of module configurations is available (see Table 1) through the use of selector switches. When proximity detector modes are selected, LFD is enabled and the output switches to OFF if a line fault is detected.

SPECIFICATION

See also common specification

Number of channels
4, configured by switches

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

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics

Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit.
Open-circuit alarm on if I_{in} < 50µA
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

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

Operating frequency:	dc to 500Hz
Max. off-state voltage:	± 35V
Max. off-state leakage current:	± 50µA
Max. on-state resistance:	25Ω
Max. on-state current:	± 50mA

LED indicators
Green: power indication
Yellow: four: on when output active
Red: LFD indication + faulty channel's yellow LED flashes

Maximum current consumption
40mA at 24V (with all output channels energised)

Power dissipation within unit
0.96W at 24V, with 10mA loads

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

MTL5510

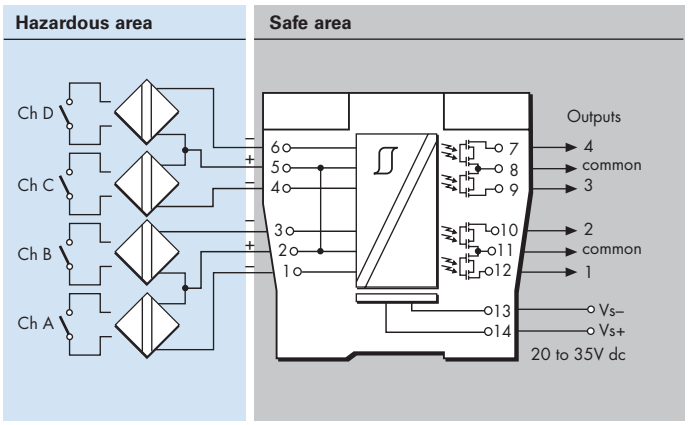

Table 1 - Mode options

MODE	o/p 1	o/p 2	o/p 3	o/p 4	i/p type
0	chA	chB	chC	chD	switch
1	chA rev.	chB	chC	chD	
2	chA	chB rev.	chC	chD	
3	chA	chB	chC rev.	chD	
4	chA	chB	chC	chD rev.	
5	chA rev.	chB	chC rev.	chD	
6	chA	chB rev.	chC	chD rev.	
7	chA rev.	chB rev.	chC rev.	chD rev.	
8	chA	chB	chC	chD	prox. detector + LFD
9	chA rev.	chB	chC	chD	
10	chA	chB rev.	chC	chD	
11	chA	chB	chC rev.	chD	
12	chA	chB	chC	chD rev.	
13	chA rev.	chB	chC rev.	chD	
14	chA	chB rev.	chC	chD rev.	
15	chA rev.	chB rev.	chC rev.	chD rev.	

See Instruction Manual INM4500 or INM5500 for further mode information.

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MTL5510B
SWITCH/ PROXIMITY DETECTOR INTERFACE
4-channel, multi-function, digital input

The MTL5510B enables four solid-state outputs in the safe area to be controlled by up to four switches or proximity detectors located in a hazardous area. Each pair of output transistors shares a common terminal and can switch +ve or –ve polarity signals. A range of module configurations is available (see Table 1) through the use of selector switches. These include start/stop operations and pulse output modes.

SPECIFICATION

See also common specification

Number of channels
4, configured by switches

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

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics

Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit.
Open-circuit alarm on if I_{in} < 50µA
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

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

Operating frequency:	dc to 500Hz
Max. off-state voltage:	± 35V
Max. off-state leakage current:	± 50µA
Max. on-state resistance:	25Ω
Max. on-state current:	± 50mA

LED indicators
Green: power indication
Yellow: four: on when output active
Red: LFD indication + faulty channel's yellow LED flashes

Maximum current consumption
40mA at 24V (with all output channels energised)

Power dissipation within unit
0.96W at 24V, with 10mA loads

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

MTL5510B

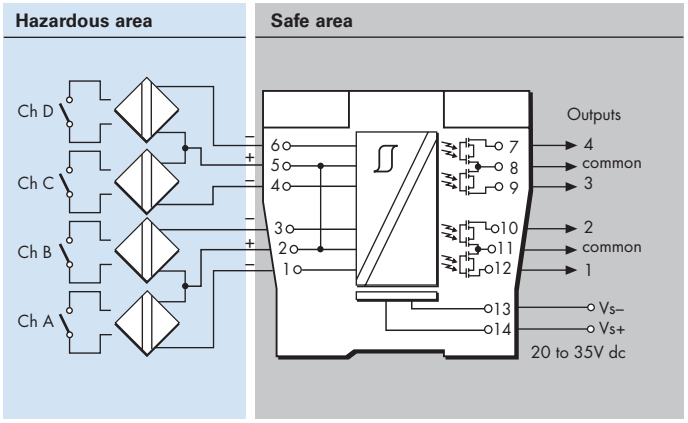

Table 1 - Mode options

MODE	Function	Equivalent*
0	4-ch switch input,	MTLx510
1	2-ch each channel one input, two outputs	MTL4016
2	As mode 1 but with phase reversed on all outputs	MTL4016
3	2-ch, 2-pole changeover output	
4	1-ch with line fault output	MTLx014
5	As mode 4 with changeover outputs	
6	1-ch with start-stop latch	MTL2210B
7	As mode 2 but with LFD enabled on both inputs	MTL4016
8	4-ch switch input,	MTLx510
9	2-ch with line fault output	MTLx017
10	As mode 9 with LFD changeover	
11	As mode 10 with phase reversed	
12	3-ch with normally-open LFD output	
13	3-ch with normally-closed LFD output	
14	2-ch monostable, pulse stretcher	
15	4-ch switch input	MTLx510

** Note: that terminal connections may not be the same on these models, and x can mean either '4' or '5'.*
See Instruction Manual INM4500 or INM5500 for further mode information.

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MTL5511
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, with line fault detection

The MTL5511 enables a safe-area load to be controlled by a switch or proximity detector located in a hazardous-area. When selected, open or short circuit conditions in the field wiring are detected by the line-fault-detect (LFD) facility and also indicated on the top of the module. Phase reversal for the channel is selected by a switch on the side of the module and output is provided by changeover relay contacts.

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 area if suitably certified
Div. 1, Group A hazardous location

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

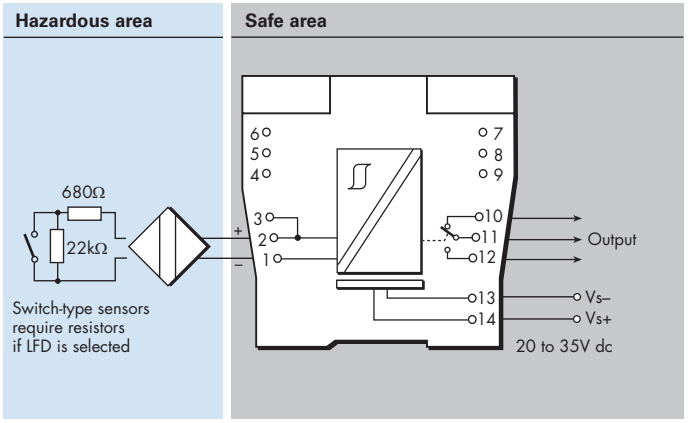
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. A line fault is indicated by an LED. The channel output relay is de-energised if an input line fault is detected.
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit 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

Safe-area output
Single pole relay with changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics

Response time:	10ms maximum
Contact rating (Safe Area):	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load
Contact rating (Zone 2):	35V, 2A, 100VA.

MTL5511



LED indicators
Green: power indication
Yellow: channel status, on when output energised
Red: LFD indication, on when line fault detected

Maximum current consumption
25mA at 24V

Power dissipation within unit
0.6W at 24V

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5513
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, line fault detection, phase reversal

The MTL5513 enables two solid-state outputs in the safe area to be controlled by two switches or proximity detectors located in the hazardous area. The Ch1/Ch2 output transistors share a common terminal and can switch +ve or -ve polarity signals. Independent output phase reversal and line fault detection are enabled via switches for each output. LFD indication is provided on the top of the module.

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

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

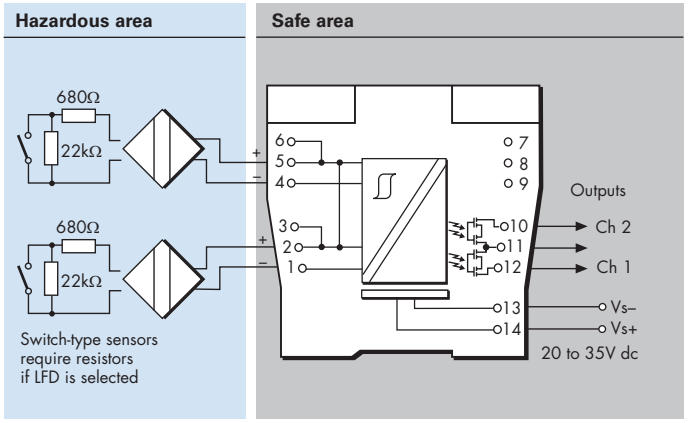
Line fault detection (LFD) (when selected)
User-selectable for each channel via switches on the side of the unit. Line faults are indicated by an LED for each channel.
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit alarm on if R_{in} < 100Ω
Short-circuit 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

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

Operating frequency:	dc to 500Hz
Max. off-state voltage:	± 35V
Max. off-state leakage current:	± 50µA
Max. on-state resistance:	25Ω
Max. on-state current:	± 50mA

MTL5513



LED indicators
Green: power indication
Yellow: two: channel status, on when output active
Red: two: LFD indication, on when line fault detected

Maximum current consumption
30mA at 24V

Power dissipation within unit
0.65W typical at 24V, with 10mA loads
0.78W max. with 50mA loads

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

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MTL5514
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, line fault detection, phase reversal

The MTL5514 enables a safe–area load to be controlled, through a relay, by a proximity detector or switch located in a hazardous area. Line faults are signalled through a separate relay and indicated on the top of the module. Switches are provided to select phase reversal and to enable the line fault detection.

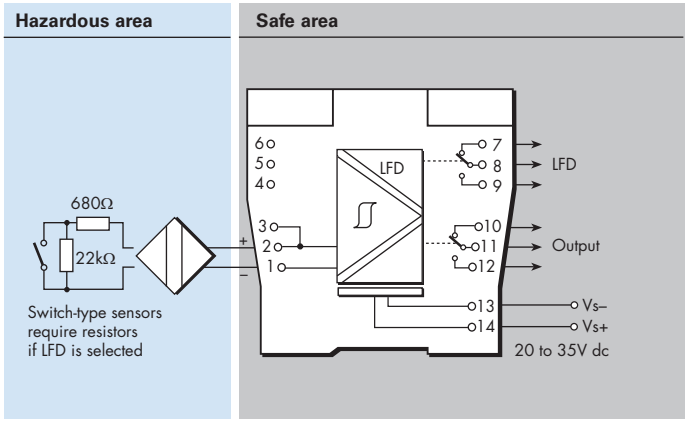
SPECIFICATION

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
Hazardous–area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)
Voltage applied to sensor
7 to 9V dc from 1kΩ ±10%
Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED. Line fault relay is energised and channel output relay de-energised if input line-fault detected
Open-circuit alarm on if I_{in} < 50µA
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
Safe-area output
Channel: Single pole relay with changeover contacts
LFD: Single pole relay with changeover contacts
Note: reactive loads must be adequately suppressed
Relay characteristics

Response time:	10ms maximum
Contact rating (Safe Area):	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load
Contact rating (Zone 2):	35V, 2A, 100VA.

MTL5514



LED indicators
Green: power indication
Yellow: channel status, on when output energised
Red: LFD indication, on when line fault detected
Maximum current consumption
25mA at 24V dc
Power dissipation within unit
0.6W at 24V
Safety description
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5514D
SWITCH/ PROXIMITY DETECTOR INTERFACE

1-channel, dual output, LFD, phase reversal

The MTL5514D enables two safe–area loads to be controlled, through relays, by a proximity detector or switch located in a hazardous area. When selected, open or short circuit conditions in the field wiring are detected by the line fault detect (LFD) facility and indicated on the top of the module. Switches are provided to select phase reversal and to enable the line fault detection.

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

Hazardous–area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

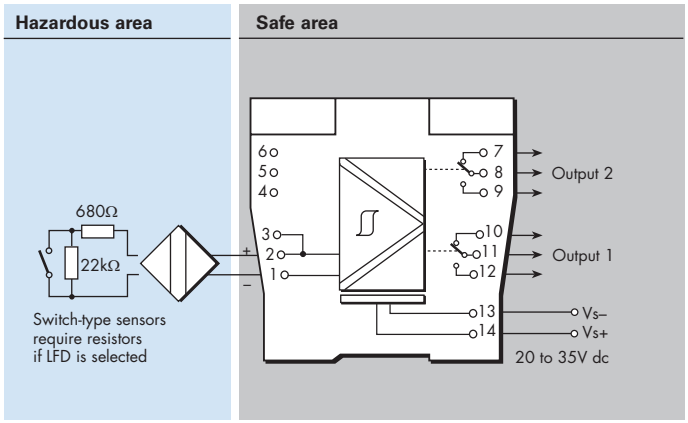
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED. The channel output relays are de-energised if an input line-fault is detected
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit 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

Safe-area output
Two, single pole relays with changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics

Response time:	10ms maximum
Contact rating (Safe Area):	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load
Contact rating (Zone 2):	35V, 2A, 100VA.

MTL5514D



LED indicators
Green: power indication
Yellow: channel status, on when output energised
Red: LFD indication, on when line fault detected

Maximum current consumption
29mA at 24V dc

Power dissipation within unit
0.7W at 24V

Safety description
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual

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MTL5516C
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, with line fault detection

The MTL5516C enables two safe-area loads to be controlled by a switch or proximity detector located in a hazardous-area. When selected, open or short circuit conditions in the field wiring are detected by the line-fault-detect (LFD) facility and also indicated on the top of the module. Phase reversal for each channel is selected by a switch on the side of the module and output is provided by changeover relay contacts.

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

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED for each channel. The channel output relay is de-energised if an input line fault is detected.
Open-circuit alarm on if I_{in} < 50µA
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

Safe-area output
Two single-pole relays with changeover contacts
Note: reactive loads must be adequately suppressed

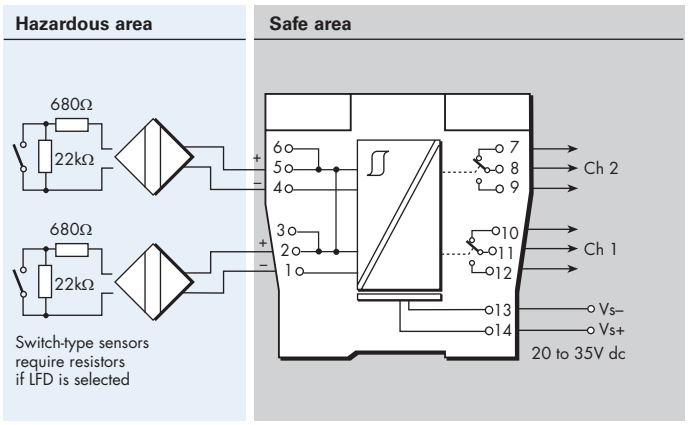
Relay characteristics

Response time:	10ms maximum
Contact rating (Safe Area):	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load
Contact rating (Zone 2):	35V, 2A, 100VA.

Maximum current consumption
35mA at 24V

Power dissipation within unit
0.84W at 24V

MTL5516C



LED indicators
Green: power indication
Yellow: two: channel status, on when output energised
Red: two: LFD indication, on when line fault detected

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual

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MTL5517
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, line fault detection, phase reversal

The MTL5517 enables two safe-area loads to be controlled, through a relay, by proximity detectors or switches located in a hazardous area. Line faults are signalled through a separate relay and indicated on the top of the module. Switches are provided to select phase reversal and to enable the line fault detection.

SPECIFICATION

See also common specification

Number of channels
Two

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

Hazardous-area inputs
Inputs conforming to BS EN60947–5–6:2001 standards for proximity detectors (NAMUR)

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

Input/output characteristics
Normal phase
Outputs closed if input > 2.1mA (< 2kΩ in input circuit)
Outputs open if input < 1.2mA (> 10kΩ in input circuit)
Hysteresis: 200µA (650Ω) nominal

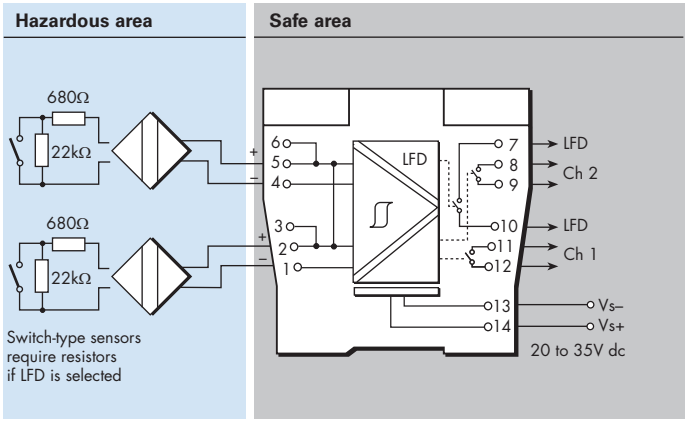
Line fault detection (LFD) (when selected)
User selectable by switches on the side of the module.
Line faults are indicated by the LED for each channel.
Line fault relay is energised and channel output relay de-energised if input line-fault detected
Open-circuit alarm on if I_{in} < 50µA
Open-circuit 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

Safe-area output
Channel: Two single-pole relays with normally open contacts
LFD: Single pole relay with normally open contact
Note: reactive loads must be adequately suppressed

Relay characteristics

Response time:	10ms maximum
Contact rating (Safe Area):	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load
Contact rating (Zone 2):	35V, 2A, 100VA.

MTL5517



Maximum current consumption
35mA at 24V

Power dissipation within unit
0.84W at 24V

LED indicators
Green: power indication
Yellow: two: channel status, on when output energised
Red: two: LFD indication, on when line fault detected

Safety description (each channel)
U_o=10.5V I_o=14mA P_o=37mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5521
SOLENOID/ ALARM DRIVER
loop-powered, IIC

The MTL5521 is loop-powered module which enables a device located in the hazardous area to be controlled from the safe area. It can drive a certified intrinsically safe low-power load, as well as non-energy-storing simple apparatus such as an LED.

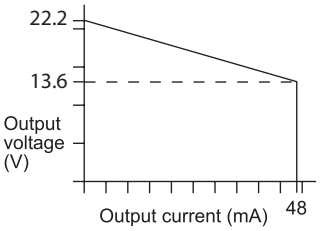
SPECIFICATION

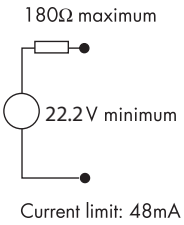
See also common specification

Number of channels
One

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

Minimum output voltage **Equivalent output circuit**





Input voltage
20 to 35V dc

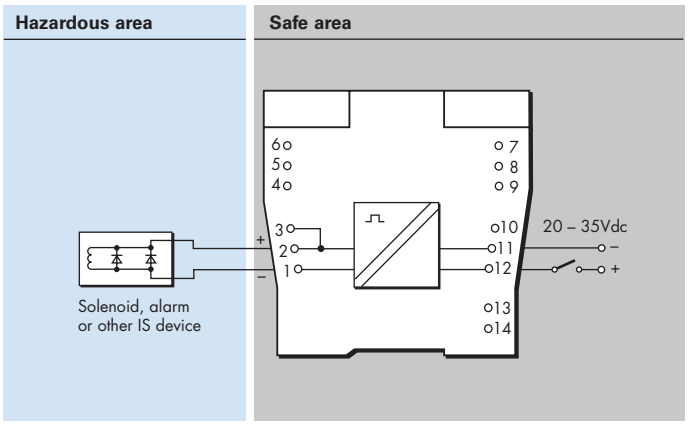
Hazardous-area output

Minimum output voltage:	13.6V at 48mA
Maximum output voltage:	24V from 180Ω
Current limit:	48mA minimum

Output ripple
< 0.5% of maximum output, peak to peak

Response time
Output within 10% of final value within 100ms

MTL5521



LED indicator
Yellow: output status, on when output active

Maximum current consumption
90mA at 24V

Power dissipation within unit
1.4W at 24V

Safety description
U_o=25V I_o=147mA P_o=0.92W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL3 capable for a single device (HFT=0) when the required function is to de-energise the output.
SIL1 capable for a single device (HFT=0) when the required function is to energise the output.
See data on MTL web site and refer to the safety manual.

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MTL5522
SOLENOID/ALARM DRIVER
loop-powered, IIB

The MTL5522 is a loop-powered module which enables a device located in the hazardous area to be controlled from the safe area. The MTL5522 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.

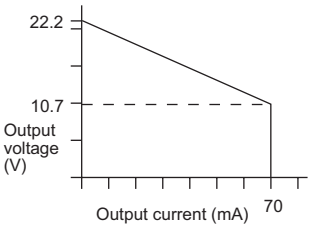
SPECIFICATION

See also common specification

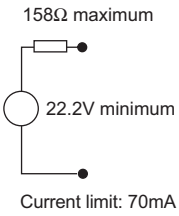
Number of channels
One

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

Minimum output voltage



Equivalent output circuit



Input voltage
20 to 35V dc

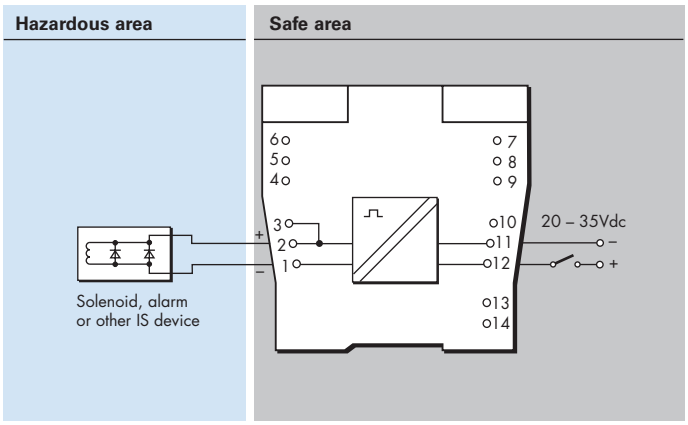
Hazardous-area output

Minimum output voltage:	10.7V at 70mA
Maximum output voltage:	24V from 158Ω
Current limit:	70mA minimum

Output ripple
< 0.5% of maximum output, peak to peak

Response time
Output within 10% of final value within 100ms

MTL5522



LED indicator
Yellow: output status, on when output active

Maximum current consumption
125mA (typ.) at 24V

Power dissipation within unit
1.4W at 24V

Safety description
U_o=25V I_o=166mA P_o=1.04W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL3 capable for a single device (HFT=0) when the required function is to de-energise the output.
SIL1 capable for a single device (HFT=0) when the required function is to energise the output.
See data on MTL web site and refer to the safety manual.

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MTL5523
SOLENOID/ALARM DRIVER
with line fault detection, IIC

With the MTL5523 interface, an on/off device in a hazardous area can be controlled by a volt-free contact or logic signal in the safe area. It is suitable for driving loads such as solenoids. Line fault detection (LFD), which operates irrespective of the output state, is signalled by a safe-area solid-state switch which de-energises MTL5523 if a field line is open or short–circuited.

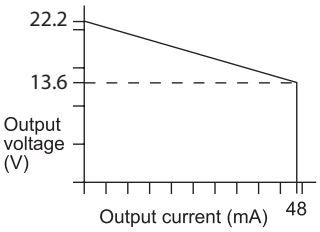
SPECIFICATION

See also common specification

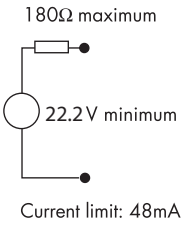
Number of channels
One

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

Minimum output voltage



Equivalent output circuit



Hazardous-area output

Minimum output voltage:	13.6V at 48mA
Maximum output voltage:	24V from 180Ω
Maximum off-state output voltage:	4V from 180Ω
Current limit:	48mA minimum

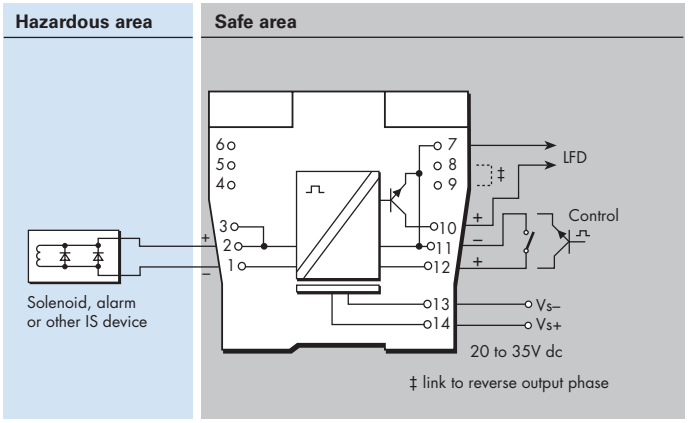
Output ripple
< 0.5% of maximum output, peak to peak

Control input
Suitable for switch contacts, an open collector transistor or logic drive.
(Internal contact wetting voltage 12V @ 0.2mA contact closed.
Not suitable for voltage control via series diode.)
Output turns on if input switch closed, transistor on or
< 1.4V applied across control input
Output turns off if input switch open, transistor off or
> 4.5V applied across control input

Response time
Output within 10% of final value within 100ms

Line fault detection (LFD)
Open or short circuit in field cabling de-energises solid state line-fault signal.
LFD transistor is switched on, provided that the field circuit impedance is > 55Ω and < 4kΩ.

MTL5523



Line fault signal characteristics

Maximum off-state voltage:	35V
Maximum off-state leakage current:	10µA
Maximum on-state voltage drop:	2V
Maximum on-state current:	50mA

LED indicators
Green: power indication
Yellow: output status, on when output active
Red: LFD indication, on when line fault detected

Maximum current consumption
100mA at 24V dc

Power dissipation within unit
1.2W with typical solenoid valve, output on
2.0W worst case

Safety description
U_o=25V I_o=147mA P_o= 0.92W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5523V / MTL5523VL
SOLENOID/ALARM DRIVER
with line fault detection, IIC

With the MTL5523V/VL interface, an on/off device in a hazardous area can be controlled by a voltage signal in the safe area. It is suitable for driving loads such as solenoids. Line fault detection (LFD), which operates irrespective of the output state, is signalled by a safe-area solid-state switch which energises if a field line is open or short–circuited.

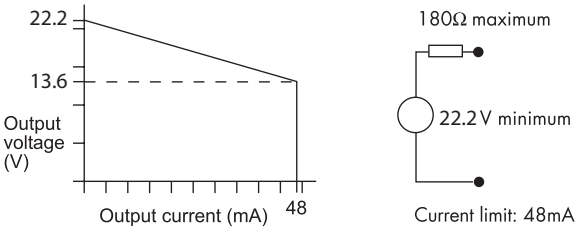
SPECIFICATION

See also common specification

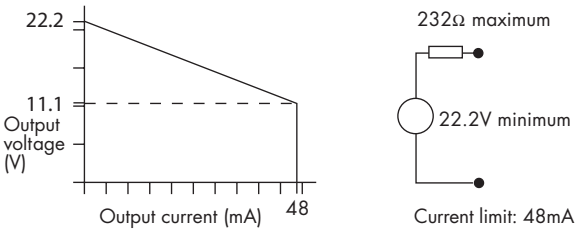
Number of channels
One

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

Minimum output voltage (MTL5523V) **Equivalent output circuit**



Minimum output voltage (MTL5523VL) **Equivalent output circuit**



Hazardous-area output (MTL5523V)

Minimum output voltage:	13.6V at 48mA
Maximum output voltage:	24V from 180Ω
Maximum off-state output voltage:	4V from 180Ω
Current limit:	48mA minimum

Hazardous-area output (MTL5523VL)

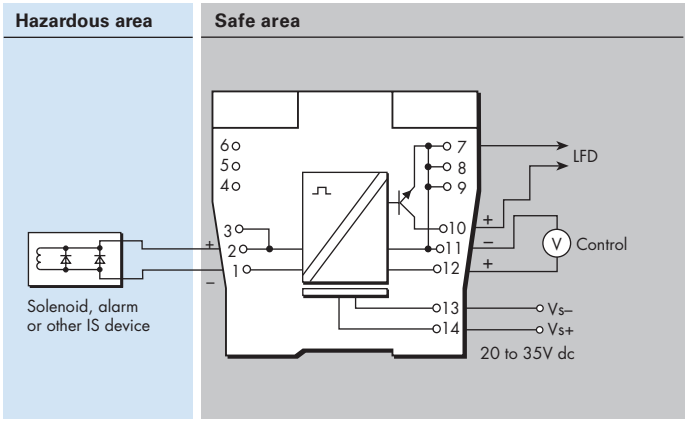
Minimum output voltage:	11.1V at 48mA
Maximum output voltage:	24V from 232Ω
Maximum off-state output voltage:	4V from 232Ω
Current limit:	48mA minimum

Output ripple
< 0.5% of maximum output, peak to peak

Control input
Suitable for 24V logic drive
Output turns on if > 18V applied across control input
Output turns off if < 5V applied across control input
Maximum control input voltage: 28V
Maximum control system output leakage current: 0.5mA

Response time
Output within 10% of final value within 100ms

MTL5523V / MTL5523VL



Line fault detection (LFD)
Open or short circuit in field cabling energises solid state line-fault signal.
LFD transistor is switched off, provided that the field circuit impedance is > 55Ω and < 4kΩ.

Line fault signal characteristics

Maximum off-state voltage:	35V
Maximum off-state leakage current:	10µA
Maximum on-state voltage drop:	2V
Maximum on-state current:	50mA

LED indicators
Green: power indication
Yellow: output status, on when output active
Red: LFD indication, on when line fault detected

Maximum current consumption
100mA at 24V dc

Power dissipation within unit
1.2W with typical solenoid valve, output on
2.0W worst case

Safety description (MTL5523V)
V_o=25V I_o=147mA P_o= 0.92W U_m = 253V rms or dc

Safety description (MTL5523VL)
V_o=25V I_o=108mA P_o= 0.68W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5524
SOLENOID/ALARM DRIVER
switch operated with override, IIC

The MTL5524 enables an on/off device in a hazardous area to be controlled by a volt-free contact or logic signal in the safe area. It can drive loads such as solenoids, alarms, LEDs and other low power devices that are certified as intrinsically safe or are classified as non-energy storing simple apparatus.

The MTL5524 has its phase reversed by connecting a wire link between pins 8 and 9.

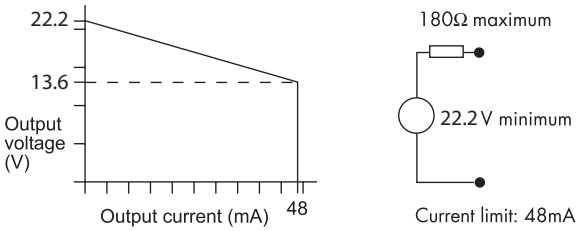
SPECIFICATION

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

Minimum output voltage **Equivalent output circuit**



Hazardous-area output

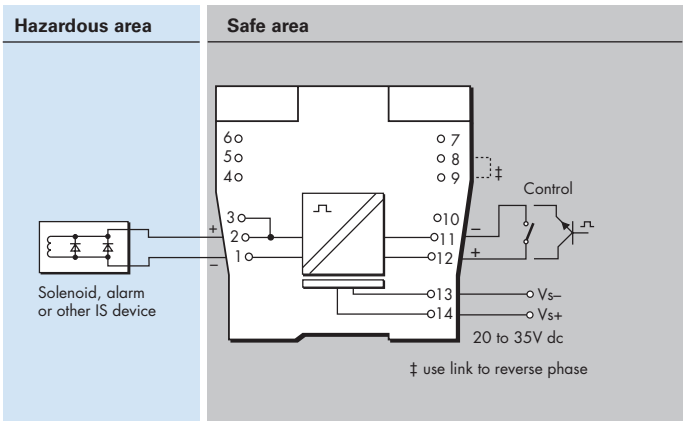
Minimum output voltage:	13.6V at 48mA
Maximum output voltage:	24V from 180Ω
Maximum off-state output voltage:	4V from 180Ω
Current limit:	48mA minimum

Output ripple
< 0.5% of maximum output, peak-to-peak

Control input
Suitable for switch contacts, an open collector transistor or logic drive
0 = input switch closed, transistor on or <1.4V applied
1 = input switch open, transistor off or >4.5V applied

Response time
Output within 10% of final value within 100ms

MTL5524



LED indicators
Green: power indication
Yellow: output status, on when output active

Maximum current consumption
100mA at 24V dc

Power dissipation within unit
1.3W with typical solenoid valve, output on
1.9W worst case

Safety description
U_o=25V I_o=147mA P_o= 0.92W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5525
SOLENOID/ALARM DRIVER
switch operated with override, IIC, low power

The MTL5525 enables an on/off device in a hazardous area to be controlled by a volt-free contact or logic signal in the safe area. It can drive loads such as solenoids, alarms, LEDs and other low power devices that are certified as intrinsically safe or are classified as non-energy storing simple apparatus.

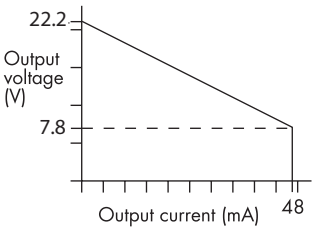
SPECIFICATION

See also common specification

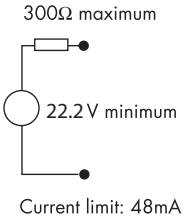
Number of channels
One

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

Minimum output voltage



Equivalent output circuit



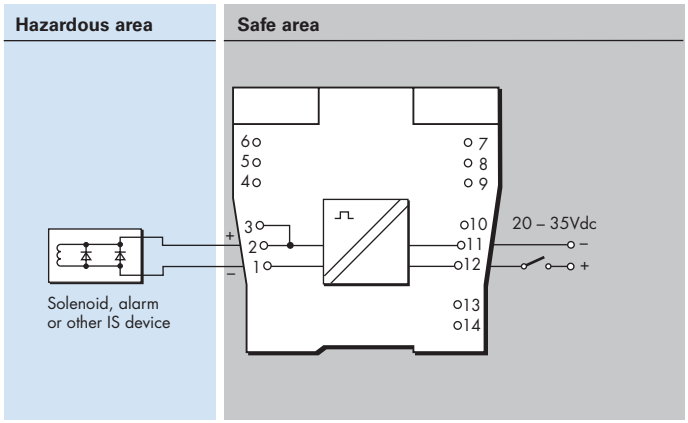
Hazardous-area output

Minimum output voltage:	7.8V at 48mA
Maximum output voltage:	24V from 300Ω
Maximum off-state output voltage:	4V from 300Ω
Current limit:	48mA minimum

Output ripple
< 0.5% of maximum output, peak-to-peak

Response time
Output within 10% of final value within 100ms

MTL5525



LED indicators
Green: power indication
Yellow: output status, on when output active

Maximum current consumption
100mA at 24V dc

Power dissipation within unit
1.3W with typical solenoid valve, output on
1.9W worst case

Safety description
U_o=25V I_o=83.3mA P_o=0.52W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 (SIL3 for MTL5525) capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5526
SWITCH-OPERATED RELAY
2–channel IS–output

The MTL5526 enables two separate IS circuits in a hazardous area to be contact controlled by one or two, on/off, control signals in a safe area. Applications include the calibration of strain–gauge bridges; changing the polarity (and thereby the tone) of an IS sounder; the testing of IS fire alarms; and the transfer of safe-area signals into an annunciator with IS input terminals not segregated from each other. The output–relay contacts are certified as non–energy–storing apparatus, and can be connected to any IS circuit without further certification, provided that separate IS circuits are such that they would remain safe if connected together.

SPECIFICATION

See also common specification

Number of channels
Two, fully floating

Location of control circuit
Safe area

Input/output characteristics
Contact/Logic mode
(Inputs suitable for switch contacts, an open–collector transistor or logic drive)
Relay energised if < 450Ω or < 1V applied
Relay de–energised if > 5kΩ or > 2V applied (35V max.)
Loop powered mode
Relay energised if >20V
Relay de-energised if <17V

Power supply failure protection
Relays de–energised if supply fails

Response time
25ms nominal

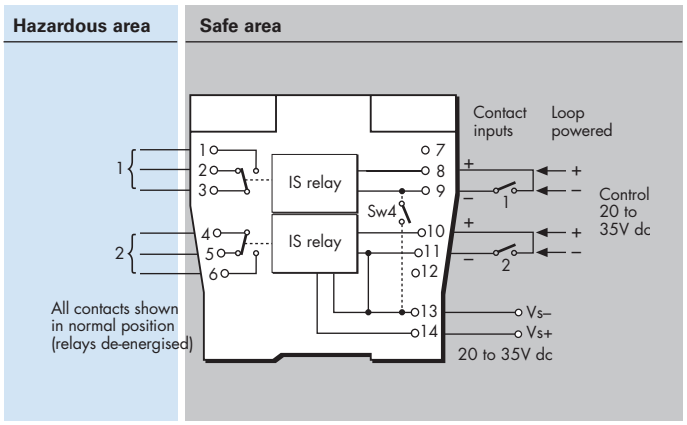
Contacts (suitable for connection to IS circuits)
1–pole changeover per channel

Contact rating
250V ac, limited to 40V dc for IS applications, 2A
(reactive loads must be suppressed)

Contact life expectancy
2 x 10^7 operations at maximum IS load

Relay drive (see switch setting table)
Choice of "loop-powered" or "contact/logic" control, for both channels, by switch selection. A further switch option ("1in2out") enables either input, in contact/logic mode, to activate both outputs.

MTL5526



LED indicators
Green: power indication
Yellow: two: output status, on when relay energised

Power requirement, Vs
41mA at 20V dc
44mA at 24V dc
60mA at 35V dc

Power dissipation within unit
1.1W maximum at 24V

Safety description (each channel)
Non-energy–storing apparatus: relay contacts may be connected to any IS circuit without further consideration

User switch settings for operating mode

Mode	Function	SW1	SW2	SW3	SW4
Contact/Logic Input	2 ch	Off	On	On	On
	1in2out	On	On	On	On
Loop Powered	2 ch	Off	Off	Off	Off

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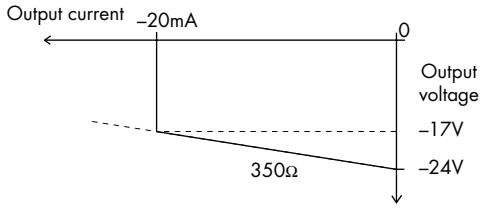
MTL5531
VIBRATION TRANSDUCER INTERFACE

The MTL5531 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 or 2-wire current sensors; the selection is made by a switch on the side of the module.

SPECIFICATION

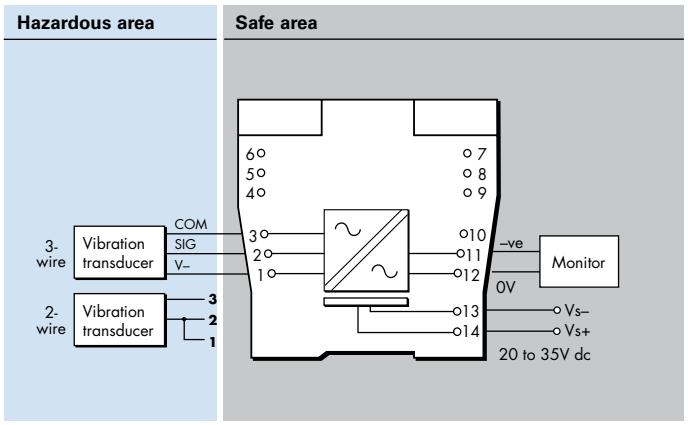
See also common specification

Number of channels
One
Sensor type
2- or 3-wire vibration transducer
Location of signal source
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A hazardous location
Hazardous-area input
Input impedance
(terminals 2 & 3): 10kΩ
Transducer supply voltage, 3-wire (terminals 3 & 1)



Transducer supply current, 2-wire
3.3mA (nom.) for 2-wire sensors, user selectable by switch
Signal range
Minimum –20V, maximum –0.5V
DC transfer accuracy at 20°C
<±50mV
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 47kHz (typical)
Phase response
<14µs, equivalent to:
–1° at 200Hz
–3° at 600Hz
–5° at 1kHz
–50° at 10kHz
–100° at 20kHz
Safe-area output impedance
<20Ω
LED indicator
Green: power indication

MTL5531



Supply voltage
20 to 35V dc
Maximum current consumption (10mA transducer load)
65mA at 24V
Maximum power dissipation within unit
1.33W
Safety description
Terminals 3 to 1
U_o=26.6V I_o=94mA P_o=0.66W U_m = 253V rms or dc
Terminals 3 to 2
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications up to SIL 1.
See data on MTL web site and refer to the safety manual.

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MTL5532
PULSE ISOLATOR
pulse & 4/20mA current outputs

The MTL5532 isolates pulses from a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in a hazardous area. It is ideal for applications involving high pulse rates and fast response times, by repeating the pulses into the safe area. An analogue output proportional to frequency is also provided, together with a relay output, which may be configured to act as an alarm. Configuration is carried out with a personal computer.

SPECIFICATION

See also common specification

Number of channels
One, fully floating

Sensor type
Switch or proximity detector (NAMUR/BS EN 60947–5–6:2001)
2– or 3–wire voltage or pulse transmitter

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–T6 if suitably certified
Div.1, Group A, hazardous location

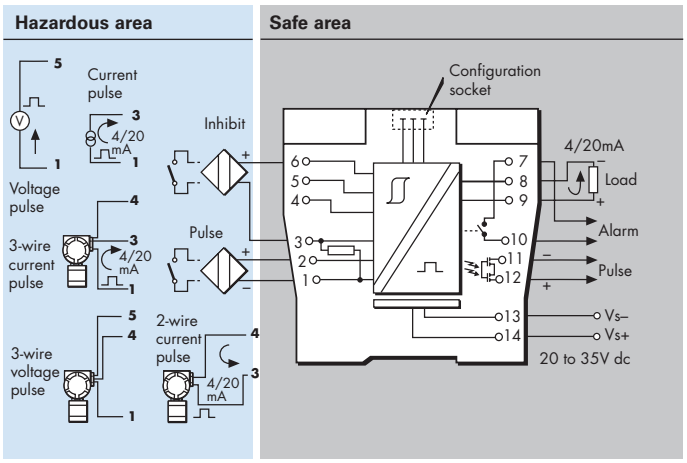
Input
Switch input:
Output ON if switch is closed
Proximity detector input:
Excitation: 7.0 to 9.0V dc from 1kΩ nominal
Output ON if input > 2.1mA* (< 2kΩ)
Output OFF if input < 1.2mA* (> 10kΩ)
Switching hysteresis: 0.2mA (650Ω) nominal
*NAMUR and BS EN 60947–5–6:2001standards
Current pulse input:
Transmitter supply: 16.5V dc at 20mA
Short circuit current: 24mA
Output: I_{in} > 9.0mA = ON, I_{in} < 7.0mA = OFF
Switching hysteresis: 0.5mA
Voltage pulse input
Input impedance: > 10kΩ
Switching point voltage (V_{sp}): 3, 6, or 12V nominal
(User selectable by switches on the side of the module)
Output: $V_{in} > V_{sp}$ = ON, $V_{in} < V_{sp}$ = OFF
Switching hysteresis: 100mV + (0.1 x V_{sp}) typical

Safe-area pulse output
Maximum delay: 10µs
Maximum off–state voltage: 35V
Maximum off–state leakage current: 10µA
Maximum on–state resistance: 25Ω
Maximum on–state current: 50mA
Output OFF if supply fails
Note: LFD signal is Zener-diode protected against inductive loads

Safe-area current output
Input capture delay: 2 signal periods (5ms min.)
Signal range: 4 to 20mA
Under/over range: 0 to 22mA
Load resistance: 0 to 450Ω @20mA
Output resistance: >1MΩ
Ripple: < 50µA peak-to-peak
Accuracy: better than 20µA at 20°C
Temperature drift: < 1µA/°C
Risetime (10% - 90%, after step change): 60 ms

Alarm output
Relay ON in alarm, 0.5A @ 35Vdc max.

MTL5532



Pulse width
High: 10µs min
Low: 10µs min

Frequency range
0 – 50kHz - pulse output mode
0 – 10KHz - for analogue output

LED indicators
Green: power indication
Yellow: on when output circuit is on
Red: flashing when line fault or error

Power requirement
65mA at 24V dc
70mA at 20V dc
55mA at 35V dc

Power dissipation within unit
1.35W maximum at 24V
1.75W maximum at 35V

Safety description (U_m = 253V rms or dc)
Terminals 2 to 1 and 6 to 1
U_o=10.5V I_o=14mA P_o=37mW
Terminals 4 to 3 and 1
U_o=28V I_o=93mA P_o=651mW
Terminals 3 to 1
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V
Terminals 5 to 4 and 1
V_{max} ≤ 28V, I_{max} ≤ 94mA, P_{max} ≤ 0.66W

Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

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MTL5541 / MTL5541S
REPEATER POWER SUPPLY
4/20mA, HART®, 2- or 3-wire transmitters

The MTL5541 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 HART 2-wire transmitters, the unit allows bi-directional communications signals superimposed on the 4/20mA loop current. Alternatively, the MTL5541S acts as a current sink for a safe-area connection rather than driving a current into the load. Separately powered current sources, such as 4-wire transmitters, can be connected but will not support HART 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 output

Signal range:	4 to 20mA
Under/over-range:	0 to 24mA
Safe-area load resistance (MTL5541)	
@ 24mA:	0 to 360Ω
@ 20mA:	0 to 450Ω
Safe-area load (MTL5541S)	
Current sink:	600Ω max.
Maximum voltage source:	24V dc
Safe-area circuit output resistance:	> 1MΩ

Safe-area circuit ripple
< 50µA peak-to-peak

Hazardous-area input

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

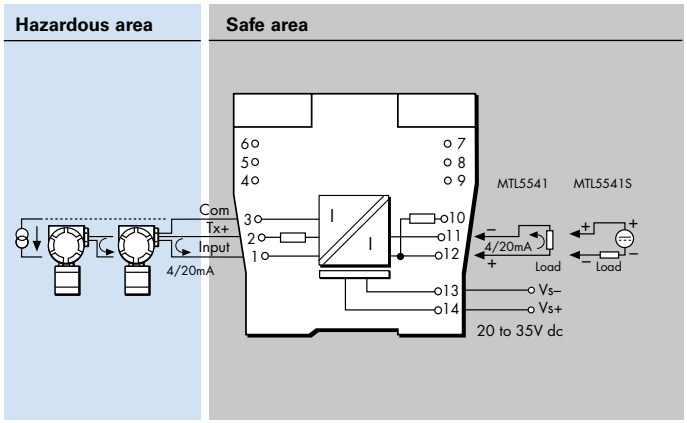
Transfer accuracy at 20°C
Better than 15µA

Temperature drift
< 0.8µA/°C

Response time
Settles to within 10% of final value within 50µs

Communications supported
HART (terminals 1 & 2 only)

MTL5541 / MTL5541S



LED indicator
Green: power indication

Maximum current consumption (with 20mA signal)
51mA at 24V

Power dissipation within unit (with 20mA signal)

MTL5541	0.7W @ 24V dc
MTL5541S	1.0W @ 24V dc

Safety description
Terminals 2 to 1 and 3:
U_o=28V I_o=93mA P_o=651mW U_m = 253V rms or dc
Terminals 1 to 3:
Simple apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL3 capable for a single device (HFT=0)
See data on MTL web site and refer to the safety manual.

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MTL5541A / MTL5541AS CURRENT REPEATER

4/20mA passive i/p for HART® transmitters

The MTL5541A provides an input for separately powered 4/20mA transmitters and also allows bi–directional transmission of HART communication signals superimposed on the 4/20mA loop current. Alternatively, the MTL5541AS acts as a current sink for a safe-area connection rather than driving a current into the 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

Hazardous area input

Signal range:	4 to 20mA
Under/over-range:	1.0 to 21.5mA

Input impedance for HART signals
at terminals 1, 2: > 230Ω

Maximum input volt drop
at terminals 1, 2: < 6.6V
i.e. a transmitter load of 330Ω at 20mA

Safe-area output

Signal range:	4 to 20mA
Under/over-range:	1.0 to 21.5mA
Safe-area load resistance (MTL5541A)	
Conventional transmitters:	0 to 360Ω
Smart transmitters:	250Ω ±10%
Safe-area load (MTL5541AS)	
Current sink:	600Ω max.
Maximum voltage source:	24V DC
Safe-area circuit output resistance:	> 1MΩ

Safe–area circuit ripple
< 50µA peak-to-peak up to 80kHz

Transfer accuracy at 20°C
Better than 20µA

Temperature drift
< 1µA/°C

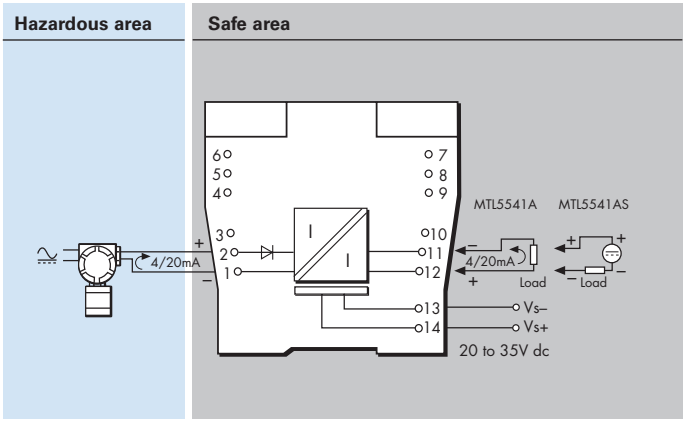
Response time
Settles within 200µA of final value after 20ms

Communications supported
HART

LED indicator
Green: power indication

Power requirement (with 20mA signal)
50mA at 20V
45mA at 24V
35mA at 35V

MTL5541A / MTL5541AS



Power dissipation within unit (with 20mA signals)

MTL5541A	0.8W @ 24V dc
MTL5541AS	1.1W @ 24V dc

Safety description
Terminals 1 to 2:
U_m = 253V rms or dc.
8.6V (diode). This voltage must be considered when calculating the load capacitance.
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5544 / MTL5544S
REPEATER POWER SUPPLY

2-channel, 4/20mA, HART®, 2- or 3- wire transmitters

The MTL5544 provides fully-floating dc supplies for energising two conventional 2-wire or 3-wire 4/20mA or HART transmitters located in a hazardous area, and repeats the current in other circuits to drive two safe-area loads. For smart transmitters, the unit allows bi-directional transmission of digital communication signals superimposed on the 4/20mA loop current. Alternatively, the MTL5544S acts as a current sink for a safe-area connection rather than driving a current into the load. Separately powered current sources, such as 4-wire transmitters, can be connected but will not support HART communication.

SPECIFICATION

See also common specification

Number of channels
Two

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 (MTL5544)	
@ 24mA:	0 to 360Ω
@ 20mA:	0 to 450Ω
Safe-area load (MTL5544S)	
Current sink:	600Ω max.
Maximum voltage source:	24V dc
Safe-area circuit output resistance:	> 1MΩ

Safe-area circuit ripple
< 50µA peak-to-peak

Hazardous-area input

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

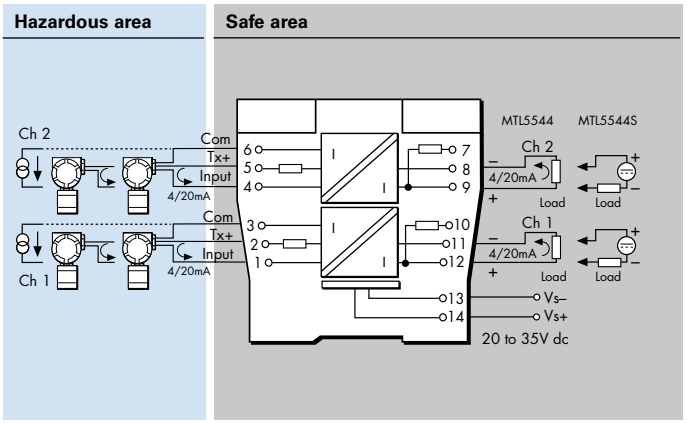
Transfer accuracy at 20°C
Better than 15µA

Temperature drift
< 0.8µA/°C

Response time
Settles to within 10% of final value within 50µs

Communications supported
HART (terminals 1 & 2 and 4 & 5 only)

MTL5544 / MTL5544S



LED indicator
Green: power indication

Maximum current consumption (with 20mA signals)
96mA at 24V dc

Power dissipation within unit (with 20mA signals)

MTL5544	1.4W @ 24V dc
MTL5544S	1.9W @ 24V dc

Safety description (each channel)
Terminals 2 to 1 and 3, and 5 to 4 and 6:
U_o=28V I_o=93mA P_o=651mW U_m = 253V rms or dc
Terminals 1 to 3 and 4 to 6:
Simple apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL3 capable for a single device (HFT=0)
See data on MTL web site and refer to the safety manual.

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MTL5544A / MTL5544AS CURRENT REPEATER

4/20mA passive i/p for HART® transmitters

The MTL5544A provides an input for separately powered 4/20mA transmitters and also allows bi–directional transmission of HART communication signals superimposed on the 4/20mA loop current, so that the transmitter can be interrogated either from the operator station or by a hand-held communicator (HHC). Alternatively, the MTL5544AS acts as a current sink for a safe-area connection rather than driving a current into the load.

SPECIFICATION

See also common specification

Number of channels
Two

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

Hazardous area input
Signal range: 4 to 20mA
Under/over-range: 1.0 to 21.5mA

Input impedance for HART signals
at terminals 1, 2 and 4, 5: > 230Ω

Maximum input volt drop
at terminals 1, 2 and 4, 5: < 6.6V
i.e. a transmitter load of 330Ω at 20mA

Safe-area output
Signal range: 4 to 20mA
Under/over-range: 1.0 to 21.5mA
Safe-area load resistance (MTL5544A)
Conventional transmitters: 0 to 360Ω
Smart transmitters: 250Ω ±10%
Safe-area load (MTL5544AS)
Current sink: 600Ω max.
Maximum voltage source: 24V DC
Safe-area circuit output resistance: > 1MΩ

Safe–area circuit ripple
< 50µA peak-to-peak up to 80kHz

Transfer accuracy at 20°C
Better than 20µA

Temperature drift
< 1µA/°C

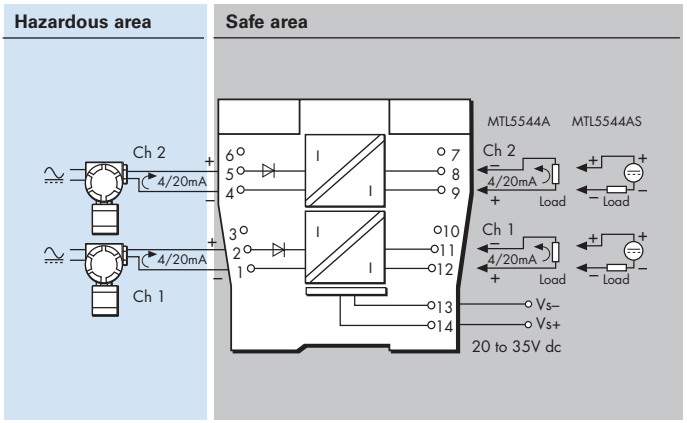
Response time
Settles within 200µA of final value after 20ms

Communications supported
HART

LED indicator
Green: power indication

Power requirement (with 20mA signal)
70mA at 24V
85mA at 20V
50mA at 35V

MTL5544A / MTL5544AS



Power dissipation within unit (with 20mA signals)
MTL5544A 1.5W @ 24V dc
MTL5544AS 2.0W @ 24V dc

Safety description
Terminals 1 to 2 and 4 to 5:
U_m = 253V rms or dc.
8.6V (diode). This voltage must be considered when calculating the load capacitance.
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage < 28V

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5544D
REPEATER POWER SUPPLY
single channel, 4/20mA, HART®
for 2- or 3-wire transmitters, two outputs

The MTL5544D provides a fully-floating dc supply for energising a conventional 2- or 3-wire 4/20mA transmitter located in a hazardous area, and repeats the current in other circuits to drive two safe-area loads. For HART 2-wire transmitters, the unit allows bi-directional transmission of digital communication signals superimposed on the 4/20mA loop current. Separately powered current sources, such as 4-wire transmitters, can be connected but will not support HART 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 output

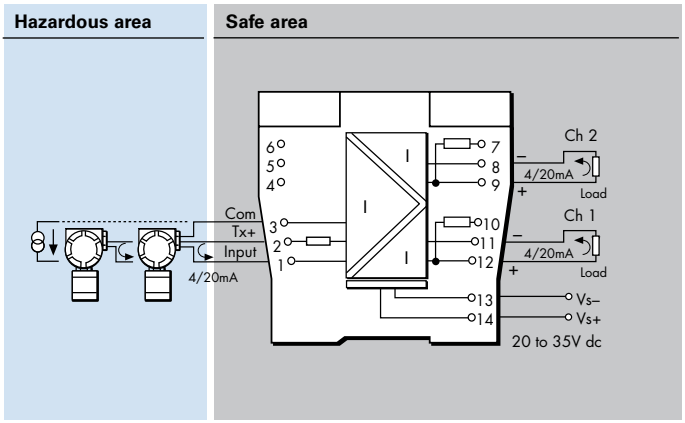
Signal range:	4 to 20mA
Under/over-range:	0 to 24mA
Safe-area load resistance	
@ 24mA:	0 to 360Ω
@ 20mA:	0 to 450Ω
Safe-area circuit output resistance:	> 1MΩ

Safe-area circuit ripple
< 50µA 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 15µA
Temperature drift
< 0.8µA/°C
Response time
Settles to within 10% of final value within 50µs
Communications supported
HART (terminals 1 & 2, output Ch 1 only)

MTL5544D



LED indicator
Green: power indication
Maximum current consumption (with 20mA signals)
96mA at 24V dc
Power dissipation within unit (with 20mA signals)
1.4W @ 24V dc
Safety description
Terminals 2 to 1 and 3:
U_o=28V I_o=93mA P_o=651mW U_m = 253V rms or dc
Terminals 1 to 3:
Simple apparatus ≤1.5V, ≤0.1A and ≤25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL3 capable for a single device (HFT=0)
See data on MTL web site and refer to the safety manual.

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MTL5546 / MTL5546Y
ISOLATING DRIVER

for 4–20mA HART® valve positioners
with line fault detection

The MTL5546 accepts a 4/20mA floating signal from a safe-area controller to drive a current/pressure converter (or any other load up to 800Ω) in a hazardous area. For HART valve positioners, the module also permits bi-directional transmission of digital communication signals. Process controllers with a readback facility can detect open or short circuits in the field wiring: if these occur, the current taken into the terminals drops to a preset level. The MTL5546Y is very similar to the MTL5546 except that it provides open circuit detection only (i.e. no short-circuit detection).

SPECIFICATION

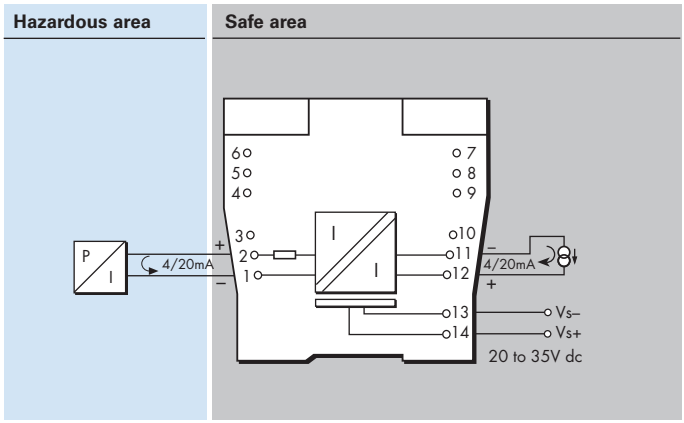
See also common specification

Number of channels
One
Location of I/P converter
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A, hazardous location
Working range
4 to 20mA
Digital signal bandwidth
500Hz to 10kHz
Maximum load resistance
800Ω (16V at 20mA)
Minimum load resistance
90Ω (short-circuit detection at < 50Ω)
Output resistance
> 1MΩ
Under/over range capability
Under range = 1mA
Over range = 24mA (load ≤ 520Ω)
Input and output circuit ripple
< 40µA peak-to-peak
Transfer accuracy at 20°C
Better than 20µA
Temperature drift
< 1.0µA/°C
Input characteristics

Field wiring state	MTL5546	MTL5546Y
Normal	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.

Response time
Settles within 200µA of final value within 100ms
Communications supported
HART

MTL5546 / MTL5546Y



LED indicator
Green: power indication
Maximum current consumption (with 20mA signals into 250Ω load)
35mA at 24V dc
Power dissipation within unit (with 20mA signals into 250Ω load)
0.8W at 24V
Safety description
U_o=28V I_o=93mA P_o=651mW U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5549 / MTL5549Y ISOLATING DRIVER

two-channel, for 4–20mA, HART®
valve positioners with line fault detection

The MTL5549 accepts 4/20mA floating signals from safe-area controllers to drive 2 current/pressure converters (or any other load up to 800Ω) in a hazardous area. For HART valve positioners, the module also permits bi-directional transmission of digital communication signals. Process controllers with a readback facility can detect open or short circuits in the field wiring: if these occur, the current taken into the terminals drops to a preset level. The MTL5549Y is very similar to the MTL5549 except that it provides open circuit detection only (i.e. no short-circuit detection).

SPECIFICATION

See also common specification

Number of channels
Two

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

Working range
4 to 20mA

Digital signal bandwidth
500Hz to 10kHz

Maximum load resistance
800Ω (16V at 20mA)

Minimum load resistance
90Ω (short-circuit detection at < 50Ω)

Output resistance
> 1MΩ

Under/over range capability
Under range = 1mA
Over range = 24mA (load ≤ 520Ω)

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

Communications supported
HART

Transfer accuracy at 20°C
Better than 20µA

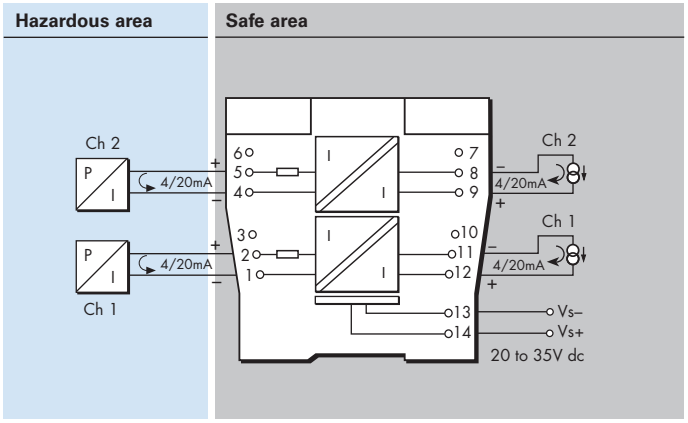
Temperature drift
< 1.0µA/°C

Input characteristics

Field wiring state	MTL5549	MTL5549Y
Normal	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.

Response time
Settles within 200µA of final value within 100ms

MTL5549 / MTL5549Y



LED indicator
Green: power indication

Maximum current consumption (with 20mA signals into 250Ω load)
70mA at 24V dc

Power dissipation within unit (with 20mA signals into 250Ω load)
1.6W at 24V

Safety description (each channel)
U_o=28V I_o=93mA P_o=0.65W U_m = 253V rms or dc

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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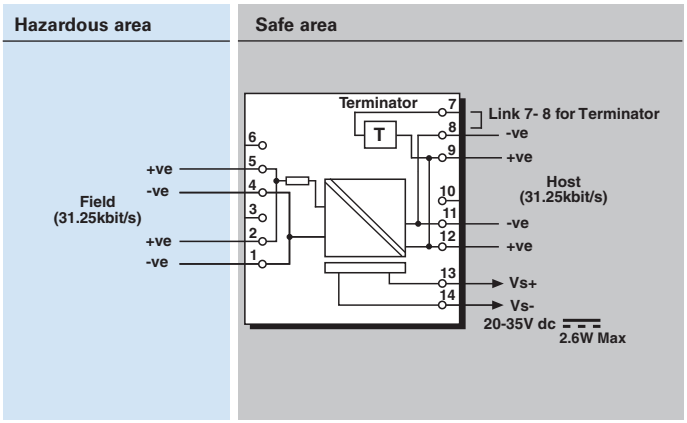
MTL5553
ISOLATOR/ POWER SUPPLY
31.25kbit/s fieldbus

The MTL5553 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 MTL5553 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 MTL5553'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 MTL5553 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; Um = 250V rms or dc

† 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

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
7	Link to 8 to enable internal terminator
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, and 10. Please note, however, that there is no internal connection for these terminals so they are not earthed.

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MTL5561
FIRE AND SMOKE DETECTOR INTERFACE
2-channel

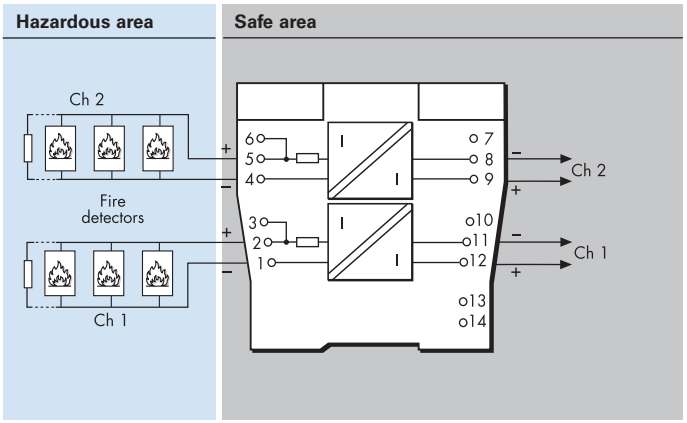
The MTL5561 is a loop-powered 2–channel interface for use with conventional fire and smoke detectors located in hazardous areas. In operation, the triggering of a detector causes a corresponding change in the safe–area current. The unit features reverse input polarity protection.

SPECIFICATION

See also common specification

Number of channels
Two, fully floating, loop powered
Location of fire and smoke detectors
Zone 0, IIC, T4–6 hazardous area if suitably certified
Div. 1, Group A, hazardous area
Input voltage
6 to 30V dc
Current range
1 to 40mA, nominal
Quiescent safe–area current at 20°C
(hazardous–area terminals open circuit)
< 400µA at Vin = 24V per channel
Integral input polarity protection
Input circuit protected against reverse polarity
Minimum output voltage Vout at 20°C
For Vin ≤ 25V: Vout = Vin – (0.38 x current in mA) – 2V
For Vin > 25V: Vout = 22.5V – (0.35 x current in mA)
Maximum output voltage
28V from 300Ω
Transfer accuracy at 20°C
Better than 400µA
Temperature drift
< 4µA/°C (0°C to 60°C)
< 15µA/°C (–20°C to 0°C)
Response time to step input
Settles to within 5% of final value within 1.5ms
Power dissipation within unit
0.7W maximum at 24V with 40mA signal (each channel)
0.9W maximum at 30V with 40mA signal (each channel)
Safety description for each channel
U_o=28V I_o=93mA P_o=0.65W U_m = 253V rms or dc

MTL5561



SIL capable
These models have been assessed for use in IEC 61508 functional safety applications.
SIL2 capable for a single device (HFT=0)
SIL3 capable for multiple devices in safety redundant configurations (HFT=1)
See data on MTL web site and refer to the safety manual.

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MTL5573
TEMPERATURE CONVERTER
THC or RTD input

The MTL5573 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 all thermocouple types and 2-, 3- or 4-wire RTDs. (For thermocouple applications the HAZ-CJC plug on terminals 1–3 includes an integral CJC sensor). Configuration is carried out using a personal computer.

SPECIFICATION

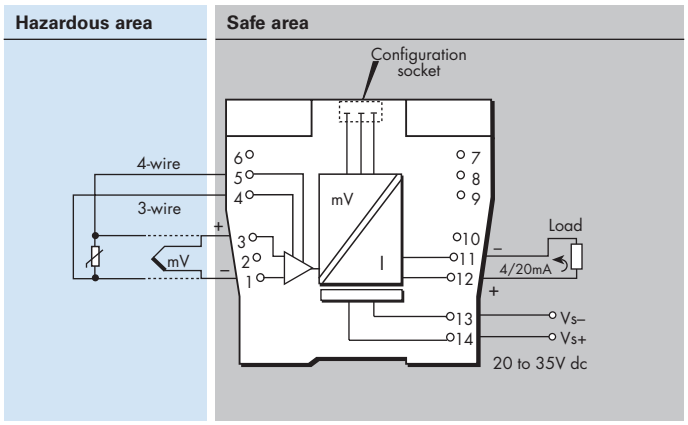
See also common specification

Number of channels
One
Location of signal source
Zone 0, IIC, Hazardous area
Division 1, Groups A-D, hazardous location
Signal source

Input	Type		Min. span
THC	J,K,T,E,R,S,B,N	BS EN 60584-1:1996	3mV
	XK	GOST P8.585-2001	
mV	-75 to +75mV		3mV
RTD 2/3/4 wire	Pt100, Pt500, Pt1000	BS EN 60751:2008	10,50,100Ω
	Cu-50, Cu-53	GOST 6651-94	10Ω
	Ni100, Ni500, Ni1000	DIN43760:1985	10,50,100Ω
Resistance	0 to 400Ω		10Ω

RTD excitation current
200µA nominal
Cold junction compensation, THC input
Selectable ON or OFF
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)
Pt 100 - RTD: ± 80mΩ
Output: ± 11µA
Temperature drift (typical)
Inputs:
mV/THC: ± 0.003% of input value/°C
Pt 100 - 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 failure
Upscale, downscale, or off

MTL5573



Early burnout
Early burnout detection for thermocouples (when selected)
EBD indicated when loop resistance increase is > 50Ω
Output range
4 to 20mA nominal into 600Ω max.
Out of range characteristic - MTL or NAMUR NE43
Maximum lead resistance (THC)
600Ω with safety drive on sensor failure enabled.
>10kΩ with safety drive on sensor failure disabled
Response time
Typical 500 ms
LED indicator
Green: EBD alarm indication, power and status indication
Yellow: alarm indication
Maximum current consumption (with 20mA signal)
50mA at 24V
Power dissipation within unit (with 20mA signal)
1.2W at 24V
Safety description
Refer to certificate for parameters. U_m=253V rms or dc
Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

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MTL5575
TEMPERATURE CONVERTER
THC or RTD input + Alarm

The MTL5575 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 all thermocouple types and 2-, 3- or 4-wire RTDs. (For thermocouple applications the HAZ-CJC plug on terminals 1–3 includes an integral CJC sensor). Configuration is carried out using a personal computer. A single alarm output is provided and may be configured for process alarm or to provide notice of early thermocouple failure.

SPECIFICATION

See also common specification

Number of channels
One
Signal source
THC types J, K, T, E, R, S, B or N to BS 60584 and XK
mV input
RTDs 2/3/4-wire platinum to BS 60751
Pt 100, Pt 500, Pt 1000
Cu-50 & Cu-53
Ni 100/500/1000 DIN 43760
Location of signal source
Zone 0, IIC, T4-6 hazardous area
Division 1, Group A, hazardous location
Input signal range
–75 to +75mV, or 0 to 400Ω (0 to 1000Ω Pt & Ni sensors)
Input signal span
3 to 150mV, or 10 to 400Ω (10 to 1000Ω Pt & Ni sensors)
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 (500ms response)
Series mode rejection
40dB for 50Hz or 60Hz
Calibration accuracy (at 20°C)
(includes hysteresis, non-linearity and repeatability)
Inputs: (500ms response)

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

Temperature drift (typical)
Inputs:

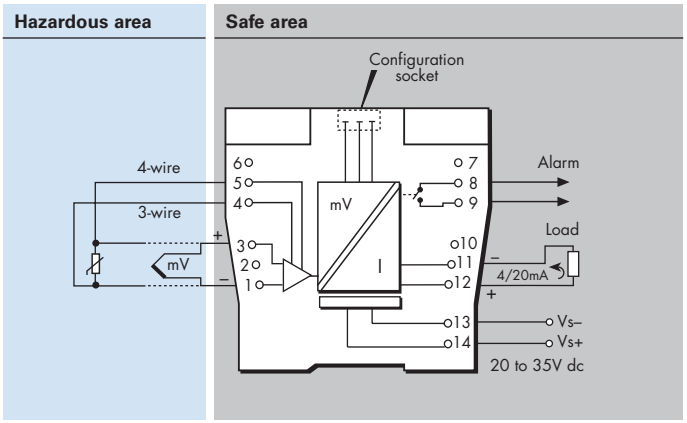
mV/THC:	± 0.003% of input value/°C
RTD:	± 7mΩ/°C
Output:	± 0.6µA/°C

Example of calibration accuracy and temperature drift (RTD input - 500ms response)

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 failure
Upscale, downscale, or off

MTL5575



Early burnout
Early burnout detection for thermocouples (when selected)
Alarm trips when loop resistance increase is > 50Ω
Output range
4 to 20mA nominal into 600Ω max.
Alarm output (configurable)
Relay ON in alarm, 250mA @ 35V max
Maximum lead resistance (THC)
600Ω
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)
LED indicator
Green: power and status indication
Yellow: alarm indication, on when contacts are closed
Maximum current consumption (with 20mA signal)
50mA at 24V
Power dissipation within unit (with 20mA signal)
1.2W at 24V
Safety description
Refer to certificate for parameters. U_m=253V rms or dc
Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

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MTL5576-RTD
TEMPERATURE CONVERTER
RTD/potentiometer input, 2-channel

The MTL5576–RTD converts signals from resistance temperature detectors (RTDs) mounted in a hazardous area, into 4/20mA currents for driving safe-area loads. Software selectable features include input type and characterisation, ranging, monitoring, testing and tagging. Configuration is carried out using a personal computer. The MTL5576–RTD is compatible with 2– and 3–wire RTD inputs. The MTL5576-RTD can also be configured to drive two safe-area loads from a single input.

SPECIFICATION

See also common specification

Number of channels
Two

Signal source
2-/3-wire RTDs to BS 60751
Pt 100, Pt 500, Pt 1000
Cu-50 & Cu-53
Ni 100/500/1000 DIN 43760

Location of signal source
Zone 0, IIC, T4–6 hazardous area
Division 1, Group A, hazardous location

Input signal range
0 to 400Ω (0 to 4000Ω Pt & Ni sensors)

Input signal span
10 to 400Ω (10 to 1000Ω Pt & Ni sensors)

RTD excitation current
200µA nominal

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)

Input:	± 80mΩ
Output:	± 16µA

Temperature drift (typical)

Input:	± 7mΩ/°C
Output:	± 0.6µA/°C

Example of calibration accuracy and temperature drift (RTD input)

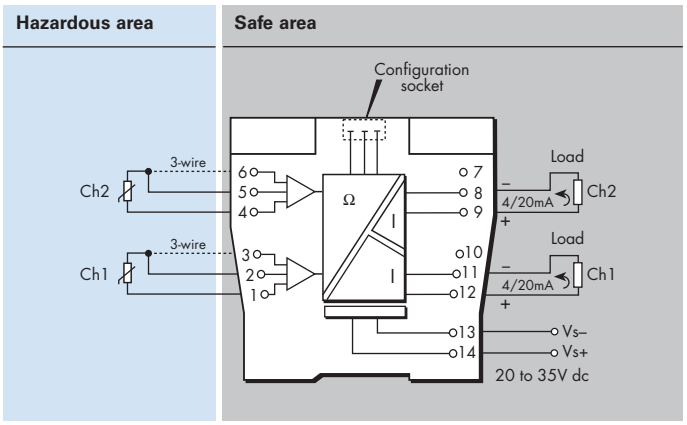
Span:	250Ω
Accuracy:	± (0.08/250 + 16/16000) x 100% = 0.13% of span
Temperature drift:	± (0.007/250 x 16000 + 0.6) µA/°C = ±1.0µA/°C

Safety drive on sensor failure
Upscale, downscale, or off

Output range
4 to 20mA nominal into 300Ω max.

Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

MTL5576-RTD



LED indicator
Green: power and status indication
Yellow: one provided for channel status
Red: alarm indication

Power requirement, Vs with 20mA signal
60mA at 24V

Power dissipation within unit with 20mA signal
1.4W at 24V

Isolation
Functional channel–channel isolation for safe and hazardous–area circuits

Safety description
Refer to certificate for parameters. U_m=253V rms or dc

Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

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MTL5576-THC
TEMPERATURE CONVERTER
mV/THC input, 2-channel

The MTL5576–THC converts low–level dc signals from temperature sensors mounted in a hazardous–area into 4/20mA currents for driving safe-–area loads. Software selectable features include linearisation for standard thermocouple types, ranging, monitoring, testing and tagging. Configuration is carried out using a personal computer. The hazardous–area connections include cold–junction compensation and do not need to be ordered separately.

SPECIFICATION

See also common specification

Number of channels
Two
Signal source
THC types J, K, T, E, R, S, B or N to BS 60584 and XK
mV input
Location of signal source
Zone 0, IIC, T4–6 hazardous area
Division 1, Group A, hazardous location
Input signal range
–75 to +75mV
Input signal span
3 to 150mV
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)

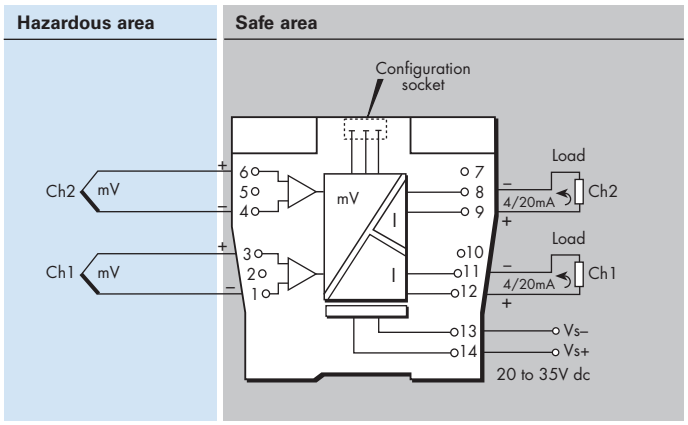
Input:	±15µV or ±0.05% of input value (whichever is greater)
Output:	±16µA

Temperature drift (typical)

Input:	±0.003% of input value/°C
Output:	±0.6µA/°C

Safety drive on sensor burnout
Upscale, downscale, or off
Output range
4 to 20mA nominal into 300Ω max.
Maximum lead resistance
300Ω with safety drive on sensor failure enabled
>10kΩ with safety drive on sensor failure disabled
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact Eaton's MTL product line)

MTL5576-THC



LED indicator
Green: power and status indication
Yellow: one provided for channel status
Red: alarm indication
Power requirement, Vs with 20mA signal
60mA at 24V
Power dissipation within unit with 20mA signal
1.4W at 24V
Isolation
Functional isolation channel–channel for safe and hazardous–area circuits.
Safety description
Refer to certificate for parameters. Um=253V rms or dc
Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

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MTL5581
MILLIVOLT/THERMOCOUPLE ISOLATOR
for low-level signals

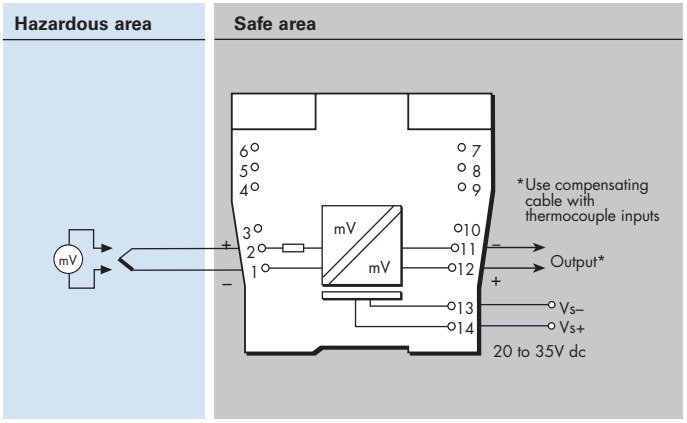
The MTL5581 takes a low-level dc signal from a voltage source in a hazardous area, isolates it, and passes it to a receiving instrument located in the safe area. The module is intended for use with thermocouples utilising external cold-junction compensation. A switch enables or disables the safety drive in the event of thermocouple burnout or cable breakage; a second switch permits the selection of upscale or downscale operation as appropriate.

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
Maximum lead resistance 600Ω
Output resistance
60Ω nominal
Transfer accuracy@20°C
Linearity and repeatability < 0.05% of reading or ± 5µV, whichever is the greater
Temperature drift
< 2µV/°C, maximum
Response time
Settles to within 10% of final value within 150µs
Frequency response
dc to 4kHz nominal
Safety drive on THC burnout
Two switches enable or disable the safety drive and select upscale or downscale operation

MTL5581



LED indicator
Green: power indication
Power requirement, Vs
30mA max, 20V dc to 35V dc
Power dissipation within unit
0.7W typical at 24V
0.91W at 35V
Safety description
Terminals 1 to 2
Non-energy-storing apparatus ≤ 1.5V, ≤ 0.1A and ≤ 25mW; can be connected without further certification into any IS loop with an open-circuit voltage <28V

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MTL5582B
RESISTANCE ISOLATOR
to repeat RTD signals

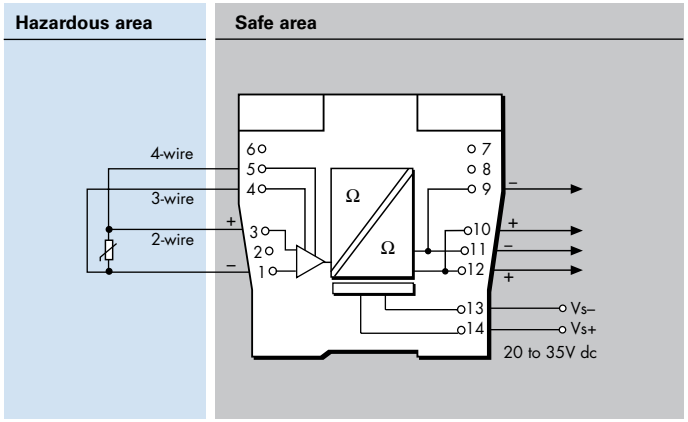
The MTL5582B connects to a 2-, 3-, or 4-wire resistance temperature device (RTD) or other resistance located in a hazardous area, isolates it and repeats the resistance to a monitoring system in the safe area. The module is intended typically (but not exclusively) for use with Pt100 3-wire RTDs. Switches enable selection of 2-, 3-, or 4-wire RTD connection. The MTL5582B should be considered as an alternative, non-configurable MTL5573, 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.

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 (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@20°C
<0.15Ω at excitation current 1 - 5mA
<0.25Ω at excitation current 0.5 - 1mA

MTL5582B



LED indicator
Green: power indication
Power requirements, Vs
33mA at 24V
35mA at 20V
28mA at 35V
Maximum power dissipation within unit
0.8W at 24V
1.0W at 35V
Safety description
Terminals 1 and 3
U_o = 1.2V I_o = 4mA P_o = 1.2mW U_m = 253V rms or dc
Non-energy-storing apparatus ≤ 1.5V, ≤ 0.1A, ≤ 25mW; can be connected without further certification into any IS loop with an open circuit voltage < 5V.
Terminals 1, 3, 4 and 5
U_o = 6.51V I_o = 10mA P_o = 17mW

SIL capable
These models have been assessed for use in IEC 61508 functional safety applications up to SIL 1.
See data on MTL web site and refer to the safety manual.

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MTL5599
DUMMY ISOLATOR

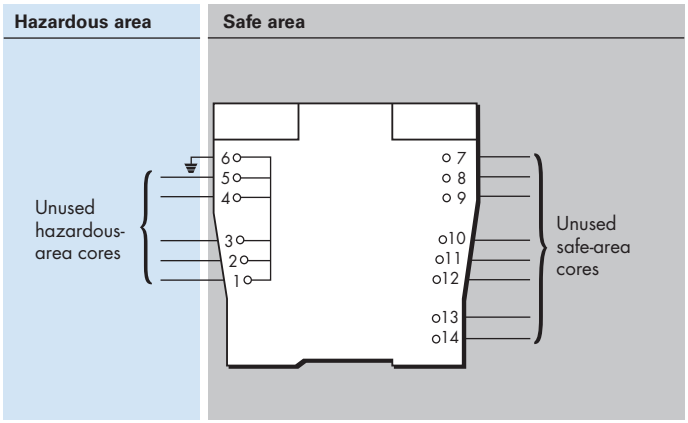
The primary function of the MTLx599, which can be used with all other MTLx500 range of units, is to provide termination and earthing facilities for unused cable cores from hazardous areas.

SPECIFICATION

See also common specification

Weight
60g

MTL5599



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MTL5051
SERIAL-DATA COMMS ISOLATOR

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

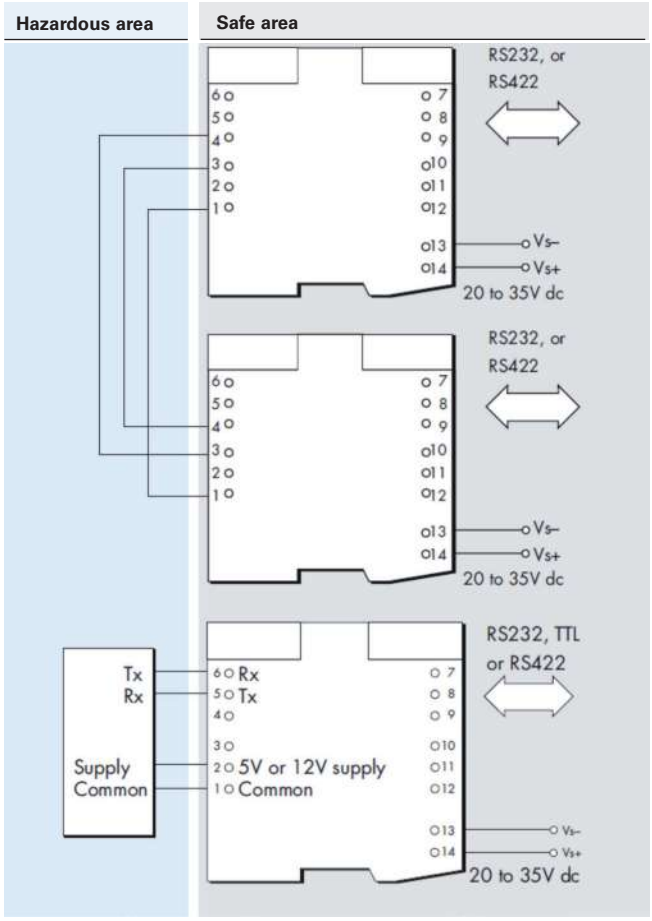
Safety description
Terminals 1,2,3,4 only 14V, 800mW, 192mA
Terminals 1,3,4 only 14V, 350mW, 88mA
Terminals 1,2,3 only 14V, 450mW, 108mA
Terminals 1,5,6 only 15V, 70mW, 35mA
Terminals 1,2,5,6 only 20V, 460mW, 139mA
Terminals 1,2,3,4,5,6 only 20V, 810mW, 227mA

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 fullduplex data across hazardous areas, as shown above. Current switching is used to minimise the bandwidth-limiting effects of long cables.

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.



MTL5051 Terminals	MTI640 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

Terminal	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

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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MTL5314
TRIP AMPLIFIER

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

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 MTL5541 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

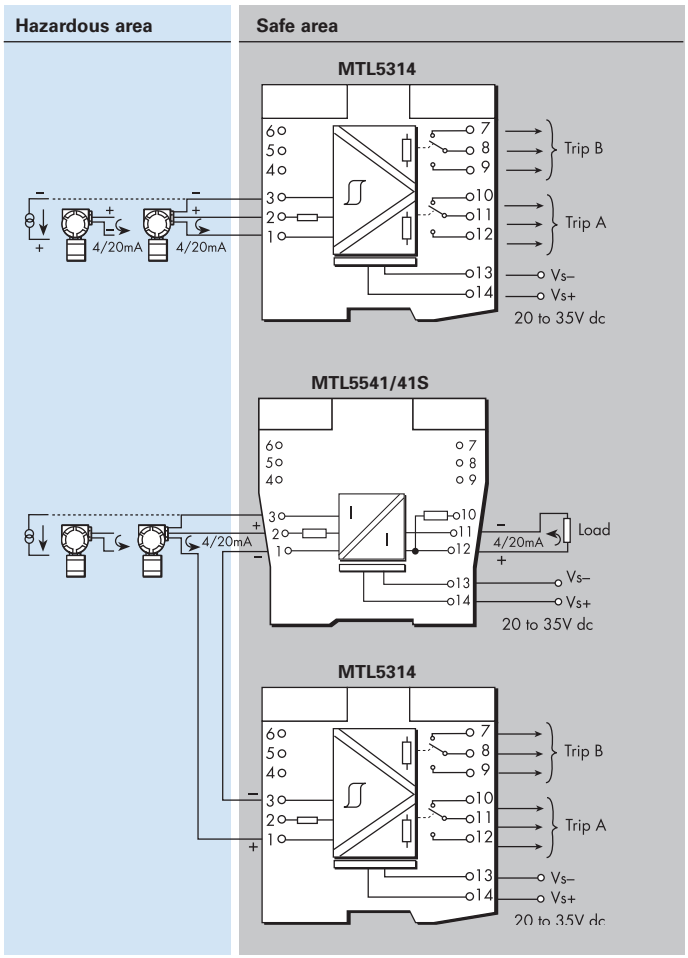
Contact rating	250V ac, 2A, cosø >0.7 40V dc, 2A, resistive load
Contact life expectancy	3.3x105 operations

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
4	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.

Publication No.
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MTL5500 RANGE
COMMON SPECIFICATIONS

Please go to our website at www.mtl-inst.com for the latest information regarding safety approvals, certificates and entity parameters.

Connectors

Each unit is supplied with signal connectors, as applicable. When using crimp ferrules for the hazardous or non-hazardous (safe) signal connectors the metal tube length should be 12mm and the wire trim length 14mm.

Isolation

250V rms, tested at 1500V rms minimum, between safe- and hazardous-area terminals.

MTL5500: 250V rms between safe-area circuits and power supply

Supply voltage

20 – 35V dc

Location of units

Safe area

Terminals

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

Mounting

MTL5500

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

Ambient temperature limits

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

Humidity

5 to 95% relative humidity

Weight

Approximate (except where indicated)

MTL5500 150g

EMC

To EN61326 and NE21*

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

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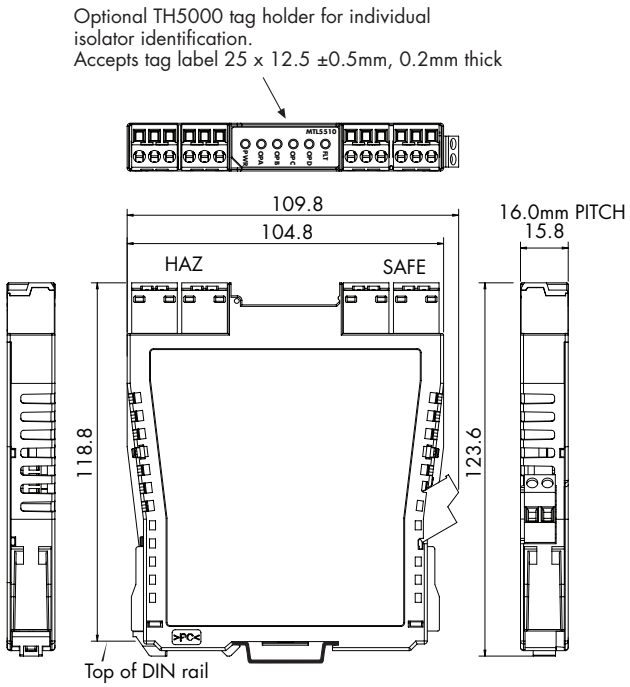
DIMENSIONS (MM)

MTL5500



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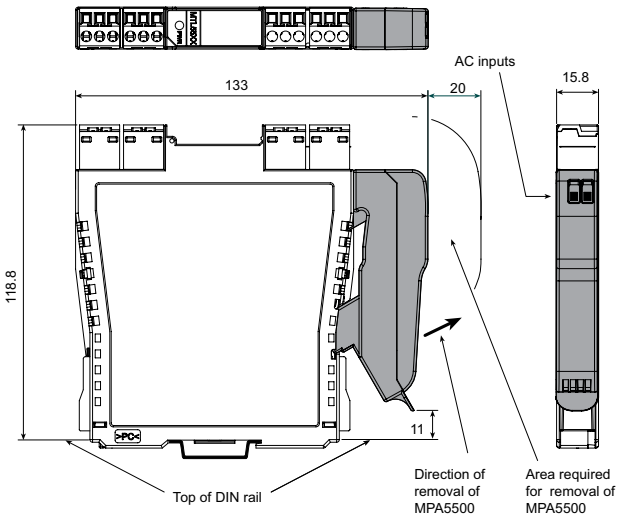
MPA5500
A.C. POWER ADAPTOR

The MPA5500 enables any MTL5500 module that is normally powered from a nominal 24V DC supply (i.e. those that are not loop-powered) to be powered from a high-voltage AC supply.

It plugs into the power socket (terminals 13 and 14) of an MTL5500 module and clips securely onto the module housing. The 25V DC power output from the adaptor is sufficient to supply a single module and can be connected to any normal AC power source.

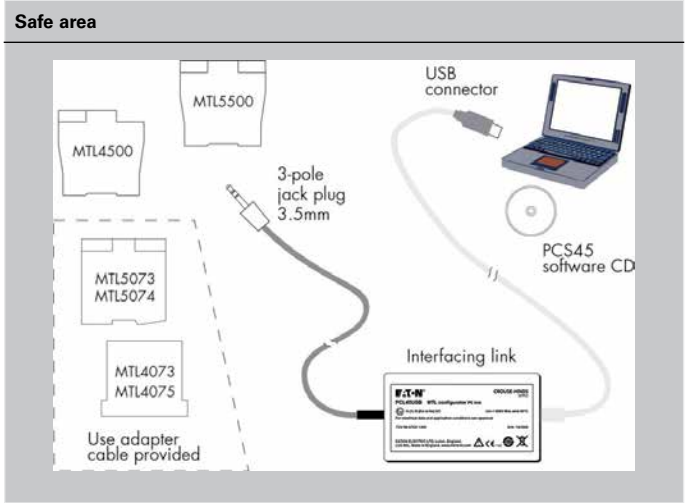


SPECIFICATION

Input voltage
85 – 265V AC, (45–65Hz)
Efficiency
71% typ. at 230V AC
Power dissipation
1.2W typ at 230V AC.
Input terminals
Cage-clamp terminals accommodating conductors up to 1.5mm^2 stranded or 16AWG single-core
Input protection
internal fuse, not user serviceable
Output voltage
25Vdc ± 10%
Output current
120mA at 25V
Ambient temperature
Operating: –20 to +60°C
Storage: –40 to +80°C
Mounting
Plugs into and clips onto MTL5500 range I/O module
It is not for use with any equipment other than MTL5500.
Humidity
5 to 95% relative humidity
Mechanical
Ingress Protection: IP20
Material: polycarbonate
Weight: 28g approx.
Standards compliance
EN 61326, EN 61010

PCS45/PCL45USB
CONFIGURATOR
FOR MTL CONVERTERS

The PCS45/PCL45USB configurator allows MTL converters to be configured from a standard PC running a Microsoft® Windows® operating system. It comprises PC software, provided on a CD (PCS45), and an ATEX certified interfacing link (PCL45USB). Converters can be configured from the safe area, while on-line, and configurations can be saved to disk and printed out when required. It is suitable for use with MTL4000, MTL4500, MTL5000 and MTL5500 range of products.



SPECIFICATION

PCL45USB hardware
Location
Safe area
Connections
PC side: USB B(F) socket
Converter side: cable with 3.5mm jackplug, 3-pole for MTL4500 and MTL5500 range of converters. An adapter cable is provided for other earlier MTL converters.
Cable lengths
Converter side (fitted): 1.5m
USB cable A(M) to B(M) (supplied): 2m
Ambient temperature limits
–10°C to +60°C operating
–20°C to +70°C storage
Humidity
5 to 95% relative humidity (non-condensing)
Weight
200g
PCS45 Configuration software
Compatible with Windows XP, Win7, Win8.
Consult MTL for operation with any other operating system.
Software medium
PCS45 supplied on CD
Updates are available at www.mtl-inst.com
Recommended minimum PC configuration
Microsoft Windows XP, Win7, Win8
20MB of available hard disc space
CD ROM drive
Available USB port
Printer (local or network)

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PSG60E24RM
24V 2.5A PSU
24Vdc Power supply, DIN rail mounting, mains input.

A general purpose 24V dc power supply for use with MTL isolator and barrier product ranges. Single 24V output with adjustable voltage and status indication.

For mounting on 35mm top hat DIN rail.

(replacement for MTL5991)

Terminals	Function
L	Mains input line
N	Mains input neutral
E	Earth
+	24V dc+
-	24Vdc

SPECIFICATION See also common specification

AC input range
85Vac to 264Vac, 47 to 63Hz

DC input range
120Vdc to 375Vdc

DC output
24V (adjustable 24-28V)

Output current
2.5A (3,75A for 5s)

Main interruption holdup time
>20ms

Efficiency
90%

Input to Output isolation
4kVac

Isolation Input/output to ground
1.5kVac

Housing material
Aluminium

Dimensions L x W x H
121 x 32 x 125mm

Weight
370g

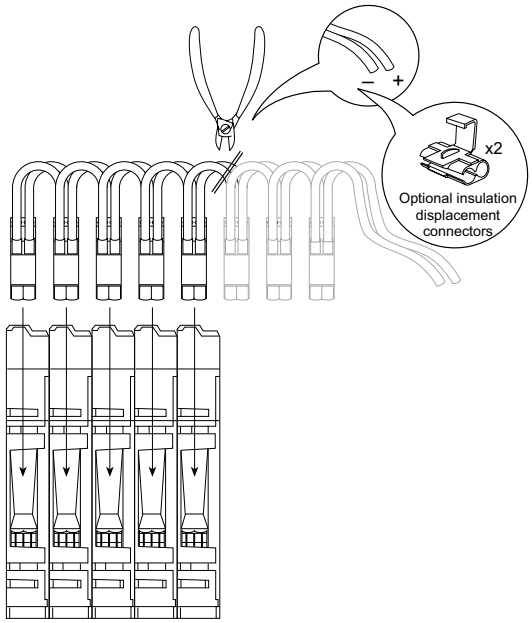
Wire size
0.3 to 3.3mm^2, AWG 22-12 with removable terminals

Operating Temperature
-20°C to +80°C

Storage Temperature
-25°C to +85°C

MTL5500 RANGE
POWERBUS KITS
PB - 8T,16T,24T,32T

A quick and easy way to distribute DC power to MTL5500 range modules. 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

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 KIT

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.

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MTL5500 Rev5 160418

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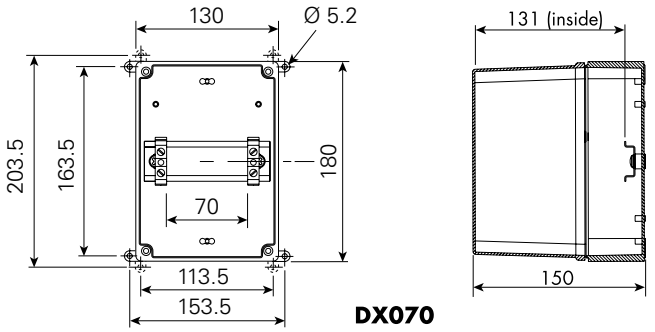
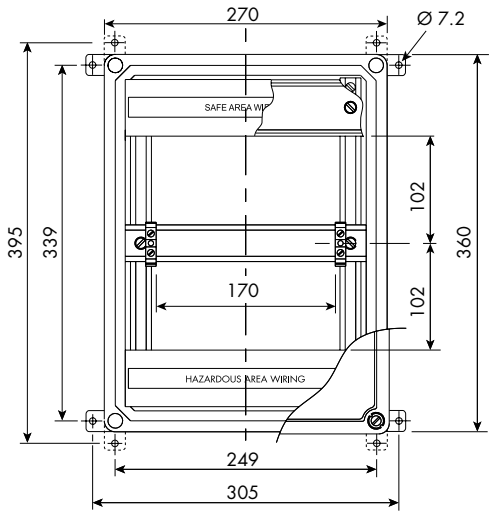
MTL5500 RANGE ENCLOSURES

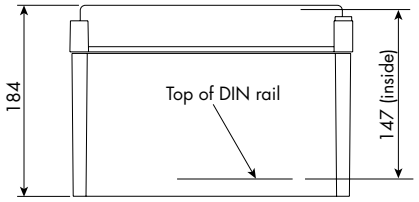
DIMENSIONS (mm) AND MOUNTING



DX070



DX170



SPECIFICATION

Construction

Glass reinforced polycarbonate base - DX070
Glass reinforced polyester base - DX170
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

Items provided

DIN rail - fitted
ETL7000 Earth terminals (2 x) - fitted
"Take care IS" front adhesive label
Cable trunking (DX170 only)

Note: Isolators are not included.

Mounting

Wall fixing lugs provided. For further details refer to INM5500.

Tagging and earth rail

Accommodates MTL5500 range of 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 MTL5500 isolators	
DX070	4	(2)*
DX170	10	(8)*

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

Ambient temperature limits

Dependent on units fitted. See instruction manual INM5500.

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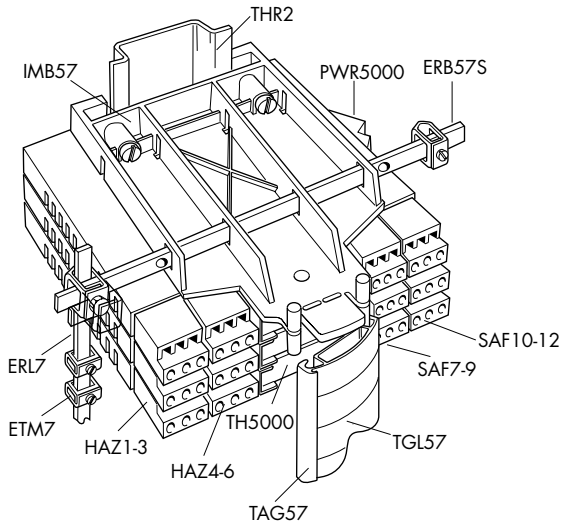
MTL5500 RANGE ACCESSORIES

MTL5500 range of isolators mount quickly and easily onto standard DIN rail. A comprehensive range of accessories simplifies earthing and tagging arrangements.



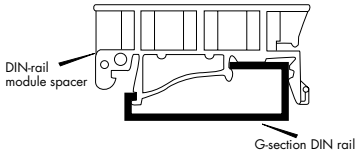
MOUNTING

THR2 DIN rail,1m length

DIN rail to EN50022; BS5584; DIN46277

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

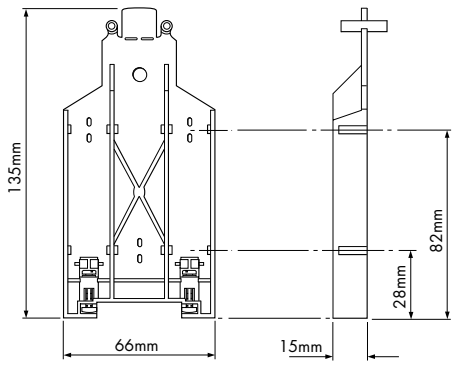
Grey spacer, one required between each MTL5533 or MTL5995-PS and any adjacent module on a DIN rail, to provide 10mm air-circulation space between modules



EARTH RAILS AND TAG STRIP

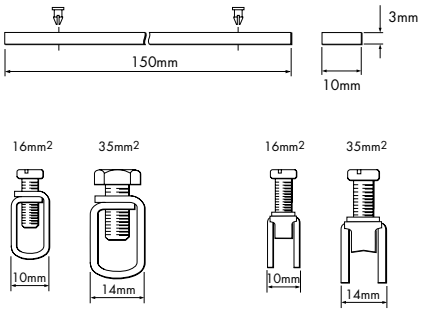
IMB57 Insulating mounting block

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



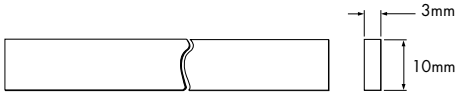
ERB57S Earth-rail bracket, straight

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



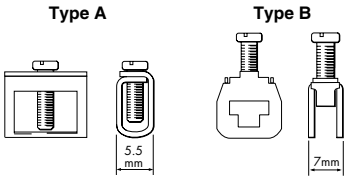
ERL7 Earth rail, 1m length

Nickel-plated; may be cut to length.



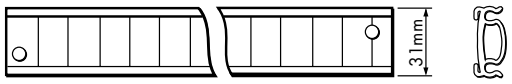
ETM7 Earth terminal, bag of 50

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 tagging strip label suitable for MTL5000 or MTL5500 modules.



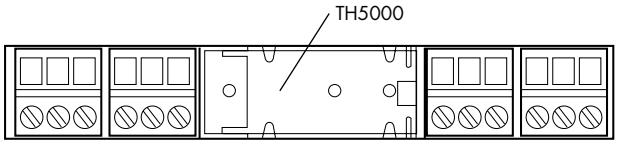
TGL57 Tagging strip labels, set of 10 x 0.5m

Spares replacement, for use with TAG57 tagging strip. Suitable for MTL5000 or MTL5500 modules.

INDIVIDUAL ISOLATOR IDENTIFICATION

TH5000 tag holders

Each isolator may be fitted with a clear plastic tag holder, as shown below. Order TH5000, pack of 20.



CONNECTORS

Each MTL5500 unit is supplied with signal and power connectors, as applicable.

Spares replacement connectors are available separately; see ordering information.

See also
'MTL5500 range of powerbus kits'

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ORDERING INFORMATION

MTL5500 range isolators
Specify part number: **eg, MTL5511, MTL5575**

Individual isolator identification

TH5000	Tag holder (Pack of 20)

Connectors - MTL4500 & MTL5500

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
HAZ-CJC2	Hazardous-area plug, terminals 4 and 6 with cold-junction sensor
SAF1-3	Safe-area plug, terminals 1, 2 and 3
SAF4-6	Safe-area plug, terminals 4, 5 and 6

Connectors - MTL5500 only

SAF7-9	Safe-area plug, terminals 7, 8 and 9
SAF10-12	Safe-area plug, terminals 10, 11 and 12
PWR5000	Power connector, terminals 13 and 14

PowerBus - MTL5500 only

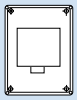
PB-8T	Powerbus Kit for up to 8 isolators
PB-16T	Powerbus Kit for up to 16 isolators
PB-24T	Powerbus Kit for up to 24 isolators
PB-32T	Powerbus Kit for up to 32 isolators

MTL5500 mounting accessories

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

MTL5500 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



MTL5500 enclosures

DX070	Enclosure for MTL5500 x 4
DX170	Enclosure for MTL5500 x 10

Configurator and software

PCL45USB	Configurator, PC interface and software
PCS45	PC software

Please go to our website at www.mtl-inst.com for the latest information regarding safety approvals, certificates and entity parameters.

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