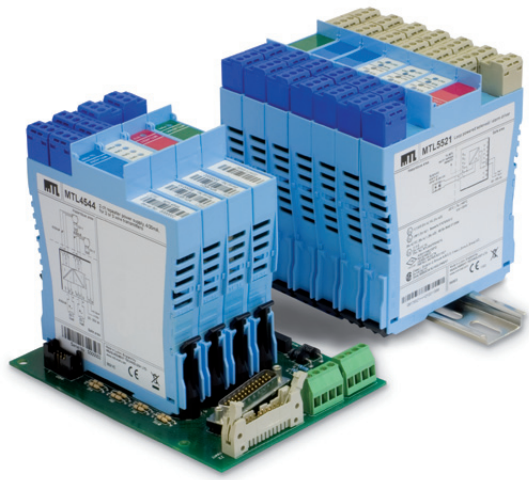
technical datasheet

MTL4500/MTL5500 Series

Intrinsic safety (IS) isolators for hazardous area interfacing

- 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 and earth-fault protection
- Compatible with preceding MTL isolator series for pluggable replacements



MTL's latest generation of 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 Series to bring the benefits of new developments in galvanic isolation without compromising the reliability of the designs from which they have evolved.

The backplane mounting MTL4500 Series is designed with system vendors in mind for "project-focussed" applications such as Distributed Control System (DCS), Emergency Shutdown Systems (ESD) and Fire and Gas monitoring (F&G).

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 Series 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 MTL4523/5523 solenoid/alarm drivers and the isolating drivers. Analogue input units such as the MTL4541/5541 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.

Both new series have been designed for compatiblity with earlier models. The MTL4500 series provides plug-replacements for earlier MTL4000 series units, while the MTL5500 models can easily replace MTL5000 series units. Each offer the latest in modern technology and efficiency without compromise.

COOPER Crouse-Hinds

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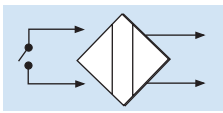
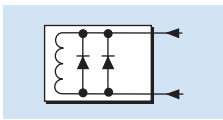
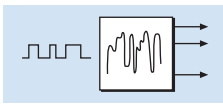
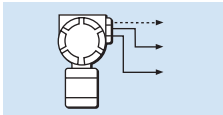
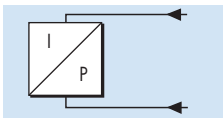
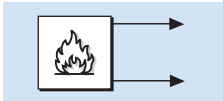
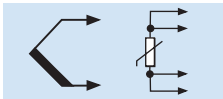
ISOLATOR FUNCTION SELECTOR

MTL4500 (Backplane)		*MTL5500 (DIN-rail)*	*Channels*	*Function*
Digital Input				
MTL4501-SR		MTL5501-SR	1	fail-safe solid-state output + LFD alarm
MTL4504		–	1	switch/prox input, phase reversal + LFD
MTL4510		MTL5510	4	switch/prox input, solid-state output
MTL4510B		MTL5510B	4	multi-function switch/prox input, solid-state output
MTL4511		MTL5511	1	switch/prox input, c/o relay output
MTL4513		MTL5513	2	switch/prox input, solid-state output
MTL4514		MTL5514	1	switch/prox input, relay + LFD
MTL4516		–	2	switch/prox input, relay + LFD outputs
MTL4516C		MTL5516C	2	switch/prox input, c/o relay + LFD outputs
MTL4517		MTL5517	2	switch/prox input, relay + LFD outputs
Digital Output				
MTL4521		MTL5521	1	loop powered solenoid driver
MTL4521L		–	1	loop powered solenoid driver, IIC
–		MTL5522	1	loop powered solenoid driver, IIB
MTL4523		MTL5523	1	solenoid driver with LFD
MTL4523L		–	1	loop powered solenoid driver with LFD
MTL4523R		–	1	solenoid driver with reverse LFD
MTL4523V		MTL5523V	1	solenoid driver with LFD, IIC
MTL4524		MTL5524	1	switch operated solenoid driver
MTL4524S		–	1	switch operated solenoid driver, 24V override
MTL4525		MTL5525	1	switch operated solenoid driver, low power
MTL4526		MTL5526	2	switch operated relay
Pulse & Vibration				
MTL4531		MTL5531	1	vibration probe interface
MTL4532		MTL5532	1	pulse isolator, digital or analogue output
MTL4533		MTL5533	2	vibration probe interface
Analogue Input				
MTL4541		MTL5541	1	2/3 wire transmitter repeater
MTL4541A		MTL5541A	1	transmitter repeater, passive input
MTL4541AS		MTL5541AS	1	transmitter repeater, passive input, current sink
MTL4541S		MTL5541S	1	2/3 wire transmitter repeater, current sink
MTL4544		MTL5544	2	2/3 wire transmitter repeater
MTL4544A		MTL5544A	2	transmitter repeater, passive input
MTL4544AS		MTL5544AS	2	transmitter repeater, passive input, current sink
MTL4544S		MTL5544S	2	2/3 wire transmitter repeater, current sink
MTL4544D		MTL5544D	1	2/3 wire transmitter repeater, dual output
Analogue Output				
MTL4546		MTL5546	1	4-20mA smart isolating driver + LFD
MTL4546Y		MTL5546Y	1	4-20mA smart isolating driver + oc LFD
MTL4549		MTL5549	2	4-20mA smart isolating driver + LFD
MTL4549Y		MTL5549Y	2	4-20mA smart isolating driver + oc LFD
Fire & Smoke				
MTL4561		MTL5561	2	loop-powered, for fire and smoke detectors
Temperature Input				
MTL4575		MTL5575	1	temperature converter, THC or RTD
MTL4576-RTD		MTL5576-RTD	2	temperature converter, RTD
MTL4576-THC		MTL5576-THC	2	temperature converter, THC
MTL4581		MTL5581	1	mV/mV isolator
–		MTL5582	1	RTD/RTD isolator
General				
MTL4599		MTL5599	–	dummy module
MTL4599N		–	–	general purpose feed-through module

MTL4501-SR – MTL5501-SR
FAIL-SAFE SWITCH/PROXIMITY-DETECTOR INTERFACE
with LFD

With the MTLx501-SR, a fail-safe switch/proximity detector located in the hazardous area can control an isolated fail-safe electronic output. The MTLx501-SR also provides relay alarm contacts to signal line-fault conditions. The MTLx501-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

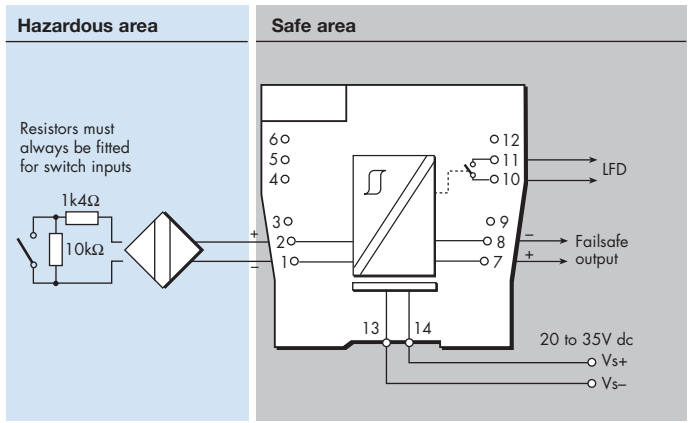
Note: Is = sensor current

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

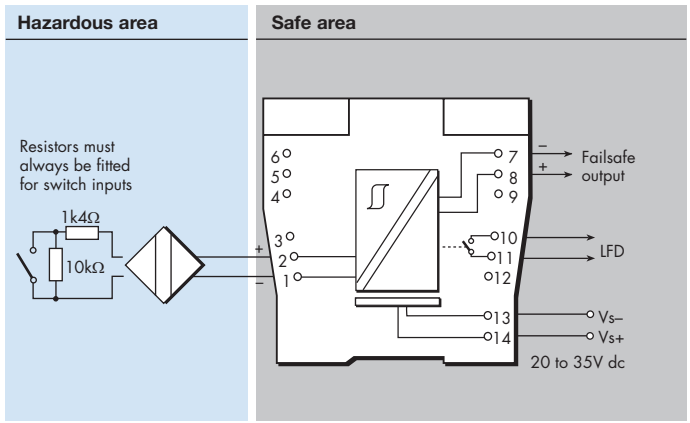
Line fault detection (LFD)
LFD relay output: contacts open when line fault detected
Switch characteristics: 0.3A 110V ac/dc; 1A 35V dc; 30W/33VA

Safety integrity level (SIL)
Highest level in single in-line subsystem SIL3
(in accordance with IEC61508-2)

MTL4501-SR



MTL5501-SR



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

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

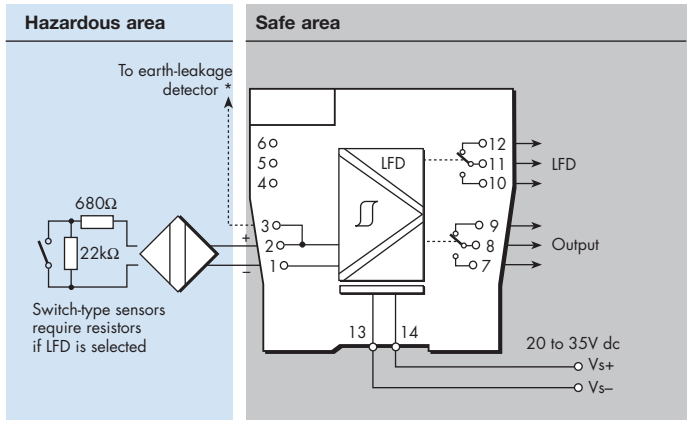
Safety description
U_o = ±9.7V, I_o = 30mA, P_o = 0.07W, C_i = 0nF, L_i = 0mH
U_m = 253V

Note: switch-type sensors must be fitted with resistors as shown

MTL4504
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel with LFD and phase reversal

The MTL4504 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. MTBF information for the LFD relay is available from MTL to allow the failure rate for the LFD relay to be calculated when used in the critical path with the output relay for safety critical applications. Switches are provided to select phase reversal and to enable the line fault detection.

MTL4504



* Signal plug HAZ1-3 is required for access to this function

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 de-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: 10W, 0.5A, 35V dc

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. See data on MTL web site.

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MTL4510 – MTL5510
SWITCH/ PROXIMITY DETECTOR INTERFACE
4-channel, digital input

The MTLx510 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

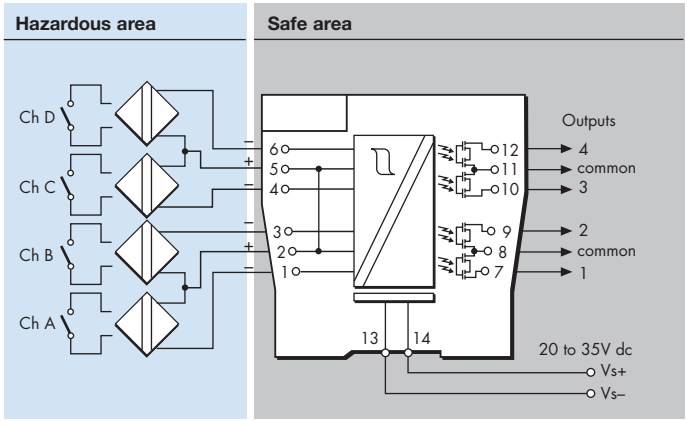
See also common specification

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

MTL4510



MTL5510

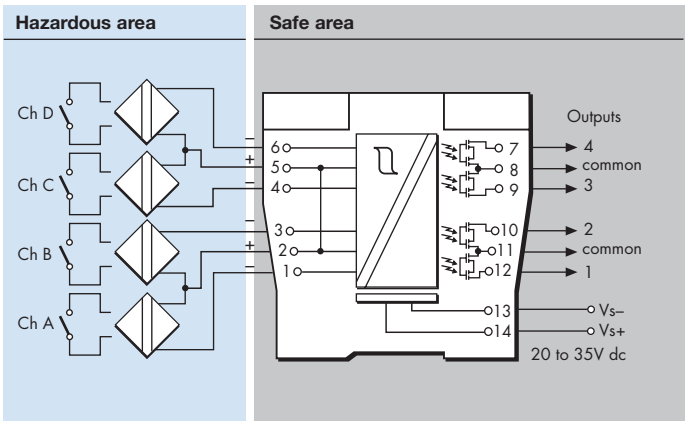


Table 1 - Mode options

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 for further mode information.

MTL4510B – MTL5510B
SWITCH/ PROXIMITY DETECTOR INTERFACE
4-channel, multi-function, digital input

The MTL4510B 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

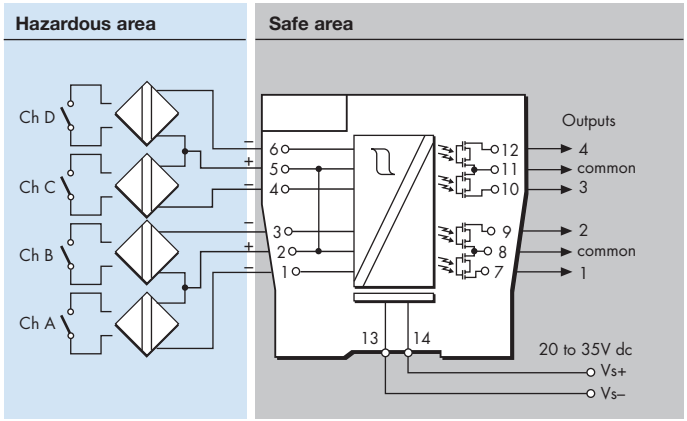
See also common specification

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

MTL4510B



MTL5510B

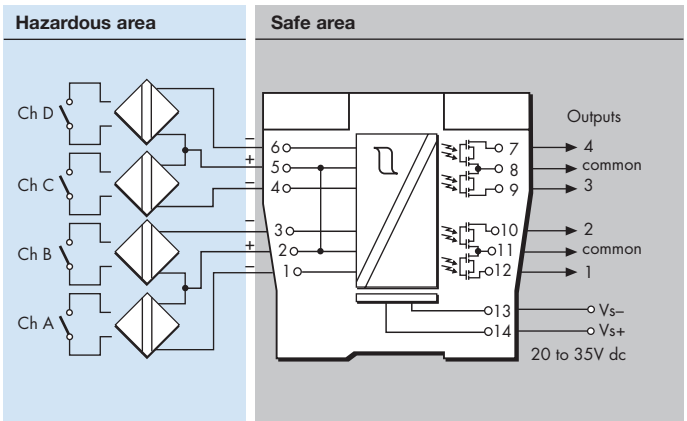


Table 1 - Mode options

MODE	Function	Equivalent*
0	4-ch switch input,	MTLx510
1	2-ch each channel one input, two outputs	MTL4016
2	Same as mode 1 with phase reversed	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	4-ch switch input,	MTLx510
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 for further mode information.

MTL4511 – MTL5511
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, with line fault detection

The MTLx511 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

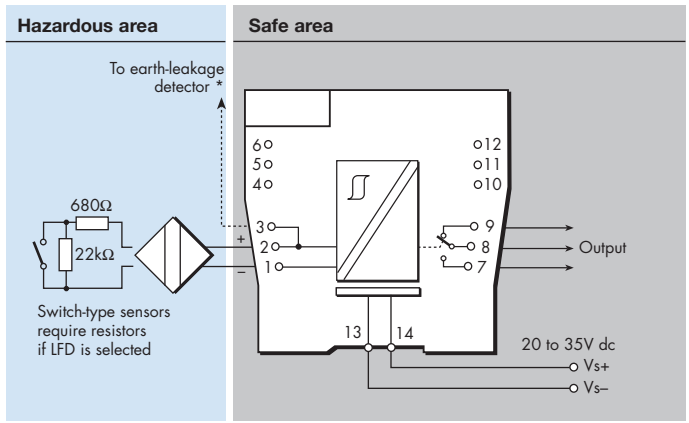
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. A line fault is indicated by an LED. The channel output relay is de-energised if an input line fault is detected.
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit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

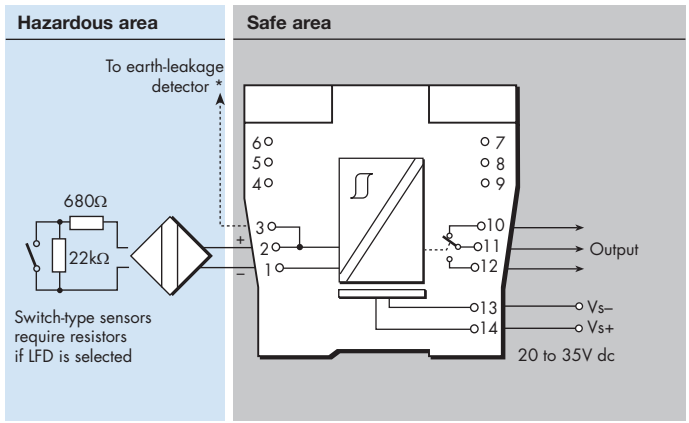
Relay characteristics

	MTL4511	MTL5511
Response time:	10ms maximum	10ms maximum
Contact rating:	10W, 0.5A, 35V dc	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load

MTL4511



MTL5511



* Signal plug HAZ1-3 is required for access to this function

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. See data on MTL web site.

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MTL4513 – MTL5513
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, line fault detection, phase reversal

The MTLx513 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

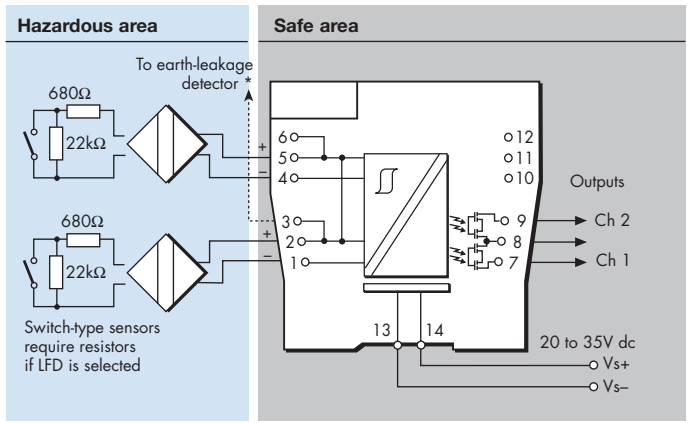
Line fault detection (LFD) (when selected)
User-selectable for each channel via switches on the side of the unit. Line faults are indicated by an LED for each channel.
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit alarm on if R_{in} < 100Ω
Short-circuit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

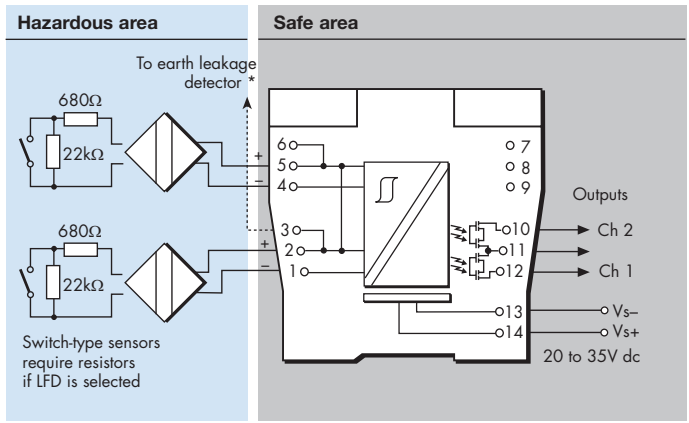
Safe-area outputs
Floating solid-state outputs compatible with logic circuits

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

MTL4513



MTL5513



* Signal plug HAZ1-3 is required for access to this function

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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MTL4514 – MTL5514
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, line fault detection, phase reversal

The MTLx514 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

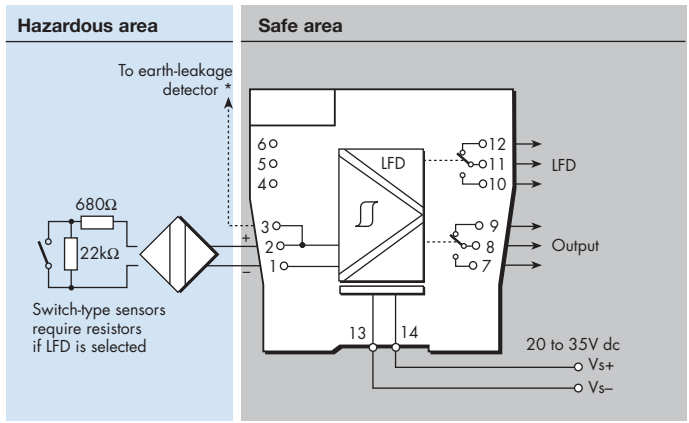
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED. Line fault relay is energised and channel output relay de-energised if input line-fault detected
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in}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

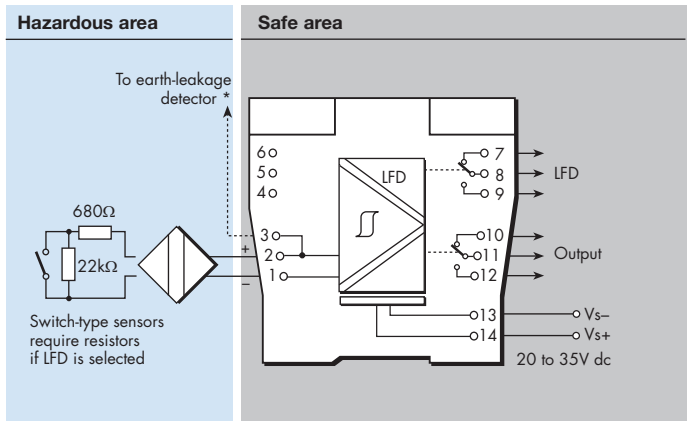
Relay characteristics

	MTL4514	MTL5514
Response time:	10ms maximum	10ms maximum
Contact rating:	10W, 0.5A, 35V dc	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load

MTL4514



MTL5514



* Signal plug HAZ1-3 is required for access to this function

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. See data on MTL web site.

MTL4516/C – MTL5516C
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, with line fault detection

The MTLx516/C enable 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

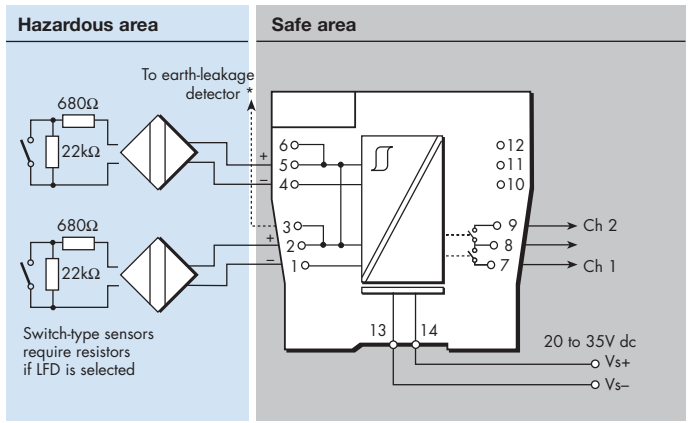
Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED for each channel. The channel output relay is de-energised if an input line fault is detected.
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} >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

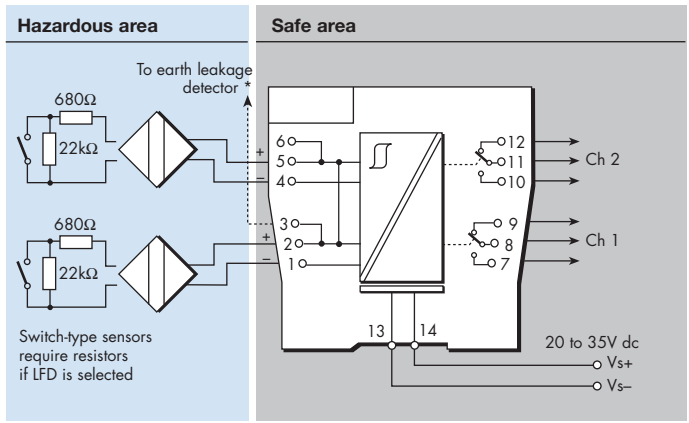
Relay characteristics

	MTL4516/C	MTL5516C
Response time:	10ms maximum	10ms maximum
Contact rating:	10W, 0.5A, 35V dc	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load

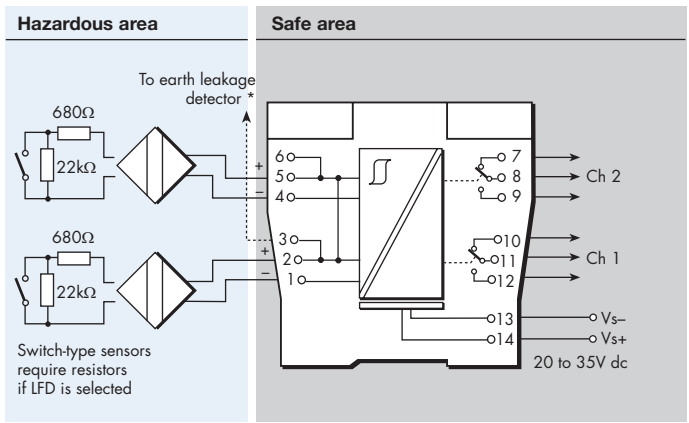
MTL4516



MTL4516C



MTL5516C



* Signal plug HAZ1-3 is required for access to this function

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

Maximum current consumption
35mA at 24V

Power dissipation within unit
0.84W 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. See data on MTL web site.

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MTL4517 – MTL5517
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, line fault detection, phase reversal

The MTLx517 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

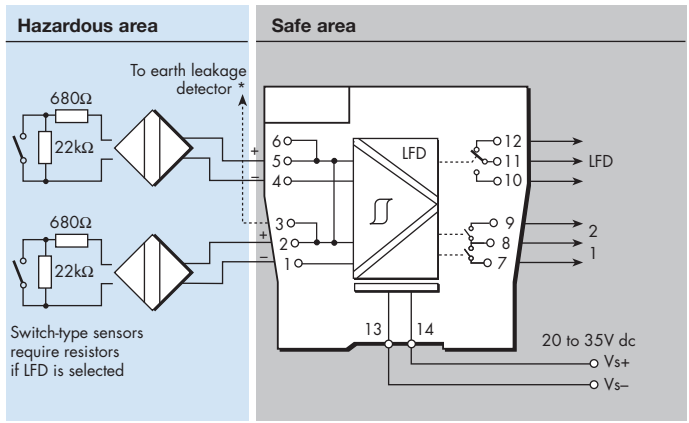
Line fault detection (LFD) (when selected)
User selectable by switches on the side of the module.
Line faults are indicated by the LED for each channel.
Line fault relay is energised and channel output relay de-energised if input line-fault detected
Open-circuit alarm on if I_{in} < 50µA
Open-circuit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

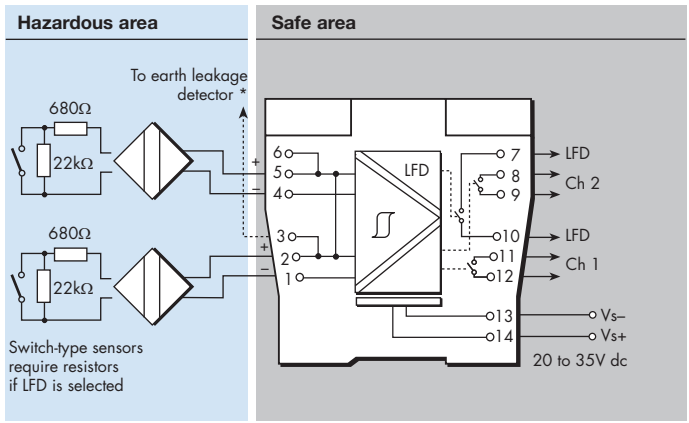
Relay characteristics

	MTL4517	MTL5517
Response time:	10ms maximum	10ms maximum
Contact rating:	10W, 0.5A, 35V dc	250V ac, 2A, cosØ >0.7, 40V dc, 2A, resistive load

MTL4517



MTL5517



* Signal plug HAZ1-3 is required for access to this function

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

Maximum current consumption
35mA at 24V

Power dissipation within unit
0.84W 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. See data on MTL web site.

MTL4521/L – MTL5521
SOLENOID/ ALARM DRIVER
loop-powered, IIC

The MTLx521 and the MTL4521L are loop-powered modules which enable a device located in the hazardous area to be controlled from the safe area. They can all drive a certified intrinsically safe low-power load, as well as non-energy-storing simple apparatus such as an LED.

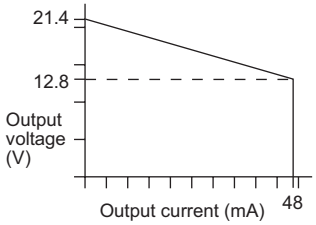
SPECIFICATION

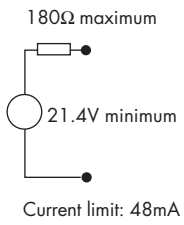
See also common specification

Number of channels
One

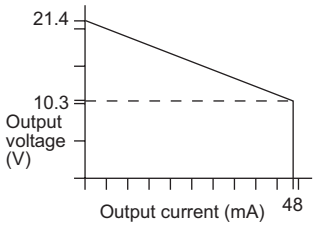
Location of load
Zone 0, IIC, T4–-6 hazardous area if suitably certified
Div. 1, Group A hazardous location

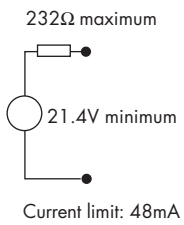
Minimum output voltage (MTLx521) **Equivalent output circuit**





Minimum output voltage (MTL4521L) **Equivalent output circuit**





Input voltage
20 to 35V dc

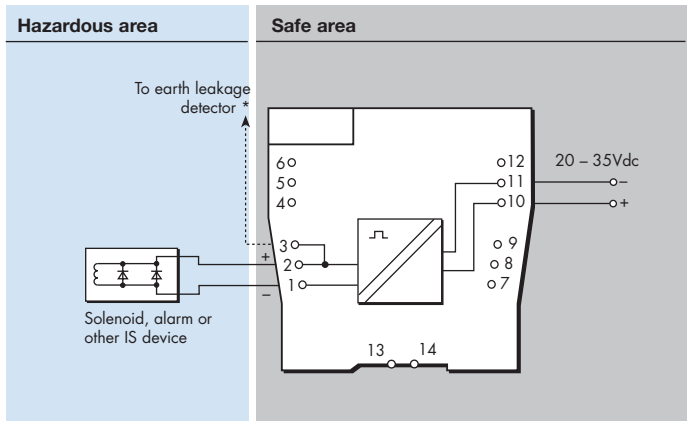
Hazardous-area output (MTLx521)
Minimum output voltage: 12.8V at 48mA
Maximum output voltage: 24V from 180Ω
Current limit: 48mA

Hazardous-area output (MTL4521L)
Minimum output voltage: 10.3V at 48mA
Maximum output voltage: 24V from 232Ω
Current limit: 48mA

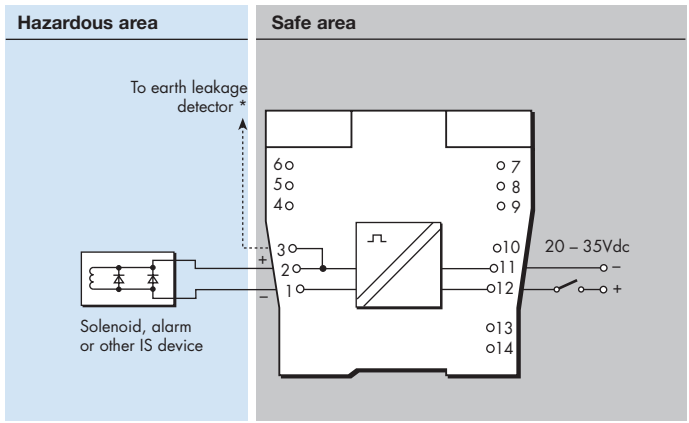
Output ripple
< 0.5% of maximum output, peak to peak

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

MTL4521 / MTL4521L



MTL5521



* Signal plug HAZ1-3 is required for access to this function

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 (MTLx521)
U_o=25V I_o=147mA P_o=0.92W U_m = 253V rms or dc

Safety description (MTL4521L)
U_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. See data on MTL web site.

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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.

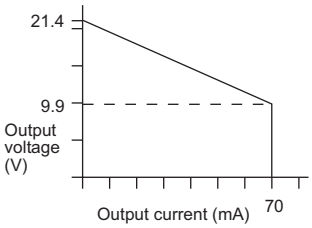
SPECIFICATION

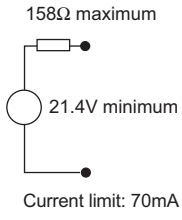
See also common specification

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

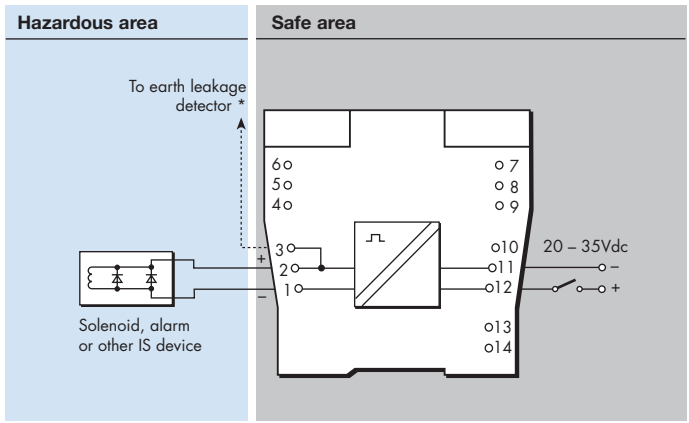
Hazardous-area output

Minimum output voltage:	9.9V at 70mA
Maximum output voltage:	24V from 158Ω
Current limit:	70mA

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

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

MTL5522



* Signal plug HAZ1-3 is required for access to this function

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. See data on MTL web site.

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MTL4523/R – MTL5523
SOLENOID/ALARM DRIVER
with line fault detection, IIC

With the MTLx523 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 MTLx523, or energises MTL4523R, if a field line is open or short–circuited. Earth fault detection can be provided by connecting an MTL4220 earth leakage detector to terminal 3.

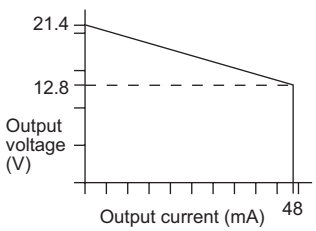
SPECIFICATION

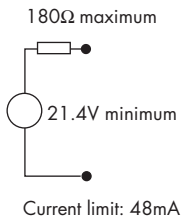
See also common specification

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: 12.8V at 48mA
Maximum output voltage: 24V from 180Ω
Current limit: 48mA

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

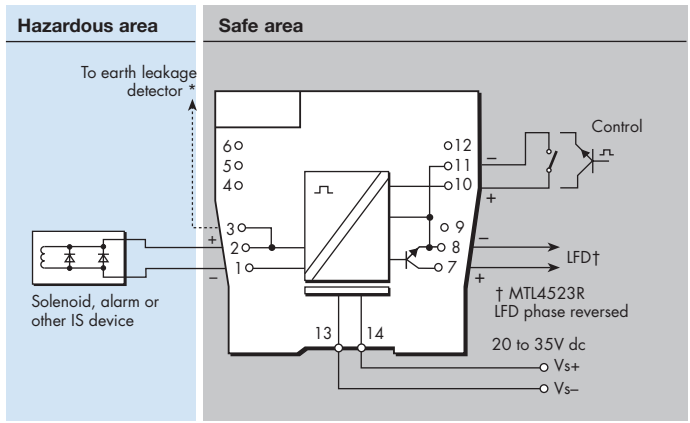
Control input
Suitable for switch contacts, an open collector transistor or logic drive.
(Internal contact wetting voltage 12V @ 0.2mA contact closed. Not suitable for voltage control via series diode.)
Output turns on if input switch closed, transistor on or < 1.4V applied across control input
Output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

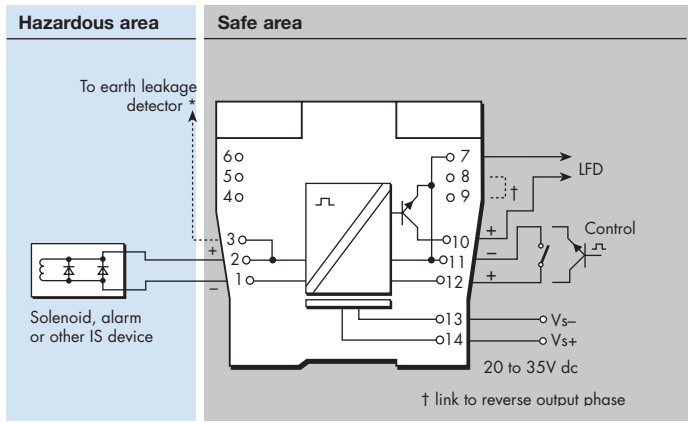
Line fault detection (LFD)
Open or short circuit in field cabling *de-energises** solid state line-fault signal.
LFD transistor is switched *on**, provided that the field circuit impedance is > 55Ω and < 4kΩ.
** These conditions are reversed for the MTL4523R. This is to permit parallel connection of alarms between modules to provide a group alarm output.*

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

MTL4523 / MTL4523R



MTL5523



* Signal plug HAZ1-3 is required for access to this function

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. See data on MTL web site.

MTL4523L
SOLENOID/ ALARM DRIVER
loop-powered with line fault detection, IIC

With the MTL4523L 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 when the output is energised, is signalled by a safe-area solid-state switch which energises if a field line is open or short-circuited. Earth fault detection can be provided by connecting an MTL4220 earth leakage detector to terminal 3.

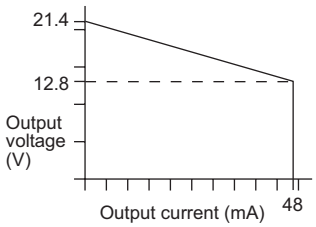
SPECIFICATION

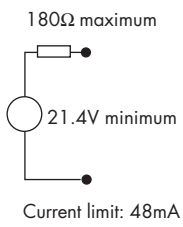
See also common specification

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: 12.8V at 48mA
Maximum output voltage: 24V from 180Ω
Current limit: 48mA

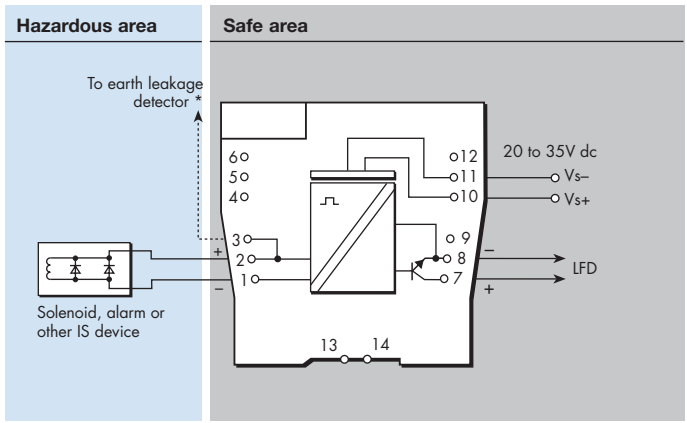
Output ripple
< 0.5% of maximum output, peak to peak

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

Line fault detection (LFD)
Open or short circuit in field cabling energises solid state line fault signal
LFD transistor is switched on, 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
Note: LFD signal is Zener-diode protected against inductive loads

MTL4523L



* Signal plug HAZ1-3 is required for access to this function

LED indicators
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

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. See data on MTL web site.

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MTL4523V - MTL5523V
SOLENOID/ ALARM DRIVER
with line fault detection, IIC

With the MTLx523V 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. Earth fault detection can be provided by connecting an MTL4220 earth leakage detector to terminal 3.

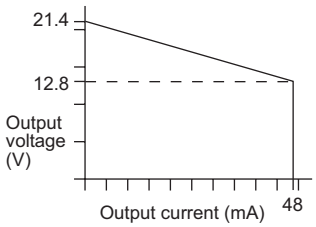
SPECIFICATION

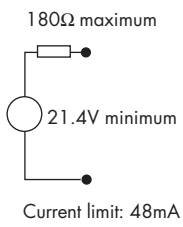
See also common specification

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: 12.8V at 48mA
Maximum output voltage: 24V from 180Ω
Current limit: 48mA

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

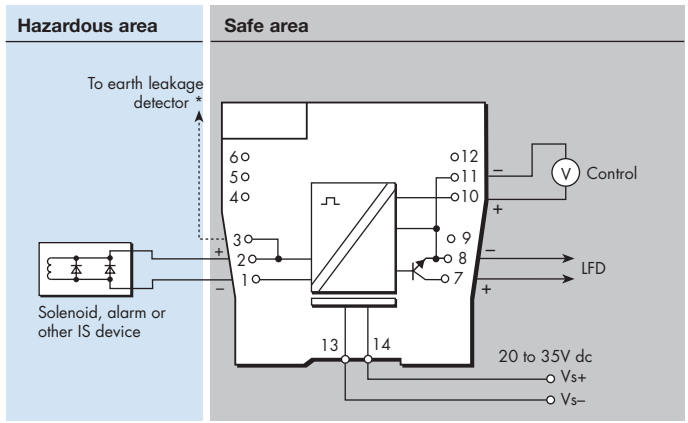
Control input
Suitable for 24V logic drive
Output turns on if > 18V applied across control input
Output turns off if < 5V applied across control input
Maximum control input voltage: 28V
Maximum control system output leakage current: 0.5mA

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

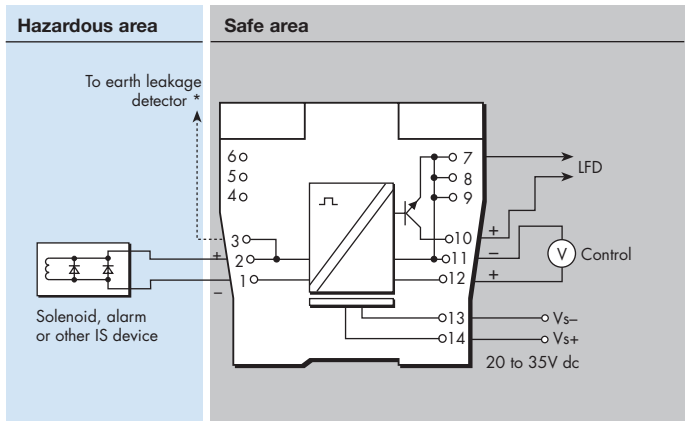
Line fault detection (LFD)
Open or short circuit in field cabling energises solid state line fault signal
LFD transistor is switched on, provided that the field circuit impedance is > 55Ω and < 4kΩ.

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

MTL4523V



MTL5523V



* Signal plug HAZ1-3 is required for access to this function

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

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MTL4524 – MTL5524
SOLENOID/ALARM DRIVER
switch operated with override, IIC

The MTLx524 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 MTL4524 allows a second safe-area switch or logic signal to be connected enabling the output to be disabled to permit, for example, a safety system to override a control signal.

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

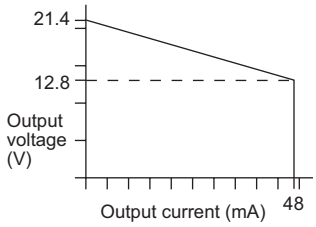
SPECIFICATION

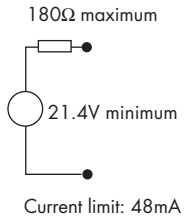
See also common specification

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: 12.8V at 48mA
Maximum output voltage: 24V from 180Ω
Current limit: 48mA

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

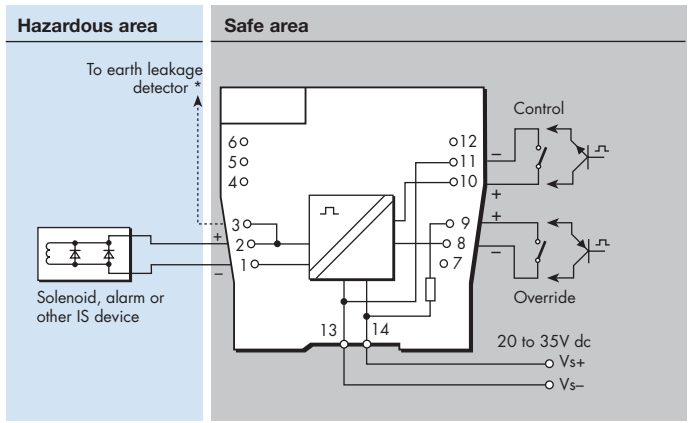
Override input on MTL4524
An open collector transistor or a switch connected across the terminals can be used to turn the output off whatever the state of the control input
0 = transistor on or switch closed
1 = transistor off or switch open

Control and override inputs on MTL4524

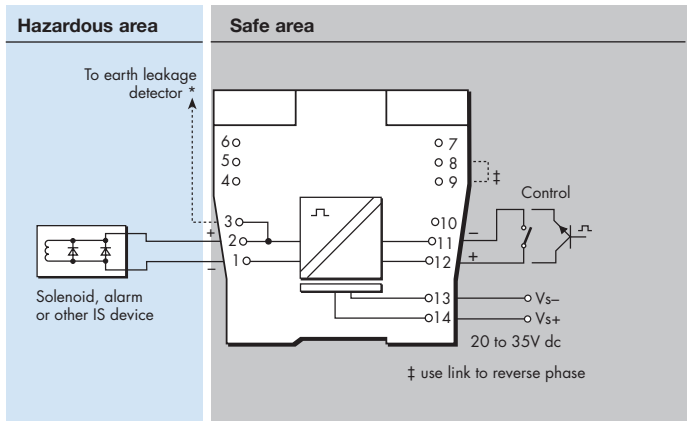
Control input	Override input	Output state
0	0	off
0	1	on
1	0	off
1	1	off

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

MTL4524



MTL5524



* Signal plug HAZ1-3 is required for access to this function

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

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MTL4524S
SOLENOID/ALARM DRIVER
switch operated with 24V override, IIC

The MTL4524S enables an on/off device in a hazardous area to be controlled by a volt-free contact or a floating 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. By connecting a second safe-area voltage, the output can be disabled to permit, for example, a safety system to override a control signal.

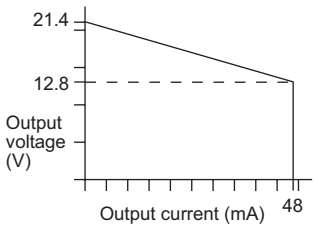
SPECIFICATION

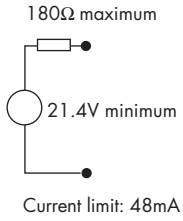
See also common specification

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:	12.8V at 48mA
Maximum output voltage:	24V from 180Ω
Current limit:	48mA

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

Control input (must be fully-floating)
Suitable for switch contacts or an opto-isolator
0 = input switch closed, transistor on or < 1.4V applied
1 = input switch open, transistor off or > 4.5V applied

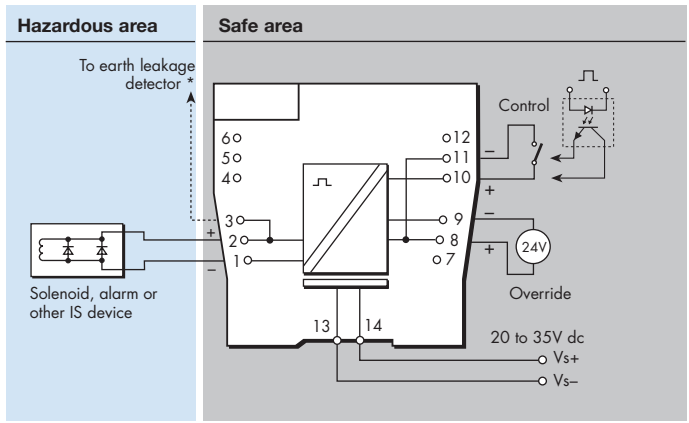
Override input
A 24V logic signal applied across the terminals allows the solenoid/alarm to be operated by the control input. If it is disconnected, the solenoid/alarm is off.
0 = < 2.0V applied across terminals 8 & 9
1 = > 9.0V applied across terminals 8 & 9
(nominal switching point 4.5V)

Control and override inputs

Control input	Override input	Output state
0	0	off
0	1	on
1	0	off
1	1	off

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

MTL4524S



* Signal plug HAZ1-3 is required for access to this function

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

MTL4525 – MTL5525
SOLENOID/ALARM DRIVER
switch operated with override, IIC, low power

The MTLx525 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 MTL4525 allows a second safe-area switch or logic signal to be connected that enables the output to be disabled to permit, for example, a safety system to override a control signal.

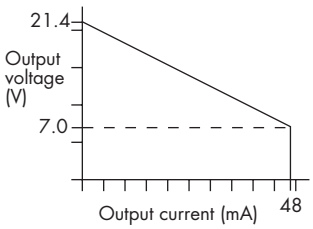
SPECIFICATION

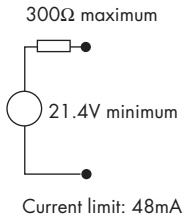
See also common specification

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: 7V at 48mA
Maximum output voltage: 24V from 300Ω
Current limit: 48mA

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

Control input on MTL4525
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

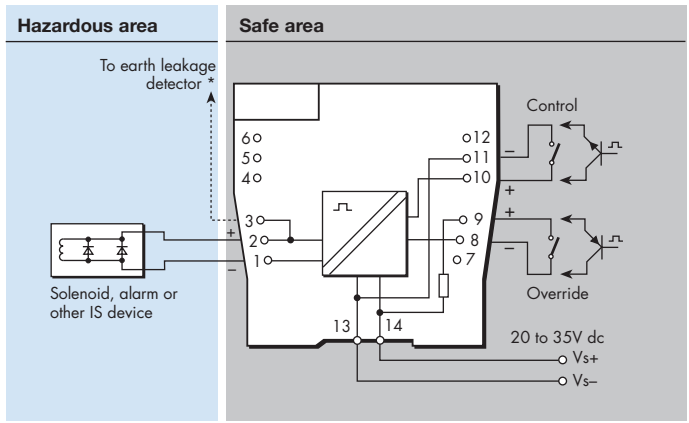
Override input on MTL4525
An open collector transistor or a switch connected across the terminals can be used to turn the output off whatever the state of the control input
0 = transistor on or switch closed
1 = transistor off or switch open

Control and override inputs on MTL4525

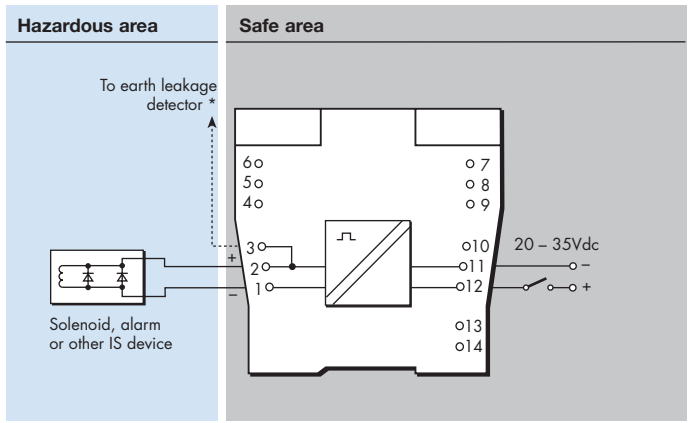
Control input	Override input	Output state
0	0	off
0	1	on
1	0	off
1	1	off

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

MTL4525



MTL5525



* Signal plug HAZ1-3 is required for access to this function

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

MTL4526 – MTL5526
SWITCH-OPERATED RELAY
2–channel IS–output

The MTLX526 enables two separate IS circuits in a hazardous area to be relay-contact controlled by two on-off switches or logic 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

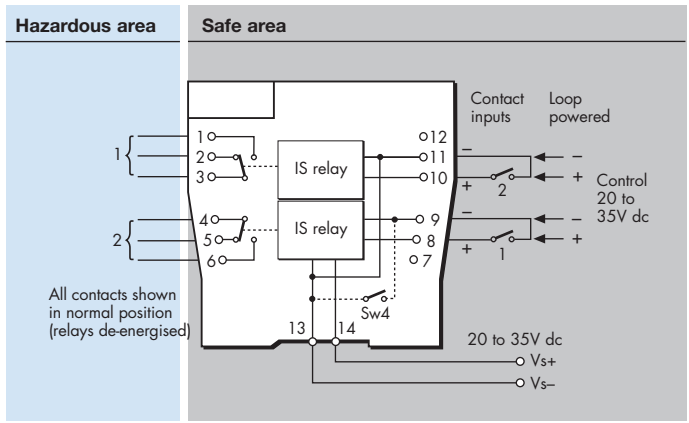
Contacts (suitable for connection to IS circuits)
1–pole changeover per channel

Contact rating
250V dc, limited to 30V dc for IS applications, 2A
(reactive loads must be suppressed)

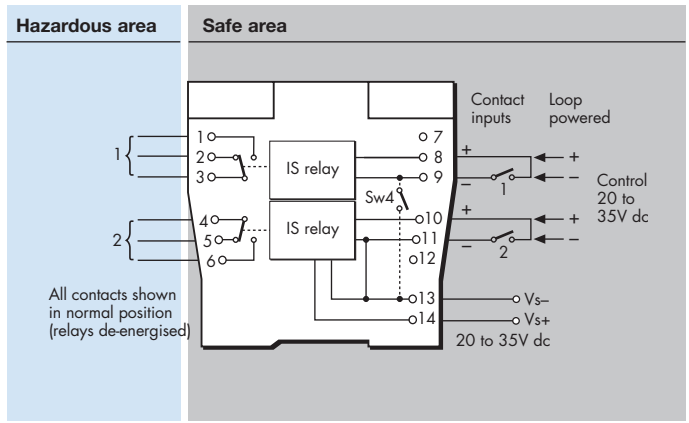
Contact life expectancy
2 x 10^7 operations at maximum IS load

Relay drive (see switch setting table)
Switch selection of loop powered or contact/logic control for both channels. Further switch selects "1in2out" mode

MTL4526



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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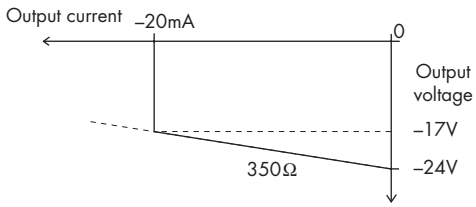
MTL4531 – MTL5531
VIBRATION TRANSDUCER INTERFACE

The MTLx531 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

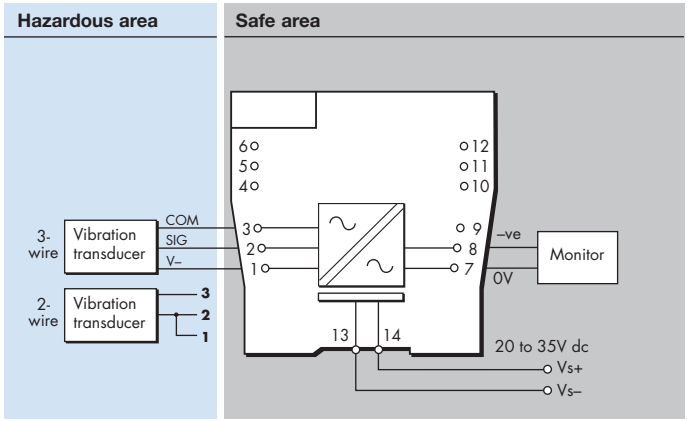
See also common specification

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)

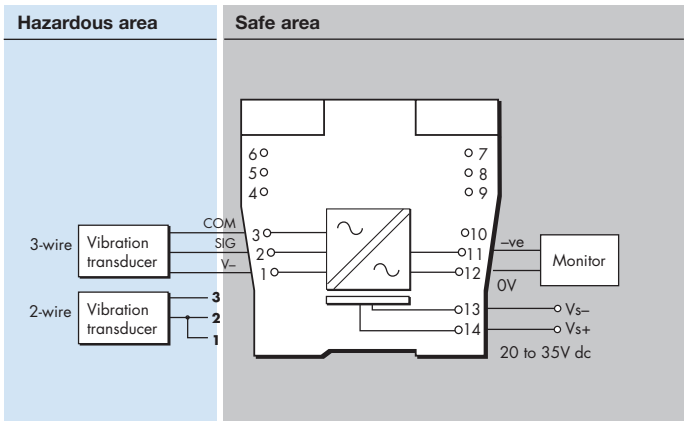


Transducer supply current, 2-wire
3.3mA (nom.) for 2-wire sensors, user selectable by switch
Signal range
Minimum –20V, maximum –0.5V
DC transfer accuracy at 20°C
<±50mV
AC transfer accuracy at 20°C
0Hz to 1kHz: ±1%
1kHz to 10kHz: –5% to +1%
10kHz to 20kHz: –10% to +1%
Temperature coefficient
±50ppm/°C (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

MTL4531



MTL5531



LED indicator
Green: power indication
Supply voltage
20 to 35V dc
Maximum current consumption (10mA transducer load)
96mA at 24V
Maximum power dissipation within unit
2W
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

MTL4532 – MTL5532
PULSE ISOLATOR
pulse & 4/20mA current outputs

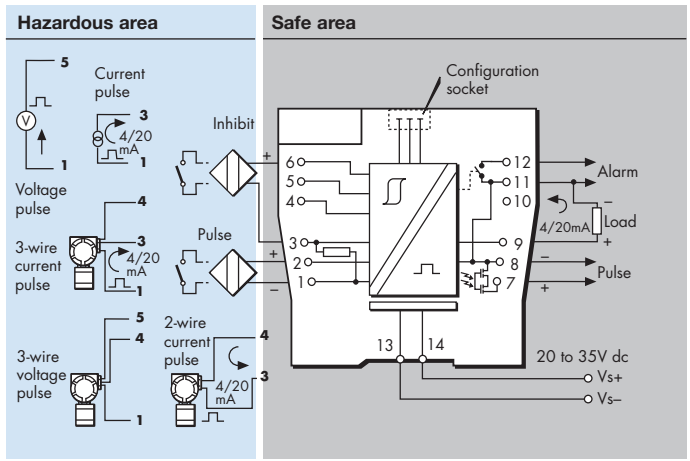
The MTLx532 isolates pulses from a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in a hazardous area. It is ideal for applications involving high pulse rates and fast response times, by repeating the pulses into the safe area. An analogue output proportional 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

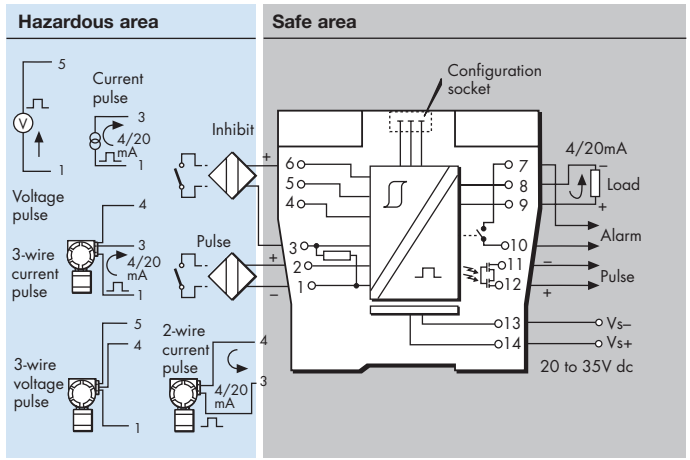
See also common specification

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.

MTL4532



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.

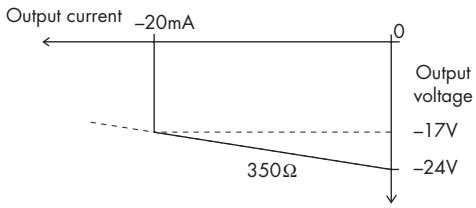
MTL4533 – MTL5533
VIBRATION TRANSDUCER INTERFACE
2-channel

The MTLx533 repeats signals from vibration sensors in a hazardous area, providing outputs 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 switches on the side of the module.

SPECIFICATION

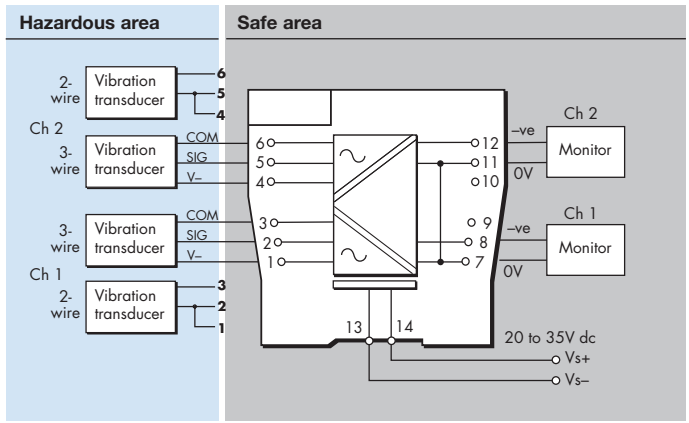
See also common specification

Number of channels
Two
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, 5 & 6): 10kΩ
Transducer supply voltage, 3-wire (terminals 3 & 1 and 6 & 4)

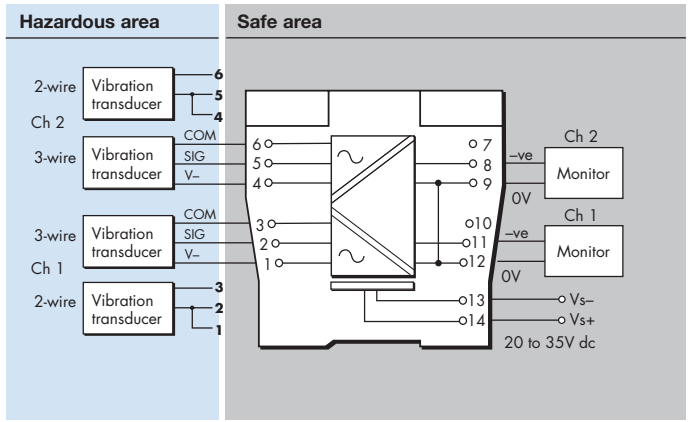


Transducer supply current, 2-wire
3.3mA (nom.) for 2-wire sensors, user selectable by switch
Signal range
Minimum –20V, maximum –0.5V
DC transfer accuracy at 20°C
<±50mV
AC transfer accuracy at 20°C
0Hz to 1kHz: ±1%
1kHz to 10kHz: –5% to +1%
10kHz to 20kHz: –10% to +1%
Temperature coefficient
±50ppm/°C (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

MTL4533



MTL5533



LED indicator
Green: power indication
Supply voltage
20 to 35V dc
Maximum current consumption (10mA transducer load/ch)
130mA at 24V
Maximum power dissipation within unit
2.7W *
Safety description
Terminals 3 to 1 and 6 to 4
U_o=26.6V I_o=94mA P_o=0.66W U_m = 253V rms or dc
Terminals 3 to 2 and 6 to 5
Non-energy-storing apparatus ≤1.5V, ≤0.1A and ≤25mW

* Refer to installation manual for recommendations on unit spacing.

MTL4541/S – MTL5541/S
REPEATER POWER SUPPLY
4/20mA, HART®, 2- or 3-wire transmitters

The MTLx541 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 MTLx541S 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 (MTLx541)	
@ 24mA:	0 to 360Ω
@ 20mA:	0 to 450Ω
Safe-area load (MTLx541S)	
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

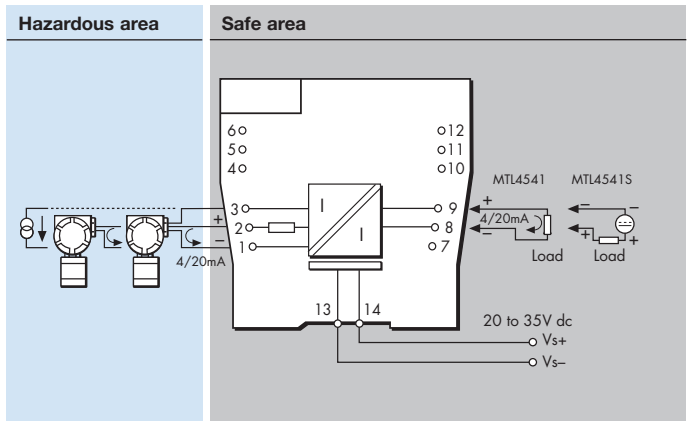
Transfer accuracy at 20°C
Better than 15µA

Temperature drift
< 0.8µA/°C

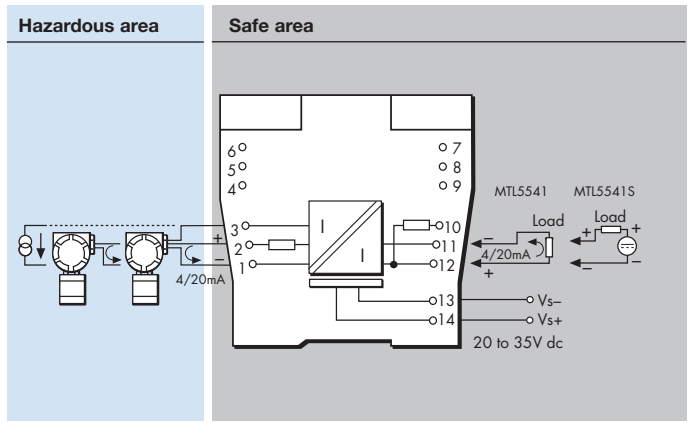
Response time
Settles to within 10% of final value within 50µs

Communications supported
HART (terminals 1 & 2 only)

MTL4541 / MTL4541S



MTL5541 / MTL5541S



LED indicator
Green: power indication

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

Power dissipation within unit (with 20mA signal)

MTLx541	0.7W @ 24V dc
MTLx541S	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. See data on MTL web site.

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MTL4541A/AS – MTL5541A/AS
CURRENT REPEATER
4/20mA passive i/p for HART® transmitters

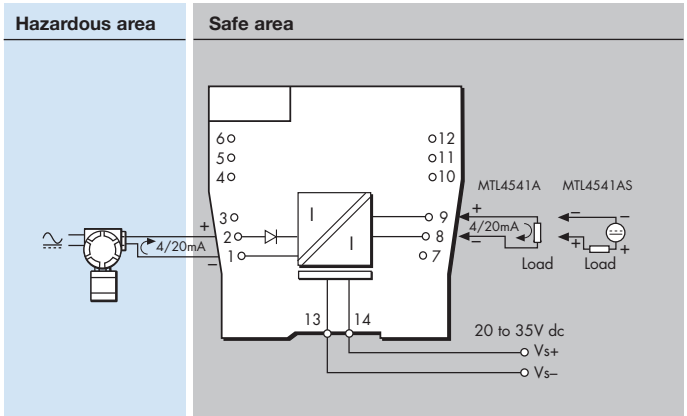
The MTLx541A provides an input for separately powered 4/20mA transmitters and also allows bi–directional transmission of HART communication signals superimposed on the 4/20mA loop current. Alternatively, the MTLx541AS acts as a current sink for a safe-area connection rather than driving a current into the load.

SPECIFICATION

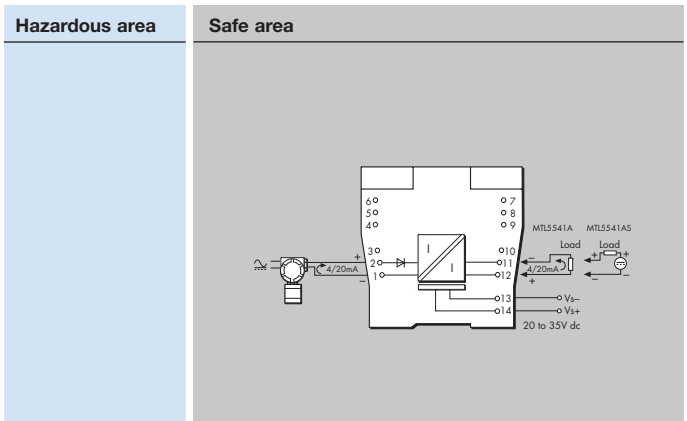
See also common specification

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 (MTLx541A)
Conventional transmitters: 0 to 360Ω
Smart transmitters: 250Ω ±10%
Safe-area load (MTLx541AS)
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

MTL4541A / MTL4541AS



MTL5541A / MTL5541AS



LED indicator
Green: power indication
Power requirement (with 20mA signal)
50mA at 20V
45mA at 24V
35mA at 35V
Power dissipation within unit (with 20mA signals)
MTLx541A 0.8W @ 24V dc
MTLx541AS 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

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MTL4544/S – MTL5544/S
REPEATER POWER SUPPLY
2-channel, 4/20mA, HART®, 2- or 3- wire transmitters

The MTLx544 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 MTLx544S 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 (MTLx 544)	
@ 24mA:	0 to 360Ω
@ 20mA:	0 to 450Ω
Safe-area load (MTLx544S)	
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

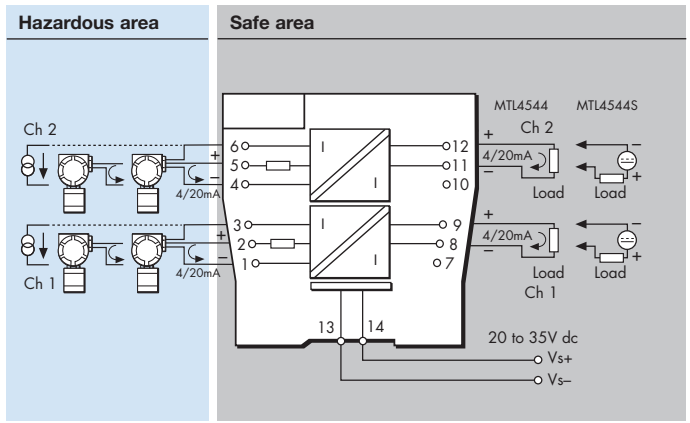
Transfer accuracy at 20°C
Better than 15µA

Temperature drift
< 0.8µA/°C

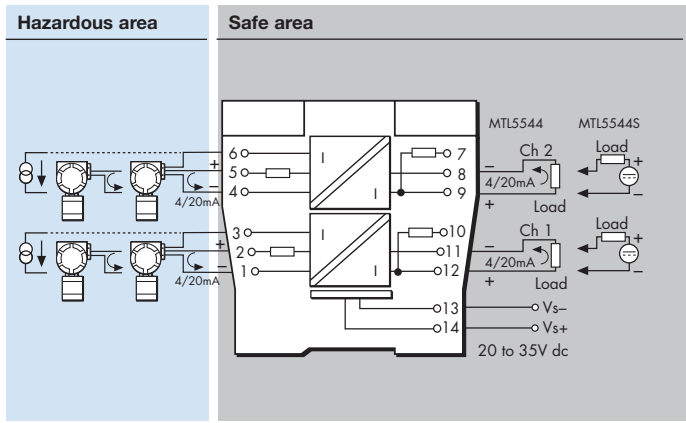
Response time
Settles to within 10% of final value within 50µs

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

MTL4544 / MTL4544S



MTL5544 / MTL5544S



LED indicator
Green: power indication

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

Power dissipation within unit (with 20mA signals)

MTLx544	1.4W @ 24V dc
MTLx544S	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. See data on MTL web site.

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MTL4544A/AS – MTL5544A/AS CURRENT REPEATER

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

The MTLx544A 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 MTLx544AS 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

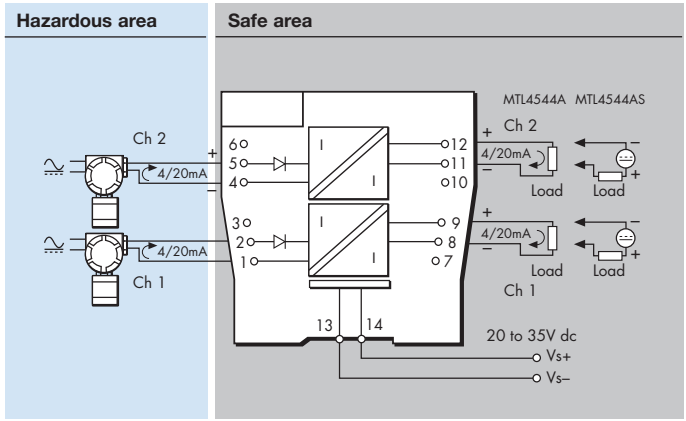
Transfer accuracy at 20°C
Better than 20µA

Temperature drift
< 1µA/°C

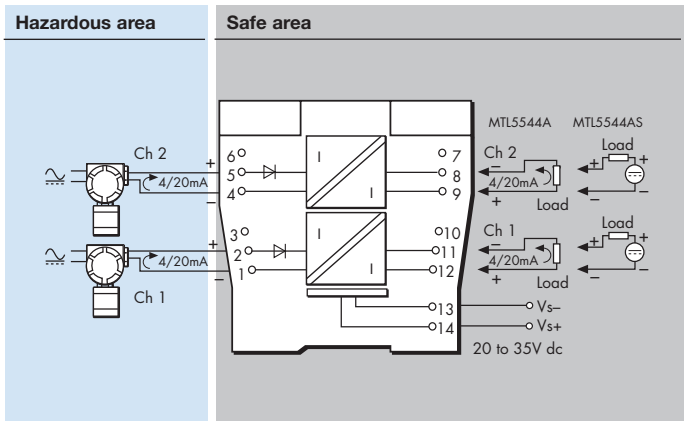
Response time
Settles within 200µA of final value after 20ms

Communications supported
HART

MTL4544A / MTL4544AS



MTL5544A / MTL5544AS



LED indicator
Green: power indication

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

Power dissipation within unit (with 20mA signals)
MTLx544A 1.5W @ 24V dc
MTLx544AS 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

MTL4544D – MTL5544D
REPEATER POWER SUPPLY
single channel, 4/20mA, HART®
for 2- or 3-wire transmitters, two outputs

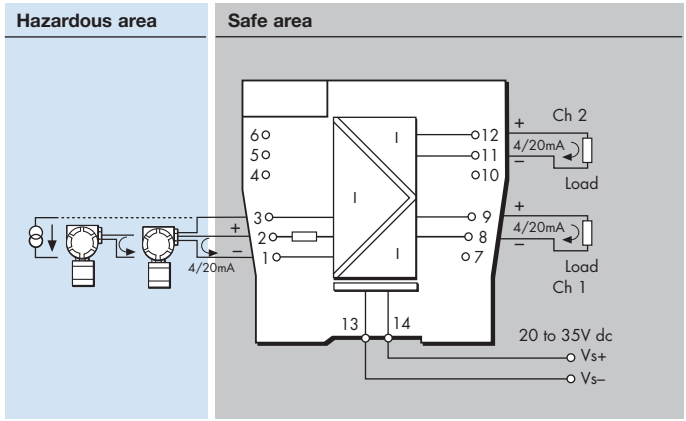
The MTLx544D provides a fully-floating dc supply for energising a conventional 2- or 3-wire 4/20mA transmitter located in a hazardous area, and repeats the current in other circuits to drive two safe-area loads. For HART 2-wire transmitters, the unit allows bi-directional transmission of digital communication 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

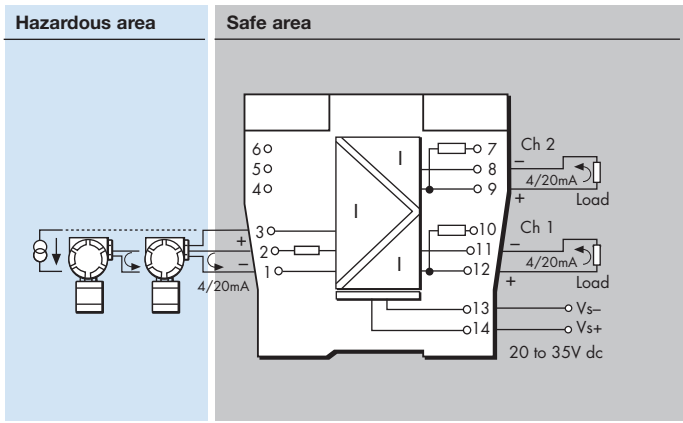
See also common specification

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)

MTL4544D



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. See data on MTL web site.

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MTL4546/C/Y – MTL5546/Y
ISOLATING DRIVER

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

The MTLx546 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 MTL4546C and the MTLx546Y are very similar to the MTLx546 except that they provide open circuit detection only (i.e. no short-circuit detection).

SPECIFICATION

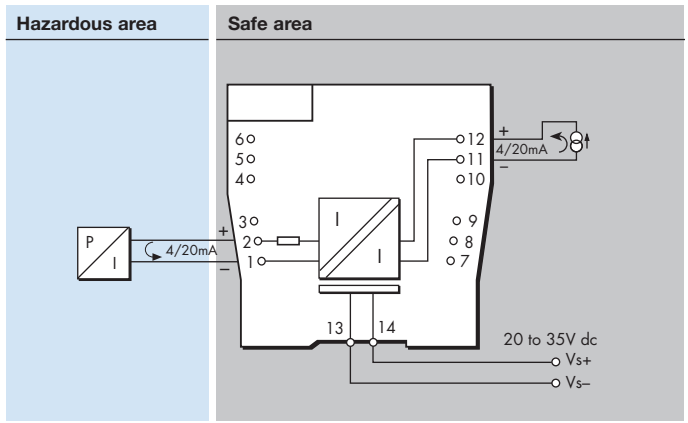
See also common specification

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

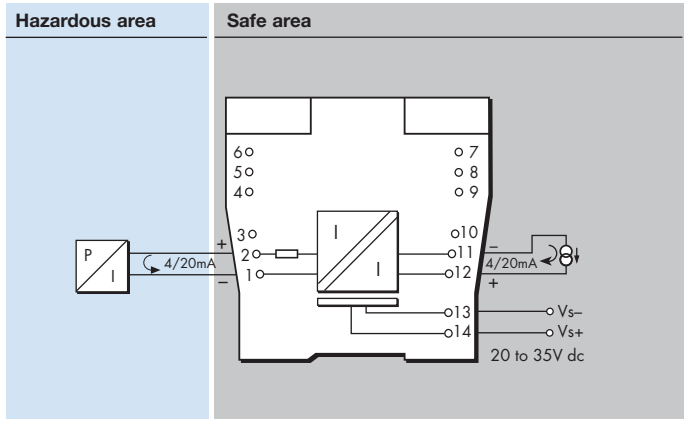
Field wiring state	MTLx546	MTL4546C	MTLx546Y
Normal	< 6.0V	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.	N.A.

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

MTL4546 / MTL4546C / MTL4546Y



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. See data on MTL web site.

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MTL4549/C/Y - MTL5549/Y
ISOLATING DRIVER

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

The MTLx549 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 MTL4549C and MTLx549Y are very similar to the MTLx549 except that they provide 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

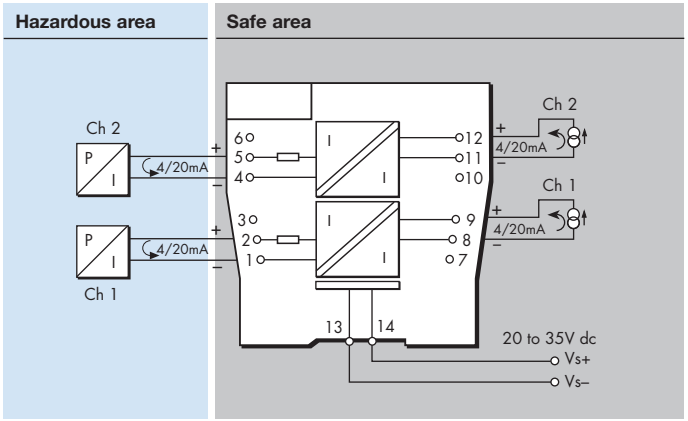
Temperature drift
< 1.0µA/°C

Input characteristics

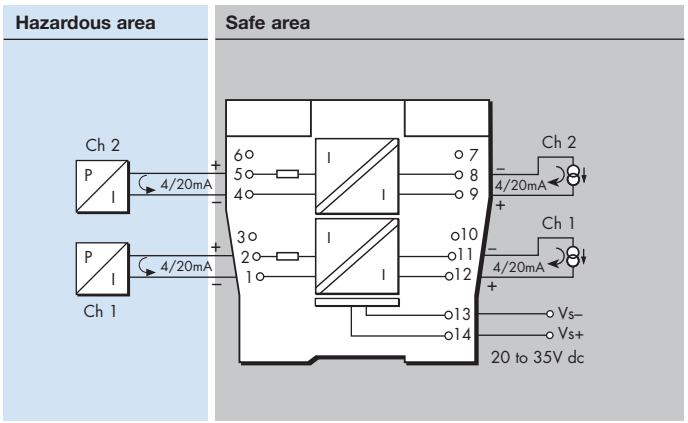
Field wiring state	MTL4549	MTL4549C	MTL4549Y
Normal	< 6.0V	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.	N.A.

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

MTL4549 / MTL4549C / MTL4549Y



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
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MTL4561 – MTL5561
FIRE AND SMOKE DETECTOR INTERFACE
2-channel

The MTLx561 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, while 'no-fail' earth fault detection on either line can be provided by connecting an earth leakage detector to terminal 3 and/or 6.

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

'No-fail' earth fault protection
Enabled by connecting terminals 3 and/or 6 to an earth leakage detector (see notes)
Fault on either line of each channel proclaimed: unit continues worki ng

Notes:
1. *To maintain isolation between the two channels, separate earth leakage detectors are needed.*
2. *The earth leakage detectors introduce a 100µA, 1Hz ripple to the field circuit.*

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

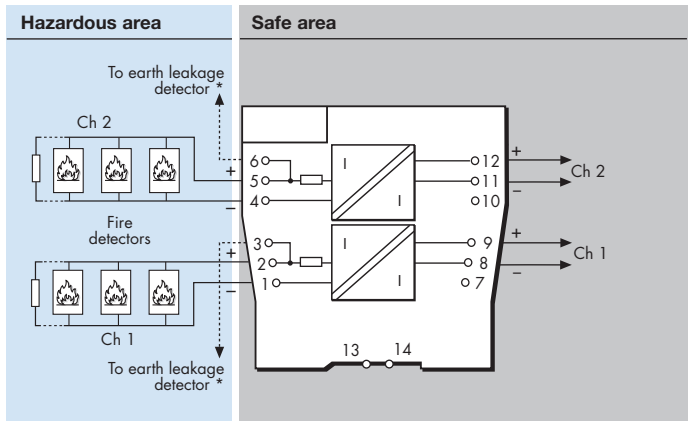
Temperature drift
< 4µA/°C (0°C to 60°C)
< 15µA/°C (–20°C to 0°C)

Response time to step input
Settles to within 5% of final value within 1.5ms

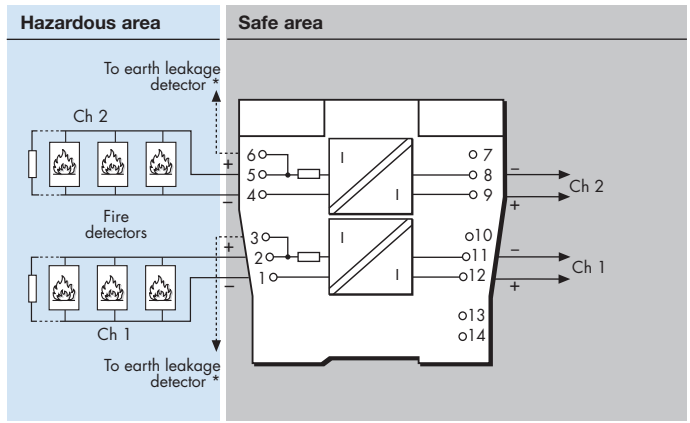
Power dissipation within unit
0.7W maximum at 24V with 40mA signal (each channel)
0.9W maximum at 30V with 40mA signal (each channel)

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

MTL4561



MTL5561



*Signal plug HAZ1-3 is required for access to this function

MTL4575 – MTL5575
TEMPERATURE CONVERTER
THC or RTD input + Alarm

The MTLx575 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 high or low 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)

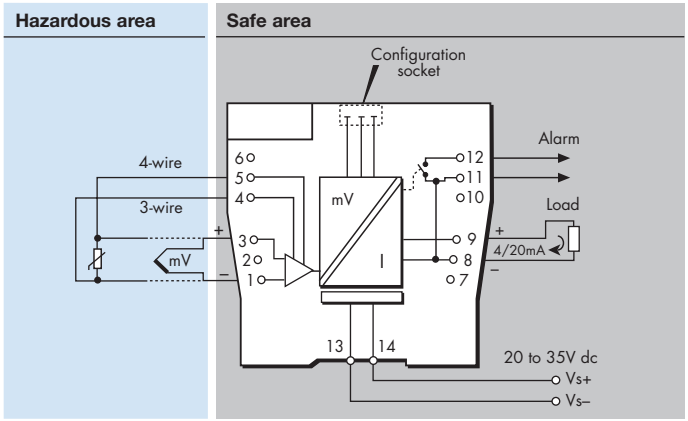
Inputs:	
mV/THC:	± 0.003% of input value/°C
RTD:	± 7mΩ/°C
Output:	± 0.6µA/°C

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

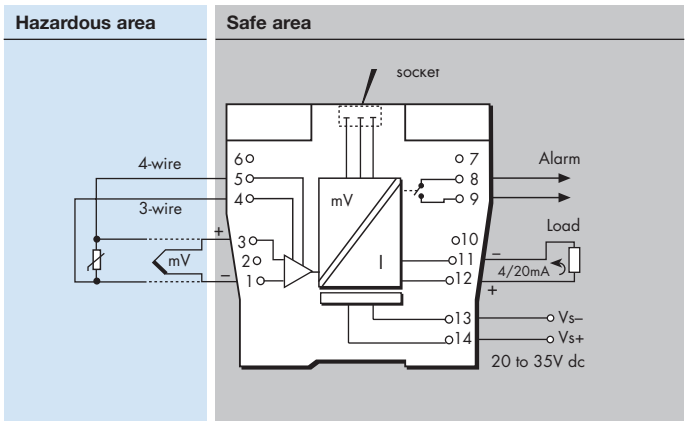
Span:	250Ω
Accuracy:	± (0.08/250 + 11/16000) x 100% = 0.1% of span
Temperature drift:	± (0.007/250 x 16000 + 0.6) µA/°C = ±1.0µA/°C

Safety drive on sensor failure
Upscale, downscale, or off

MTL4575



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. (direct or reverse)
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.

MTL4576-RTD – MTL5576-RTD
TEMPERATURE CONVERTER
RTD/potentiometer input, 2-channel

The MTLx576–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 MTLx576–RTD is compatible with 2– and 3–wire RTD inputs.

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)

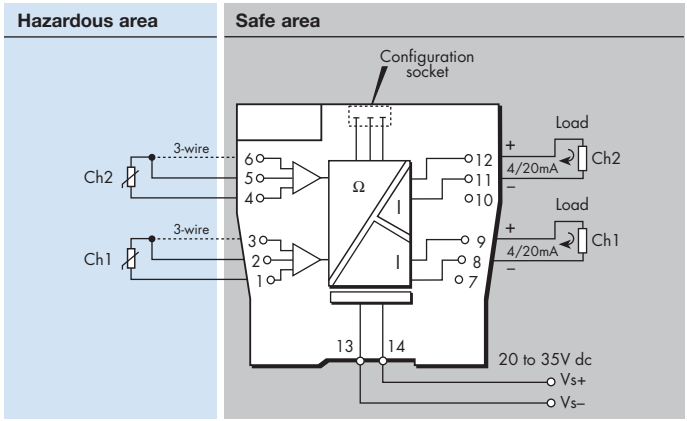
Input:	± 7mΩ/°C
Output:	± 0.6µA/°C

Example of calibration accuracy and temperature drift (RTD input)

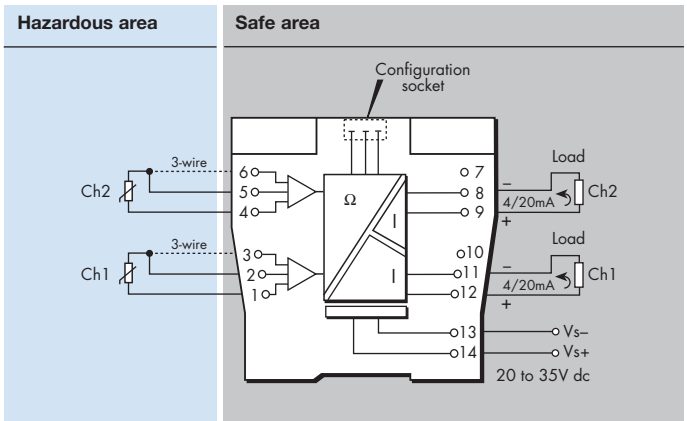
Span:	250Ω
Accuracy:	± (0.08/250 + 16/16000) x 100% = 0.13% of span
Temperature drift:	± (0.007/250 x 16000 + 0.6) µA/°C = ±1.0µA/°C

Safety drive on sensor failure
Upscale, downscale, or off
Output range
4 to 20mA nominal into 300Ω max. (direct or reverse)
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

MTL4576-RTD



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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MTL4576-THC – MTL5576-THC
TEMPERATURE CONVERTER
mV/THC input, 2-channel

The MTLx576–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)

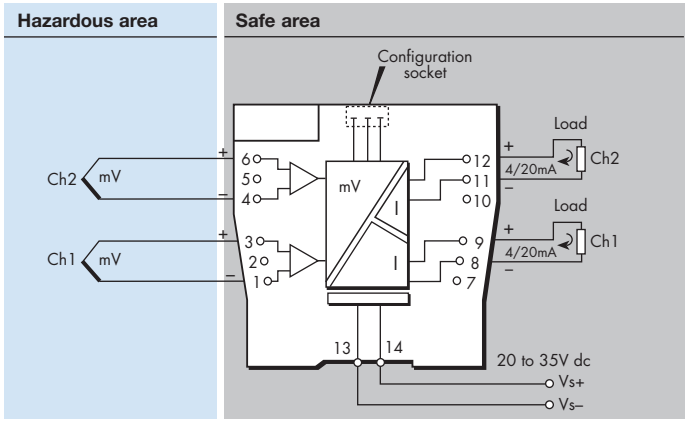
Input:	±15µV or ±0.05% of input value (whichever is greater)
Output:	±16µA

Temperature drift (typical)

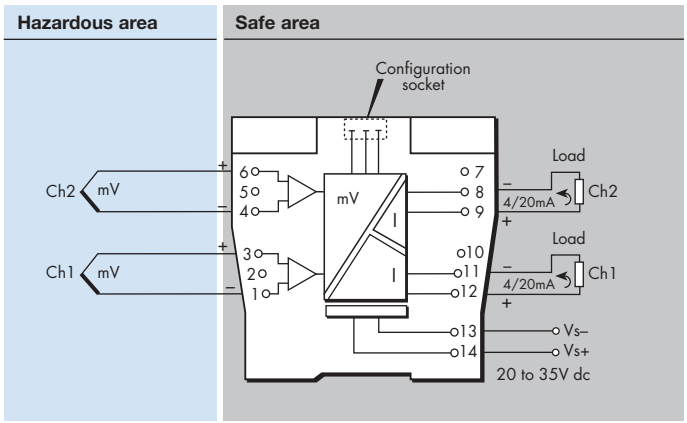
Input:	±0.003% of input value/°C
Output:	±0.6µA/°C

Safety drive on sensor burnout
Upscale, downscale, or off
Output range
4 to 20mA nominal into 300Ω max. (direct or reverse)
Maximum lead resistance
300Ω
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

MTL4576-THC



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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MTL4581 – MTL5581
MILLIVOLT/THERMOCOUPLE ISOLATOR
for low-level signals

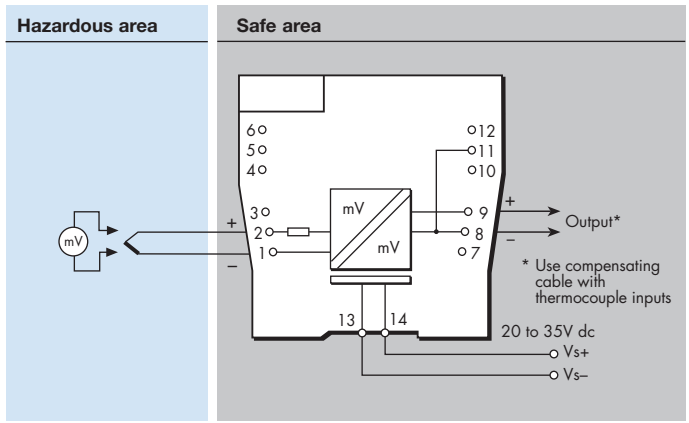
The MTLx581 takes a low-level dc signal from a voltage source in a hazardous area, isolates it, and passes it to a receiving instrument located in the safe area. The module is intended for use with thermocouples utilising external cold-junction compensation. A switch enables or disables the safety drive in the event of thermocouple burnout or cable breakage; a second switch permits the selection of upscale or downscale operation as appropriate.

SPECIFICATION

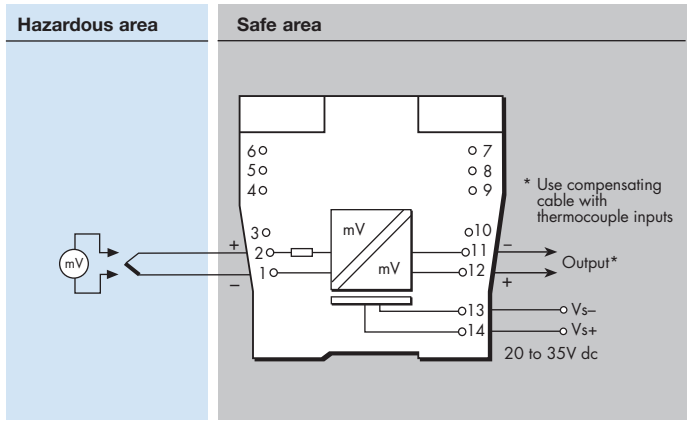
See also common specification

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
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

MTL4581



MTL5581

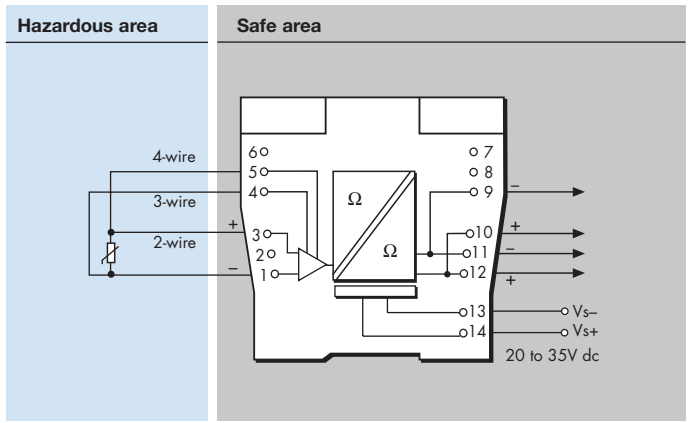


LED indicator
Green: power indication
Power requirement, Vs
30mA max, 20V dc to 35V dc
Power dissipation within unit
0.7W typical at 24V
0.91W at 35V
Safety description
Terminals 1 to 2
Non-energy-storing apparatus ≤ 1.5V, ≤ 0.1A and ≤ 25mW; can be connected without further certification into any IS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

MTL5582
RESISTANCE ISOLATOR
to repeat RTD signals

The MTL5582 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 MTL5582 should be considered as an alternative, non-configurable MTL5575, 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.

MTL5582



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

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
Uo = 1.2V Io = 4mA Po = 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 and 3 and 4 and 5
Uo = 6.6V Io = 42mA Po = 69mW

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MTL4599 - MTL5599
DUMMY ISOLATOR

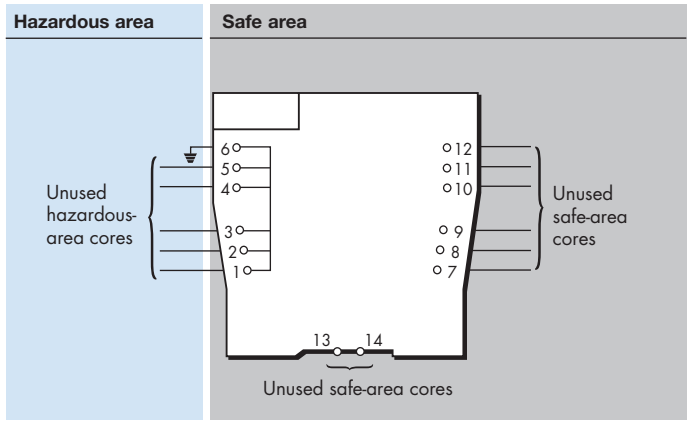
The primary function of the MTLx599, which can be used with all other MTLx500 Series units, is to provide termination and earthing facilities for unused cable cores from hazardous areas.

SPECIFICATION

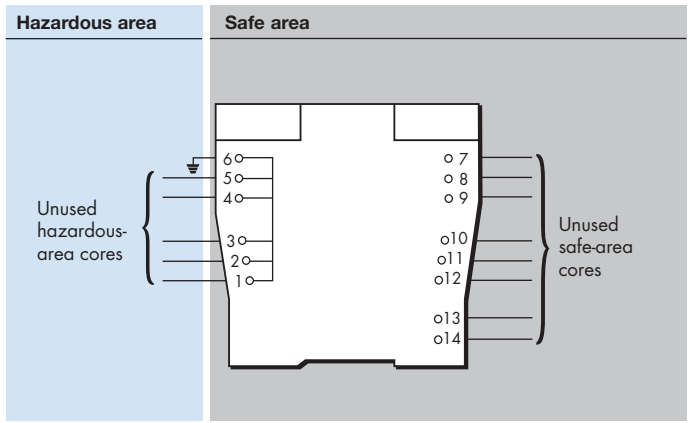
See also common specification

Weight
60g

MTL4599



MTL5599



MTL4599N
GENERAL PURPOSE FEED-THROUGH MODULE

The feed–through termination module allows non–IS connections to the MTL4500 backplanes. The wires from the field are connected using screw terminals. Six terminals are provided for each contact of the multiway connector on the backplane. The terminals and cables conform to IS regulations so that non–IS and IS signals can be mixed on the same backplane.

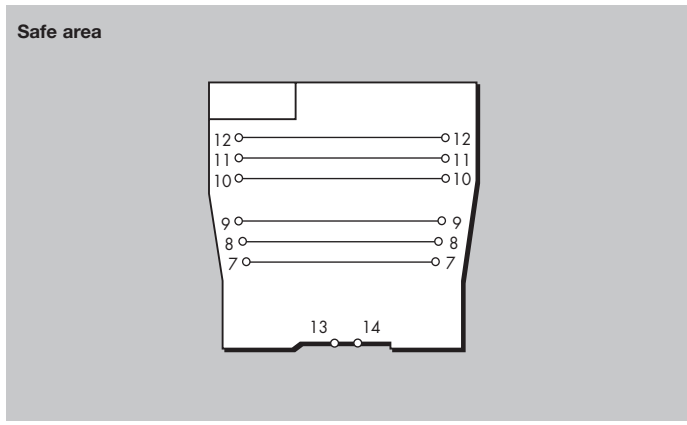
Note: Must not be used with signals >50V or >0.25A

SPECIFICATION

See also common specification

Weight
60g

MTL4599N



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MTL4500 - MTL5500 SERIES
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.
50V 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
MTL4500
MTL4500 series backplanes
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)

MTL4500	140g
MTL5500	150g

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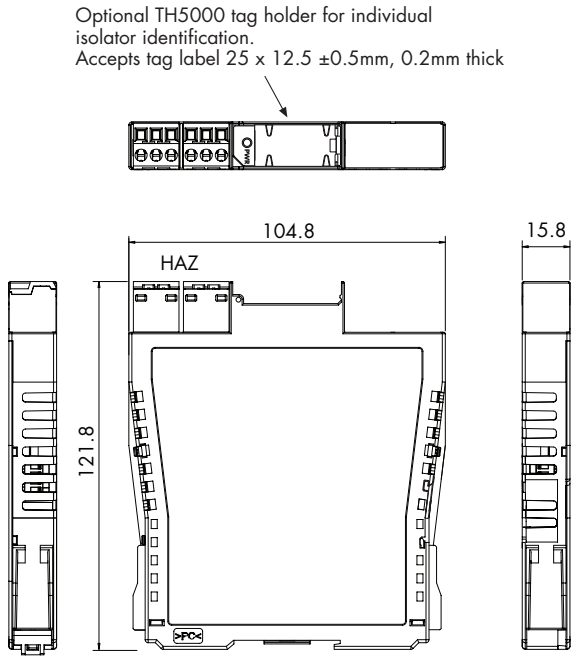
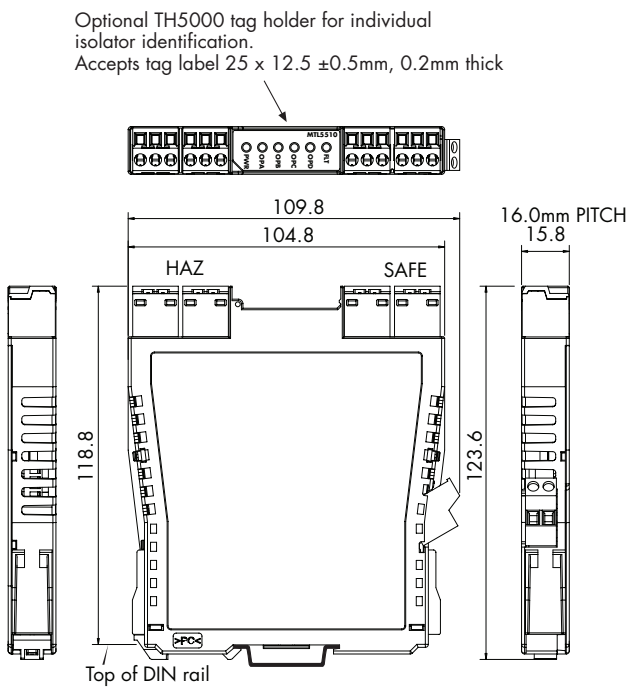
DIMENSIONS (MM)

MTL4500



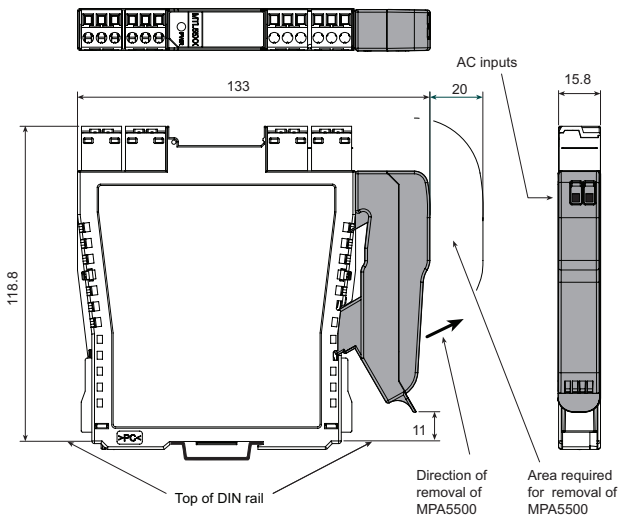
MTL5500



MPA5500
A.C. POWER ADAPTOR

The MPA5500 enables any MTL5500 Series 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.

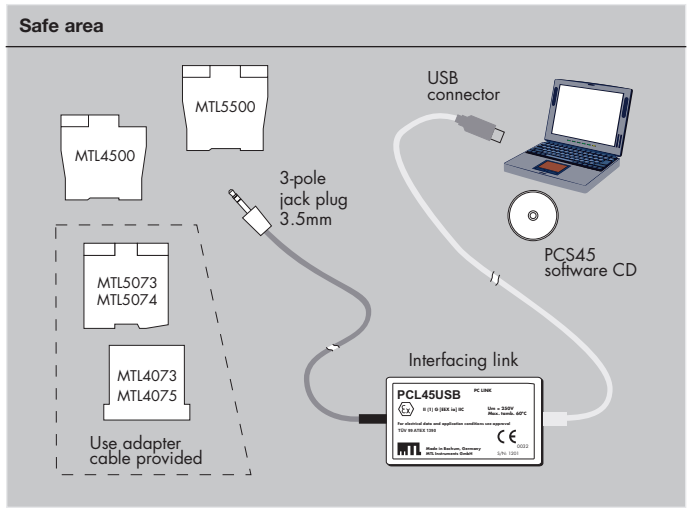


SPECIFICATION

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 Series 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 series 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 series 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 2000 or Windows XP.
Consult MTL for operation with any other operating system, e.g. Windows Vista™.
Software medium
PCS45 supplied on CD
Updates are available at www.mtl-inst.com
Recommended minimum PC configuration
Microsoft Windows 2000 or Windows XP
20MB of available hard disc space
CD ROM drive
Available USB port
Printer (local or network)

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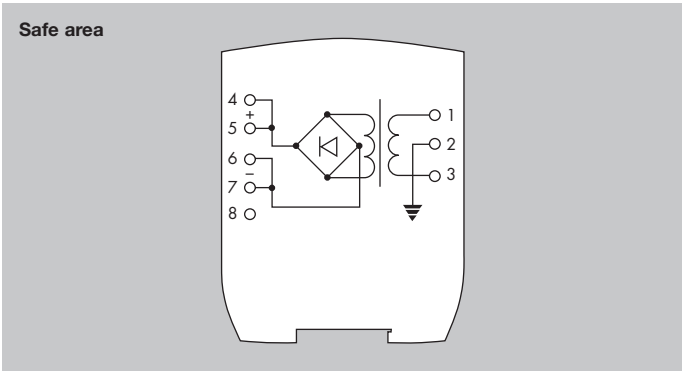
MTL5991
24V DC POWER SUPPLY

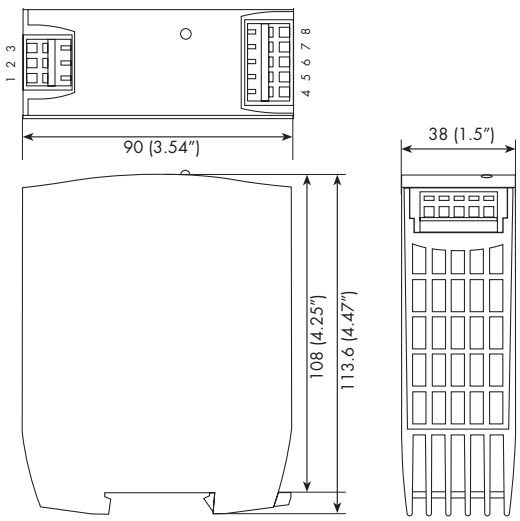
A DIN-rail mounted unit for locations where a dc supply is not readily available. The wide input power supply range makes this unit universally applicable and the 24V dc , 2A output will drive a useful number of MTL5000 and MTL5500 series modules.



SPECIFICATION

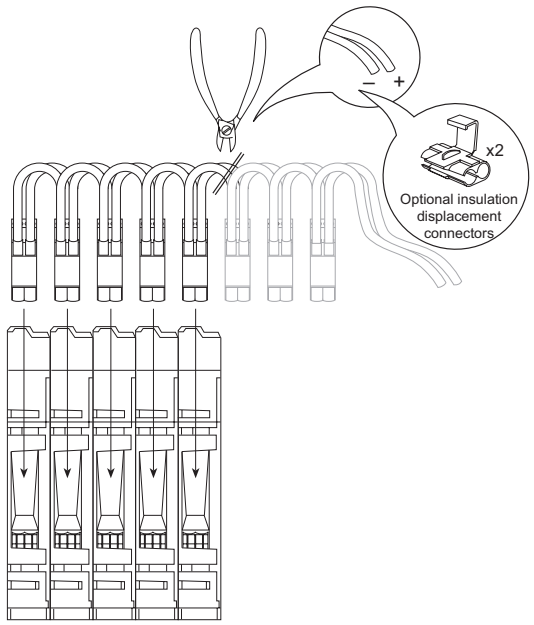
Power supply
85 to 264V ac 47 to 63Hz
Power dissipation within unit
7.2W @ 2A
Mounting
35mm DIN (top hat) rail
Output voltage
24V dc nom (23.64 min/24.36 max)
Output current
2A maximum (1.7A with <105V ac input)
LED indicators
Green: Power indication
Weight
310g
Ambient temperature
Operating temperature –10°C to +50°C
Storage temperature –40°C to +85°C
Terminals
Cage clamp type accommodating conductors up to 2.5mm^2, stranded or single-core

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



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

A quick and easy way to distribute DC power to MTL5500 Series 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

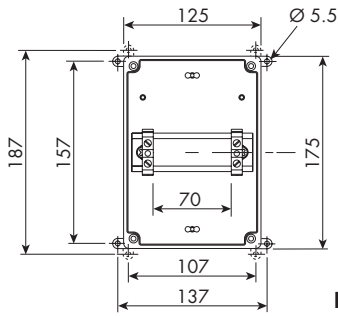
CHOOSING A POWERBUS KIT

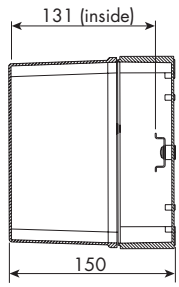
Choose a powerbus where the number of power plugs is greater than or equal to the number of isolators to be powered and if necessary cut the powerbus to the required number of terminations.

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

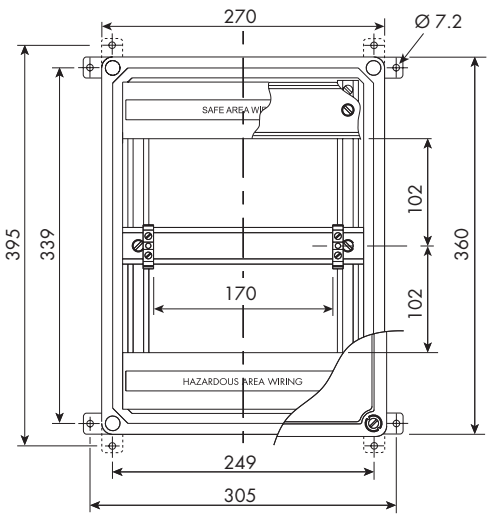
MTL5500 SERIES
ENCLOSURES

DIMENSIONS (mm) AND MOUNTING

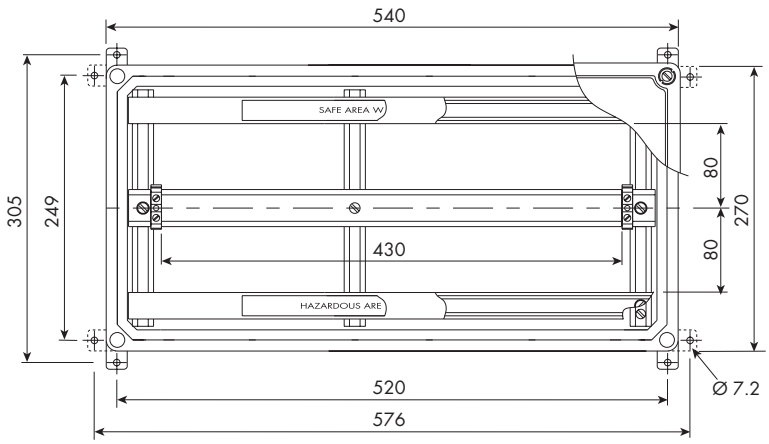




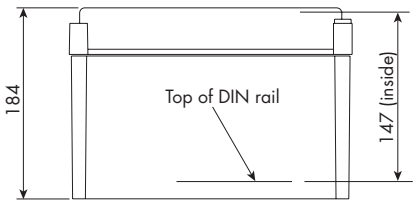
DX070

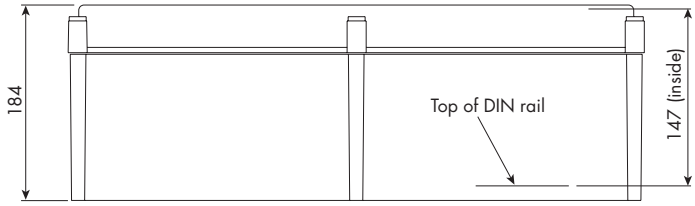


DX170



DX430





SPECIFICATION

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

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

Lid fixing
Captive fixing screws

Weight (excluding barriers/isolators) kg

DX070	0.8
DX170	2.6
DX430	4.1

Items provided
DIN rail - fitted
ETL7000 Earth terminals (2 x) - fitted
"Take care IS" front adhesive label
Cable trunking (except DX070)

Note: Isolators are not included.

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

Tagging and earth rail
Accommodates MTL5500 Series accessories.

Permitted location
Safe (non-hazardous) area

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

Approximate capacities (on DIN rail between earth terminals)

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

	Number of MTL5500 isolators	
DX070	4	(2)*
DX170	10	(8)*
DX430	26	(24)*

Ambient temperature limits
Dependent on units fitted. See instruction manual INM5500.

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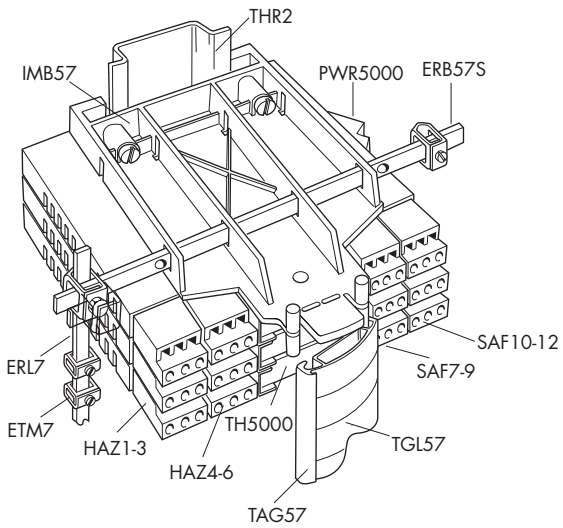
MTL5500 SERIES
ACCESSORIES

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



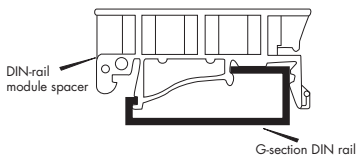
MOUNTING

THR2 DIN rail,1m length

DIN rail to EN50022; BS5584; DIN46277

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

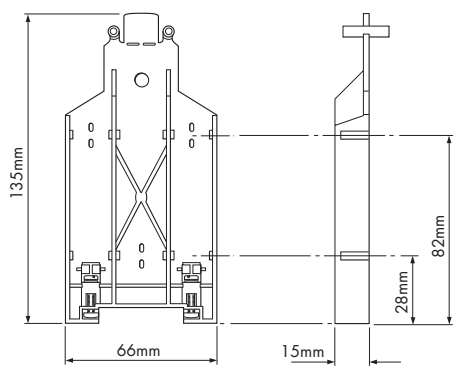
Grey spacer, one required between each MTL5995 and any adjacent module on a DIN rail, to provide 10mm air-circulation space between modules



EARTH RAILS AND TAG STRIP

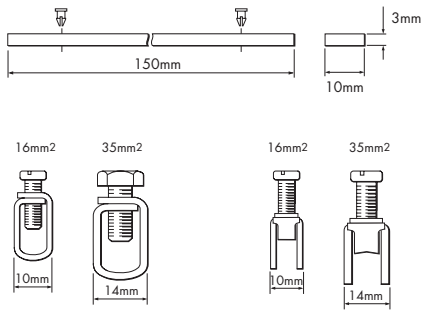
IMB57 Insulating mounting block

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



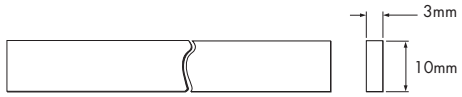
ERB57S Earth-rail bracket, straight

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



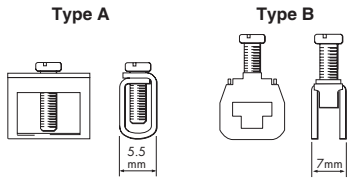
ERL7 Earth rail, 1m length

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.

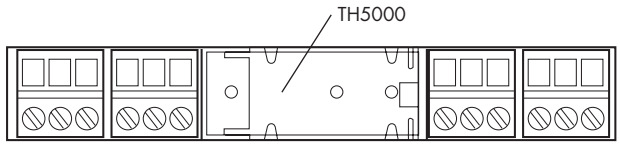
TGL57 Tagging strip labels, set of 10 x 0.5m

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 Series powerbus kits'

CUSTOM, STANDARD AND UNIVERSAL BACKPLANES FOR EASY DCS INTEGRATION

- Total flexibility
- Reduce wiring
- Simplify installation
- Special functions
- Signal conditioning
- HART® integration

The MTL4500 Series backplanes, enclosures and other accessories provide comprehensive, flexible and remarkably compact mounting facilities for system vendors, original equipment manufacturers and end users alike.

CUSTOMISED BACKPLANES

MTL provides a complete design and manufacturing service for customised backplanes. Customised backplanes give the vendors and users of process control and safety systems the opportunity to integrate MTL4500/HART® modules directly into their system architecture. As there are no hazardous-area circuits on the backplanes, customised versions can be produced without the need for IS certification, so simplifying design and lowering costs.

UNIVERSAL CUSTOM BACKPLANES

The 'universal' backplane allows a fast and economic approach to providing a custom interface. Where tight time schedules exist, the backplane can be installed to allow the panel building and wiring to be completed. The customised adapter card can then be plugged in at any time up to integrated test.

ADAPTER CARDS

Adapter cards already exist for many of the DCS companies. In addition there is a range of general purpose cards that offer reduced wiring for use with specific MTL modules. These are also available in left- and right-hand versions to ease panel wiring.

STANDARD MTL BACKPLANES

Standard MTL backplanes are available to accommodate 4, 8, 16, or 24 modules using screw-clamp connectors for the safe-area circuits. On an individual backplane, any module can be plugged into any position and module types can be mixed. For 8-, 16- and 24-way backplanes, screw-clamp connectors which plug into the backplanes provide primary and secondary 24V dc power supplies. Power to several 8- or 16-way backplanes can be interconnected to reduce and simplify wiring – see instruction manual INM4500 for details.

OPTIONAL ACCESSORIES

Optional accessories include colour coded tagging strip kits for all three sizes of backplane and earth rail kits for 8 and 16-way versions. Mounting accessories are available for surface (all backplanes), T-section and G-section DIN-rail (8- and 16-way versions), and a horizontal plate for mounting 24-way backplanes in 19-inch racks.

WEATHERPROOF ENCLOSURES

Weatherproof enclosures are available for applications where separate safe–area enclosures are required for backplanes with modules. Available to accommodate one 4-way or one 8-way backplane, they are manufactured from GRP giving protection against dust and water to IEC529:IP65. The lids are made from transparent high-strength polycarbonate so that LEDs, switches, etc, on the tops of the modules are easy to see.

DCS VENDORS/SYSTEMS SUPPORTED:

ABB Automation
S100, INFI90
Rockwell Automation
Bently-Nevada
Foxboro
IA FBM & FBM2xx
Siemens-Moore
APACS, Quadlog
Honeywell
TDC, Plantscape
Honeywell-SMS
FSC
ICS
Triplex, Plantguard
Triconex
Tricon, Trident
Yokogawa
Centum XL, µXL, CS1000, CS3000, R3
Yokogawa Industrial Safety Systems
ProSafe & ProSafe RS

MTL CPS STANDARD BACKPLANES

Backplane model no.	Number of modules	Safe-area connections	MOUNTING KITS			ACCESSORIES		
			Surface	DIN–rail (T or G)	19–inch rack	Earth–rail kit	Tagging strip kit	Spare fuse pack
CPS04	4	Screw–clamp	SMS01	DMK01	–	–		F US1.0ATE5
CPS08	8	Screw–clamp	SMS01	DMK01	–	ERK08	TSK08	FUS1.0ATE5
CPS16	16	Screw–clamp	SMS01	DMK01	–	ERK16	TSK16	F S2.0ATE5
CPS24	24	Screw–clamp	SMS01	DMK01	HMP24	–	TSK24	FUS4.0ATE5

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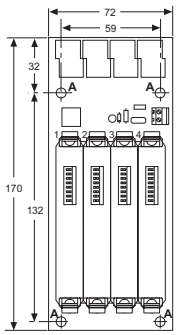
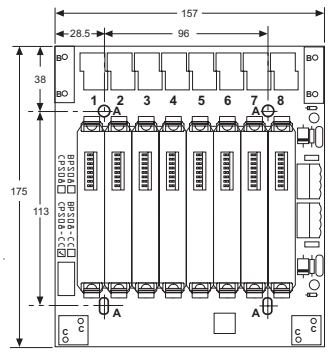
EPS45/5500 Rev2 080210

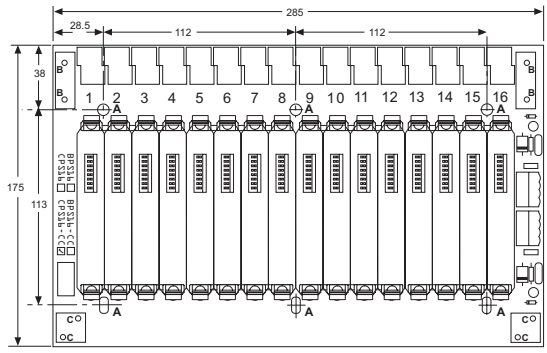
CPS BACKPLANE DIMENSIONS (mm)



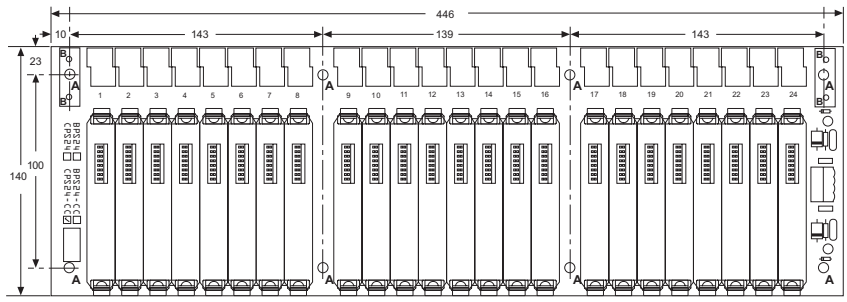
CPS04



CPS08



CPS16



CPS24

Power requirements, Vs

21V dc to 35V dc through plug-in connectors

Safe–area connections

CPS: 2.5mm^2 screw-clamp terminals – 6 positions per module

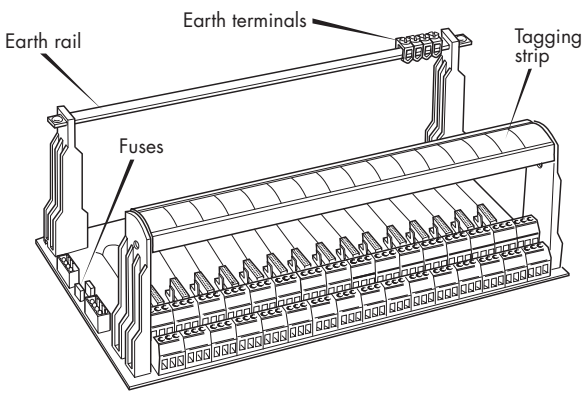
Power sense

Through separate plug-in crimp connector

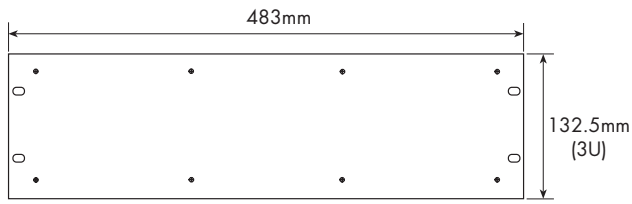
Weight (without modules or accessories)

CPS04:	96g
CPS08:	225g
CPS16:	419g
CPS24:	592g

BACKPLANE ACCESSORIES



HMP24 MOUNTING PLATE FOR 19 INCH RACK



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ORDERING INFORMATION

MTL4500/5500 Series isolators
Specify part number: eg, **MTL4511, 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

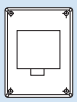
PB-8T	Powerbus Kit for up to 8 isolators
PB-16T	Powerbus Kit for up to 16 isolators
PB-24T	Powerbus Kit for up to 24 isolators
PB-32T	Powerbus Kit for up to 32 isolators

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
DX430	Enclosure for MTL5500 x 26

MTL4500 Standard Backplanes

CPS04	4-way backplane screw-clamp connector
CPS08	8-way backplane screw-clamp connector
CPS16	16-way backplane screw-clamp connector
CPS24	24-way backplane screw-clamp connector

MTL4500 Custom Backplanes
Contact MTL for options and advice

MTL4500 Backplane mounting accessories

DMK01	DIN-rail mounting kit, T- or G-section (pack of 40) 8-way backplanes require 4, 16-way backplanes require 6
SMS01	Surface mounting kit (pack of 40) 4- and 8-way backplanes require 4, 16-way backplanes require 6, 24-way backplanes require 8
HMP24	Horizontal mounting plate and screws for 19-inch rack mounting 24-way backplanes only
BMK08	Mounting kit for one 4- or 8-way backplane
BMK16	Mounting kit for one 16-way backplane

MTL4500 Backplane accessories

ERK08	Earth rail kit for CPS08 backplane
ERK16	Earth rail kit for CPS16 backplane
TSK08	Tagging strip kit for CPS08 backplane
TSK16	Tagging strip kit for CPS16 backplane
TSK24	Tagging strip kit for CPS24 backplane
FUS1.0ATE5	Fuse kit for 4- and 8-way backplanes, (10 per pack)
FUS2.0ATE5	Fuse kit for 16-way backplane, (10 per pack)
FUS4.0ATE5	Fuse kit for 24-way backplanes, (10 per pack)
MCK45	MTL4000 backplane conversion kit (16 clip pairs per pack)
SCK45	Module 4-clip strips (10 strips + 40 rivets per pack)
MPL01	Module position label (blank) (50 per pack)

Literature

INM5500	MTL5500 Series instruction manual
INM4500	MTL4500 Series instruction manual

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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