MTL4600 Series

Isolating interfaces

- 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

Isolation—protecting your system

Designing your plant with good clean earth systems is not always possible. Poor ground conductivity, large process areas and heavy electrical machinery, all contribute to increased noise. This noise is induced or conducted into adjacent wiring, which in turn degrades the quality of the signals passing through the cables. Without isolation this noise is superimposed on the process signal causing a loss of accuracy, poor control and possibly failures or false trips.

Many control systems, PLCs and safety systems do not have full isolation between channels. In compact well defined plant layouts this is acceptable, but these are not always guaranteed. To avoid interference between channels, isolation is the solution.

The MTL4600 series isolators offer reduced risk and greater protection to the system, with all the advantages of a common design approach for both IS and non-IS signals.

System Solutions

Building on the base of the MTL4500 series solutions, the MTL4600 offers a high level of signal isolation for installations where multiple loops on a common connection are not desirable.

Signal isolation provides excellent protection against surges, common faults and noisy environments. It also eliminates the risk of earth loops between different areas of the plant, which, if not isolated, can cause significant errors or failures under fault conditions.

MTL4600 isolators are fully compatible with all existing backplanes used with MTL4500 series and many control systems. The form factor and signal types offer the user a common approach for both IS and non-IS signals.

The backplane mounting MTL4600 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.

Line fault detection (LFD) facilities are provided across the range of I/O functions; on the switch/proximity detectors, the MTL4623 solenoid/alarm drivers and the isolating drivers. Analogue input units such as the MTL4641 provide line fault detection by repeating o/c or s/c currents to the control system.

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

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ISOLATOR FUNCTION SELECTOR

		Channels	Function

Digital Input
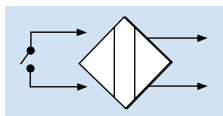
		Channels	Function
MTL4604		1	switch/prox input, phase reversal + LFD
MTL4610		4	switch/prox input, solid-state output
MTL4611		1	switch/prox input, c/o relay output
MTL4613		2	switch/prox input, solid-state output
MTL4614		1	switch/prox input, relay + LFD alarm
MTL4614D		1	switch/prox input, dual output relay
MTL4616		2	switch/prox input, relay
MTL4617		2	switch/prox input, relay + LFD alarm

Digital Output
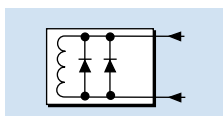
		Channels	Function
MTL4621		1	loop powered solenoid driver
MTL4623		1	solenoid driver with LFD alarm
MTL4623L		1	loop powered solenoid driver with LFD alarm
MTL4623R		1	solenoid driver with reverse LFD alarm
MTL4624		1	switch operated solenoid driver
MTL4624S		1	switch operated solenoid driver, 24V override
MTL4626		2	switch operated relay

Pulse Output

		Channels	Function
MTL4632		1	pulse isolator, digital or analogue output

Analogue Input
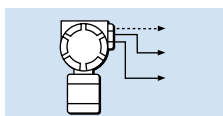
		Channels	Function
MTL4641		1	2/3 wire transmitter repeater
MTL4641A		1	transmitter repeater, passive input
MTL4641AS		1	transmitter repeater, passive input, current sink
MTL4641S		1	2/3 wire transmitter repeater, current sink
MTL4644		2	2/3 wire transmitter repeater
MTL4644A		2	transmitter repeater, passive input
MTL4644AS		2	transmitter repeater, passive input, current sink
MTL4644S		2	2/3 wire transmitter repeater, current sink
MTL4644D		1	2/3 wire transmitter repeater, dual output

Analogue Output
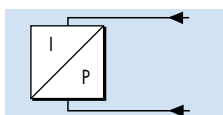
		Channels	Function
MTL4646		1	4-20mA smart isolating driver + LFD
MTL4646Y		1	4-20mA smart isolating driver + oc LFD
MTL4649		2	4-20mA smart isolating driver + LFD
MTL4649Y		2	4-20mA smart isolating driver + oc LFD

Temperature Input
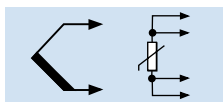
		Channels	Function
MTL4675		1	temperature converter, THC or RTD
MTL4676-RTD		2	temperature converter, RTD
MTL4676-THC		2	temperature converter, THC

MTL4604
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel with LFD and phase reversal

The MTL4604 enables a load to be controlled, through a relay, by a proximity detector or switch. 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.

SPECIFICATION

See also common specification

Number of channels
One

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

Output
Channel: Single pole relay with changeover contacts
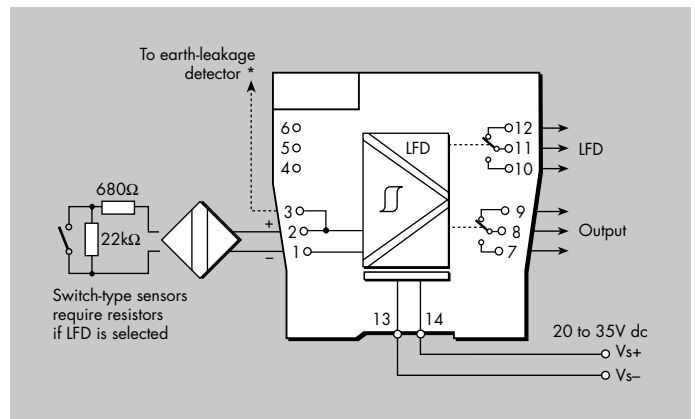LFD: Single pole relay with changeover contacts
Note: reactive loads must be adequately suppressed

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

MTL4610
SWITCH/ PROXIMITY DETECTOR INTERFACE
4-channel, digital input

The MTL4610 enables four solid-state outputs to be controlled by up to four switches or proximity detectors. 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
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
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)
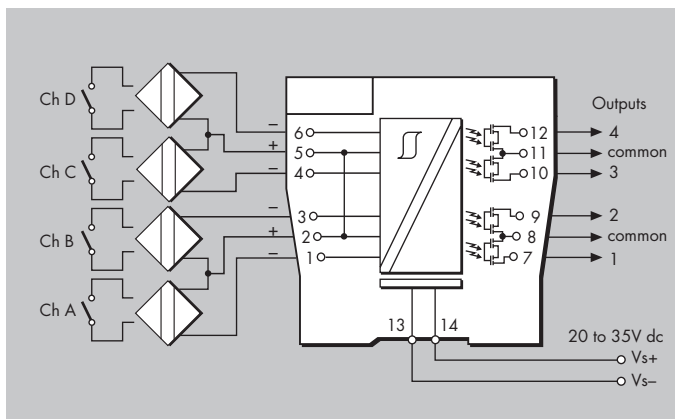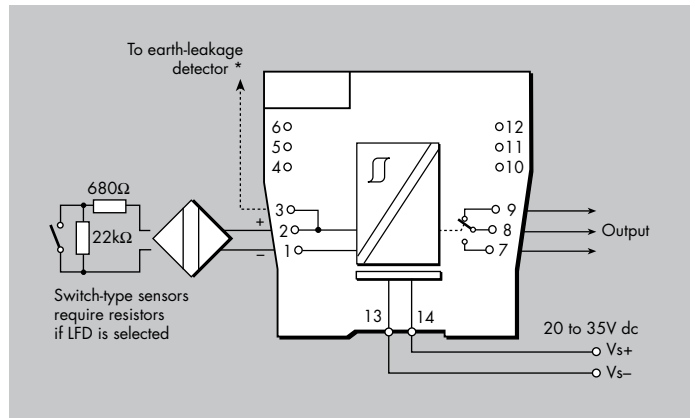**Power dissipation within unit**
0.96W at 24V, with 10mA loads

MTL4610

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.

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EPS4610 Rev1 201210

MTL4611
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, with line fault detection

The MTL4611 enables a load to be controlled by a switch or proximity detector. 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
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
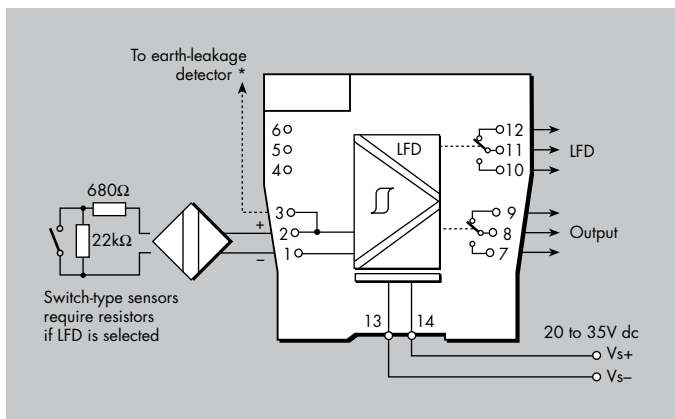**Output**
Single pole relay with changeover contacts
Note: reactive loads must be adequately suppressed
Relay characteristics
Response time: 10ms maximum
Contact rating: 10W, 0.5A, 35V dc

MTL4611

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

MTL4614
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, line fault detection, phase reversal

The MTL4614 enables a load to be controlled, through a relay, by a proximity detector or switch. 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

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

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

MTL4614

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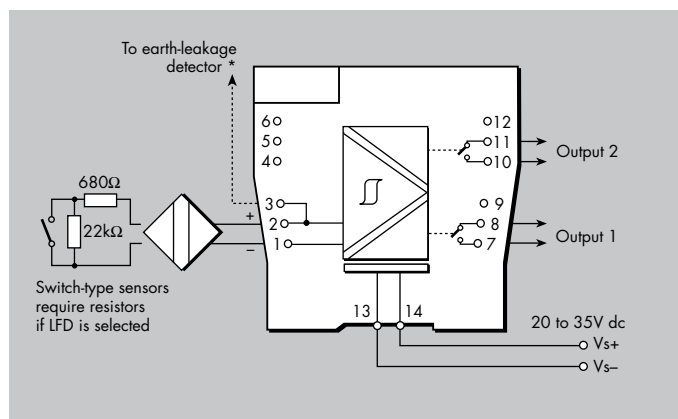Red: LFD indication, on when line fault detected

Maximum current consumption
25mA at 24V dc

Power dissipation within unit
0.6W at 24V

MTL4614D
SWITCH/ PROXIMITY DETECTOR INTERFACE
1-channel, dual output, LFD, phase reversal

The MTL4614D enables two safe–area loads to be controlled, through relays, by a proximity detector or switch. When selected, open or short circuit conditions in the field wiring are detected by the line fault detect (LFD) facility and indicated on the top of the module. Switches are provided to select phase reversal and to enable the line fault detection.

SPECIFICATION

See also common specification

Number of channels
One

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

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

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

Line fault detection (LFD) (when selected)
User-selectable via switches on the side of the unit. Line faults are indicated by an LED. The channel output relays are de-energised if an input line-fault is detected
Open-circuit alarm on if I_{in} < 50µA
Open-circuit alarm off if I_{in} > 250µA
Short-circuit alarm on if R_{in} < 100Ω
Short-circuit alarm off if R_{in} > 360Ω
Note: Resistors must be fitted when using the LFD facility with a contact input
500Ω to 1kΩ in series with switch
20kΩ to 25kΩ in parallel with switch

Output
Two, single pole relays with normally-open contacts
Note: reactive loads must be adequately suppressed

Relay characteristics
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
29mA at 24V dc

Power dissipation within unit
0.7W at 24V

MTL4614D

* Signal plug SAF1-3 is required for access to this function

MTL4616
SWITCH/ PROXIMITY
DETECTOR INTERFACE
2-channel, with line fault detection

The MTL4616 enable two loads to be controlled by a switch or proximity detector. 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
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
Output
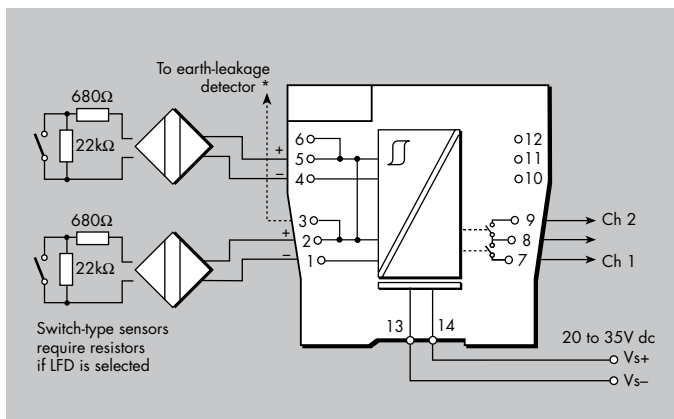 Two single-pole relays with changeover contacts
  Note: reactive loads must be adequately suppressed
Relay characteristics
  Response time: 10ms maximum
  Contact rating: 10W, 0.5A, 35V dc

MTL4616

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

MTL4617
SWITCH/ PROXIMITY DETECTOR INTERFACE
2-channel, line fault detection, phase reversal

The MTL4617 enables two loads to be controlled, through a relay, by proximity detectors or switches. 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

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

Output
Channel: Two single-pole relays with normally open contacts
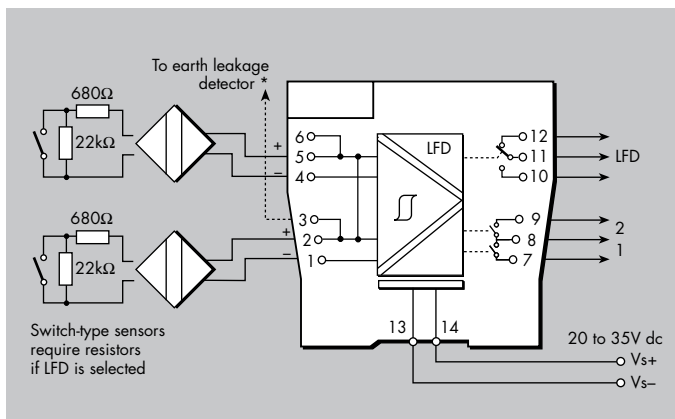LFD: Single pole relay with changeover contacts
Note: reactive loads must be adequately suppressed

Relay characteristics
Response time: 10ms maximum
Contact rating: 10W, 0.5A, 35V dc

MTL4617

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

MTL4621
SOLENOID/ALARM DRIVER
loop-powered

The MTL4621 is a loop-powered module that can drive a low-power load as well as 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.
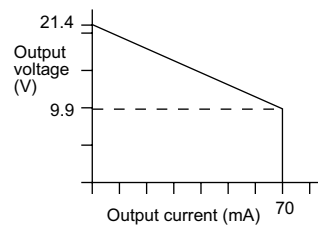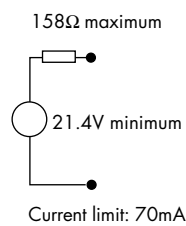
SPECIFICATION

See also common specification

Number of channels
One

Minimum output voltage   **Equivalent output circuit**

Input voltage
20 to 35V dc

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

MTL4621

LED indicator
Yellow: output status, on when output active

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

Power dissipation within unit
1.4W at 24V

MTL4623/R
SOLENOID/ALARM DRIVER
with line fault detection, IIC

With the MTL4623 interface, an on/off device can be controlled by a volt-free contact or logic signal. It is suitable for driving loads such as solenoids. Line fault detection (LFD), which operates irrespective of the output state, is signalled by a solid-state switch which de-energises MTL4623, or energises MTL4623R, 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.
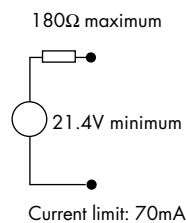
SPECIFICATION

See also common specification

Number of channels
One

Minimum output voltage   ### Equivalent output circuit
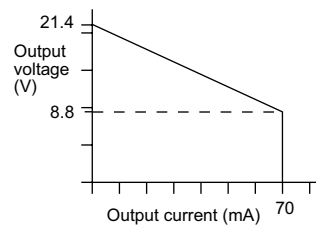
Output
Minimum output voltage:	8.8V at 70mA
Maximum output voltage:	24V from 180Ω
Current limit:	70mA

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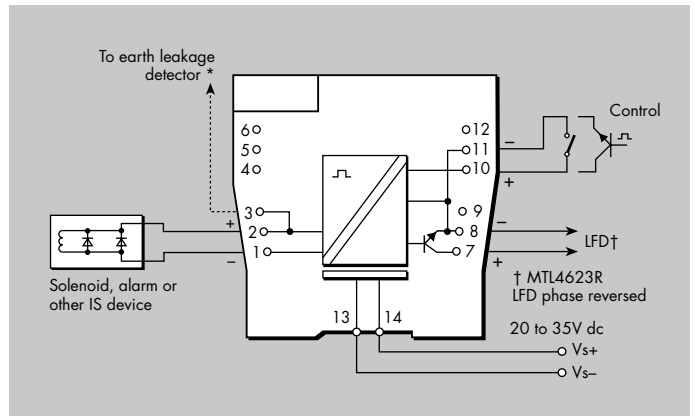Open or short circuit in field cabling *de-energises** solid state line-fault signal.
LFD transistor is switched *on**, provided that the field circuit impedance is > 55Ω and < 4kΩ.

* These conditions are reversed for the MTL4623R. 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

MTL4623 / MTL4623R

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

Maximum current consumption
125mA at 24V dc

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

MTL4623L
SOLENOID/ ALARM DRIVER
loop-powered with line fault detection

With the MTL4623L interface, an on/off device can be controlled by a voltage signal. It is suitable for driving loads such as solenoids. Line fault detection (LFD), which operates when the output is energised, is signalled by a 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.
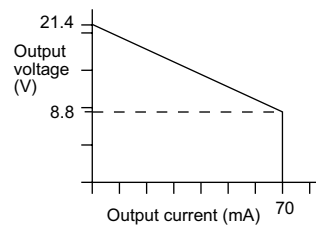
SPECIFICATION
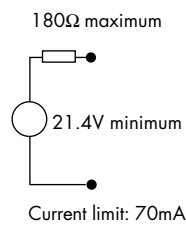
See also common specification

Number of channels
One

Minimum output voltage   **Equivalent output circuit**

Input voltage
20 to 35V dc

Output
Minimum output voltage:	8.8V at 70mA
Maximum output voltage:	24V from 180Ω
Current limit:	70mA

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

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

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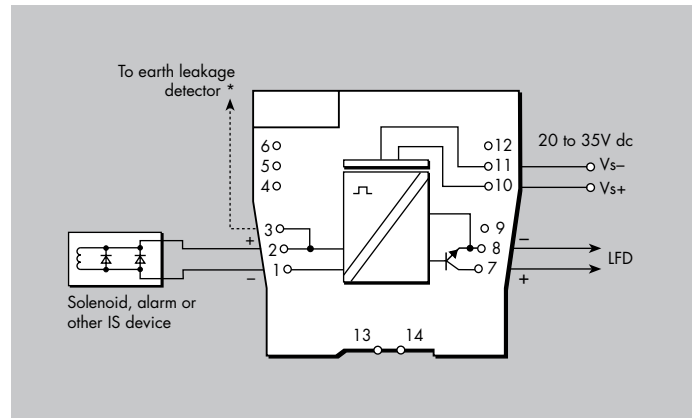Open or short circuit in field cabling energises solid state line fault signal
LFD transistor is switched on, provided that the field circuit impedance is > 55Ω and < 4kΩ.

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

MTL4623L

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

Maximum current consumption
125mA at 24V dc

Power dissipation within unit
1.4W with typical solenoid valve, output on

MTL4624
SOLENOID/ALARM DRIVER
switch operated with override

The MTL4624 enables an on/off device to be controlled by a volt-free contact or logic signal. It can drive loads such as solenoids, alarms, LEDs and other low power devices.

The MTL4624 allows a second 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.
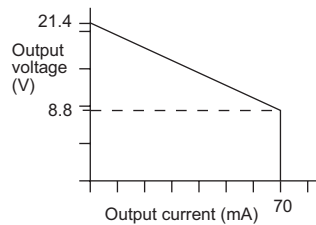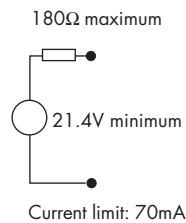
MTL4624

SPECIFICATION

See also common specification

Number of channels
One

Minimum output voltage

Equivalent output circuit

Output
Minimum output voltage:	8.8V at 70mA
Maximum output voltage:	24V from 180Ω
Current limit:	70mA

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
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
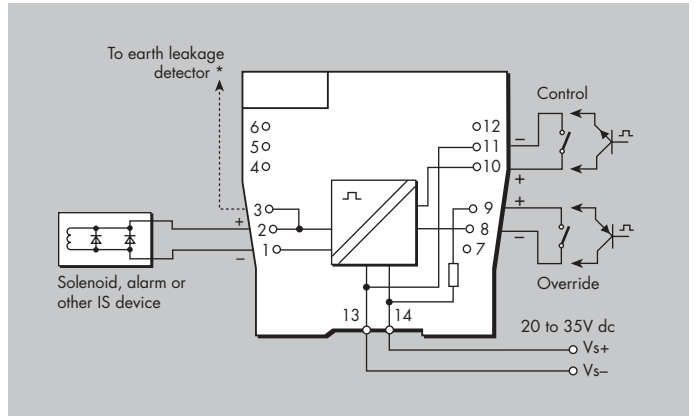1 = transistor off or switch open

Control and override inputs

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

LED indicators
Green: power indication
Yellow: output status, on when output active
Maximum current consumption
125mA at 24V dc
Power dissipation within unit
1.4W with typical solenoid valve, output on
1.9W worst case

MTL4624S
SOLENOID/ALARM DRIVER
switch operated with 24V override

The MTL4624S enables an on/off device to be controlled by a volt-free contact or a floating logic signal. It can drive loads such as solenoids, alarms, LEDs and other low power devices. By connecting a second voltage, the output can be disabled to permit, for example, a safety system to override a control signal.
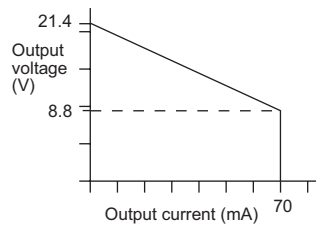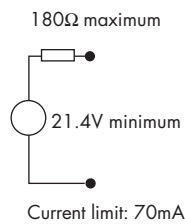
SPECIFICATION

See also common specification

Number of channels
    One
Minimum output voltage   **Equivalent output circuit**

Output
    Minimum output voltage: 8.8V at 70mA
    Maximum output voltage: 24V from 180Ω
    Current limit: 70mA
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
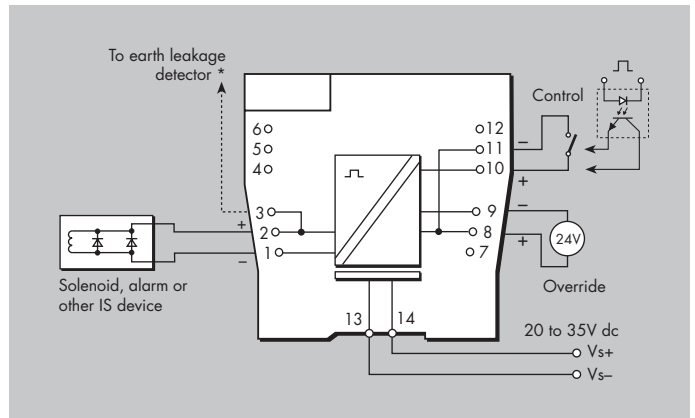   (nominal switching point 4.5V)
Control and override inputs

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

MTL4624S

LED indicators
    Green: power indication
    Yellow: output status, on when output active
Maximum current consumption
    125mA at 24V dc
Power dissipation within unit
    1.4W with typical solenoid valve, output on
    1.9W worst case

MTL4626
SWITCH-OPERATED RELAY
2–channel switched output

The MTL4626 enables two separate circuits to be contact controlled by one or two, on/off, control inputs. Applications include the calibration of strain–gauge bridges; changing the polarity (and thereby the tone) of a sounder; the testing of fire alarms; and the transfer of signals into an annunciator with input terminals not segregated from each other.

SPECIFICATION

See also common specification

Number of channels
Two, fully floating
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
1–pole changeover per channel
Contact rating
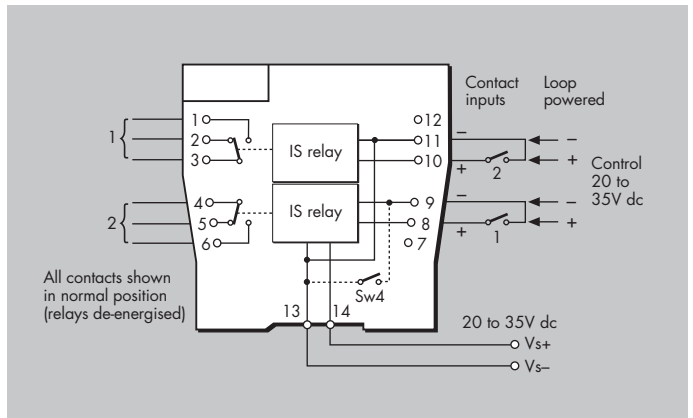250V dc, 2A
(reactive loads must be suppressed)
Contact life expectancy
10×10^6 operations at maximum load
Relay drive (see switch setting table)
Choice of "loop-powered" or "contact/logic" control, for both channels, by switch selection. A further switch option ("1in2out") enables either input, in contact/logic mode, to activate *both* outputs.

MTL4626

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
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

MTL4632
PULSE ISOLATOR
pulse & 4/20mA current outputs

MTL4632

The MTL4632 isolates pulses from a switch, proximity detector, current pulse transmitter or voltage pulse transmitter. It is ideal for applications involving high pulse rates and fast response times, by repeating the pulses into an isolated circuit. 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

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 60947–5–6:2001 standards

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

Pulse output
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

Current output
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
Response delay: TBA ms

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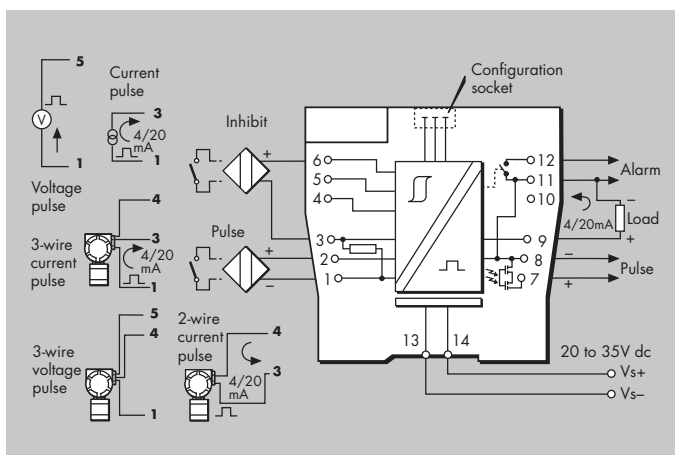Relay ON in alarm, 0.5A @ 35Vdc max.

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

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

MTL4641/S
REPEATER POWER SUPPLY
4/20mA, HART®, 2- or 3-wire transmitters

The MTL4641 provides a fully-floating dc supply for energising a conventional 2- or 3-wire 4/20mA transmitter and repeating the current in another floating circuit to drive a load. For HART 2-wire transmitters, the unit allows bi-directional communications signals superimposed on the 4/20mA loop current. Alternatively, the MTL4641S acts as a current sink rather than driving a current into the load.

SPECIFICATION

See also common specification

Number of channels
    One
Output
    Signal range: 4 to 20mA
    Under/over-range: 0 to 24mA
    Load resistance (MTL4641)
        @ 24mA: 0 to 375Ω
        @ 20mA: 0 to 465Ω
    Load (MTL4641S)
        Current sink: 600Ω max.
        Maximum voltage source: 24V dc
    Circuit output resistance: > 1MΩ
Circuit ripple
    < 50µA peak-to-peak
Input
    Signal range: 0 to 24mA (including over-range)
    Transmitter voltage: 20V at 20mA (MTL4641)
                           16.5V at 20mA (MTL4641S)
Transfer accuracy at 20°C
    Better than 20µA 4-20mA (Terminals 1 & 2)
    Better than 30µA 4-20mA (Terminals 1 & 3)
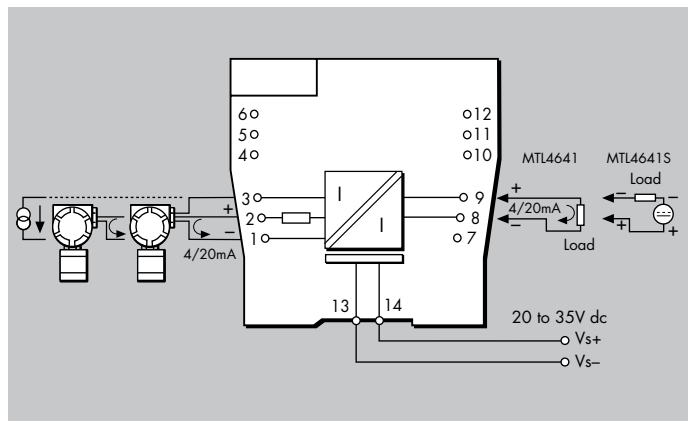**Temperature drift**
    < 0.8µA/°C
Response time
    Settles to within 10% of final value within 50µs
Communications supported

MTL4641 / MTL4641S

    HART (terminals 1 & 2 only)
LED indicator
    Green: power indication
Maximum current consumption (with 20mA signal)
    53mA at 24V
Power dissipation within unit (with 20mA signal)
    MTL4641   0.8W @ 24V dc
    MTL4641S   1.0W @ 24V dc

MTL4641A/AS
CURRENT REPEATER
4/20mA passive i/p for HART® transmitters

The MTL4641A 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 MTL4641AS acts as a current sink rather than driving a current into the load.

SPECIFICATION

See also common specification

Number of channels
    One
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
Output
    Signal range: 4 to 20mA
    Under/over-range: 1.0 to 21.5mA
    Load resistance (MTL4641A)
        Conventional transmitters: 0 to 360Ω
        Smart transmitters: 250Ω ±10%
    Load (MTL4641AS)
        Current sink: 600Ω max.
        Maximum voltage source: 24V DC
    Circuit output resistance: > 1MΩ
Circuit ripple
    < 50µA peak-to-peak up to 80kHz
Transfer accuracy at 20°C
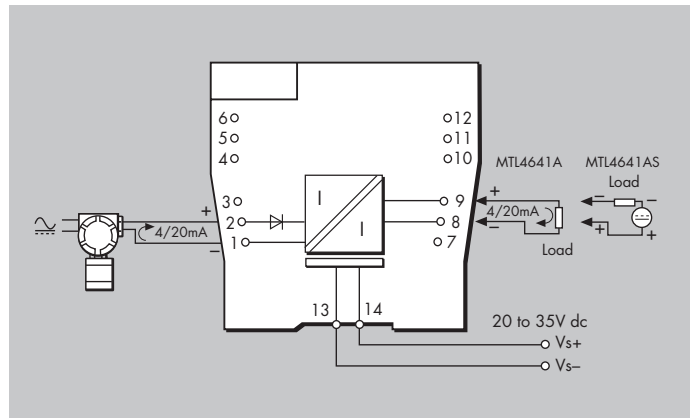   Better than 20µA
Temperature drift
    < 1µA/°C
Response time
    Settles within 200µA of final value after 20ms
Communications supported
    HART

LED indicator
    Green: power indication
Power requirement (with 20mA signal)
    50mA at 20V
    45mA at 24V
    35mA at 35V
Power dissipation within unit (with 20mA signals)
    MTL4641A   0.8W @ 24V dc
    MTL4641AS   1.1W @ 24V dc

MTL4644/S
REPEATER POWER SUPPLY
2-channel, 4/20mA, HART®, 2- or 3- wire transmitters

The MTL4644 provides fully-floating dc supplies for energising two conventional 2-wire or 3-wire 4/20mA or HART transmitters, and repeats the current in other circuits to drive two loads. For smart transmitters, the unit allows bi-directional transmission of digital communication signals superimposed on the 4/20mA loop current. Alternatively, the MTL4644S acts as a current sink rather than driving a current into the load.

SPECIFICATION

See also common specification

Number of channels
Two

Output
Signal range:	4 to 20mA
Under/over-range:	0 to 24mA

Load resistance (MTL4644)
@ 24mA:	0 to 375Ω
@ 20mA:	0 to 465Ω

Load (MTL4644S)
Current sink:	600Ω max.
Maximum voltage source:	24V dc

Circuit output resistance: > 1MΩ

Circuit ripple
< 50µA peak-to-peak

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

Transfer accuracy at 20°C
Better than 20µA 4-20mA (Terminals 1 & 2 / 4 & 5)
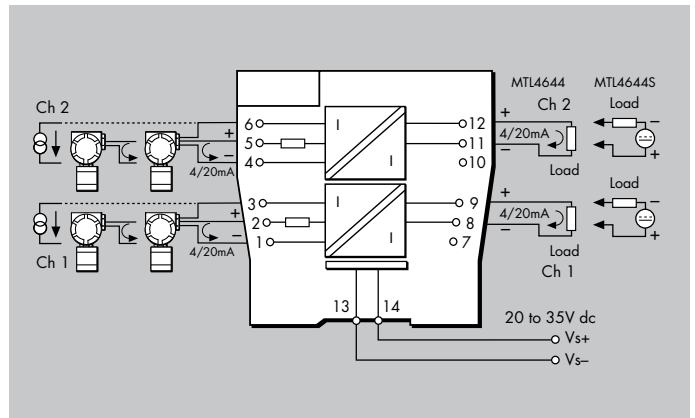Better than 30µA 4-20mA (Terminals 1 & 3 / 4 & 6)

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)

LED indicator
Green: power indication

Maximum current consumption (with 20mA signals)
100mA at 24V dc

Power dissipation within unit (with 20mA signals)
MTL4644	1.5W @ 24V dc
MTL4644S	2.0W @ 24V dc

MTL4644 / MTL4644S

MTL4644A/AS
CURRENT REPEATER
4/20mA passive i/p for HART® transmitters

The MTL4644A 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 MTL4644AS acts as a current sink rather than driving a current into the load.

SPECIFICATION

See also common specification

Number of channels
Two

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: $> 230\Omega$

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

Output

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

Load resistance (MTL4644A)

Conventional transmitters:	0 to 360Ω
Smart transmitters:	250Ω ±10%

Load (MTL4644AS)

Current sink:	600Ω max.
Maximum voltage source:	24V DC

Circuit output resistance: $> 1M\Omega$

Circuit ripple
$< 50\mu A$ peak-to-peak up to 80kHz

Transfer accuracy at 20°C
Better than 20µA
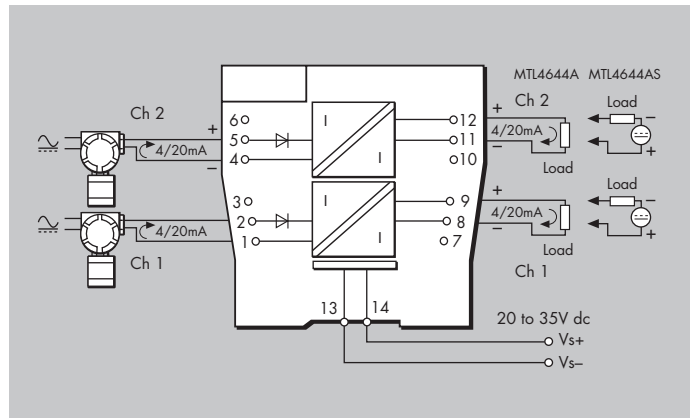
Temperature drift
$< 1\mu A/°C$

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

Communications supported
HART

MTL4644A / MTL4644AS

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)

MTL4644A	1.5W @ 24V dc
MTL4644AS	2.0W @ 24V dc

MTL4644D
REPEATER POWER SUPPLY
single channel, 4/20mA, HART®
for 2- or 3-wire transmitters, two outputs

MTL4644D

The MTL4644D provides a fully-floating dc supply for energising a conventional 2- or 3-wire 4/20mA transmitter and repeating the current in other circuits to drive two loads. For HART 2-wire transmitters, the unit allows bi-directional transmission of digital communication signals superimposed on the 4/20mA loop current.

SPECIFICATION

See also common specification

Number of channels
  One
Output
  Signal range: 4 to 20mA
  Under/over-range: 0 to 24mA
  Load resistance
    @ 24mA: 0 to 360Ω
    @ 20mA: 0 to 450Ω
  Circuit output resistance: > 1MΩ
Circuit ripple
  < 50µA peak-to-peak
Input
  Signal range: 0 to 24mA (including over-range)
  Transmitter voltage: 16.5V at 20mA
Transfer accuracy at 20°C
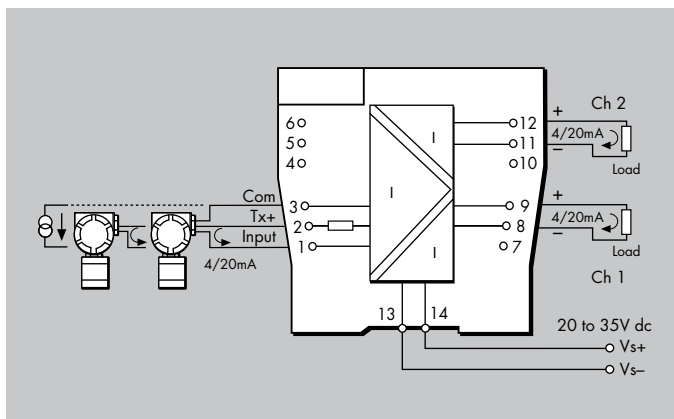 Better than 15µA
Temperature drift
  < 0.8µA/°C
Response time
  Settles to within 10% of final value within 50µs
Communications supported
  HART (terminals 1 & 2, output Ch 1 only)

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

MTL4646/Y
ISOLATING DRIVER
for 4–20mA HART® valve positioners
with line fault detection

The MTL4646 accepts a 4/20mA floating signal from a safe-area controller to drive a current/pressure converter (or any other load up to 800Ω). 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 MTL4646Y is very similar except that it provides open circuit detection only (i.e. no short-circuit detection).

MTL4646 / MTL4646Y

SPECIFICATION

See also common specification

Number of channels
One
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	MTL4646	MTL4646Y
Normal	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.

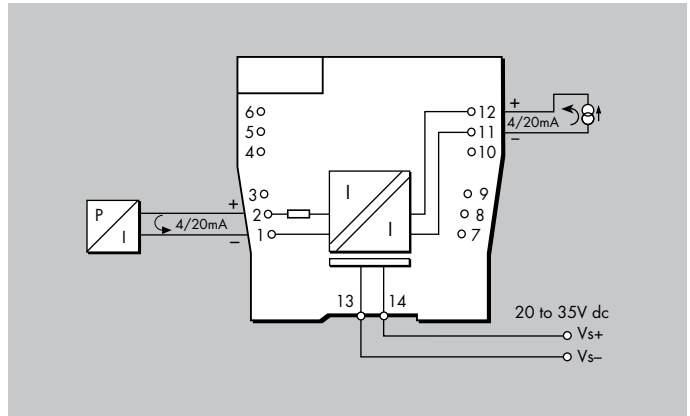**Response time**
Settles within 200µA of final value within 100ms
Communications supported
HART

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

MTL4649/Y
ISOLATING DRIVER
two-channel, for 4–20mA, HART®
valve positioners with line fault detection

The MTL4649 accepts 4/20mA floating signals from a controller to drive 2 current/pressure converters (or any other load up to 800Ω). 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 MTL4649Y is very similar except that it provides open circuit detection only (i.e. no short-circuit detection).

MTL4649 / MTL4649Y

SPECIFICATION

See also common specification

Number of channels
Two
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
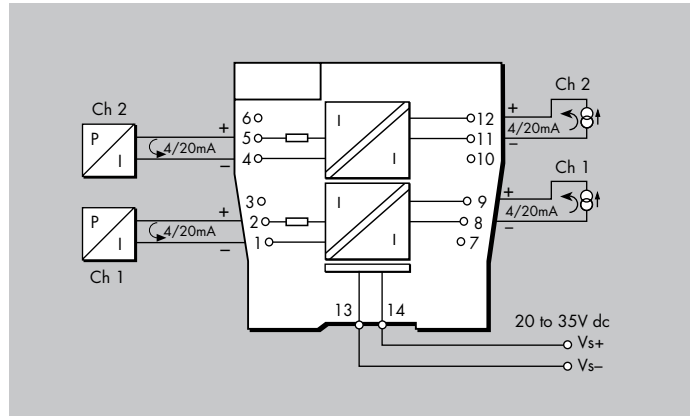Better than 20µA
Temperature drift
< 1.0µA/°C
Input characteristics

Field wiring state	MTL4649	MTL4649Y
Normal	< 6.0V	< 6.0V
Open-circuit	< 0.9mA	< 0.5mA
Short-circuit	< 0.9mA	N.A.

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

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

MTL4675
TEMPERATURE CONVERTER
THC or RTD input + Alarm

The MTL4675 converts a low-level dc signal from a temperature sensor mounted into a 4/20mA current for driving a 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 SAF-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.

MTL4675

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
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
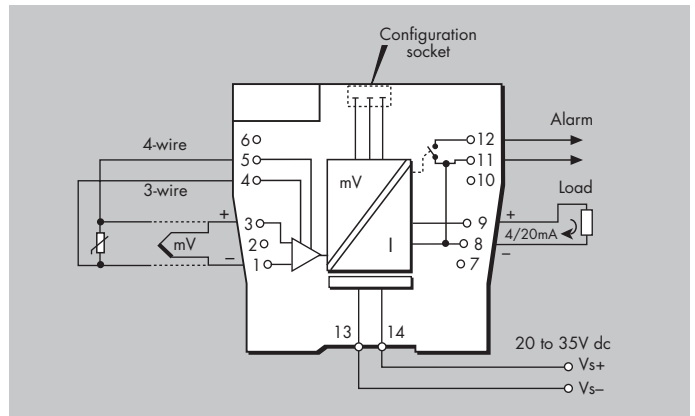   = ±1.0µA/°C
Safety drive on sensor failure
Upscale, downscale, or off
Early burnout
Early burnout detection for thermocouples (when selected)
Alarm trips when loop resistance increase is > 50Ω

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

MTL4676-RTD
TEMPERATURE CONVERTER
RTD/potentiometer input, 2-channel

The MTL4676–RTD converts signals from resistance temperature detectors (RTDs) into 4/20mA currents. Software selectable features include input type and characterisation, ranging, monitoring, testing and tagging. Configuration is carried out using a personal computer. The MTL4676–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
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
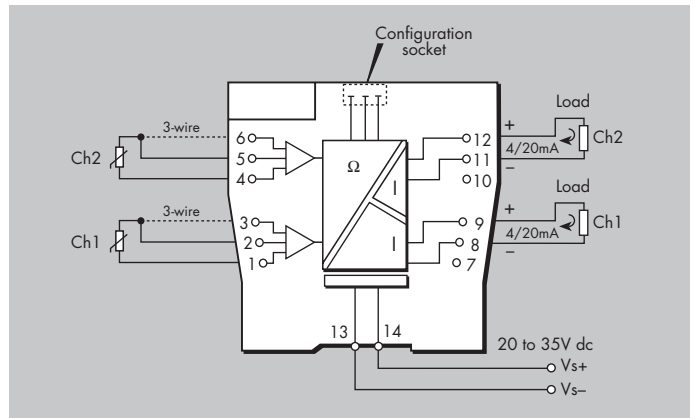Upscale, downscale, or off
Output range
4 to 20mA nominal into 300Ω max. (direct or reverse)
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

MTL4676-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
Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

MTL4676-THC
TEMPERATURE CONVERTER
mV/THC input, 2-channel

The MTL4676–THC converts low–level dc signals from temperature sensors mounted in a hazardous–area into 4/20mA currents. Software selectable features include linearisation for standard thermocouple types, ranging, monitoring, testing and tagging. Configuration is carried out using a personal computer. The field connections include cold–junction compensation and do not need to be ordered separately.

MTL4676-THC

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
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
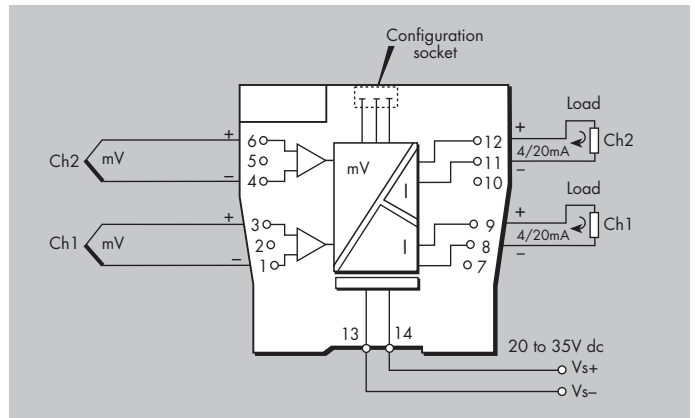4 to 20mA nominal into 300Ω max. (direct or reverse)
Maximum lead resistance
300Ω
Response time
Configurable - 500 ms default
(Accuracy at 100/200ms - contact MTL)

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 input and output circuits.
Configurator
A personal computer running MTL PCS45 software with a PCL45USB serial interface.

MTL4600 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 signal connectors the metal tube length should be 12mm and the wire trim length 14mm.

Isolation
1500V rms minimum, between system and field terminals.
50V between system circuits and power supply

Supply voltage
20 – 35V dc

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

Mounting
MTL4500/4600 series backplanes

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

Humidity
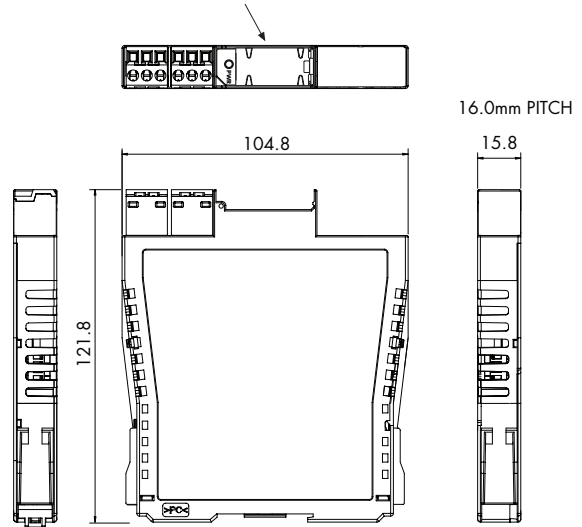5 to 95% relative humidity

Weight
140g
Approximate (except where indicated)

HART® is a registered trademark of HART Communication Foundation

DIMENSIONS (MM)

MTL4600

Optional TH5000 tag holder for individual isolator identification.
Accepts tag label 25 x 12.5 ±0.5mm, 0.2mm thick
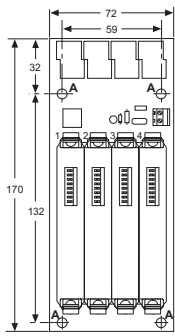
16.0mm PITCH

104.8

15.8

121.8

MTL

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EPS46CS Rev1 201210

CUSTOM, STANDARD AND UNIVERSAL BACKPLANES FOR EASY DCS INTEGRATION

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

The MTL4500/MTL4600 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/MTL4600/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/INM4600 for details.

OPTIONAL ACCESSORIES

Optional accessories include 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, etc, on the tops of the modules are easy to see.

DCS VENDORS/SYSTEMS SUPPORTED:

ABB Automation
S100, INFI90, S800
Rockwell Automation
Bently-Nevada
Foxboro
IA FBM & FBM2xx
Siemens
ET200, S7
Honeywell
PMIO, C200, C300
Honeywell-SMS
Safety Manager, RUSIO
ICS
Triplex, Plantguard
Triconex
Tricon, Trident
Yokogawa
Centum R3, VF, Prosafe RS

Emerson
M Series, S Series
HIMA
HIMax
Schneider
Modicon

MTL CPS STANDARD BACKPLANES

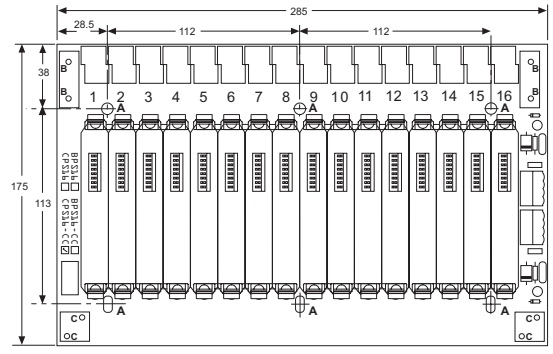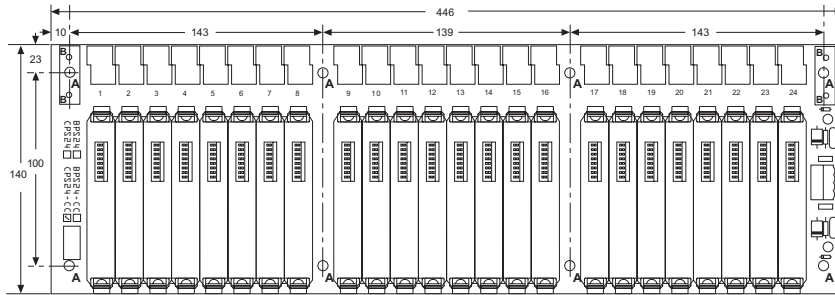| Backplane model no.	Number of modules	Safe-area connections	MOUNTING KITS			ACCESSORIES		
			Surface	DIN–rail (T or G)	19–inch rack	Earth–rail kit	Tagging strip kit	Spare fuse pack
CPS04	4	Screw–clamp	SMS01	DMK01	–	–		FUS1.0ATE5
CPS08	8	Screw–clamp	SMS01	DMK01	–	ERK08	TSK08	FUS1.0ATE5
CPS16	16	Screw–clamp	SMS01	DMK01	–	ERK16	TSK16	FUS2.0ATE5
CPS24	24	Screw–clamp	SMS01	DMK01	HMP24	–	TSK24	FUS4.0ATE5

CPS BACKPLANE DIMENSIONS (mm)

CPS04
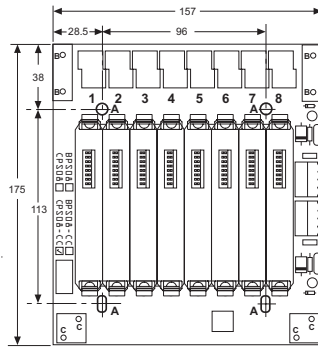
CPS08

CPS16

CPS24

Power requirements, Vs
21V dc to 35V dc through plug-in connectors

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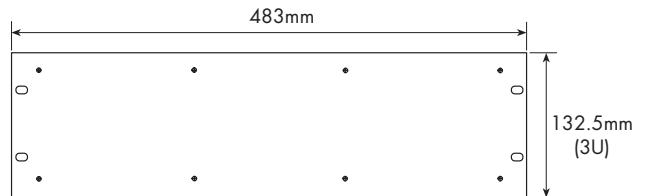CPS: 2.5mm^2 screw-clamp terminals – 6 positions per module

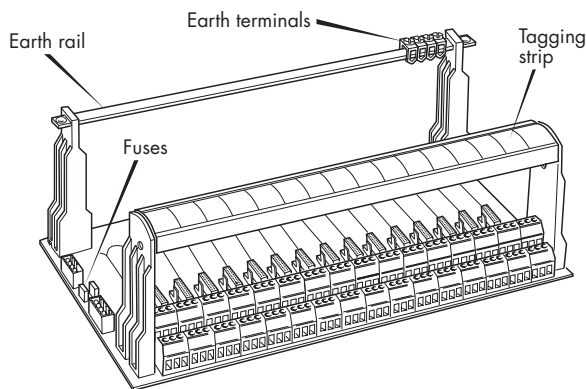**Power sense**
Through separate plug-in crimp connector

Weight (without modules or accessories)

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

HMP24 MOUNTING PLATE FOR 19 INCH RACK

483mm

132.5mm (3U)

BACKPLANE ACCESSORIES

Earth rail

Earth terminals

Tagging strip

Fuses

SCK45 - backplane clips

10 x strip of four

MCK45 - backplane clips

16 x strip of two

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

ORDERING INFORMATION

MTL4600 Series isolators
Specify part number: eg, **MTL4611**

Individual isolator identification
TH5000   Tag holder (Pack of 20)

Connectors - MTL4600
SAF-CJC   Field plug, terminals 1 and 3 with cold-junction sensor
SAF-CJC2   Field plug, terminals 4 and 6 with cold-junction sensor
SAF1-3   System plug, terminals 1, 2 and 3
SAF4-6   System plug, terminals 4, 5 and 6

MTL4500/4600 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

MTL4500/4600 Custom Backplanes
Contact MTL for options and advice

MTL4500/4600 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

MTL4600 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
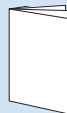**FUS1.0ATE5** Fuse kit for 4- and 8-way backplanes, (10 per pack)
FUS2.0ATE5 Fuse kit for 16-way backplane, (10 per pack)
FUS4.0ATE5 Fuse kit for 24-way backplanes, (10 per pack)
MCK45   MTL4000 backplane conversion kit (16 clip pairs per pack)
SCK45   Module 4-clip strips (10 strips + 40 rivets per pack)
MPL01   Module position label (blank) (50 per pack)

Literature
INM4500   MTL4600 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.