

# MTL4510 SWITCH/ PROXIMITY DETECTOR INTERFACE

four-channel, digital input

The MTL4510 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  $1k\Omega \pm 10\%$

### Input/output characteristics

Normal phase

Outputs closed if input > 2.1mA (< 2k $\Omega$  in input circuit)

Outputs open if input < 1.2mA (> 10k $\Omega$  in input circuit)

Hysteresis: 200 $\mu$ A (650 $\Omega$ ) nominal

### Line fault detection (LFD) (when selected)

User-selectable via switches on the side of the unit.

Open-circuit alarm on if  $I_{in} < 50\mu$ A

Open-circuit alarm off if  $I_{in} > 250\mu$ A

Short-circuit alarm on if  $R_{in} < 100\Omega$

Short-circuit alarm off if  $R_{in} > 360\Omega$

Note: Resistors must be fitted when using the LFD facility with a contact input 500 $\Omega$  to 1k $\Omega$  in series with switch

20k $\Omega$  to 25k $\Omega$  in parallel with switch

### Safe-area outputs

Floating solid-state outputs compatible with logic circuits

Operating frequency: dc to 500Hz

Max. off-state voltage:  $\pm 35$ V

Max. off-state leakage current:  $\pm 50\mu$ A

Max. on-state resistance: 65 $\Omega$

Max. on-state current:  $\pm 50$ mA

### LED indicators

Green: power indication

Yellow: four: indicates output active

Red: indicates line fault + faulty channel's yellow LED flashes

### Maximum current consumption

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

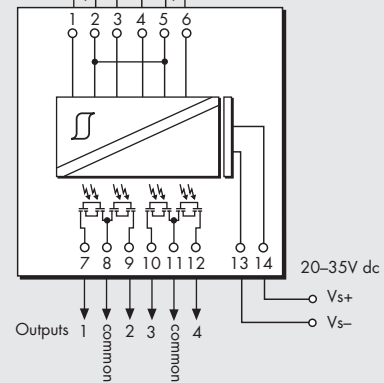
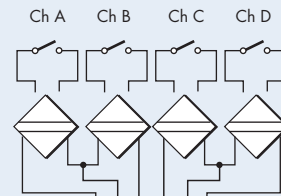
### Power dissipation within unit

0.96W at 24V

### Safety description (each channel)

$V_o=10.5$ V  $I_o=14$ mA  $P_o=37$ mW  $U_m = 253$ V rms or dc

### Hazardous area



### Safe area

Terminal	Function
1	Input channel A
2	Input channel AB common (+)
3	Input channel B
4	Input channel C
5	Input channel CD common (+)
6	Input channel D
7	Output channel 1
8	Output channel 1/2 common
9	Output channel 2
10	Output channel 3
11	Output channel 3/4 common
12	Output channel 4
13	Supply -ve
14	Supply +ve

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.	prox. detector + LFD
8	chA	chB	chC	chD	
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.

