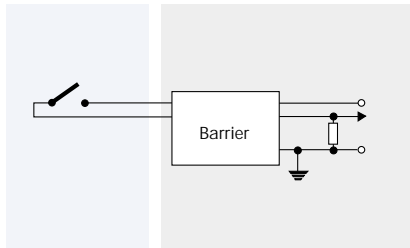


BARRIERS BY APPLICATION

In the following tables, recommended barriers for common applications are listed with 'key' barriers shown bold. Specifications and more detailed application data for all three ranges follow on from the tables. For further in-depth considerations of the factors affecting various applications and barrier choices, refer to the following MTL Application Notes.

- PS007 Intrinsic safety – principles and practice (included in this catalogue)
- AN9003 A user's guide to intrinsic safety
- AN9007 A user's guide to shunt-diode safety barriers MTL700 Series

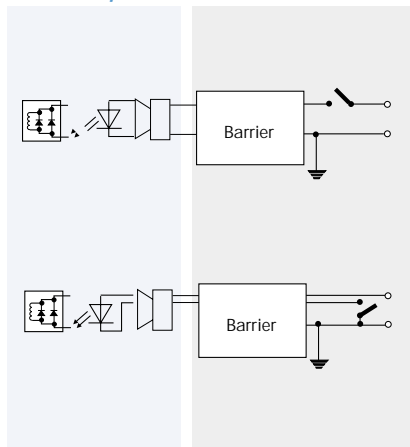
SWITCHES



DIGITAL (ON/OFF) INPUTS Key barriers are shown in bold throughout

Power supply	Barrier	Loops	Main features
Regulated	MTL7787+	1	Diode return
	MTL7789+	2	Diode return - Dual channel
	MTL774X	1	Relay/Solid state output
Unregulated: 20–35V	MTL774x	1/2	Relay/Solid state output

ALARMS, LEDS, SOLENOID VALVES, ETC

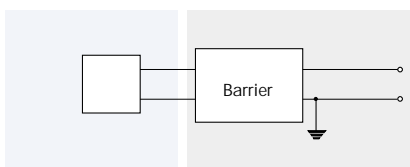


DIGITAL (ON/OFF) OUTPUTS

Signal/power	Barrier	Loops	Usable power per loop	Main features
Switch in power leg, (earth return); regulated supplies	MTL7728+	1	0.48W	- Higher power, IIC gases Volt drop = 5.1V at 20mA Higher power, IIB gas
	MTL7728P+	1	0.59W	
	MTL7729P+	1	0.82W	
Switch in power leg, (earth return); unregulated (20–35V) supplies	MTL7707+	1	0.41W	Up to 35mA available
Control switch on earth (diode return); regulated supplies	MTL7787+	1	0.42W	- Higher power, IIC gases
	MTL7787P+	1	0.51W	
Control switch on earth (diode return); unregulated (20–35V) supplies	MTL7707+	1	0.29W	Up to 35mA available Optimised for IIB gases
MTL7707P+	1	0.68W		

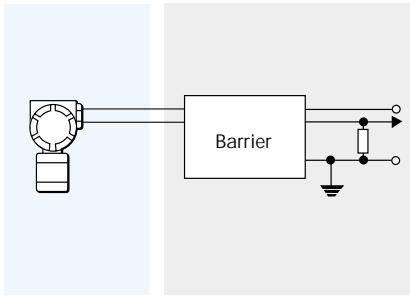
NB: usable power figures calculated for V_{wkg} of barrier

NEGATIVE AND FLOATING POWER SUPPLIES



Signal/power	Barrier	Loops
Regulated negative/floating power supply	MTL7728-	1

TRANSMITTERS; 2-WIRE, 4/20mA, AND SMART

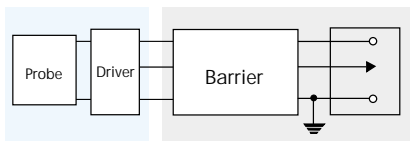


ANALOGUE INPUTS (HIGH-LEVEL)

Power supply	Barrier	Loops	Voltage for Tx and lines	Main features
Regulated	MTL7787+ MTL7787P+ MTL7788R+	1 1 1	12.4V 13.1V 13.7V	Compatible with most smart transmitters Higher power, IIC gases 1-5V safe-area output
Unregulated 20 to 35V	MTL7706+ MTL7707P+	1 1	15.5V 13.0V	High accuracy; compatible with most smart transmitters; full output voltage available independently of supply voltage Higher power, IIB gases

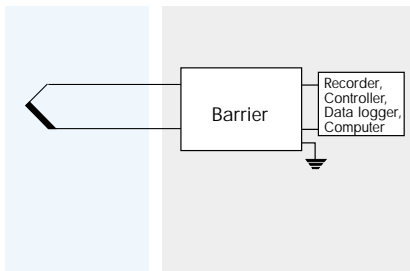
NB: voltage available for transmitter and lines is calculated at V_{wkg} for passive barriers and 24V for overvoltage protected barriers, both at 20mA with a 250Ω resistor. In practice slightly higher voltages than those indicated are attainable by using a supply voltage of up to V_{max} : for example, see MTL7787P+.

VIBRATION PROBES



Power supply	Barrier	Loops	Main features
Regulated	MTL7796-	1	For -24V systems

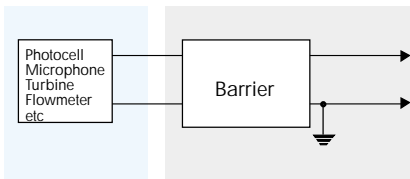
THCS AND MV SOURCES



ANALOGUE INPUTS (LOW-LEVEL)

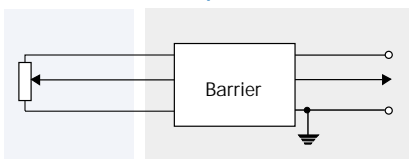
Comments	Barrier	Loops	Maximum end-to-end resistance per loop	Features
Earth-free signal, receiver input floating	MTL7760ac MTL7761ac	1 1	170Ω 290Ω	- -
Moving-coil or low resistance receivers	MTL7751ac MTL7755ac	1 1	40Ω 36Ω	- -

AC; PHOTOCCELL, MICROPHONE, TURBINE FLOWMETER



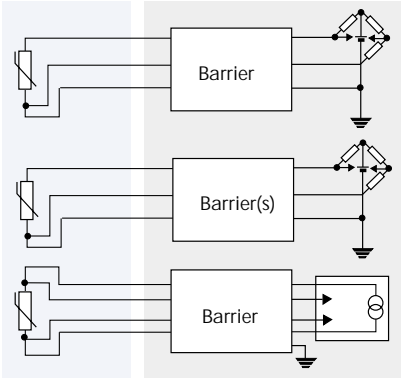
Comments	Barrier	Loops	Maximum end-to-end resistance per loop	Features
Earth-free signals up to a few kHz	MTL7751ac MTL7760ac	1 1	40Ω 170Ω	- -

DISPLACEMENT TRANSDUCERS, SLIDEWIRE



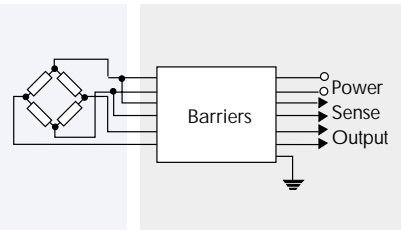
Power supply	Barrier	Loops	V_{wkg}	Features
For nominal 6V supplies	MTL7760ac	1	6.0V	

2-, 3- AND 4-WIRE RTDS



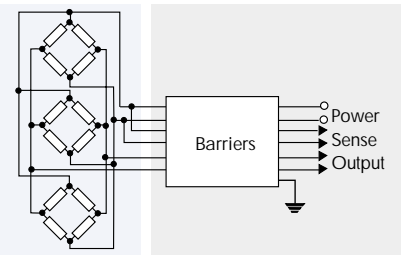
Comments	Barrier	Loops	Main features
2-wire	MTL7755ac	1	2 channels track to 0.15Ω
3-wire	MTL7755ac MTL7756ac	2/3 1	End-to-end resistance 18.0Ω/channel Needs 1 1/2 barriers End-to-end resistance 24Ω/channel
4-wire	MTL7755ac MTL7760ac MTL7761ac	1/2 1/2 1/2	Needs 2 barriers V _{wkg} = 6V; needs 2 barriers V _{wkg} = 6V; needs 2 barriers

SINGLE STRAIN-GAUGE BRIDGE



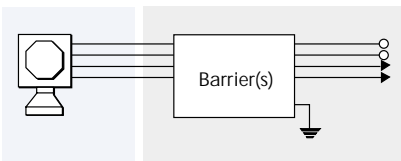
Comments	Barrier	Loops	Volts for 350Ω bridge
IIC gases	MTL7671ac (2) + MTL7764ac	1	6.5V from MTL761ac with 12V supply
	MTL7766ac + MTL7761ac + MTL7764ac	1	9.7V from MTL766ac with 20V supply

MULTIPLE STRAIN-GAUGE BRIDGES



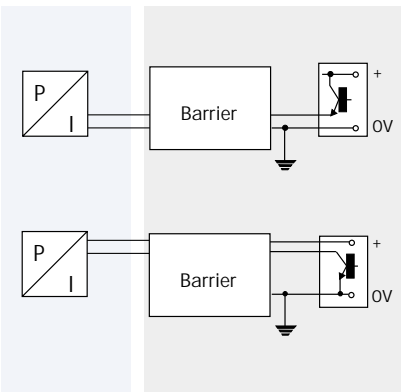
Comments	Barrier(s)	Loops	Volts for 350Ω bridges (20V in) Number of bridges			
			1	2	3	4
IIC gases	MTL766Pac (1) + MTL761Pac (2)	1	13.0	9.7	7.7	6.4

GAS DETECTORS



Power Supply	Barriers	Loops	Main features
Nominal 6V supplies	MTL7758+ + MTL7761ac	1	For high current/low voltage MTL7758+ V _{wkg} = 6.0V

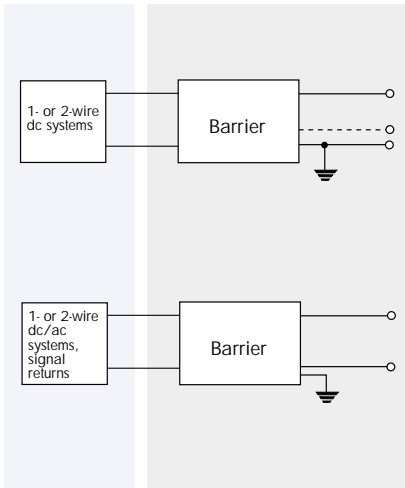
CONTROLLER OUTPUTS; (I/P CONVERTERS)



ANALOGUE OUTPUTS

Signal/power	Barrier	Loops	Volt drop at 20mA	Main features
Output goes to 0V (earth return); regulated supplies	MTL7728+ MTL7728P+ MTL7729P+	1 1 1	6.8V 5.1V 3.7V	- Higher power, IIC gases Higher power, IIB gases
Transistor between controller output and 0V; (diode return); regulated supplies	MTL7787+ MTL7787P+	1 1	8.1V 6.4V	- Higher power, IIC gases
Transistor between controller output and 0V; (diode return); unregulated supplies (20 to 35V)	MTL7707+ MTL7707P+	1 1	12.0V 5.9V	- Higher power, IIB gases

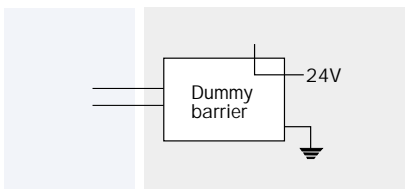
2-WIRE DC/AC SYSTEMS, SIGNAL RETURNS



MISCELLANEOUS

System or function	Barrier	Loops	V _{wkg}	Main features
5V logic systems, displays, loggers, etc	MTL7710P+	1	8.0V	End-to-end resistance only 42Ω; 65mA at 5V from 8V supply; IIC gases
6V dc systems	MTL7710+	1	6.0V	-
8V dc systems	MTL7710P+	1	8.0V	-
Low-level logic returns	MTL7764+	2	10.0V	End-to-end resistance 1075Ω
12V dc systems	MTL7715+ MTL7715P+	1	12.0V 12.5V	- -
18V dc systems	MTL7722+ MTL7722P+	1	19.0V 18.5V	- Higher power version, IIC
4V ac systems	MTL7710ac	1	6.0V	-
2-wire dc/ac systems	MTL7765ac MTL7778ac	1	12.0V 24.0V	- -
Signal returns	MTL7789+	2	25.5V	2 diode return channels

SECURING CABLE SCREENS AND SPARE CABLE CORES



System or function	Barrier	Loops	V _{wkg}	Main features
Securing cables to earth for future use; terminating cable screens	MTL7799	-	-	Power feed to bussed power modules. Not certified