

Zener diode barrier MTL 7787+



Description

All MTL7700 Series barriers are based on the same simple principle. Each channel contains two stages of pulse-tested Zener or forward-connected diodes and an 'infallible' terminating resistor. In the event of an electrical fault in the safe area, the diodes limit the voltage that can reach the hazardous area and the resistor limits the current. A fuse protects the diodes, and the two stages of voltage limitation ensure continued safety if either stage should fail. No active output current limiting circuits are employed. All models are certified 'ia' for all zones and 'IIC' for all explosive atmospheres (except MTL7707P+ and MTL7729P+, 'ia' 'IIB').

■ Safety description

The safety description of a barrier, eg 10 V, 50 Ω, 200 mA, refers to the maximum voltage of the terminating Zener or forward diode while the fuse is blowing, the minimum value of the terminating resistor, and the corresponding maximum short-circuit current. It is an indication of the fault energy that can be developed in the hazardous area, and not of the working voltage or end-to-end resistance.

■ Polarity

Barriers may be polarised + or –, or non-polarised ('ac'). Polarised barriers accept and/or deliver safe-area voltages of the specified polarity only. Non-polarised barriers support voltages of either polarity applied at either end.

■ End-to-end resistance

The resistance between the two ends of a barrier channel at 20°C, ie of the resistors and the fuse. If diodes or transistors are present, their voltage drop (transistors ON) is quoted in addition.

■ Working voltage (Vwkg)

The greatest steady voltage, of appropriate polarity, that can be applied between the safe-area terminal of a 'basic' barrier channel and earth at 20 °C for the specified leakage current, with the hazardous-area terminal open circuit.

■ Maximum voltage (Vmax)

The greatest steady voltage, of appropriate polarity, that can be applied continuously between the safe-area terminal of any barrier channel and earth at 20 °C without blowing the fuse. For 'basic' barriers, it is specified with the hazardous-area terminal open circuit; if current is drawn in the hazardous area, the maximum voltage for these barriers is reduced. The 'ac' channels of 'basic' barriers and most channels of overvoltage-protected barriers withstand voltages of the opposite polarity also – see circuit diagrams.

■ Fuse rating

The greatest current that can be passed continuously (for 1000 hours at 35 °C) through the fuse.

■ Star connection

In star-connected barriers, the two channels are interlocked such that the voltage between them cannot exceed the working voltage, Vwkg: this allows for higher cable capacitance or inductance.

■ Maximum safe-area voltage (U_m)

The maximum permissible safe-area voltage (U_m) for MTL7700 Series barriers is 250 V AC / DC.

Technical data	Type: MLT 7787+
Ambient temperature and humidity limits	- 20 ... + 60 °C continuous working - 40 ... + 80 °C storage 5 ... 95 % RH
Safety description	28 V, 300 Ohm
Terminals	Removable terminals accommodate conductors up to 2.5 mm ² (13AWG). Hazardous-area terminals are identified by blue labels. Removal force > 15 N.
Weight	~ 140 g
EMV-directive	EN 50 081-2 EN 50 082-2