MTL5051
SERIAL-DATA COMMS ISOLATOR

The MTL5051 provides bi-directional serial data communication from a computer system in safe area to instrumentation in a hazardous area. It is used to provide a fully floating dc supply for, and serial data communications to: MTL643, MTL644, MTL646 and MTL647 IS text displays, other IS instrumentation, keyboards or a mouse. It can also be used for data communications across a hazardous area.

SPECIFICATION

See also common specification

Location of field equipment
Zone 0, IIC, T4-6 hazardous area
Div 1, Group A hazardous location

Safe-area signal
RS232 or RS422

Hazardous-area signal
MTL640 Series mode:
To hazardous area: 3V signal superimposed on 12V (nominal) supply
From hazardous area: 5mA signal superimposed on quiescent current

Across hazardous area communications mode:
To hazardous area: 10mA current source
From hazardous area: 10mA current source

IS RS232/TTL devices mode:
To hazardous area: RS232-compatible signal levels
From hazardous area: TTL/RS232 signals

LED Indicators
Green: power indication

Max. power dissipation within unit
1.7W at 24V, 25mA load

Maximum power consumption (25mA load)
At Vs=20V, 105mA
At Vs=24V, 90mA
At Vs=35V, 70mA

Comms bandwidth
643/4 mode 1200 to 9600 baud
Other modes up to 19.2 kbaud

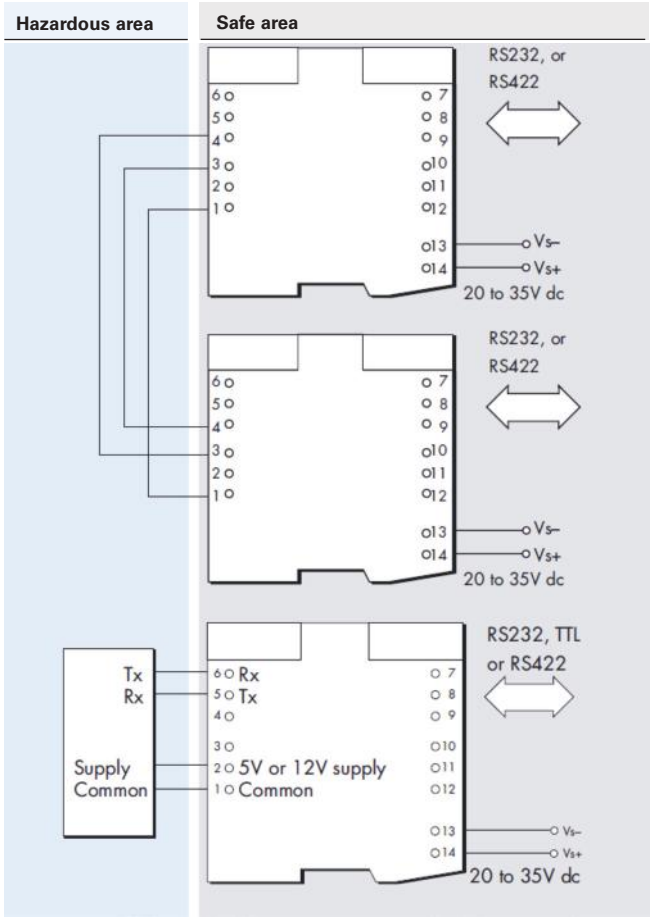
Safety description
Terminals 1,2,3,4 only 14V, 800mW, 192mA
Terminals 1,3,4 only 14V, 350mW, 88mA
Terminals 1,2,3 only 14V, 450mW, 108mA
Terminals 1,5,6 only 15V, 70mW, 35mA
Terminals 1,2,5,6 only 20V, 460mW, 139mA
Terminals 1,2,3,4,5,6 only 20V, 810mW, 227mA

Hazardous area supply terminal 2
+12V mode 12.0V ± 5% (load <23mA)
+12V mode 8.0V min (load >23 to <50mA)
+5V 5.6V ± 5% (load >23 to <50mA)

Hazardous Interfacing
See MTL640 Series for details of interfacing with MTL643, MTL644, MTL646 and MTL647 IS text displays.

Across hazardous areas communications mode
The MTL5051 is used in pairs to transfer bi-directional fullduplex data across hazardous areas, as shown above. Current switching is used to minimise the bandwidth-limiting effects of long cables.

Interfacing to an IS keyboard, mouse or other device
Communicating with RS232-level interfaces, such as an IS keyboard, mouse, etc. is achieved by using one or more MTL5051 units as required by the device. (TTL level interfaces are also accommodated by the TTL-compatibility feature of RS232 receivers.) The supply to the IS equipment may be selected to be either 5V or 12V by switch on top of unit.



MTL5051 Terminals	MTI640 mode	Comms mode	Other IS devices
1	Common	Common	Common
2	V signal	-	5V/12V
3	I return	Rx	-
4	-	Tx	-
5	-	-	Tx
6	-	-	Rx
Switch			
1a	ON	OFF	OFF
1b	ON	ON	OFF/ON

Terminal	RS232 mode	TTL mode	RS422 mode
7	-	-	Rx-
8	-	-	Rx +
9	-	Tx	Tx +
10	Tx	-	Tx-
11	Common	Common	Common
12	Rx	Rx	-
13	Supply -ve	Supply-ve	Supply -ve
14	Supply +ve	Supply +ve	Supply +ve
Switch			
2a	OFF	ON	ON
2b	ON	OFF	OFF

Note: the normal RS232 limitations of bandwidth versus cable length are applicable. As a rule of thumb, speed(baud) x length(metres) < 150,000.

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