

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 $V_s=20V$, 105mA
At $V_s=24V$, 90mA
At $V_s=35V$, 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 \pm 5% (load <23mA)
+12V mode 8.0V min (load >23 to <50mA)
+5V 5.6V \pm 5% (load >23 to <50mA)

Hazardous Interfacing

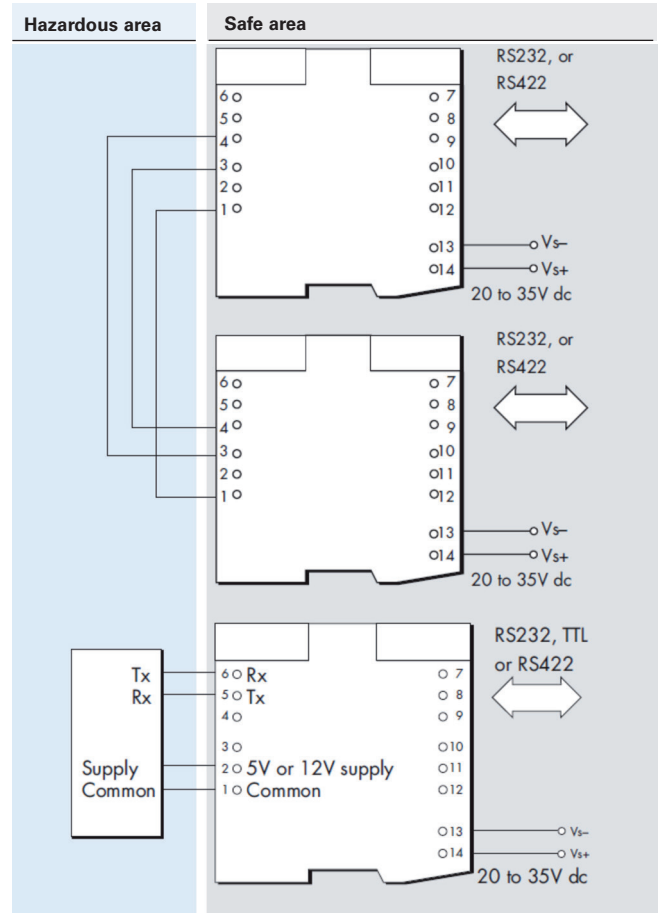
See MTL640 Series for details of interfacing with MTL643, MTL644, MTL646 and MTL647 IS text displays.

Across hazardous areas communications mode

The MTL5051 is used in pairs to transfer bi-directional full duplex 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, $speed(baud) \times length(metres) < 150,000$.

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.