

RS422 Line Driver/Repeater



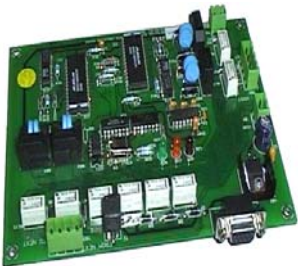
The RS422 Line Driver/Repeater was designed to facilitate multidrop data exchange between nodes in a network by providing a local RS232 equipment interface, which is galvanically isolated from the communication line. An on-board microprocessor monitors line data activity and power supply. Upon local node failure, the communication line can be isolated from the node by enabling a by-pass connection. Communication line failure detection enables swapping of the TX / RX pairs to enable communication from downstream direction which overcomes single break type problems. Galvanic isolation reduces or eliminates electrical surge problems associated with communication lines which have varying voltage potential.

The LD100 series RS422 line driver was designed to provide reliable long distance data exchange between two nodes on a network. The line driver module includes an RS232 local equipment interface via a DB9 connector and provides copper twisted pair termination via mate-enlock screw terminal assemblies. The module requires an external low current plug-pack style power supply, or use of proprietary designated DB9 allocated connector pin. If the application requires electrical surge protection, the LD100SP unit incorporates galvanic isolation



Features

- RS422 signal level compliant
 - Four wire / 2 pair (RX / TX) RS422 balanced communications line interface
- Galvanic Isolation from local RS232 interface
 - Provides an isolated DC supply and a line connection that can sustain 1500 volt for 30 seconds through a combination of Transorbs and galvanic isolation circuitry
- Surge protection by Transorbs and PTC devices
 - Protects the RS422 Line Driver from over-voltage surges
- Transmission line length at maximum quality baud rate (115 kb) is approximately 1 Km (refer to specification overleaf)
- Multi-drop data exchange, driver and repeater functions
 - Data 'T' from line at RS232 signal level
 - Station isolation – communication line isolation from station incorporating station electrical by-pass circuit
 - The RS422 line driver can be used in multi-drop situations depending on local host device compatibility
 - Signal repeater - RS422 signal is converted to a TTL signal within each station, then converted back into RS422 and retransmitted to the next site
 - Automated line direction selection
 - Combination of primary and secondary line operation to overcome line failures
 - Automatic switch over to the 'secondary line' if data on the primary line is lost for more than 2.5 minutes. The node will look for re-established communication from the 'other' line every 30 seconds





Transmission Line Characteristics

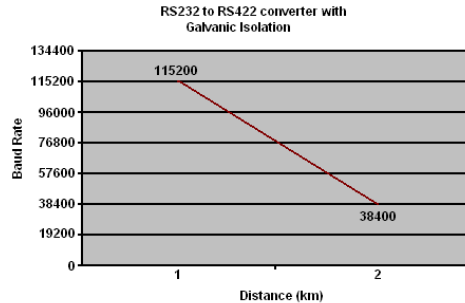


Figure A – Distance v Communication baud rate with Galvanic Isolation

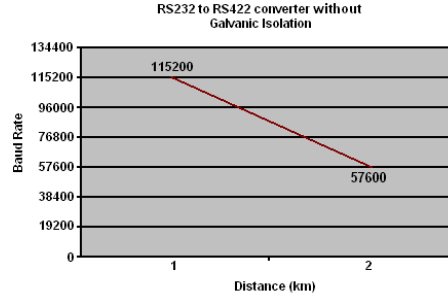


Figure B – Distance v Communication baud rate without Galvanic Isolation

Figure A, displays 100% error free transmission at the designated baud rate. Maximum baud rate of 115200 at one kilometre and 38400 baud rate at two kilometres with random bit pattern message streams. The baud rate may be configured to the relevant distance for reliable operation.

Figure B, displays 100% error free transmission at the designated baud rate. Maximum baud rate of 115200 at one kilometre and 57600 baud rate at two kilometres with random bit pattern message streams. The baud rate may be configured to the relevant distance for reliable operation.

Models

LDC-100 Line driver circuit card
 LDM-100 Line driver module
 LDR -100 Line driver/repeater

General Specification

Electrical: RS422 electrical signal level compatible, 2 pair full duplex configuration operation TX/RX
 Isolation: 1500 volt for 30 seconds
 Protocol: Asynchronous
 Data Rate: Baud rate 115.2 kbps at 1 km
 Connectors: RS-232: (1) DB9 Socket (1 amp at 20 Megohms/100 milliamp)
 RS-422: (2) 4-screw assy terminal block (10 amp 300 volt DC)
 Max Distance: 48 hour test 2 km at 100% error free transmission – 38400 baud
 Power: 12 volt (external or proprietary connection via RS232 connector)
 Current: Line Driver: 0.03 amps, line driver/repeater 0.17 amp
 Weight: Line Driver < 0.1 kg, line driver/repeater < 0.250 kg
 Size: Line Driver: Card: 86 mm x 55 mm x 20 mm, Case: 90 mm x 90 mm x 40 mm
 Size: Line Driver/Repeater: Card: 86 mm x 55 mm x 20 mm, Case: 90 mm x 90 mm x 40 mm

Circuitry is rated to 65°C operation with a relative humidity of 90%. Circuit cards are conformal coated and will operate within Australian Standard Guidelines for Traffic Control Devices as per TSC/3 and TSC/4. The CONFORMAL coating material used to protect the circuit cards is labelled SCC3 CC from Electrolube. The conformal coating material has a dielectric strength of 90 KV/mm and an operational temperature range of -70°C to +200°C and is self extinguishing when exposed to a flame.