

# Heavy Industrial RS-232 to RS-422/485 Isolated Converter

485DRCI-PH



## PRODUCT FEATURES

- IEEE-61850-3, IEEE-1613
- NEMA TS2
- -40 to 85°C Operating Temperature
- Rugged IP30 Metal Panel Mount Case
- 50G Shock, 4G Vibration
- 2kV Triple Isolation
- 10 to 48 VDC Input Power

Model 485DRCI-PH is our premium heavy industrial RS-232 to RS-422/485 isolated converter. Designed for rugged industrial environments, it has been put through some of the most exacting compliance tests in the industry. Meeting the requirements of IEC 61850-3 and IEEE 1613, it is suitable for installation in electrical substations. These specifications are more stringent than the NEMA TS1/TS2 requirements for transportation applications. Powerful isolation on both data ports protects your equipment and data from damaging ground loops and surges. Additional isolation on the power supply circuits adds a third degree of protection.

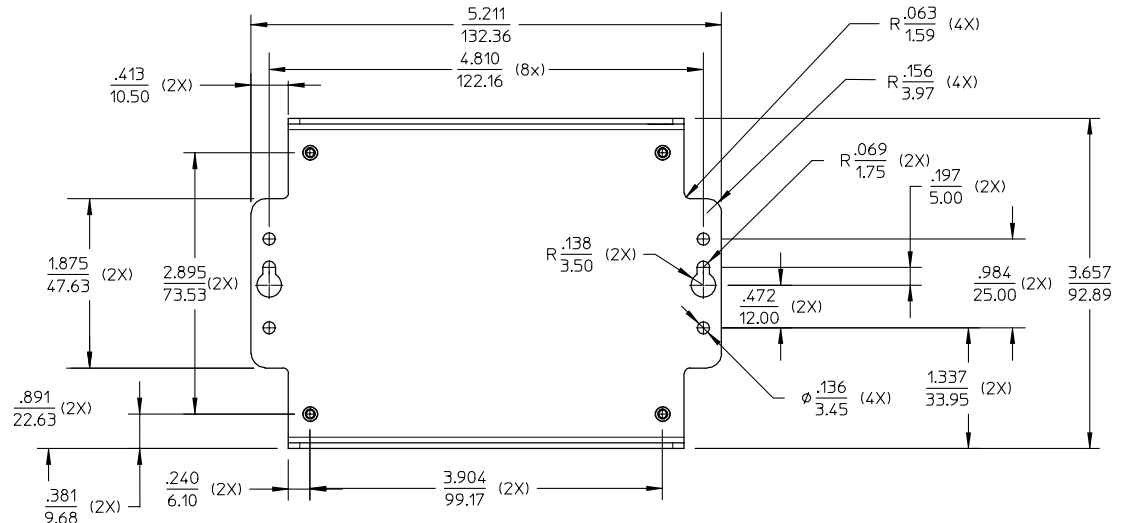
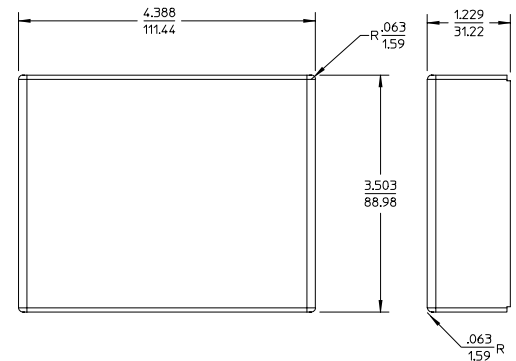
Packaged in a rugged IP30 metal case, it converts unbalanced, full or half-duplex RS-232 signals to balanced RS-422/485 signals. Featuring Automatic Send Data Control circuitry, it does not require special software control of handshake signals in RS-485 mode. Our bit-wise enabled circuitry automatically detects the data rate without setting a

## ORDERING INFORMATION

| MODEL NUMBER | DESCRIPTION  |
|--------------|--|
| 485DRCI-PH   | Heavy Industrial RS-232 to RS-422/485 Isolated Converter |

## ACCESSORIES

MDR-40-24 - DIN Rail Mount Power Supply 24VDC, 1.7 A output power



# Heavy Industrial RS-232 to RS-422/485 Isolated Converter

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## SPECIFICATIONS

| SERIAL TECHNOLOGY     |   |
|-----------------------|---|
| RS-232                | TD, RD, GND   |
| RS-422                | TDA(-), TDB(+), RDA(-), RDB(+)                              |
| RS-485 4-Wire         | TDA(-), TDB(+), RDA(-), RDB(+)                              |
| RS-485 2-Wire         | Data A(-), Data B(+)  |
| RS-232 Connector      | DB9 Female (DCE)  |
| RS-422/485 Connector  | 5 position, removable terminal block                        |
| Data Rate             | 1.2 to 115.2 Kbps   |
| Isolation             | 2 KV RMS, 1 minute  |
| Surge Protection      | 600W peak power dissipation.<br>Clamping time <1 picosecond |
| Industrial Bus        | Modbus ASCII / RTU  |
| Bias                  | Built-in, switchable 1.2K $\Omega$ XMT/RCV                  |
| Termination           | Built-in, switchable 120 $\Omega$                           |
| POWER                 |   |
| Source                | External  |
| Power Connector       | 2 position removable terminal block                         |
| Input Voltage         | 10 to 48 VDC (56 VDC Maximum)                               |
| Power Consumption     | 0.5 W typical (1.9 W with termination)                      |
| TERMINAL BLOCKS       |   |
| Wire Size Accepted    | 28 to 12 AWG, copper wire only.                             |
| Pitch                 | 5.08 mm   |
| Insulation Resistance | $\geq$ 500 M $\Omega$ @ 500 VDC                             |
| Maximum Torque        | 5 Kg / cm   |

| INDICATORS            |  |
|-----------------------|--|
| Power                 | Red LED  |
| TD / RD (Each Port)   | Green LED  |
| MECHANICAL            |  |
| Dimensions            | 5.2 x 3.7 x 1.3 in<br>132.4 x 92.9 x 33.0 mm                         |
| Enclosure             | IP30 Metal, Panel Mount  |
| Weight                | 0.46 lbs (208.65 grams)  |
| MTBF                  | 163611 Hours   |
| MTBF Calc. Method     | Parts Count Reliability Prediction                                   |
| ENVIRONMENTAL         |  |
| Operating Temperature | -40 to 85°C (-40 to 176°F)   |
| Storage Temperature   | -40 to 85°C (-40 to 176°F)   |
| Operating Humidity    | 0 to 95% Non-condensing  |
| REGULATORY            |  |
| Approvals             | FCC, CE, IEC 61850-3, IEEE 1613<br>UL C1 D2, File: E245458, NEMA TS2 |

## IEC 61850-3 ELECTRO MAGNETIC INTERFERENCE SPECIFICATIONS

| TEST       | DESCRIPTION               | TEST LEVEL        | LEVEL                                 |       |
|------------|---------------------------|-------------------|---------------------------------------|-------|
| 61000-4-2  | ESD                       | Enclosure Contact | 8 kV                                  | 4     |
|            |                           | Enclosure Air     | 15 kV                                 | 4     |
| 61000-4-3  | Radiated RFI              | Enclosure Ports   | 10 V/m                                | 3     |
|            |                           | Signal Ports      | 4 kV @ 2.5 KHz                        | ----- |
| 61000-4-4  | Burst (Fast Transient)    | DC Power Ports    | 4 kV                                  | 4     |
|            |                           | Signal Ports      | 2 kV line to earth, 1 kV line to line | 4     |
| 61000-4-5  | Surge                     | DC Power Ports    | 2 kV line to earth, 1 kV line to line | 3     |
|            |                           | Signal Ports      | 10 V RMS                              | 3     |
| 61000-4-6  | Induced (Conductive) RFI  | DC Power Ports    | 10 V RMS                              | 3     |
|            |                           | Signal Ports      | 2.5 kV common, 1 kV diff mode @ 1MHz  | 3     |
| 61000-4-12 | Damped Oscillatory        | DC Power Ports    | 2.5 kV common, 1 kV diff mode @ 1MHz  | 3     |
|            |                           | Signal Ports      | 30 V Continuous, 300 V for 1 s        | 4     |
| 61000-4-16 | Mains Frequency Voltage   | DC Power Ports    | 30 V Continuous, 300 V for 1 s        | 4     |
|            |                           | DC Power Ports    | 10%                                   | 3     |
| 61000-4-17 | Ripple on DC Power Supply | DC Power Ports    | 10%                                   | 3     |

## IEEE 1613 C37.90 ELECTROMAGNETIC INTERFERENCE SPECIFICATIONS

| TEST     | DESCRIPTION    | TEST LEVEL        | LEVEL          |       |
|----------|----------------|-------------------|----------------|-------|
| C37.90.3 | ESD            | Enclosure Contact | 8 kV           | ----- |
|          |                | Enclosure Air     | 15 kV          | ----- |
| C37.90.2 | Radiated RFI   | Enclosure Ports   | 10 v/m         | ----- |
|          |                | Signal Ports      | 4 kV @ 2.5 kHz | ----- |
| C37.90.1 | Fast Transient | DC Power Ports    | 4 kV           | ----- |

## ENVIRONMENTAL SPECIFICATIONS

| TEST           | DESCRIPTION                | TEST LEVEL | LEVEL  |         |
|----------------|----------------------------|------------|--|---------|
| 60068-2-1      | Cold Temperature           | Test Ad    | (-)40 C, 16 Hours                                | -----   |
| 60068-2-2      | Dry Heat                   | Test Bd    | (+)85 C, 16 Hours                                | -----   |
| 60068-2-30     | Humidity (damp heat cycle) | Test Dd    | 90% (non-condensing) (+)55C, 6 Cycles            | -----   |
| IEC 60068-2-6  | Vibration                  | Test Fc    | 4G   | Class 2 |
| IEC 60068-2-27 | Shock                      | Test Ea    | 50G  | Class 2 |
| IEC 60068-2-32 | Drop                       | -----      | 6 faces, 3 edges, 1 corner total 10 drops at 1 m | -----   |



[www.L-TronDirect.com](http://www.L-TronDirect.com)

800-830-9523

[info@L-Tron.com](mailto:info@L-Tron.com)

596 Fishers Station Dr | Victor, NY | 14564 | Suite 1 A

[www.L-Tron.com](http://www.L-Tron.com)

