OMNITERM LPR & LPS LOOP REPEATER/SPLITTER

Model C2463B LPR (Current Loop Repeater) & C2464B LPS (Current Loop Splitter).

DATASHEET

- Isolate 0/4-20mA loops

- Create extra isolated 0/4-20mA signals

- Create extra drive in an existing loop.

- Very low volt drop/insertion resistance

- 0-20mA or 4-20mA input

- Voltage or current outputs

- 24Vdc powered

- Output current loops individually isolated.

FEATURES

- **DIN Rail or surface mountable**
- **Narrow 22.5mm module width**
- **20 - 30V dc powered.**
- **1500Vac Isolation Input/Output/Power Supply**

- **No Field Calibration necessary**
- **Wide operating temperature range**
- **High Accuracy**
- **CE Mark Compliant**

OVERVIEW

The OMNITERM LPR current loop repeater and OMNITERM LPS current loop splitter products are specifically designed to create additional current loop signals from an existing current loop signal with minimal effect on the impedance of the existing loop.

The LPR has a single isolated output while the LPS has two isolated outputs.

These 24Vdc powered modules accept a 0-20mA or 4-20mA input, and create 0-20mA or 4-20mA outputs. The output current loops repeat the input signal and are isolated from the input signal and 24Vdc power supply. Impedance changes on the output loops have no effect on the input loop.

The LPR has an internal 250 ohm precision resistor that can be connected to provide a convenient 1-5Volt output for connecting to a PLC's etc. with voltage input.

These second-generation products utilises advanced electronic techniques to achieve high accuracy with minimum loop losses and zero field calibration.

These products are designed for high reliability, and are suitable for use in SIL1 safety loops in accordance with IEC61508. See the separate reliability datasheet for design parameters.

Forming part of OMNIFLEX's extensive OMNITERM range of industrial instrumentation, the OMNITERM LPR and LPS are designed to be DIN rail or surface mounted and are an economical 22.5mm wide.
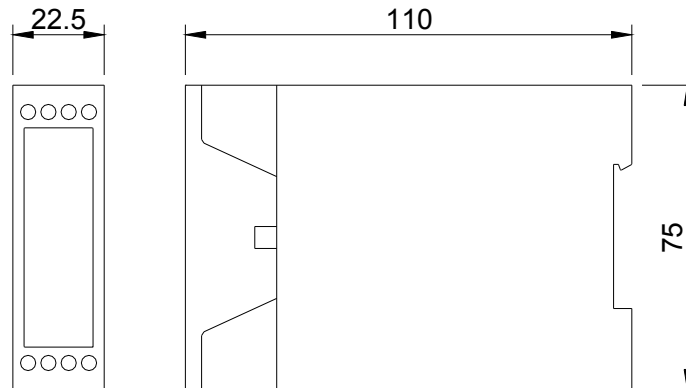
Electrical Connections
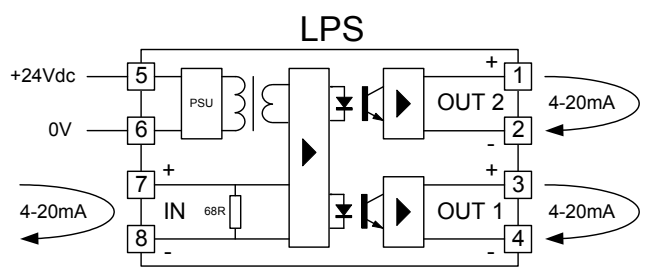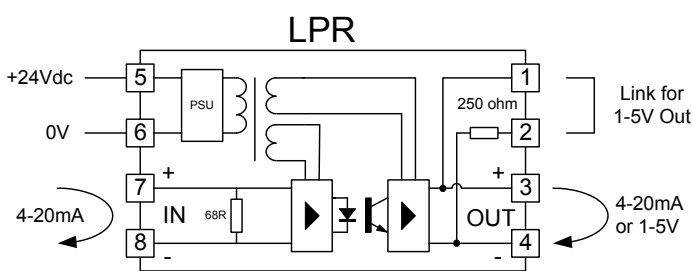
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Mechanical Details

SPECIFICATIONS

Input

Absolute Maximum input current range	0-25mA
Input Volt drop	1.35V maximum at 20mA
Equivalent insertion loop resistance	68 ohms at 20mA

Output

Output current	Matches input current
Min. load resistance	0Ω
Max. load resistance	1kΩ at 20 mA, 24Vdc supply
Internal 250 Resistor	0.1% 50ppm/°C

Power Supply

Operating Range	20-28Volts dc
Supply Current	30mA maximum plus the output current loops

Performance (at 20°C; 250Ω load; Input range 4-20mA)

Initial Accuracy	<20uA
Effect of load impedance	< .02% of Full Scale per 100Ω change
Response time 10-90%	20ms typical

Temperature

Storage	-20 to +70°C
Operating	0 to +60°C
Effect of Temperature	< 100ppm/°C

Isolation

Isolation Test Voltage	1500Vrms Input/Output/Power Supply

Functional Safety

Standard	IEC 61508
Safety Integrity Level	SIL1 (Separate Reliability Report available)

Compliance to Standards

Safety	EN 60950
Emissions	EN 55011 & EN 50081-2 Group I, Class A
Immunity – ESD	IEC 61000-4-2, level 3
Immunity – RF Fields	IEC 61000-4-3, level 3
Immunity – Fast Transients	IEC 61000-4-4 2 kV – DC power port 1 kV – input/output lines

Weight

Unpacked	130g approx.
Packed	155g approx.

Housing

Width	22.5mm (1.18")
Height	75mm(2.95")
Depth (from panel)	110mm(4.33")
Material	ABS Flammability Class HB as per UL94

Ordering Information

Order Code	Model
C2463B	Omniterm LPR Loop Repeater (single output with 250 ohm resistor)
C2464B	Omniterm LPS Loop Splitter (dual outputs)

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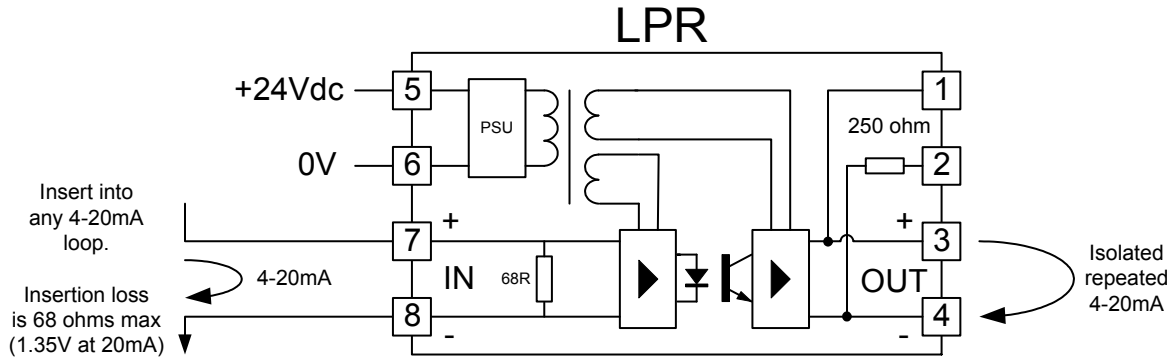# OMNITERM LPR & LPS LOOP REPEATER/SPLITTER

Model C2463B LPR (Current Loop Repeater) & C2464B LPS (Current Loop Splitter).

Application Examples

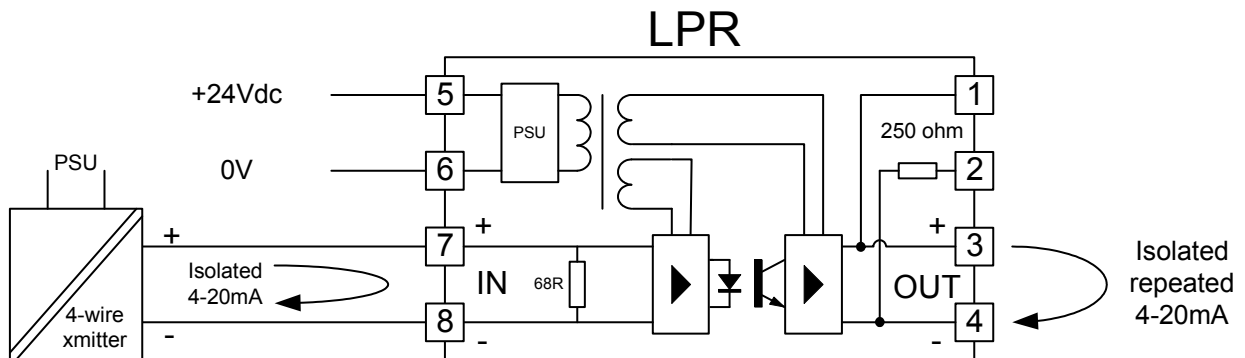### Basic Connection: Repeating a current loop

NOTES:
1. Insertion loss in the input loop is minimal at 1.35 Volts (68 ohms) maximum at 20mA.
2. Output loop has no effect on the input loop.
3. The LPS may be substituted for the LPR in all of these applications where two isolated output loops are required.

Example 1: Repeating the current loop from a two-wire transmitter
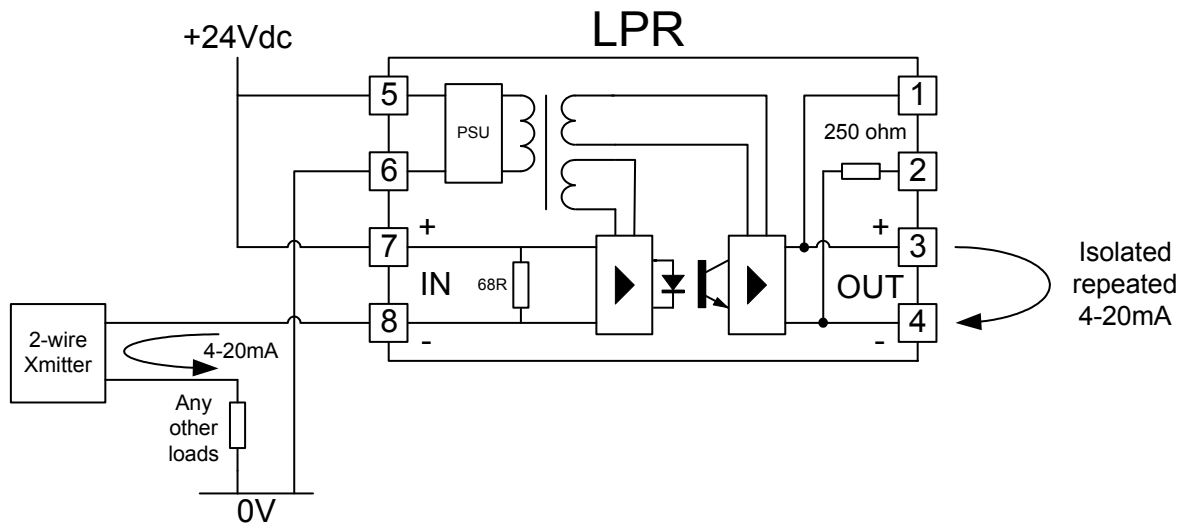
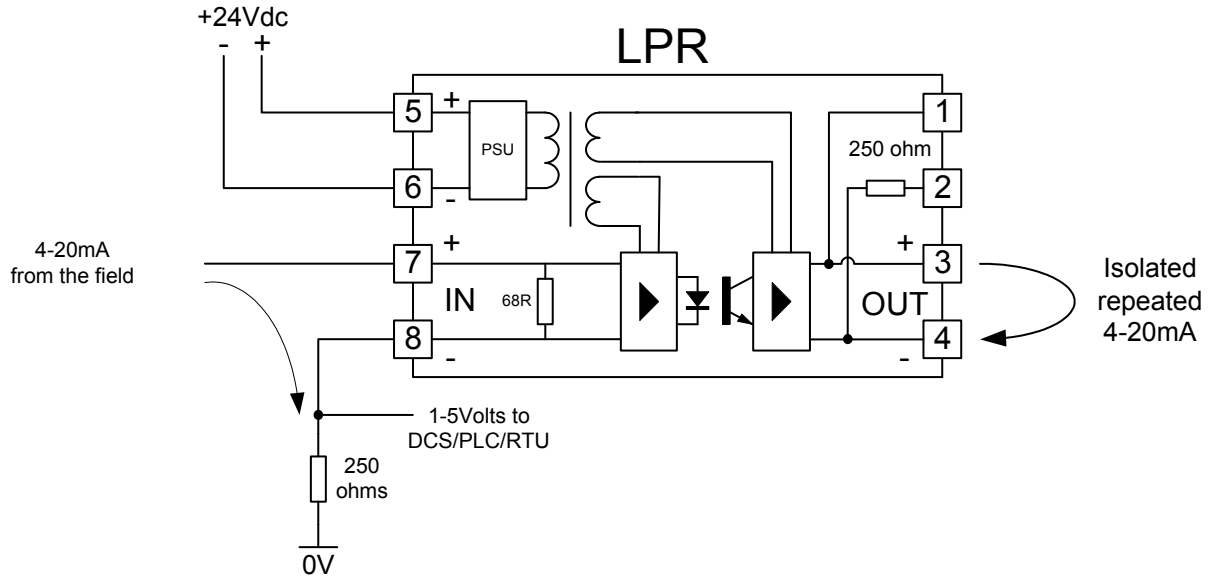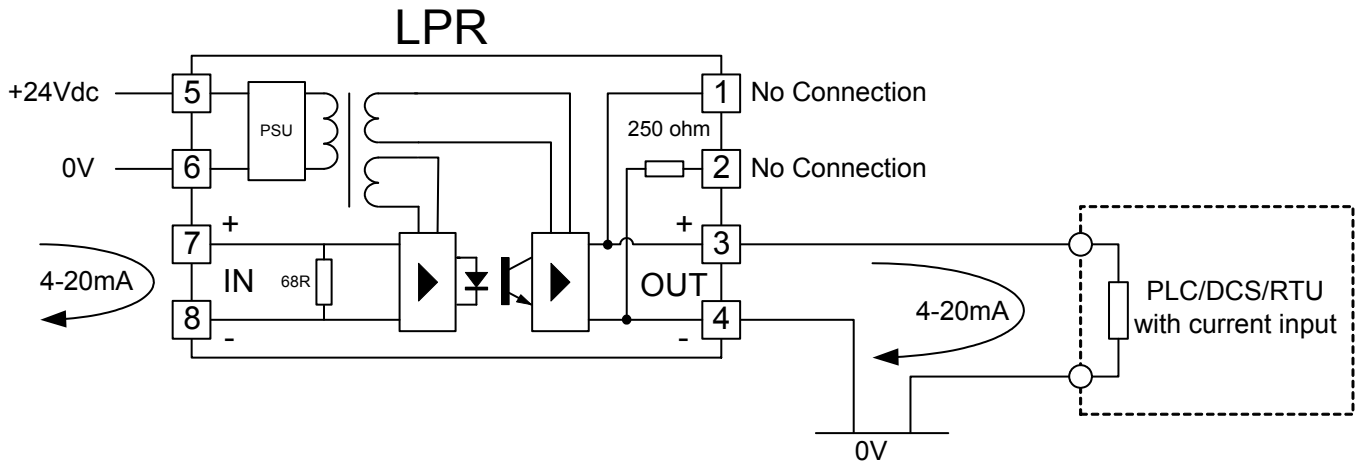### Example 2: Repeating the current loop from a four-wire transmitter

OMNITERM LPR & LPS LOOP REPEATER/SPLITTER

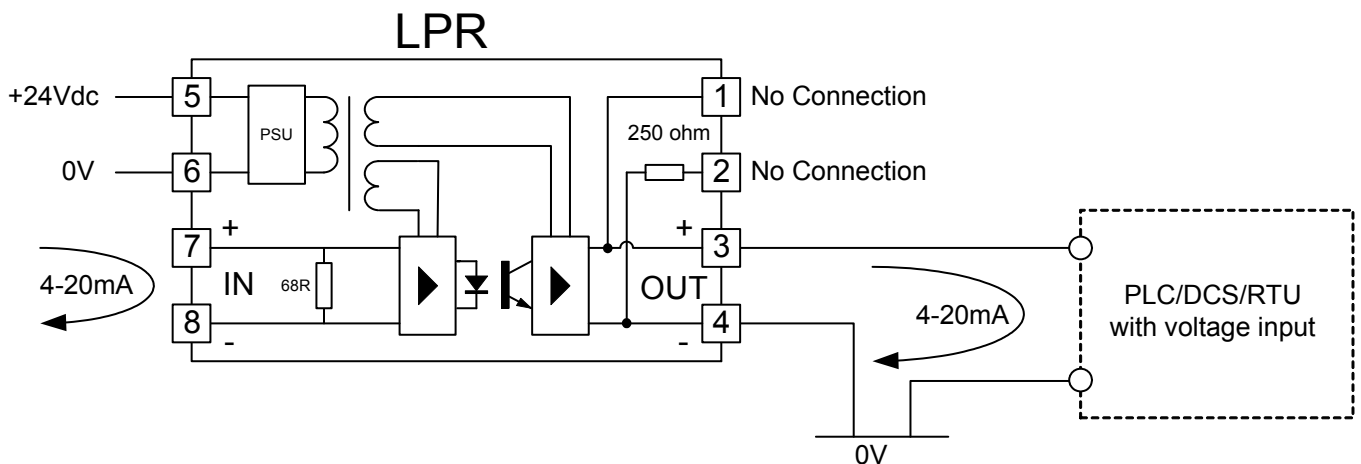Model C2463B LPR (Current Loop Repeater) & C2464B LPS (Current Loop Splitter).

Example 3: Repeating the current in a 1-5V input DCS/PLC/RTU loop.

+24Vdc

LPR

4-20mA from the field

250 ohm

1-5Volts to DCS/PLC/RTU

250 ohms

0V

Isolated repeated 4-20mA

Example 4: Connecting an LPR output to a current input on a PLC/DCS or RTU

LPR

+24Vdc

0V

4-20mA

No Connection

250 ohm

No Connection

4-20mA

PLC/DCS/RTU with current input

0V

Example 5: Connecting an LPR output to a voltage input on a PLC/DCS or RTU

LPR

+24Vdc

0V

4-20mA

No Connection

250 ohm

No Connection

4-20mA

PLC/DCS/RTU with voltage input

0V

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Application Notes

Using the Omniterm LPR or LPS to monitor SIL1 Safety Loops

The LPR and LPS modules have been certified to SIL1 for use in safety loops.

There is an increasing awareness today of the importance of safety in dangerous processes. IEC61508 is the most universally applied standard for the qualification of Safety Integrity in Safety Instrumented Systems.

Individual control loops are usually certified to Safety Integrity Level 1 (SIL1) as specified in IEC61508, with redundancy employed to increase this to higher SIL levels when appropriate.

As part of the system design, it is common to want to monitor these critical current loops using independent systems. The difficulty arises of connecting the monitoring system to these critical loops without affecting their safety integrity level, accuracy or performance.

The Omniterm LPR and LPS have been certified to SIL1 for this application. Connecting an Omniterm LPR or Omniterm LPS to your SIL1 safety critical current loop will not affect the safety of the loop. The output of the Omniterm LPR or LPS can be safely connected to any SCADA, PLC, or RTU system without this connection affecting the integrity level of the original current loop in any way.

Because the safety loop is not passing between input and output of the Omniterm LPR or LPS, the accuracy, reliability and speed of the Omniterm LPR or LPS do not affect the performance of the current loop. The reliability of the safety loop is considerably enhanced in this configuration.

Because of the low insertion loss and full electrical isolation of the input stage of the Omniterm LPR or LPS, only a minimal volt drop will occur in the loop by the addition of the Omniterm LPR or LPS, making the monitoring of almost any existing current loop possible.

LPR

+24Vdc — 5
0V — 6
PSU
7 + IN 68R
8 -
250 ohm
1
2
Link for 1-5V Out
3 + OUT
4 -
Isolated 4-20mA or 1-5V monitor loop. (Nothing you connect here will affect the safety of the input loop.)