



OMNITERM LZI & LZD Current Loop Interface

Model C2474A LZI (Single) & C2475A LZD (Dual) with Surge Suppression.

DATASHEET

- Field Interface for 2 or 4-wire transmitters
- 10-30Vdc supply suits battery operation
- Provides 24Vdc power to 2 wire transmitters
- Includes 10kA Surge Protection.
- Includes Signal Isolation.
- Includes optional 250 ohm termination.
- Very low power suits battery applications



FEATURES

- Fully surge protected inputs
- 1500Vac Isolation Input/Output
- IEC61508 SIL1 Compliant
- No Field Calibration necessary
- Wide operating temperature range
- DIN Rail or surface mountable
- Narrow 22.5mm module width
- CE Mark Compliant

OVERVIEW

The OMNITERM LZI and LZD are current loop interface modules designed to interface field mounted transmitters in remote applications where signal isolation and surge protection is required. Applications include interfacing for RTU's, PLC's etc.

The LZI is a single channel device with additional flexibility and support for both 2-wire and 4-wire 4-20mA transmitters. The LZD is a dual channel device for increased packing density, suitable for multiple 2-wire transmitters.

The Omniterm LZI and LZD both include the following features:

- A fully specified 10kA surge arrester to prevent electrical surges induced on the field wiring from damaging sensitive equipment in the panel
- 1500Vac isolation from input to output so that ground loops cannot occur, that might otherwise affect instrument accuracy.
- A stable 24Vdc field power supply to power two-wire transmitters from lower voltage sources such as 12V battery systems without compromising available loop voltage or loop resistance.

- A precision 250 ohm resistor allowing 4-20mA to be converted conveniently into 1-5V signals for RTU's and PLC's.

Combining the surge arrester, isolator and 250 ohm termination into a single module, saves significant cost, engineering time and panel space in monitoring applications.

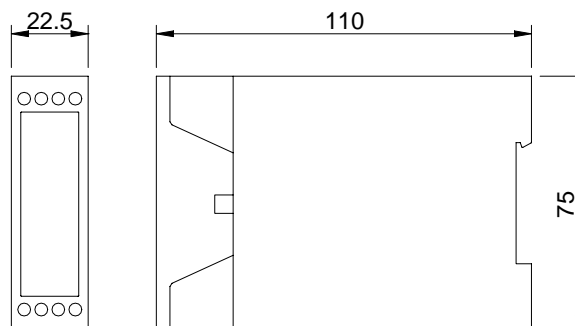
Reliability figures in accordance with IEC61508 (SIL1) are available to allow inclusion of these devices in safety systems.

These modules utilise advanced electronic techniques to achieve high accuracy and low power consumption with zero field calibration, saving you installation and commissioning time.

Forming part of OMNIFLEX's extensive OMNITERM range of industrial instrumentation, the OMNITERM LZI and LZD are designed to be DIN rail or surface mounted and are a space-saving 22.5mm wide.

See the companion Omniterm LZB datasheet for dual binary inputs with surge protection.

Mechanical Details

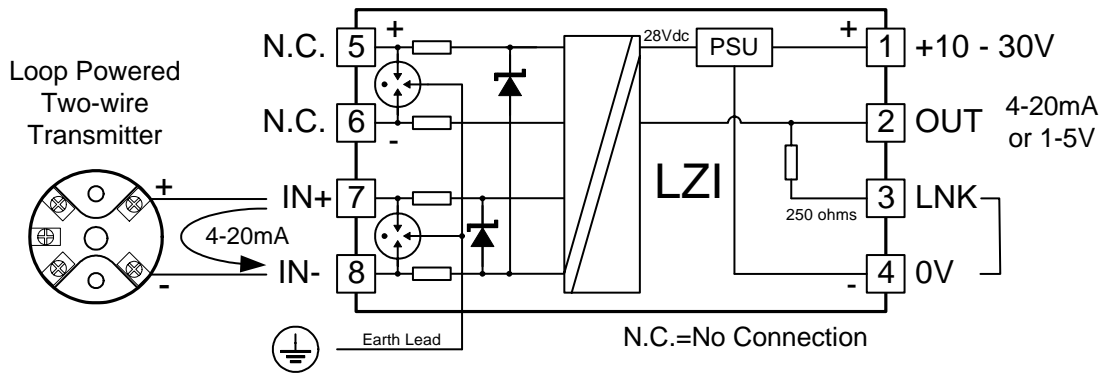




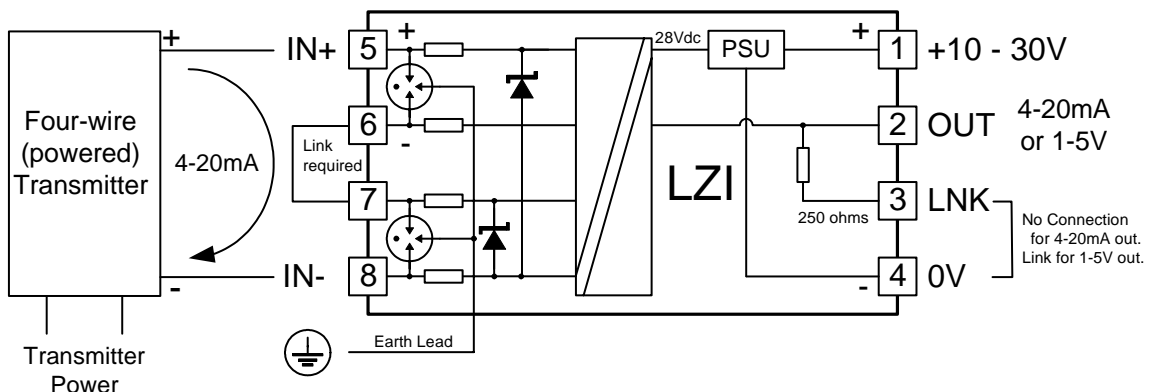
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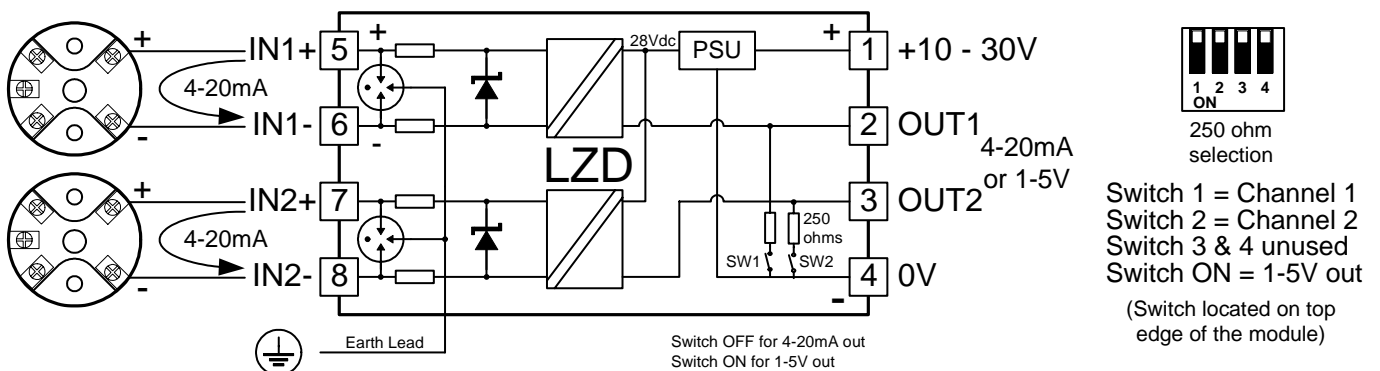
Electrical Connections



Single Channel OMNITERM LZI with Two-Wire Transmitter



Single Channel OMNITERM LZI with Four-Wire Transmitter



Dual Channel OMNITERM LZD with two Two-Wire Transmitters



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Specifications

Power Supply

Operating Range	10-30Volts dc	
	C2474A LZI	C2475A LZD
Supply Current (with outputs at 20mA)	55mA max at 12V 24mA max at 24V	110mA max at 12V 48mA max at 24V

Two-Wire Transmitter Inputs (LZI and LZD)

Input Current Range	Operating Range 2-23mA Accuracy specified over 4-20mA
Minimum loop voltage	$V_{LOOP} = 21.4V$ minimum (measured at 23mA load, 10V supply)
Maximum loop voltage	$V_{LOOP} = 28.0V$ maximum (measured at 2mA load, 30V supply)
Minimum output load	0 ohms minimum
Maximum output load	Depends on available loop voltage Please see sample loop calculations below.

Four-Wire Transmitter Inputs (LZI only)

Input Current Range	Operating Range 2-23mA Accuracy specified over 4-20mA
Input Impedance	< 250 ohms
Minimum output load	0 ohms minimum
Maximum output Load	750 ohms maximum

Output

Output current	Matches input current
Accuracy	< 0.1% of full scale at 20°C (< 20uA)
Response time	40ms typical for 10-90% change

Turn on time

Time to full accuracy	100ms maximum (plus time to settle of 2-wire Transmitter)
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Internal Termination Resistor

Resistance	250Ω ± 0.1%
Temperature Drift	< 50ppm/°C

Input Surge Suppression

Discharge Current	10kA 8/20μs nominal
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Temperature

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

Isolation

Isolation Test Voltage	1500Vrms Input/Output
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Weight

Unpacked / Packed	130g / 155g approx.
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Compliance to Standards

Safety	EN 60950:1995
Emissions	EN55011 and EN50081-2:1994 Group I, Class A
Immunity – ESD	IEC 61000-4-2:1995, level 3
Immunity – RF Fields	IEC 61000-4-3:1995, level 3
Immunity – Fast Transients	IEC 61000-4-4:1995 2 kV – DC power port 1 kV – input/output lines
Immunity – RF Fields	IEC 61000-4-3:1995, level 3
Surge Rating	IEC 61000-4-5:2005, level 4

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	Description
C2474A	Omniterm LZI
C2475A	Omniterm LZD

Sample Loop Calculation for Two-Wire Transmitter Inputs

When used with two-wire transmitters, the Omniterm LZI and LZD operate as loop isolators for minimum power consumption. This means that the loop voltage available to power the two-wire transmitter is affected by the size of other impedances in the loop including output load and field wiring loop resistance.

The following simple method shows to calculate the allowable total loop resistance for a given two-wire transmitter:

GIVEN:

V_{TX} = The two-wire transmitter minimum operating voltage (in Volts).

Calculate the maximum allowable loop resistance from the following formula:

$$R_{max} \text{ (in Ohms)} = (21.4 - V_{TX})/0.023$$

This maximum allowable loop resistance should include the output load resistance, field wiring resistance and a safety margin.

Example:

For an ABB Model 364 Pressure Transmitter, minimum operating voltage is specified as 10.5V

Therefore maximum allowable loop resistance $R_{max} = (21.4 - 10.5)/.023 = 474$ ohms regardless of power supply voltage.

Using a 250 ohm load resistor such as the internal precision 250 ohm resistor in the LZI/LZD leaves an additional $474-250 = 224$ ohms for loop wiring resistance etc.



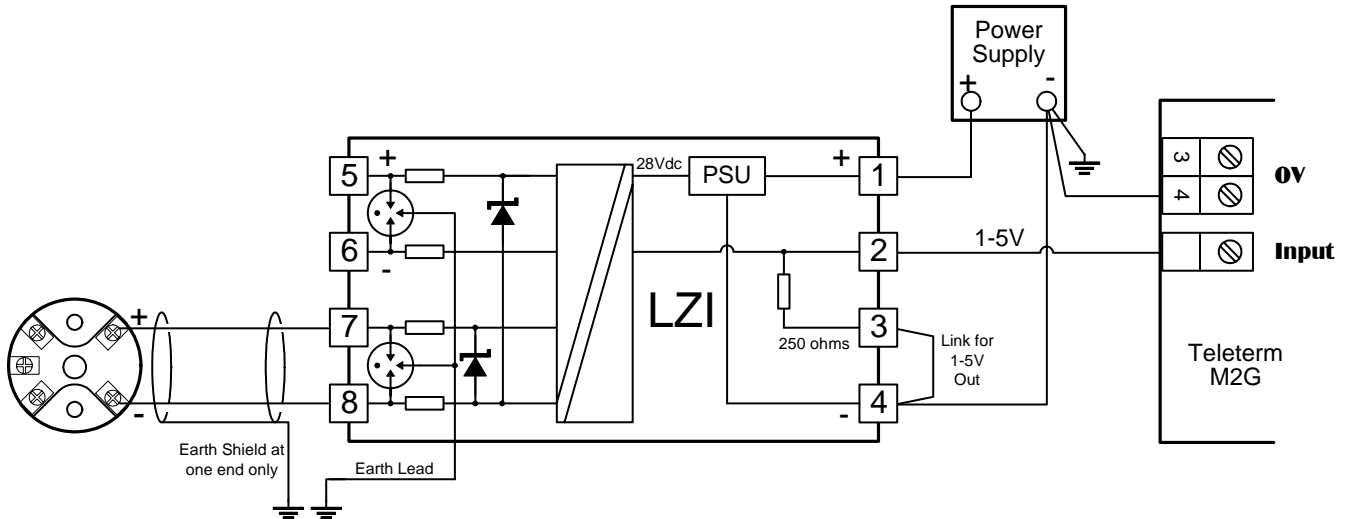


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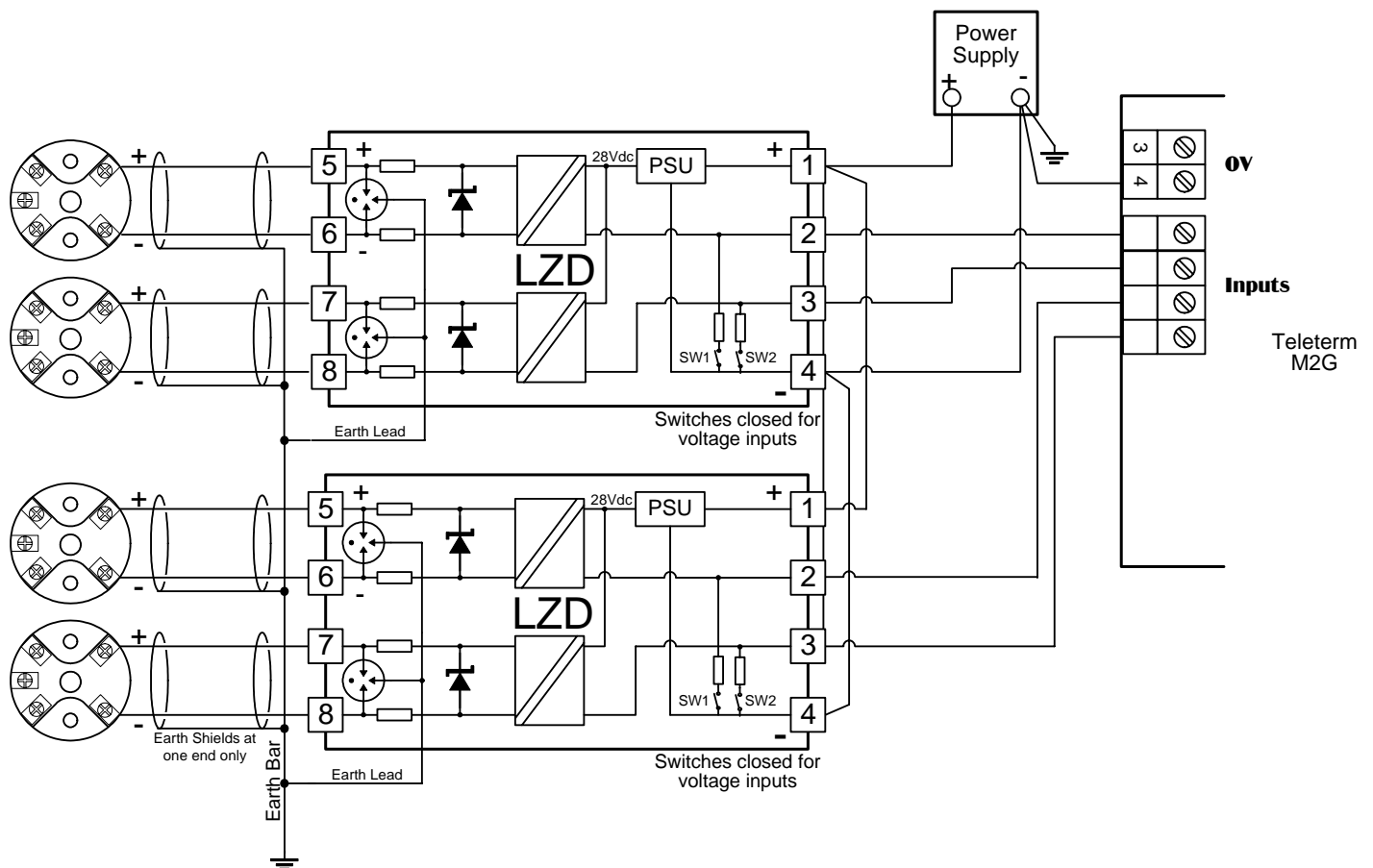
Application Example 1

NOTE: The LZD may be substituted for the LZI in applications where two channels are required.



Example 1: Interfacing a two-wire transmitter input to a Teleterm M2 Series RTU

Application Example 2



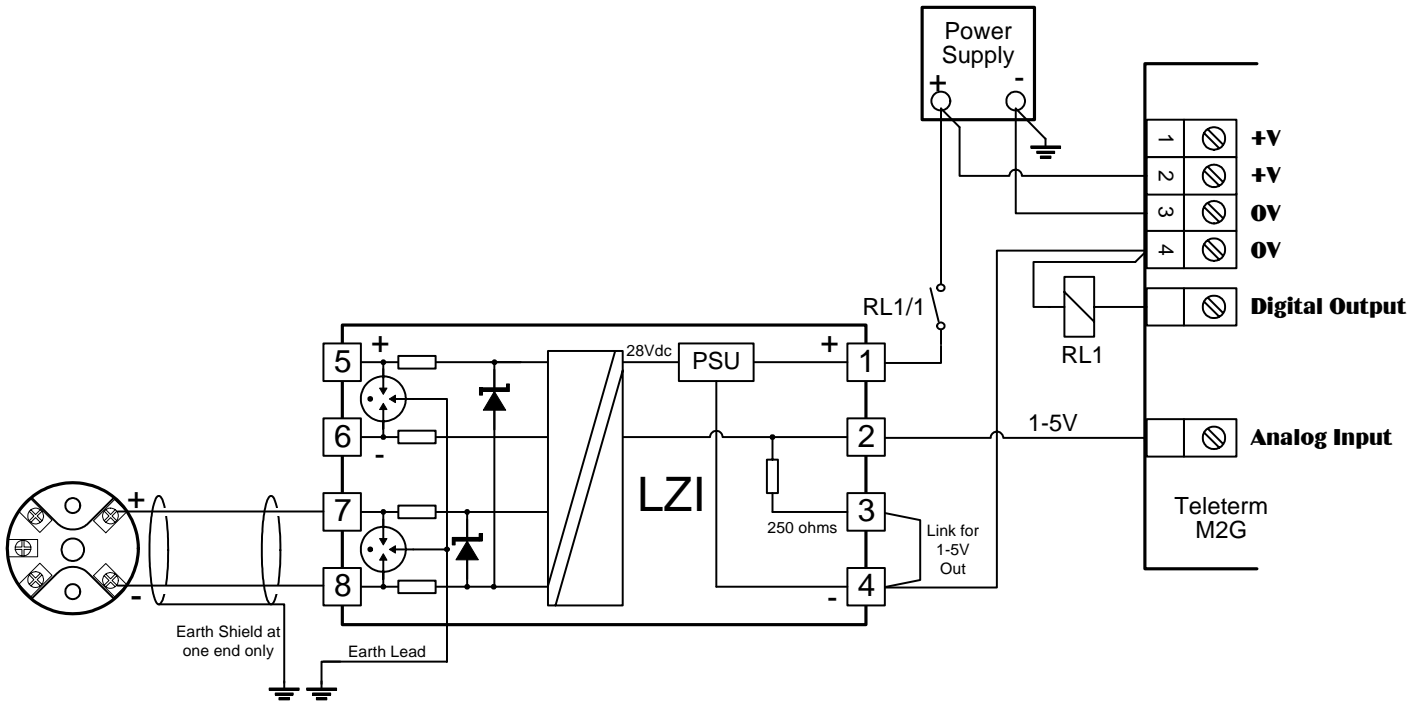
Example 2: Interfacing four transmitters to a Teleterm M2 Series RTU



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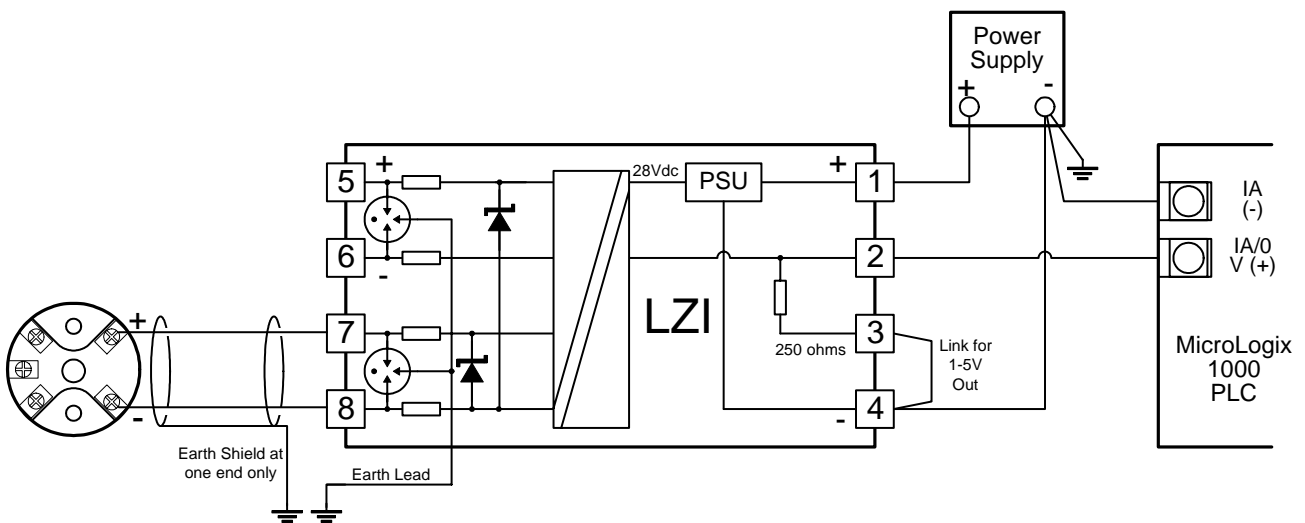
Application Example 3



Example 3: Interfacing a two-wire transmitter input to a Teleterm M2 Series RTU with power down circuit.

Use this circuit to reduce power consumption in battery powered applications, when the two-wire transmitter need only be read intermittently. The program in the Teleterm M2 RTU must turn the power to the LZI on prior to reading and off again when complete.

Application Example 4



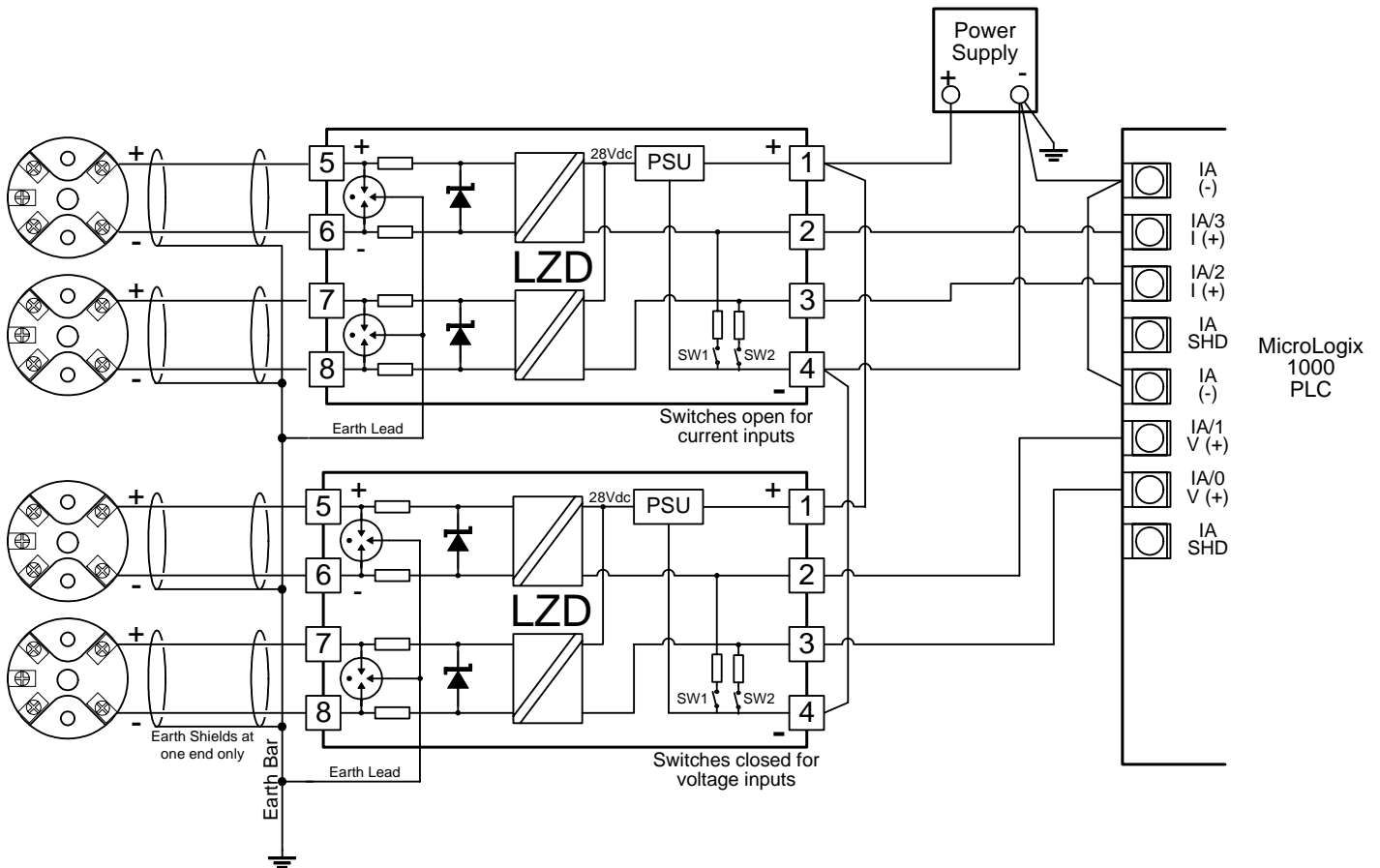
Example 4: Interfacing a two-wire transmitter to an A-B MicroLogix 1000 series PLC.



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Application Example 5



Example 5: Interfacing four two-wire transmitters to an A-B MicroLogix 1000 series PLC.

Typical Installation

Installation example showing termination of surge protection ground wires to earthing bar.

Keep all earth connections as short as possible.

