

# Universal Analog to Dual or Quad 4-20mA Transmitter / Retransmitter



**TL-QUAD-LOOP**



**TL-DUAL-LOOP**

## Product Description

- The TL-QUAD-LOOP is a universal process input, 4-channel 4-20mA output retransmitter. Selectable inputs include 4-20mA, 0-5V, 1-5V and 0-10V, and isolated 24VDC excitation is conveniently supplied at the input. Each output channel includes a 10ohm test resistance and adjustment potentiometers for zero (typically 4mA) and span (20mA) calibration. In addition, each output has a signal amplitude LED indicator (dim at 4mA, bright at 20mA).
- The TL-DUAL-LOOP is a universal process input, 2-channel 4-20mA output retransmitter. Selectable inputs include 4-20mA, 0-5V, 1-5V and 0-10V, and isolated 24VDC excitation is conveniently supplied at the input. Each output channel includes a 10ohm test resistance and adjustment potentiometers for zero (typically 4mA) and span (20mA) calibration. In addition, each output has a signal amplitude LED indicator (dim at 4mA, bright at 20mA).

## User Interface

- PWR LED showing unit is powered up.
- “Z” (ZERO) and “S” (SPAN) potentiometers for each channel.
- Output LED showing relative signal strength for each channel (marked L1 for Channel 1, L2 for Channel 2, etc.).
- Input range selection jumpers (voltage or current; voltage range) (NOTE: the jumpers are located inside of the case)

## Specifications

- Input Range:**.....Jumper selectable DC current (4-20mA) and DC voltage (0-5V, 1-5V, 0-10V).
- Accuracy:** .....±0.02% of reading.
- Warm up time:**.....Up to 10 minutes depending on input.
- Transducer Excitation:** 24 Vdc output, 90 mA max.
- Isolation:**.....5000Vrms isolation between input and output signals, power supply isolation between input and output.
- Power Indicator:** .....Red or Green power LED
- Power Supply:**.....AC/DC Auto sensing wide range supply  
**PS1 (std)** .....85-265 VAC 50-400Hz / 95-300 VDC 3.5W max.  
**PS2** .....15-48 VAC 50-400Hz / 10-72 VDC 3.5W max.
- Environmental-**  
**Operating Temperature:**.: 0 to 50 °C (32 °F to 122 °F).  
**Storage Temperature:** -20 °C to 70 °C (-4 °F to 158 °F).  
**Relative Humidity:** ....95% (non condensing) at 40 °C (104 °F).
- Mechanical-**  
**Mounting:** .....DIN Rail Mount  
**Case Dimensions:** ....22.5mm x 102.4mm x 128.7mm  
 0.89" (W)x 4.03" (H) x 5.07" (D)  
 Plus 11.8 mm (0.47") for Right-angled connectors.
- Weight:**.....6.4 oz., 8.0 oz when packed  
 0.16 kg., 0.22 kg when packed

## Installation

1. Install and wire transmitter per local applicable codes regulations, the particular application, and good installation practices.
2. Install transmitter in a location that does not exceed the maximum operating temperature and that provides good air circulation.
3. Separate input/output leads from power lines to protect the transmitter from external noise. Input/output leads should be routed as far away as possible from contactors, control relays, transformers and other noisy components. Shielding cables for input/output leads is recommended with shield connection to earth ground near the meter preferred.

4. A circuit breaker or disconnect switch is required to disconnect power to the meter. The breaker/switch should be in close proximity to the meter and marked as the disconnecting device for the meter or meter circuit. The circuit breaker or wall switch must be rated for the applied voltage (e.g., 120VAC or 240VAC) and current appropriate for the electrical application (e.g., 15A or 20A).
5. See *Connector Pinouts* section for wiring.
6. Use 28-12 AWG wiring, minimum 90°C (HH) temperature rating. Strip wire approximately 0.3 in. (7-8 mm).
7. Recommended torque on all terminal plug screws is 4.5 lb-in (0.51 N-m).



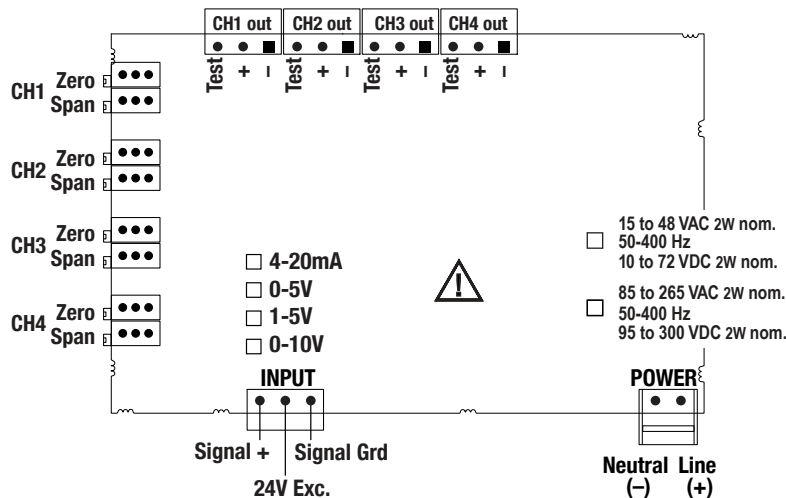
## Connector Pinouts

### Pinout Diagram

The TL Series Transmitter uses plug-in type screw terminal connectors for all input and output connections. The power supply connections have a unique plug and socket outline to prevent cross connection.



**WARNING:** AC and DC input signals and power supply voltages can be hazardous. Do Not connect live wires to screw terminal plugs, and do not insert, remove or handle screw terminal plugs with live wires connected.



## Input Select

Input range is normally set by the factor per your order, but you may change that by following these directions.



1. **WARNING:** Disconnect the power from the meter and disconnect any equipment attached to the outputs before attempting this procedure. Dangerous voltages may be present.

2. Remove the four screws from the top panel (label side), nuts are in the bottom panel. Open the case.

3. To select 4-20mA input, move the Voltage/Current jumper to CURRENT, move the range selection jumper to 4-20mA.

4. To select a voltage input, move the Voltage/Current jumper to VOLTAGE, move the range selection jumper to the desired voltage range (0-5V, 1-5V, 0-10V).

5. Reassemble the case.

6. It is best to place a small label at the input connector indicating the required input signal.

**NOTE:** Input signal calibration is not required in the TL-DUAL-LOOP and TL-QUAD-LOOP meters.

## Output Signal Calibration

Each output channel is normally calibrated by the factory.

You may recalibrate the output channels by following these directions. Each output channel is calibrated using the “Z” (ZERO) and “S” (SPAN) potentiometers located on the front panel, L1 for Channel 1, L2 for Channel 2, etc.

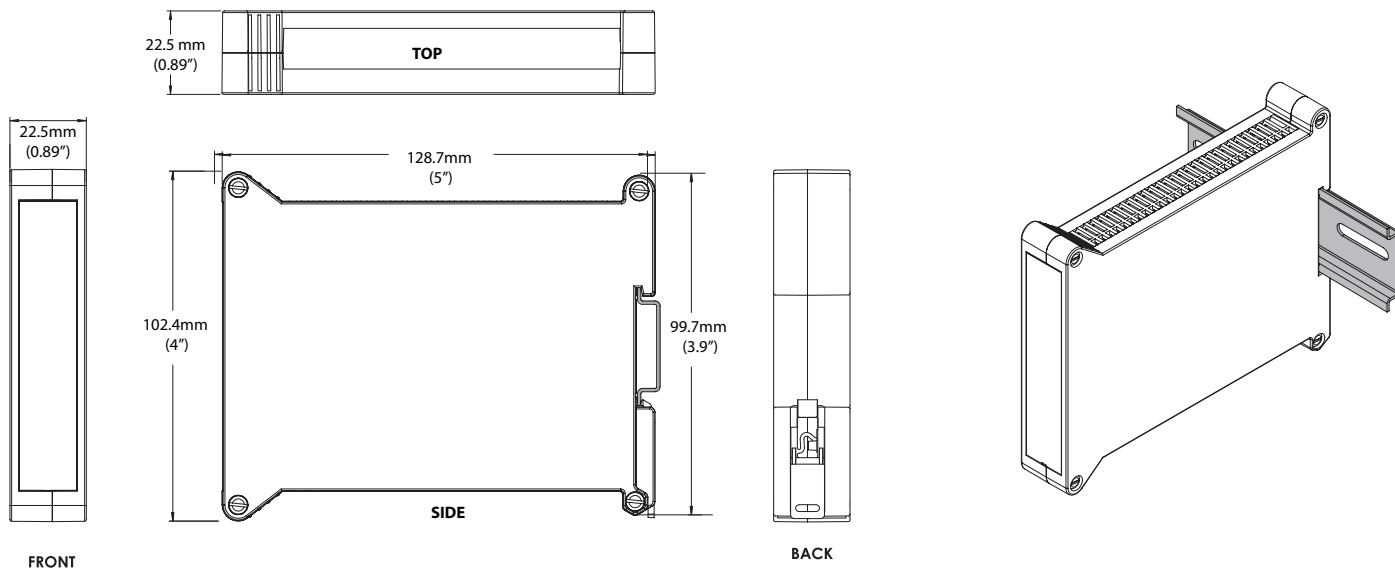
1. A calibrated input signal source is strongly recommended.
2. A calibrated 4-20mA measurement meter is strongly recommended for the output.
3. Make sure the input signal type (current or voltage) and range are correctly set. See INPUT SELECT above.
4. Make sure power is applied to the meter and the PWR LED is lit.
5. The calibration process takes several iterations, so it is not necessary to get to 4.00mA or 20.00mA on the first pass. Rather, set the output progressively more accurately with each iteration.
6. Apply the low value of the input signal range to the input connector.

7. Adjust the ZERO potentiometer until a reading of 4.0mA is observed at the output.
8. Set the input to the high value of the input signal range.
9. Adjust the “S” (SPAN) potentiometer until a reading 20.0mA is observed at the output.
10. Repeat steps 6 through 9, targeting 4.00mA and 20.00mA, until stable outputs are achieved. This typically takes 3-4 iterations.

**NOTE:** Normally, the output is 4-20mA, but the TL-LOOP-QUAD output can be adjusted to 0mA on the low end of the range.

**NOTE:** The 4-20mA output is easily converted into a voltage by adding a suitable resistor across the output pins, e.g., a 0.5% 1/4W 250 ohm metal film resistor, although accuracy of the resulting voltage will be affected by the precision and tolerance of the resistor.

## Case Dimensions



### WARRANTY

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