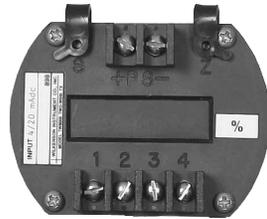


# TW810X DC INPUT TWO-WIRE TRANSMITTER



The TW8100 produces a DC output current proportional to its DC voltage or current input. A two-wire transmitter, its output regulates the current in a series loop while taking its operating power from the same current. Optional transformer input/output isolation is available.

## DESCRIPTION

The TW8100 is connected in series between a source of DC power and a readout, controller or other receiving device. An internal voltage regulator feeds a controlled portion of the transmitter's current to its internal circuitry. The block diagram at the end of these instructions illustrates the transmitter's operation.

A low-drift preamplifier amplifies the input and applies it to a circuit which regulates the total current flowing through the series loop. A chopper-stabilized preamplifier is used on low input ranges.

An optional input/output isolator chops the regulated supply voltage, couples it through a transformer and rectifies the resulting output to provide isolated DC power to the preamplifier.

The preamplifier's output also is chopped, transformer coupled and demodulated to drive the output current regulator. Transformer isolation allows separate grounding of, or even potential differences between, the input and output terminals.

The transmitter is protected by a gasketed, NEMA 4X glass-filled polyester housing and operates from  $-40^{\circ}$  to  $+85^{\circ}\text{C}$ .

## MODEL NUMBERS

**TW8100** DC Input, Nonisolated

**TW8101** DC Input, Input/Output Isolated

## OPTION

**U** All circuit boards conformal coated for protection against moisture.

## CONTROLS

Zero and span controls (*accessible through the top of the TW8100 housing*) calibrate the output current. The display option is calibrated with separate zero and span controls, and range and decimal select switches, located inside the transmitter.

## OUTPUT CALIBRATION

The TW8100 is shipped precalibrated. If there is a need to recalibrate, proceed as follows:

Connect the transmitter's output in series with a 24 volt DC power supply and a precision digital current meter per the "Typical Connection" shown in the BLOCK DIAGRAM. Connect the input to a precision DC voltage or current source covering the desired input range.

Set the input to the low end of the input range and adjust the "Z" (*zero*) control for the low-end output current (*usually 4.00 or 10.00 mA*). Increase the input resistance to full scale and adjust the "S" (*span*) control for full-scale output (*usually 20.00 or 50.00 mA*). Repeat, as the controls may interact slightly.

## SPECIFICATIONS

### DC Input

#### Voltage

select any range between  $\pm 250$  V max\*

#### Current

select any range between  $\pm 5$  A max  
(min span 10 $\mu$ A, internal shunt)

### Input Impedance

#### Voltage

$\pm 2$ V, 10 megohms

#### Current

see table in BLOCK DIAGRAM

### Output Range

4/20 mA (10/50 mA optional)

### Calibration Accuracy

$\pm 0.05\%$  or 5 microvolts, whichever is greater

### Temperature Stability

$\pm 0.01\%$  of span plus 0.3 microvolts per  $^{\circ}$ C

### Power Supply

12 to 48 volts DC

### Maximum Load Resistance

$R_{max} = (V_{supply} - 12) / I_{out\ max}$

### Supply Voltage Effect

0.01% of span max., 12 to 48 volts

### Input/Output Isolation

(Optional) 600 V rms

### Temperature, Operating

-40 to 85  $^{\circ}$ C (-40 to 185  $^{\circ}$ F)

### Environmental

NEMA-4X splashproof and corrosion resistant

\*For input values above  $\pm 10$ V use isolated transmitter TW81X1.

## MOUNTING

Mounting plate accessory DMP8500 allows the TW8100 to be mounted on a surface or in a 2 $\frac{1}{4}$  inch wide PVC tack. Use the mounting plate as a template to locate and drill holes for surface mounting, then screw the plate to the bottom of the transmitter using the #6 thread-cutting screws provided.

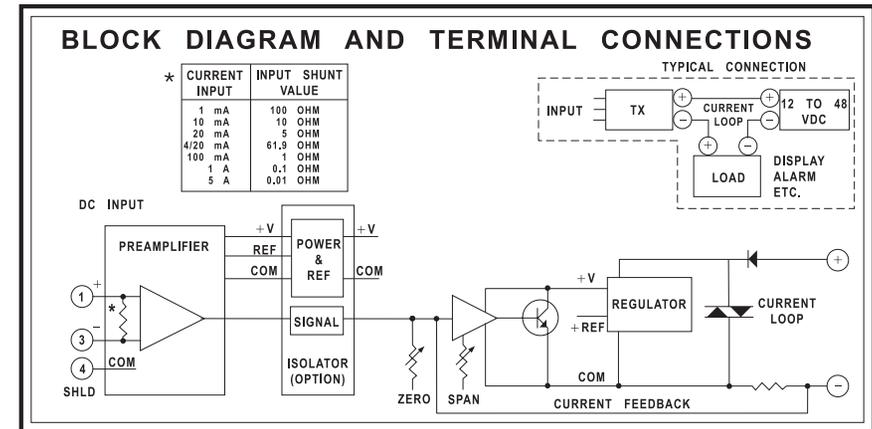
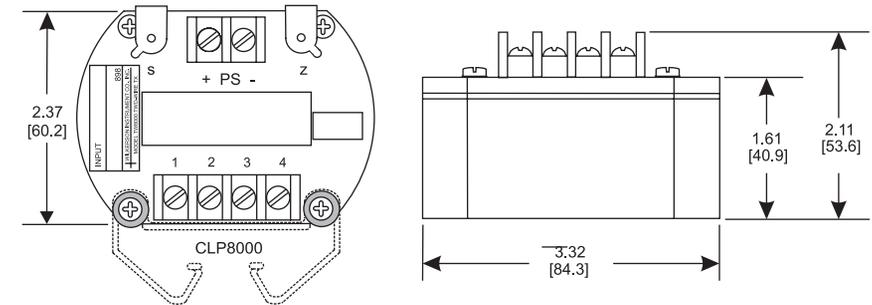
Spring retainer clip accessory CLP8000 (factory installed) holds the TW8100 in place inside a Killark HK Series Explosion-Proof Housing, or other housing with 3 $\frac{1}{2}$  inch inside diameter.

If you wish to provide your own mounting arrangements, use #6 type F thread-cutting screws or tap the bottom recesses with a #6-32 tap. The recesses are  $\frac{1}{2}$  inch deep. Exceeding this depth may damage the housing.

## WARRANTY

The TW8000 Series of products carry a limited warranty of 5 + 5 years. In the event of a failure due to defective material or workmanship, during the 5 year period, the unit will be repaired or replaced at no charge. For a period of 5 years after the initial 5 year warranty, the unit will be repaired, if possible, for a cost of 10% of the original purchase price.

## DIMENSIONS INCHES [mm]



### NOTE:

1. Do not connect input and output together, or ground both at once, unless your transmitter is isolated (TW8101).
2. The shield terminal (#4) is connected to the preamplifier's circuit common. When using a shield do not connect it, or terminal 4, to ground or to any other input terminals.

Specifications are subject to change without notice. © 2007 Wilkerson Instrument Co., Inc. DWG #W1000921A 3/07



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