

**Model TT-08  
Analog Transmitter**

**Installation Operating  
Manual**

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SECTION I  
GENERAL INFORMATION

**Introduction**

The Model TT-08 Analog Transmitters are ideal for use on systems having a full scale range of 10 mV, 20 mV, or 30 mV with minimal tare weight values. Typical applications would be a single force or pressure transducer, or a platform scale.

**Description**

An integral 9-position terminal strip provides connections for the supply voltage, transducer wiring, and analog output.

The input signal range selection is accomplished with SW1, a 2-position dip-switch.

The output signal selection is performed by soldering one or more of the following jumpers: JP1, JP2, or JP3. Note: This is normally done at the factory by specifying either a 0-10 Vdc or a 4/20 mA analog output when ordering.

The zero, span and filter adjustments for the analog output are accomplished with three trim pots. Two of them are 20-turn trim pots which adjust zero and span for either the voltage or current outputs. A 270o turn trim pot is used to change the filter setting when using the 0-10 Vdc output. Note: This trim pot has no effect if using the 4/20 mA output. Filtering is used to minimize the effects of vibration caused by agitators or other devices. Refer to Figure 3 for the locations of the trim pots.

The standard packaging is an ABS plastic DIN-Rail mounted enclosure. Optional field-mounted, fiberglass or type 304 stainless steel NEMA-4X enclosures are available.

The transmitters are available with an optional 24 Vdc power supply enabling the unit to be operated with 115 Vac. For additional information, please refer to Section III of the manual.

## Specifications

### Power

Power Supply	24 Vdc $\pm$ 15%
Load Cell Excitation	10 Vdc
Load Current	200 mA (4 load cells x 350 $\Omega$ )
Power Consumption	5 Watts

### Amplifier

Input Signal	Selectable, 10mV, 20mV, 30mV
Output Signals	Selectable, (via jumpers)
Voltage	0-10 Vdc (2K $\Omega$ min load)
Current	4-20 mA (500 $\Omega$ load max)
Maximum Gain	$\approx$ 4000
Zero Adjustment	20-turn trim-pot (- 7% / + 3% FS)
Span Adjustment	20-turn trim-pot ( $\pm$ 5% of FS)
Linearity	$\pm$ 0.02% of Full Scale
Analog Filter	Adjustable, 270° turn trim-pot

### Environmental

Operating Temp. Range	+14 to +104°F (-10 to +40°C)
Storage Temp. Range	-4 to +122°F (-20 to +50°C)
Thermal Stability	20 ppm/°C
Relative Humidity	85% non-condensing

### Enclosure

Dimensions (L x H x D)	3.0" x 3.5" x 2.5"
Mounting	DIN-Rail mount
Material	ABS Plastic
Weight	4.25 Ounces
Wiring connections	Terminal block, pitch 0.196

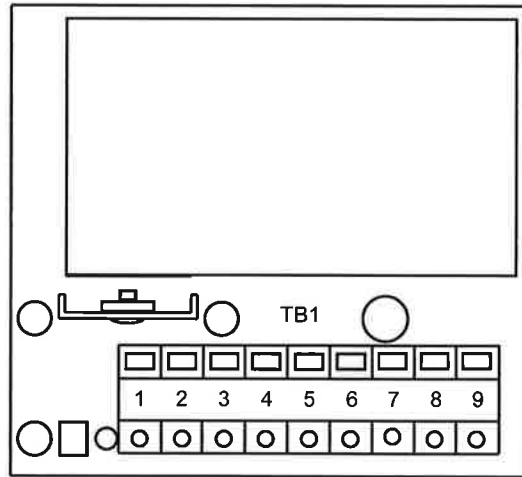
### Options

115 Vac power supply	DIN-Rail mounted, (See pg. 8)
NEMA 4X Enclosure	Wall mounted, 8" x 6" x 4"

NOTE: All specifications are subject to change.

**FIGURE 1**  
Wiring Connections

Mount the transmitter horizontally on a section of DIN-Rail with Terminal Block TB1 positioned on the bottom. If an optional 230 Vac to 24 Vdc power supply is used, the cable between the two devices must not exceed 3 feet.



TB1
1. + 24 Vdc (supply)
2. 0 Vdc (supply)
3. + Excitation (L.C)
4. - Excitation (L.C)
5. - Signal (L.C)
6. + Signal (L.C)
7. + 0-20 / 4-20 mA
8. - Analog Output
9. + 0-10 Vdc

NOTE: When using a 6-conductor cable (+/- Sense leads) the + Sense lead must be connected to the + Excitation terminal and the - Sense lead must be connected to the - Excitation terminal.

NOTE: Load cells and analog output cables shields must be grounded.

NOTE: The voltage output can range from 0 to -10Vdc in case of negative LC's input signal.

## SECTION II

### CALIBRATION

Remove the metal cover from the transmitter to expose the dip switch, soldered jumpers and trim pots.

Verify that soldered jumpers J1, J2, and J3 are in the correct position for the output required. Table 1 shows where the jumpers should be positioned for either a current or voltage output, and Figure 2 shows where the jumpers are physically located on the circuit board.

Obtain the capacity and full scale output of the transducer/s from the calibration certificate/s. Multiply the full scale mV/V output of the transducer/s by the excitation voltage to obtain millivolts (mV).

Example:  $3.0 \text{ mV/V} \times 10 \text{ Vdc} = 30 \text{ mV}$ .

Set dip-switch SW1 to match the full scale mV output obtained from the above calculation. See Table 2 on page 6.

Connect a digital multi-meter to terminal strip TB1 terminals 7 and 8 for current output or terminals 8 and 9 for voltage output.

Apply power to the unit and allow a couple of minutes for the transmitter to warm up before making the final calibration adjustments.

Remove any weight from the system and adjust the zero trim pot for a reading 0 Vdc or 4 mA. Turning the trim pot clockwise increases the output while turning it counter-clockwise decreases the output. See Figure 3 for location of adjustments.

Apply a known weight and adjust the span trim pot for the correct output. Turning the trim pot clockwise increases the output while turning it counter-clockwise decreases the output.

Re-check "zero" and "span" calibration and re-adjust if required.

Replace the metal cover on the transmitter after the calibration has been completed.

TABLE 1  
Analog Output Selection

	0-10 Vdc	0-20 mA	4-20 mA
JP1	Open	Open	Closed
JP2	Open	Open	Closed
JP3	Closed	Closed	Open

FIGURE 2  
Jumper Location

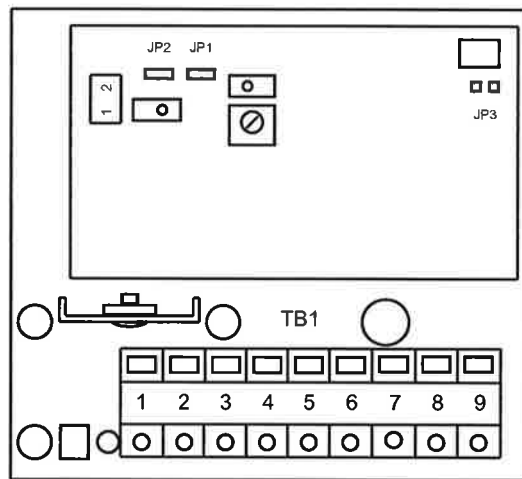
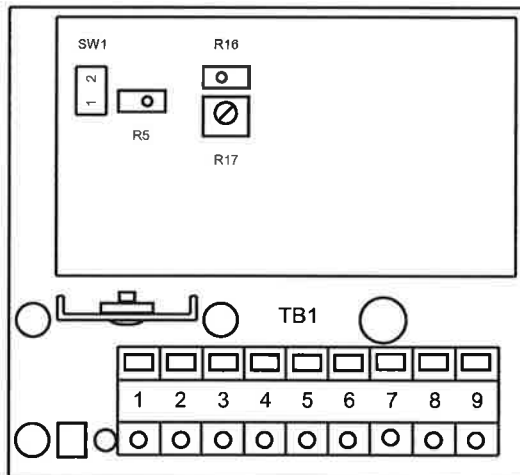


Figure 2 shows the jumpers positioned for a 4/20 mA output.

TABLE 2  
Input Signal Selection

	10 mV	20 mV	30 mV
SW1-1	ON	OFF	OFF
SW1-2	ON	ON	OFF

FIGURE 3  
Zero, Span & Analog Filter Adjustments



**R16** is used for zero adjustment of both outputs,  
**R5** is used for span adjustment of both outputs.  
**R17** is a 270° turn trim pot which is **used for analog filter adjustment of the 0-10 volt or 0-20 mA outputs.**

If the 0-10 Vdc or 0-20 mA outputs are unstable under normal operating conditions, slowly turn **R17** clockwise until the output stabilizes.

**R17** completely turned counter clockwise = filter de-activated  
**R17** completely turned clockwise = filter activated

**The adjustable filter is not available if using the 4/20 mA output.**

SECTION III  
OPTIONS

**Toledo Transducers Model TT 121**

**24 Volt Power Supply Specifications**

**Power**

Input Voltage	115 Vac, 50/60Hz
Output Voltage	24 Vdc (nominal)
Power Consumption	15 Watts (maximum)
Fuse	200 mA
Isolation	Class II

**Environmental**

Operating Temp. Range	+14 to +104°F (-10 to +40°C)
Storage Temp. Range	-4 to +122°F (-20 to +50°C)
Relative Humidity	85% non-condensing

**Enclosure**

Dimensions (L x H x D)	2.75" x 3.50" x 2.25"
Mounting	DIN-Rail mount
Material	ABS Plastic
Weight	12.5 Ounces

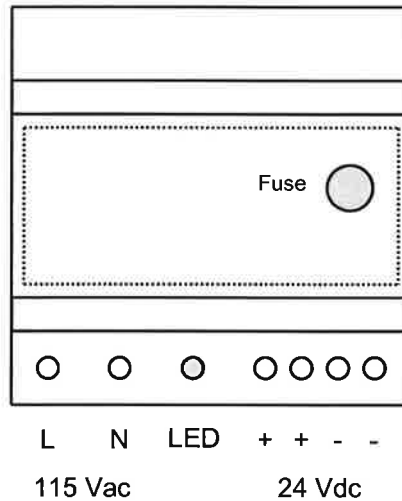
**Installation**

- Make sure the installation complies with local regulations and electrical codes.
- Connect AC voltage to the terminals marked "L" and "N".
- The DC voltage is available on the terminals marked "+" and "-". A red LED is illuminated when the power supply is "ON".

Refer to Figure 4 on the following page for terminal locations.



**FIGURE 4**  
**Model 121 Power Supply**



### **Fuse Replacement**

- The following procedures require work inside the power supply enclosure and should be performed by qualified service personnel.
- Before opening the unit, disconnect the AC voltage.
- Remove the front cover from the power supply.
- Press down gently on the cover of the fuse holder, and turn counter-clockwise.
- Pull out the cover and fuse as an assembly, replace fuse with a new one.
- Re-install fuse and cover as an assembly, press down gently and turn clockwise.
- Replace the front cover on the power supply.
- Re-apply AC voltage to the unit.

In the event of a malfunction, please contact the nearest distributor for assistance. Any attempt to modify or repair the power supply will void the manufacturers warranty.