

# Two-Wire 4-20 mA Transmitter

## Description

The Two-Wire Frequency Input Transmitter is loop-powered, providing a 4–20 mA analog process signal. The 4–20 mA signal is proportional to the flow rate and is calibrated using the zero and span adjustments to correlate with the input frequency generated by the flowmeter.

An exclusive feature provided by the transmitter is its ability to be configured for either magnetic or RF modulated carrier frequency inputs. RF pickoffs eliminate magnetic drag on turbine rotors, increasing the rangeability and providing improved accuracies at lower flow rates.

The compact transmitter, using surface mount technology, is offered in a potted module, polypropylene head, NEMA 4X housing or Class I, Division 1 & 2, Group A, B, C & D; Class II, Groups E, F & G; and Class III; Type 4X enclosure.

## Features

- Isolated 4–20 mA output
- Reverse polarity protected
- Frequency input from modulated carrier or magnetic pickoffs
- Available in potted module or polypropylene, NEMA 4X and explosion-proof enclosures
- Long range transmission with noise immunity
- Loop-powered 12–50 VDC
- Compact module utilizing surface mount technology
- Approvals: FM/CSA approved for intrinsically-safe requirements and CE conformity per the EU EMC Directive



## Two-Wire 4-20 mA Transmitter

## Specifications

### Input

Frequency Range	5–3500 Hz
Sensitivity	7 mV RMS (Magnetic)

### Output

Range	4–20 mA
Linearity	±0.1% of reading
Overall Accuracy (Including Linearity, Repeatability & Hysteresis)	±0.1% of span
Temperature Stability	±0.01% of reading per degree C
Zero Adjust	±0.2 mA
Operating Temperature Range	-40° C to +85° C (-40° F to +185° F)
Storage Temperature Range	-55° C to +125° C (-67° F to +257° F)
Relative Humidity	5 to 95%
Maximum Load Resistance	$R_{max} = \frac{(V_{supply} - 12)}{20 \text{ mA}}$

### Power

External Supply	12–50 VDC Loop-Powered
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### Approvals

Meets intrinsically-safe hazardous outdoor (NEMA 4X) locations when installed per FTI drawing 76-61827, which requires approved barrier.

CE approval on qualified FTI models (consult factory).



# Model Numbering System

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## Basic Model No.

### Input Options

- A = Magnetic
- B = Pulse (requires "017" Special Code)
- C = 1 mH Carrier (RF)

### Enclosure Options

- 3 = Polypropylene
- 4 = Potted Module With Mounting Holes
- B6 = NEMA 4X
- 9 = Class I, Div. 1 & 2, Group A, B, C & D

### Frequency Range

- 1 thru 12 from chart (optional).
- Factory select when purchased with meter.

### Special Configuration

CE = CE conformity marked

- Notes: 1) Only available with "- 9" enclosure option.  
 2) With CE mark the enclosure is a double-sided instrument housing.

IS = FM and CSA Intrinsically-Safe

- Notes: 1) Available with enclosure options "B6" and "- 9" only.  
 2) Must be used with IS rated pick-off.

017 = Special configuration for pulse input

## Frequency Range Chart

Twelve different operating frequency ranges are available from 5 Hz up to 3500 Hz. If the Two-Wire Transmitter is purchased with a turbine flowmeter, the transmitter with the appropriate frequency range will be selected at the time of calibration. Otherwise, one of the 12 listed ranges must be specified in the model number.

Range Number	Operating Frequency*	Span Adjust	Response Time**
01	50 - 3500	3001 - 3500	<100 msec
02	50 - 3000	2100 - 3000	<100 msec
03	50 - 2099	1470 - 2099	<100 msec
04	25 - 1469	1030 - 1469	150 msec
05	25 - 1029	720 - 1029	150 msec
06	25 - 719	500 - 719	150 msec
07	15 - 499	350 - 499	500 msec
08	15 - 349	245 - 349	500 msec
09	15 - 244	170 - 244	1.5 sec
10	5 - 169	120 - 169	1.5 sec
11	5 - 119	81 - 119	4 sec
12	5 - 80	50 - 80	4 sec

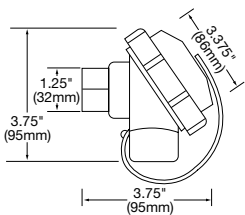
\* Frequencies below the operating range may cause output ripple to be in excess of 2 mV RMS

\*\* Response time for frequency step changes from 0 to 90%

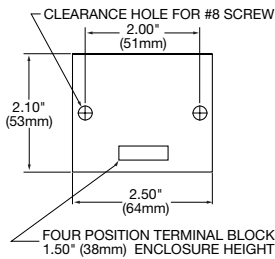
Specifications are for reference only and are subject to change without notice.

Drawings not to scale.

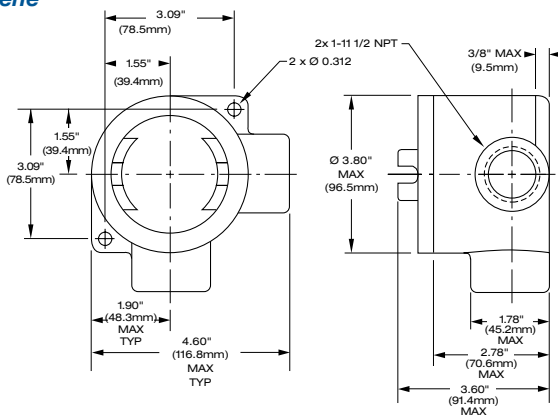
## Enclosure Options



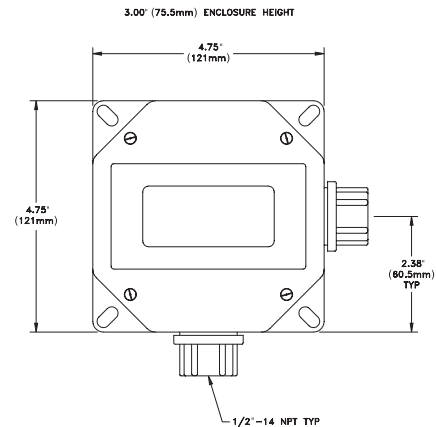
3 = Polypropylene



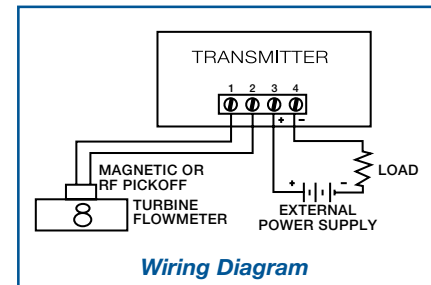
4 = Potted Module



9 = Class I, Div. 1 & 2, Group A, B, C & D



B6 = NEMA 4X



Wiring Diagram

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