



## Isolated Transmitters



## Frequency Input

These transmitters accept periodic or pulse wave-form signals such as those originating from tachometers, magnetic transducers, and turbine flow meters, and provide a proportional process current or voltage output signal.

### Models

250T: Loop-powered transmitter series

350T: DC-powered transmitter series

450T: AC-powered transmitter series

### Input Ranges

- Frequency, span ranges 0 to 25.6KHz, field-selectable, direct coupled inputs,  $\pm 25\text{mV}$  to 150V RMS

### Output Ranges

- DC current: 4 to 20mA
- DC voltage: 0 to 5V or 0 to 10V

### Power Requirements

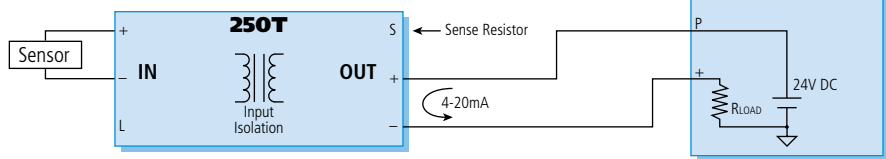
- 250T: 12 to 50V DC @ 20mA (loop-powered)
- 350T: DC voltage source (see table below)

Output range	Power
4 to 20mA	10 to 36V DC @ 30mA
0 to 5V	10 to 36V DC @ 9mA
0 to 10V	12.5 to 36V DC @ 9mA

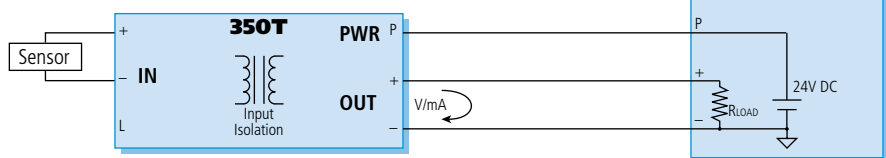
- 450T: 115V or 230V AC,  $\pm 10\%$ , 50 to 60Hz

Output range	Power
4 to 20mA	115V AC @ 0.050A
4 to 20mA	230V AC @ 0.025A
0 to 5V, 0 to 10V	115V AC @ 0.020A
0 to 5V, 0 to 10V	230V AC @ 0.010A

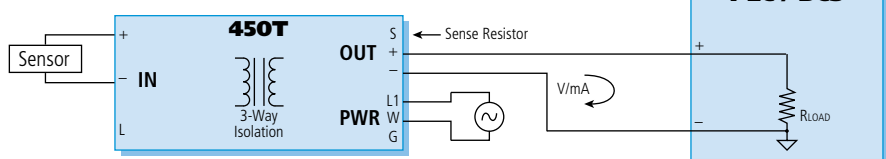
## 250T Loop-Powered (2-wire) Transmitter



## 350T DC-Powered (3-wire) Transmitter



## 450T AC-Powered (4-wire) Transmitter



## Special Features

- Excellent accuracy and stability ensure reliable measurements in harsh industrial environments.
- RFI and EMI resistance minimize the effects of environmental noise.
- 90% span adjustment enables precise application calibration.
- Quartz crystal time-base design improves temperature performance
- Field-selectable time constants optimize output response time and ripple characteristics
- Selectable threshold circuits accept unipolar/bipolar inputs (0V bipolar, 1.5V unipolar)
- Excitation/pull-up circuit adds flexibility
- 1500V AC peak isolation (250V AC or 354V DC continuous) prevents ground loops.

### 250T models:

Input isolated from output/power.

### 350T models:

Input isolated from output and power. Output and power share a common.

### 450T models:

3-way isolation. Input, output, and power circuits are isolated from each other.

## Performance

### Ambient Temperature Range

Operating:  $-13$  to  $185^{\circ}\text{F}$  ( $-25$  to  $85^{\circ}\text{C}$ ).

Storage:  $-40$  to  $185^{\circ}\text{F}$  ( $-40$  to  $85^{\circ}\text{C}$ ).

### Accuracy

$\pm 0.1\%$  of calibrated span. Includes repeatability, hysteresis, terminal point linearity, and adjustment resolution.

### Ambient Temperature Effect

Less than  $\pm 0.01\%$  of output span per  $^{\circ}\text{F}$  ( $\pm 0.018\%$  per  $^{\circ}\text{C}$ ). (Specification includes the combined effects of zero and span over temperature).

### Noise Resistance

RFI: Less than  $\pm 0.5\%$  of output span effect.

EMI: Less than  $\pm 0.25\%$  of output span effect.

### Noise Rejection

Common Mode: 115dB at 60Hz, 100 ohm unbalance.

Normal Mode: Not applicable.

### Response Time

Time for output to reach 98% of output span depends on jumper-selectable frequency range.

Range 1: 8.0 sec response time (98%).

Range 2: 5.0 sec response time (98%).

Range 3: 0.4 sec response time (98%).

### Bandwidth

-3dB at 25,600Hz, typical.

### Output Compliance

250T:  $R_{LOAD}(\text{max.}) = (V_{SUPPLY} - 12\text{V}) / 20\text{mA}$ .

350T:  $R_{LOAD}(\text{max.}) = (V_{SUPPLY} - 2.5\text{V}) / 20\text{mA}$ .

450T:  $R_{LOAD} = 600$  ohms.



## Ordering Information

Select one option from each column. Example: 450T-V4-V0-2-DIN-NCR-C  
To order factory calibration, append "-C" to end of model number. Specify ranges on order.

Base	Input	Mounting		Approval
250T	-FQ1	-DIN	-N4	-NCR
		-ST	-N12	-DT1
		-SM	-XP	

Note:  
All 250Ts have 4 to 20mA output and are loop-powered.

Base	Input	Output	Mounting	Approval
350T	-FQ1	-Y	-DIN	-NCR
		-V0		
		-V5		

Note:  
All 350Ts accept 10 to 36V DC power supply.

Base	Input	Output	Power	Mounting	Approval
450T	-FQ1	-Y	-1	-DIN	-NCR
		-V0	-2		
		-V5			

## Input Options

-FQ1: Frequency, range 0 to 25.6KHz  
Span adjust: 50 to 100% of range selected below.  
Zero adjust: 0 to 20% of span.

Jumper-selectable ranges:

- Range A: 25 to 50 Hz span.
- Range B: 50 to 100 Hz span.
- Range C: 100 to 200 Hz span.
- Range D: 200 to 400 Hz span.
- Range E: 400 to 800 Hz span.
- Range F: 800 to 1,600 Hz span.
- Range G: 1,600 to 3,200 Hz span.
- Range H: 3,200 to 6,400 Hz span.
- Range I: 6,400 to 12,800 Hz span.
- Range J: 12,800 to 25,600 Hz span.

## Input Circuit Open Response

Down-scale drive standard.

## Bipolar Input Configuration

Threshold: 0.0V DC.

Input Amplitude:  $\pm 25$ mV to 150V RMS.

Hysteresis: Fixed:  $\pm 25$ mV, nominal. Switching points are -25mV and +25mV (nominal), or 0.0V  $\pm 0.025$ V.

## Unipolar Input Configuration

Threshold: 1.5V DC. Attenuator resistors may be installed to further reduce sensitivity, consult factory.

Hysteresis: Fixed:  $\pm 25$ mV, nominal. Switching points are +1.525V and +1.475V (nominal), or +1.5V  $\pm 0.025$ V.

Input Amplitude: 0 to 2V to 150V RMS.

Unipolar Excitation Supply: For contact closure or open collector transistor switching circuits. Nominal excitation/pull-up is 5V DC through 15K ohms (0.333mA, nominal).

## Minimum Pulse Width

The minimum pulse width required is 10 $\mu$ s.

## Output Options (350T, 450T only)

- Y: 4 to 20mA DC.
- V0: 0 to 10V DC into 10K ohms or greater
- V5: 0 to 5V DC into 5K ohms or greater

## Power Options (450T only)

- 1: 115V AC power
- 2: 230V AC power

## Mounting Options

### Mountings

- DIN: DIN rail G or T mount
- ST: SNAPTRACK mount [250T only]
- SM: Surface-mount [250T only]

### External housings

- N4: NEMA 4, water-tight [250T only], holds two
- N12: NEMA 12, oil-tight [250T only], holds two
- XP: Explosion-proof NEMA 4 [250T only], holds one

## Approval Options

- CE marked [250T only].
- NCR: No certification/approval required.

- DT1<sup>†</sup>: CSA approval, Div. 2 hazardous locations: Class I; Div. 2; Groups A, B, C, D [250T only].

## Ordering Notes

\* Unit requires factory calibration. Append "-C" to end of model number. Specify ranges on order.

† Units are shipped separately from any optional enclosures (i.e. units are not installed in any external housing).

## Accessories

### Power supplies

See Power Supplies on Page 199.

### DIN RAIL 3.0

### DIN RAIL 16.7

DIN rail strip, Type T, 3 inches (75mm) or 16.7 inches (425mm)

### 20RM-16-DIN

19" rack-mount kit with DIN rail. Holds sixteen 250T/350Ts or ten 450T transmitters.

### 350T-N4-WM

NEMA 4 water-tight enclosure, wall-mount. Holds two 350Ts or one 450T transmitter.

### 350T-N12-WM

NEMA 12 oil-tight enclosure, wall-mount. Holds two 350Ts or one 450T transmitter.

## Retired Models

- 250T-FQ1-N4-DT1-C
- 250T-FQ1-SM-DT1
- 250T-FQ1-SM-NCR
- 250T-FQ1-SM-NCR-C
- 250T-FQ1-ST-DT1
- 250T-FQ1-XP-NCR-C
- 350T-FQ1-V0-DIN-NCR-C
- 350T-FQ1-Y-DIN-NCR-C
- 450T-FQ1-V0-1-DIN-NCR
- 450T-FQ1-V0-1-DIN-NCR-C
- 450T-FQ1-Y-1-DIN-NCR-C