



## Isolated Transmitters



## 150T Series

### Frequency Input

#### Input Ranges

Frequency,  
span ranges from 25Hz to 25.6KHz,  
field-selectable  
(span: adjustable over entire range selected)  
(zero: 0 to 20% of full scale frequency for  
range selected),  
direct coupled input ( $\pm 25\text{mV}$  to 100V RMS)

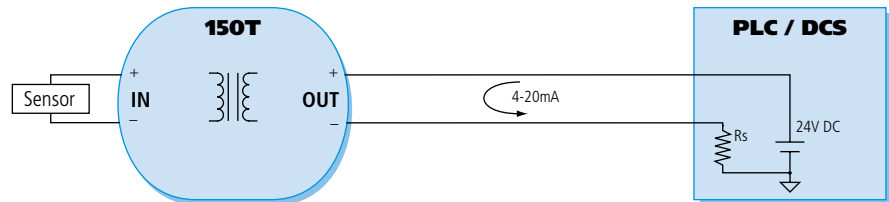
#### Output Range

4 to 20mA DC

#### Power requirement

12 to 50V DC, loop-powered

## 150T Loop-Powered Transmitter



### Description

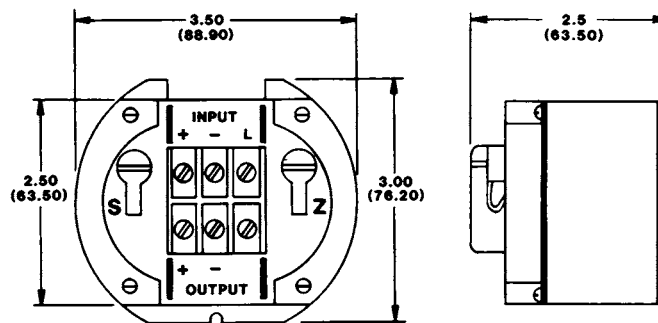
These loop-powered transmitters accept periodic or pulse waveform signals such as those originating from tachometers, magnetic transducers, and turbine flow meters, and provide a proportional process current output signal. The output and power share the same pair of wires.

150T two-wire transmitters deliver outstanding performance and a broad range of flexibility. They are ideal for remote or control room mounting. They feature rugged construction and remain stable even in harsh industrial environments.

### Special Features

- Excellent accuracy and stability ensure reliable measurements in harsh industrial environments.
- RFI and EMI resistance minimize the effects of noise.
- Isolated inputs prevent ground loops.
- Wide range zero and span adjustment enable precise calibration.

## 150T Dimensions



Dimensions are in inches (millimeters).



## ■ Performance

### Reference Test Conditions

Input: 0-12.8K Hz, 100 ohm resistive source; Output 4-20mA into 500 ohm load; Ambient temperature: 77°F (25°C); Power supply: 24V DC supply

## ■ Input

### Input Range

0 to 25,600 Hz; input impedance 20,000 ohms min..

### Input Span Ranges

A: 25 to 50 Hz      F: 800 to 1600 Hz  
B: 50 to 100 Hz    G: 1600 to 3200 Hz  
C: 100 to 200 Hz   H: 3200 to 6400 Hz  
D: 200 to 400 Hz   I: 6400 to 12800 Hz  
E: 400 to 800 Hz    J: 12,800 to 25,600 Hz

### Span

The input span is continuously adjustable over the preselected input span range.

### Zero

The minimum input frequency for any range, can be from 0-20% of the full-scale frequency.

### Input Amplitude

Bipolar input from  $\pm 25$ mV to 100V rms using the zero-volt threshold or unipolar input from 0 to 2V to 100V rms using the 1.5V threshold level.

### Input Threshold (Switching Level)

0V, +1.5V; shunt selectable. 0V threshold is used for bipolar (zero crossing) inputs; 1.5V DC nominal threshold is used for unipolar (non-zero crossing) inputs.

Bipolar: 0V DC Threshold (nominal)  
Unipolar: 1.5V DC Threshold (nominal)

### Input Hysteresis

50mV, fixed.

### Input Excitation

Excitation for contact closure or open collector transistor switching can be field configured. Nominal excitation/pull-up is 5V through 33,000 ohms (150  $\mu$ A, nominal). Must be used with 1.5V threshold level.

## ■ Output

### Output Range

4-20mA DC output.

### Output Limits (approximate)

3.8mA DC to 30mA DC.

### Output Ripple

Less than 0.5% of maximum output span for inputs from 10-100% of full-scale.

### Current Drive Capability

$R_{LOAD} (max.) = (V_{SUPPLY} - 12V)/20mA.$   
At  $V_{SUPPLY} = 24V, R_{LOAD} = 0$  to 600 ohms

### Load Resistance Effect

Less than  $\pm 0.005\%$  of output span for 100 ohm change.

### Accuracy

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

### Response Time

Shunt block selection of the filter networks results in different response times. Unit ships with 0.4 second response filter. To maintain low output ripple for each frequency range, use recommended filter. For a step change in the input, the nominal response time for a 98% change of the output span is specified below.

Range A thru J: 8.0 sec response time (98%)

Range C thru J: 5.0 sec response time (98%)

Range D thru J: 0.4 sec response time (98%)

## ■ Power

### Power Supply

External loop power supply required, minimum 12V DC, maximum 50V DC. Under no circumstances must the DC supply ever exceed 100 volts peak instantaneously. Unit has reverse polarity protection.

### Power Supply Effect

DC Volts:  $\pm 0.001\%$  of output span per volt DC.  
60/120 Hz ripple:  $\pm 0.01\%$  of span per volt peak to peak of power supply ripple.

## ■ Environmental

### Ambient Temperature Range

-15 to 185°F (-25 to 85°C).

### Ambient Temperature Effect

Less than  $\pm 0.01\%$  of output span per °F ( $\pm 0.018\%$  per °C) over ambient transmitter range for reference test conditions. Includes combined effects of zero and span over temperature.

### Isolation

Input circuit is electrically isolated from output/ power circuits allowing the input to operate at up to 250V AC or 354V DC off ground on a continuous basis (will withstand 1500V AC dielectric strength test for one (1) minute without breakdown). Complies with test requirements outlined in ANSI C39.5-1974 for the voltage rating specified.

### RFI Resistance

Less than  $\pm 0.5\%$  of output span with RFI field strengths up to 10V/meter at frequencies of 27, 151 and 467 MHz.

### EMI Resistance

Less than  $\pm 0.25\%$  of output span effect with switching solenoids or commutator motors.

### Noise Rejection

Common Mode: 120dB, 60 Hz, 100 ohm unbalance.  
Normal Mode: Not applicable.

### Surge Withstand Capability (SWC)

Input/Output terminations rated per ANSI/IEEE C37.90-1978. Unit is tested to a standardized test waveform that is representative of surges (high frequency transient electrical interference), observed in actual installations.

## ■ Physical

### Case

Self-extinguishing polypropylene UL94 V-O, recognized by CSA, color blue.

### Printed Circuit Boards

Military grade FR-4 epoxy glass circuit board.

### Connections

Barrier-type terminal strip using No. 6 screw & clamp plates. Wire range 12-26 AWG.

### Environmental Protection

Water resistant enclosures, PC Boards are coated with fungus resistant acrylic conformal coating. Gasket material: silicon rubber.

### Mounting Position Effect

Position insensitive.

### Shipping Weight

One (1) pound (0.45 kg.) packed.

## ■ Ordering Information

### Transmitter Model

150T-FQ-I-20

Transmitter, frequency input.

To add factory calibration, append "-C" to end of model number. Specify ranges on order.

## Accessories

### Power supplies

See Power Supplies on page 183.

### 150T-N4

NEMA 4 enclosure, water-tight.

### 150T-N12

NEMA 12 enclosure, oil-tight.

### 150T-XJSM-WM

### 150T-XJSM-PM

Explosion-proof enclosure (-WM for wall-mount or -PM w/pipe-mount hardware).

### 150T-SM-3.5

### 150T-SM-24

Mounting rail, 3.5" (holds one 150T) or 24" long.

### 150T-MSM

Metal surface mounting bracket.

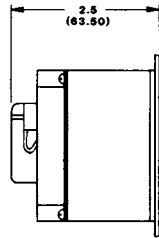
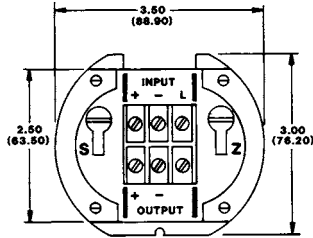
### 150T-DRA

DIN rail adapter.

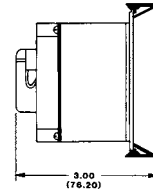
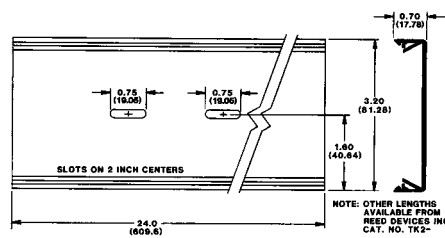


## 100T, 150T, 150I Dimensions

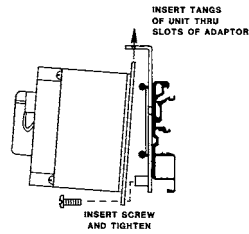
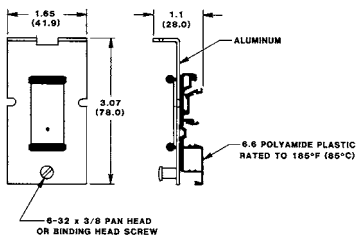
### 100T/150T/150I Housing



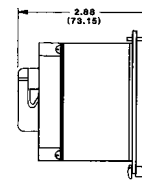
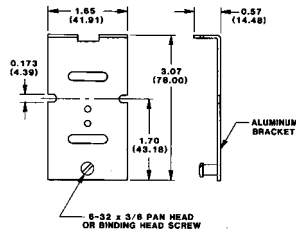
### 150T-SM-24 Mounting Rail



### 150T-DRA Adapter



### 150T-MSM Bracket



### 150T-N4, NEMA4 150T-N12, NEMA12

