



## Isolated Transmitters



## Thermocouple Input

These models convert sensor inputs to proportional process current or voltage output signals.

### Models

250T: Loop-powered transmitter series

350T: DC-powered transmitter series

450T: AC-powered transmitter series

### Input Ranges

- Thermocouple types J, K, T, R, S, E, B
- Linearized thermocouple (custom ranges)

### Output Ranges

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

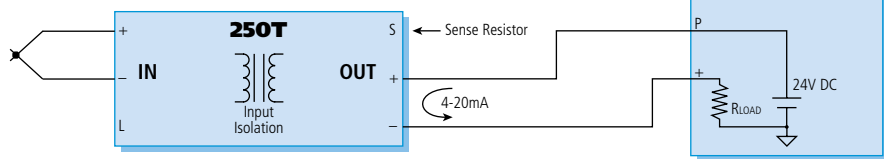
### Power Requirements

- 250T: 12 to 50V DC @ 20mA (loop-powered)
- 350T: DC voltage source (see table below)
- 450T: 115V or 230V AC,  $\pm 10\%$ , 50 to 60Hz

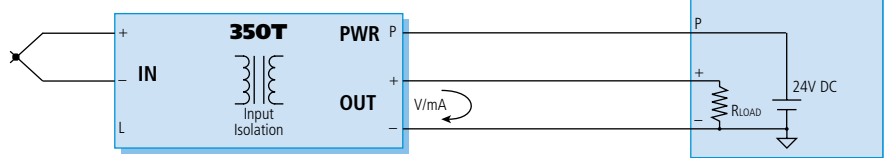
Output range	Power
4 to 20mA	10 to 36V DC @ 30mA
0 to 5V	10 to 36V DC @ 9mA
0 to 10V	12.5 to 36V DC @ 9mA

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

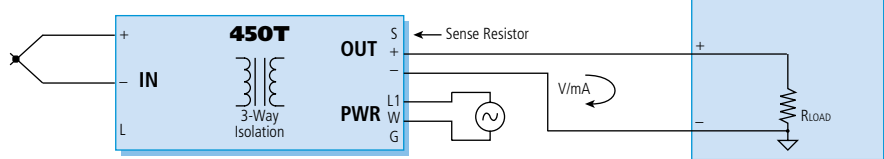
### 250T Loop-Powered (2-wire) Transmitter



### 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.
- Field-selectable input types reduce stocking requirements.
- Thermocouple reference junction compensation reduces drift and corrects nonlinearity.
- TC linearizer (5-slope) improves accuracy.
- TC break detection indicates open circuit failures with selectable up/downscale operation.
- RFI and EMI resistance minimize the effects of environmental noise.
- 75% span adjustment enables precise application calibration.
- 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°F (-25 to 85°C).  
Storage: -40 to 185°F (-40 to 85°C).

**Accuracy**  
 $\pm 0.1\%$  of calibrated span or  $\pm 0.01\text{mV}$ , whichever is greater. Includes repeatability, hysteresis, terminal point linearity, and adjustment resolution.

**Ambient Temperature Effect**  
Less than  $\pm 0.01\%$  of output span per °F ( $\pm 0.018\%$  per °C).  $\pm 0.025\%$  of output span per °F ( $\pm 0.045\%$  per °C) for narrow span units. (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: 130dB at 60Hz, 100 ohm unbalance.  
Normal Mode: 30dB at 60Hz, 100 ohm source.

**Response Time**  
Output reaches 98% of output span in 300ms.

**Bandwidth**  
-3dB at 3 Hz, typical.

**Output Compliance**  
250T:  $R_{LOAD} (\text{max.}) = (V_{SUPPLY} - 12V) / 20\text{mA}$ .  
350T:  $R_{LOAD} (\text{max.}) = (V_{SUPPLY} - 2.5V) / 20\text{mA}$ .  
450T:  $R_{LOAD} = 600 \text{ ohms}$ .

**Linearization (-xLxx) Option**  
5-segment TC linearizer provides minimum 10 to 1 improvement  $\pm 0.1\%$  in the linearity curve.



## Ordering Information

Select one option from each column. Example: 450T-TC3-Y-1-DIN-NCR-C  
To order factory calibration, append "-C" to end of model number. Specify ranges on order.

Base	Input	Mounting	Approval
250T	-TC1	-RL00*	-DIN -N4 -NCR
	-TC3*	-SL00*	-ST -N12 -OL1
	-JL00*	-EL00*	-SM -XP -DT1
	-KL00*	-BL00*	-EP1
	-TL00*		-IS1

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

Base	Input	Output	Mounting	Approval
350T	-TC1	-RL00*	-Y	-DIN -NCR
	-TC3*	-SL00*	-V0	
	-JL00*	-EL00*	-V5	
	-KL00*	-BL00*		
	-TL00*			

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

Base	Input	Output	Power	Mounting	Approval
450T	-TC1	-RL00*	-Y	-1	-DIN -NCR
	-TC3*	-SL00*	-V0	-2	
	-JL00*	-EL00*	-V5		
	-KL00*	-BL00*			
	-TL00*				

## Input Options

### Nonlinearized Input Options (output linear to millivolts)

-TC1: Thermocouple;  
Field-selectable for J,K,T,R,S,E,B

Type J:  
Span: 100 to 760°C (180 to 1368°F)  
Zero: -100 to 450°C (-148 to 842°F)

Type K:  
Span: 100 to 1200°C (180 to 2160°F)  
Zero: -100 to 600°C (-148 to 1112°F)

Type T:  
Span: 150 to 400°C (270 to 720°F)  
Zero: -150 to 300°C (-238 to 572°F)

Type E:  
Span: 100 to 700°C (180 to 1260°F)  
Zero: -100 to 350°C (-148 to 662°F)

Type R:  
Span: 550 to 1750°C (990 to 3150°F)  
Zero: 0 to 1200°C (32 to 2192°F)

Type S:  
Span: 550 to 1750°C (990 to 3150°F)  
Zero: 0 to 1200°C (32 to 2192°F)

Type B:  
Span: 1000 to 1820°C (1800 to 3276°F)  
Zero: 0 to 1000°C (32 to 2192°F)

-TC3\*: Narrow span TC, Field selectable J,K,T,R,S,E,B;  
(spans from 3 to 5mV); . Specify ranges on order.

### Linearized Input Options

(output linear to temperature for spans over 5mV  
consult factory for spans under 5mV)

-JL00\*: Linearized TC for Type J  
Specify ranges on order.

-KL00\*: Linearized TC for Type K  
Specify ranges on order.

-TL00\*: Linearized TC for Type T  
Specify ranges on order.

-RL00\*: Linearized TC for Type R  
Specify ranges on order.

-SL00\*: Linearized TC for Type S  
Specify ranges on order.

-EL00\*: Linearized TC for Type E  
Specify ranges on order.

-BL00\*: Linearized TC for Type B  
Specify ranges on order.

### Input Impedance

Without TC Break Detection: 1.0M ohm at 10mV span, typical; input current, ±10nA, typical.

With TC Break Detection: 400K ohm at 10mV span; input current, ±25nA, typical (±30nA, max.).

### 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

-NCR: No certification/approval required.

-OL1: CSA approval, Ordinary Locations [250T only].

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

-EP1††: CSA approval, Explosion-proof for hazardous locations: Class I; Groups B, C, D Class II; Groups E, F, G. NOTE: Only available with explosion-proof housing (-XP) [250T only].

-IS1†: CSA approval, Intrinsically Safe for hazardous locations: Class I; 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).

†† Units shipped installed in external enclosure.

## Accessories

### Power supplies

See Power Supplies on page 213.

### 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.



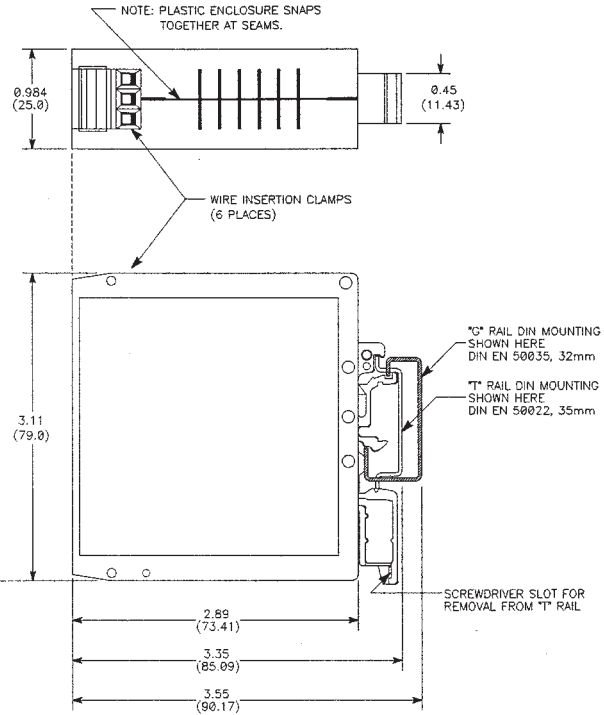
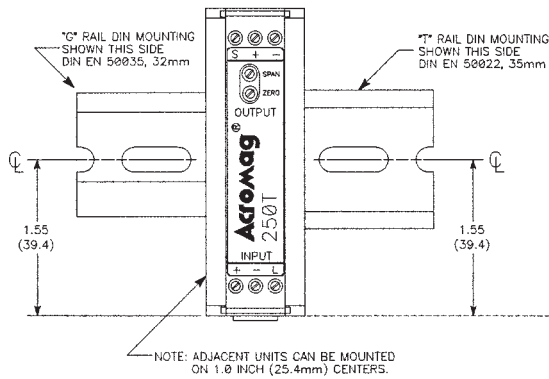
## Dimensions

**Transmitters: 250T, 350T**

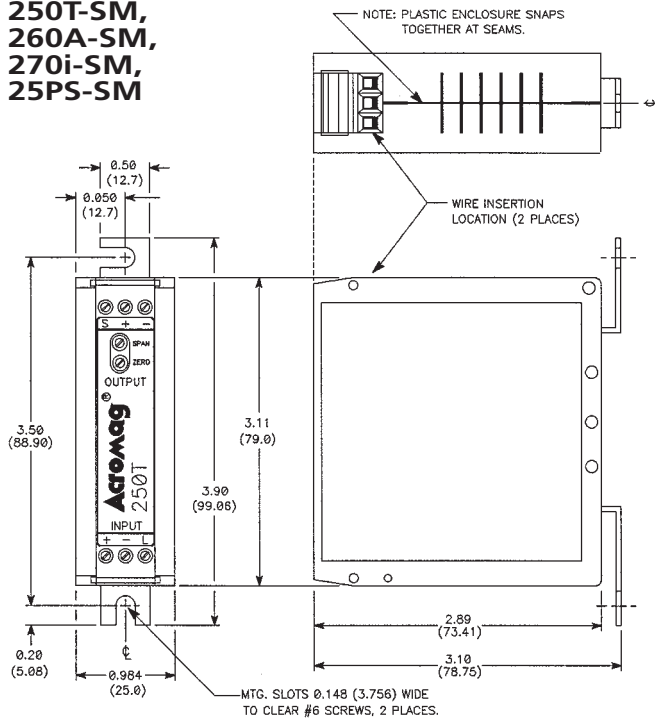
**Isolators: 270i, 340i,**

**Limit Alarms: 260A**

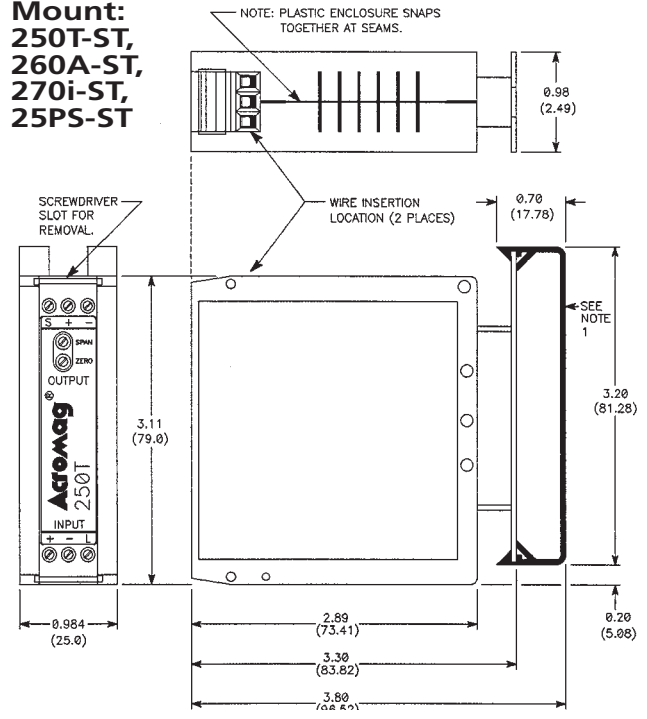
**Power Supplies: 25PS, 35PS-2U**



**Surface Mount:  
250T-SM,  
260A-SM,  
270i-SM,  
25PS-SM**



**Snaptrack Mount:  
250T-ST,  
260A-ST,  
270i-ST,  
25PS-ST**



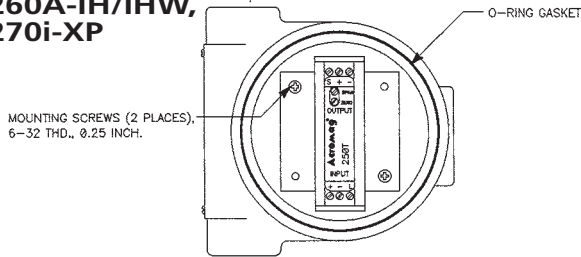
Dimensions are in inches (millimeters).



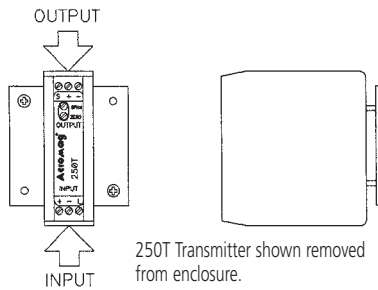
## Dimensions

### Explosion-Proof and Industrial Housing

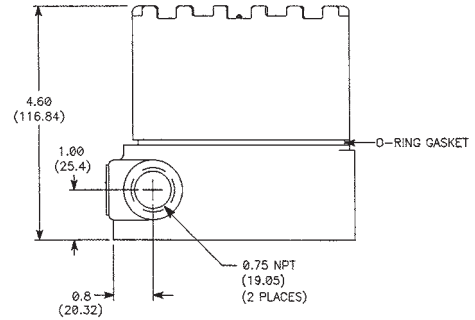
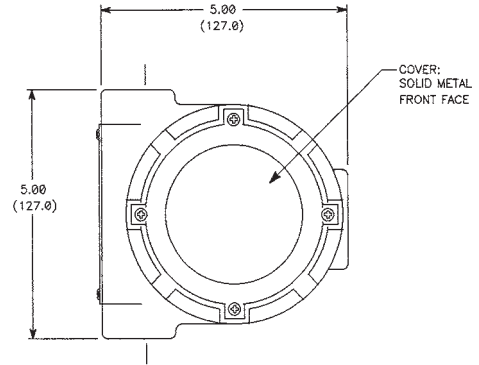
250T-XP,  
260A-IH/IHW,  
270i-XP



250T Transmitter shown installed in enclosure with cover removed.

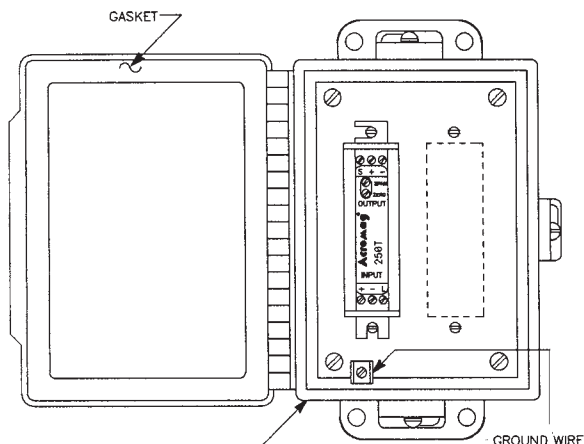


250T Transmitter shown removed from enclosure.

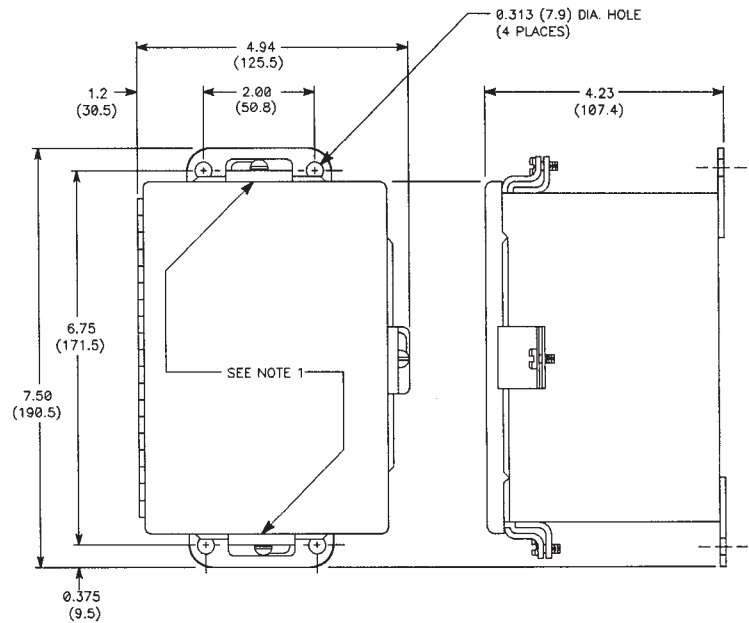


### NEMA-4 and NEMA-12 Enclosures

250T-N4 / N12, 25PS-N4 / N12  
260A-N4 / N12, 270i-N4 / N12



SERIES 250T TRANSMITTER SHOWN IN ENCLOSURE WITH COVER OPEN. NOTE: ROOM IS AVAILABLE FOR A SECOND UNIT WITH THE -SM (SURFACE MOUNT) OPTION - ORDER SEPARATELY.



NOTES:

1. THESE SPECIFIC CLAMPS ON NEMA 4 ENCLOSURES ONLY.
2. CONDUIT MOUNTING HOLES AND FITTINGS ARE CUSTOMER SUPPLIED.

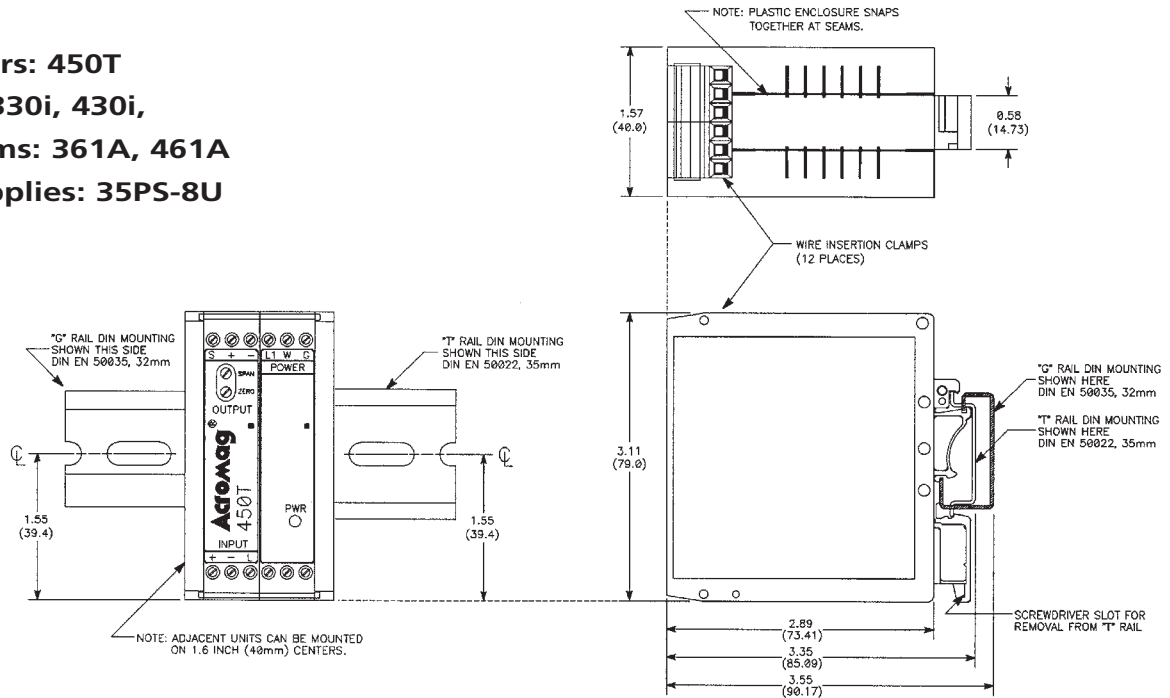
Dimensions are in inches (millimeters).

Flat Pack



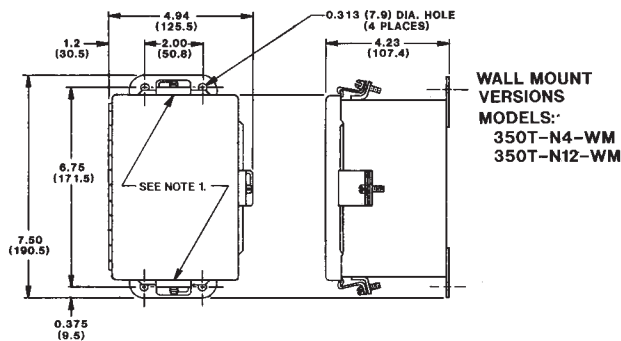
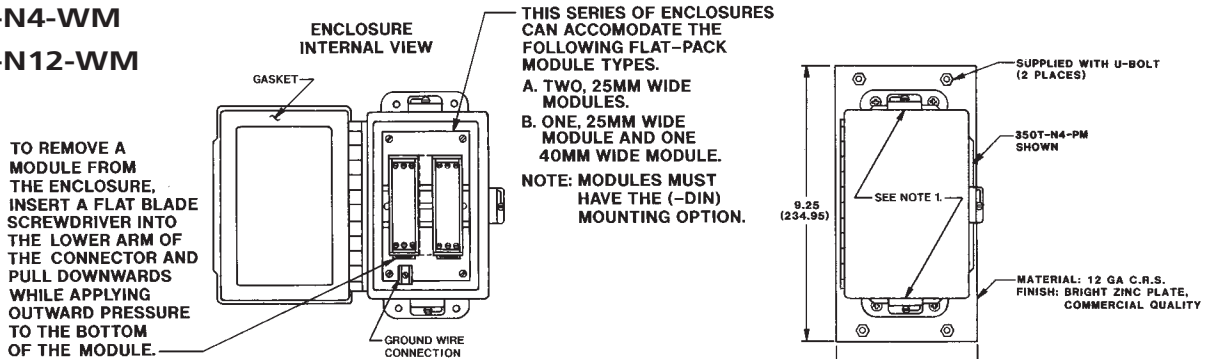
## Dimensions

**Transmitters: 450T**  
**Isolators: 330i, 430i,**  
**Limit Alarms: 361A, 461A**  
**Power Supplies: 35PS-8U**



## NEMA-4 and NEMA-12 Enclosures

**350T-N4-WM**  
**350T-N12-WM**



- NOTES:
1. THESE SPECIFIC CLAMPS ON NEMA 4 ENCLOSURES ONLY.
  2. CONDUIT MOUNTING HOLES AND FITTINGS ARE CUSTOMER SUPPLIED.
  3. ALL DIMENSIONS ARE IN INCHES (MILLIMETERS).

Dimensions are in inches (millimeters).

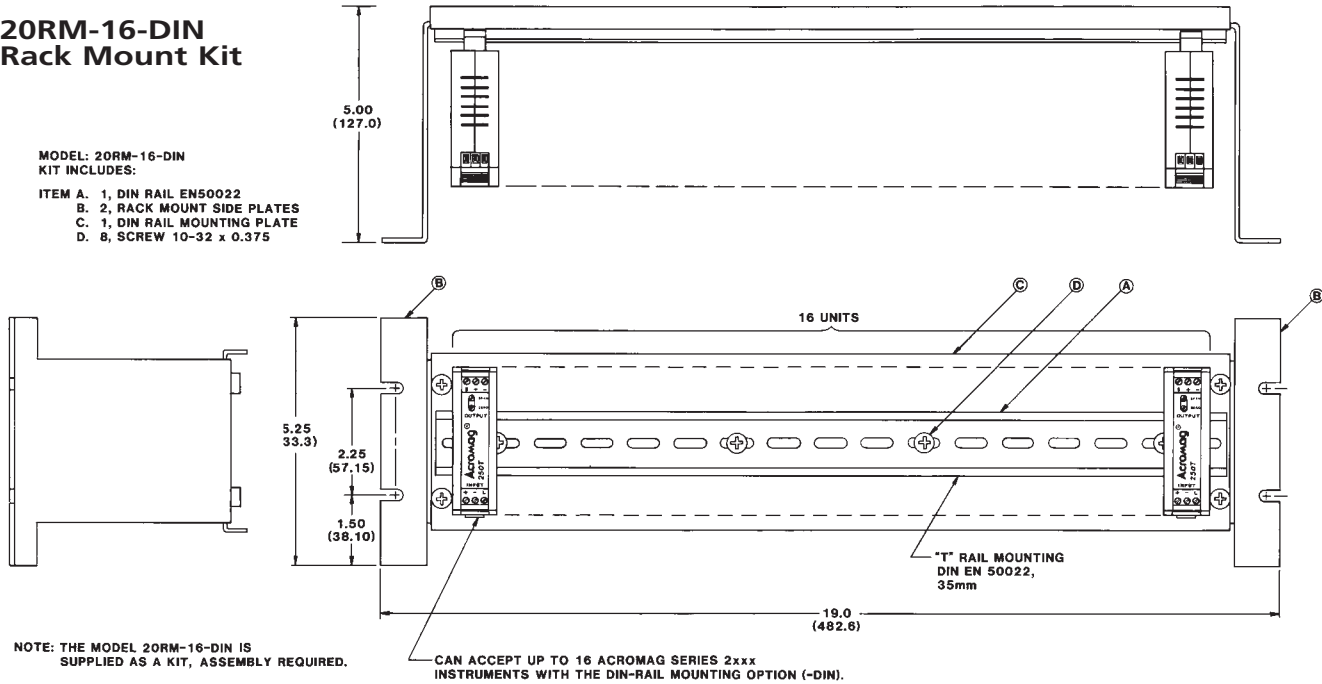


## Dimensions

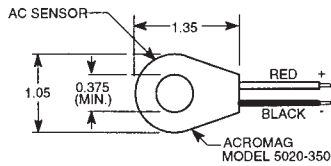
### 20RM-16-DIN Rack Mount Kit

MODEL: 20RM-16-DIN  
KIT INCLUDES:

- ITEM A. 1, DIN RAIL EN50022
- B. 2, RACK MOUNT SIDE PLATES
- C. 1, DIN RAIL MOUNTING PLATE
- D. 8, SCREW 10-32 x 0.375



### AC Sensor 5020-350



Dimensions are in inches (millimeters).

Flat Pack