



## Isolated Transmitters



## 270i Isolators DC Current Input

The 270i accepts a process current input and provides an isolated 4 to 20mA process current output signal. Power is received from the input signal current.

These isolators use transformer isolation to effectively break the electrical path between the transmitted signal and the receiving device. This eliminates ground loops, reduces noise, and helps protect against transients for more accurate and reliable measurements.

This product is also extremely easy to install. All units are factory calibrated for loads up to 600 ohms to eliminate any need for load trim adjustments.

### Input Range

- 4 to 20mA DC

### Output Range

- 4 to 20mA DC

### Power Requirement

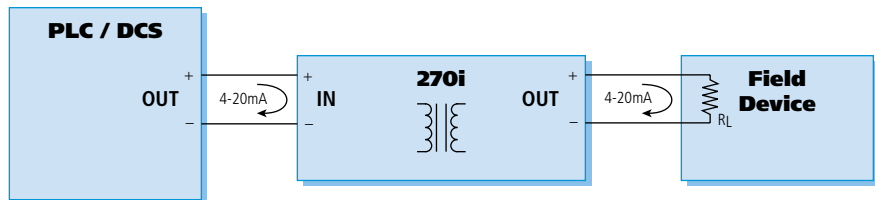
- 12 to 50V DC @ 20mA (loop-powered), power is derived from the input signal current. Loop-burden: 10.8V@250 ohm output load.

### Approvals

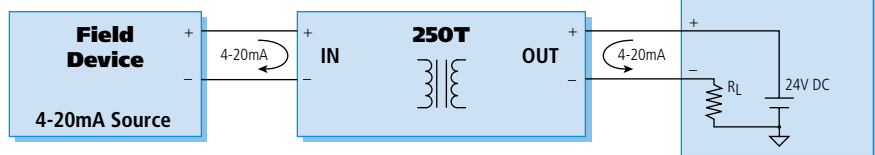
CSA: C22.2 No. 142

- Class I; Division 1; Groups A, B, C, D
- Class I; Division 2; Groups A, B, C, D
- Class II; Division 1; Groups E, F, G

## 270i Isolator Diagram



## 250T Isolator Diagram



For more information about the 250T Transmitter, refer to Page 144.

## Special Features

- Excellent accuracy and stability ensure reliable measurements in harsh industrial environments.
- 1500V AC peak isolation (250V AC or 354V DC continuous) prevents ground loops.
- RFI and EMI resistance minimize the effects of environmental noise.
- Calibration is independent of the load to eliminate load compensation adjustments
- Zero and span adjustment enable precise calibration.
- Compact, 1-inch wide housing uses less space for easier installation in control panels.
- Input current sense resistor simplifies field diagnostics

## Performance

### Input

#### Input Range

4 to 20mA input. Power is derived from the input signal loop. Input current should be limited to less than 50mA to prevent damage to the isolator. In the event of an open output circuit, the input loop voltage drop is limited to 20V, nominal. Isolator has reverse polarity protection.

#### Zero and span

Zero and span trim adjustments utilize 22-turn potentiometers accessible from front of the unit.

#### Input voltage drop

The voltage drop is a function of the input current and load resistance and is calculated as follows:

$$\text{Input Voltage Drop} = 5.4V \text{ DC} + (0.0216A \times R_{LOAD})$$

Example ( $R_{LOAD} = 250 \text{ ohms}$ ):

$$\text{Input Voltage Drop} =$$

$$5.4V \text{ DC} + (0.0216A \times 250 \text{ ohms}) = 10.8V \text{ DC}.$$

#### Current sense resistor

A built-in 10 ohm ( $\pm 0.1\%$ ) resistor can monitor input current to the isolator. Wiring to the isolator's input terminals determines if this resistor is included in the current loop. Use of this resistor provides a test signal of 40 to 200mV, representing 4 to 20mA.

*Continued on the next page.*



## Performance (continued)

### Output

#### Output Range

4-20mA DC output.

A. For  $R_{LOAD}$  from 50 to 600 ohms, connect  $R_{LOAD}$  between Output (+) and Output (-) terminals.

B. For  $R_{LOAD}$  from 0 to 50 ohms, connect  $R_{LOAD}$  between Output (S) and Output (-) terminals. For optimum performance at low values of  $R_{LOAD}$ , the isolator has a built-in pad resistor of 50 ohms.

1. Input Voltage Drop (input sense resistor not used):  
 $V_{DROP} = 5.4V DC + (0.0216A \times (R_{LOAD} + 50 \text{ ohms}))$

2. Input Voltage Drop (input sense resistor used):  
 $V_{DROP} = 5.6V DC + (0.0216A \times (R_{LOAD} + 50 \text{ ohms}))$

#### Accuracy

$\pm 0.1\%$  of output span. Error includes the combined effects of isolator repeatability, hysteresis, terminal point linearity and adjustment resolution.

#### Load resistance effect

Less than  $\pm 0.1\%$  of output span as load resistance is changed over entire range. Allows use of isolator, within resistance load range, without the need to recalibrate the isolator for a particular load.

#### Output ripple

Less than  $\pm 0.1\%$  of the maximum output span.

#### Bandwidth

-3dB at 3Hz, typical.

#### Response time

For a step input, the output reaches 98% of output span in 180ms, typical.

### Environmental

#### Ambient temperature range

Operating: -13 to 185°F (-25 to 85°C).

Storage: -40 to 185°F (-40 to 85°C).

#### Ambient temperature effect

Less than  $\pm 0.006\%$  of output span per °F ( $\pm 0.01\%$  per °C) over the ambient temperature range for reference test conditions. This specification includes the combined effects of zero and span over temperature.

#### Isolation

The input and output circuits are isolated from each other for common-mode voltages up to 250V AC, or 354V DC off ground, on a continuous basis (will withstand 1500V AC dielectric strength test for one minute without breakdown).

#### Noise rejection

Common mode: 110dB at 60Hz, typical.

#### RFI resistance

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

#### EMI resistance

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

#### 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.

## Ordering Information

Select one option from each column. Example: 270i-20MA-DIN-NCR

Base	Input	Mounting		Approval
270i	-20MA	-DIN	-N4	-NCR
		-ST	-N12	-OL1
		-SM	-XP	-DT1
				-EP1

### Input Options

-20MA: 4.0 to 20.0mA DC

### Mounting Options

#### Mountings

-DIN: DIN rail G or T mount

-ST: SNAPTRACK mount

-SM: Surface-mount

#### External housings

-N4: NEMA 4, water-tight, holds two

-N12: NEMA 12, oil-tight, holds two

-XP: Explosion-proof NEMA 4, holds one

### Approval Options

-NCR: No certification/approval required.

-OL1†: CSA approval, Ordinary Locations.

-DT1†: CSA approval, Div. 2 hazardous locations:  
Class I; Div. 2; Groups A, B, C, D.

-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).

### 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 270i isolators.



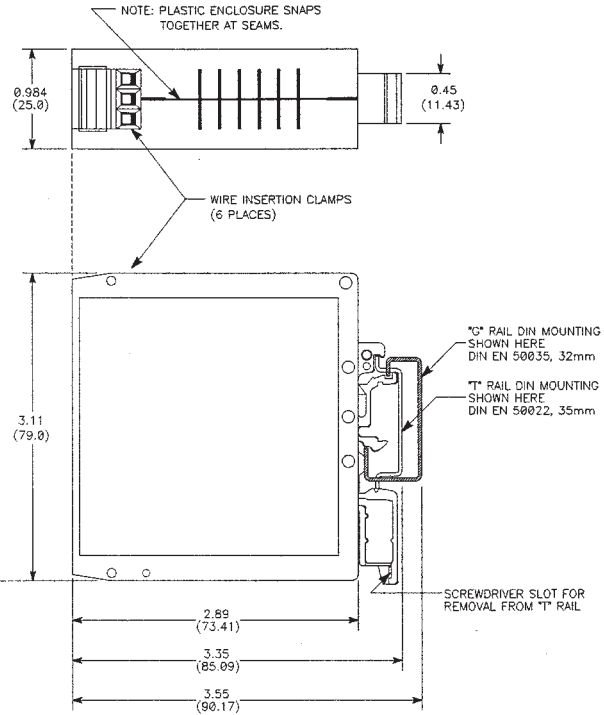
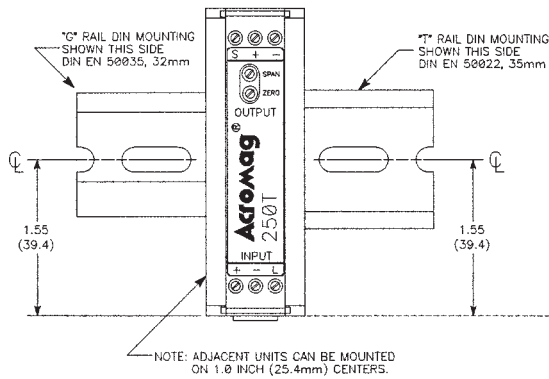
## Dimensions

**Transmitters: 250T, 350T**

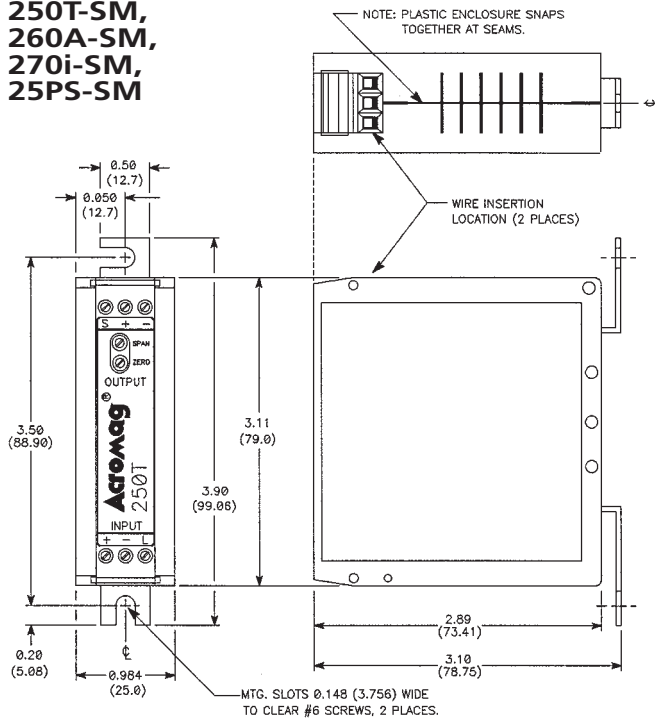
**Isolators: 270i, 340i,**

**Limit Alarms: 260A**

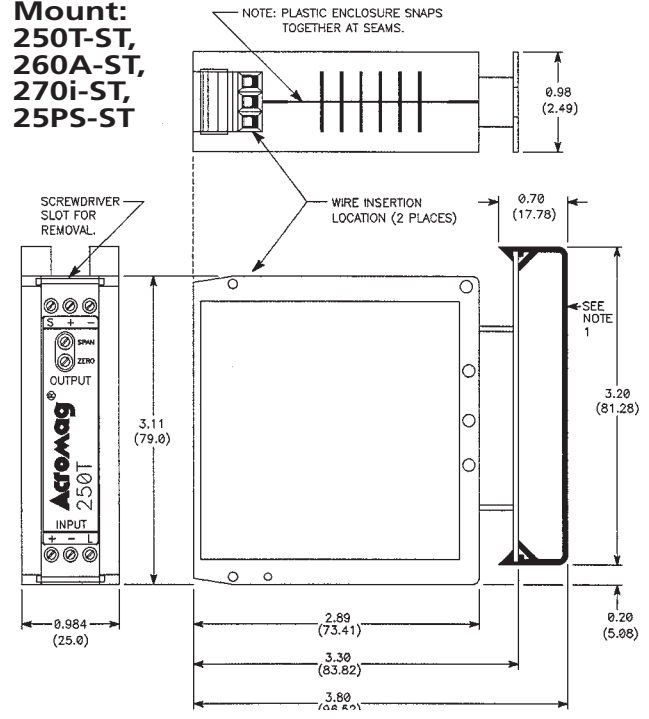
**Power Supplies: 25PS, 35PS-2U**



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



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



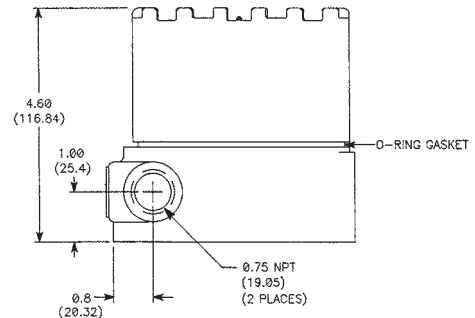
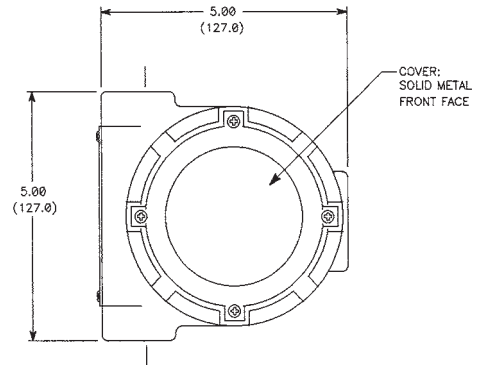
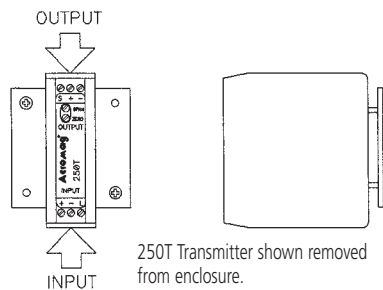
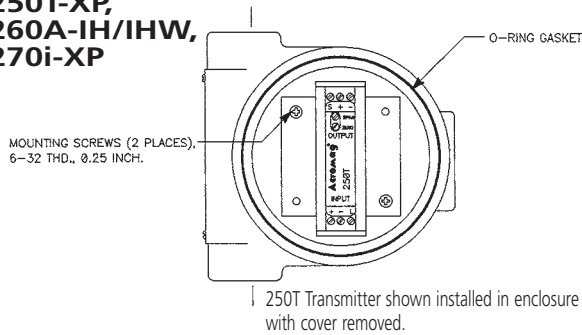
Dimensions are in inches (millimeters).



## Dimensions

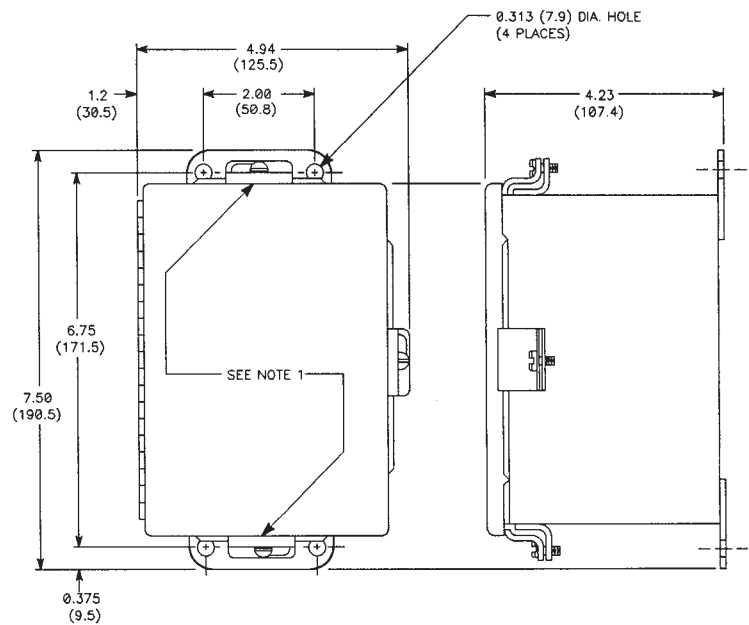
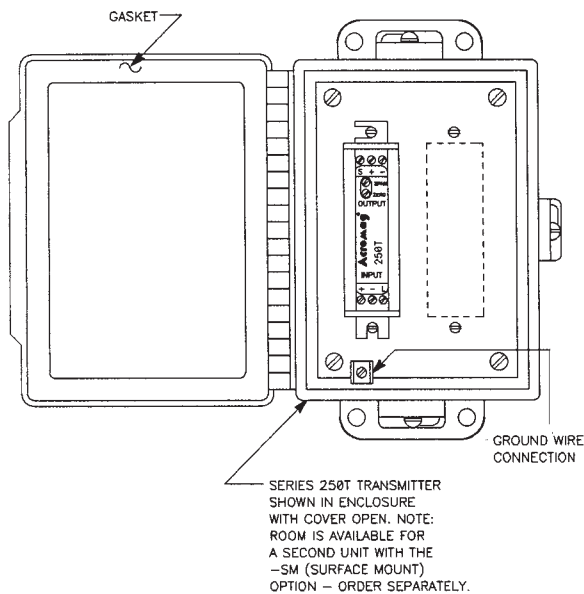
### Explosion-Proof and Industrial Housing

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



### NEMA-4 and NEMA-12 Enclosures

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



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

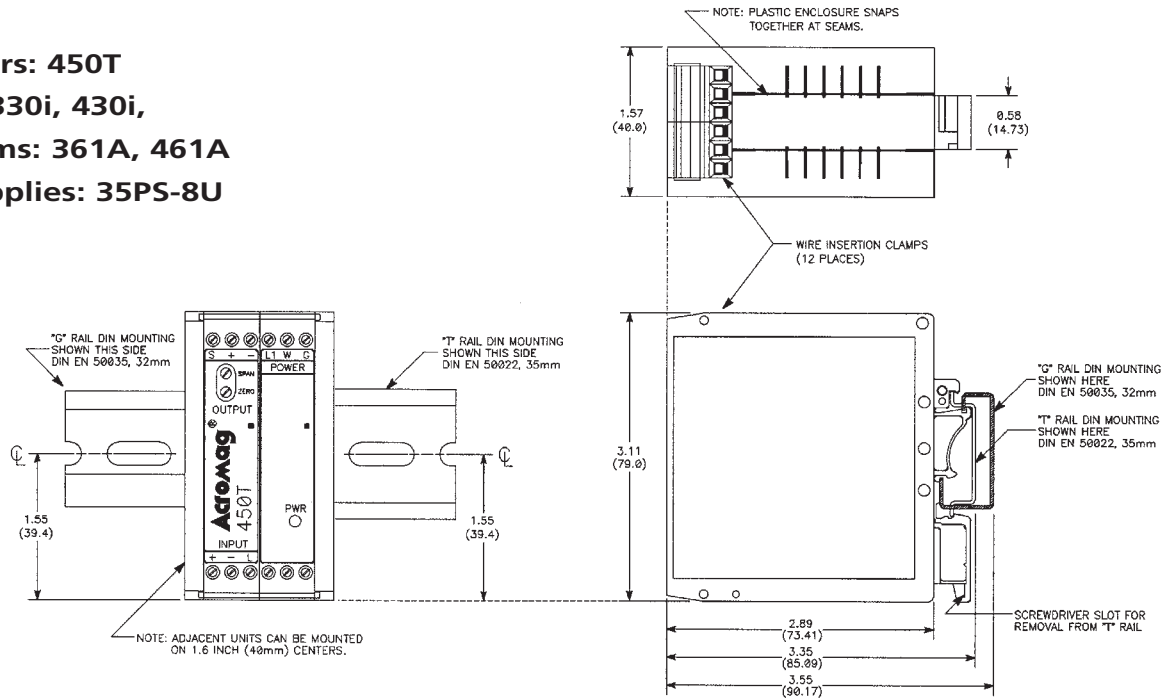
Dimensions are in inches (millimeters).

Flat Pack



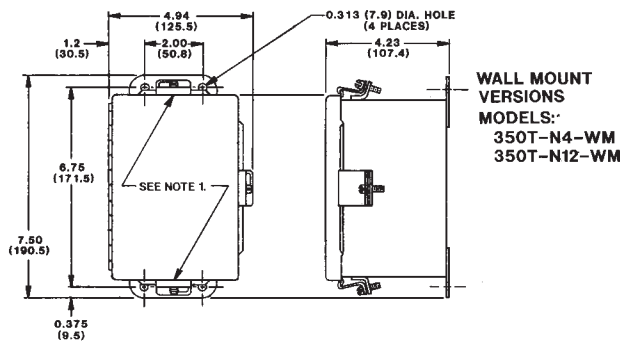
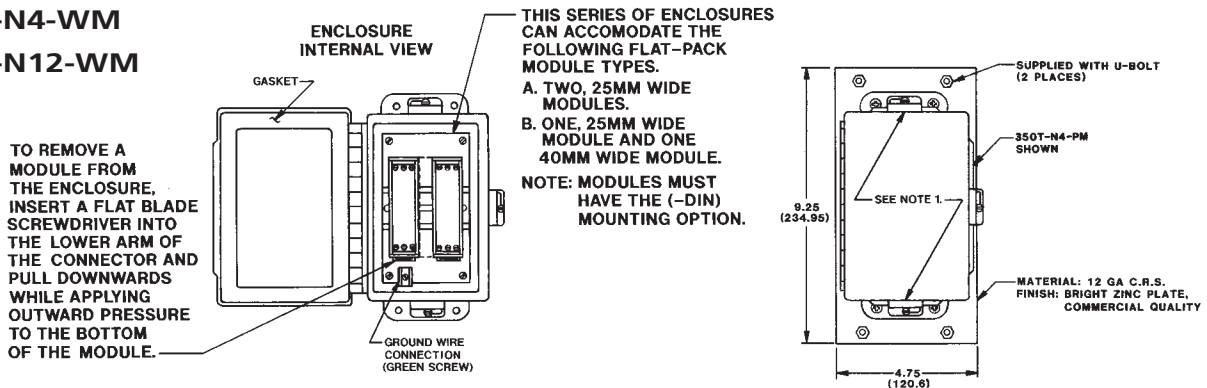
## Dimensions

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).

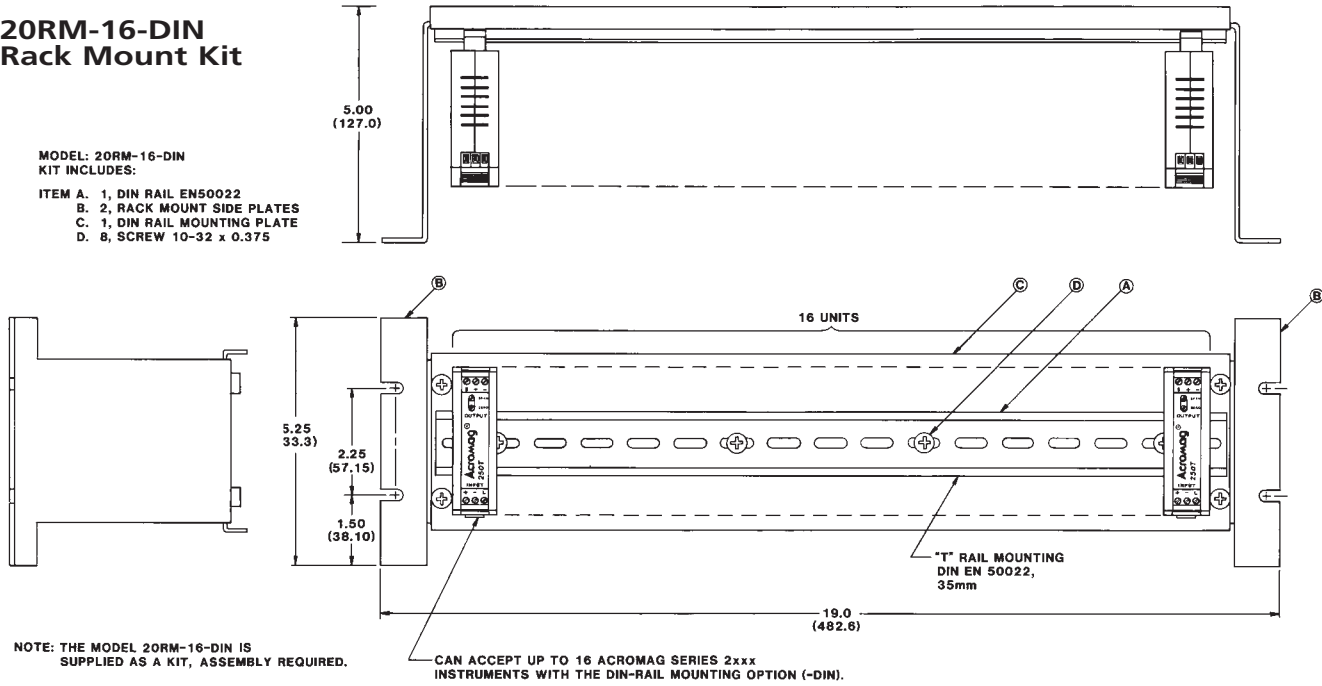


## Dimensions

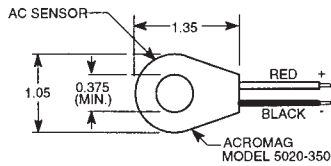
### 20RM-16-DIN Rack Mount Kit

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