



## Isolated Transmitters



## 630T Series Multi-Channel, AC/DC-Powered 4-Wire Isolators DC Current Input

### Models

- 631T: Single I/O channel
- 632T: Dual I/O channel
- 633T: Single input, dual output (splitter)

### Input / Output Ranges

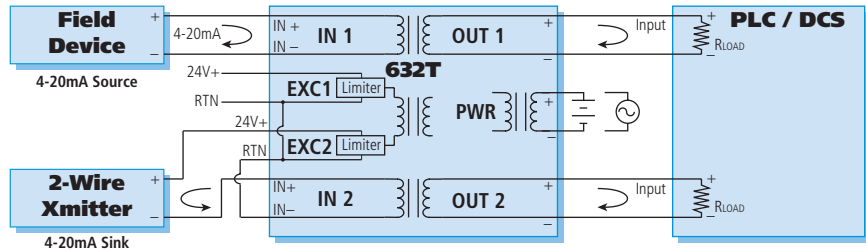
- 4 to 20mA DC input
- 4 to 20mA DC output

### Power Requirement

- 15-36V DC
- 90-250V AC (125V DC  $\pm 10\%$ )
- Four-wire isolated transmitter

### Approvals (pending)

- CE marked. UL, cUL listed.
- Class I, Division 2, Groups A, B, C, D.



### Description

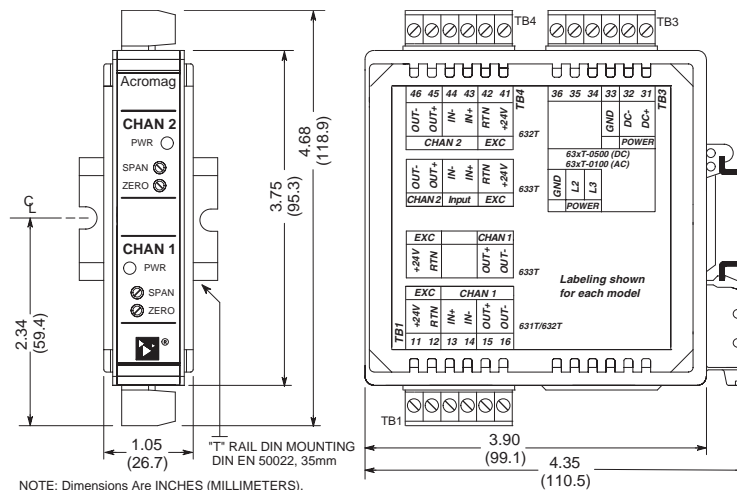
These units receive 4-20mA process current inputs and provide isolated 4-20mA output signals. Each channel operates independently and is isolated from the others to prevent interaction between channels. Galvanic isolation eliminates ground loops, reduces noise, and blocks transient signals.

Units are shipped with factory calibration for quick installation. These isolators also automatically compensate for load resistance variations, so re-calibration is rarely necessary. However, adjustable zero and span trim pots are provided to ensure precise calibration for maintenance requirements and long term serviceability.

These isolators generate a 24V input excitation supply suitable for powering one or two 2-wire transmitters. The supply is current limited at each output to prevent any excitation short from pulling down the internal power supply. The internal DC supply improves system performance by isolating loops on a single or dual channel basis. It saves space, complexity, and the expense of installing additional supplies to power your field loops.

### Special Features

- Two channels in a single unit saves space and reduces costs.
- Signal splitter model (633T) provides two identical isolated outputs from one input signal.
- Built-in isolated excitation supply with short circuit protection can drive up to two field 2-wire process loops.
- Full isolation safely separates each input channel, each output channel, the excitation supply, and power.
- Excellent accuracy and stability ensure reliable operation in hostile environments.
- Low input burden keeps voltage drop to less than 1.5V for full-scale current.
- Supports wide 0 to 1000 ohm load range and no trimming is required if the load varies.
- Current limiting safely limits output to 27mA.
- Pluggable terminals, zero/span trim pots and power LEDs make installation, maintenance, and long term service easy.



NOTE: Dimensions Are INCHES (MILLIMETERS).



## ■ Performance

### Reference Test Conditions

Input/output current 4 to 20mA; Output load 250 ohms; Power 24V DC or 115V AC; 77°F (25°C).

### Input Range

4 to 20mA input (each channel).

### Input Burden

Voltage drop (631T, 632T):  
Less than 1.5V (75 ohms) at full scale.  
Voltage drop (633T):  
Less than 3.0V (150 ohms) at full scale.

### Input Overvoltage Protection

Bipolar Transient Voltage Suppressors (TVS).

### Input Excitation

24V DC  $\pm 10\%$ , 22mA maximum each. Fully isolated. Includes independent current limiting at EXC1 and EXC2 near 23mA, each.

### Output Range

4-20mA DC output (each channel).

### Output Trim Range

Zero and full-scale adjustment to  $\pm 4\%$ .

### Output Limiting

Outputs are limited to 27mA.

### Output Load

0 to 1000 ohms (631T).  
0 to 950 ohms (632T, 633T).

### Output Load Resistance Effect

Less than  $\pm 0.01\%$  of output span effect for a  $\pm 100$  ohm change in load resistance.

### Output Response Time (for input step change)

25mS typical to 98% of final output value.

### Accuracy

$\pm 0.05\%$  of output span. Error includes the combined effects of isolator repeatability, hysteresis, terminal point linearity and adjustment resolution.

### Temperature Drift

Better than  $\pm 50\text{ppm}/^\circ\text{C}$  ( $\pm 0.005\%/^\circ\text{C}$ ) over the ambient temperature range. This specification includes the combined effects of zero and span over temperature.

### Calibration

Two 15-turn potentiometers (zero and span) per output channel, accessible from front of the unit.

### Bandwidth

-3dB at 50Hz, typical with a 500 ohm load.

### Noise Rejection

Common mode: Better than 100dB at 60Hz, typical.  
Normal mode: -6dB at 60Hz, typical, 500 ohm load.

### LED Indicators

Green, one LED per output channel.  
Constant ON indicates power applied.

## ■ Environmental

### Ambient Temperature

Operating: -25 to 75°C (-13 to 167°F),  
[if excitation supplies are used on 632T or 633T  
-25 to 60°C (-13 to 140°F)]  
Storage: -40 to 85°C (-40 to 185°F)

### Relative Humidity

5 to 95%.

### Power Requirement

DC-powered units: 15-36V DC SELV.  
AC-powered units: 90-250V AC (125V DC  $\pm 10\%$ )  
631T: 1.5 watts without excitation, 2.4 watts with excitation.  
632T, 633T: 3.0 watts without excitation, 4.8 watts with excitation.

### Isolation

Inputs, outputs, individual channels, power, and excitation supplies 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).

### Electromagnetic Field Immunity (EMI)

Less than  $\pm 0.25\%$  of output span effect under the influence of electromagnetic fields from switching solenoids, commutator motors, and drill motors.

### Meets Immunity Standards Per EN50082-1

### Electrostatic Discharge (ESD) Immunity

4KV direct contact and 8KV air-discharge to the enclosure port per EN61000-4-2.

### Radiated Field Immunity (RFI)

10V/M, 80 to 1000MHz AM and 900MHz keyed carrier, per EN61000-4-3 and ENV50204.

### Electrical Fast Transient Immunity (EFT)

2KV to power and 1KV to signal I/O per EN61000-4-4.

### Conducted RF Immunity (CRFI)

10Vrms, 150KHz to 80MHz, per EN61000-4-6.

### Surge Immunity

0.5KV per EN61000-4-5.

### Emissions Per European Norm EN50081-1

### Radiated Frequency Emissions

30 to 1000MHz per EN55022 Class B.

### Approvals (pending)

CE marked  
UL listed (UL3121 and UL1604).  
cUL listed (C22.2, NO.1010.1-92).  
Hazardous Locations: Class I: Div. 2; Groups A, B, C, D

## ■ Physical

### Enclosure

Case: Self-extinguishing NYLON type 6.6 polyamide thermoplastic UL94 V-2 NEMA Type 1 enclosure.

### Connectors (Removable Terminal Blocks)

Wire Range: AWG #14-22 (AWG #12 stranded only).

### Printed Circuit Boards

Military grade FR-4 epoxy glass circuit board.

### Dimensions

1.05W x 4.68H x 4.35D inches.  
26.7W x 95.3H x 110.5D millimeters.

### Shipping Weight

1 pound (0.45 Kg) packed.

## ■ Ordering Information

### Models

#### 631T-0100

Single channel isolator, AC-powered

#### 631T-0500

Single channel isolator, DC-powered

#### 632T-0100

Dual channel isolator, AC-powered

#### 632T-0500

Dual channel isolator, DC-powered

#### 633T-0100

Single input with dual isolated output, AC-powered

#### 633T-0500

Single input with dual isolated output, DC-powered

## Accessories (see Page 138)

### PSSR-D24

Power supply (24V DC, 2.1A).  
See Power Supplies on page 213.

### TBK-B02

Optional terminal block kit, barrier strip style, 4 pcs.

### TBK-S02

Optional terminal block kit, spring clamp style, 4 pcs.

### 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 630T transmitters.



## Accessories

### Terminal Blocks

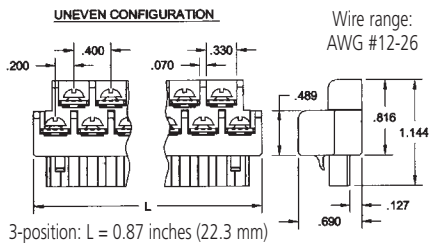
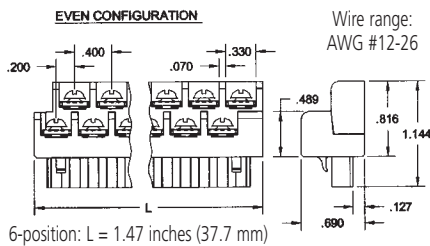


Barrier strip (left) and spring clamp (right).

#### Ordering Information

See individual I/O modules for compatibility.

#### Barrier Strip Terminal Blocks

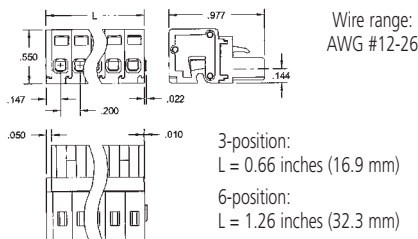


**TBK-B01**  
Terminal block kit,  
two 6-position pieces

**TBK-B03**  
Terminal block kit,  
one 3-position and  
three 6-position pieces

**TBK-B02**  
Terminal block kit,  
four 6-position pieces

#### Spring Clamp Terminal Blocks



**TBK-S01**  
Terminal block kit,  
two 6-position pieces

**TBK-S03**  
Terminal block kit,  
one 3-position and  
three 6-position pieces

**TBK-S02**  
Terminal block kit,  
four 6-position pieces

### Mounting Hardware

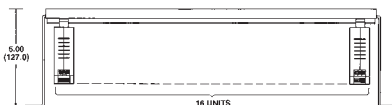
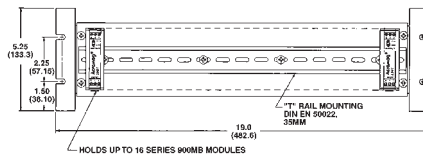


#### DIN-Rail Mounting

For your convenience, Acromag offers several mounting accessories to simplify your system installation. Our 19" rack-mount kit provides a clean solution for mounting your I/O modules and a power supply. Or you can buy precut DIN rail strips for mounting on any flat surface.

#### Ordering Information

- 20RM-16-DIN  
19" rack-mount kit with DIN rail.
- DIN RAIL 3.0
- DIN RAIL 16.7
- DIN rail strip, Type T, 3 inches (75mm) or 16.7 inches (425mm)



### Power Supplies



#### 50W Supply

**Input Power Requirement**  
85 to 264V AC or 105 to 370V DC

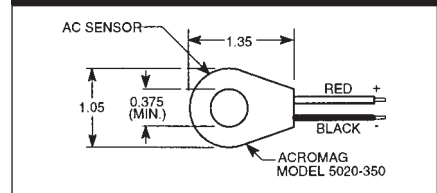
**Output**  
24V DC, 2.1A (50W)

#### Ordering Information

**PSSR-D24**  
Universal 50W power supply

See Power Supplies on page 213 for other models and more information.

### AC Current Sensor



#### Ordering Information

**5020-350**  
AC current sensor