



## Isolated Transmitters



## 670T Units Multi-Channel, 2-Wire Isolator

### Models

- 671T: Single I/O channel
- 672T: Dual I/O channel
- 674T: Quad I/O channel

### Input / Output Ranges

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

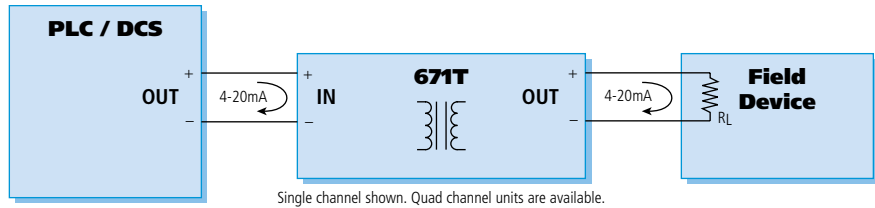
### Power Requirement

- Loop-powered  
(power derived from input signal current)

### Approvals

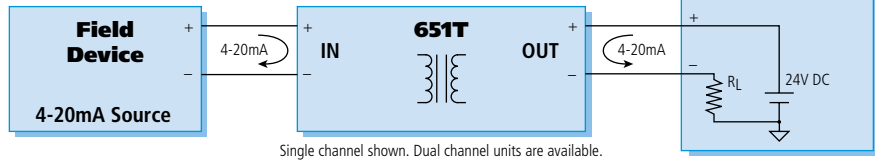
- CE marked. UL, cUL listed.
- Class I; Division 2; Groups A, B, C, D

## 670T Series Isolation Diagram



Note: 670T series transmitters are for output resistive loads only (sources current).  
For application notes using 670T Transmitters, refer to Page 107.

## 650T Series Isolation Diagram



Note: 650T series transmitters are for two-wire transmitter interfaces (sinks current).  
For more information about the 650T Transmitter, refer to Page 96. Application notes are on Page 106.

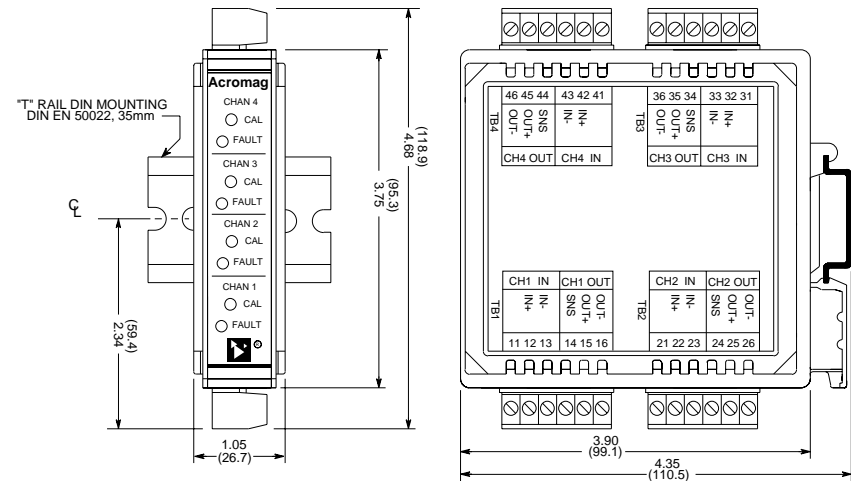
## Description

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.

For easy troubleshooting, each unit has LEDs and diagnostic test points. Fault LEDs identify output open loop conditions and load compliance problems. The precision 10 ohm sense resistor enables monitoring of the output signal without disturbing field wiring.

## Special Features

- Multiple channels on a single unit saves space and reduces costs.
- Galvanic isolation eliminates ground loops, reduces noise, and blocks transient signals.
- Independent channels prevent signal interaction and offer spares for later use.
- Fault LEDs provide a clear visual warning of open or failed process loops.
- Single calibration pot per channel enables one-step, precise calibration.





## ■ Performance

### Reference Test Conditions

Input/Output current: 4 to 20mA; output load 250 ohms; 77°F (25°C).

### Input

4 to 20mA input (each channel).

### Input burden

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

Input Voltage Drop = 4.9V DC + (0.0212A x R<sub>LOAD</sub>)

Example:

For R<sub>LOAD</sub> = 250 ohms, V<sub>DROP</sub> = 10.2V DC

### Output

4-20mA DC output (each channel).

### Output load

0 to 525 ohms.

### Accuracy

Better than ±0.1% of output span. Error includes the combined effects of isolator repeatability, hysteresis, terminal point linearity and adjustment resolution.

### Calibration

One 15-turn potentiometer per channel accessible from front of the unit.

### Ambient temperature effect

Less than ±0.01% of output span per °F (±0.018% per °C) over the ambient temperature range for reference test conditions. This specification includes the combined effects of zero and span over temperature.

### Output ripple

Less than ±0.1% of the maximum output span.

### Bandwidth

-3dB at 2.2Hz, typical.

### Response time

For a step input, the output reaches 98% of output span in less than 300mS, typical, into 250 ohms.

### Noise rejection

Common mode: 110dB at 60Hz, typical.

### Diagnostics

LED fault indicator: Lights for output open loop detection or load compliance problem.

Field test points: An internal 10 ohm sense resistor provides test points for monitoring the output signal current during field maintenance with a voltmeter.

## ■ Environmental

### Ambient Temperature

Operating: -25 to 70°C (-13 to 158°F).  
Storage: -40 to 85°C (-40 to 185°F).

### Relative Humidity

5 to 95%.

### Power Requirement

Power is derived from the input signal loop. In the event of an open output circuit, the input loop voltage drop is limited below 20V, nominal. Isolator has reverse polarity protection.

### Isolation

Inputs, outputs, and individual channels 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).

### Radiated Field Immunity (RFI)

Designed to comply with EN61000-4-3 Level 3 (10V/m, 80 to 1000MHz AM and 900MHz keyed) and European Norm EN50082-1.

### Electromagnetic Field Immunity (EMI)

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

### Electrical Fast Transient (EFT)

Complies with EN61000-4-4 Level 3 (2KV) and European Norm EN50082-1.

### Surge Immunity

Complies with EN61000-4-5 Level 3 (2KV) and European Norm EN50082-1.

### Electrostatic Discharge (ESD)

Complies with EN61000-4-2 Level 3 (8KV air, 4KV direct to the enclosure port) and European Norm EN50082-1.

### Radiated Emissions

Meets or exceeds European Norm EN50081-1 for Class B equipment.

### Approvals

CE marked.  
UL listed (UL508 and UL1604).  
cUL listed (C22.2, 142-M1987 and 213-M1987).  
Hazardous Loc.: Class I; Division 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 118.9H x 110.5D millimeters.

### Shipping Weight

1 pound (0.45 Kg) packed.

## ■ Ordering Information

### Models

671T-0600

Single channel isolated transmitter

672T-0600

Dual channel isolated transmitter

674T-0600

Quad channel isolated transmitter

### Accessories (see Page 108)

PS5R-D24

Power supply (24V DC, 2.1A).  
See Power Supplies on page 183.

TBK-B01

Optional terminal block kit, barrier strip style, 2 pcs. (For use with 671T and 672T model.s)

TBK-B02

Optional terminal block kit, barrier strip style, 4 pcs. (For use with 674T model.)

TBK-S01

Optional terminal block kit, spring clamp style, 2 pcs. (For use with 671T and 672T model.s)

TBK-S02

Optional terminal block kit, spring clamp style, 4 pcs. (For use with 674T model.)

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 670T transmitters.



Optional terminal blocks: barrier strip (left) and spring clamp (right). Cage clamp terminal is standard.



## Accessories

### Terminal Blocks

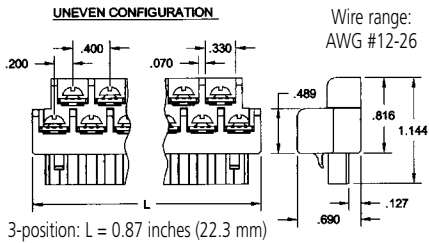
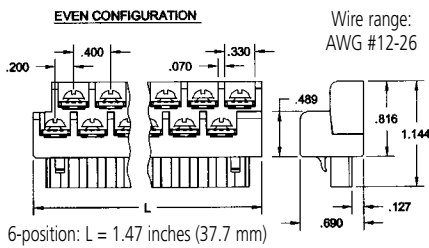


Barrier strip (left) and spring clamp (right).

#### Ordering Information

See individual I/O modules for compatibility.

#### Barrier Strip Terminal Blocks

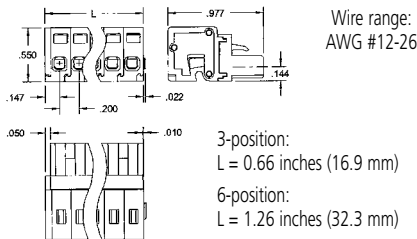


**TBK-B01**  
Terminal block kit,  
two 6-position pieces

**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

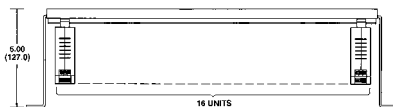
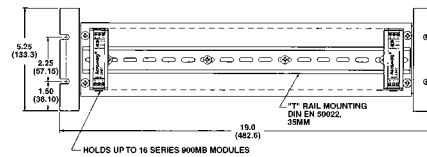


#### DIN-Rail Mounting

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

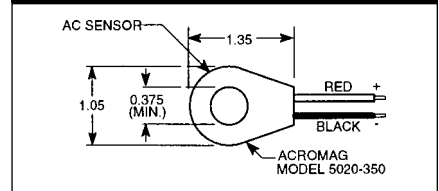
**Output**  
24V DC, 2.1A (50W)

#### Ordering Information

PSSR-D24  
Universal 50W power supply

See Power Supplies on page 183 for other models and more information.

### AC Current Sensor



#### Ordering Information

5020-350  
AC current sensor