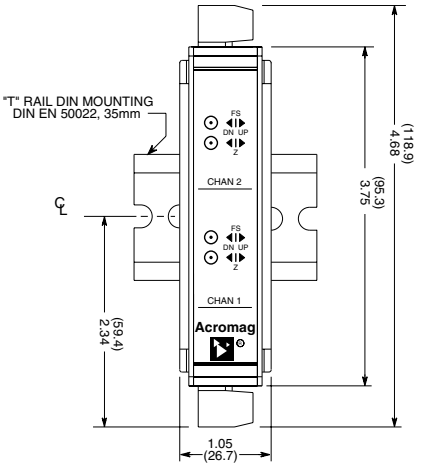
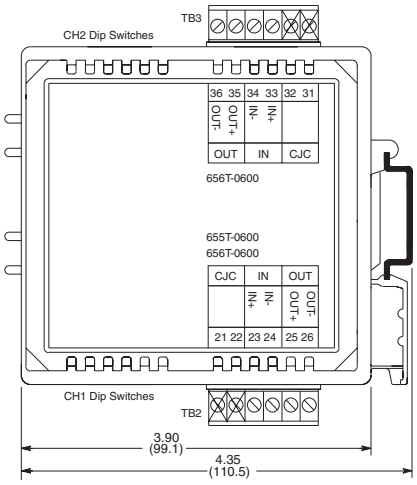
Isolated Transmitters: 600T Series

655T, 656T Multi-Channel, Two-Wire Transmitters



NOTE: ALL DIMENSION ARE IN INCHES (MILLIMETERS)



Thermocouple and millivolt input ◆ Single/dual channel loop-powered transmitter

Description

Models

655T: Single TC/mV input channel
656T: Dual TC/mV input channel

These units accept universal thermocouple and millivolt input signals, provide isolation, and output proportional DC current signals. The output can also be linearized to the input sensor signal. Single-channel 655T and dual-channel 656T units are ideal for panel shops and end-users who require a high-density signal conditioner that can cover a broad range of temperature measurement applications.

Configuration is fast and easy. First, you select the input type with a simple DIP switch. Then, you set your zero/full-scale output values using a toggle switch on the front panel to increase or decrease the signal until you read the desired output value on your voltmeter. The toggles make it easy to calibrate a normal (proportional) or reverse-acting (inverse) response in seconds. After setting the desired calibration, just press the mode/set toggle and your configuration settings are safely saved to nonvolatile memory.

Both models provide high-voltage input isolation (output and power circuits share a common). On dual channel units, each channel operates independently, with inputs isolated from each other, to prevent interaction between channels.

Input Ranges

TC types: J, K, T, R, S, E, B, N
(DIP switch selection)

DC voltage: ±15.6mV to ±62.5mV, 0 to 1V DC

Output Ranges

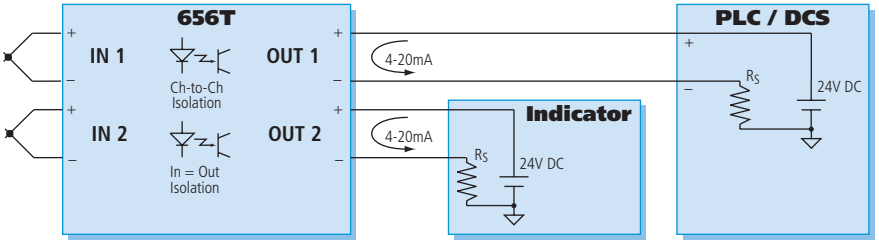
4 to 20mA DC

Power Requirement

12 to 50V DC (loop-powered)
Two-wire transmitter

Approvals

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



Key Features & Benefits

- Selectable thermocouple input types offer flexibility to fit many applications.
- DIP switch-configuration and self-ranging technologies speed installation without pots, jumpers, or software.
- Linearizer function provides an output that is linear to the temperature or millivolt signal.
- Isolation eliminates ground loops, reduces noise, and blocks transient signals.
- Toggle-switch calibration simplifies field adjustments for faster and easier maintenance.
- Configuration lockout safety feature prevents tampering and accidental changes.
- Reverse-acting output capability enables inverse proportional control signals.
- Dual channel model saves space and reduces equipment costs.
- CJC control only requires a millivolt source to calibrate modules
- High-resolution Σ–Δ A/D converters deliver superior accuracy for reliable measurements.

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Isolated Transmitters: 600T Series

Performance Specifications

◆ General Input

Analog to Digital Converter (ADC)
16-bit S-D A/D converter.

Noise Rejection
Normal Mode: Better than 40dB @ 60Hz.
Common Mode: Better than 100dB @ 60Hz.

Input Overvoltage Protection
Bipolar Transient Voltage Suppressors (TVS).

◆ Thermocouple Input

Input Ranges (switch-selectable)

TC Type	Temperature Range	Accuracy
J	-210 to 760°C (-346 to 1400°F)	±0.5°C
K	200 to 1372°C (-328 to 2502°F)	±0.5°C
T	-260 to 400°C (-436 to 752°F)	±0.5°C
R	-50 to 1768°C (-58 to 3214°F)	±1.0°C
S	-50 to 1768°C (-58 to 3214°F)	±1.0°C
E	-200 to 1000°C (-328 to 1832°F)	±0.5°C
B	260 to 1820°C (500 to 3308°F)	±1.0°C
N	-230 to 1300°C (-382 to 2372°F)	±0.5°C

Span adjust: Full range. 100°C or 3mV minimum span recommended.
Zero adjust: 0 to 90 % of full range.

Thermocouple Linearization
On/off selectable.

Thermocouple Break Detection
TC sensor failure can be configured for either upscale or downscale.

Cold Junction Compensation (CJC) Control
On/off selectable.

◆ Millivolt Input

Input Range

Ranges: ±15.6, ±31.3, ±62.5mV
0 to 0.125, 0.25, 0.5, 1.0V DC
Span adjust: 10 to 100% of range.
Zero adjust: 0 to 90% of range.

◆ Output

Output Range

Range: 4 to 20mA DC, 3.8 to 22mA range typical.

Output Compliance

Rload = (Vsupply - 12V) / 0.02A

Output Response Control

Proportional/inverse selectable.

Ambient Temperature Effect

Better than ±0.006% of input span per °C or ±100ppm/°C, whichever is greater.

Output Response Time (for input step change)

700mS typical to 98% of final output value.

◆ Environmental

Ambient Temperature
Operating: -25 to 75°C (-13 to 167°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative Humidity
5 to 95%, noncondensing.

Power Requirement
12 to 50V DC @ 25mA for each output channel.

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)
Complies with EN61000-4-3 Level 3 and EN50082-1.

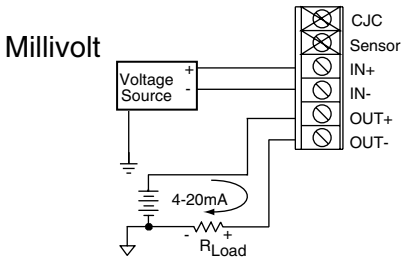
Electromagnetic Field Immunity (EMI)
Less than ±0.25% of output span effect.

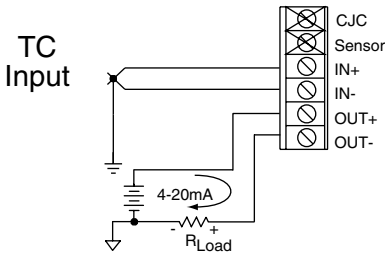
Electrical Fast Transient (EFT)
Complies with EN61000-4-4 Level 3 and EN50082-1.

Electrostatic Discharge (ESD)
Complies with EN61000-4-2 Level 3 and EN50082-1.

Radiated Emissions
Meets or exceeds EN50081-1 for Class B equipment.

Approvals
CE marked, UL & cUL listed.
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 #12-24.

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

655T-0600
Single channel TC 2-wire transmitter. Full feature set.

656T-0600
Dual channel TC 2-wire transmitter. Full feature set.
Add "-C" suffix for optional factory configuration.

656T-E600
Dual channel TC 2-wire transmitter. Economy version.
TC Type J, K and 0-125mV input ranges only.
No linearization. No inverse output (proportional only).

Accessories (see Page 21)

PS5R-SD24
Power supply (24V DC, 2.5A).

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 650T series transmitters.

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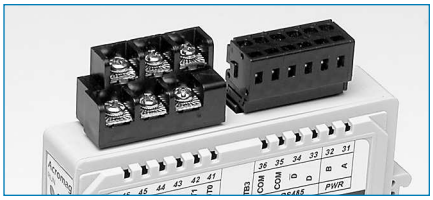
Isolated Transmitters: 600T Series

Accessories

◆ Terminal Blocks



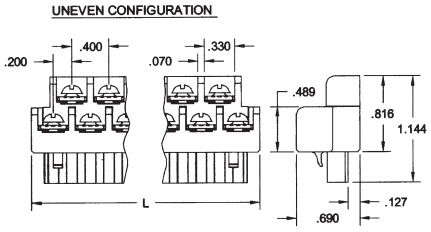
Barrier Strip Terminal Blocks*

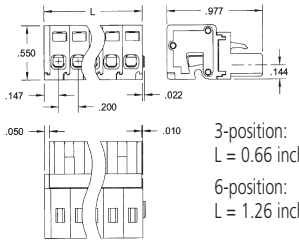
Spring Clamp Terminal Blocks*

Ordering Information

* I/O modules ship with cage clamp terminal blocks. Terminal block kits are for replacement purposes.

See I/O module information for compatibility





Wire range:
AWG #12-26

3-position:
L = 0.66 inches (16.9 mm)

6-position:
L = 1.26 inches (32.3 mm)

Barrier Strip

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

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

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

Spring Clamp

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

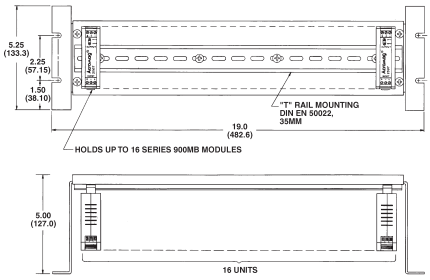
TBK-S02
Terminal block kit, four 6-position pieces

TBK-S03
Terminal block kit, one 3-position and three 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.

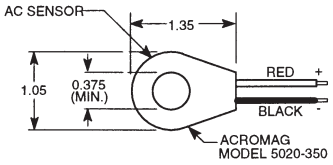


Ordering Information

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)

◆ AC Current Sensor



This external sensor measures a 0-20A AC signal and provides a DC mA output for an Ethernet input module. It enables remote mounting of the I/O module for safe monitoring of the AC signal.

Ordering Information

5020-350
AC current sensor

◆ Power Supplies

60W Universal Slimline Power Supply

Input Power Requirement
85 to 264V AC or 100 to 370V DC

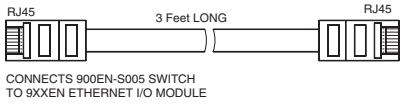
Output
24V DC, 2.5A (60W)

Ordering Information

PS5R-SD24
Universal 60W power supply

Visit www.acromag.com for additional models and more information.

◆ Cables



Ordering Information

5035-355
Ethernet straight cable, CAT5, 3 feet long, shielded

5035-360
Ethernet crossover cable, CAT5E, 5 feet long, shielded

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