

## Product Datasheet - Technical Specifications



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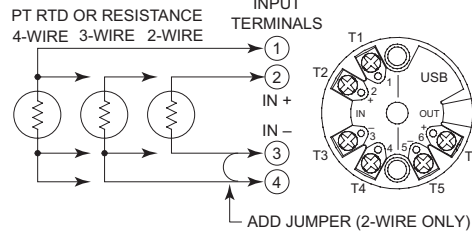


# Transmitters: ST130 Series

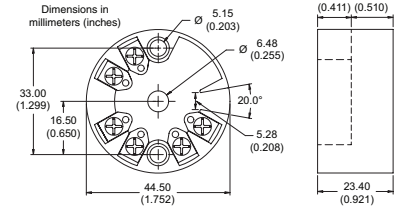
## ST131 RTD input head-mount transmitter



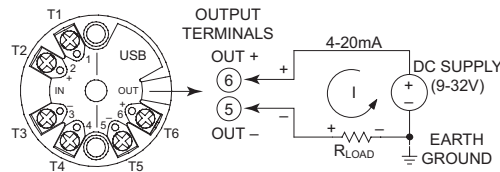
### INPUT CONNECTIONS



### DIMENSIONS



### OUTPUT CONNECTIONS



100 ohm Pt RTD or 0-900 ohm input ◆ 4-20mA output ◆ Loop-powered, 9-32V DC

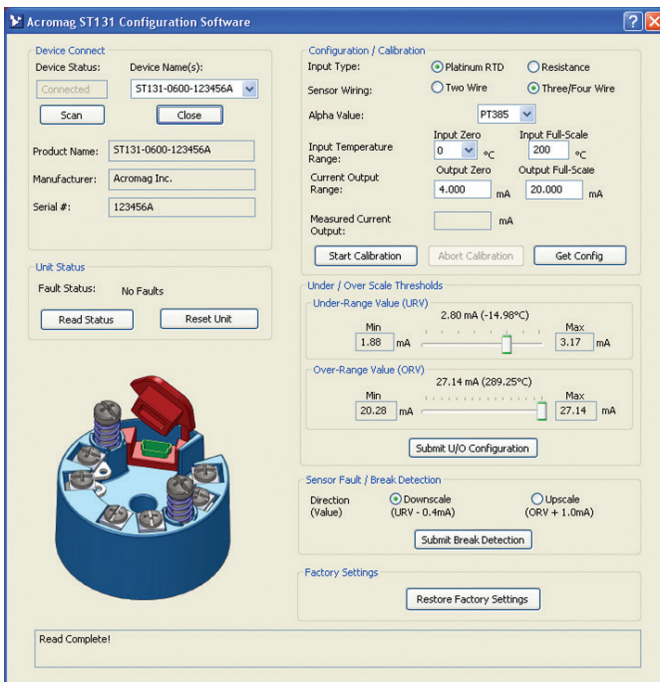
### Description

The ST131 is a low-cost two-wire transmitter that converts a 100 ohm Platinum RTD sensor input to a proportional 4-20mA signal. Power is received from the output loop current. The transmitter provides sensor excitation and includes linearization, lead-wire compensation, and lead-break detection functions. Setup and calibration are fast and easy with a convenient USB connection to your PC and Acromag's Windows configuration software.

Advanced signal processing capabilities, variable range input, and convenient USB programming make this instrument a very versatile temperature transmitter for RTD and resistance elements. These transmitters are designed to withstand harsh industrial environments and operate reliably across a wide temperature range with very low drift. They feature RFI, EMI, ESD, EFT, and surge protection plus low radiated emissions.

### Key Features & Benefits

- Easy setup and digital calibration via USB with Windows configuration software
- Flexible RTD or linear resistance input ranges
- Supports any 100 ohm Pt RTD (375-393 alpha)
- High accuracy and linearity
- Advanced analog signal conditioning ASIC eliminates digitization errors
- Low temperature drift
- Fast response time (< 500µs)
- Programmable over/under-range limits
- Selectable upscale or downscale operation for sensor errors and lead-break detection
- NAMUR NE43 compliant fault response
- Reverse polarity protected with non-polarized output
- Mounts in DIN Form B sensor heads
- Optional DIN rail adapter
- Wide ambient operation (-40 to 80°C)
- Hardened for harsh environments
- CE Compliant. UL/cUL Class 1 Div 2 Zone 2 approvals. ATEX Certified.



ST130 Series Transmitter Configuration Software is downloadable (FREE) from [www.acromag.com](http://www.acromag.com).



# Transmitters: ST130 Series

## ST131 RTD input head-mount transmitter

### Performance Specifications

**IMPORTANT:** To prevent damage or errors from grounded PCs and surges, Acromag strongly recommends use of the USB-ISOLATOR when configuring an ST130 transmitter.

#### ■ USB Interface

##### USB Connector

USB Mini-B type socket, 5-pin.

##### USB Data Rate

12Mbps. USB v1.1 and 2.0 compatible.

##### USB Transient Protection

Transient voltage suppression on power and data lines.

##### USB Cable Length

5.0 meters maximum.

##### Driver

Not required. Uses built-in Human Interface Device (HID) USB drivers of the Windows operating system.

#### ■ Input

##### Input Configuration

Two-, three- or four-wire sensor input connections.

##### Input Ranges

100 ohm Platinum RTD, alpha = 375-393, 385 (default), -50 to 900°C (-58 to 1652°F).

0 to 900 ohms linear resistance.

Programs in °C or ohmic integers only.

##### Zero Adjust

RTD 3/4 wire: -50, -17.78, or 0°C (-58, 0, 32°F).

RTD 2 wire: 0°C (32°F) fixed.

RES: 0 or 100 ohms.

##### Full-Scale Adjust

RTD: up to 900°C (1652°F), 50°C (58°F) span minimum.

Resistance: up to 900 ohms, 8 ohm span minimum.

##### Excitation Current

0.5mA, nominal.

##### Lead-Wire Compensation

25 ohms per lead.

##### Lead Break (Sensor Burnout) Detection

Configurable for either upscale or downscale.

#### ■ Output

##### Output Range

4 to 20mA DC.

Under-scale limit adjustable for 2.1 to 3.6mA, nominal.

Over-scale limit adjustable for 21 to 30mA, nominal.

##### Output Fault Limits (Sensor Fault)

0.4mA below selected under-scale threshold and

1.0mA above over-scale threshold, typical.

##### Output Compliance

$R_{LOAD} = (V_{SUPPLY} - 9V) / 0.02A$ .

$R_{LOAD} = 0$  to 750 ohms @ 24V DC.

##### Output Accuracy

Better than  $\pm 0.1\%$  of span, typical for spans less than 500°C. Includes the effects of repeatability, terminal point conformity, and linearization, but does not include sensor error.

##### Ambient Temperature Effect

Better than  $\pm 0.010\%$  per °C of input span or  $\pm 80\text{ppm}/^\circ\text{C}$ , typical. Includes the combined effects of zero and span drift over temperature.

##### Output Response Time

500 $\mu\text{s}$ , typical with 250 ohm load.

#### ■ Environmental

##### Operating temperature

-40 to 80°C (-40° to 176°F).

##### Storage temperature

-40 to 85°C (-40 to 185°F).

##### Relative humidity

5 to 95% non-condensing.

##### Power Requirement

9-32V DC SELV (Safety Extra Low Voltage), 28mA max.

##### Isolation

Not isolated.

##### Shock and Vibration Immunity

Vibration: 5g, per IEC 60068-2-64.

Shock: 50g, per IEC 60068-2-27.

##### Radiated Emissions

BS EN 61000-6-4, CISPR 16.

##### Radiated Field Immunity (RFI)

BS EN 61000-6-2, IEC 61000-4-3.

##### Conducted RF Immunity (CRFI)

BS EN 61000-6-2, IEC 61000-4-6.

##### Electrostatic Discharge (ESD)

BS EN 61000-6-2, IEC 61000-4-2.

##### Electrical Fast Transient (EFT)

BS EN 61000-6-2, IEC 61000-4-4.

##### Surge Immunity

BS EN 61000-6-2, IEC 61000-4-5.

##### Approvals

CE compliant. UL/cUL listings. ATEX Certified.

Designed for Class I; Division 2; Groups ABCD; Zone 2.

Ⓢ II 3 G Ex nA IIC T4 Gc -40°C ≤ Ta ≤ +80°C

#### ■ Physical

##### General

General purpose enclosure with potted circuit designed for mounting in DIN Form B connection heads.

##### DIN-Rail Mounting

Using optional ST130-DIN adapter, unit can mount to 35x15mm, T-type or G-type DIN rails.

##### Case Material

Self-extinguishing polycarbonate ABS plastic, UL94 V-0 rated base material. USB dust cap material is Santoprene, 251-70W232.

##### Printed Circuit Board

Military grade fire-retardant epoxy glass per IPC-4101/98 with humi-seal conformal coating.

##### I/O Connectors

Barrier strip type, captive screw terminals.

Wire range: AWG #14-28 solid or stranded.

##### Dimensions

Diameter = 44.5mm (1.752 inches),

Height = 23.4mm (0.921 inches).

Conforms to DIN 43 729 Form B size requirements.

##### Shipping Weight

0.5 pounds (0.22 Kg) packed.

### Ordering Information

#### Models

##### [ST131-0600](#)

Transmitter, 100 ohm Pt RTD input, CE Compliant. Default calibration: Pt385 RTD, 3-wire, 0-200°C input, 4-20mA output, upscale fault detect.

##### [ST131-0610](#)

Same as ST131-0600 plus UL/cUL Class 1 Div 2 Zone 2 approval and ATEX Certified.

*If mounting screws are required, order one ST130-MTG with each unit.*

#### Services

##### ST13x-Config/Cal

Factory custom configuration/calibration service.

Specify input type, input/output zero and full-scale values, filtering, and sensor fault settings on order.

#### Software

##### ST13C-SIP

Software Interface Package. Includes configuration software (ST130-CONFIG), isolator (USB-Isolator) and two USB cables (Part # 4001-112, 4001-113) for Acromag ST130 Series head-mount transmitters.

One (1) kit recommended per customer.

#### Accessories

##### Connection Head Enclosures

See Bulletin 8400-630 or [www.acromag.com](http://www.acromag.com) for info.

##### ST130-DIN

DIN-rail adapter.

##### ST130-MTG

Replacement mounting kit (screws and relief springs) for installing ST130 transmitter in a DIN Form B connection head.

##### USB-ISOLATOR

USB-to-USB isolator, includes USB cable (4001-112).

ISO9001  
AS9100  MADE IN USA

**Acromag**   
THE LEADER IN INDUSTRIAL I/O





# Transmitters: ST130 Series

## Mounting Accessories Enclosures, adapters, mounting kits



4001-115K Aluminum Explosion-Proof, NEMA-4 rated



4001-116K Stainless Steel Explosion-Proof, NEMA-4X rated



4001-117K Aluminum General-Purpose, NEMA-4X rated



4001-119K Cast Iron General-Purpose, NEMA-4X rated

Simplifies mounting of ST130 Series transmitters ♦ Ideal for mounting in the field or in a control room

### Description

For your convenience, Acromag offers a variety of head-mount enclosures and other mounting accessories to simplify your system installation.

### Ordering Information

NOTE: For more information visit [www.acromag.com](http://www.acromag.com).

### Mounting Accessories

#### ST130-MTG

Replacement mounting Kit – Includes two (2) M4 mounting screws, (2) 6-32 mounting screws, and (2) two relief springs for mounting an ST130 transmitter in a DIN Form B connection head.

#### 4001-115K

Explosion-Proof Aluminum Connection Head – FM/FMC, Class I, Division 1, Groups A, B, C, D, T6; Class II, III, Division 1, Groups E, F, G, T6; NEMA 4 rated. Includes M4 mounting screws and springs.

#### 4001-116K

Explosion-Proof Stainless Steel Connection Head – FM/FMC, Class I, Division 1, Groups A, B, C, D, T6; Class II, Division 1, Groups E, F, G, T6; Class III, NEMA 4X rated. Includes M4 mtg screws and springs.

#### 4001-117K

General-Purpose Aluminum Connection Head – NEMA 4X and IP68 rated. Includes M4 mounting screws and springs.

#### 4001-119K

General-Purpose Cast Iron Connection Head – NEMA 4X rated. Includes M4 mtg screws and springs.

#### ST130-DIN

Series ST DIN Rail Adapter – Includes a DIN rail bracket with mounting screws that connects a ST130 transmitter to a 35mm T-type or G-type DIN rail. Includes M4 mounting screws and springs.



ST130-MTG Mounting Kit

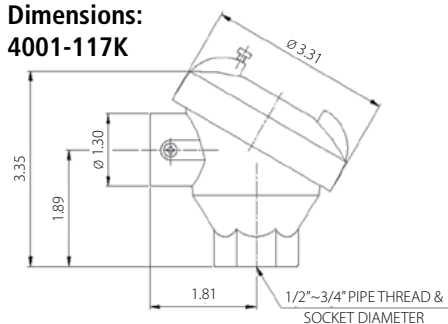
Required to mount ST130 transmitter in connection head enclosure.



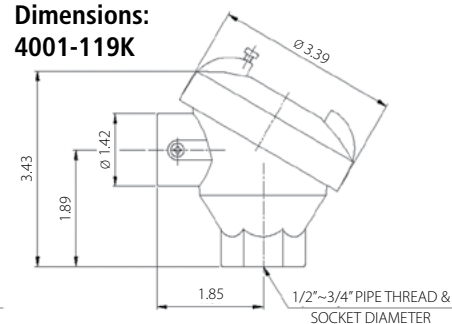
ST130-DIN DIN-rail Adapter

Includes ST130-MTG

### Dimensions: 4001-117K



### Dimensions: 4001-119K



### Dimensions: 4001-115K and 4001-116K

