

Product Datasheet - Technical Specifications



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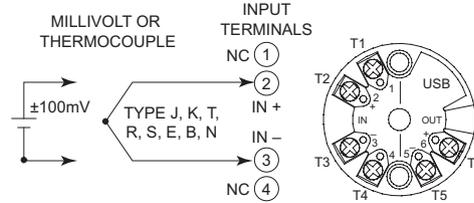
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Transmitters: ST130 Series

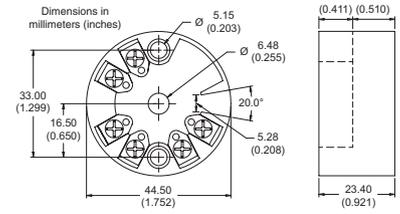
ST132 Thermocouple/millivolt input head-mount transmitter



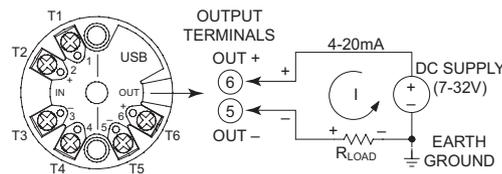
INPUT CONNECTIONS



DIMENSIONS



OUTPUT CONNECTIONS



Universal thermocouple (8 types) or $\pm 100\text{mV}$ input ◆ 4-20mA output ◆ Loop-powered, 7-32V DC

Description

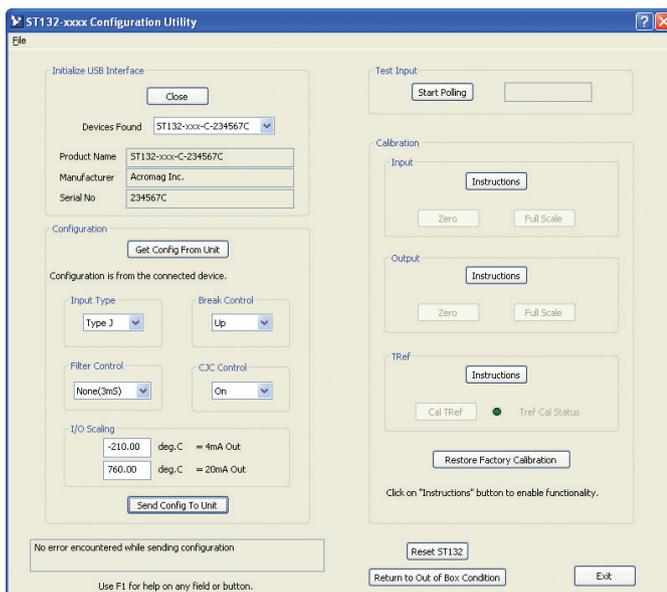
The ST132 is a low-cost two-wire transmitter that converts a millivolt or thermocouple sensor input to a proportional 4-20mA control signal. Power is received from the output loop current. The transmitter performs signal linearization, cold-junction compensation, and lead-break detection functions.

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 measurement device. These transmitters can 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 thermocouple or millivolt input ranges (TC Type J, K, T, R, S, E, B, N or $\pm 100\text{mV}$)
- 24-bit A/D microcontroller
- High accuracy, linearity, stability, and reliability
- Low temperature drift (<75ppm/°C)
- Fast response time (as low as 8ms)
- Supports reverse-acting (inverse) output
- Selectable upscale or downscale operation for sensor errors and lead-break detection
- Non-polarized output/power connection
- Mounts in DIN Form B sensor heads
- Shock (50g) and vibration (5g) resistant
- 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.

ST132 software allows you to configure transmitters offline, save the file, and download settings into units later, at your convenience.



Transmitters: ST130 Series

ST132 Thermocouple input head-mount transmitter with USB-configuration

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

Default Configuration/Calibration

Input: TC J, -40°F to 176°F (-40°C to 80°C), upscale break, high filter.

Output: 4 to 20mA

Input Ranges and Accuracy

Input	Range	Accuracy
TC J	-210 to 760°C (-346 to 1400°F)	±0.5°C
TC K	-200 to 1372°C (-328 to 2502°F)	±0.5°C
TC T	-260 to 400°C (-436 to 752°F)	±0.5°C
TC R	-50 to 1768°C (-58 to 3214°F)	±1.0°C
TC S	-50 to 1768°C (-58 to 3214°F)	±1.0°C
TC E	-200 to 1000°C (-328 to 1832°F)	±0.5°C
TC B	260 to 1820°C (500 to 3308°F)	±1.0°C
TC N	-230 to 1300°C (-382 to 2372°F)	±1.0°C
mV	-100 to 100mV	±0.1mV

Error includes the effects of repeatability, terminal point conformity, and linearization at 25°C operating ambient temperature.

Thermocouple Reference

(Cold Junction Compensation)

±0.1°C typical, ±0.3°C maximum at 25°C

Ambient Temperature Effect

Better than ±75ppm/°C (±0.0075%/°C)

Zero Scaling Adjust

0 to 95% of range, typical

Full Scale Adjust

5 to 100% of full scale range, typical

Lead Break (Sensor Burnout) Detection

Configurable for either upscale or downscale

Thermocouple Input Bias Current
±250nA typical (TC break)

Input Over-Voltage Protection

Bipolar Transient Voltage Suppressors (TVS),
5.6V clamp level typical

Input Filter Bandwidth

-3dB at 55Hz, typical, normal mode filter

Resolution

Millivolt input: 0.005% (1 part in 20,000)
Thermocouple input: 0.1°C

Input Filter

Normal mode filtering, plus selectable digital filtering settings (none, low, medium, high) optimized and fixed per input range within the A/D converter.

Noise Rejection (Normal Mode)

75dB @ 60Hz, typical with 100 ohm input unbalance

■ Output

Output Range

4 to 20mA DC.

Output Compliance

$R_{LOAD} = (V_{SUPPLY} - 7V) / 0.02A$.

$R_{LOAD} = 0$ to 850 ohms @ 24V DC.

Output Response Time (for step input change)

Time to reach 98% of final output value ranges from 8ms (with no filtering) to 800ms (with high filtering).

■ 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

7-32V DC SELV (Safety Extra Low Voltage), 25mA max.

Isolation

Not isolated

Shock and Vibration Immunity

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

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

Electromagnetic Compatibility (EMC) Compliance

Radiated Emissions: BS EN 61000-6-4, CISPR 16

RFI: BS EN 61000-6-2, IEC 61000-4-3

Conducted RFI: BS EN 61000-6-2, IEC 61000-4-6

ESD: BS EN 61000-6-2, IEC 61000-4-2

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.

Case Material

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

I/O Connectors

Barrier strip type, captive screw terminals.
Wire range: AWG #14-28 solid or stranded.

Shipping Weight

0.5 pounds (0.22 Kg) packed.

Ordering Information

Models

ST132-0600

Transmitter, thermocouple/millivolt input, CE approval

ST132-0610

Same as ST132-0600 plus UL/cUL Class 1 Division 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 (recommend one kit per customer)

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.

Accessories

Connection Head Enclosures

See Bulletin 8400-630 or www.acromag.com for info

ST130-DIN

DIN-rail adapter (Type G or T)

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


THE LEADER IN INDUSTRIAL I/O