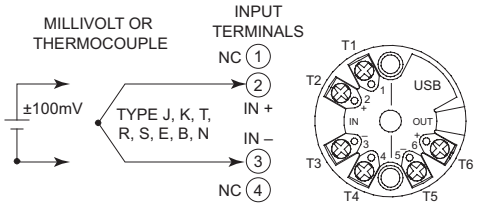
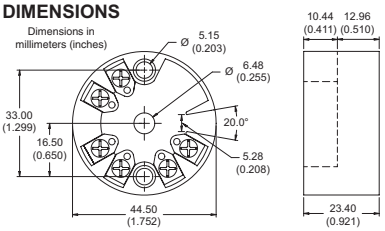
Transmitters: ST130 Series

ST132 Thermocouple/millivolt input head-mount transmitter

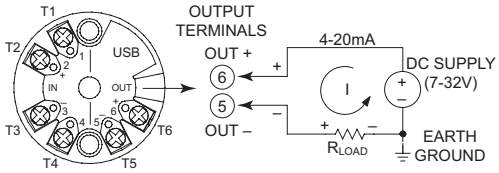
INPUT CONNECTIONS



DIMENSIONS



OUTPUT CONNECTIONS



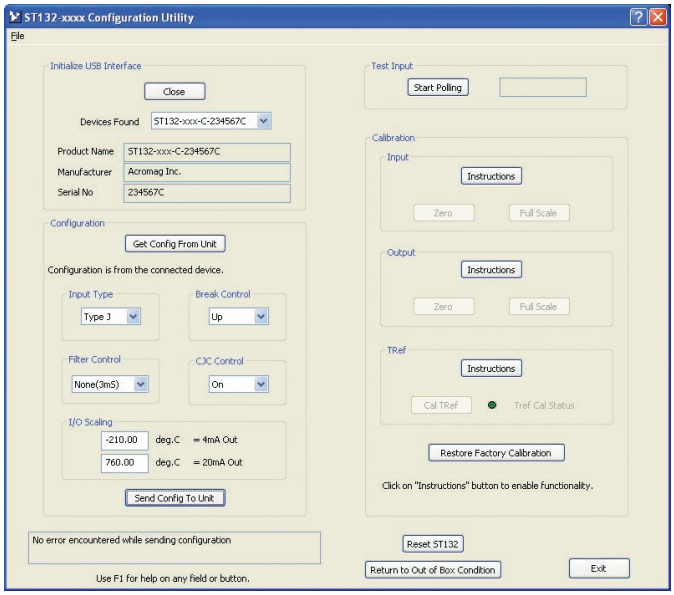
Universal thermocouple (8 types) or ±100mV input ◆ 4-20mA output ◆ Loop-powered, 7-32V DC

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.



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

ST130 Series Transmitter Configuration Software is downloadable (FREE) from www.acromag.com.

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 ±100mV)
- 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.

Acromag
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Bulletin #8400-631h

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, -17.78 to 60°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 Suppressers (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.
Ⓔx 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

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