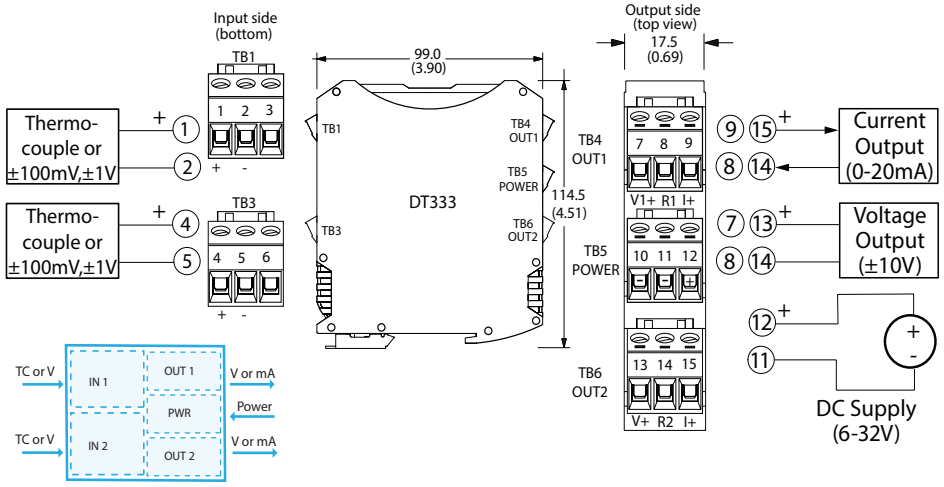
Transmitters: DT330 Series

DT333 Thermocouple/millivolt input four-wire dual transmitter



Dual channels ◆ Universal thermocouple, mV inputs ◆ 6-32V DC local/bus power

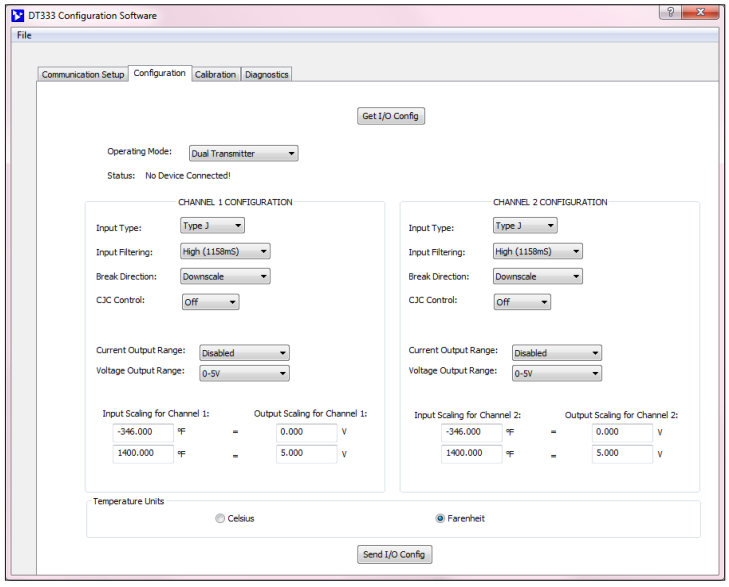
Description

DT330 series signal conditioners provide two independent I/O channels in a single, space-saving unit. The DT333 model is a four-wire dual transmitter that isolates and converts millivolt or thermocouple sensor inputs to proportional control signals. Each channel supports DC current or voltage output. An optional DIN rail bus can deliver primary or redundant power to multiple units.

High-voltage isolation separates inputs, outputs, and power from each other. Isolation protects from surges, reduces noise, and eliminates ground loop errors.

Setup and calibration are fast and easy with a convenient USB connection to your PC and Acromag's Windows configuration software. The Android app enables setup with mobile devices.

Advanced signal processing capabilities, variable range input/output, and convenient USB programming make this instrument very versatile. 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.



Save configuration files for convenient copy/restore capability.

Windows configuration software (FREE) at www.acromag.com

Android Agility™ app (FREE) at [Google Play Store](#)

Key Features & Benefits

- Operate as a dual transmitter, a single transmitter, or a signal splitter
- Easy configuration via USB with Windows software or Agility™ app for Android
- Independently adjustable and scalable input and output ranges
- Selectable thermocouple/millivolt input types: (TC Type J, K, T, R, S, E, B, N, ±100mV, ±1V)
- Selectable current and voltage output ranges: 0-20mA, 4-20mA, ±5V, ±10V, 0-5V, 0-10V DC
- Supports reverse-acting (inverse) output
- High accuracy, linearity, stability, and reliability
- User-selectable filtering (none, low, med., high)
- Selectable up/downscale fault detection
- Bus power, local power, or both (redundancy)
- Space-saving 17.5mm (0.7 inch) unit with pluggable terminals for convenient wiring
- 1500V input isolation, 5-way, (power/input/output)
- Wide ambient operation (-40 to 70°C)
- CE compliant. UL/cUL Class I Div 2, ATEX/IECEx Zone 2

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Transmitters: DT330 Series

DT333 Thermocouple/millivolt input four-wire dual transmitter

Performance Specifications

IMPORTANT: To prevent damage or errors from grounded PCs and surges, Acromag strongly recommends use of their USB-ISOLATOR when configuring a DT330 Series transmitter.

USB Interface

USB Connection
Type: USB Mini-B type socket, 5-pin.
Data rate: 12Mbps. USB v1.1 and 2.0 compatible.
Maximum cable length: 5.0 meters.
Transient voltage suppression on power and data lines.

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

Input (two channels)

Default Configuration/Calibration
Input: TC J, -210 to 760°C, medium filter.
Output: 4 to 20mA, upscale break detect.

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 170°C (-382 to -274°F)	±1.0°C
TC N	-230 to 1300°C (-382 to 2372°F)	±0.5°C
mV	-100 to 100mV	±0.5%

Thermocouple Reference (Cold Junction Compensation)
±0.2°C typical, ±0.5°C maximum at 25°C.

Ambient Temperature Effect
Better than ±80ppm/°C (±0.008%/°C).

Scaling Adjust
Full range.

Lead Break (Sensor Burnout) Detection
Upscale/downscale full range.

Input Impedance
15M ohms.

Input Over-Voltage Protection
Bipolar Transient Voltage Suppression (TVS) and diode clamping.

Input Filter
RC filter plus variable digital filter (none, low, med., high).

Noise Rejection
Common Mode: 96dB no filter (134dB high filter).
Normal Mode: 0.12dB no filter, 60Hz (>80dB med/high filter).

Output (two channels)

D/A Converters (DAC)
Two 16-bit D/A converters.

Output Ranges
±10V (±11V maximum).
±5V (±5.5V maximum).
0 to 10V (11V maximum).
0 to 5V (5.5V maximum).
0 to 20mA (24mA maximum).
4 to 20mA (24mA maximum).

Output Accuracy
±0.05%, typical. ±0.1%, maximum.

Output Load
Voltage output: 1K ohms minimum.
Current output: 0-550 ohms.

Output Compliance
11V, typical.

Output Response Time (for step input change)
Time to reach 98% of final output value (typical)
No filter: 13 milliseconds
Low filter: 38 milliseconds
Medium filter: 122 milliseconds
High filter: 1158 milliseconds

Output Ripple
Less than ±0.1% of output span.

Environmental

Operating Temperature Range
Operation: -40 to 70°C (-40° to 158°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative humidity
5 to 95% non-condensing.

Power Requirement
6-32V DC SELV, 1.6W max.

Isolation
1500V AC peak. 250V AC (354V DC) continuous isolation between inputs, outputs, and power (5-way).

Shock and Vibration Immunity
Vibration: 4g, per IEC 60068-2-6.
Shock: 25g, per IEC 60068-2-27.

Approvals
CE compliant. UL/cUL listed Class I Division 2 Groups ABCD. ATEX, IECEx certified Zone 2.
Ⓔx II 3 G Ex nA IIC T4 Gc -40°C ≤ Ta ≤ +80°C.

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.

Physical

General
General-purpose enclosure designed for mounting on 35mm "T-type" DIN rail.

Case Material
Self-extinguishing polyamide, UL94 V-0 rated.

I/O Connectors
Removable plug-in terminal blocks rated for 12A/250V; AWG #26-12, stranded or solid copper wire.

Dimensions
17.5 x 114.5 x 99.0 mm (0.7 x 4.51 x 3.90 inches).
Unit weight: 0.16 kg (0.35 pounds).
Shipping Weight: 0.22 kg (0.5 pounds) packed.

Ordering Information

Models

Go to on-line ordering page >

DT333-0700
Four-wire dual transmitter, thermocouple/millivolt inputs, isolated current or voltage outputs.

Services

DT330-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

TTC-SIP (recommend one kit per customer)
Windows Software Interface Package for Acromag DT Series transmitters. Includes configuration software CD-ROM (5040-944), isolator (USB-ISOLATOR) and two USB cables (4001-112, 4001-113).

Agility Mobile Application
Software configuration software for an Android smart device. Download for free from the Google Play Store. Requires 5028-565 and 4001-113 cables.

Accessories

TT BUS-KIT
DIN rail bus power connector and left/right terminal blocks. One kit supports multiple transmitters.

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

4001-112
USB cable, 1 meter, with Type A to Type B plugs.

4001-113
USB cable, 1 meter, with Type A to Mini-B plugs.

4001-252
DIN rail end stop for hazloc approvals.

5028-565
USB-OTG 6 inch cable.

ISO9001
AS9100
MADE IN USA

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