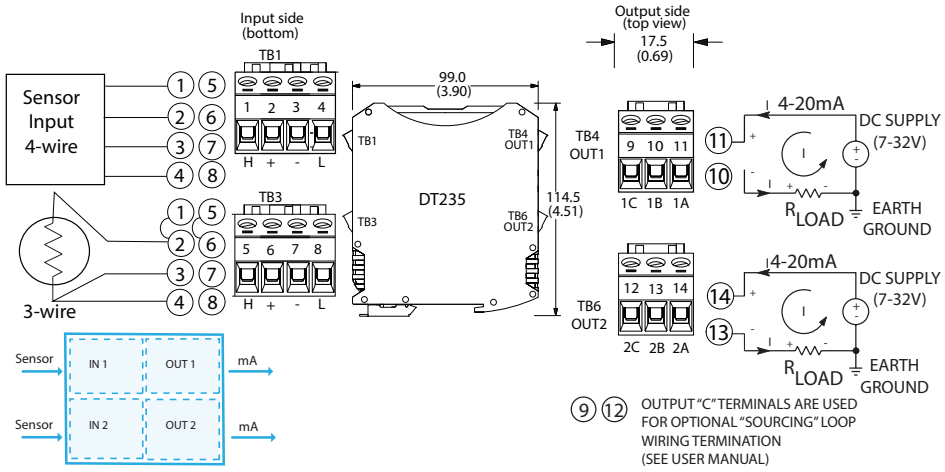
Transmitters: DT230 Series

DT235 RTD/resistance input two-wire dual transmitter



Dual channels ◆ RTD (Pt, Ni, Cu), 0-4500 ohm inputs ◆ 4-20mA output (sink/source) ◆ 7-32V DC loop power

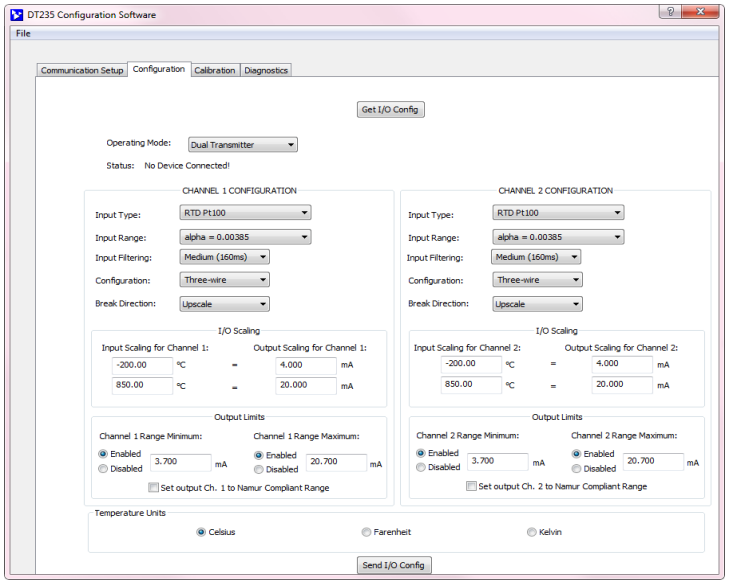
Description

DT230 series signal conditioners provide two independent I/O channels in a single, space-saving unit. The DT235 model is a two-wire dual transmitter that isolates and converts RTD or linear resistance sensor inputs to a proportional 4-20mA control signal. Power is received from the output loop current or a DC supply when using a three-wire connection.

High-voltage isolation separates all input and output circuits 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 RTD and linear resistance input types: Pt 100/200/500Ω, Ni 120Ω, Cu 10Ω, 0-4500Ω
- 4-20mA current loop outputs support sinking or sourcing circuit configurations
- Supports reverse-acting (inverse) output
- User-configurable output range clamp levels support NAMUR-compliant operation
- Selectable up/downscale sensor break detection
- Very low 7V two-wire loop burden
- High accuracy, linearity, stability, and reliability
- User-selectable filtering (none, low, med., high)
- Space-saving 17.5mm (0.7 inch) unit with pluggable terminals for convenient wiring
- 1500V isolation, 4-way (inputs/outputs)
- Wide ambient operation (-40 to 80°C)
- CE compliant. UL/cUL Class I Div 2, ATEX/IECEx Zone 2

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Transmitters: DT230 Series

DT235 RTD/resistance input two-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 DT230 Series transmitter.

USB Interface

USB Connection
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.

Input (two channels)

Default Configuration
Input: 100Ω Pt RTD, 3-wire, =0.00385, -200 to 850°C, medium filter.
Output: 4 to 20mA, upscale break detect.

A/D Converters (ADC)
Two 24-bit Sigma Delta ADCs (only 16-bits used).

Input Ranges

Input Type	Input Range	Accuracy[2]
RTD, Pt 100Ω	-200 to 850°C	±0.25°C
RTD, Pt 200Ω	-200 to 850°C	±0.30°C
RTD, Pt 500Ω	-200 to 850°C	±0.50°C
RTD, Pt 1000Ω	-200 to 850°C	±1.0°C
Ni 120Ω (Minco 7-120)	-80 to 320°C	±0.08°C
Cu 10Ω (Minco 16-9)	-200 to 270°C	±1.0°C
Resistance (linear)	0 to 25Ω	±0.05Ω
Resistance (linear)	0 to 450Ω	±0.10Ω
Resistance (linear)	0 to 9000Ω	±0.90Ω
Resistance (linear)	0to 2250Ω	±2.25Ω
Resistance (linear)	0 to 4500Ω	±4.50Ω

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

Scaling Adjust
Full range.

Lead Break (Sensor Burnout) Detection
Upscale/downscale.

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

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

Input Bandwidth
-3dB @ 16Hz (no filtering).

Noise Rejection (@ 60Hz, no filter)
Common Mode: 101dB no filter.
Normal Mode: 11dB no filter.

Output (two channels)

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

Output Ranges
4-20mA DC. 3.5-24mA under/over-range capability.

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

Output Compliance
R_{LOAD} = (V_{SUPPLY} - 7V) / 0.020A.
R_{LOAD} = 0 to 850 ohms @ 24V DC.

Output Response Time (for step input change)

Time to reach 98% of final output value (typical)	
No filter	34 milliseconds
Low filter	80 milliseconds
Medium filter	214 milliseconds
High filter	1238 milliseconds

Output Ripple
Less than ±0.1% of output span.

Environmental

Operating temperature
Operation: -40 to 80°C (-40° to 176°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative humidity
5 to 95% non-condensing.

Power Requirement
Loop-powered, 7-32V DC SELV, 24mA max.

Isolation
1500V AC peak. 250V AC (354V DC) continuous isolation between input and output circuits.

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 Zone 2.

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

DT235-0600
Two-wire dual transmitter, RTD/resistance inputs, isolated current or voltage outputs.

Services

DT230-Config/Cal
Factory custom configuration/calibration service. Specify input type, input/output, zero, full-scale values, filtering, and sensor fault settings* on order.
** Sensor fault settings are only available for models DT233, DT235, DT333 and DT335.*

Software

TTC-SIP (recommend one kit per customer)
Windows Software Interface Package for Acromag SP 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

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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