**Transmitters: DT230 Series**

**DT235** RTD/resistance input two-wire dual transmitter

**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.

**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 approvals pending.

**Windows configuration software (FREE) at [www.acromag.com](http://www.acromag.com)**

**Android Agility™ app (FREE) at [Google Play Store](https://play.google.com/store)**

Save configuration files for convenient copy/restore capability.
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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.

**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**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Input Range</th>
<th>Accuracy²</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTD, Pt 100Ω</td>
<td>-200 to 850°C</td>
<td>±0.25°C</td>
</tr>
<tr>
<td>RTD, Pt 200Ω</td>
<td>-200 to 850°C</td>
<td>±0.30°C</td>
</tr>
<tr>
<td>RTD, Pt 500Ω</td>
<td>-200 to 850°C</td>
<td>±0.50°C</td>
</tr>
<tr>
<td>RTD, Pt 1000Ω</td>
<td>-200 to 850°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Ni 120Ω (Minco 7-120)</td>
<td>-80 to 320°C</td>
<td>±0.08°C</td>
</tr>
<tr>
<td>Cu 10Ω (Minco 16-9)</td>
<td>-200 to 270°C</td>
<td>±1.0°C</td>
</tr>
<tr>
<td>Resistance (linear)</td>
<td>0 to 25Ω</td>
<td>±0.05Ω</td>
</tr>
<tr>
<td>Resistance (linear)</td>
<td>0 to 45Ω</td>
<td>±0.10Ω</td>
</tr>
<tr>
<td>Resistance (linear)</td>
<td>0 to 90Ω</td>
<td>±0.50Ω</td>
</tr>
<tr>
<td>Resistance (linear)</td>
<td>0 to 225Ω</td>
<td>±2.75Ω</td>
</tr>
<tr>
<td>Resistance (linear)</td>
<td>0 to 450Ω</td>
<td>±4.50Ω</td>
</tr>
</tbody>
</table>

**Ambient Temperature Effect**

Better than ±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.

**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**

\[ \text{R}_{\text{load}} = \left( \frac{V_{\text{supply}}}{7V} \right) / 0.020A. \]

\[ \text{R}_{\text{load}} = 0 \text{ to 850 ohms} \; @ \; 24VDC. \]

**Output Response Time**

Time to reach 98% of final output value (typical)

<table>
<thead>
<tr>
<th>Filter</th>
<th>Time to reach 98% of final output value (typical)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No filter</td>
<td>34 milliseconds</td>
</tr>
<tr>
<td>Low filter</td>
<td>80 milliseconds</td>
</tr>
<tr>
<td>Medium filter</td>
<td>214 milliseconds</td>
</tr>
<tr>
<td>High filter</td>
<td>1238 milliseconds</td>
</tr>
</tbody>
</table>

**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 (pending)**

CE compliant. UL/cUL listed Class I Division 2 Groups A/BCD, ATEX, IECEx certified Zone 2, 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 61000-4-4.

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 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 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-S65 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-S65

USB-OTG 6 inch cable.

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USB-OTG 6 inch cable.
**Transmitters: DT Series**

**Acromag Agility™ Config Tool Mobile Application**

The Agility™ Config Tool is a mobile application that allows easy setup and configuration of Acromag SP Series signal splitters via a tethered mobile device.

This free app is available for Android devices at the Google Play store at [Acromag Agility™ Config Tool](https://play.google.com/store/apps/details?id=com.acromag.agility).

Demo the software, no need for a module. To enter demo mode simply tap the icon in the upper left corner 8 times.

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**Key Features & Benefits**

- Connects to Acromag DT230 and DT330 Series signal splitters
- Requires the use of USB OTG Cable (Acromag part #: 5028-565) and USB A to Mini B Cable (Acromag part #: 4001-113)
- Configures and calibrates DT230 and DT330 Series products via phone or tablet running Android 4.3 ICS (Ice Cream Sandwich) or later.
- View wiring diagrams, even without an internet connection
- Perform quick and easy field diagnostics and troubleshooting
- Ideal for field technicians

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With a couple of taps, quickly configure input, output, unit and scaling options.

Quick and easy access to the wiring diagram, even offline without internet access.