

# DT230 Dual-Channel Transmitters Series

DIN-Rail Mount

Easy Configuration

Slim design



**USB-Programmable  
Saves Space and Cost**



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## Acromag: The I/O Leader

Acromag is a customer-driven manufacturer focused on developing process automation I/O products that provide the best long term value in the industry. Compare and you'll find that Acromag products offer an unmatched balance of price, performance, and features.

## 60+ Years of I/O Experience

Acromag has more than 60 years of measurement and control experience. Since 1957, we have delivered nearly a million units to thousands of customers around the globe for manufacturing, power, environmental, transportation, and military applications.

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We take every measure to guarantee you dependable operation and products that perform at or beyond their specifications. Our state-of-the-art manufacturing and military-grade components add an extra degree of ruggedness. Most products qualify for an extended 2-year warranty. And with ISO 9001/AS9100 certified quality control, you get full confidence.

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## Online Ordering

For your convenience, Acromag provides full product documentation and pricing information on our website. You can obtain quotes or even place your order directly on our website.

## Fast Delivery from Stock

Most products can be shipped within 24 hours of receiving your order.

## Special Services

We are happy to accommodate your special requirements and offer the following services:

- custom product development
- custom calibration
- source inspections, quality audits
- special shipping, documentation
- protective humiseal coating
- plastic and stainless steel tagging

## Certification and Approvals

Many Acromag products carry globally recognized agency approvals and safety certifications.

- CE
- Ethernet conformance
- UL, cUL
- Modbus conformance
- ATEX
- Profibus certification
- CSA
- IECEx

# Transmitters: DT Series



## DT Series Programmable Dual-Channel Transmitters



### Introduction

The new DT Series transmitters are designed to offer a cost-effective space-saving solution to interface a variety of process and sensor signals to your control systems. Each model supports several input ranges and can output proportional 0/4-20mA, 0-10V, or  $\pm 10V$  DC signals.

### Input

Thermocouple/Millivolt, RTD/Resistance, Process Voltage, High Voltage, Current/Millivolt

### Output

Proportional 0/4-20mA, 0-10V, or  $\pm 10V$  DC

### Power

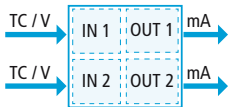
- DT230 Series: 7-32V DC loop/local power
- DT330 Series: 6-32V DC local/bus power

### Key Features and Benefits

- USB-programmable (allows easy selection of options that is not possible with pots or jumpers)
- Dual unit saves space and reduces costs
- Signal splitter capability
- Selectable filtering levels
- Configurable output clamp levels (NAMUR)
- Removable, front-facing terminal blocks (simplify your wiring tasks)
- Rail power bus and redundancy
- Supports sink/source wiring
- 40 to 80° C operation (DT230 Series)
- 40 to 70° C operation (DT330 Series)
- Hazloc approvals UL C1D2, ATEX/IECEx Zone2



### DT233 Thermocouple, Millivolt Input

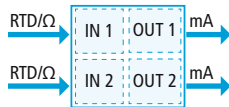


#### Input

- Type J, K, T, R, S, E, B, N thermocouple
- $\pm 100mV$
- $\pm 1V$

[See data sheet](#)

### DT235 RTD/resistance Input

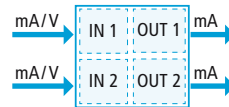


#### Input

- RTD
  - Pt (100/200/500Ω)
  - Ni (120Ω)
  - Cu (10Ω)
- Resistance 0-4500 Ω

[See data sheet](#)

### DT236 Current/millivolt Input

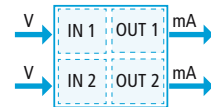


#### Input

- $\pm 20mA$
- $\pm 500mV$

[See data sheet](#)

### DT237 Medium DC Voltage Input

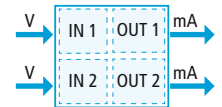


#### Input

- 0-10V
- $\pm 10V$

[See data sheet](#)

### DT238 High Voltage Input

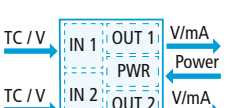


#### Input

- $\pm 150V$

[See data sheet](#)

### DT333 Thermocouple, Millivolt Input

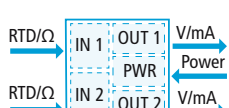


#### Input

- Type J, K, T, R, S, E, B, N thermocouple
- $\pm 100mV$

[See data sheet](#)

### DT335 RTD/resistance Input

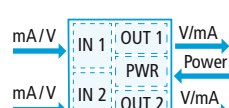


#### Input

- RTD
  - Pt (100/200/500Ω)
  - Ni (120Ω)
  - Cu (10Ω)
- Resistance 0-4500 Ω

[See data sheet](#)

### DT336 Current/millivolt Input

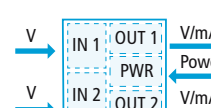


#### Input

- $\pm 20mA$
- $\pm 500mV$

[See data sheet](#)

### DT337 Medium DC Voltage Input

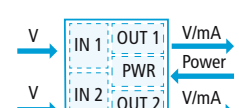


#### Input

- $\pm 1V$
- $\pm 10V$

[See data sheet](#)

### DT338 High Voltage Input



#### Input

- $\pm 15V$
- $\pm 150V$

[See data sheet](#)



# Transmitters: DT Series

## Key Features



### Removable Terminal Blocks

Pluggable terminal blocks simplify wiring for easy installation and removal of modules.

### Scalable Current or Voltage Output

DT230 Series: Supports sink or source 4-20mA output

DT330 Series: Supports scalable current or voltage output ranges: 0-20mA, 4-20mA,  $\pm 5V$ ,  $\pm 10V$ , 0-5V, 0-10V DC

### 2-wire, Loop-powered 4-wire, External-powered

DT230 Series: 7-32V DC Power is received from the output loop (2-wire).

DT330 Series: 6-32V DC power connects (4-wire) on a terminal block, a rail bus, or both for redundancy.

### Simple Configuration

A USB connection to a Windows® PC or Android™ device enables simple, precise configuration of I/O ranges and a variety of operational settings with free software.



### Space Saving

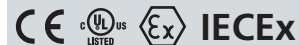
A strikingly thin enclosure, at only 17.5mm wide, to easily achieve high-density DIN-rail mounting.

### Input Options



### Rugged Design

Wide ambient temperature operation, shock and vibration-resistant, as well as CE Compliant, UL/cUL Class I Div 2, ATEX/IECEx Zone 2 approvals (pending).



# Transmitters: DT Series



## General Operation and Performance Specifications



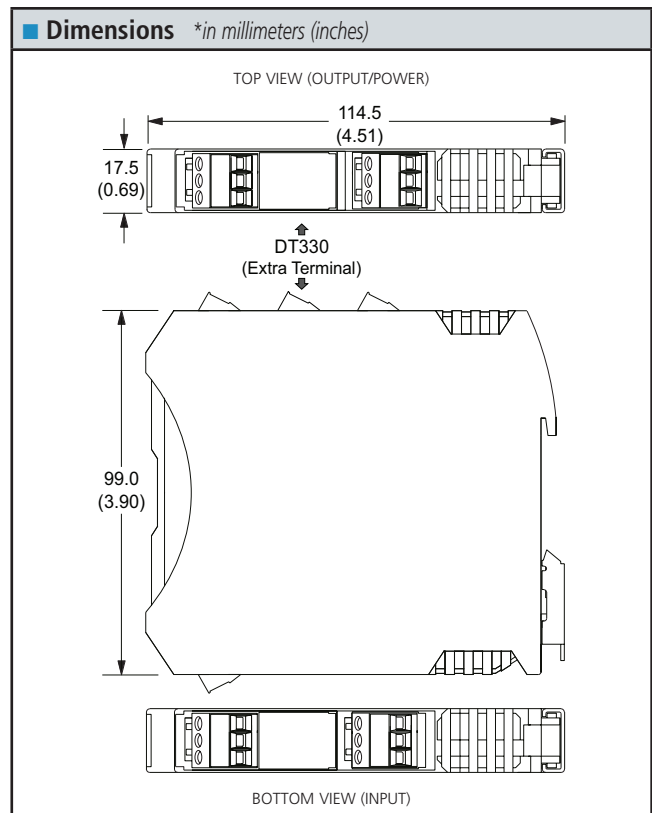
The following specifications are common to all DT Series transmitter modules.

■ USB Interface	
USB Connector	USB Mini-B type socket, 5-pin.
USB Data Rate	12Mbps. USB v1.1 and 2.0 compatible.

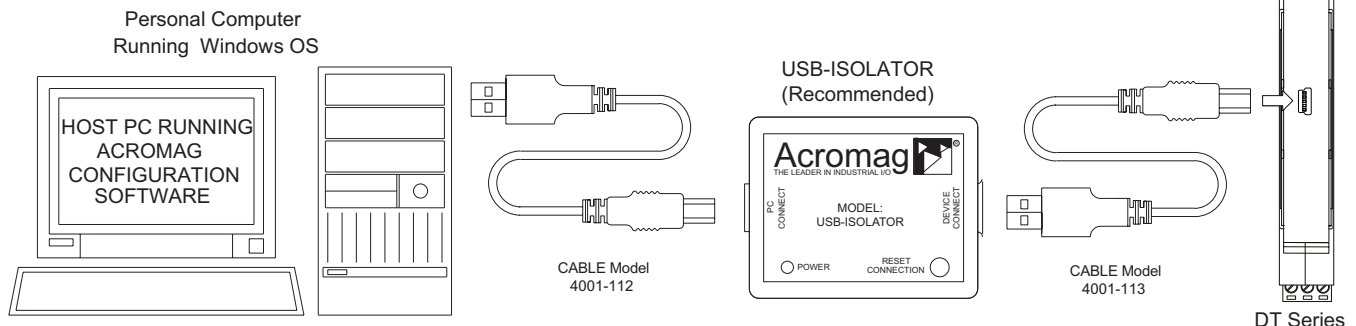
■ Output	
Output Ranges	0-20mA, 4-20mA, ±5V, ±10V, 0-5V, 0-10V DC
Accuracy	±0.05%, typical. ±0.1%, maximum.

■ Environmental	
Operating Temperature	DT230 Series: -40 to 80°C (-40° to 176°F). DT330 Series: -40 to 70°C (-40° to 158°F).
Storage Temperature	-40 to 85°C (-40 to 185°F).
Relative Humidity	5 to 95% non-condensing.
Power Requirement	DT230 Series: 7-32V DC SELV, 24mA max, loop power. DT330 Series: 6-32V DC SELV, 1.5W max.
Isolation	1500V AC peak. 250V AC (354V DC) continuous isolation between input, output, and power (5-way).
Shock and Vibration Immunity	Vibration: 4g, per IEC 60068-2-6 Shock: 25g, 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 61000-6-1, IEC 61000-4-5
Approvals	CE compliant. UL/cUL listed Class I Div. 2. Groups ABCD. ATEX, IECEx certified Zone 2. Ex II 3 G Ex nA IIC T4 Gc -40°C ≤ Ta ≤ +80°C

■ Physical	
General	General-purpose plastic enclosure designed for mounting on 35mm "T-type" DIN rail.
Case Material	Self-extinguishing polyamide, UL94 V-0 rated, color light gray. General-purpose NEMA Type 1 enclosure.
I/O Connectors	Removable plug-in terminal blocks rated for 12A/250V; AWG #26-12, stranded or solid copper wire.
Shipping Weight	0.5 pounds (0.22 Kg) packed.

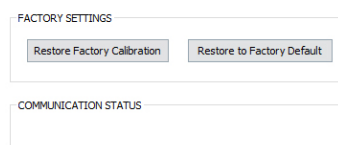
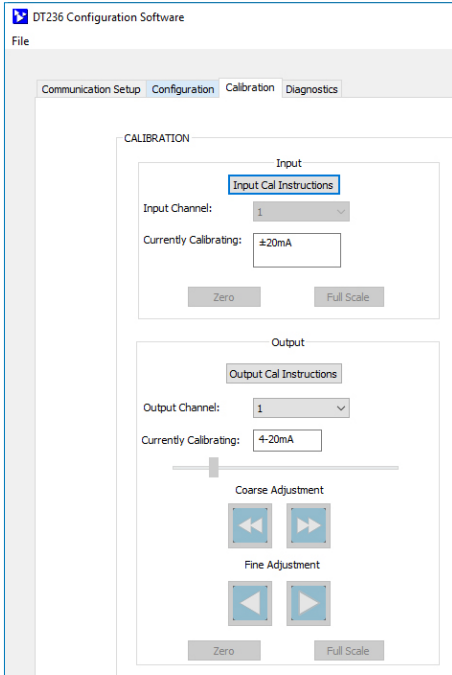
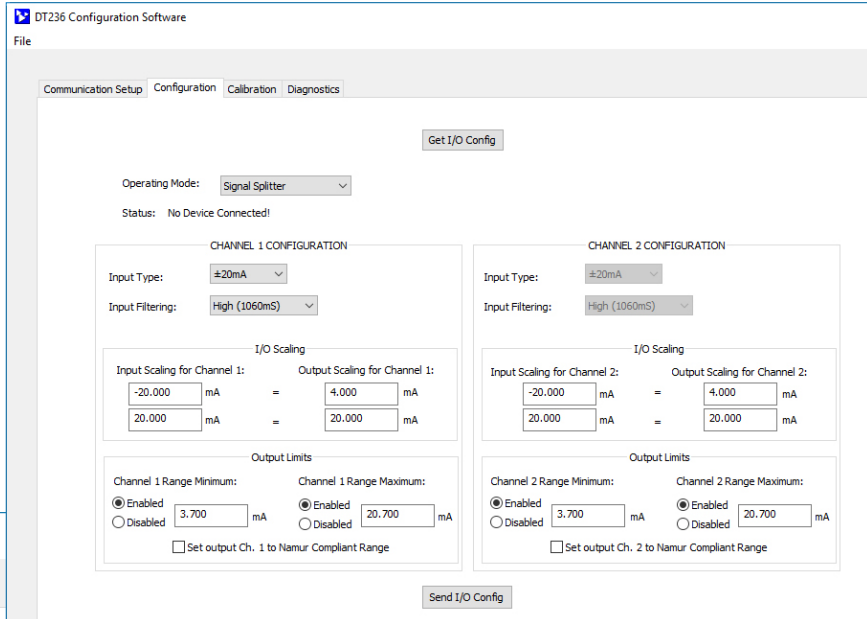
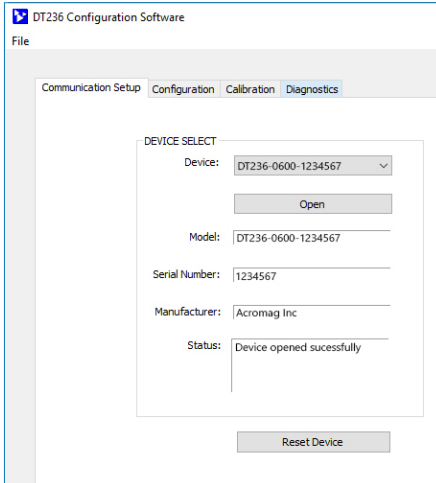


## DT Series USB Transmitter Connections



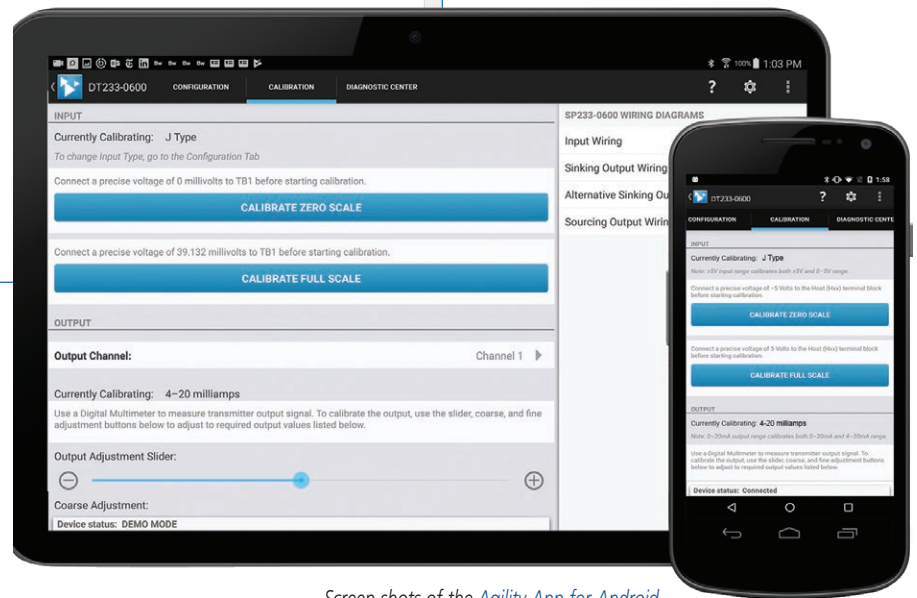
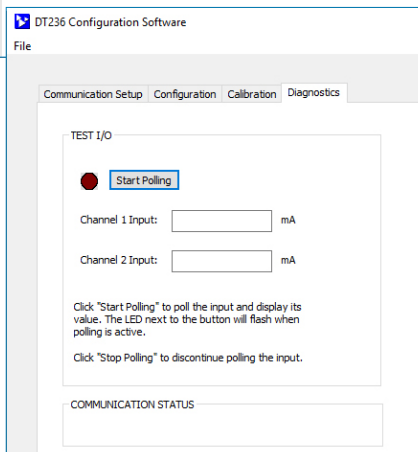
# Transmitters: DT Series

## Module Configuration



Screen shots of Windows-based transmitter configuration software.

Using simple pull-down menus and user-input, your transmitter is ready for use in a snap.



Screen shots of the [Agility App for Android](#), allowing for mobile configuration in the field.

# Transmitters: DT Series



## Accessories



### ◆ Configuration Software



#### DT Series Configuration

Simple to use, whether you need the full software interface package (includes USB isolator and cables) or just the configuration software itself. Acromag makes it easy to get started.

#### Acromag Agility™ Config Tool

Easy to download, configuration tool mobile app for free download at the [Google Play Store](#).

### Ordering Information

#### [TTC-SIP](#)

Software Interface Package for Acromag DT/SP/TT Series. Includes configuration software CD-ROM, USB isolator and two USB cables (4001-112, 4001-113)

#### [DT230-Config/Cal](#), [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.

### ◆ Bus-Kit



#### TT Bus-Kit

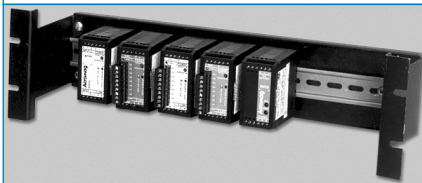
DIN rail bus power connector and left/right terminal blocks. One kit supports multiple DT Series transmitters.

### Ordering Information

#### [TTBUS-Kit](#)

DIN rail bus power connector and left/right terminal blocks for DT, SP, or TT Series.

### ◆ Mounting Hardware



#### Din-Rail Mounting

For your convenience, Acromag offers several mounting accessories to simplify your system installation. Our 19" rack-mount kit provides a clean solution for mounting your I/O modules and a power supply. Or you can buy precut DIN rail strips for mounting on any flat surface.

### Ordering Information

#### [20RM-16-DIN](#)

19" rack-mount kit with DIN rail.

#### [DIN RAIL 3.0](#)

#### [DIN RAIL 16.7](#)

DIN rail strip, Type T, 3 inches (75mm) or 16.7 inches (425mm)

### ◆ Power Supplies



#### Universal Slimline Power Supplies

Input Power Requirement  
Universal Input (85-264V AC / 100-370V DC)  
Output  
10W, 15W, 30W, 60W, 90W, 120W, 240W

### Ordering Information

#### [PSSR-VB24](#)

Power supply, 15W, 0.65A at 24V DC

#### [PSSR-VD24](#)

Power supply, 60W, 2.5A at 24V DC

Visit [www.acromag.com](http://www.acromag.com) for additional models and more information.

### ◆ USB Isolator



#### USB-to-USB Isolator

This compact, industrial-grade isolator provides a high-voltage isolation barrier between a computer and a connected USB device; protecting equipment from electrical surges, transient voltage spikes, and ground loop currents.

### Ordering Information

#### [USB-Isolator](#)

USB isolator, includes USB cable (Part # 4001-112) for isolator-to-PC connection

### ◆ USB Cables



#### USB Cables

Cables for PC-to-USB isolator, USB isolator-to-transmitter connections, and mobile device-to-USB isolator-to-transmitter connections.

### Ordering Information

#### [4001-112](#)

USB Cable, Type A to Type B, 1 meter

#### [4001-113](#)

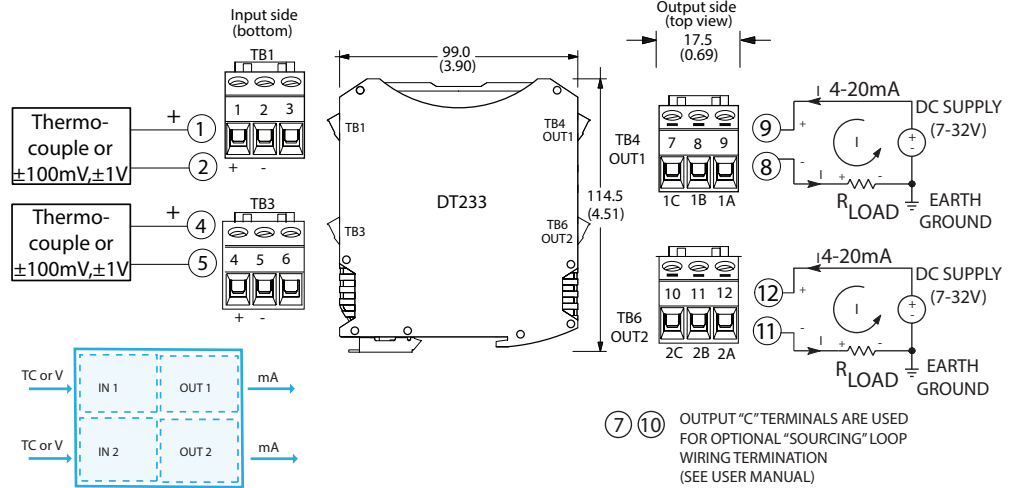
USB Cable, Type A to Mini-B, 1 meter

#### [5028-565](#)

USB Cable, USB OTG Cable, 6 inches

# Transmitters: DT230 Series

## DT233 Thermocouple/millivolt input two-wire dual transmitter



Dual channels ♦ Universal thermocouple, mV input ♦ 4-20mA outputs (sink/source) ♦ 7-32V DC loop/local

### Description

DT230 series signal conditioners provide two independent I/O channels in a single, space-saving unit. The DT233 model is a dual two-wire transmitter that isolates and converts millivolt or thermocouple sensor inputs to proportional 4-20mA control signals. Power is received from the output loop current.

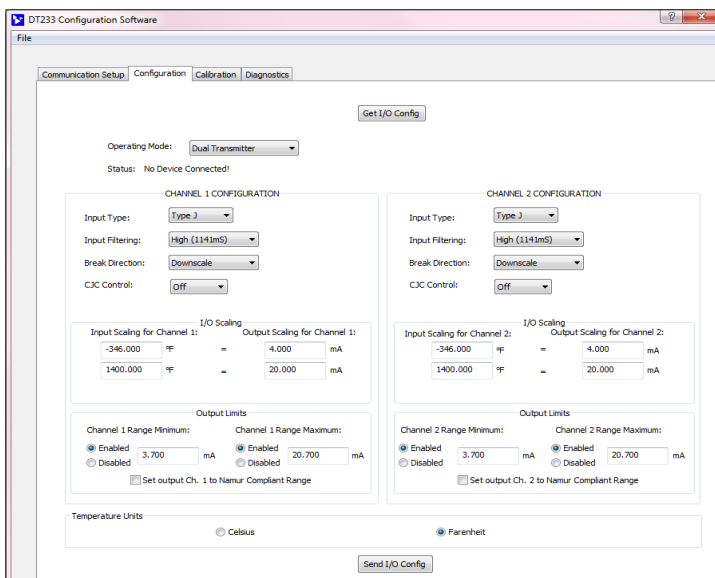
High-voltage isolation separates all input and output circuits from each other. Isolation protects from surges, reduces noise, and helps eliminate ground loop errors.

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 thermocouple/millivolt input types: (TC Type J, K, T, R, S, E, B, N, ±100mV, ±1V)
- 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/apps/details?id=com.acromag.agility)

Save configuration files for convenient copy/restore capability.

Tel 877-214-6267 ■ sales@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA



# Transmitters: DT230 Series Series

## DT233 Thermocouple/millivolt input two-wire dual transmitter

### Performance Specifications

**IMPORTANT:** To prevent ground loop error between a grounded PC and a grounded input signal, Acromag strongly recommends use of a USB isolator like Acromag's USB-Isolator when configuring a DT230 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.

##### A/D Converters (ADC)

Two 24-bit Sigma Delta ADCs (only 16-bits used).

##### Input Ranges

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 (-274 to 2372°F)	±0.5°C
mV	-100 to 100mV	±0.05%

##### 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

0 to 110% of nominal range.

##### Lead Break (Sensor Burnout) Detection

Upscale/downscale.

##### 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, medium, high).

##### Noise Rejection (@ 60Hz)

Common Mode: 100dB no filter (135dB high filter).  
Normal Mode: 0.5dB no filter (>80dB high 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

RLOAD = (V<sub>SUPPLY</sub> - 7V) / 0.020A.  
RLOAD = 0 to 850 ohms @ 24V DC.

##### Output Response Time (for step input change)

Time to reach 98% of output value (typical)	
No filtering	14 milliseconds
Low filter	47 milliseconds
Medium filter	156 milliseconds
High filter	1154 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 (pending)

CE compliant. Designed for UL/cUL 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

##### [DT233-0600](#)

Two-wire dual transmitter, thermocouple/millivolt 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 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

##### [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

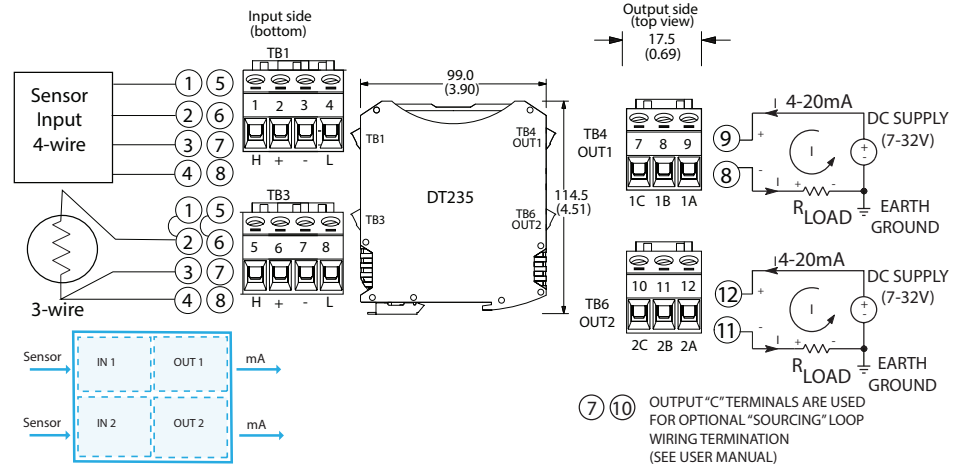


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**Acromag**   
THE LEADER IN INDUSTRIAL I/O

# 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.

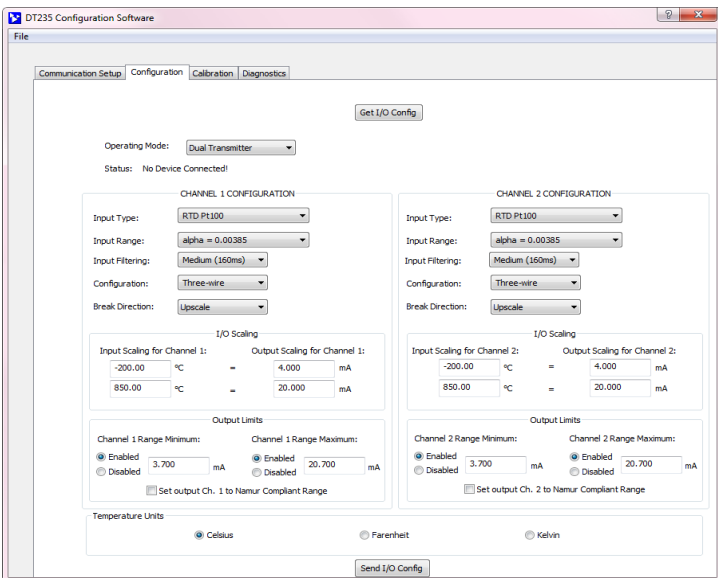
High-voltage isolation separates all input and output circuits from each other. Isolation protects from surges, reduces noise, and eliminates ground loop errors.

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.

### 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 supporting 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/apps/details?id=com.acromag.agility)

Save configuration files for convenient copy/restore capability.

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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 <sup>2</sup>
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)	0 to 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 (pending)

CE compliant. UL/cUL listed Class I Division 2 Groups

ABCD. 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 61000-4-6.

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 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 5028-565 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

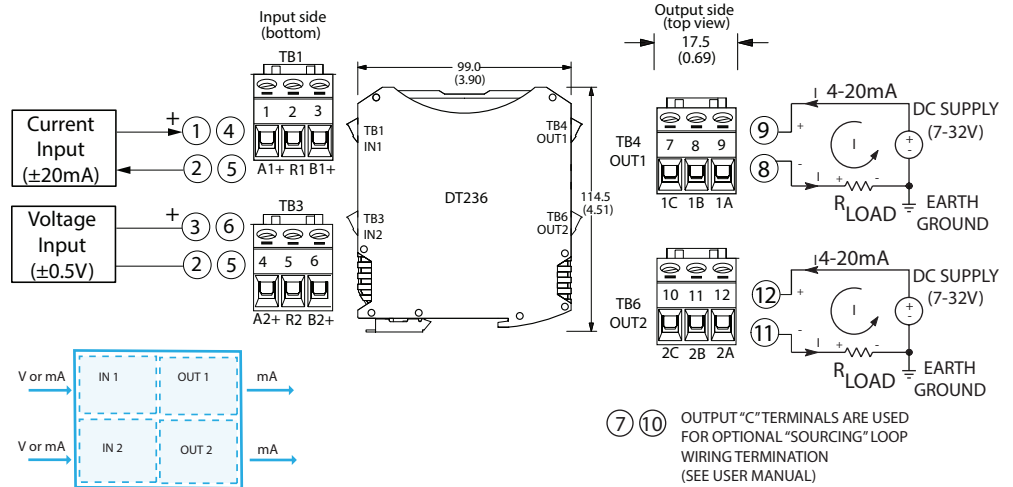


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# Transmitters: DT230 Series

## DT236 Current/millivolt input two-wire dual transmitters



Dual channels ◆  $\pm 20\text{mA}$ ,  $\pm 500\text{mV}$  inputs ◆ 4-20mA outputs (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 DT236 model is a dual two-wire transmitter that isolates and converts DC current or low voltage inputs to proportional 4-20mA control signals. Power is received from the output loop current or a DC supply when using a three-wire connection.

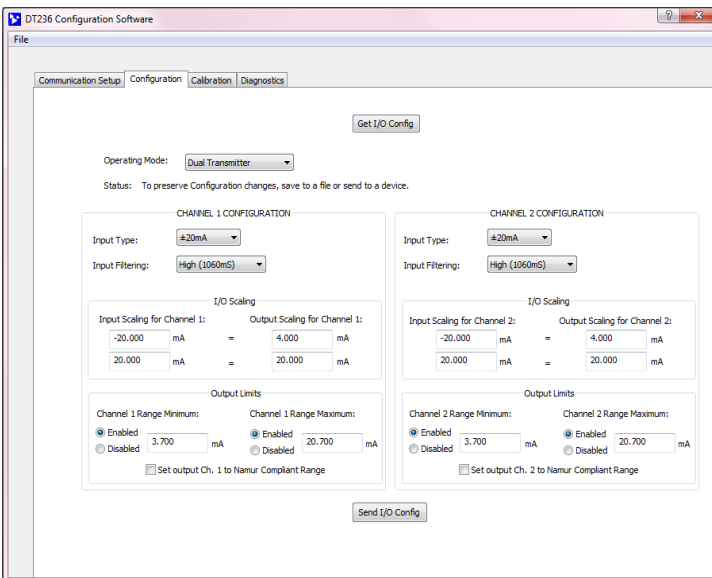
High-voltage isolation separates all input and output circuits from each other. Isolation protects from surges, reduces noise, and helps eliminate ground loop errors.

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 current and voltage input ranges: 0/4-20mA,  $\pm 1\text{mA}$ ,  $\pm 20\text{mA}$ ,  $\pm 0.5\text{V}$ , 0-500mV DC
- Compatible with Acromag 0-20A AC sensor input
- 4-20mA current loop outputs support sinking or sourcing circuit configurations
- User-configurable output range clamp levels support NAMUR-compliant operation
- 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/apps/details?id=com.acromag.agility)

Save configuration files for convenient copy/restore capability.

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# Transmitters: DT230 Series

## DT236 Current/millivolt input two-wire dual transmitters

### Performance Specifications

**IMPORTANT:** To prevent ground loop error between a grounded PC and a grounded input signal, Acromag strongly recommends use of a USB isolator like Acromag's USB-Isolator when configuring a DT230 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.

#### ■ Input (two channels)

##### Default Configuration/Calibration

Input: 4 to 20mA, medium filter.  
Output: 4 to 20mA.

##### A/D Converters (ADC)

Two 24-bit Sigma Delta ADCs (only 16-bits used).

##### Input Ranges

Path A:  $\pm 1$ mA,  $\pm 20$ mA, 0 to 11.17mA, 0-20mA, 4-20mA DC.

Path B:  $\pm 0.5$ V, 0-500mV DC.

##### Ambient Temperature Effect

Better than  $\pm 80$ ppm/ $^{\circ}$ C ( $\pm 0.008\%$ / $^{\circ}$ C).

##### Scaling Adjust

Full range.

##### Input Impedance

Current input: 24.9 ohms.  
Voltage input: 15M ohms.

##### 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: 93dB no filter (139dB high filter).  
Normal Mode: 6dB no filter ( $>80$ dB high 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

$\pm 0.05\%$ , typical.  $\pm 0.1\%$ , 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 output value (typical)	
No filter	31 milliseconds
Low filter	51 milliseconds
Medium filter	152 milliseconds
High filter	1100 milliseconds

##### Output Ripple

Less than  $\pm 0.1\%$  of output span.

#### ■ Environmental

##### Operating temperature

Operation:  $-40$  to  $80^{\circ}$ C ( $-40$  to  $176^{\circ}$ F).  
Storage:  $-40$  to  $85^{\circ}$ C ( $-40$  to  $185^{\circ}$ 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 ABCD. ATEX, IECEx certified Zone 2.  
 $\text{Ex II 3 G Ex nA IIC T4 Gc } -40^{\circ}\text{C} \leq T_a \leq +80^{\circ}\text{C}$

##### 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

##### [DT236-0600](#)

Two-wire dual transmitter, current/millivolt 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 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

##### [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.

##### [5020-350](#)

AC current sensor (toroidal transformer); converts 0-20A AC to 0-11.17mA DC.

##### [5028-565](#)

USB-OTG 6 inch cable.

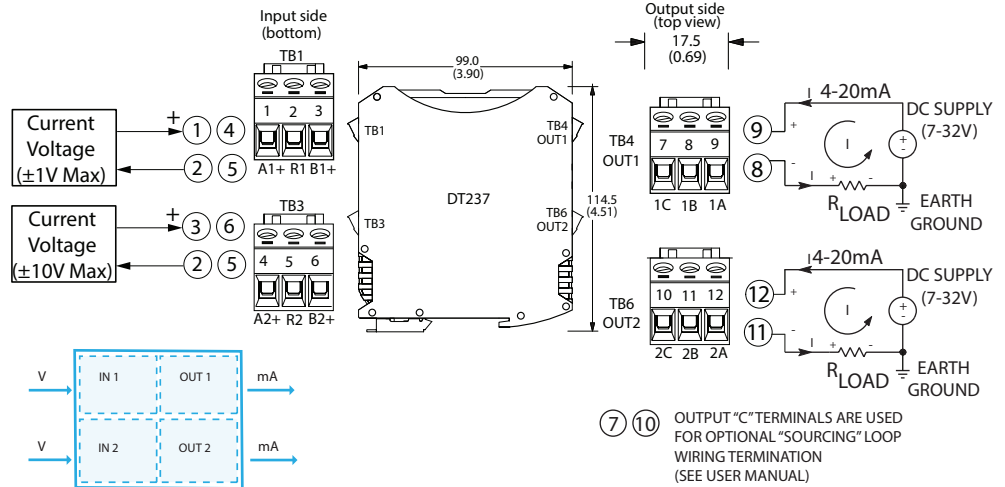
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AS9100  MADE IN USA

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# Transmitters: DT230 Series

## DT237 Medium DC voltage input two-wire dual transmitter



Dual channels ♦ 0-10V,  $\pm 10V$  inputs ♦ 4-20mA outputs (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 DT237 model is a two-wire dual transmitter that isolates and converts high-level DC voltage 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.

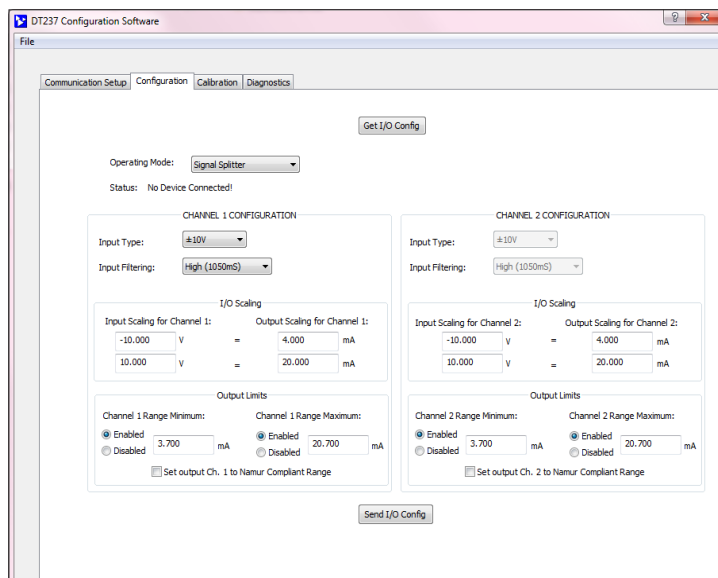
High-voltage isolation separates all input and output circuits from each other. Isolation protects from surges, reduces noise, and eliminates ground loop errors.

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 voltage input ranges:  $\pm 1V$ ,  $\pm 5V$ ,  $\pm 10V$ , 0-1V, 0-5V, 0-10V DC
- 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
- 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/apps/details?id=com.acromag.agility)

Save configuration files for convenient copy/restore capability.

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# Transmitters: DT230 Series

## DT237 Medium DC voltage input two-wire dual transmitter

### Performance Specifications

**IMPORTANT:** To prevent ground loop error between a grounded PC and a grounded input signal, Acromag strongly recommends use of a USB isolator like Acromag's USB-Isolator when configuring a DT230 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:  $\pm 10V$ , medium filter.  
Output: 4 to 20mA.

##### A/D Converters (ADC)

Two 24-bit Sigma Delta ADCs (only 16-bits used).

##### Input Ranges

Path A:  $\pm 1V$ , 0-1V.  
Path B:  $\pm 5V$ ,  $\pm 10V$ , 0-5V, 0-10V DC.

##### Ambient Temperature Effect

Better than  $\pm 80\text{ppm}/^\circ\text{C}$  ( $\pm 0.008\%/^\circ\text{C}$ ).

##### Scaling Adjust

Full range.

##### Input Impedance

Path A:  $15M\Omega$   
Path B:  $1M\Omega$ .

##### 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: 71dB no filter (119dB high filter).  
Normal Mode: Path A 7dB, Path B 28dB no filter (>80dB high 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

$\pm 0.05\%$ , typical.  $\pm 0.1\%$ , 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 output value (typical)	
No filter	136 milliseconds
Low filter	147 milliseconds
Medium filter	317 milliseconds
High filter	1109 milliseconds

##### Output Ripple

Less than  $\pm 0.1\%$  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 ABCD. ATEX, IECEx certified Zone 2.  
 II 3 G Ex nA IIC T4 Gc -40°C  $\leq$  Ta  $\leq$  +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

##### DT237-0600

Two-wire dual transmitter, medium DC voltage 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 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

##### 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.

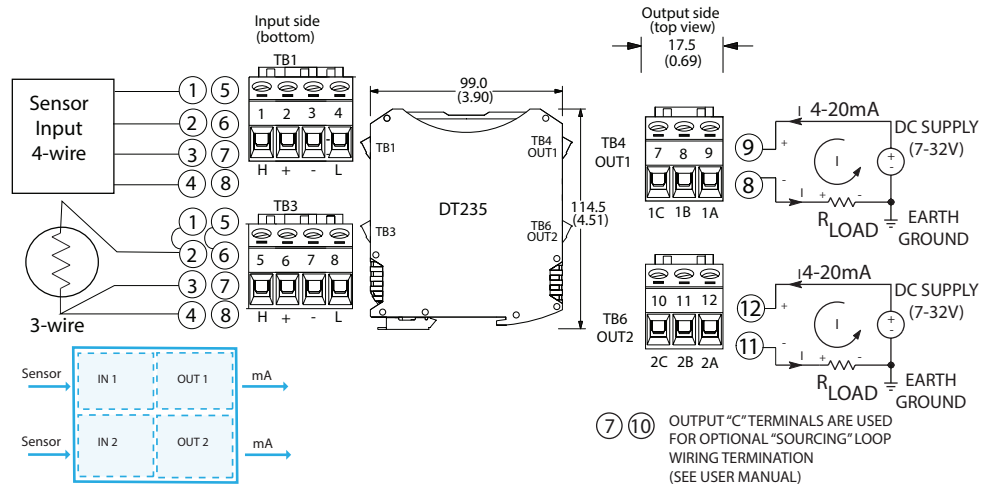
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# Transmitters: DT230 Series

**DT238** High DC voltage input two-wire dual transmitter



Dual inputs ♦ 0±150V input ♦ 4-20mA outputs (sink/source) ♦ 7-32V DC loop/local power

## Description

DT230 series signal conditioners provide two independent I/O channels in a single, space-saving unit. The DT238 model is a two-wire dual transmitter that isolates and converts high-level DC voltage inputs to proportional 4-20mA control signals. Power is received from the output loop current or a DC supply when using a three-wire connection.

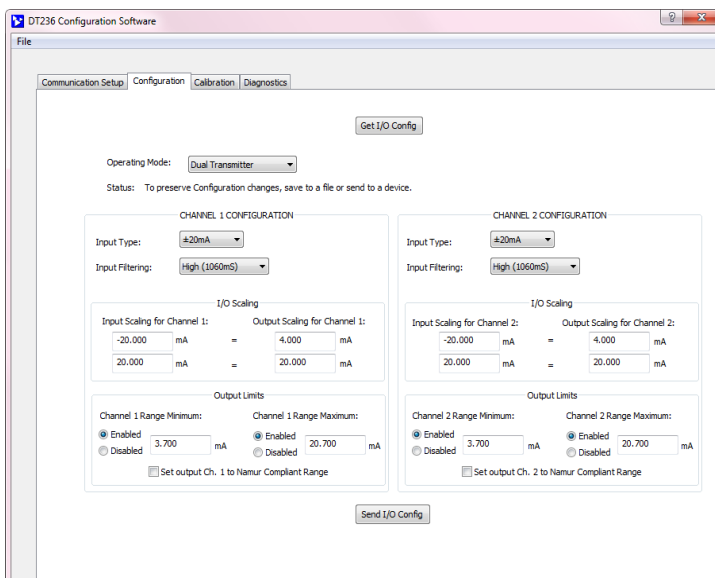
High-voltage isolation separates all input and output circuits from each other. Isolation protects from surges, reduces noise, and eliminates ground loop errors.

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 voltage input ranges: ±15V, ±75V, ±150V, 0-15V, 0-75V, 0-150V DC
- 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
- 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/apps/details?id=com.acromag.agility)

Save configuration files for convenient copy/restore capability.



Tel 877-214-6267 ■ sales@acromag.com ■ www.acromag.com ■ 30765 Wixom Rd, Wixom, MI 48393 USA



# Transmitters: DT230 Series

## DT238 High voltage input two-wire dual transmitter

### Performance Specifications

**IMPORTANT:** To prevent ground loop error between a grounded PC and a grounded input signal, Acromag strongly recommends use of a USB isolator like Acromag's USB-Isolator when configuring a DT230 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.

#### ■ Input (two channels)

##### Default Configuration/Calibration

Input:  $\pm 150V$ , medium filter.  
Output: 4 to 20mA.

##### Scaling Adjust

Full range.

##### Input Impedance

Path A: 15M $\Omega$   
Path B: 1M $\Omega$ .

##### 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: 70dB no filter (113dB high filter).  
Normal Mode: Path A 32dB, Path B 51dB no filter (>80dB high 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

$\pm 0.05\%$ , typical.  $\pm 0.1\%$ , 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 output value (typical)	
No filter	34 milliseconds
Low filter	62 milliseconds
Medium filter	195 milliseconds
High filter	1109 milliseconds

##### Output Ripple

Less than  $\pm 0.1\%$  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 ABCD. ATEX, IECEx certified Zone 2.  
☞ II 3 G Ex nA IIC T4 Gc -40°C  $\leq$  Ta  $\leq$  +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

##### DT238-0600

Two-wire dual transmitter, high DC voltage 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 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

##### 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.

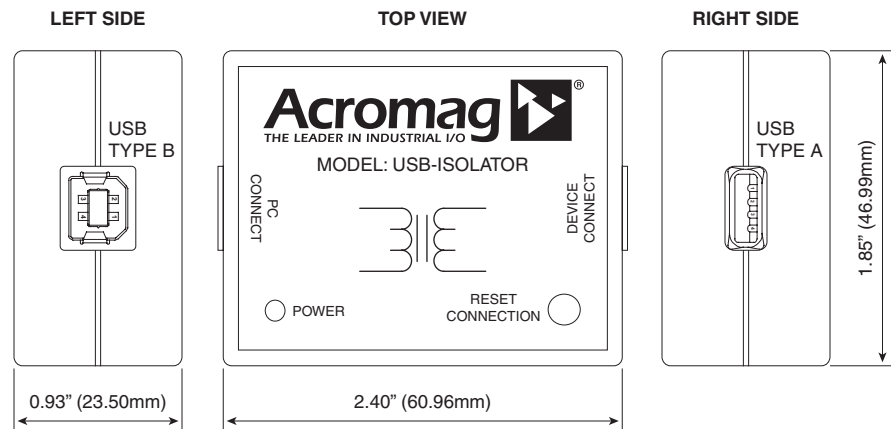
##### 5028-565

USB-OTG 6 inch cable.



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## USB-ISOLATOR USB-to-USB Isolator



USB-powered, USB 2.0 and 1.1 compatible ◆ 1500V AC / 2100V DC isolation ◆ No drivers required

### Description

This compact, industrial-grade isolator provides a high-voltage isolation barrier between a computer and a connected USB device. The isolation protects equipment from electrical surges and transient voltage spikes. It also eliminates ground loop currents flowing between the PC and peripherals which can cause damage and inaccurate measurements. Additionally, isolation minimizes conducted noise from static discharge, magnetic fields, and radio frequency interference.

Acromag's USB isolator is very easy to use. The isolator inserts in-line with the USB connection and operates transparently. No special software drivers are required. The unit receives power from the PC's USB port and isolates that power to the connected device. High noise immunity and low radiated emissions ensure reliable data transfer in sensitive applications.

A number of high-performance features help provide convenient and dependable operation. The green LED indicates that power is being received and blinks if the connected device draws too much current. An internal jumper lets you switch from Full Speed (12 Mbps) to Low Speed (1.5 Mbps) communication. The reset button offers a simple way to reinitialize a connected device without breaking the cable connection. High-retention USB sockets keep cables securely attached under shock and vibration.

### Key Features & Benefits

- Isolates and protects a USB peripheral from a USB host
- Electrical isolation up to 1500V AC / 2100V DC
- Common mode filtering on all data lines
- Built-in surge/transient suppression up to 8kV on all ports
- Self-powered through the USB port
- Supports USB 2.0 full speed (12 Mbps) and USB 1.1 low speed (1.5 Mbps) data rates with jumper-selection
- LED for power indication and diagnostics
- Reset button to reinitialize and re-enumerate peripheral devices
- Output short circuit protection with auto-retry
- No software or configuration required (transparent operation)
- Uses standard high-retention USB Type A/B cable connections (includes 1m cable)
- Compact size and rugged design for harsh environments
- Wide ambient temperature operation -40 to 70°C (-40 to 158°F)
- CE, FCC, UL/cUL approvals

### Ordering Information

#### Models

##### USB-ISOLATOR

USB isolator, includes USB cable (Part # 4001-112) for isolator-to-PC connection

##### TTC-SIP

CD-ROM (Part #5040-944), USB isolator and two USB cables (Part # 4001-112, 4001-113) for configuration of Acromag DT, TT and ST Series Transmitters, and SP and uBSP Series Signal Splitters.

##### XT-SIP

CD-ROM (Part #5041-094), USB isolator, two USB cables (Part # 4001-112, 4001-113), and one Ethernet cable (Part # 5035-360) for configuration of Acromag BusWorks XT Series Ethernet modules.

#### Accessories

##### 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



## USB-ISOLATOR USB-to-USB Isolator



### Performance Specifications

#### ■ USB Port Interface

##### Standards

USB 1.1 and 2.0 compatible, full speed (12Mbps, default) and low speed (1.5Mbps) data rates supported. For low speed data rates, an internal jumper is provided for user setting. Connection is transparent, no software or configuration is required. Isolator will not be enumerated in the device manager.

#### ■ Physical

##### Dimensions

2.40" Length x 1.85" Wide x 0.925" High  
(60.96mm x 46.99mm x 23.495mm).

##### Connectors

Standard high retention USB A/B connectors with minimum withdrawal force of 15 Newtons. 1 meter A/B cable included.

##### PC Connector

USB Type B receptacle

##### Device Connector

USB Type A receptacle

##### LED Indicator

Green LED indicates isolator receiving 5V power from the USB computer bus. Flashing indicates short circuit/ retries on peripheral side.

##### Reset Button

Resets the connection to the USB peripheral device for reinitialization and re-enumeration.

##### Enclosure Material

ABS Resin, UL94 rated, IP30 plastic case.

#### ■ Environmental

**Operating temperature**  
-40 to 70°C (-40° to 158°F).

**Storage temperature**  
-40 to 85°C (-40 to 185°F).

**Relative humidity**  
5 to 95% non-condensing.

##### Power

PC Connect Side: Standard USB bus power (5V DC).

Device Connect Side: 5V DC / 120mA with full power connection from PC. Includes over-current protection with auto-retry.

##### Isolation

1500V AC / 2100V DC peak isolation.  
250V AC continuous safety isolation.

##### Agency Approvals:

CE and FCC compliant. UL/cUL Class 1 Div. 2 Zone 2.

#### Radiated Field Immunity (RFI)

Designed to comply with IEC1000-4-3 Level 3 and EN50082-1.

#### Electromagnetic Compatibility (EMC)

Minimum immunity per EN61000-6-2:2001

#### Electrostatic Discharge (ESD) Immunity

Per IEC61000-4-2.

#### Radiated Field Immunity (RFI)

Per IEC61000-4-3.

#### Electrical Fast Transient Immunity (EFT)

Per IEC61000-4-4. Complies with IEC1000-4-4 Level 3 and EN50082-1.

#### Surge Immunity

Complies with IEC1000-4-5 Level 3 and EN50082-1. Per IEC61000-4-5.

#### Conducted RF Immunity (CRFI)

Per IEC61000-4-6.

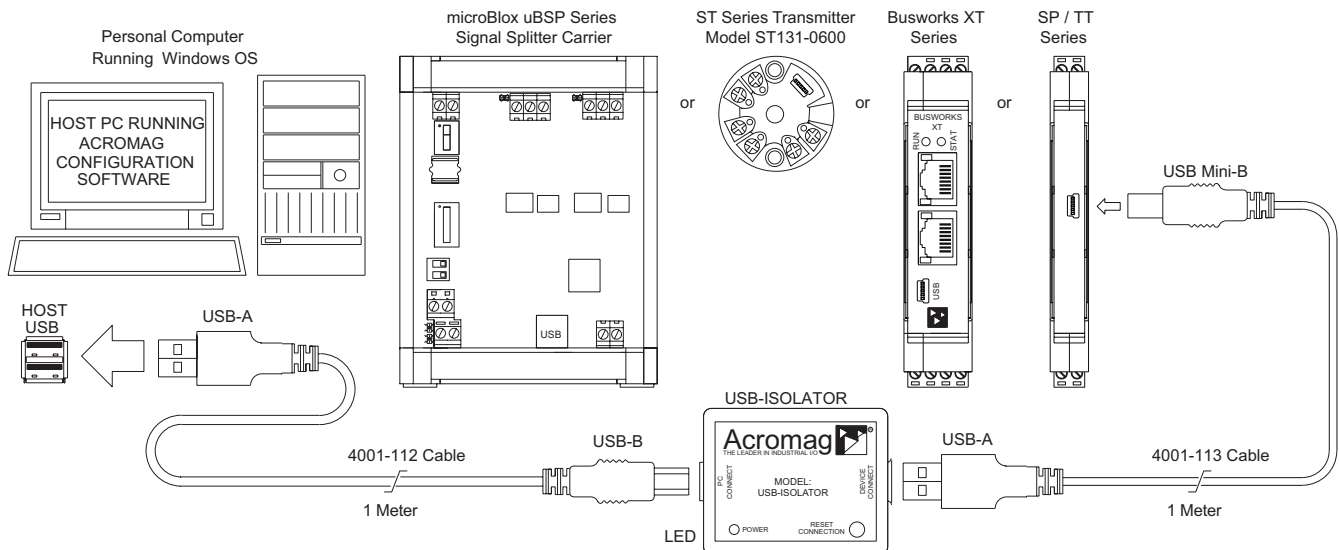
#### Emissions

Per EN61000-6-4:2001.

#### Radiated Frequency Emissions

Per CISPR11 Class A. Meets or exceeds EN50081-1 for Class B equipment.

### Example USB Connections (TT Series, SP Series, uBSP Series, XT Series, or ST Series)




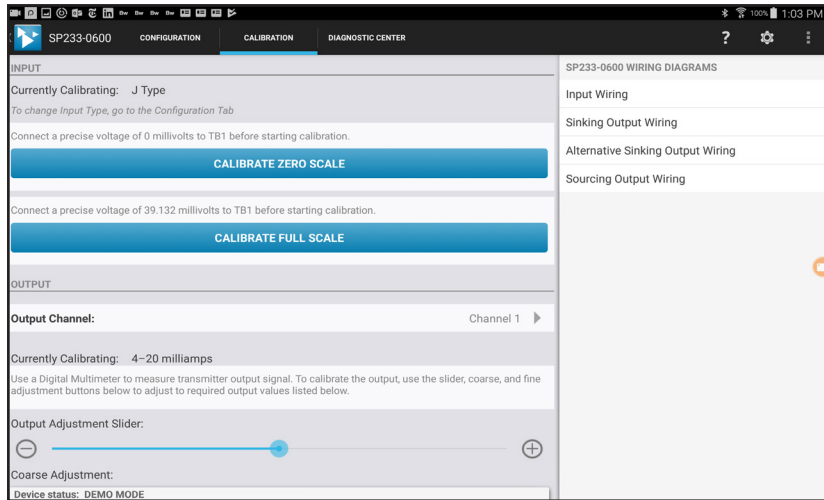
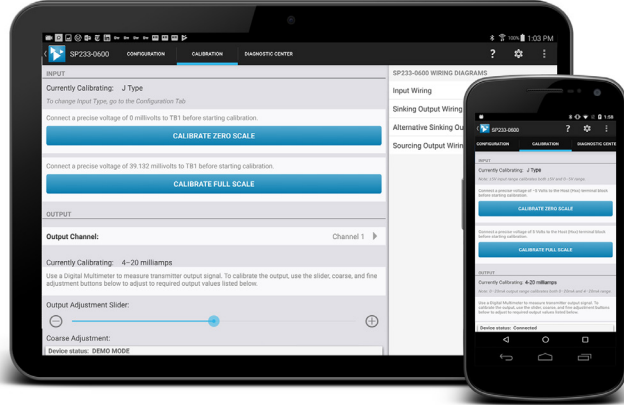
# Transmitters: DTx30 Series

## Acromag Agility™ Config Tool Mobile Application

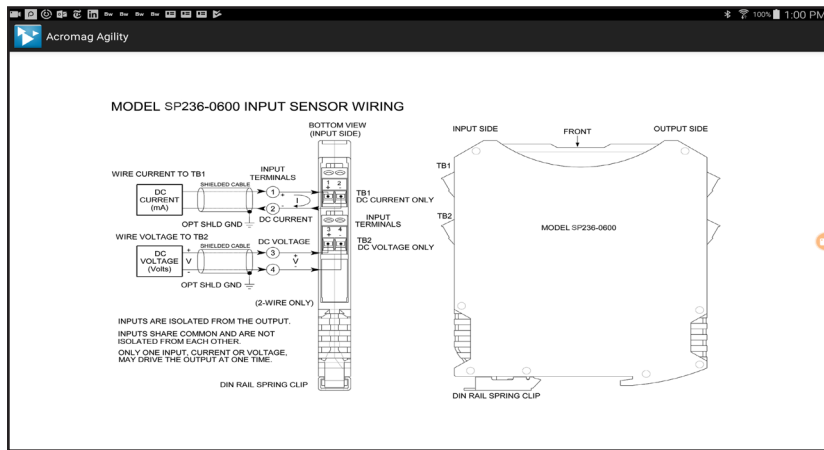
The Agility™ Config Tool is a mobile application that allows easy setup and configuration of Acromag SP Series signal splitters via a tethered mobile device.

This free app is available for Android devices at the Google Play store at [Acromag Agility™ Config Tool](#).

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



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.

### 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

