

Transmitters/Signal Conditioners

SERIES DX

Watlow's SERIES DX DeviceNet™ four-channel temperature transmitter provides high accuracy and the flexibility of distributed networking in a compact, DIN-mounted package. Hundreds of temperature sensors can now be networked together on a single DeviceNet™ cable. This simplifies the installation process and reduces the cost of wiring labor and input hardware. The new transmitter not only saves on installation costs, but also allows all of the latest temperature sensor technologies based on the IEEE 1451.4 format to be accessible to most PLCs, networks and LabVIEW™ applications.

The DX transmitter inputs can be used in any combination of standard or plug and play IEEE 1451.4 RTDs and thermocouples.

- Thermocouples: Type J, K, T, N, E, R, S, B and nonstandard
- RTDs: 2- or 3-wire platinum, 100Ω, DIN (0.00385 curve)
- INFOSENSE-PT™ high accuracy plug and play IEEE 1451.4 smart sensors (RTD and thermocouple)
- WATCOUPLE thermocouple long-life, high accuracy, high temperature plug and play IEEE 1451.4 smart nonstandard thermocouples



Features and Benefits

Easy installation, use and maintenance

- Network and rotary switch configurable
- Bright, legible status LEDs for channel and network status
- Automatic DIN-rail grounding
- Writable front cover for easy identification
- Hot-swappable without having to remove adjoining transmitters
- No need to install separate power supply

Lower cost installation (significantly lower cost per channel in multi-channel installation)

- Powered from DeviceNet™ network (11 to 25V_{DC}, class 2); no additional cost for additional power supplies and additional cabinet space

- Low power consumption; allows up to 252 sensors to be installed via 63 cascaded transmitters on one DeviceNet™ network run
- Small size enables use of smaller enclosures and lowers the enclosure cost per channel (four sensor inputs in 0.90 in. (22.5 mm) wide package)

Very high accuracy

- 0.5°C (±0.9°F) cold junction compensation accuracy for thermocouples over range of -40 to 70°C (-40 to 158°F)
- ± 0.5°C (±0.9°F) transmitter accuracy with thermocouple
- ± 0.25°C (±0.5°F) transmitter accuracy with RTD

Available Options

- M12 sealed-style metal circular male micro DeviceNet™ connector
- Open-style stripped five-wire DeviceNet™ connector
- Backplane cascade connection

DeviceNet™ is a trademark of the Open DeviceNet Vendors Association.

LabVIEW™ is a trademark of National Instruments Corporation.

Transmitters/Signal Conditioners

SERIES DX

Ordering Information—To order, complete the part number on the right with the information below:

DX4000

Connector

- B = Backplane connector only
- M = M12 sealed style metal circular male micro DeviceNet™ connector and backplane connector
- S = Open style stripped five-wire DeviceNet™ connector and a backplane connector

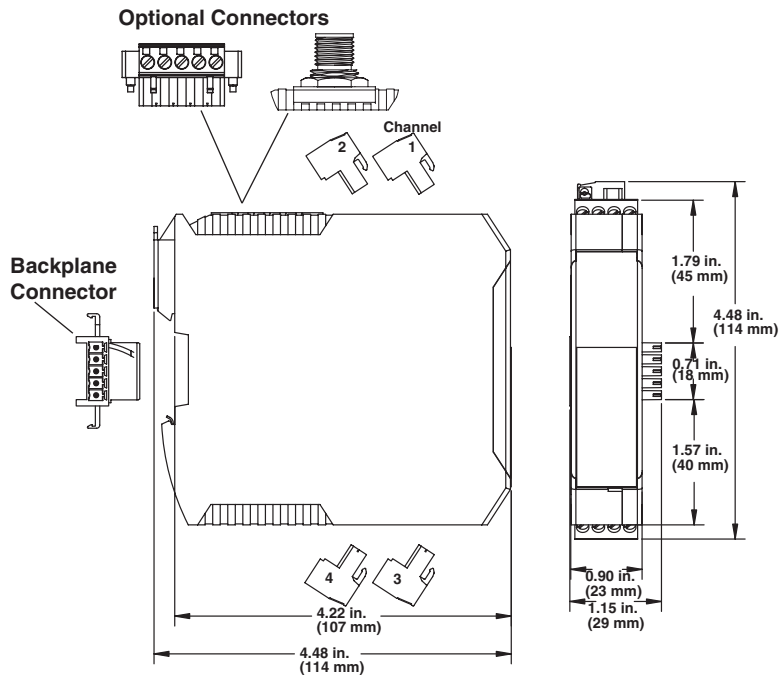
Printed manual

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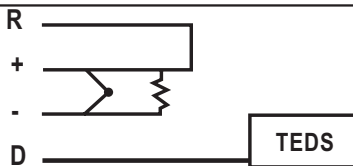
CD manual and EDS file

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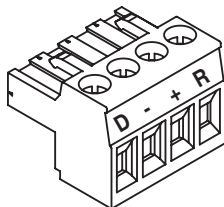
Dimensions



TERMINAL T/C RTD IEEE 1451.4

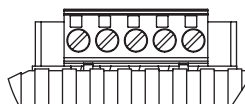
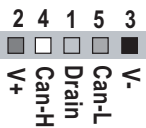


Channel Connector Removable for Easy Wiring

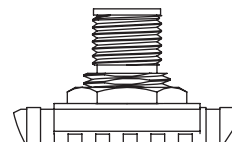
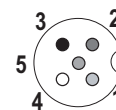


DeviceNet™ Connector Options

Open Style Connector (Option S)



M12 Male Micro Style (Option M)



Transmitters/Signal Conditioners

SERIES 5750

Watlow's SERIES 5750 temperature transmitters offer remarkably accurate temperature measurement and improved reliability, which reduces downtime and costs.

The 5750 SERIES two-wire signal conditioner is constructed using surface mount technology and utilizes digital technology with non-volatile memory. It is designed to fit directly into universal aluminum or universal iron connection heads with a separate mounting kit.

The transmitter is programmed via a separate connection cable along with an easy-to-use Windows®-based software program. There is no need to use a separate thermocouple/RTD calibrator; nor are individual resistors required.

The SERIES 5750 provides linearization between temperature sensor input signal and the 4-20 mA output signal, ensuring accurate temperature measurements over a wider range.

Contact our customer service department to integrate this transmitter into a Watlow Style AR or AT thermocouple sensor or a Watlow Style RR or RT RTD sensor.

Features and Benefits

Full temperature to thermocouple signal linearization over the complete operation temperature span

- Ensures signal accuracy

Programmable

- Ensures greater convenience for future changes and inventory efficiency



User selectable input types

- Thermocouple calibration Types B, C, E, J, K, N, R, S and T; RTD Pt100, DIN or JIS

CE marked

- Compliant to electromagnetic interference

NAMUR compliant

- Increased safety

No external power supply needed for ranging

- Ease of use

Specifications

- **Operating voltage:** 8 to 36 volts (the SERIES 5750 is protected against voltage surges and reverse polarity)
- **Sensor burn out protection:** A pulsed current is continuously checking all sensor leads for disconnect. The output will go upscale or downscale.
- **Minimum input signal:** RTDs: 10°C, thermocouples: 2mV
- **Operating temperature:** -40 to +85°C

- **Response time appr.:** 0.5 seconds
- **RFI sensitive:** 20 - 1000 MHz, 10V/m typical <0.1 percent (of end value)
- **Permissible ripple of supply:** 4V p-p
- **Long term stability:** 0.2 percent per year
- **Calibration inaccuracy, thermocouples:** max of 20µ volts or 0.01 percent
- **Temperature effect:** cold junction compensation $\pm 0.5^{\circ}\text{C}$
- **Housing:** PC, ABS/VO connection polyamid / V2
- **Mounting:** DIN B or DIN-rail with Part #30413301
- **Non-Isolated**

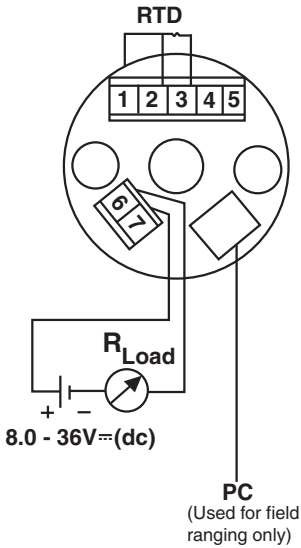
Windows® is a registered trademark of the Microsoft Corporation.

Transmitters/Signal Conditioners

SERIES 5750

Ordering Information—To order, complete the part number on the right with the information below:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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1-4. SERIES

5750 = Linearized T/C or RTD

5. Sensor Type

Standard plugs and jacks 200°C (400°F)

- B = Type B T/C N = Type N T/C
- C = Type C T/C R = Type R T/C
- E = Type E T/C S = Type S T/C
- J = Type J T/C T = Type T T/C
- K = Type K T/C O = 2 - 4-wire RTD 100Ω

6. Low Temperature Sign

(Enter + or - sign)

7-9. Low Temperature

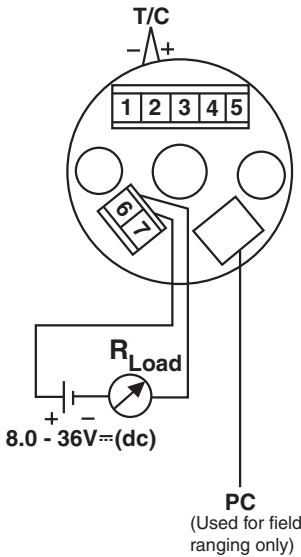
10. High Temperature Sign

(Enter + or - sign)

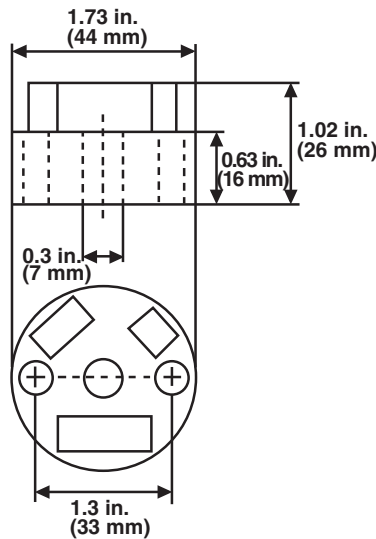
11-14. High Temperature

15. Unit of Measure (°C/°F)

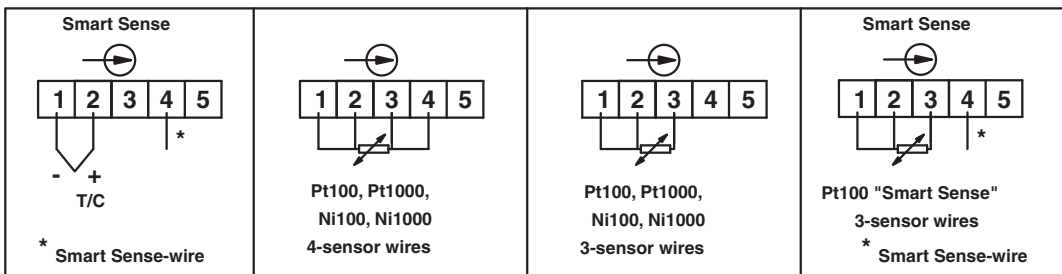
Program cable and software part number 5750-CABLE (Required for optional future changes)



Standard Dimensions



Wiring Diagram



Transmitters/Signal Conditioners

SERIES 5900

Watlow's SERIES 5900 temperature transmitters offer remarkably accurate temperature measurement and improved reliability which reduces downtime and costs.

The 5900 SERIES two-wire signal conditioner is constructed using surface mount technology and utilizes digital technology with non-volatile memory. It is designed to fit directly into universal aluminum or universal iron connection heads with a separate mounting kit.

The transmitter is programmed via a separate connection cable along with an easy-to-use Windows®-based software program. There is no need to use a separate thermocouple/RTD calibrator; nor are individual resistors required.

The SERIES 5900 is isolated to 1500V~(ac) and features full linearization between temperature sensor input signal and the 4-20 mA output signal. Isolated transmitters provide isolation from input to output thus eliminating ground loops and other related problems to signal integrity.

Additional options include insulation resistance monitoring between sensor and ground to prevent inaccurate measurements due to insulation breakdown.

Contact our customer service department to integrate this transmitter into a Watlow Style AR or AT thermocouple sensor or a Watlow Style RR or RT RTD sensor.

Features and Benefits

Full temperature to thermocouple signal linearization over the complete operation temperature span

- Ensures signal accuracy

Full isolation from input to output

- Eliminates ground loops for high data integrity



Fits directly into connection head

- Easy to install

Programmable

- Insures greater convenience for future changes and inventory efficiency

User selectable input types

- Thermocouple calibration Types B, C, E, J, K, N, R, S and T; RTD Pt100 and Pt1000 including four-wire

Optional insulation resistance monitoring

- Prevents inaccurate measurements due to insulation breakdown

CE marked

- Compliant to electromagnet interference

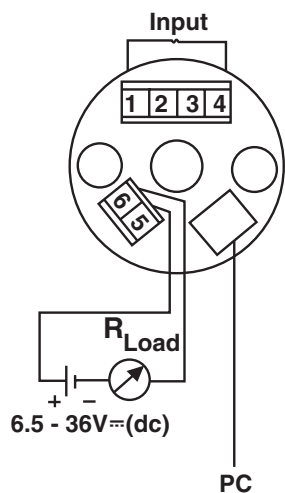
Specifications

- **Isolation:** 1500V~(ac) for one minute
- **Operating voltage:** 6.5 to 36 volts (the 5900 is protected against voltage surges and reverse polarity)

- **Sensor burn out protection:** A pulsed current is continuously checking all sensor leads for disconnect. The output will go upscale or downscale.
- **Minimum input signal:** RTDs: 10°C, thermocouples: 2mV
- **Operating temperature:** -40 to 85°C
- **Response time appr.:** 0.5 seconds
- **RFI sensitive:** 20 - 1000 MHZ, 10V/m typical <0.1 percent (of end value)
- **Permissible ripple of supply:** 4V p-p
- **Long term stability:** 0.1 percent per year
- **Calibration inaccuracy, thermocouples:** max of 20μ volts or 0.01 percent
- **Temperature effect:** cold junction compensation 0.02 percent C/C
- **Housing:** PC, ABS/VO connection polyamid / V2
- **Mounting:** DIN B

Transmitters/Signal Conditioners

SERIES 5900

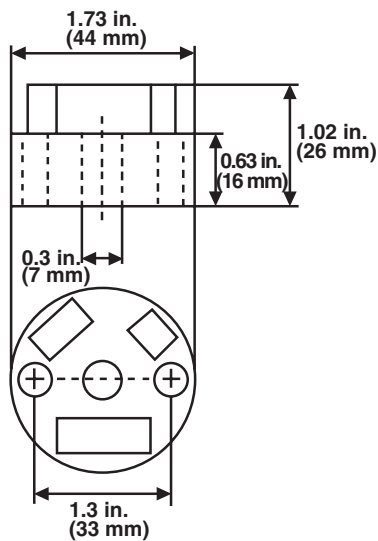


Ordering Information—To order, complete the part number on the right with the information below:

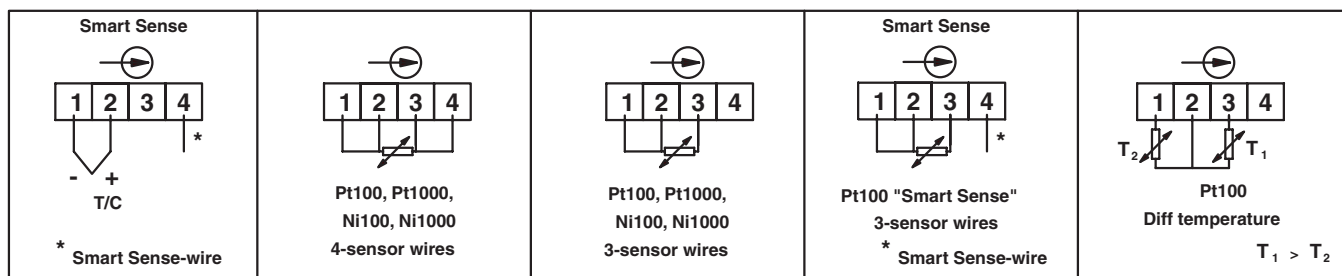
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1-4. SERIES															
5900 = Linearized T/C or RTD															
5901 = 1000Ω RTD															
5902 = Isolated, linearized with insulation resistance monitoring															
5. Sensor Type															
Standard plugs and jacks 200°C (400°F)															
B = Type B T/C															
C = Type C T/C															
E = Type E T/C															
J = Type J T/C															
K = Type K T/C															
N = Type N T/C															
R = Type R T/C															
S = Type S T/C															
T = Type T T/C															
O = 3-wire RTD															
1 = 2-wire RTD															
2 = 4-wire RTD															
6. Low Temperature Sign															
(Enter + or - sign)															
7-9. Low Temperature															
10. High Temperature Sign															
(Enter + or - sign)															
11-14. High Temperature															
15. Unit of Measure (°C/°F)															

Program cable and software part number 5900-CABLE

Standard Dimensions



Wiring Diagram

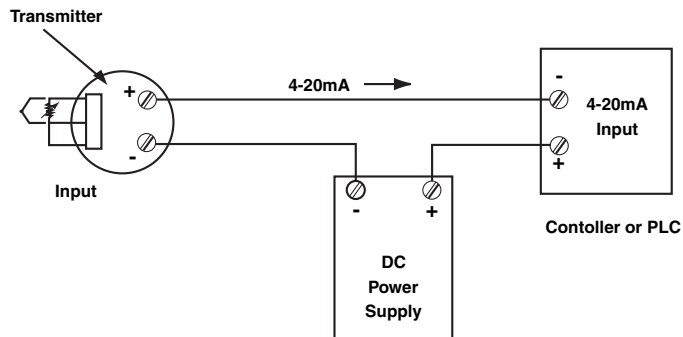


Transmitters/ Signal Conditioners

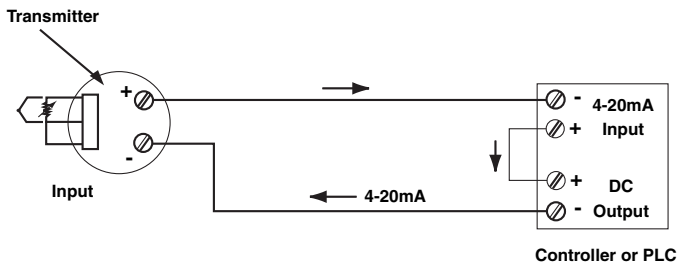
System Components

Typical Wiring Diagrams for Two-Wire Signal Conditioners

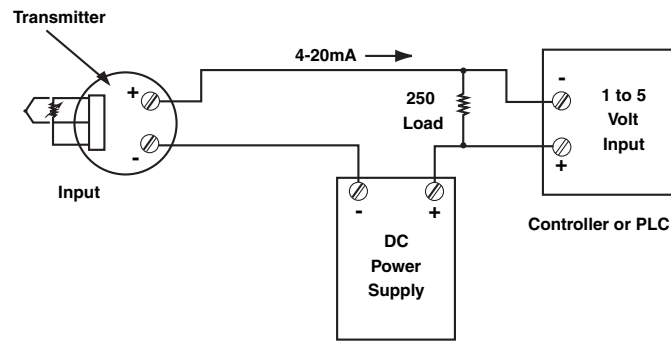
Controller or PLC with 4-20mA Input



Controller or PLC with Intergal Power Supply



Controller or PLC with 1 to 5 Volt Input



Transmitter and Connection Head Mounting Options

Signal Conditioner Model and Description	Connection Heads			
	Cast Aluminum	Cast Iron	Explosion XP SERIES	Poly Heads Pt SERIES
5750, Non-isolated, Non-linearized	Mount with kit 81501901	Does not fit	Mount with kit 81501301	Mount with kit 81501201
5900, 5901 and 5902, Isolated, Linearized	Mount with kit 81501901	Does not fit	Mount with kit 81501301	Mount with kit 81501201

Notes