

Twin-Temp Thermometer Product Guide

The WIKA Twin-Temp thermometer is available in a wide variety of different configurations. These options allow flexibility in adapting the Twin-Temp to existing bimetal thermometer process locations. When installed properly, the Twin-Temp will provide accurate remote and local temperature readings for your process. Included in this document are Twin-Temp configurations, installation guideline, and a replacement parts guide.



Configured with
aluminum head



Configured with
female plug



Solar Digital
Twin Temp



Configured with
weatherproof housing



Configured with
6" flying lead wires



Twin-Temp Thermometer Installation

WIKA Twin-Temps are made from a combination of two temperature sensors that are put to work in the same temperature probe. Each sensor reads temperature independently with a stated accuracy of +/- 1% of span. Sensors vary in design from a bi-metallic helix or thermister to thermocouples or RTDs. Units with an analog output (pointer dial) use a bi-metallic helix in conjunction with the user's choice of an RTD or thermocouple. Solar digital (TT80, TT82) units utilize a thermister with a user's choice of RTD or thermocouple.

GENERAL INSTALLATION: When removing the Twin-Temp from the packing box, handle it by the case assembly or the fitting. Do not handle the Twin-Temp by the stem. Bending or compromising the stem will cause misalignment of the internal parts resulting in permanent damage.

INSTALLATION OF TWIN-TEMP: Mount the Twin-Temp so that three or four inches of the free end of the stem are subject to the average temperature. Units configured with the RTD option need to be submerged into the process at least 4 inches because the RTD sits above the helix inside the thermometer stem. Do not expose the stem to temperatures in excess of the maximum dial reading.

INSTALLATION WITH THERMOWELL: First, install the thermowell into the process. You may prepare the thermometer for service by coating the last two to three inches of the stem with a heat-conducting compound that is suitable for the temperature range. Insert the thermometer stem into the thermowell and tighten with an open-ended wrench on the wrench flats of the threaded connection. Turn wrench flats until they are reasonably tight, then tighten further until scale is in desired position for reading. Do not over torque the unit into process location. Overtightening can cause damage to the Twin-Temp.

DO NOT TIGHTEN the Twin-Temp by its case. This will cause misalignment and internal damage. Install the thermometer so that the maximum case temperature is kept well below 200° F (93° C) at all times (solar digital units should be kept below 150° F (65° C)).

THERMOWELLS: Thermowells should be used in all pressurized or hazardous media applications. This is to protect the Twin-Temp from corrosion, physical damage, and premature failure. A thermowell also allows removal of the Twin-Temp without disturbing the process.

MAINTENANCE: Aside from an occasional verification or calibration, little maintenance is required. In some applications, materials may harden and build up on the thermometer stem. This can affect the thermometer's sensitivity. Simply remove the thermometer from the process, clean the stem, and reinstall following the above procedure.

MECHANICAL ADJUSTMENT: Twin-Temp thermometers are fitted with an external adjustment. Use a small open-ended wrench, screwdriver, or coin to turn the hexagon "RESET" on the back of the thermometer case. Turn the adjustment until pointer reads the proper temperature. This external adjustment only effects the local mechanical readings. There is no adjustment for the remote reading RTD or thermocouple.

The proper temperature reading must be derived from a calibration bath or dry block tester that is set at a known accurate temperature setting.

ELECTRICAL OPTIONS: These include thermocouples and RTD. Thermocouple types J,K,E, and T are available in ranges to 50°-550° F. Type K can be offered in ranges to 750° F.

ELECTRICAL PLUG CONNECTION: This includes options TJ,TK,TE, and TT. Twin-Temp units are supplied with a female, two-pin thermocouple connection. The user is required to match the proper male thermocouple plug connection with the connection on the unit in order to obtain a signal output. Twin-Temps equipped with the RA RTD option are supplied with a three-wire sub-miniature terminal block that is permanently mounted to the Twin-Temp. The end user must supply field wiring to connect to the terminal block.

FLYING LEAD OPTIONS: These include J1,K1,E1,T1, and R1 (Note that the number slot represents the length of lead wire as sold in 6" increments. For example, J3 would specify 18" lead wire). Flying lead units are required in order to properly configure enclosure heads, transmitters, or terminal blocks. For units configured with flying leads only, the end user should connect field wiring directly to the leads. At the end user's discretion, flying leads can be wired to a remote mounted terminal block or transmitter. However, this is not configurable and would have to be achieved via field wiring. For units with the terminal block or transmitter options inside a protective head enclosure, the end user should wire through the head. This can be achieved by running the wires through a protective conduit, through the protective head, and directly to the terminal block or transmitter. When adjusting the head of the Twin-Temp to the direction of conduit with wires, release the wires from transmitter or terminal block. Once in position, reattach the lead wires.

The terminal block provides a connection point for thermocouple or RTD and field wiring. The transmitter option takes the signal from the thermocouple or RTD and converts it to a clean 4-20 mA signal. (The transmitter is programmed to the temperature range of the unit during manufacturing process.) The end user can wire directly from the transmitter, through the protective head enclosure, and to the control room, data acquisition equipment, panel readout, etc.

TRANSMITTERS: Units configured with a transmitter (T or R) are manufactured with the transmitter installed in the enclosure head. Transmitters are factory

programmed to operate in a specific temperature range as configured in the part number. Transmitters will differ only with the customer's selection of thermocouple or RTD. Once installed, readings from the selected sensor are converted by the transmitter into mA output.

The end user should be able to wire directly to the transmitter and get clean 4-20 mA readings from the unit.

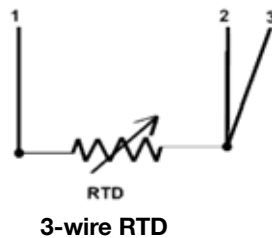
TERMINAL BLOCK: Units configured with a terminal block provide the user with wiring connections for field use. The unit is supplied with flying lead wires and an enclosure head that holds the terminal block. The end user should attach the RTD wires to the terminal block followed by connecting the appropriate RTD or T/C wire for a remote reading device.

T/Cs available from WIKA have following wire jacket colors:

- | | |
|-------------|-------------|
| J: + White | K: + Yellow |
| - Red | - Red |
| E: + Purple | T: + Blue |
| - Red | - Red |

RTD Wiring:

1. Red
2. Black or Green
3. Black or Green



When a Twin-Temp is configured with a transmitter, the customer will receive one of the transmitters shown below. Customer's should wire to their application from the +/-mA screws. The unit should arrive from the factory wired to the transmitter and the transmitter should be programmed to the correct temperature range. Note: If ordering the transmitter separately and retrofitting a flying lead model, the transmitter must be ordered and programmed specifically to the range on the dial.



**Terminal Block
Part # 2246228**



**Standard Aluminum Head
Part # 102-02**



**T12 Transmitter
Part # 463278 -
For use with thermocouples**



**T24 Transmitter
Part # 463278
For use with RTDs**

NOTE: Transmitters must be ordered to the correct temperature range.



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**TT.52 configured
with aluminum head**



**Twin-Temp configured
with 6" flying lead wires**

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- Certified technical specialists who conduct Best Practice Instrument Reviews with performance improvement reports
- An in-house engineering team for product customization and innovation
- Proven capabilities to connect with customer business processes for ordering and inventory management
- Web-based customer service features, including RFQs, literature request and competitor product cross reference

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