

8. Set the temperature bath to the maximum range of the TT820D transmitter (Ex: 200 °C = 20 mA)
9. With the temperature standard, verify the bath temperature and enter the value in the " Second Point " text box located in the " 2 Points Calibration " section of the " Programming " window.
10. Immerse the TT820D probe in the temperature bath and wait for the output stabilizes.
11. Click on the " Read " button associated to the " Second Point " calibration.
12. Click on the " Process " button, located in the " 2 Points Calibration " section of the " Programming " window, to update the calibration parameters in the TT820D.

7. Calibration with a thermocouple simulator

Both calibrations, one point calibration and advanced calibration, can be performed with a thermocouple simulator. In both cases, proper thermocouple wires should be used to connect the simulator to the TT820D transmitter.

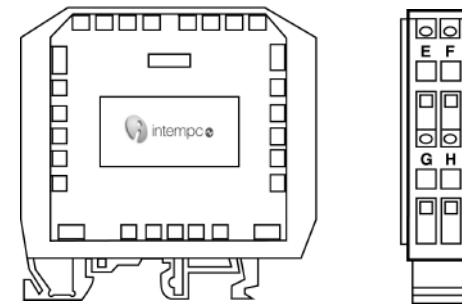
For the one point calibration, simply replace the probe (thermocouple) by the simulator and set the output of the simulator to mid-range of operation. Wait for output signal stabilizes and adjust, with the " UP " and " DW " push buttons, the output to 12.00 mA.

For the two points calibration, simply replace the probe (thermocouple) by the simulator and follow the same procedure as for the " Advanced Calibration ". Instead of using a temperature bath, adjust the output of the simulator to the minimum and maximum values of the range.

8. Specifications

Power Supply :	12-36V DC, polarity protected
Input :	Thermocouples type J, K, T, E
Output :	4-20 mA
Supply Voltage Effect :	± 0.02 % / V
Load Capability :	$R_{max.} = (V_{supply} - 12V) / 20mA$
Zero Drift :	± 0.1 % / °C
Span Drift :	± 0.1 % / °C
Ambient Operating Temperature :	-40 to +80 °C (-40 to +158 °F)
Warm-up time :	30 sec.
Accuracy :	
K, E, J, T :	± 0.5 % of FS
Cold Junction Compensation Error :	
K :	± 1 °C max. at -20 to 50 °C
J :	± 2 °C max. at -20 to 50 °C
T, E :	± 3 °C max. at -20 to 50 °C

INTEMPCO's TT820D Digital Thermocouple Transmitter



INSTRUCTION MANUAL

1. Description

The TT820D is a digital transmitter that converts the signal from a thermocouple to a linearized 4-20 mA output. The TT820D features a one point calibration adjustment with two push buttons as well as an advanced software programming via the RS-232 input. The advanced programming allows a two points calibration, a re-scaling, filtering options and identification of the transmitter.

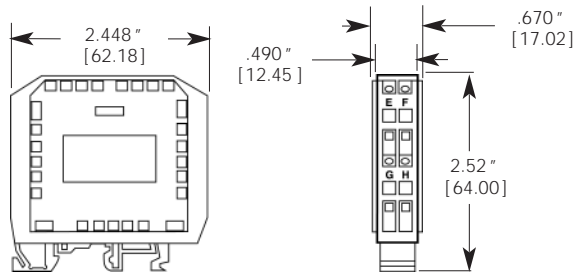
2. Note

Prior to unpacking and installation, please read the operating instructions and follow them carefully. These units are to be used, serviced, and repaired only by individuals who are familiar with the operating instructions and the applicable regulations for operational safety and accident prevention.

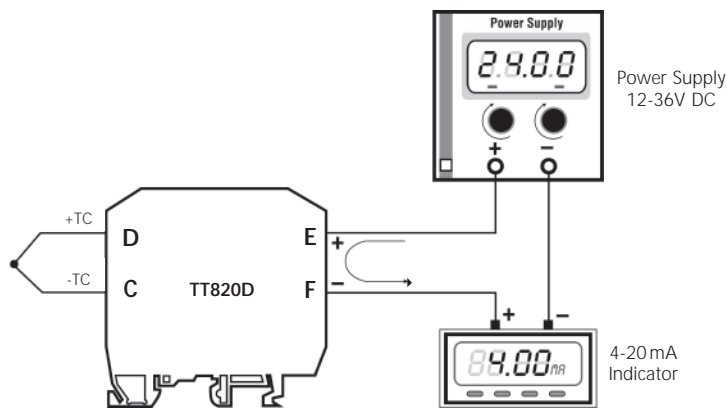
3. Control of Units

The units are calibrated and checked before shipment and shipped in good conditions. If you detect a visible defect on the unit, we recommend that you carefully check the packing material. In the event of a defect, please immediately notify the mail service/freight forwarder, as they are responsible for shipping damage.

4. Dimensions



5. Electrical Connections



The diagram above represents the connection method to provide the 4-20 mA with a current loop output. The connections should be made in the following order :

1. Connect the Thermocouple to the « C » and « D » terminals on the TT820D. Be sure to respect the polarity of the thermocouple (C to Neg. D To Pos.) otherwise the output will not correspond to the right reading.
2. Connect the positive side of the power supply (12-36 VDC) to the « E » terminal on the TT820D.
3. Connect the positive side of the current loop indicator to the « F » terminal on the TT820D.
4. Connect the negative side of the current loop indicator to the negative side of the power supply (12-36 VDC).

Note : i) It takes about 30 seconds, due to the filtering features, before the output signal stabilizes to its value.

ii) The indicator could be replaced by a controller, a data logger, etc. In any case, be sure to respect the maximum load allowed on the loop, given by :

$$R_{max.} = [(V_{supply} - 12V) / 20mA]$$

6. Calibration Instructions

The TT820D comes factory calibrated. If you need to re-calibrate the unit, two options are available. The first one is the " One Point Calibration " and the second one is the " Advanced Calibration " .

One Point Calibration

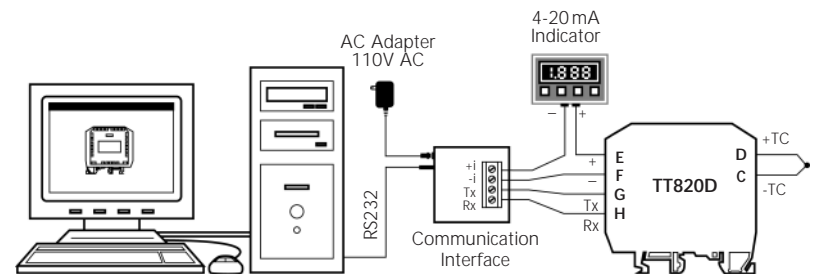
In some cases, a single point calibration is sufficient especially when a process is at a fixed set point.

1. With a temperature standard, verify the correct process temperature and compare it to the TT820D reading.
2. With the " UP " and " DW " push buttons, located on the front of the TT820D transmitter, adjust current output to the value read by the standard.

Advanced Calibration

To perform the " Advanced Calibration " you will need :

- The MIST TT820D Programming Kit. (ordered separately)
- A milliamp indicator or a loop-powered calibrator.
- A temperature bath.
- A standard reference temperature sensor.
- Test leads



1. Connect the TT820D as per the wiring diagram shown above.
2. Start the MIST T/C software.
3. Go in the Programming section of the software by clicking on the " Program " button.
4. Set the temperature bath to the minimum range of the TT820D transmitter (Ex.: 0°C = 4 mA)
5. With the temperature standard, verify the bath temperature and enter the value in the " First Point " text box located in the " 2 Points Calibration " section of the " Programming " window.
6. Immerse the TT820D probe in the temperature bath and wait for the output stabilizes.
7. Click on the " Read " button associated to the " First Point " calibration.