OPERATION MANUAL

Fr Block
Temperature Transmitter

Thank You for selecting **ABUSTEK** products! before operating this instrument, please read this manual carefully and fully understand its contents. In case of any problems, please contact our sales Deptt. or distributors from whom the instrument has been supplied. The manual contents is subject to change without prior notice.

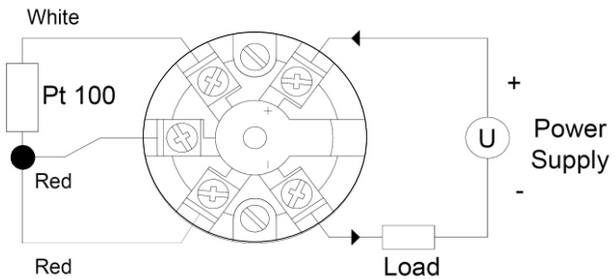
▣ Introduction

The head-mounted version of the Temperature Transmitter Models Fr Block for RTD Pt-100 sensor input and Thermocouple input, converts a standard temperature sensor input signal into a 4 to 20 mA DC current loop signal with excellent linearity and load driving capability.

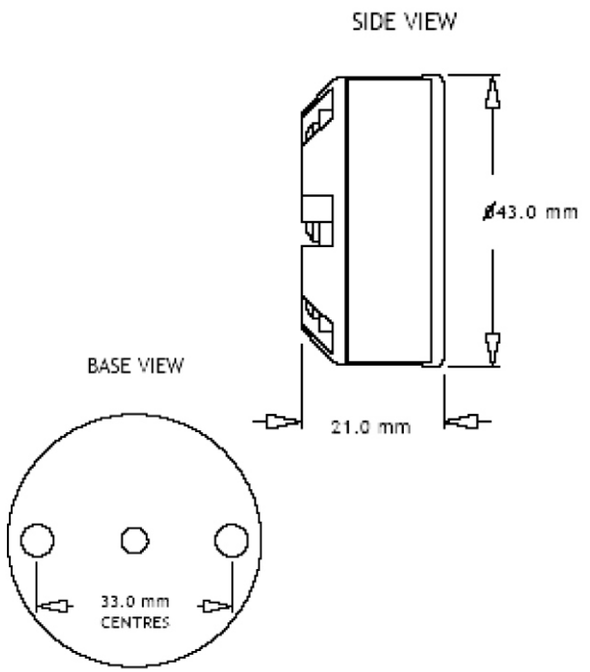
The Transmitter is located in the head of the temperature sensor and accepts either a three-wire RTD Pt-100 sensor or a Thermocouple sensor and converts it into a linear current loop signal of 4 to 20 mA DC, capable of driving a load of up to 600 Ohms. The instrument operates in two-wire configuration.

The Temperature Transmitters are available in highly compact executions and allow for calibration of output to the required measured temperature range by means of external settings for Zero and Span.

▣ Connections



▣ Dimensions



Fixing holes 2 x Ø5.5 mm

Centre hole Ø4.0 mm

▣ Features

- Solder jumpers for Span, Zero, Upscale / Downscale, 4~20 mA / 20~4 mA
- Multi-range : 8 SPAN ranges, 25 to 600 C° / 45 to 1080 F°
- 4 ZERO ranges, -100 to +70 °C / -148 to +158 °F
- Accurate : 0.1% temperature linear 4~20 mA output
- V loop drop allows 800 W load @ 24 V DC
- Upscale / downscale selectable sensor break detection
- 4~20 mA or 20~4 mA selection
- Pt50, Pt200, Pt500, Pt1000 on request.

▣ Specifications

Input Type: Pt100 (α=0.00385), 3-wire connection
Sensor Current: 0.3 mA
Other Input Types: Pt50, Pt200, Pt1000 on request
Sensor Break Detection, Selectable: Upscale ~ 25 mA
Downscale ~ 3 mA
On LED: Provided
Zero Selection: -100 to +70 ˚C (-148 to +158˚F) in
Zero, Fine Adjustments: ±10%
Span Selection: 25 to 650 ˚C (45 to 1202 ˚F),
Span, Fine Adjustment: ±10%
Current, Selectable: 4 ~ 20 mA, 20 ~ 4 mA
Linearity: Temperature Linear
Current Limit: ~ 25 mA
Permissible Load: 800Ω @ 24 VDC, 22 mA
Linearity & Calibration: ±0.1% of span
Temperature Effect on Accuracy: ±0.5% of span / 25 ˚C
±0.6% of span / 50 ˚F
Supply Voltage Effect: ±0.002% of span / V
Supply Voltage: 6.5 to 32 VDC
Material: Zinc alloy
Mounting: DIN B-head or larger
Connection, Single/ Stranded Wires: ≤ 2.5 mm2, AWG 14
Weight: 70 grams
Protection: IP 20
Ambient, Storage: -20˚C to +85˚C (-5˚F to +185˚F)
Ambient, Operation: -20˚C to +55˚C (-5˚F to +160˚F)
Relative Humidity: 0 ~ 95%

Installation

RECOMMENDATION

It is important to follow the recommendations below:

1.Signal wires should be installed in grounded conduits and away from power or contactor wires.

2.The instrument should have its own power supply wires, which should not be shared with electrical motors, coils, contactors, etc.

3.Installing RC filters is strongly recommended at contactor coils or any other inductors.

4.System failure should always be taken into account when designing a control panel to avoid irreversible damage to equipment or people.

5.The transmitter is working on the principle of 2-wire system. For more details refer connection diagrams.

INPUT SENSORS

SENSOR TYPE	RANGE	MINIMUM MEASUREMENT SPAN
Pt-50	- °C	25 °C
Pt-100	-250 ~ +650 °C	50 °C
Pt-1000	°C	25 °C
Other Specified	-	-

FrBlock Input Sensors

Operation

All input types and the 4-20mA output current is factory calibrated. However, a manual offset trim is implemented to provide fine adjustments to the signal in the field. The offset correction can also be accomplished by factory settings.

Note: when using a Pt100 simulator, make sure the FrBlock Pt100 excitation current (0.17 mA) s compatible with the simulator specification.

The input sensors are listed in table FrBlock Input Sensor, along with the maximum and minimum ranges accepted by each one.

Calibration

The operation can be realized through Simulator / Decade Box and calibrate the transmitter by zero and span, potentiometer through 2-wire system. Further check the current 4 ~ 20 mA output signal Zero and span potentiometer is available, on the top of instrument, for fine adjustment or calibration for the transmitters through micro screw driver.

The set parameters use the same calibration way as standard and the calibration. Same procedure can be repeated, at least thrice in order to calibrate the instrument precisely.

For better calibration procedure, you may use regulated and filtered power supply. To make 2-wire system you may refer to the connection diagram of the same manual.

Ordering Details

TYPE		DESCRIPTION
Product	Fr	Temperature Transmitter Fixed Range
Zero & Span	Z	With Zero & Span Adjustment
	N	Without Zero & Span Adjustment
Zero	?	Enter value corresponding to 4mA
Span	?	Enter value corresponding to 20mA
Unit	C	°C
	F	°F
Output Type	1	4 ~ 20 mA DC
	2	20 ~ 4 mA DC
Burnout	U	Upscale
	D	Downscale
Input Type	1	Pt-50
	2	Pt-100
	3	Pt-1000
	4	Other Specified

Example: Fr > Z > ? (0) > ? (200) > C > 1 > D > 1

Limited Warranty

The products are warranted to be free from defects in materials and workmanship for a period of one (1) year from the date of shipment, subject to the following terms and conditions: Without charge, they will repair, replace, or refund the purchase price at option products found to be defective in materials or workmanship within the warranty period; provided that:

- the product has not been subjected to abuse, neglect, accident, incorrect wiring not our own, improper installation or servicing, or use in violation of labels or instructions;
- the product has not been repaired or altered by anyone except us;
- the maximum ratings label and serial number or date code have not been removed, defaced, or otherwise changed;
- examination discloses, in the judgment of us, the defect in materials or workmanship developed under normal installation, use and service; and
- Our system is notified in advance of and the product is returned to us transportation prepaid before expiration of the warranty period.

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