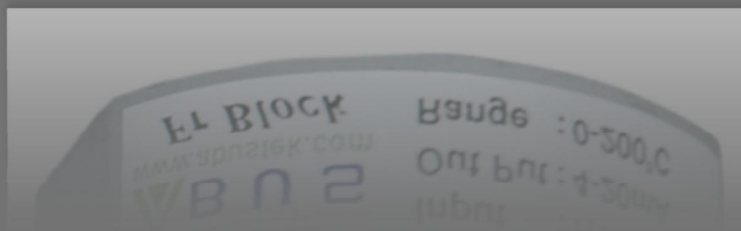
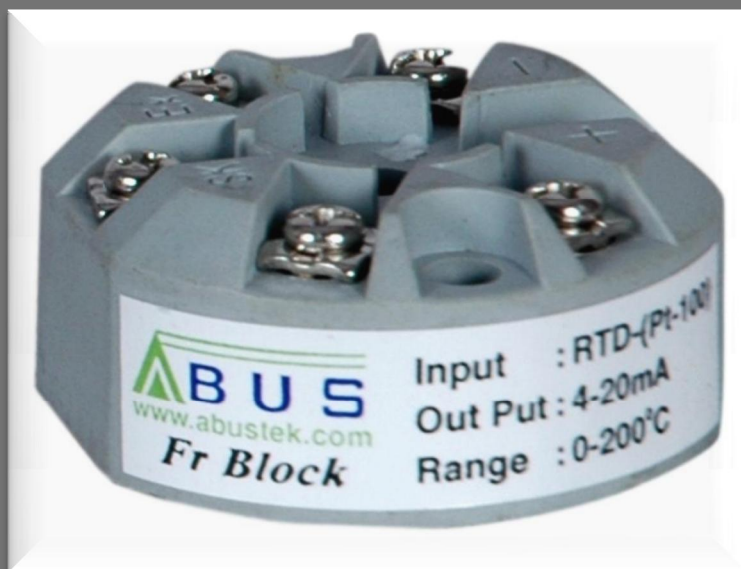


Fr Block

Temperature Transmitter
User Manual



WARNING

- ❖ This manual should be passed on to the end user.
- ❖ The contents of this manual are subject to change without prior notice.
- ❖ All rights reserved.
- ❖ ABUS gives no warranty of any kind with regard to this manual, including, but not limited to, fitness for a particular purpose.
- ❖ If any question arises or errors are found, or if any information is missing from this manual, please inform your supplier or inform at info@abustek.com.
- ❖ The specifications mentioned in this manual are limited to those for the standard type under the specified model number break-down and do not necessarily apply for customized instruments.
- ❖ Please note that changes in the specifications, construction, or component parts of the instrument may not immediately be reflected in this manual at the time of change.
- ❖ If the customer or any third party is harmed by the use of this product, ABUS assumes no responsibility for any such harm owing to any defects in the product which were not predictable, or for any indirect damages.

Although Warning hazards are related to personal injury, and Caution hazards are associated with equipment or property damage, it must be understood that operation of damaged equipment could, under certain operational conditions, result in degraded process system performance leading to personal injury or death. Therefore, comply fully with all Warning and Caution notices.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of Technical Communications Department, ABUS Technologies

HEALTH AND SAFETY

To ensure that our products are safe and without risk to health, the following points must be noted:

1. The relevant sections of these instructions must be read carefully before proceeding.
2. Warning labels on containers and packages must be observed.
3. Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given. Any deviation from these instructions will transfer the complete liability to the user.
4. Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.
5. Chemicals must be stored away from heat, protected from temperature extremes and powders kept dry. Normal safe handling procedures must be used.
6. When disposing of chemicals ensure that no two chemicals are mixed.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information..

CATALOGUE

Contents	Page No.
1. Introduction	4
2. Presentation	4
1. Features	4
2. Technical Parameters	5
3. Dimensions	6
4. Ordering Details	6
5. Connections	7
6. Installation	7
1. Recommendation	7
2. Input Sensors	7
7. Operation	8
8. Maintenance	8
Calibration of Instrument	8
9. Safety Precautions	9
10. Warranty	9

1. INTRODUCTION

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

The Transmitter is mounted on 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.

2. PRESENTATION

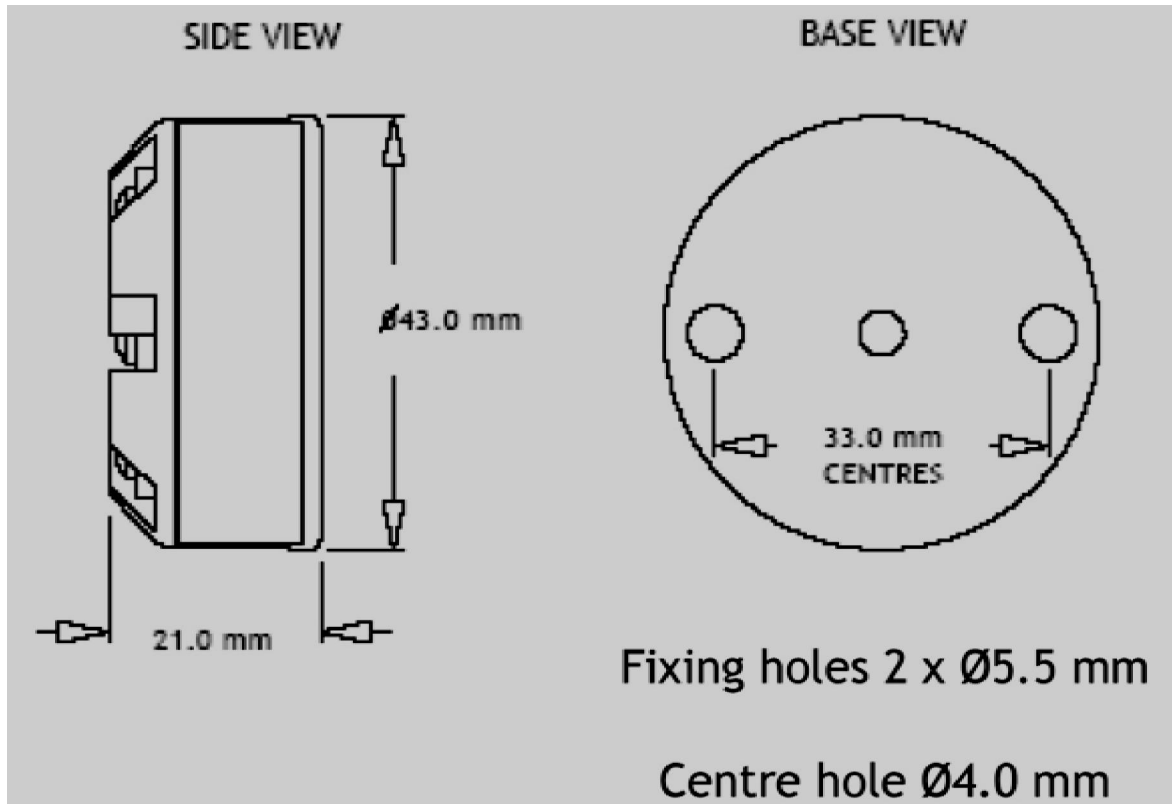
2.1 Features

1. Solder jumpers for
 - Span
 - Zero
 - Upscale / Downscale
 - 4~20 mA / 20~4 mA
2. Multi-range : 8 SPAN ranges, 25 to 600 C° / 45 to 1080 F°
3. 4 ZERO ranges, -100 to +70 °C / -148 to +158 °F
4. Accurate : 0.1% temperature linear 4~20 mA output
 - V loop drop allows 800 W load @ 24 V DC
5. Upscale / downscale selectable sensor break detection
6. 4~20 mA or 20~4 mA selection
7. Pt50, Pt200, Pt500, Pt1000 on request.

2.2 Technical Parameters

Input Type:	Pt100 ($\alpha=0.00385$), 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 mm ² , 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%

3. DIMENSIONS

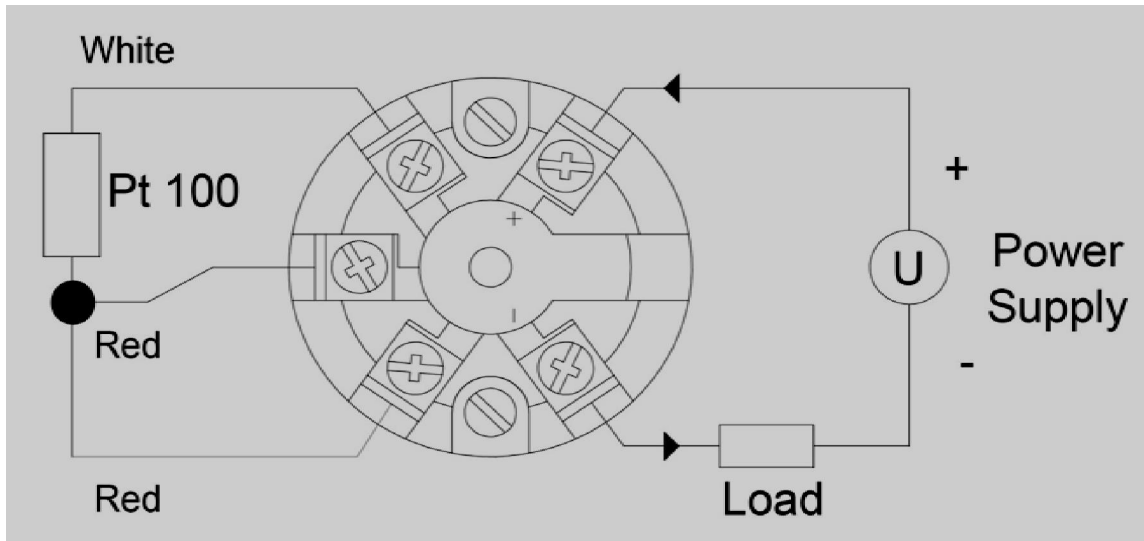


4. ORDERING DETAILS

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

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

5. CONNECTIONS



6. INSTALLATION

6.1 Recommendation

It is important to follow the recommendations below, to ensure satisfactory operation of instrument.

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.

6.2 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

7. 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) is 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.

8. MAINTENANCE

Calibration of Instruments

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.

9. SAFETY PRECAUTIONS

1. The unit should be powered for 15 minutes before use.
2. Use in ambient temperature of 0-60°C.
3. Avoid vibrations, shock, excessive dust, corrosive chemical materials or gaseous environment.
4. Input wire should not be too long. If measured signal have to be far away from the unit, please use 2-core shielded cable.
5. Use this instrument in the scope of its specifications, otherwise fire or malfunctions may result.
6. Contact of the instrument, with organic solvents or oils should be avoided.
7. Do not turn on the power supply until all of the wiring is completed. Otherwise electrical shock, fire or malfunction may result.
8. Do not disassemble, repair or modify the instrument.
9. All connections should be tightened properly.
10. Power supply should be constant, should not be fluctuating.

10. WARRANTY

ABUS provides the original purchaser of this instrument a one (1) year warranty against defects in material and workmanship under the following terms:

- The one year warranty begins on the day of shipment as stated on the sales bill.
- During the warranty period all costs of material and labor will be free of charge provided that the instrument does not show any evidence of misuse.
- For maintenance, return the instrument with a copy of the sales bill to our factory.
- All transportation and insurance costs should be covered by the owner of the equipment.
- Should any sign of electrical or mechanical shock, abuse, bad handling or misuse be evident the warranty voids and maintenance costs will be charged.

ABUS TECHNOLOGIES INC.

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