

# RT381 Rotary Temperature Transmitter (853-100)

The RT381 is a one-channel temperature measurement system designed as an upgrade for Fuji Electric FTM 1AA02 transmitters to monitor temperature on heated godet roll shells on filament spinning machines. The system features generous 8 mm clearance between the rotating and stationary parts which eliminates damage due to impact and rubbing. TempTrak® data communications technology is unaffected by dust or debris. Digital circuitry in the rotating transmitter and the stationary receiver are immune to electrical noise and drift. Error detection modes protect heater from damage and expedite troubleshooting in the event of a sensor failure.



## Installation

1. Remove the existing FTM rotary and stationary assemblies.
2. Remove the cover from the FTM stationary assembly. Label (e.g. "FE", "FD") then disconnect the power and data signal wires from the top circuit board. Remove the wires from the assembly and discard the FTM unit.
3. Remove the housing cover of the RT381S.
4. Prepare the ends of the power and data wires, and then secure them in the corresponding screw terminals of the green connector on the RT381S. See the Stator Power and Output Connections drawing below.
5. Route the cables across the top of the RT381S and over the mounting tabs at the edge of the board. Secure the cables with wire ties. Additional cable anchors are located at the base of the housing.
6. Slide the RT381R rotary assembly on to the motor shaft with steel base toward motor. Tighten the compression screws (alternating from one screw to the other) to lock assembly onto shaft.

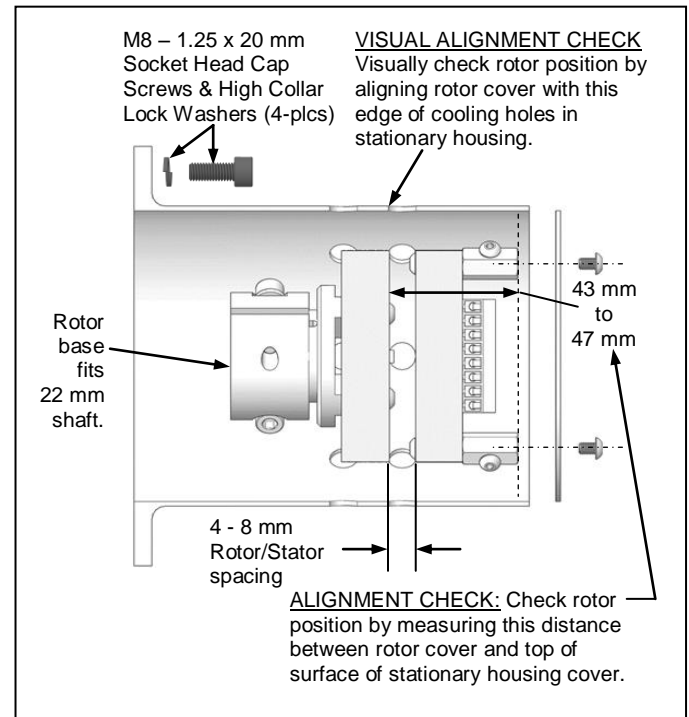
Note: The RT381R requires proper positioning on the shaft; see Step 10 below for details.

7. Secure RTD leads to terminals at top of rotary assembly with the 3 mm socket head cap screws provided.
8. **IMPORTANT!** Pull excess RTD leads towards the front of the godet roll to be stored under the godet cover. This prevents RTD wires from rubbing against the RT381S stationary housing during rotation.
9. Position RT381S stationary housing over RT381R rotary assembly with cables leading downward and secure it to the motor with screws provided.
10. **IMPORTANT!** There should be approximately a 8 mm space between the rotary and stationary assemblies. To verify correct axial spacing refer to the Installation Diagram and use either of the following methods:

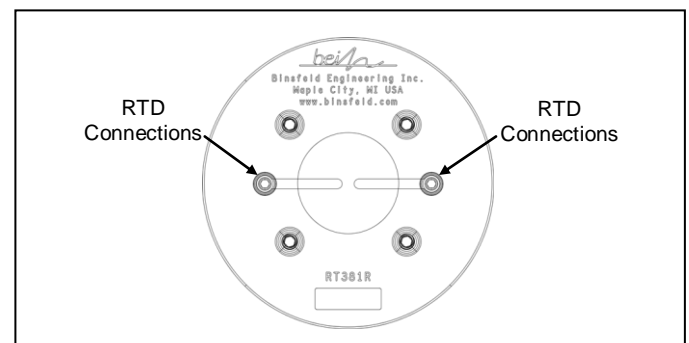
Visual Alignment: sight the outer face of the rotor through the side ventilation holes in the stator.

Measured Alignment: insert a steel scale through the ventilation slots in the cover of the stator and measure 47 mm  $\pm$  3 mm from the stator cover to the outer face of the rotor.

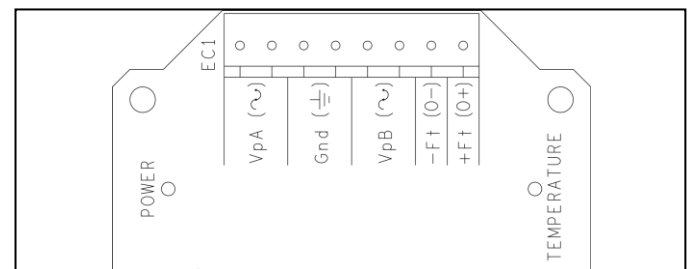
11. Re-connect the power and data signal wires to the machine control system.



Installation Diagram



Rotor RTD Connections



Stator Power and Output Connections

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## Troubleshooting

Status Indicators:

Light Status	System Status
All Lights on Solid	Proper Operation
<u>Lights Off or Flickering:</u>	<u>An error condition is occurring:</u>
"Power" Light	Check the power supply input voltage.
"Temperature" Light	Check the rotor connections, and rotor to stator spacing.

Output Signal:

Frequency Output	Displayed Output	Fault Description	Troubleshooting Suggestions
7146.6 Hz.	310°C	The RTD is reading > 310°C.	Check RTD and its connections.
7184.0 Hz.	312°C	The RTD is reading < -20°C.	Check RTD and its connections.
7333.2 Hz.	320°C	There is low rotor power occurring.	Check the rotor to stator spacing.
7370.3 Hz.	322°C	There is high rotor power occurring.	Check the rotor to stator spacing.

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## Specifications

Rotor:

Number of Sensors: 1  
Input Sensor type: JPt200 RTD 200  $\Omega$  at 0°C, Alpha = 0.003916 (JIS C1604)  
Temperature Range: -10 to 300°C  
Sensor Connections: 3 mm SHCS for ring lugs  
Speed: 10,000 RPM

Stator:

Connector Type: Wire clamp screw terminal block for 14 to 26 AWG wire  
Temperature Signal Output: 551 to 6959 Hz for -10 to 300°C RTD Temperature  
Power Input: 16 to 28 VAC or 22 to 40 VDC, 200 mA (max), 100 mA (nom)

General:

Accuracy:  $\pm 0.5^\circ\text{C}$  max error (corresponds to  $\pm 10.34$  Hz on frequency output).  
(Over the operating temperature and RTD range and product warranty period)  
Operating Temperature: Rotary Assembly: 0 to 85°C, non-condensing  
Stationary Assembly: 0 to 85°C, non-condensing

This document is subject to change without prior notification.

## Warranty

Binsfeld Engineering Inc. warrants this product to be free from defective materials and workmanship for a period of five years from the date of delivery to the original purchaser and that this product will conform to specifications and standards published by Binsfeld Engineering Inc. Upon evaluation by Binsfeld Engineering Inc., any product found to be defective will be replaced or repaired at the sole discretion of Binsfeld Engineering Inc. Our warranty is limited to the foregoing. Binsfeld Engineering Inc. disclaims any warranty of merchantability or fitness for intended purpose.

## Revision History

<u>Rev</u>	<u>Date</u>	<u>Init</u>	<u>Changes[Reason]</u>
1	04/17	CB	Created from scratch.
A	11/17	CB	Completed for first shipment of parts.

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(One sheet, double-sided)