

RT301 Rotary Temperature Transmitter (850-390)

The RT301 rotary temperature transmitter is a digital system designed to accurately transmit temperature data from an RTD sensor embedded in the heated godet roll shell. The system consists of three components: The RT301R rotary assembly, the RT300S stationary assembly, and the RT301C current controller interface assembly.



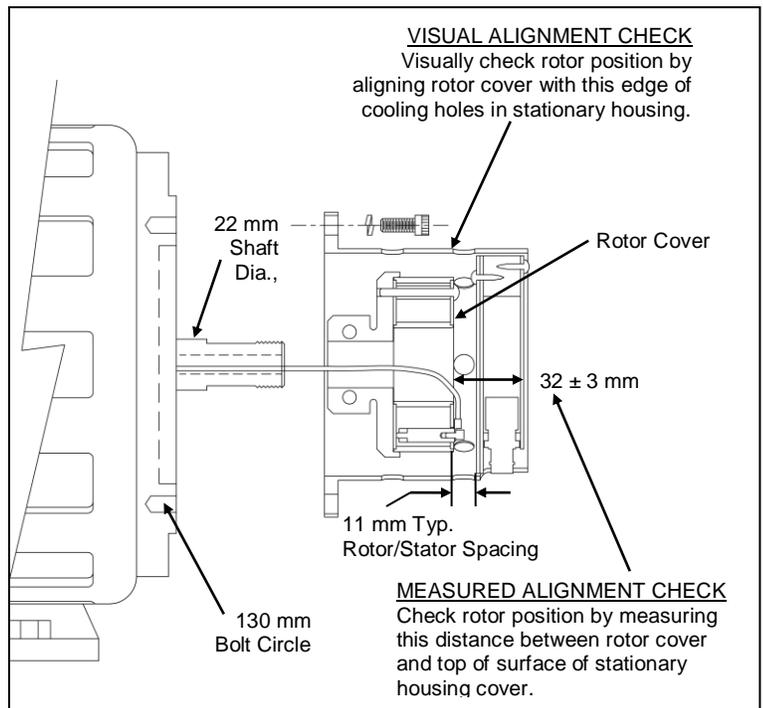
Installation

- Slide the RT301R rotary assembly onto shaft with steel base toward motor until shaft end hits alignment stops. Tighten the (2) M6 compression screws (alternating from one screw to the other) to lock assembly onto shaft.
 Note: The RT301R requires proper positioning on the shaft, see Step 5 below for details.
- Review the "Rotor/RTD Connections Diagram" for wiring the RTD connections onto the RT301R rotary assembly. Secure leads with the M3 socket head cap screws provided.
- IMPORTANT!** Pull excess RTD leads towards the front of the godet roll to be stored under the godet cover. This prevents lead wires from rubbing against inside cover of RT300S stationary housing during rotation.
- Carefully position the RT300S stationary housing over shaft-mounted RT301R transmitter and mount it using customer supplied hardware.
- IMPORTANT!** Refer to the Installation Diagram to verify correct axial spacing between rotor and stator using either of the following methods:

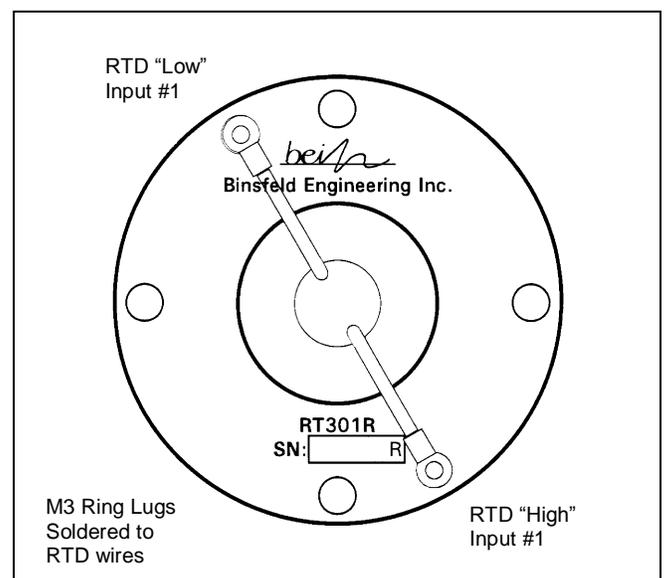
Visual Alignment: sight the outer face of the rotor through the side ventilation holes in the stator.

Measured Alignment: insert a steel scale through the ventilation slots in the cover of the stator and measure $32 \pm 3\text{mm}$ from the stator (RT300S) cover to the outer face of the rotor.

- DIN rail (35mm) mount the RT301C current controller interface at a convenient location. **CAUTION:** To promote airflow and prevent overheating, the RT301C must have at least 25mm clearance above and below the enclosure.
- Connect one end of the provided coax cable to the BNC plug on the RT300S stationary housing and the other end to the BNC plug on the RT301C.
- Connect a power source to the proper terminals indicated on the RT301C. Acceptable power is 23-30VDC or 18-23VAC. **CAUTION:** Power source must be isolated from current output.
- Connect the 4-20mA current loop (from the customer's process controller) to the current source terminals indicated on the RT301C.
- Allow a 30 second start up.



Installation Diagram



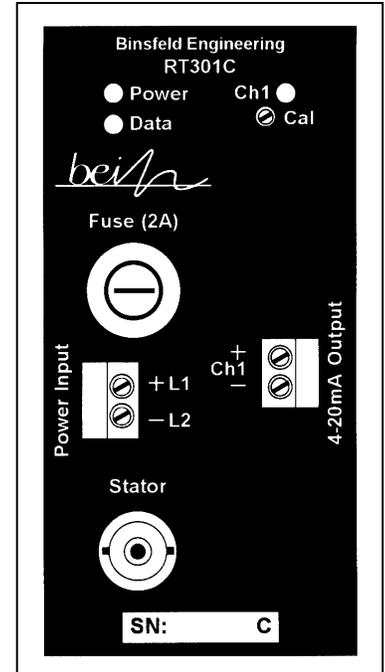
Rotor/RTD Connections Diagram

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Troubleshooting

In normal operating mode the Power status light the Data status light and the CH status light are all on solid. In error mode, one or more of the LED's on the RT301C Controller Interface will flash and a high temperature signal (approximately 24 mA) will be output. Refer to the table below when troubleshooting an error mode event.

| <u>Power Status</u> | <u>Condition</u> | <u>Corrective Action</u> |
|---|--|---|
| On solid | Stator and rotary power in spec | --- |
| Flash fast (5Hz) | Rotary power out of spec | Check rotor/stator spacing, and coaxial connections |
| Flash slow (2Hz) | Stationary power out of spec | Check power source |
| Off | System not powered | Check power source, and power connections |
| 10 sec on/1 sec off (Data light off, RTD light(s) blinking) | Insufficient rotary power or data not received (Rotor Reset mode) | Check rotor/stator spacing, and coaxial connections |
| <u>Data Status</u> | <u>Condition</u> | <u>Corrective Action</u> |
| On solid | Digital transmission is error-free | --- |
| Flickering | Intermittent transmission errors | Check rotor/stator spacing, coax connections |
| Off | Data not received | Check rotor/stator spacing, and coaxial connections |
| <u>Ch 1 Status</u> | <u>Condition</u> | <u>Corrective Action</u> |
| On solid | No errors detected | --- |
| Flash fast (5Hz) | Rotary side error: RTD out of range (including open or shorted) | Check RTD, connections |
| Flash slow (2Hz) | Open circuit in 4-20mA loop | Check connections and continuity of current loop |



Status Indicators & I/O Diagram

If the status lights do not agree with conditions listed above, remove power to the RT301C for 5 seconds, and then restore power (to reset the digital circuitry). Go to <http://www.binsfeld.com/temptrak/rt300/> for more trouble shooting aids.

Specifications

| | | |
|-----------------------|---------------------------|--|
| Rotor: | Number of sensors | 1 |
| | Sensor connection: | M3-0.5 screw terminals with socket-head cap screws |
| | Input sensor type: | PT100 RTD (100 Ω at 0° C, α =.00385, two wire) |
| | Sensor range: | 0 – 300° C |
| | Speed: | 10,000 RPM |
| Stator: | Connector: | Coaxial interconnect (BNC) |
| Controller Interface: | Output connection: | Quick connect screw terminal block. |
| | Output signal: | 4-20 mA (Linear with 0 - 300° C) |
| | Power input: | 22-35 VDC or 17-27 VAC; 2A max, 1A nominal |
| | Max load resistance | 400 Ω |
| General: | Accuracy (typical error): | \pm 0.30% span over operating temperature range |
| | Operating temperature: | 0 – 100° C |
| | Humidity: | 0 – 90% RH, 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.