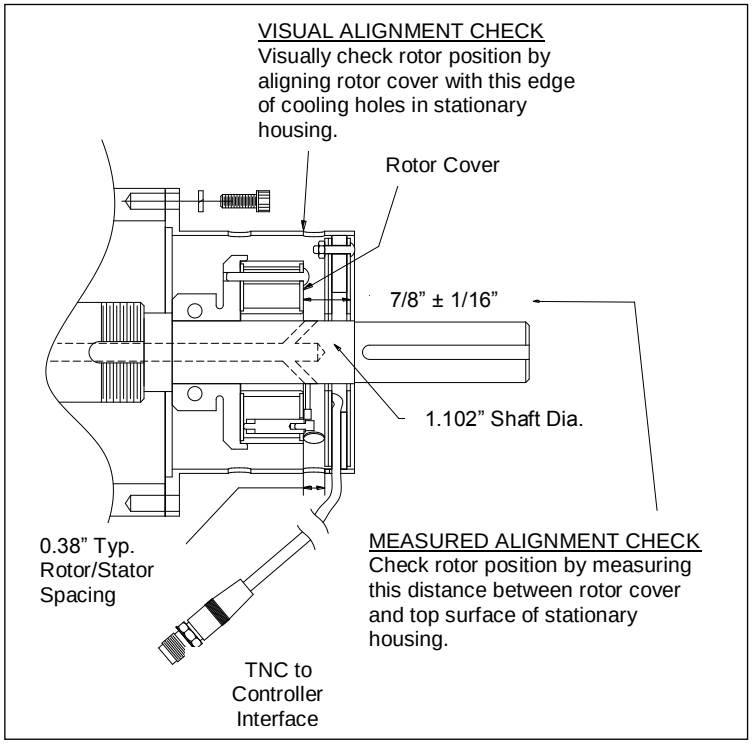
# RT303 Rotary Temperature Transmitter (850-352)

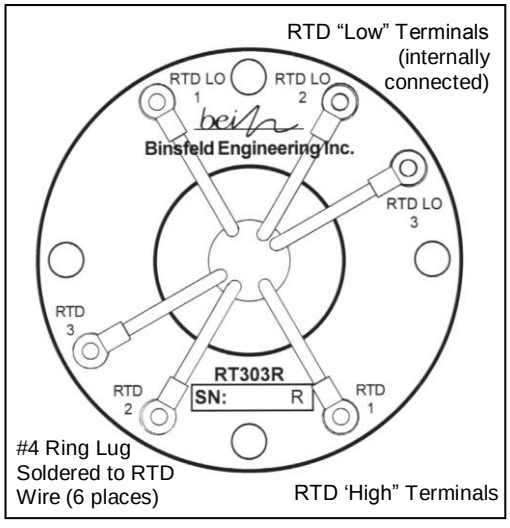
The RT303 rotary temperature transmitter is a digital system designed to accurately transmit temperature data from RTD sensors embedded in the heated godet roll shell. The system consists of three components: The RT303R rotary assembly, the RT300S stationary assembly and the RT303C controller interface assembly.

## Installation

1. Slide the RT303R rotary assembly onto shaft with steel base toward motor. Secure the base to the shaft by tightening the (2) ¼-20 compression screws (alternating from one screw to the other).
   Note: The RT303R requires proper positioning on the shaft; see Installation Diagram.
2. Review the RTD-Rotor Wiring Diagram for wiring the RTD connections onto the RT303R rotary assembly. Secure leads with the 4-40 x 1/4" socket head cap screws provided.
3. **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 the RT300S stationary board during rotation.
4. Carefully position the RT300S stationary housing over shaft-mounted RT303R transmitter and mount it to the motor housing.
5. **IMPORTANT!** Refer to the Installation Diagram to verify the correct axial spacing between rotor and stator using either of the following methods:
   Visual Alignment Check: Sight the outer face of the rotor through the side of the ventilation holes in the stator.
   Measured Alignment Check: Insert a steel scale through the ventilation slots in the cover of the stator and measure 1¼" ± 1/8" from the stator cover to the outer face of the rotor.
6. DIN rail (35mm) mount the RT303C controller interface at a convenient location. CAUTION: To promote airflow and prevent overheating, the RT303C must have at least 1" clearance above and below the enclosure.
7. Connect the TNC end of the provided coax cable to the TNC plug on the RT300S stationary housing and the BNC end to the BNC plug on the RT303C.
8. Connect a power source to the proper terminals indicated on the RT303C. Acceptable power is 22-35VDC or 17-27VAC**. CAUTION: Power source must be isolated from current output.**
9. Connect the 4-20 mA current loop (from the customer's process controller) to the current source terminals indicated on the RT303C.
10. Allow a 30 second start up.




Installation Diagram




Rotor-RTD Wiring Diagram

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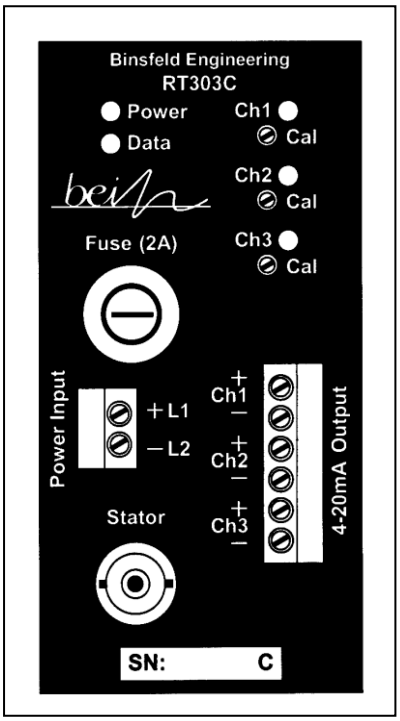
## Troubleshooting

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 RT303C 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.

| **Power Status** | **Condition** | **Corrective Action** |
|---|---|---|
| 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 |

| **Data Status** | **Condition** | **Corrective Action** |
|---|---|---|
| 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 |

| **Ch Status** | **Condition** | **Corrective Action** |
|---|---|---|
| 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 continuity of current loop | Check connections and |




Status Indicators & I/O Diagram

If the status lights do not agree with conditions listed above, remove power to the RT303C 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 | 1-3 |
| | Sensor connection: | #4-40 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 cable (RG58C/U, TNC single ended) |
| 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, 0.5A nominal |
| | Max load resistance | 400 Ω |
| General: | Accuracy (typical error): | ±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.