# RT301 Rotary Temperature Transmitter (850-388)

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.  (RTD probe sold separately.)
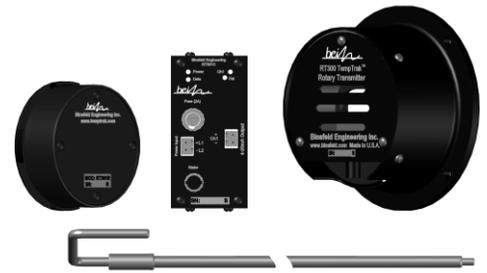
## Installation

1.  Remove existing RTD sensor from roll and install the Binsfeld RTD sensor.  The end of the RTD tube with the connector should protrude beyond the end of the motor shaft.  Refer to the Installation Diagram.

2.  Guide the RTD tube through the center hole in the Binsfeld rotating base.  The base mounts to the existing back plate on the motor shaft using (4) M4-0.7 x 12mm long socket head cap screws provided by Binsfeld.  It is recommended that a thread locking adhesive such as Loctite 222MS be used to secure these screws.

3.  Slide the Binsfeld RT301R transmitter connector onto the mating connector on the RTD sensor.  Mount the transmitter module to the rotating base with (4) 6-32 x 1.375-inch long socket head cap screws using 5/64-inch hex wrench provided.  It is recommended that a thread locking adhesive such as Loctite 222MS be used to secure these screws.

4.  Carefully position the RT300S stationary housing over the shaft-mounted RT301R transmitter and secure it to the motor housing using (4) M6-1 x 20mm long socket head cap screws and lock washers provided.
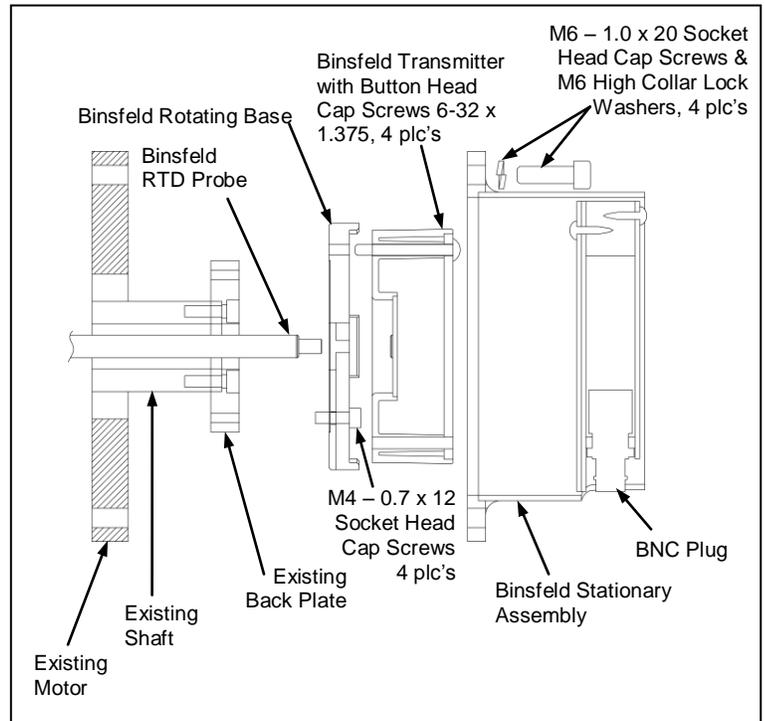


Installation Diagram

5.  Mount the RT301C controller interface (shown on page 2) to a 35mm DIN rail at a convenient location in an area or control cabinet protected from spin finish.  **CAUTION: To promote airflow and prevent overheating, the RT301C must have at least 25mm clearance above and below the enclosure.**

6.  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.

7.  Connect a power source to the proper terminals indicated on the RT301C.  Acceptable power is 22-35VDC or 17-27VAC.  **CAUTION: Power source must be isolated from current output.**

8.  Connect the 4-20mA output terminals on the RT301C to the godet heater process controller.

9.  Allow a 30 second start up.

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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 lights on the RT301C Controller Interface will flash <u>and a high temperature signal (approximately 24 mA) will be output</u>.  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, and coaxial connections |
| Off | Data not received | Check rotor/stator spacing, and coaxial connections |

| Ch 1 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 | Check connections and continuity of current loop |
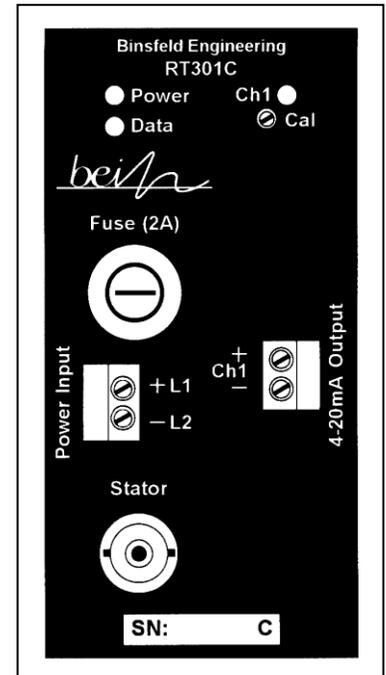
RT301C Controller Interface

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

## Specifications

| | | |
|---|---|---|
| Rotor: | Number of sensors | 1 |
| | Sensor connection: | Lemo Triaxial Connector |
| | Input sensor type: | PT100 RTD (100 $\Omega$ at 0° C, $\alpha$=.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, 0.5 A nominal |
| | Max load resistance | 400 $\Omega$ |
| 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