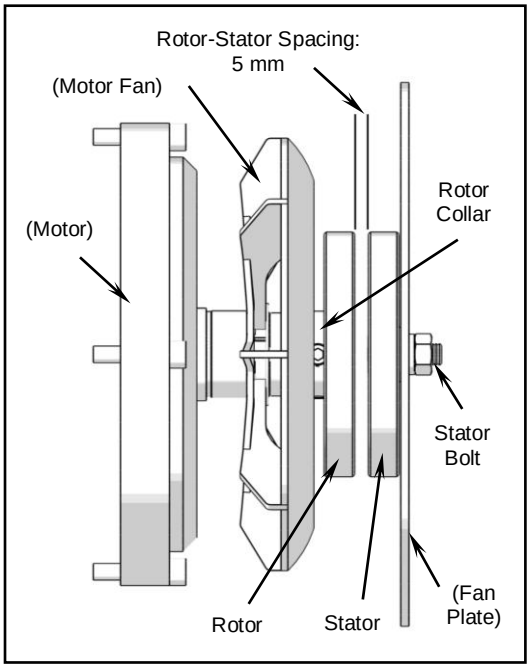
RT351 Rotary Temperature Transmitter (852-001)

The RT351 is a single-channel temperature measurement system designed to monitor temperature on heated godet roll shells. The system features Dienes-compatible output signals for temperature and speed as well as a linear 4-20 mA output for use with standard process controllers. Error detection modes protect the heater from damage and expedite troubleshooting in the event of a sensor or other failure. Digital circuitry from sensor input to signal output and generous clearance between the rotating and stationary components make the RT351 a robust and reliable element in the temperature feedback loop.

Installation

1. Remove the existing transmitter system from the motor.
2. Insert the sheathed RTD leads from the RT351 rotor into the motor shaft until they exit the shaft at the front of the godet.
3. Place the rotor with mounting collar over the end of the shaft until it stops against the shaft then tighten the collar screws to secure the rotor.
4. Connect the ring terminals from the rotor to the RTD terminals at the front of the godet.
5. Install the RT351 stator bolt through the fan plate. Orient the stator for convenient routing of the output signal cables then secure the stator with the lock-washer and nut provided.
6. After reinstalling the fan plate on the motor, verify the rotor-stator spacing (5mm nominal) as shown.
7. Refer to the Wiring Code below for connecting the RT351 output signal cables to the heater control system.



Installation Diagram

Wiring Code

Two cables exit the RT351 stationary unit each containing three wires:

Cable 1: Standard Current Output (4 – 20 mA)
Yellow – Supply voltage (+Vi) (+15VDC nominal)
Gray – Current output high (+I)
Blue – Current output low (-I); Also Supply Voltage low (Common)

Cable 2: Frequency and Speed Output (Dienes)
Red – Supply voltage (+Vf) (+12VDC nominal)
White – Speed output
Blue – Common

Note that both the frequency and the current output signals can be used individually or simultaneously but each must be powered accordingly.

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Troubleshooting

Current Output (mA)	Displayed Temperature	Frequency Output (Hz)	Displayed Temperature	Error Description
22.00	337.5°C	800	342.2°C	RTD Low: RTD is measuring less than 100 ohms (0°C for PT100) or is shorted.
22.25	342.2°C	825	363.6°C	RTD High: RTD is measuring more than 221 ohms (325°C for PT100) or is disconnected.
23.25	360.9°C	925	451.3°C	Rotor Data Error: Data from the Rotor is in error or non-existent or rotor circuit fault.
23.50	365.6°C	n/a	n/a	Low Stator Power: Power supply voltage to stator is too low for reliable operation. Current supply (+Vi) below 13V
23.75	370.3°C	n/a	n/a	High Stator Power: Power supply voltage to stator is too high. Current supply (+Vi) above 26V
24.00	375.0°C	n/a	n/a	Stator Circuit Fault: After initialization sequence, indicates fatal stator error.

Specifications

Rotor:	Number of sensors:	1
	Input sensor type:	PT100 RTD (100 ohm at 0°C, alpha = .00385)
	Sensor range:	0 – 300°C
	Speed:	10,000 RPM
Stator:	Output connection:	8 ft (3.8m) unterminated cable, 6-conductor
	Output signals:	Discrete 4 – 20 mA current source Frequency signal (Dienes curve: 362.48 – 749.86 Hz) Speed pulse (2 pulses per revolution)
	Power Input:	For frequency output (Dienes compatible) (+Vf): 11 – 15 VDC For current output (standard 4 – 20 mA) (+Vi): 14 – 25 VDC
General:	Accuracy (max error)	Current: ±0.20% full scale, 25 – 85°C ambient temperature Frequency: ±0.40% full scale, 25 – 85°C ambient temperature
	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 two 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.