Trouble Shooting Guide

Trouble Shooting Humidity Sensor and Control for 3940

	3940
	Revision Date: May 29, 2014

Theory of Operation: The 3940 uses a Vaisala humidity sensor (290162). This sensor measures the amount of moisture in the air and sends a 0-5VDC signal. The Watlow control (231186) accepts the 0-5VDC signal (Input 1) and, through software, converts the DC signal to %RH. The Watlow then determines whether the %RH is above or below the set point as well as how quickly the %RH is changing. It then uses this information to turn the steam generator heaters on and off through Output 1 on the control.

Modes of Failure: There are several possible modes of failure for this circuit, the following are the most common:
1. Watlow upper display shows 0.
2. Watlow upper display shows E1 4. (A/D Overflow Error)
3. Watlow upper display shows E1 3. (Sensor Overrange Error)
4. Watlow upper display shows E1 1. (A/D Underflow Error)
5. Watlow upper display shows E1 2. (Sensor Underrange Error)

Causes for Failure: These are explanations of the modes of failure:
1. No signal is being sent to the control.
2. Signal sent to the control is greater than 5VDC.
3. Same as 2.
4. Signal sent is less than 0VDC. (possibly negative voltage)
5. Same as 4.

Method for Troubleshooting:
1. Set voltmeter to VDC. (If not auto ranging meter, set range to approx. 20VDC)
2. Connect + (red) lead of meter to terminal 9 of Watlow humidity control, connect (black) lead to terminal 10 of humidity control.
3. Reading should be between .5 and 5VDC. If reading is 0 or a very small value, less than .5VDC, the sensor is not getting signal to the control. If reading is negative, check that meter leads are correct and verify that red wire (14A) is connected to terminal 9 and black wire (15) is connected to terminal 10.
4. Locate 12VDC power supply (400051). It is mounted on panel that hinges down (probably facing the floor at this time).
5. Leave voltmeter settings the same as in Step 1. Connect + (red) lead of meter to +OUT terminal (has green wire), connect (black) lead to COM Terminal (has black wire).
6. Reading should be 12VDC (+/- 2 VDC). If there is no voltage, verify power to power supply (black and white wires on transformer on power supply, 115VAC).
7. If there is voltage from power supply, but no signal (0-5VDC) to control, it is either a bad sensor, a bad connection to the control, or in the sensor to harness connection.

Wiring Schematic: