

Technical Data Sheet

RH System Trouble Shooting (Option)

3110 & 310
Revision Date: May 15, 2014

RH SYSTEM TROUBLE SHOOTING (OPTION)

Humidity Readout (190643)

The 3110 Series incubators can be equipped with a humidity sensor to monitor the relative humidity (RH) inside the chamber. The sensor is mounted to the top air duct and provides a signal that is displayed in 1% increments on the control panel. The humidity readout can be displayed continuously or toggles with the temperature readout. In addition, a low alarm limit can be set on the humidity readout, which will detect when the humidity pan runs dry.

a. Factors Affecting the Humidity Level in the Chamber:

- Water level in the humidity pan
- Frequency of door openings
- Humidity pan on the bottom of the chamber versus on a shelf
- Air leakage through the gaskets or stopper in the access port
- N2 purge on incubators with O2 control.
- Humidity levels in O2 units (3130, 3131, 3140, 3141) will be reduced, depending on the amount of N2 required to control the O2 level in the chamber.

The following table lists some typical RH levels at different O2 and CO2 percentages.



Incubators equipped with a Thermal Conductivity CO2 sensor rely on a constant level of relative humidity in order to accurately measure and control the CO2 concentration in the incubator.

Figure 6-10

%O2	%CO2	%RH (5%)
2%	5%	60%
5%	10%	75%
10%	10%	80%
21%	5%	95%

b. Accuracy of the Humidity Readout:

The sensor is capable of measuring relative humidity from 10% to 100% with an accuracy of 5% above 90%. See Section 2, Calibration for details on calibrating the humidity readout.

Calibrating Relative Humidity

All 3110 Series incubators can be equipped with an optional direct readout relative humidity sensor. This is a readout only of the chamber relative humidity. It does not provide any control of the relative humidity in the cabinet.

Relative Humidity Stabilization Times

Startup - Allow 12 hours for the relative humidity and temperature in the chamber to stabilize before proceeding.

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Operating Unit - Allow at least 2 hours after temperature display reaches set point for relative humidity to stabilize before proceeding.

- Place an accurate independent instrument in the center of the chamber. Allow at least 30 minutes for RH to stabilize.
- Press the Mode key until the CAL indicator lights.
- Press the right arrow key until RH CAL XX appears in the message center.
- Press the up/down arrow to match the display to the independent instrument.
- Press Enter to store the calibration.
- Press the mode key to return to run mode.

If a reliable RH measuring device is not available, you may calibrate the display to a typical level. On units with O2 control, the nitrogen must be shut off as the incoming nitrogen lowers the optimum achievable level of RH in the chamber. Follow the RH stabilization periods outlined above. With a full humidity pan and stable temperature, the relative humidity in the chamber will be 95%. In step 5 of the relative humidity sensor adjustment, you may adjust the display to 95%. This calibration method should be accurate to within 5%.

NOTE:

In the 310 and 3110 with humidity option where the display reads "RH Sensor Error". The fix for it is new software, part# 320367. Also there is a separate problem that requires that the RH sensor be replaced. The display will read lower than actual. In a stable incubator and full humidity pan the RH display should read 90 - 95%. If it is low by more than 1/3 - replace the sensor. It probably wouldn't hurt to send them a filtered air exchange kit (part #1900069) too.