Calibration Procedure

TC CO2 Sensor on a 3110 (Prior to Release 5)

3110
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Calibrating the Thermal Conductivity CO2 System

Models 3110, 3111, 3130 and 3131 have a thermal conductivity (T/C) CO2 sensor. Thermal conductivity of the incubator atmosphere is not only effected by the quantity of CO2 present, but also by the O2%, the air temperature, and the quantity of water vapor present in the incubator atmosphere.

In monitoring the effects of CO2, O2%, air temperature, and absolute humidity must be held constant so any change in thermal conductivity is caused only by a change in CO2 concentration.

Changing temperature or O2% set points or changing from elevated humidity levels to room ambient humidity levels would necessitate a recalibration of the CO2 control.

Models fitted with the O2 control option, (models 3130 and 3131) have an O2 compensation feature. Refer to the instructions in Section 3.1 of this manual, for enabling O2 compensation for T/C Systems. When this feature is enabled, the processor will automatically adjust the T/C CO2 sensor for changes in the O2 percentage.

New Installation - The CO2 sensor has been calibrated at the factory for 37°C and elevated humidity. Allow the incubator to run at least 12 hours before checking CO2 concentration with an independent instrument. If the incubator is operating at 37°C, a zero adjustment is all that is necessary.

1. Press the Mode key until CAL indicator lights.
2. Press the right arrow until CO2ZER0 XX.X is displayed in the message center.
3. Press up/down arrow to change the display to match the measuring device.
4. Press Enter to store the calibration.
5. Press the Mode key to return to run or right/left arrow to go to next/previous parameter.

If the display is more than ±1% of the independent instrument, or if temperature setpoint is other than 37°C, a zero and span adjustment is necessary. Never adjust span without first ensuring that the zero is adjusted to ambient CO2, which is approximately 0% CO2.

Calibrating the T/C %CO2 Zero

On models with O2 control (models 3130 and 3131) you must disable the O2 compensation before performing a complete CO2 calibration. Check Section 3.1 Configuration Mode, Enabling O2 Compensation for T/C CO2 Systems. After completion of the CO2 calibration, you may return to the Configuration Mode and enable the O2 compensation feature.

T/C CO2 Sensor Stabilization Periods

Start Up- Set CO2 set point to 0% (which disables CO2 valve) or shut CO2 off at the supply tank. Allow temperature, humidity, and O2 levels in the chamber to stabilize at least 12 hours before proceeding.

Operating Unit- Set CO2 set point to 0% (which disables CO2 valve) or shut off CO2 at the supply tank. Open both doors and air-out chamber for at least 2 minutes. Close doors and allow temperature, humidity and O2 levels to stabilize for at least 2 hours before proceeding.

1. Ensure stabilization periods as outlined above are followed.
2. Press the Mode key until the CAL indicator lights.
3. Press the right arrow until CO2 ZERO XX.X is displayed in the message center.
4. Press up/down arrow to adjust display to 0.0%.
5. Press Enter to store calibration.
6. Press the Mode key to return to run mode.

Adjust the CO2 set point to the desired level. Turn on the CO2 at the supply tank. Allow CO2 to stabilize at least 15 minutes after CO2 actual display reaches set point. Measure the chamber CO2 content through the gas sample port with a Fyrite or other independent instrument. Several readings should be taken to ensure accuracy. If the display does not match the independent instrument reading, proceed to the CO2 span adjustment.

Calibrating the T/C %CO2 Span

To insure accurate calibration, the cabinet must contain at least 2% CO2. If the cabinet does not contain at least 2.0% CO2, increase the set point and allow the unit to stabilize before completing this procedure.

1. Ensure CO2 zero adjustment has been properly followed before continuing.
2. Press the Mode key until the CAL indicator lights.
3. Press the right arrow until CO2SPAN XX.X appears in the message center.
4. Press the up/down arrow to adjust the display to match the independent instrument reading.
5. Press Enter to store the calibration.
6. Press the Mode key to return to run mode.