Using LI-COR Pyranometers on Symphonie, SymphoniePLUS, and SymphoniePLUS3 Loggers

Introduction

This note describes how to use LI-COR model LI-200SZ and LI-200R pyranometers with RNRG Symphonie, SymphoniePLUS and SymphoniePLUS3 loggers.

The Symphonie, SymphoniePLUS and SymphoniePLUS3 loggers support either LI-COR sensor using the optional Sensor Configuration Module (SCM) for LI-COR, #3154. The logger collects and stores the data in raw format. For exact scaling of the real-time display, or for scaling logged data using Symphonie Data Retriever (SDR), you will need to enter a scale factor calculated for your particular sensor.

LI-COR Calibration Value

LI-200SZ and LI-200R pyranometers provide a microampere (μA) signal output proportional to Global Horizontal Irradiance (GHI), measured in Watts per square meter (W/m^2). Each pyranometer is provided with a calibration sheet that specifies the transfer function for your particular sensor (μA per 1000 W/m^2). A further calculation needs to be performed with this calibration value before entering into the logger.

Calculate Scale Factor

The logger converts the pyranometer current to a raw value in counts. The real-time display and the scaled data generated by SDR require a scale factor to be applied to the raw value to obtain a value in W/m^2. To do this, divide the number **119.21** by your sensor's calibration value.

Example: if the calibration value of your LI-200SZ is 90.0 microamperes per 1000 W/m^2, divide 119.21 by 90.0, to obtain 1.32 (This example is the default value used by the logger display and SDR software scaling for LI-COR sensors). The same calculation applies to the LI-200R. For example, if the LI-200R calibration value is 75.0 microamperes per 1000 W/m^2, divide 119.21 by 75.0, to obtain 1.59 (119.21/75.0 = 1.59).

Entering Sensor Information into the Logger

As with all sensors, the Symphonie logger calculates and stores this data in raw units, no scaling is applied to the data in the logger. The Logger uses the descriptive and scaling information that you enter to display present values, and stores it in the data file headers for later use. Refer to your logger's User Guide for more details on entering values into the Symphonie Logger.

When the Logger is started, it will identify the LI-COR channel as an NRG 110S temperature sensor. Press [Home][4][2][9] then press [↓] to change channel 9 settings, for example.

Press [↓] (three times) to select "Licor Pyranometer", press [SET] to accept and to edit the description. Edit the sensor description if desired. Press [SET] to see the scale factor 1.320; enter the Scale Factor that you calculated. Press [SET] to see the Offset, 0.0; leave this unchanged. Press [SET] to see the Units, "W/sqm";

leave this unchanged.   Press [SET]. Enter the sensor mounting height if desired; press [SET]. Enter the sensor serial number if desired. Press [SET] to complete the settings for channel 9.

Once these parameters are entered, press [Home][1], then use the [↓] key to view the present values of the sensors.

Data Processing

When creating the site, Symphonie Data Retriever (SDR) software will transfer the site parameters entered at the logger to the site editor automatically. If the calculated scale factor was not entered into the logger, you should enter the scale factor for your sensor into the site information editor before saving the site data.

Sensor Wiring

The table below shows how to connect the LI-200SZ and LI-200R to the Symphonie, SymphoniePLUS, and SymphoniePLUS3 loggers. Since the sensors are self-powered, an excitation voltage is not required.

LI-COR 200SZ		
wire	SymphoniePLUS3 logger terminal	Symphonie and SymphoniePLUS logger terminal
bare (outer)	GND	(-)
signal (inner)	SIG	Sig

LI-COR 200R		
wire	SymphoniePLUS3 logger terminal	Symphonie and SymphoniePLUS logger terminal
brown	SIG	Sig
blue	GND	(-)
bare	SHD	SHD