

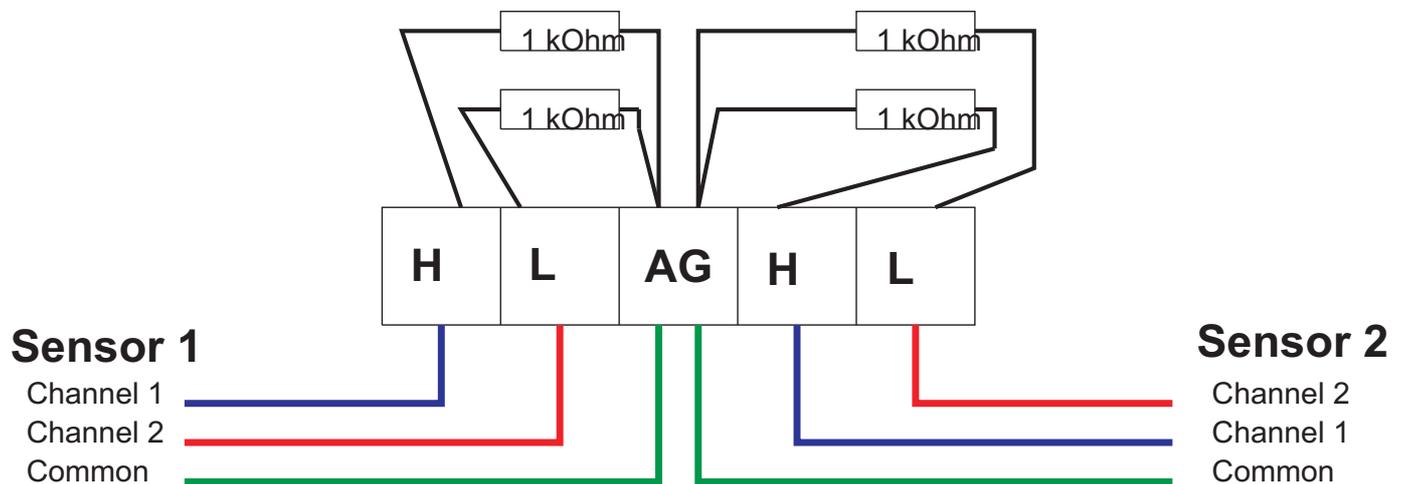


Technical Help Light

2 Channel Light Sensors connecting to a Campbell Datalogger

Skye Instruments SKR 110 and SKR 1800 2 channel light sensors have a small current output only, which comes direct from the sensing photodiode. These sensors require no power supply.

Skye's own dataloggers and meters are designed especially to measure these low current outputs, Campbell Scientific dataloggers requires the sensor to have a mV output. It is simple to convert the Skye light sensors to a mV output with the use of a 1 kohm precision resistor across the input of the logger for each channel as shown below:



NOTE - If a GREY wire is fitted (screen of cable), this should be connected to AG with the GREEN wires.

Shown above is an example of four single ended voltage channels on a logger. In this example all four channels have a common analogue ground (AG). If each pair of channels have their own analogue ground then the two resistors used for any two channels should both be connected to the analogue ground for those two channels.

In the above example H and L are single ended voltage inputs. (These are the High and Low inputs when used as a differential input.)

Note that the GREEN wire from the sensor is connected to AG. This is the common of both channels in the sensor and so will result in the channels giving a negative value. This can be ignored or removed by using a negative multiplier in the logger.

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2 Channel Light Sensors connecting to a Campbell Datalogger (Cont)

Skye recommend a 1 kohm precision resistor with the following specifications:

Power rating @ 70 degC	0.25 watts
Resistance tolerance	+/- 0.1%
Temperature coefficient	+/- 15 ppm per deg C
Temperature Range	-55 to +125 deg C

If a precision resistor of 1 kohm (0.1% ppm/deg.C.)* is used, then the value of the sensor's output in millivolts will be identical to the current output in microamps.

For example, if the Calibration Certificate says the sensor's Channel 1 output is 30.25 $\mu\text{mol m}^{-2} \text{s}^{-1}$ per μA , then when connected with a 1 kohm resistor, 30.25 $\mu\text{mol m}^{-2} \text{s}^{-1}$ will give an output of 1mV.

Other values of resistance may be calculated as follows:-

$$\begin{array}{rclcl} \text{Sensitivity} & = & \text{Sensitivity} & / & \text{Resistance} \\ (\mu\text{mol m}^{-2} \text{s}^{-1} \text{ per mV}) & = & (\mu\text{mol m}^{-2} \text{s}^{-1} \text{ per } \mu\text{A}) & / & (\text{kohm}) \end{array}$$

Resistor values above 1 kohm should be used with caution, as they may give rise to pickup noise. 10 kohm is the maximum that should be used.

* Available from Skye Instruments or the following suppliers:

RS COMPONENTS www.rswww.com	Part number	487 6075
FARNELL www.farnellone.co.uk	Part number	950 0723