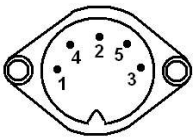
SolData Digital Module 104DM
DESCRIPTION

Purpose
The digital module can be used with a pyranometer, a thermocouple, a UV detector or other sensor. The module provides a digital display which can be programmed to show the physical units desired. Add-on features are available for e.g. 0-20 mA current loop output or relays which can activate two on/ off switches for alarms or for initiation of control functions.

Pyranometer application
A SolData pyranometer typically has a calibration factor of

$$K = 160\ mV/(kW/m^2)$$

The 104DM module is normally supplied programmed and ready to use including a 5 pole DIN connector which is used to connect the pyranometer cable to the instrument. The pin connections are as follows:



Pin 5: ground
Pin 1: signal input

If a change in the setup (e.g. to program a change in the calibration factor) is required, then briefly press the **OK**-button on the right hand side of the display. Next choose VOLT as input type. Selections are made by pressing the **arrow-up** and **arrow-down** buttons followed by **OK**. Choose **0-1** volts as the input interval. Choose **no decimal point.** Choose **0** for DI-LO, so that "0000" is displayed when the input voltage equals zero. If the display is to show millivolts, then **9999** should be selected for DI-HI. One will usually want the display to show the value of the solar irradiance directly in W/m^2, i.e. that the display shows 1000, when the input voltage equals the value of *K*. This can be accomplished by using the formula:

$$DI\text{-}HI = 1000000/K$$

For example, if $K = 160$, then one should set $DI\text{-}HI = 1E6/160 = 6250$. With this selection

A continuous display of the solar irradiance directly in watts per square meter can be achieved by using the SolData type 104DM display module shown above.

1000 mV will yield "6250" on the display, and 160 mV will show "1000".

Digital thermometer application
If the display module is to be used instead as a digital thermometer display, then standard K-type thermocouple wire can be used. Connect the K-type thermocouple wire as described below:

1) Remove the two screws from the bottom of the instrument housing and take off the lid.
2) Feed the thermocouple wire for connection to the instrument through the hole on the rear panel marked "K-type TC".
3) Connect the leads to screw terminal connections 43 (plus) and 41 (minus).

Program the unit by briefly pressing OK. Then choose TEMP, OK, °C, OK, TC. K, OK, 111.1, OK, 0 20,OK,0,OK, 50,0 mA, OK,NO,OK. Here a display interval of from 0 to 50°C has been chosen, but other ranges can of course be selected instead. If the 0-20 mA output add-on option is available, then it is connected to the DIN connector terminals 2 (plus) and 5 (minus). Use the cable provided to make your connection to a datalogger. Zero mA will correspond to 0°C, and 20 mA will correspond to 50°C.

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