

QUICK START GUIDE

Portable Power Module (PPM)

MSH-CER-1000 Issue A

OVERVIEW

The module is shipped from the factory in power down mode and before use must be woken from this state by applying a voltage of between +1V and +30V to it's **Charge Input** (see below for connector polarities etc). This could for example be done using the probes of a Digital Voltmeter when set to "Continuity buzzer" mode (insert the probes into the MC4 connectors on the end of the charging cable, making contact with the metal inserts) , or a 12V Solar Panel connected with light energy available to it. The charge input is protected against reverse polarity connection. Connections are given below. When this is done, the Power Module will initiate output of power to the connected Certimus. Once woken, the Power Module's internal charge control and monitoring circuitry will start consuming a small amount of power. The unit's internal batteries are usually shipped at approximately half of full capacity to prolong their shelf life, with the module's 2S output between 7.2V and 7.4V. This is explained in more detail later in this document.

The supplied Charge Input cable is terminated in IP67 rated MC4 connectors for waterproof connections to a Solar Panel at the installation site. Particularly if the unit is intended to power the instrument *without* connection to a Solar Panel, then prior to installation the module should be charged until fully charged and charging automatically stops (when the batteries reach approximately 8.4V), in order to maximise the available run time before the output power is cut off as the output falls below 6V to protect the internal batteries from damage. If this happens, then the Power Module must be charged to a point where the voltage exceeds 6.4V before the output power will be turned back on.

With a suitably power rated (Watts) 12V Solar Panel for the prevailing solar conditions, it will receive a daily topping up charge that is sufficient to maintain the continued operation of the instrument being powered. The module is designed for use with charge input voltages not exceeding 32V, primarily intended for use with "12V" Solar Panels which actually operate at around 18V. The PPM has an integrated MPPT (*Maximum Power Point Tracking*) charge controller and will automatically track the panel's optimum operating point to ensure that it harvests energy at the maximum achievable level of power with changing light conditions. When it comes to choice of Solar Panel to use with the Module, there is a wide range of the more efficient monocrystalline photovoltaic panels available on the market including flexible "roll up", semi-flexible and foldable versions which facilitate good portability for remote installations. *Peak* instantaneous charge input power that the PPM can attain is approximately 80 Watts, and it has an input current limit of 8Amps.

When installing the Module at the chosen site, note that due to the "wind sail" effect of an erected panel, the panel should be situated away from any seismic instrument. If the installation is in an exposed area then some form of lightning strike diversion equipment should be employed to protect the installation. The Module should be protected from temperatures outside of the range 0 to 45C in order that the batteries can be charged – refer to the "Temperature" section of the manual for further clarification.

To view the full PPM manual visit: <https://www.guralp.com/documents/MAN-CER-1000.pdf>

