

Dear Customer,

Thank you very much for buying this Phocos product. With your new MPPT Maximum Power Point Tracker, you own a state-of-the-art device which was developed according to the latest available technical standards. It comes with a number of outstanding features, such as:

- Maximum Power Point Tracking technology, which increases the efficiency of your PV system
- Allows for the use of less expensive grid-connected solar panels for 12/24V stand-alone systems
- Automatic 12/24 Volt detection
- Temperature-Compensated, Three-Stage I-U Curve Charge Regulation
- Full electronic protection (Reverse Polarity, Over-Current, Short-circuit, Over-Temperature, etc.)
- High efficiency
- DIN rail compatible
- Negative ground

This manual gives important recommendations for installing and using the MPP Tracker. Read it carefully and mind the safety and usage recommendations at the end of this manual.

Major Functions

- The MPPT charges your battery much faster than a regular charge controller.
- The MPPT protects the battery from being overcharged by the solar array. The charging characteristics include several stages which include automatic adaptation to the ambient temperature.
- The MPPT adjusts itself automatically to 12V or 24V system voltage.
- The MPPT has a number of safety and display functions.

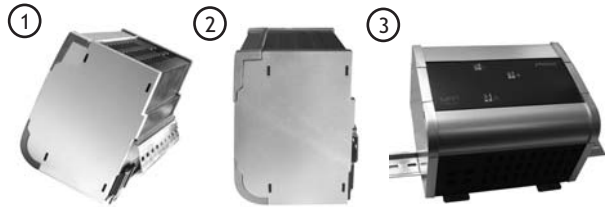
Recommendations for Use

- The MPPT warms up during normal operation.
- The MPPT does not need any maintenance or service. Remove dust with a dry tissue.
- It is important that the battery is fully charged frequently (at least monthly). Otherwise the battery will be permanently damaged.
- A battery can only be fully charged if not too much energy is drawn during charging. Keep this in mind, especially if you install additional loads.

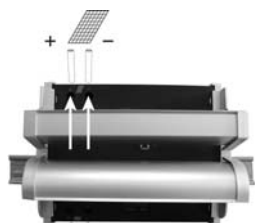
Mounting and Connecting

- The MPPT is intended for indoor use only. Protect it from direct sunlight and place it in a dry environment. Never install it in humid rooms (like bathrooms).
- The MPPT measures the ambient temperature to determine the charging voltage. The MPPT and the battery must be installed in the same room.
- The MPPT warms up during operation, and should therefore be installed on a non-flammable surface only.

NOTE: Connect the MPPT by following the steps described below to avoid installation problems.



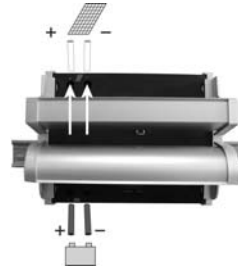
Please see Fig 1, 2 and 3 that show how to install the MPPT on a standard 35mm DIN Rail. Make sure that the ventilation slits are unobstructed. Mount Din Rail onto the vertical surface. Mount MPPT in a way that ensures there is enough space below and above for the air to vertically flow through the ventilation slots.



Connect the wires leading to the solar array with the correct polarity. To avoid any voltage from the wires, first connect the controller, then the solar array. Mind the recommended wire size: MPPT 100/20-1: min 10 mm². Close the cover of solar side.

NOTE: Place the positive and the negative wires close to each other to minimize electromagnetic effects.

NOTE: Solar panels provide voltage as soon as exposed to sun light. Mind the solar panel manufacturer's recommendations.



Open the cover at the battery side. Connect the wires leading to the battery with the correct polarity. To avoid any voltage from the wires, first connect the MPPT and then the battery. Mind the recommended wire length (min 30cm to max approx. 100cm) and the wire size: 10 mm² to 16 mm²: max. 1 m. 25 mm² to 35 mm²: max. 2 m. Close the cover of the battery side.

NOTE: Mind the recommendations of your battery manufacturer. We strongly recommend connecting a fuse directly to the battery to protect any short circuit in the battery wiring. The fuse must at least take the MPPT's nominal current or more. Suggestion: Use a slow acting 30A fuse.

Grounding the Solar System



Be aware that the negative terminals of the MPPT are connected internally and therefore have the same electrical potential. If any grounding is required, always do this on the negative wires.

Starting up the Controller

As soon as the MPPT is connected to the battery voltage, it starts operating and shows the yellow LED. When solar voltage is applied, it will activate the green LED and start charging the battery.

NOTE: There may not be an immediate change in the LED lights ! If the controller has gone into sleep mode, it may take up to one minute to activate.

System Voltage

The MPPT adjusts itself automatically to 12V or 24V system voltage. As soon as the voltage at the time of start-up exceeds 18.0V, the MPPT implies that it is a 24V system.

Display Functions

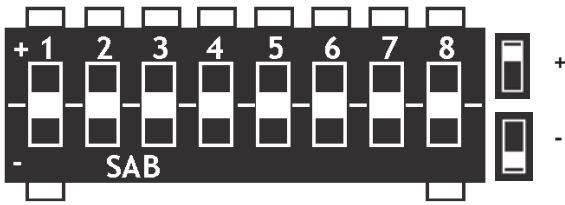
The MPPT is equipped with 3 LEDs.



- LED1 (Green): ON-Day (charging)
OFF-Night (no charging)
- LED2 (Yellow): ON- MPPT is on
OFF- MPPT is off
- LED3 (Red): ON-Failure
OFF-Normal operation

Setting up your MPPT

The MPPT comes with an 8 pole DIP-switch, which can be used to set up your MPPT.



The No.7 DIP-switch is used to set the battery type of your system:

DIP-Switch No.7: Battery Type

Setting	+	GEL-type battery
	-	Regular lead acid battery

ALL OTHER DIP-SWITCHES ARE RESERVED FOR FUTURE USE AND SHOULD BE KEPT ON POSITION "-" DURING NORMAL OPERATION!

The setting voltages of different charging cycles are as follows:

Charging Cycle	Float	Boost	Equalization
Charge-voltage	13.7V / 27.4V	14.4V / 28.8V	14.8V / 29.6V
Return voltage	-	12.4V / 24.8V	12.0V / 24.0V
Applicable	Gel / liquid	Gel / liquid	Liquid only
Mode time	-	½ h daily or 2h by voltage	2h

Safety Recommendations

- Batteries store a large amount of energy. Under no circumstances, never short-circuit a battery. We recommend connecting a fuse (slow acting type, according to the nominal regulator current) directly to the battery terminal.
- Batteries can produce flammable gases. Avoid making sparks, or using fire or any open flame around the battery. Make sure that the battery room is ventilated.
- Avoid touching or short circuiting wires or terminals. Be aware that the voltages on specific terminals or wires can be as much as 95V. Use isolated tools, stand on dry ground, and keep your hands dry.
- Keep children away from batteries and the charge regulator.
- Please observe the safety recommendations of the battery manufacturer. If in doubt, consult your dealer or installer.

Liability Exclusion

The manufacturer shall not be liable for damages, especially on the battery, caused by use other than as intended or as mentioned in this manual, or if the recommendations of the battery manufacturer are neglected. The manufacturer shall not be liable if there has been service or repair carried out by any unauthorized person, unusual use, incorrect installation, or poor system design.

Opening the case voids the warranty.

Technical Data

Nominal voltage	12V / 24 V, automatic recognition
Max. solar input voltage Voc	95V
Max. PV input Power	300W@12V, 600W@24V
Max. battery charge current	20A
Power conversion efficiency	Max. 97%
Standby power consumption	< 30mW @12V system voltage (< 2mA) < 80mW @24V system voltage (< 3mA)
Temperature compensation	-4mV/cell*K
Max. wire size	32mm ²
Dimensions	185x150x115mm
Weight	1.6kg
Ambient temperature range	-40 to + 50 °C
Case protection	IP 22

Subject to change without notice.

Version: 20080808

Made in one of the following countries:

China - Germany
Phocos AG - Germany
www.phocos.com
CID: 181301911

ISO9001:2000

CE RoHS