

- ❖ Two Inputs for PV Panels
- ❖ Detection of Overheating and Disconnection of the Battery
- ❖ Output 10 to 30 VDC for Power Supply to External Devices
- ❖ Output for Charging 12 V GEL Battery
- ❖ Integrated PoE + Injector⁽¹⁾
- ❖ RS485 for Remote Monitoring
- ❖ Suitable for OFF-GRID Systems
- ❖ Mounting for DIN35 and Flat Surface
- ❖ Operating Range -40 °C to +70 °C



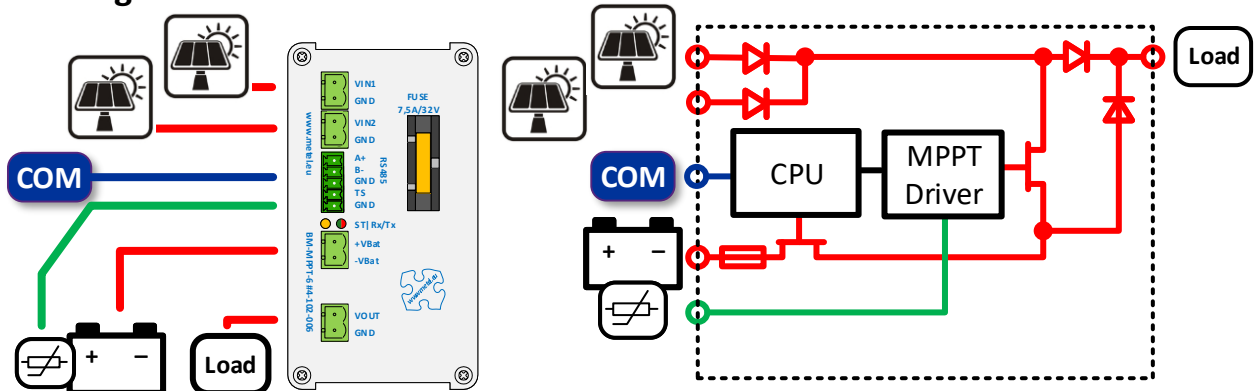
PRODUCT NAME	CODE	SUPPLY
BM-MPPT-6	4-102-006	10 - 30VDC
*BM-MPPT-6-PoE	4-102-007	10 - 30VDC

Holder for Mounting DIN35 and Flat Surface is Included.

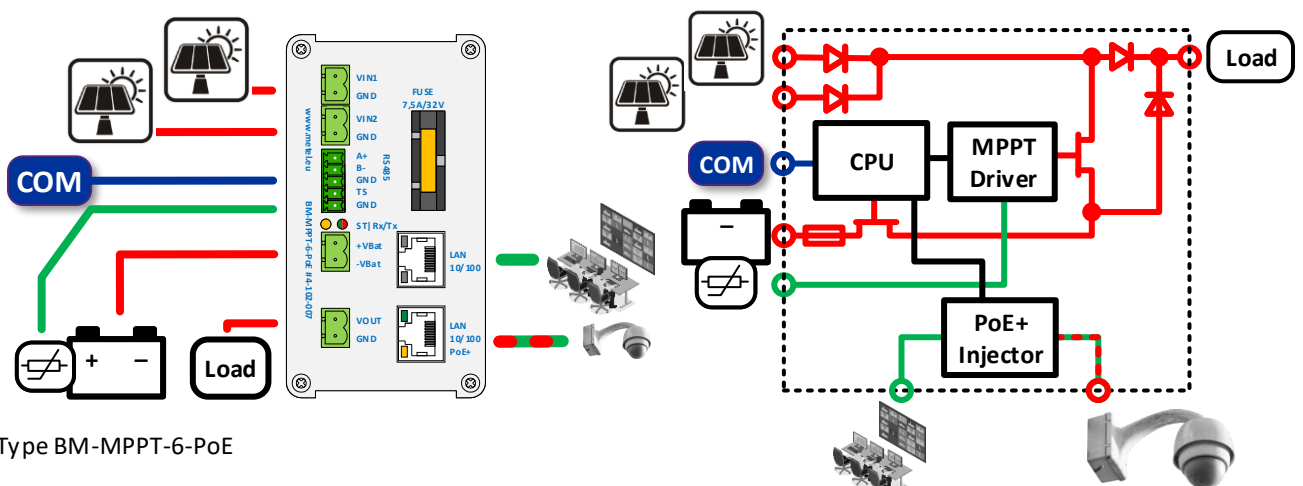
Description

The MPPT chargers automatically control current from the connected sources (PV panels) depending on the amount of available energy. The PWM controller charges the battery in three phases: refreshing the battery with 1/10 the charging current for 30 minutes, charging with a constant current of 6 A and finally charging with a constant voltage. Any overheating of the battery is detected by the NTC sensor. The charged battery is continuously monitored and charged with a current of 600 mA. The RS485 interface allows remote reading of the operating status of the MODBUS RTU protocol. The BM-PMPT-6-PoE includes an integrated PoE+ injector that can be controlled remotely.

Block Diagram BM-PMPT-6



Block Diagram BM-PMPT-6-PoE



⁽¹⁾ Type BM-MPPT-6-PoE

Technical Parameters

	PARAMETER	VALUE	UNIT	NOTE
Supply Inputs	Quantity	2		
	Voltage	Max. 30	VDC	
	Overvoltage Protection	600	W	10/1000µs
LAN port with PoE+*	Quantity	1		
	Supported Formats	10/100 BaseT		connector RJ45
	Overvoltage Protection	Pins 4-5/7-8: Lightning Arresters + Transils Pins 1-2/3-6: without Protection		
PoE Output	Max. 30	W	IEEE 802.3af/at	
Output for Load	Voltage	Max. 30	VDC	See the Block Diagram
	Maximal Current	2	A	
	Overvoltage Protection	600	W	10/1000µs
Output for Battery	Technology	Lead-Acid		
	Charging Current	Max. 6	A	Up to a max. ambient of 55 °C
	Short Circuit / Disch. Protection	Fuse 7,5 A / Disconnet at VBAT < 10,8		
	Battery Temperature Sensor	NTC termistor		103AT (is included)
Remote Monitoring	Bus	RS485		MODBUS-RTU
	Overvoltage Protection	600	W	10/1000µs
	Operating Range	-40 ... +70	°C	
Environment	Cooling	Controlled Fan		
	Dimensions	see page 4, 5	mm	
Certification		CE, TÜV SÜD		
The producer retains the right to change any technical parameters without previous written or published notification.				
* Valid for version BM-MPPT-6-PoE.				

FAQ

What is the recommended capacity and type of battery?

The battery charging current should preferably not exceed 0.2 C (6 A for 30 Ah battery). The battery capacity must be at least 30 Ah. For practical reasons, such as:

- ❖ decrease in battery capacity at low temperatures,
- ❖ place in the OH6425-OG,
- ❖ we recommend using a 12 volt Deep Cycle GEL battery, Victron BAT412550104, or equivalent. Up to 165 Ah can be used when requesting a longer backup time.

❖ What type of photovoltaic panels can be connected to the charger?

The chargers support 12V rated polycrystalline panels, such as Victron BlueSolar 80Wp-12V or their equivalent. The installed power depends on the power of the connected devices and the installation site. For more information, visit www.metel.eu, where the demo system installed in Česká Skalice is described in detail.

Electromagnetic Compatibility

Standard	Tested Level – Criteria	Note
EN 55024 – Immunity Characteristics		
EN 61000-4-2 – Contact Discharge	Level 4 – Criteria B	8kV
EN 61000-4-2 – Air Discharge	Level 4 – Criteria B	15kV
EN 61000-4-4 – Bursts	Level 4 – Criteria B	4kV / 5kHz
EN 61000-4-5 – Surge Immunity	Level 4 – Criteria B	4kV, BUS Level 3 (2kV)
EN 61000-4-8 – Magnetic Field 50 Hz	Level 5 – Criteria A	100A
EN 61000-4-9 – Pulse Magnetic Field	Level 5 – Criteria A	1000A
EN 55022 – Radiated Emission	Class A	

Remote Monitoring

The RS485 interface is compatible with the MODBUS RTU protocol, which allows you to monitor operating values, set operating modes and control outputs.

When connected to the IPLOG-Gx PLC, SNMP and MODBUS-TCP are also available for all monitored values and configurable parameters. The table below lists the available MODBUS registers.

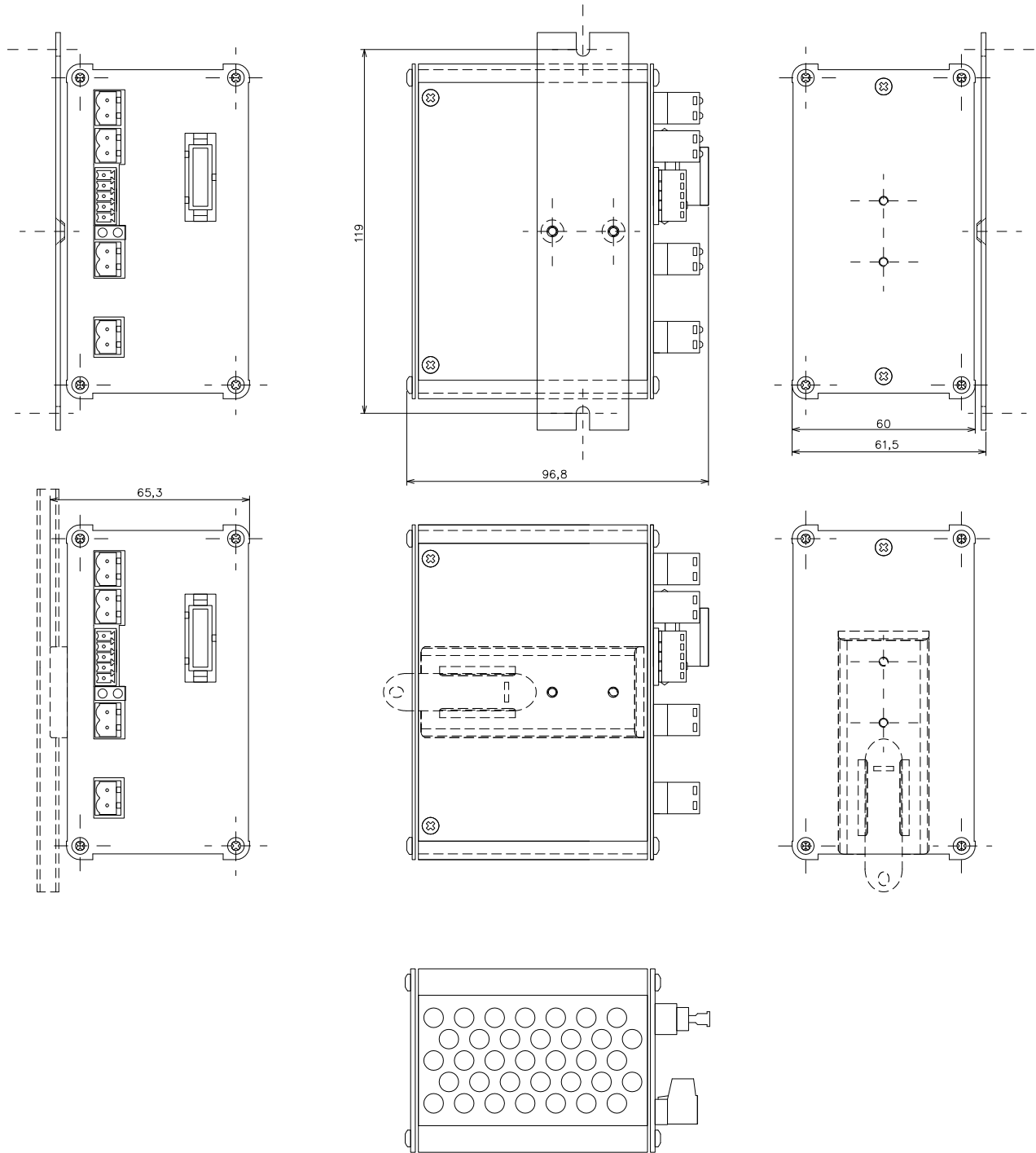
MODBUS Registres

	Subject	Channel	Type	Value	Offset
Measures	U _{IN1}	AI#01	s16	1000 = 1V	5001
	U _{IN2}	AI#02	s16	0 = 0 V	5002
	U _{BATT}	AI#03	s16	-1000 = -1V	5003
	I _{IN1}	AI#05	s16	1000 = 1A	5005
	I _{IN2}	AI#06	s16	0 = 0 A	5006
	I _{BATT}	AI#07	s16	-1000 = -1A	5007
	States	Suspend	DI#01	bit	1 - Suspend
Normal		DI#02	bit	1 - Normal	3002
Charge		DI#03	bit	1 - Charge	3003
Backup		DI#04	bit	1 - Backup	3004
States		DI#16 - DI#01	u16	0001 - Suspend 0010 - Normal 0100 - Charge 1000 - Backup	3001
Statuses	Battery	DI#17	bit	0 – Inactive 1 – Active	3017
	Stepup	DI#19	bit		3019
	Charge	DI#21	bit		3021
	Termination	DI#23	bit		3023
	Fan	DI#25	bit		3025
	Fan ERR	DI#27	bit		3027
	Overheat	DI#29	bit		3029
Controls	Battery Force On/Off	DO#17	bit	0 – Off, 1 – On	4017
	Battery Force/Auto	DO#18	bit	0 – Auto, 1 – Force	4018
	Stepup Force On/Off	DO#19	bit	0 – Off, 1 – On	4019
	Stepup Force/Auto	DO#20	bit	0 – Auto, 1 – Force	4020
	Charge Force On/Off	DO#21	bit	0 – Off, 1 – On	4021
	Charge Force/Auto	DO#22	bit	0 – Auto, 1 – Force	4022
	Termination Force On/Off	DO#23	bit	0 – Off, 1 – On	4023
	Termination Force Auto	DO#24	bit	0 – Auto, 1 – Force	4024
	Fan Force On/Off	DO#25	bit	0 – Off, 1 – On	4025
	Fan Force/Auto	DO#26	bit	0 – Auto, 1 – Force	4026

BM-MPPT-6

Industrial MPPT Chargers

Dimension of BM-MPPT-6

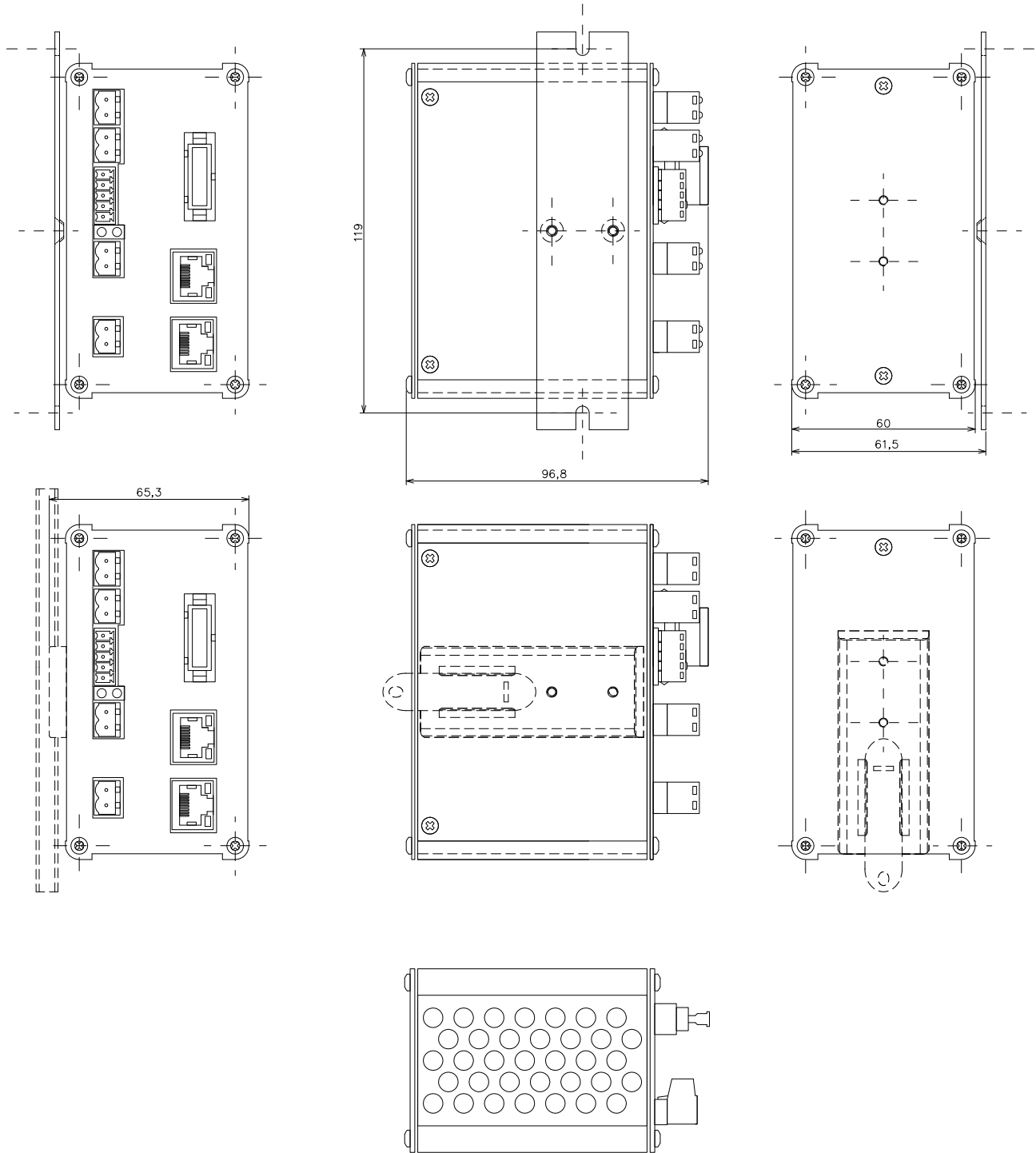


Revision: 201803 – Default
201804 – Added EMC tests

BM-MPPT-6

Industrial MPPT Chargers

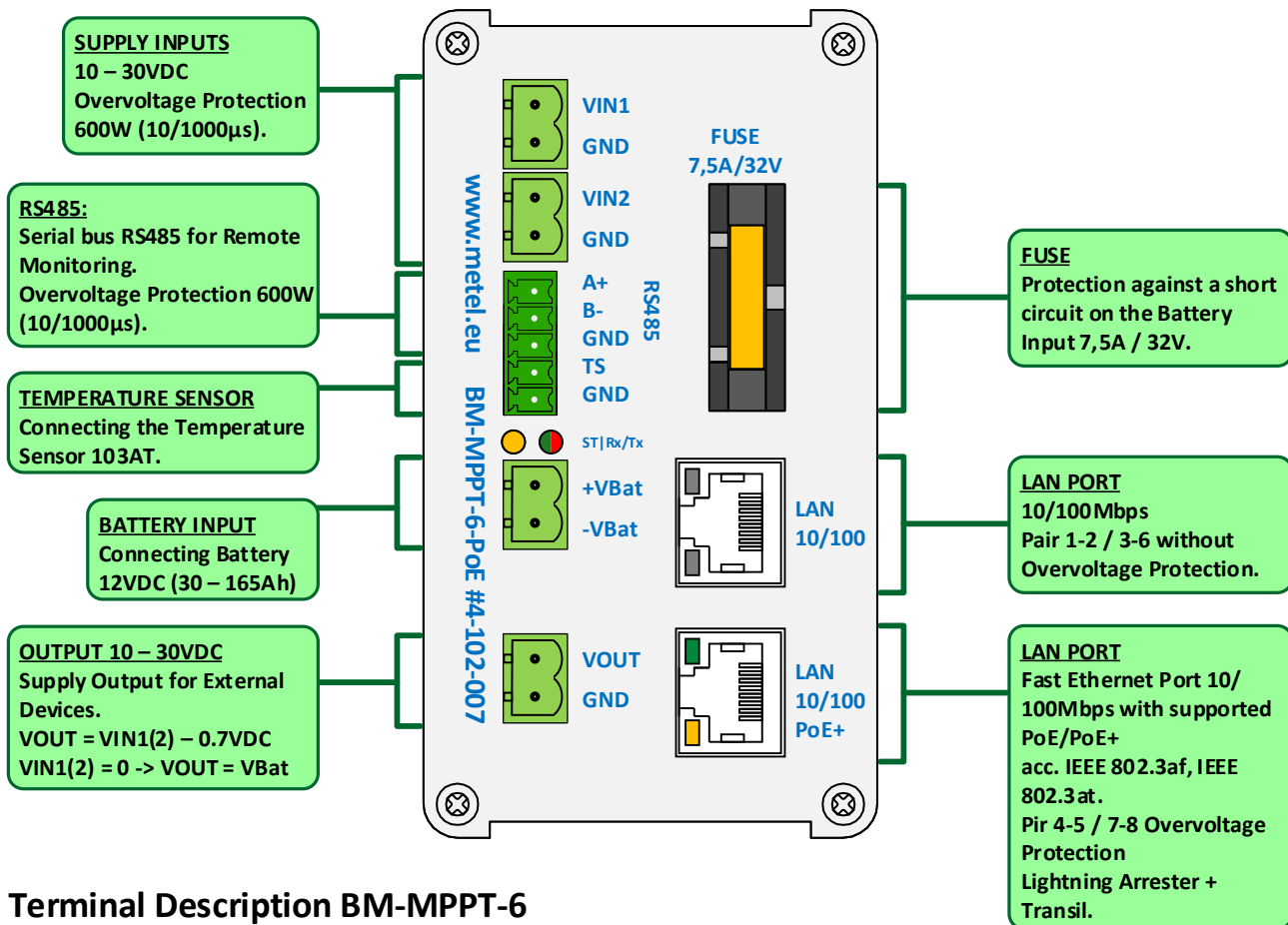
Dimension of BM-MPPT-6-PoE



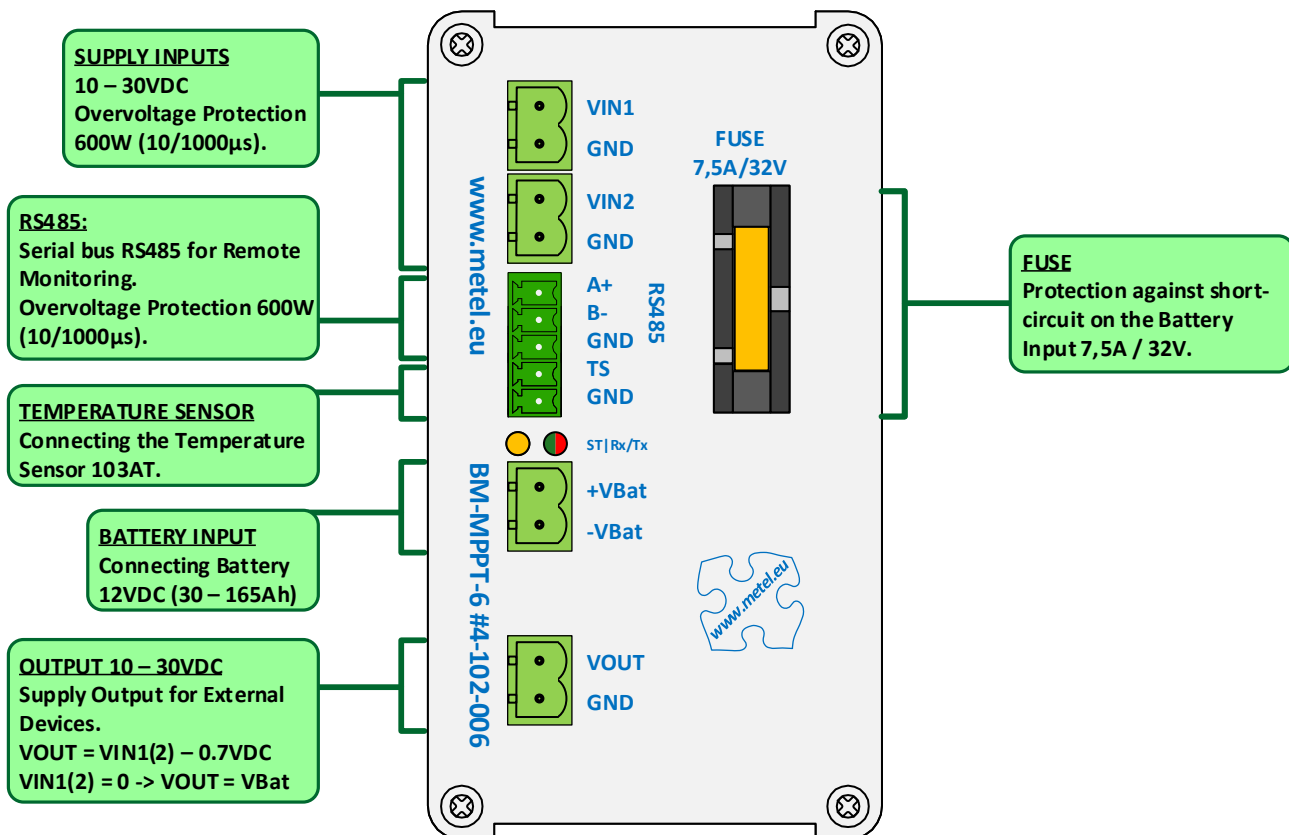
BM-MPPT-6

Industrial MPPT Chargers

Terminal Description BM-MPPT-6-PoE



Terminal Description BM-MPPT-6




BM-MPPT-6**Industrial MPPT Chargers****Installation and connection****1. Mounting**

The charger must be installed on a flat base or DIN35. Required brackets are included. Do not cover the charging air vents on the installed charger module.

2. Connection of Temperature Sensor

Connect the temperature sensor to the **TS** and **GND** terminals. Attach the sensor to the top of the battery. The connected temperature sensor compensates for the charging voltage so that the battery is optimally charged over the entire operating temperature range.

 Battery charging works only when the temperature sensor is connected.

4. Connect the Battery

When connecting the battery, the +Vbat/-Vbat terminal box must be disconnected from the charger. Attach the positive battery terminal to the **+Vbat** terminal and negative to the **-Vbat** terminal. When disconnecting the battery, first disconnect the +Vbat/-Vbat terminal from the charger. It is recommended to connect and disconnect the battery without VIN1 and VIN2 mains connected.

5. Connection of the Power Supply

Connect **VIN1-GND** and **VIN2-GND** from range 10-30VDC.

6. Output Connection

There is higher voltage at the **VOUT** and **GND** terminals from the **VIN1** or **VIN2** inputs. If there is no supply voltage at the input terminals, the battery voltage is on output. The maximum current drawn is 2A.

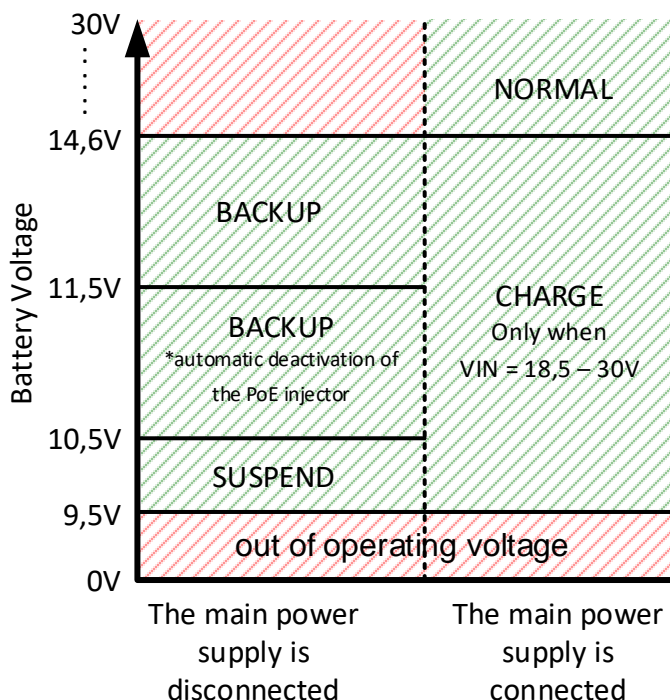
7. Connection to RS485 Interface






By connecting the RS485 serial interface, the MODBUS protocol can be read / set up by the MODBUS protocol. page 3 remote monitoring.

8. Connection PoE Device*

Connect the RJ45 connector labeled DATA to the LAN network. Connect the PoE devices to the RJ45 connector labeled DATA + PoE. Maximum PoE power is 30W.

* Valid only for version BM-MPPT-6-PoE

Charging Modes and LED Signaling

LED	DESCRIPTION	
	CHARGED	The battery is charging from inputs VIN1(2).
	NORMAL	The battery does not charge or is disconnected, but supply VIN1(2) is connected.
	BACKUP	Power VIN1(2) is less than 10 V. PoE is supplied from the battery.
	SUSPEND	VIN1(2) is less than 10 V, battery is discharged and VOUT output is disconnected.
	Max.Temp	Charger temperature over 85 °C. Switching off the alarm at a temperature below 70 °C.

* Only with PoE injector versions.

When the battery voltage drops below 11.5 V, the PoE power is automatically deactivated. When the battery drops below 10.5 V, the VOUT output will be deactivated to prevent the battery from running out of power.