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Battery Management Unit BMU801



Vaisala Battery Management Unit BMU801 provides power management and optimized battery charging capability in solar- and DC-powered systems. With its battery status monitoring and safety features, BMU801 increases the reliability and safe use of the systems.

Features

- Configurable to support 2.6, 7, 21, and 26 Ah VRLA batteries (1 or 2 pcs) by rotary switch
- Monitoring of battery status and charging – information available through Modbus interface and LED indicators
- Automatic detection of battery presence (1 or both ports occupied)
- Support for 2 solar panels
- Modern safety features, including detection of faulty battery, and overcharging and overheating protection
- Reverse polarity protection for all DC inputs and battery ports
- Maximum Power Point Tracking for solar panel operation

Versatile and smart

BMU801 is a smart battery management unit for charging and monitoring batteries. By default, it supports one or two 2.6, 7, 21, or 26 Ah 12 V valve-regulated lead-acid (VRLA) batteries configured using a rotary switch. There are 2 battery connectors, which enables full battery status identification for both batteries. BMU801 also has a Modbus communication interface for additional parameter settings. With the Modbus interface you can monitor the battery condition, state of charge, and temperature and also control charging parameters.

Unfailing power supply

Together with a commercial AC/DC power supply and/or solar panels, BMU801 makes a modular uninterruptible power supply (UPS), which is configurable for various system applications. In case the input power to the system fails, BMU801 automatically switches to the backup battery and continues feeding power without any interruptions on the output line.

Maximum efficiency

BMU801 allows connecting solar panels with 12 V nominal voltage. MPPT (Maximum Power Point Tracking) technology is used to maximize efficiency and power extraction under all conditions.

When multiple input sources are required, BMU801 can accept inputs from 2 solar panels and from a DC power supply simultaneously.

Safety prioritized

BMU801 has various safety features designed to protect the battery, the BMU801 itself, and the charging source. Safety features include, for example, detection of faulty battery, overcharging and overheating protection, reverse polarity protection for all inputs, and deep discharge protection.

BMU801 outputs several parameters, allowing close monitoring of the battery charging state, condition, and temperature. LED indication is included for the users to easily check the battery status on site.

Suitable for various applications

BMU801 can be used in a wide range of applications. In most cases it is suitable for retrofitting, to upgrade old battery regulators.

Technical data

Operating environment

Operating environment	Outdoor use [1]
Use in wet location	Yes [1]
Operating temperature	−40 … +70 °C (−40 …+158 °F) [2] [3]
Storage temperature	−60 … +85 °C (−76 … +185 °F)
Operating humidity	0–100 %RH, non-condensing
Pollution degree	2
Maximum operating altitude	3000 m (approx. 9800 ft)
IP rating	IP20

1) *Inside a weather-proof enclosure (IP65).*
2) *Recommended operating temperature for batteries may be different. See manufacturer documentation.*
3) *When the battery or its ambient temperature exceeds the operating temperature limit of the battery, BMU801 stops charging but the capability to supply power to the weather station (or other system) remains.*

Inputs and outputs

Compatible battery types	Valve-regulated lead-acid (VRLA) battery
Input voltage (all DC inputs)	9–28 V DC [1] [2]
Input voltage (for 12 V VRLA battery charging)	15–28 V DC
Overvoltage category	I
Maximum input current	10 A
Charging voltage (for 12 V VRLA battery charging)	12–15.6 V
Maximum battery charging current	6 A
Nominal output voltage	24 V [3]
Maximum continuous output (load) current	10 A
Nominal voltage, solar panel	12 V DC
Maximum power, solar panel	100 W
NTC connectors	2 × push-in connector for NTC temperature sensors
Mating connectors	
2 × battery, 2 × solar panel, power in/out	Phoenix Contact FKCN 2,5/2-ST-5,08
Modbus	M8 4-pin female
GPIO	Phoenix Contact DFMC 1,5/3-ST-3,5-LR • 2 × status output (max. 100 mA / 30 V) • 1 × battery voltage output • 1 × force-off input

1) *The short-term maximum voltage is 30 V DC.*
2) *When using external DC power supply, install an external 10 A or 16 A disconnection device, such as slow-blow fuse, for the DC input.*
3) *The actual output equals the DC input voltage when DC power supply or solar panel is connected. If no DC power or solar power is available, the output equals the battery voltage.*

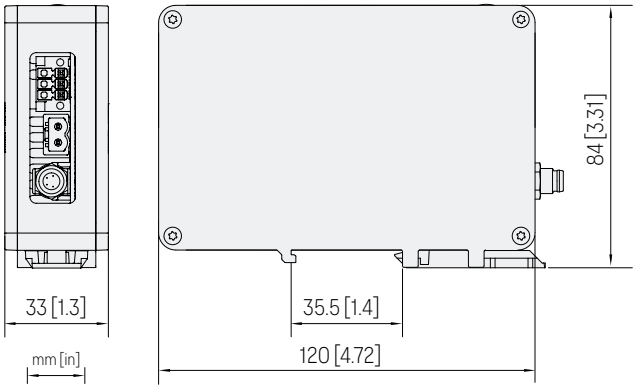
Mechanical specifications

Dimensions (H × W × D)	120 × 33 × 84 mm (4.72 × 1.30 × 3.31 in)
Weight	0.22 kg (0.49 lb)
Mounting	DIN rail 35 mm (1.4 in)
Materials	
Screws, washers	Stainless steel AISI 316
DIN rail locking piece	Stainless steel AISI 630
Frame profile	Aluminum EN AW-6060 T6
End covers	Plastic PC/ABS

Compliance

EU directives and regulations	EMC Directive (2014/30/EU) Low Voltage Directive (2014/35/EU) RoHS Directive (2011/65/EU) as amended by 2015/863
EMC immunity	EN 61326-1, industrial environment
EMC emissions	CISPR 32 / EN 55032, Class B
Electrical safety	IEC/EN/UL/CSA-C22.2 61010-1
Compliance marks	CE, RCM, UKCA
Safety listing (U.S. and Canada)	MET Recognized

Test	Applied standard	Description/Values
Vibration (sinusoidal)	IEC 60068-2-6 IEC 60945	5–13.2 Hz, 1 mm (0.04 in) amplitude 13.2–200 Hz, 0.7 g
Shock	IEC 60068-2-27	15 g, 11 ms, saw-tooth 30 g, 11 ms, half-sine
Dry heat	IEC 60068-2-2	+70 °C (+158 °F)
Damp heat	IEC 60068-2-78	+40 °C (+104 °F), 95 %RH
Cold	IEC 60068-2-1	−60 °C (−76 °F)



Dimensions

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