E-T-A PowerPlex® Mini Module PP-M-MM500

Description

The ***PowerPlex***® Mini Module for DC 12 V and DC 24 V on-board electrical systems is perfectly suitable for LEDs and ambient lighting. It offers eight multifunctional inputs, which can be used for measuring current, voltage, temperature and/or liquid levels, as well as eight load outputs.

PowerPlex® is a modular, CAN bus based control system allowing the realisation of intelligent on-board electrical systems on boats and in recreational vehicles. A ***PowerPlex***® system connects and controls a wide range of tasks and electrical components in complex on-board electrical systems. All control modules ensure reliable and efficient power supply of all functionally relevant components. The wide range of the ***PowerPlex***® line offers various options to run processes automatically or to link them with conditions.

By means of the ***PowerPlex***® configuration software, the application-specific logics for power distribution, power control and power monitoring will be defined, stored or adjusted. Communication is via the ***PowerPlex***® CAN, following SAE J1939.

Typical applications

- Buses, mobile homes etc.
- Watercraft, e.g. leisure boats, workboats

Features

- Well-proven CAN technology
- Galvanical isolation (CAN bus)
- Programmable overload protection
- 8 dimmable outputs
- Multifunctional inputs digital/analog
- Battery monitoring and management, low voltage monitoring
- Flexible system design by means of configuration software

Part number

PP-M-MM500-000-0-Z-00

Approvals

Approval authority	Standard	Rated voltage
KBA	ECE regulation No 10 (E1)	DC 12 V
		DC 24 V

Technical data

Voltage rating	DC 12 V/24 V
Operating voltage	DC 9 ... 32 V
Current consumption	typically 14 mA at DC 12 V typically 10 mA at DC 24 V
Max. total current per module	18 A
Degree of protection	IP22 when mounted vertically with main terminals pointing downwards
Operating temperature range	-40 ... +70 °C (-40 … +158 °F) Derating from +50 °C (+122 °F)
Storage temperature range	-40 ... +85 °C (-40 … +185 °F)
Humidity (IEC 60068-2-30, Db)	95 % RH, 144 hrs
Vibration IEC 60068-2-6, Fc IEC 60068-2-64, Fh	 10 Hz to 57 Hz: ± 0,38 mm 57 Hz to 200 Hz: acceleration 5 g 10 Hz to 2000 Hz: Acceleration approx. 2 g_{RMS}
Shock (IEC 60068-2-27, Ea)	 25 g (11 ms)
EMC	CE logo to EN 61000-6-1 & EN 61000-6-3
Mass	approx. 95 g
Interfaces:	
CAN	***PowerPlex***® CAN, 250 kbit/s, galvanically isolated

The CAN terminals at each end of the bus have to be terminated with a 120 Ω resistor.

Inputs:

8 multifunctional inputs configurable as	I1	I2	I3	I4	I5	I6	I7	I8
Digital inputs:								
0 … 6 kΩ: ON; > 7 kΩ: OFF; connecting to ground	•	•	•	•	•	•	•	•
Analog inputs: a) voltage measurement:								
0 … 32 V, R_{in}: 60 kΩ; resolution: 12 bit	•	•	•	•	•	•	•	•
b) battery monitoring:								
0 … 32 V; potentialfree measurement of the battery voltage (I1&I2 and I3&I4)	+	-	+	-				
± 60 mV; battery current measurement with external shunt (I5&I6 and I7&I8)					+	-	+	-
c) resistance measurement:								
0 ... 750 Ω; for tank levels and temperature	•	•	•	•	•	•	•	•

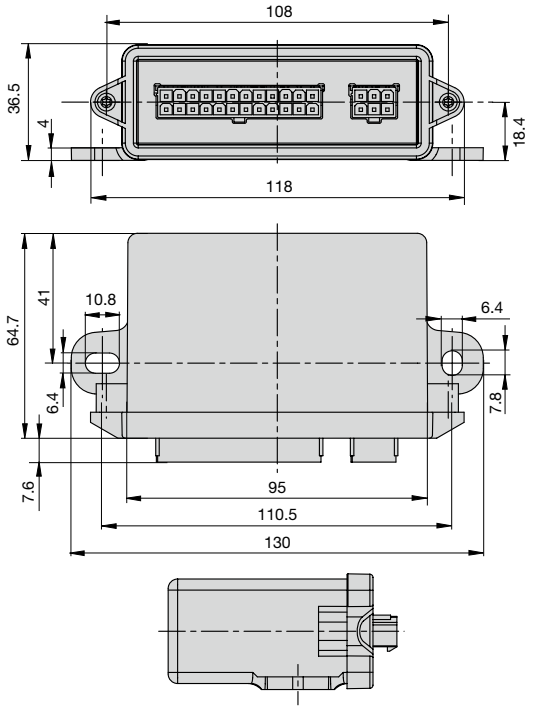
Technical data

Outputs:

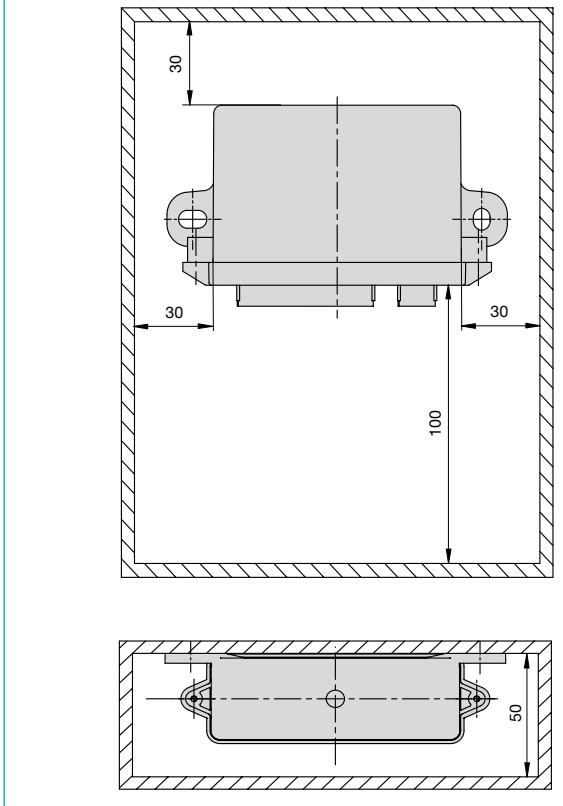
8 outputs with 4 A max. continuous current

Load output:	Power MOSFET, high side switching
Max. current rating	4 A, adjustable in 1 A steps
R_{ON} at rated current (at 25 °C):	50 mΩ
Tripping range at overload	13.5 ≤ x ≤ 26.5 A
Trip time:	typically 180 µs at 19 A
Outputs are equipped with fail-safe elements (20 A-SMD-fuse)	
Leakage current in OFF condition:	2 µA
Dimming function:	all load outputs are high-frequency dimmable, frequency adjustable

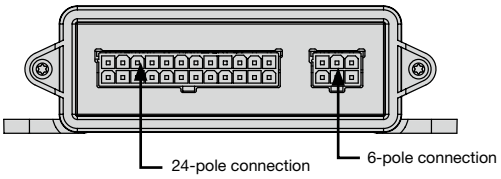
Dimensions



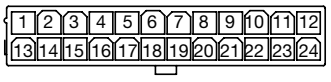
Mounting dimensions



Pin assignment

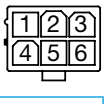


24-pole connection* (X1)



interface	assignment	pin
multifunctional inputs (Note: Correct connection of PLUS/MINUS must be ensured for battery monitoring)	I1	1.1
	I2	1.2
	I3	1.3
	I4	1.4
	I5	1.5
	I6	1.6
	I7	1.7
	I8	1.8
GND_I for multifunctional inputs (Note: GND_I, only for multifunctional inputs (X1: I1 – I8), do not use for GND_O of load outputs (X1: O1 – O8))	GND_I	1.9
	GND_I	1.10
	GND_I	1.11
	GND_I	1.12
4 A load outputs, dimmable (Note: GND_O must be connected externally.)	O1	1.13
	O2	1.14
	O3	1.15
	O4	1.16
	O5	1.17
	O6	1.18
	O7	1.19
	O8	1.20
voltage supply (DC 12 V/24 V, DC 9 ... 32 V)	U_{Batt} +	1.21
		1.22
	U_{Batt} -	1.23
		1.24

6-pole connection* (X2)



interface	assignment	pin
PowerPlex® CAN, galvanically isolated	CAN-H	2.1
	CAN-L	2.2
	SHLD	2.3
	CAN-H	2.4
	CAN-L	2.5
	SHLD	2.6

*) Mating connectors are not included in delivery (see accessories)

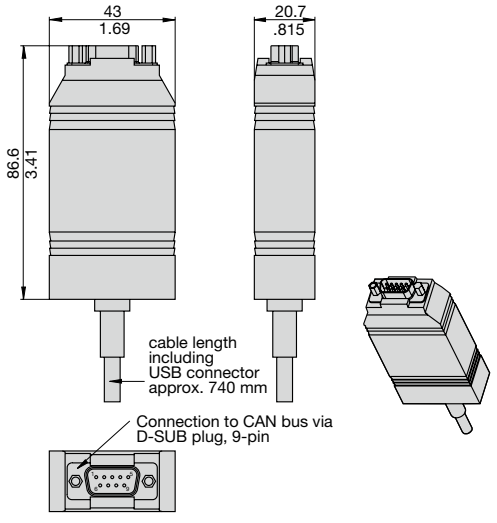
Connection

connector*	mating connectors
X1: 24-pole	Molex Mini-Fit: 0039012240 Mini-Fit Female Crimp Terminal 18-24 AWG: 39000038 Hand-Crimp-Tool: 63819-0900 Extractor Tool: 11030044
X2: 6-pole	Molex Mini-Fit: 0039012060 Mini-Fit Female Crimp Terminal 18-24 AWG: 39000038 Hand-Crimp-Tool: 63819-0900 Extractor Tool: 11030044

*) All necessary mating connectors and crimp contacts are included in the connectors package.

Accessories

USB/CAN converter: XPP-USBC0
XPP-USBC1 (opto-decoupled)



Pin assignment D-SUB output plug

PIN	assignment
2	CAN-L
7	CAN-H

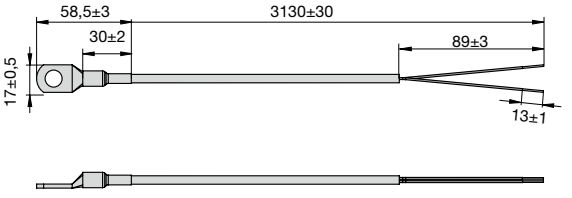
This is a metric design and millimeter dimensions take precedence.
Applicable for nominal dimensions without direct tolerance indication:
DIN ISO 286 ± IT 13.
Refer to product datasheet for installation and safety instructions.

***PowerPlex*® Configuration Software**

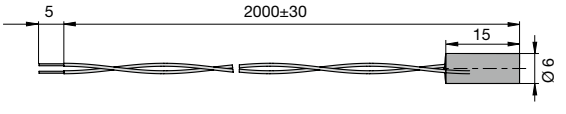
Connector package:
(contains 6-pole and 24-pole connector,
30 x crimp contacts 16 AWG (1.31 mm²)) XPP-CP-100

Temperature sensor:

XPP-TS500R-HB
temperature range: -30 ... +100 °C (-22 … +212 °F)



XPP-TS500R-PH
temperature range: -30 ... +100 °C (-22 … +212 °F)



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