

## Description

The **PowerPlex®** Mini Module for DC 12V and DC 24V on-board electrical systems is perfectly suitable for LEDs and ambient lighting. It offers eight multi-functional inputs, which can be used for measuring current, voltage, temperature and/or liquid levels, as well as eight load outputs. Its space-saving design supports the flexibility and modularity of the entire system.

**PowerPlex®** is a decentralized electrical power distribution system. All **PowerPlex®** Modules ensure, alone or in combination with other **PowerPlex®** components, reliable control and monitoring of all installed electrical devices and functions. They protect loads and harness against overcurrent. In addition the modules are used to collect sensor data from level and temperature sensors as well as shunt resistors. Outputs for dimming of electrical loads are also available.

All modules of a **PowerPlex®** system are communicating via CAN bus using a SAE J1939 based protocol. **PowerPlex®** can be configured directly by the vehicle manufacturer using the **PowerPlex®** Configuration Software on a standard PC. The configuration is transferred to the modules via the CAN bus using a USB/CAN adapter.

## Typical applications

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

## Features and Benefits

- Well-proven CAN technology
- Windows®-based configuration software
- Multifunctional inputs digital/analog
- Dimming function
- Eight load outputs
- Battery monitoring and management, undervoltage monitoring

## Part number

PP-M-MM300-000-0-Z-00

## Approvals

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



## Technical Data

Rated voltage	DC 12 V / DC 24 V
Operating voltage	9...32 V DC
Current consumption	typically 32 mA at DC 12 V typically 16 mA at DC 24 V
Max. total current per module	12 A
Degree of protection	IP22 when mounted vertically with terminals pointing downwards
Operating temperature range	-40...+60 °C (-22...+140 °F)
Storage temperature range	-40...+85 °C (-22...+185 °F)
Humidity (IEC 60068-2-30, Db)	95 % RH, 144 hrs
Vibration IEC 60068-2-6, Fc	10 Hz to 57 Hz: ± 0,38 mm 57 Hz to 200 Hz: acceleration 5 g
IEC 60068-2-64, Fh	10 Hz to 2000 Hz: acceleration approx. 2 g <sub>RMS</sub>
Shock (IEC 60068-2-27, Ea)	25 g (11 ms)
EMC	CE marking to EN 61000-6-2, EN 61000-6-3
Mass	approx. 95 g

### Interfaces:

CAN to SAE J1939 250kBits/s  
The CAN terminals at each end of the bus have to be connected with a 120 Ω terminating resistor.

### Inputs:

8 multifunctional inputs, configurable as

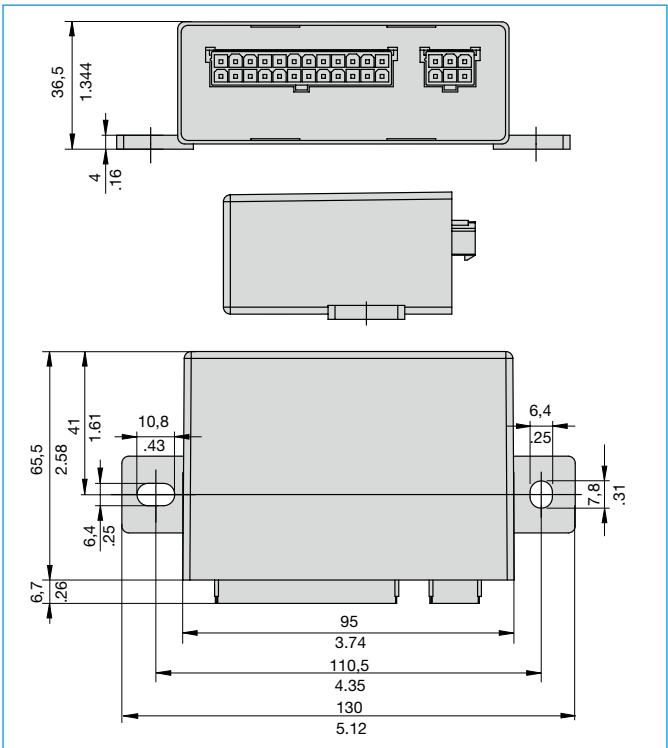
digital inputs (I1-I8):	0...50 Ω: ON; > 100 kΩ: OFF
analog inputs:	ground switching
a) for voltage monitoring (I1-I8):	
measuring range 1:	0...32 V, R <sub>in</sub> : 60 kΩ; resolution: 10 bit
measuring range 2:	0...10 V, R <sub>in</sub> : 60 kΩ; resolution: 10 bit
b) for battery monitoring	
measuring range 1:	0...32 V; potentialfree measurement of the battery voltage (only I1&I2, I3&I4)
measuring range 2:	± 60 mV; battery current measurement with external shunt (only I5&I6, I7&I8)
c) resistance measurement (I1-I8) for tank levels and temperature	
measuring range:	0...750 Ω; level measuring with resistive tank sensors, temperature measurement with XPP-TS500R-HB

**Technical Data**

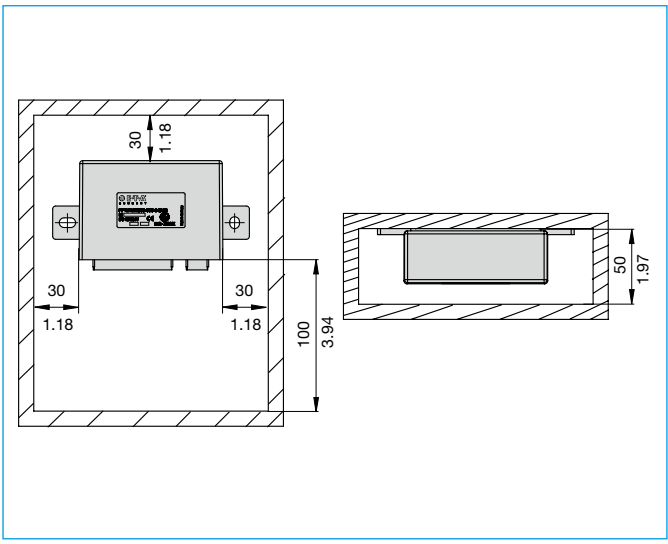
Outputs:  
 8 outputs with 1.5 A max. continuous current

load output:	Power MOSFET, plus switching
max. current rating:	1.5 A
$R_{ON}$ at rated current (at 25 °C):	50 mΩ
tripping range at overload	$13.5 \leq x \leq 26.5$ A
trip time:	typically 180 μs at 19 A
outputs are equipped with fail-safe elements (20 A-SMD-fuse)	
current limitation:	typically 19 A at DC 12 V (25° C) typically 19 A at DC 24 V (25° C)
leakage current in OFF condition	2 μA
dimmer function:	All load outputs can be dimmed in 80 steps with 488 Hz PWM

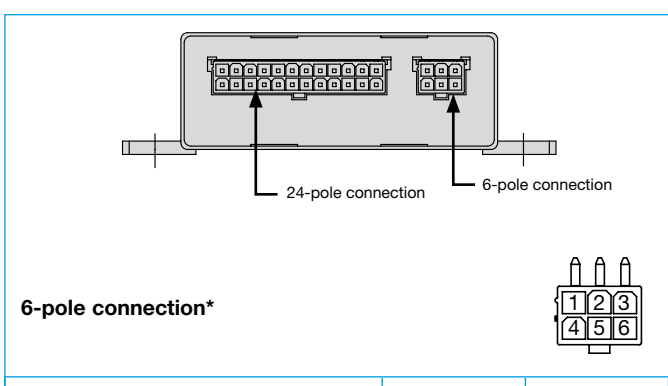
**Dimensions**



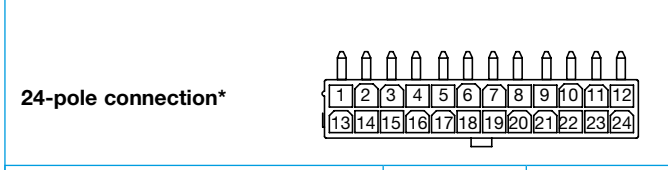
**Mounting dimensions**



**Pin assignment**



interface	assignment	pin
CAN interface	CAN-H	1
	CAN-L	2
	SHLD	3
	CAN-H	4
	CAN-L	5
	SHLD	6

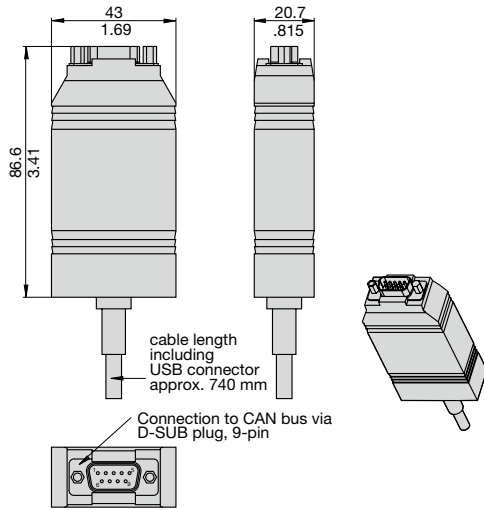


interface	assignment	pin
multi-functional inputs	I1	1
	I2	2
	I3	3
	I4	4
	I5	5
	I6	6
	I7	7
	I8	8
GND for multifunctional inputs	GND <sub>I/O</sub>	9
	GND <sub>I/O</sub>	10
	GND <sub>I/O</sub>	11
	GND <sub>I/O</sub>	12
load outputs max. 1,5 A (Note: GND <sub>L</sub> must be connected externally)	O1	13
	O2	14
	O3	15
	O4	16
	O5	17
	O6	18
	O7	19
	O8	20
power supply (DC 12V/24V; DC 9... 32 V)	U <sub>Batt +</sub>	21
		22
	U <sub>Batt -</sub>	23
		24

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

**Accessories**

**USB/CAN converter:** X PP-USBC0  
X PP-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 16AWG (1.31mm<sup>2</sup>)) XPP-CP-100

**Temperature sensor** XPP-TS500R-HB

All dimensions without tolerances are for reference only. E-T-A reserves the right change specifications at any time in the interest of improved design, performance and cost effectiveness, the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.