E-T-A *PowerPlex*® Compact Module PP-C-COM24

Description

The ***PowerPlex***® Compact Module has been designed for the 12 V or 24 V DC-System of special vehicles, buses or boats. It provides inputs for switches and sensors as well as power outputs with integrated electronic overcurrent protection.

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, etc.
- Watercraft, e.g. recreational, boats and workboats

Features and Benefits

- Well-proven CAN technology
- Programmable overload protection
- Windows® based configuration software
- Inputs for analogue sensors
- Dimming function
- Ten load outputs
- Battery monitoring and management, undervoltage monitoring and control
- Interface for touch screen
- H-bridge

Order number

PP-C-COM24-00E-0-Z-00

Approvals

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

Technical data

Voltage rating	DC 12 V / DC 24 V
Operating voltage	9...32 V DC
Max. total current per module	60 A
Degree of protection	IP20 (coated PCB)
Operating temperature range	-30...+50 °C (-22…+122 °F)
Storage temperature range	-30...+85 °C (-22…+185 °F)
Humid heat (IEC 60068-2-30, Db)	95 % RH, 240 hours
Vibration sinusoidal (IEC 60068-2-6, Fc)	10 Hz to 57 Hz: ± 3.8 mm 57 Hz to 200 Hz: acceleration 5 g
Shock (IEC 60068-2-27, Ea)	25 g
EMC	CE marking to, EN 61000-6-1, EN 61000-6-3
Mass	approx. 380 g
Interfaces:	
CAN according to	SAE J1939 250 kBits/s

The CAN-terminals at each end of the bus require a termination by a 120 Ω resistor

Inputs

10 inputs: for switches or momentary switches

digital inputs:	0...50 Ω: ON; > 100 kΩ: OFF

4 analog inputs:

- 1 for capacitive level monitoring: 0..4 V with external DC supply (max. 100 mA); R_{in}: 40 kΩ; resolution: 10 bit
- 1 for temperature monitoring (for KTY13-6)
- 1 for battery monitoring (via external shunt resistor, measuring range ± 60 mV)
- 1 for four point level indication

Outputs

10 outputs with 8 A / 10 A max. continuous current

load output:	Power MOSFET, high side switching
max. current rating:	8 A / 10 A adjustable from 1 A to 8 A / 10 A in 1 A steps
typical voltage drop U_{ON} at rated current (at 25 °C):	60 mV
overload tripping range:	1.01...1.30 x I_N

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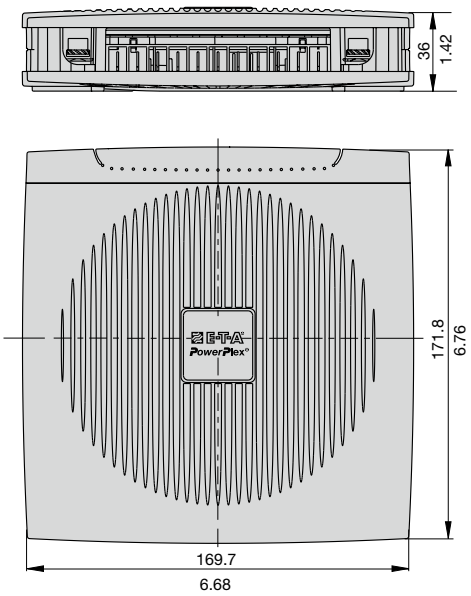
Technical data

trip time:	adjustable from 100 msec to 6 s
outputs are equipped with fail-safe elements (30 A-SMD-fuse)	
current limitation:	typically 75 A at DC 12 V (25 °C) typically 40 A at DC 24 V (25 °C)
leakage current in OFF condition:	4 µA
wire breakage monitoring in ON condition of load:	wire breakage thresholds: I_{Load} typically < 2.5 A
Motor function:	Load outputs 9 and 10 can be used as a H-bridge
High Current function:	Load outputs 6 and 8 with 10 A max. continuous current can be paralleled to build one 20 A output
Dimming function:	Load outputs 3 and 4 are dimmable in 10 steps with 100 Hz PWM

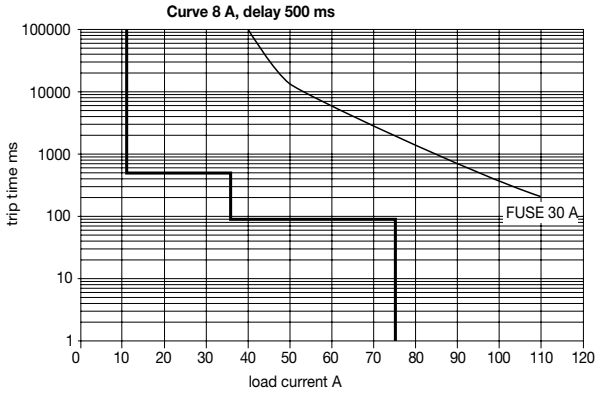
Dimensions

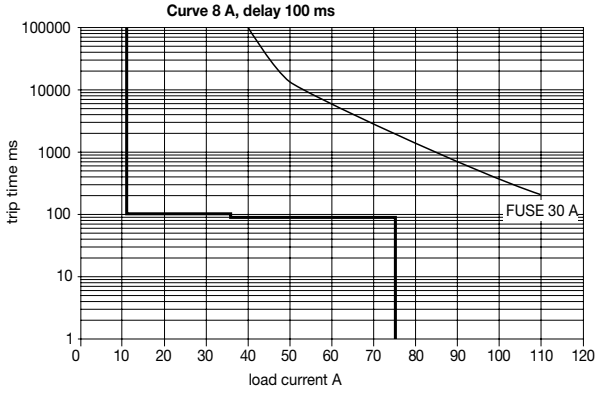


This is a metric design and millimeter dimensions take precedence ($\frac{mm}{inch}$)

Typical time/current characteristics

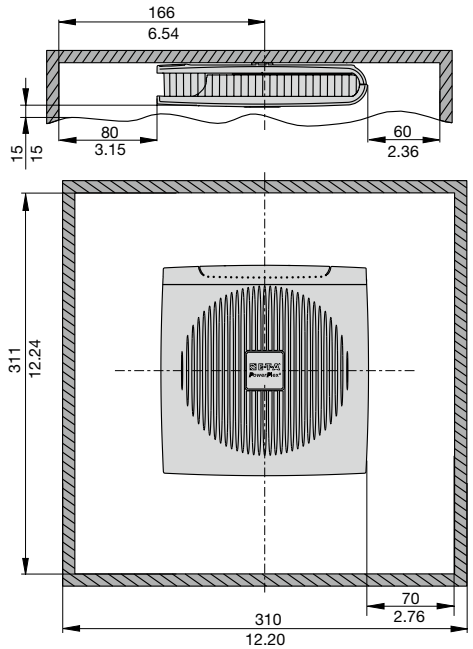
Possible programmable delay times for overload tripping
100 ms, 200 ms, 500 ms, 750 ms*, 1 s*, 2 s*, 4s*, 6s*
*not recommended
U_{bat} = 12 V, T_A = 23 °C





Installation drawings

Recommended min. mounting aperture



This is a metric design and millimeter dimensions take precedence. Applicable for nominal dimensions without direct tolerance indication: DIN ISO 286 ± IT 13

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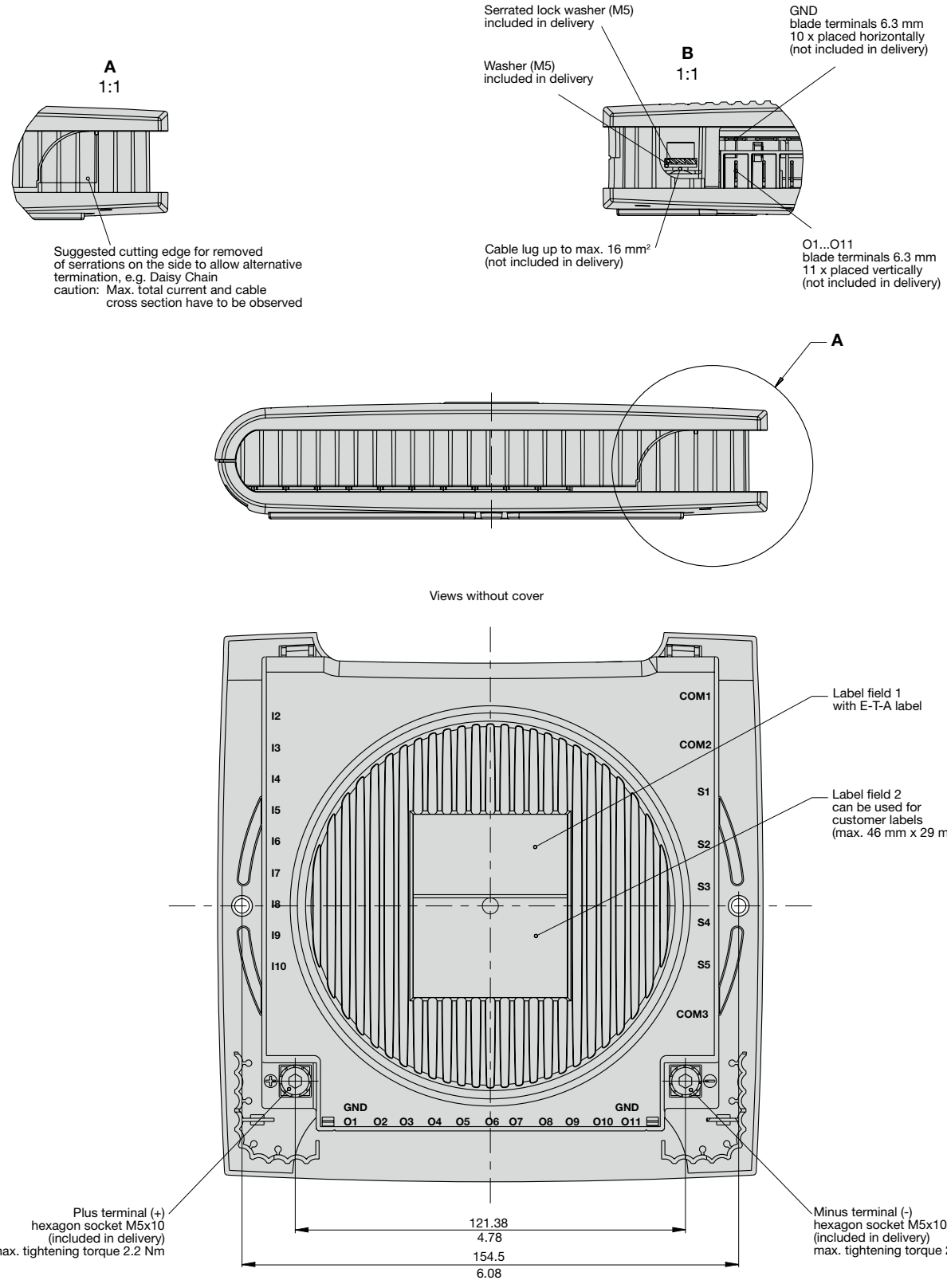
Overview (without snap-on cover)



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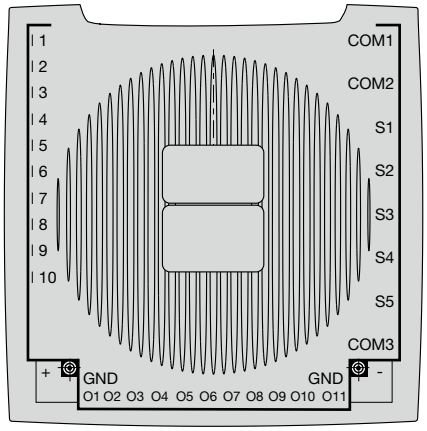
Interfaces

Suitable cables and connectors are available from E-T-A



CAN-Bus

Coding		
COM1 COM2	CAN I CAN II	CAN-H GND CAN-L GND

Sensor inputs

Coding		
S1	level sensor (in steps)	100 % 75 % 50 % 25 % GND
S2	load control	Tremat, D+/- N.C. LKL GND
S3	battery monitor	battery - battery + shunt resistor -
S4	temperature sensor	sensor temp. GND
S5	level sensor stepless	N.C. 0...4 V supply voltage AGND GND

LIN-Bus

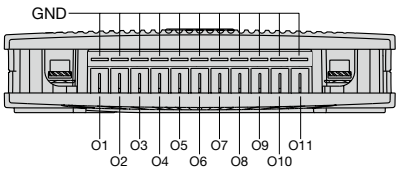
Coding	
COM3	LIN-Bus / RS232

Control inputs

Coding		
I 1 6 I 9 & I 10	switching to ground	GND
I 7, I 8	switching to ground or to positive (configurable)	

Load terminals

Connection via female connectors 6.3 mm



Coding		
GND	10 ground terminals	
O1	output 1	
O2	output 2	
O3	output 3	dimmable via PWM
O4	output 4	
O5	output 5	
O6	output 6	parallel connection (wire bridge) possible with terminal O8
O7	output 7	
O8	output 8	parallel connection (wire bridge) possible with terminal O6
O9		
O10	output 9	H-bridge
O11	output 10	

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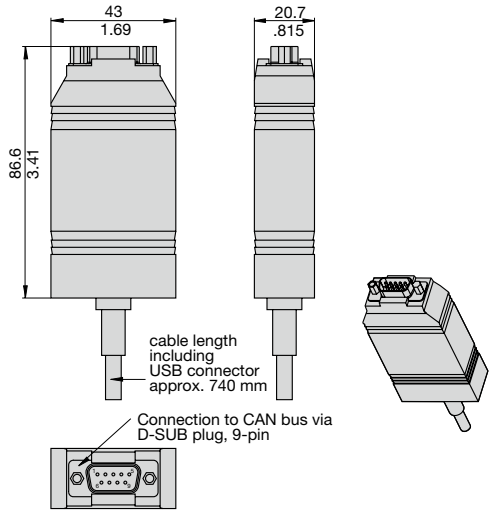
Accessories

USB/CAN converter: X PP-USBCO
X PP-USBC1 (opto-decoupled)



Pin assignment D-SUB output plug

PIN	assignment
2	CAN-L
7	CAN-H

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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**

Stocko connector:
2-pole Y 310 286 01
3-pole Y 310 287 01
4-pole Y 310 288 01
5-pole Y 310 289 01

Y-adapter:
X 223 195 01

D-SUB9 / Stocko adapter:
X 223 279 01

120 Ω load resistor
X 223 278 01

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All dimensions without tolerances are for reference only. 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.