

IPM1301, IPM1401, IPM1511

Integrated power module for charge controller

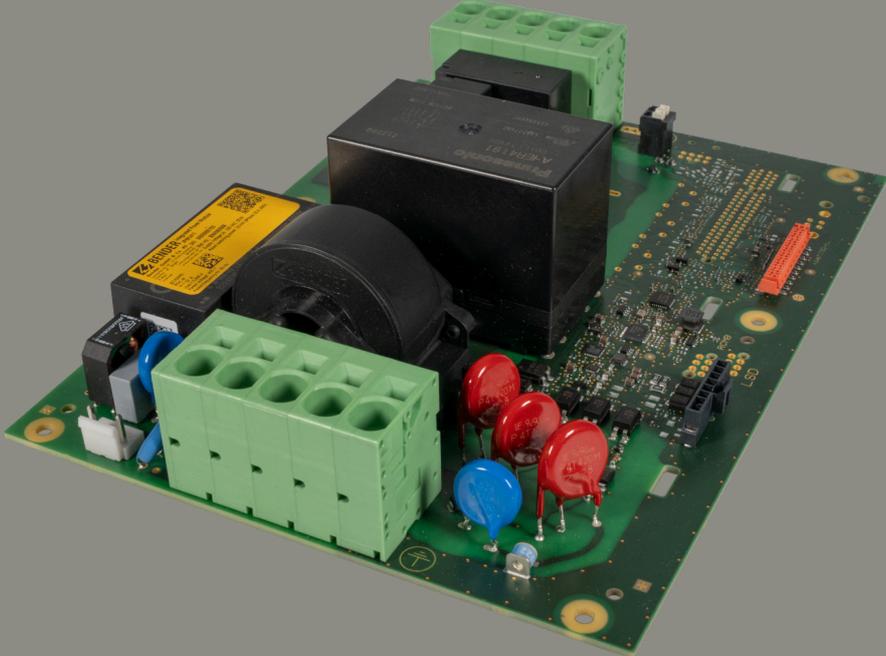


Illustration: similar



Device features

- 22 kW power relay
- Surge Protection Device (SPD)
- integrated DC power supply
- integrated residual current transformer for DC fault current monitoring
- integrated temperature sensors
- 20-pole connector for connection to the charge controller by using a connection cable
- PE monitoring
- integrated residual direct current monitoring module with residual current transformer for DC residual current monitoring (external RCD type A required)
- Relay for phase connection and phase switching
- Load current measurement using up to three external current transformers
- Varistor health monitoring, rotary field detection, phase detection and power frequency measurement

Intended use

The IPM1xx1 integrated power module, referred to as power module in the following, is a component for the set-up of Mode 3 charging stations for electric vehicles (EV). It is intended exclusively for use with Bender charge controllers as an accessory. Any other use than that described in this manual is regarded as improper.

This document is to be used together with the manual D00520 for the following charge controllers:

Type	Part No.	Link to manual
ICC1314-Connect Plus	B94060073	

i The charge controller ICC1314 is a variant of the charge controller ICC1324.

Functional description

The power module is an assembly that expands the functional range of the charge controller. The assembly combines many individual components of a Mode 3 charging unit.

A connection to the charge controller via a 20 pole connection cable, enables the power module to combine important components of an AC charging system that are required by standards according to IEC 61851-1.

The integrated monitoring of the DC residual current means that an RCD type A in the charging system is sufficient.

Integrated changeover and cut-in relays allow the charging power to be distributed as needed to either individual phases, or multiple phases in the case of a multiphase connection.

General functions

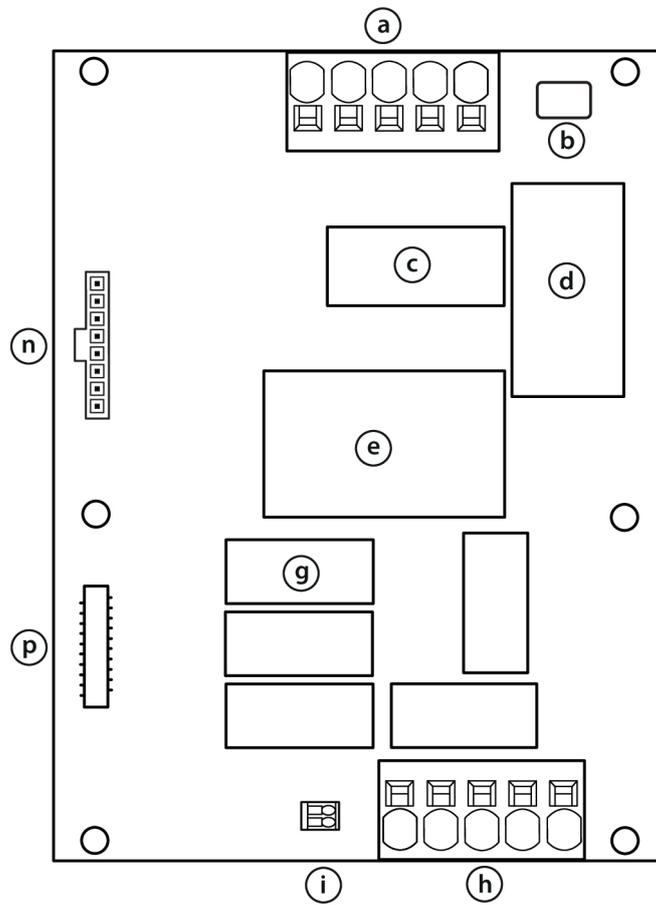
- The device includes an integrated DC power supply. This is supplied via the AC mains connection. No additional power supply is required.
- The device can be used for charging systems with up to 22 kW of charging capacity. The charge controller controls the charging process in the charging system and thereby the main relay of the power module.
- The measuring current transformer is wired in such a way that the PE connection can be monitored in the direction of the infrastructure.
- Monitoring of the 1- or 3-phase system includes varistor health (status of the overvoltage protection (SPD)), rotating field detection, phase detection and mains frequency measurement.
- The device supplements the charge controller with additional temperature sensors for recording the current PCB temperature. Based on these, the charge controller can adjust the charge current depending on the temperature.
- Normally required monitoring of the weld check is integrated in the main relay and is analysed by the integrated controllers. For the phase cut-in relays and phase changeover relays, the weld check is also monitored by the integrated controllers.
- The load current of the individual phases can be monitored with up to three externally connectable current transformers.
- The integrated phase switching relays and phase changeover relays allow the charging power to be distributed as required to individual or multiple phases with a multi-phase connection (depending on the variant).



ADVICE

The status of the internal SPD and all relays is constantly monitored. In the event of a fault, repairs must be carried out by trained specialist personnel.

Device view

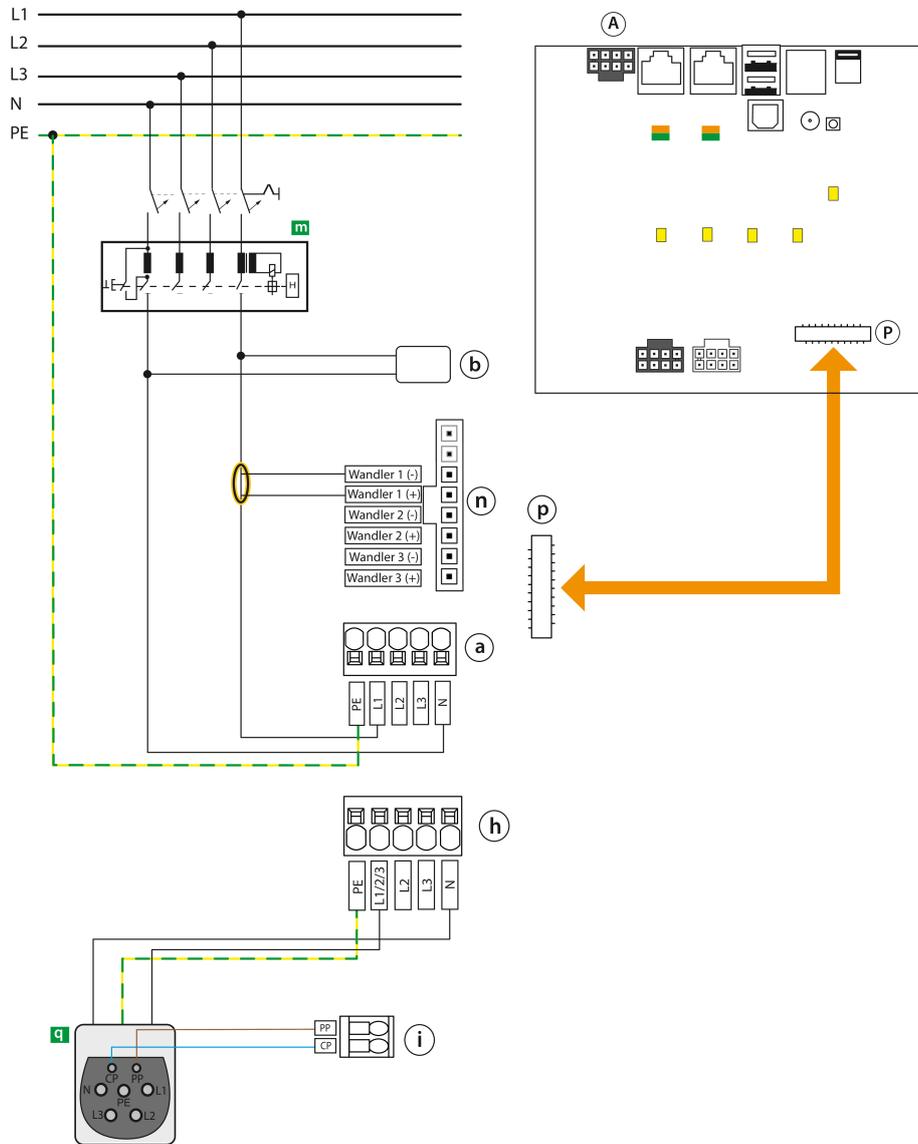


- a Network connection AC
- b Power supply AC 230 V (in compliance with calibration law)
- c Residual current transformer
- d 12 V power supply unit
- e Main relay / 62955 relay
- g Relay matrix
- h Connection charging cable with type 2 plug
- i Data line charging cable (CP) Type 2 plug
- n 3 x current transformer connection for load current measurement
- p 20 pole charge controller connection

Connection type 2 plug

The following wiring diagrams illustrate the wiring options of the power module to the ICC1314 charge controller.

Single-phase connection

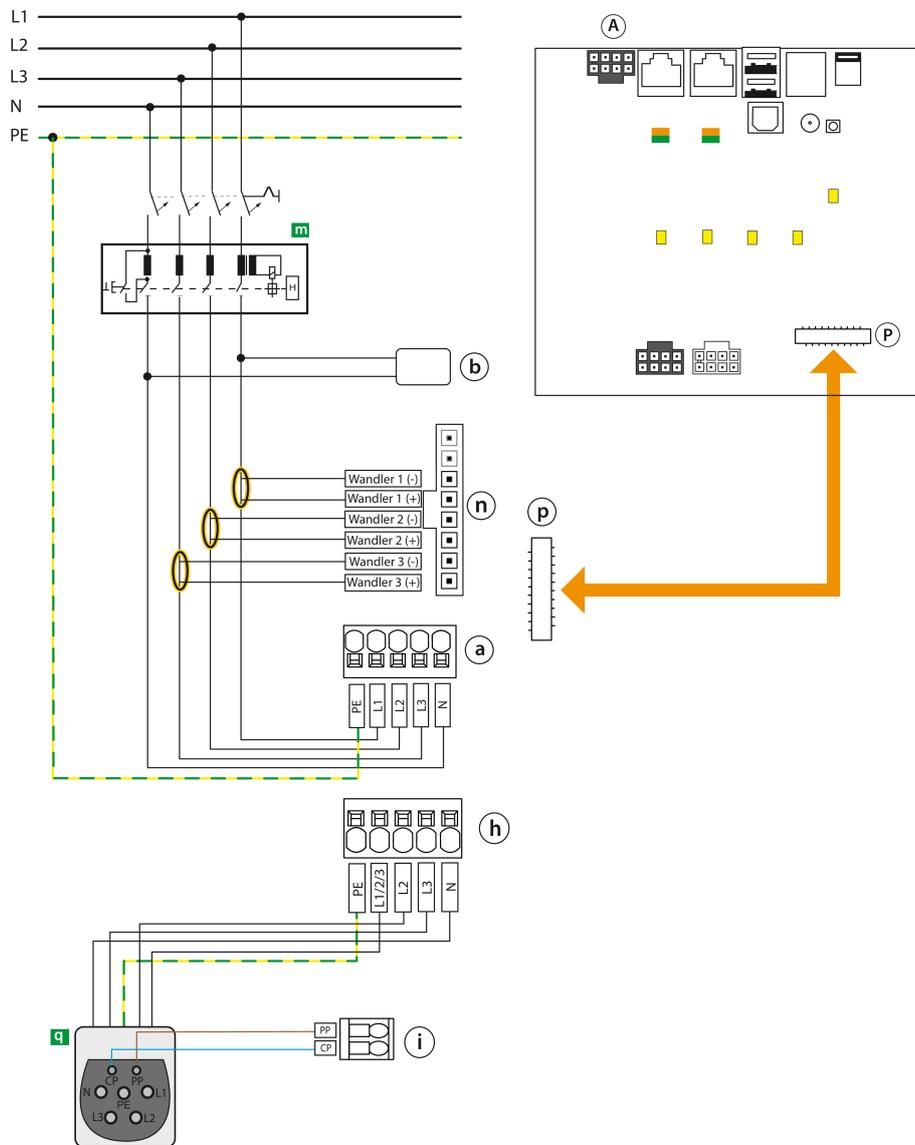


Legend

A*	PE, Modbus meter, CP, PP	i	Data line charging cable (CP) Type 2 plug
P*	Connection charge controller 20 pole	p	Connection charge controller 20 pole
a	Network connection AC	n	3 x current transformer connection
b	Power supply AC 230 V (in compliance with calibration law)	m	RCD type A
h	Charging cable connection with type 2 plug	q	Type 2 plug or permanently connected charging cable

* concerns ICC1314

Three-phase connection



Legend

A*	PE, Modbus meter, CP, PP	i	Data line charging cable (CP) Type 2 plug
P*	Connection charge controller 20 pole	p	Connection charge controller 20 pole
a	Network connection AC	n	3 x current transformer connection
b	Power supply AC 230 V (in compliance with calibration law)	m	RCD type A
h	Charging cable connection with type 2 plug	q	Type 2 plug or permanently connected charging cable

* concerns ICC1314

Technical Data

Insulation coordination acc. to IEC 60664-1 or IEC 60664-3

Rated voltage	250 V
Overvoltage category at input (terminal a, b)	III
Overvoltage category at output (terminal h)	II
Pollution degree	2
Rated impulse voltage	6 kV
Operating altitude AMSL	≤ 2000 m

AC network connection, single-phase / three-phase (terminal block a (L1, L2, L3, N, PE))

Nominal voltage	220...230 V / 400 V
Nominal voltage tolerance	198...253 V / 343...438 V
max. Charging current	1 x 32 A / 3 x 32 A
max. Charging power	7.3 kW / 22 kW
Frequency	50 Hz
max. power consumption	16 W
Self-consumption IPM1511 + ICC1314 (State C, HMI140)	8.1 W
Short-circuit current carrying capacity	
I_{nc}	3 kA
I^2t	50 kA ² s
I_p (IEC 62955)	1.85 kA
I^2t (IEC 62955)	4.5 kA ² s

Connection, type 2-socket AC single-phase / three-phase (terminal block h (L1, L2, L3, N, PE))

Nominal voltage	220...230 V / 400 V
max. Charging current	1 x 32 A / 3 x 32 A
max. Charging power	7.3 kW / 22 kW
Frequency	50 Hz

Connection charging release and external Measuring current transformer: (terminal block n)

max. current per transformer	40 A
Winding ratio	1:1000
Cable length	< 2 m
internal load resistance	10 Ω

Cable lengths/ cable types

Terminal blocks a and h

Connection type	Push-wire terminal
Connection data*	
rigid/ flexible	2.5...16 mm ²
flexible with ferrule without plastic sleeve	2.5...16 mm ²
flexible with ferrule with plastic sleeve	2.5...10 mm ²
Stripping length	18 mm
Charging cable length max. (terminal h)	< 10 m

* depends on the power capacity connected to the power module

Connection charge controller p

Permissible connection plug/ connector system*	Micromatch
Connection cable length	< 0.3 m

* can be ordered separately (see chapter "Ordering information")

- The plug-in system on the IPM board and on the charge controller can withstand 5 plugging cycles.
- The plug on the connection cable is intended for single insertion.

Terminal block i

Connection type	Push in terminal
rigid/ flexible	0.2...1.5 mm ²
flexible with ferrule without plastic sleeve	0.25...1.5 mm ²
flexible with ferrule with plastic sleeve	0.25...0.75 mm ²
Stripping length	8 mm

used plug connectors

Terminal b	JST B2P3 -VH
Terminal i	(Weidmüller LSF-SMT 3.50/02)
Terminal n	Molex Nano-Fit™ 1x8 105311-1108

Environment

Operating temperature	-25...+65 °C*
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Classification of climatic conditions acc. to IEC 60721

stationary use (IEC 60721-3-3)	3K22
Transport (IEC 60721-3-2)	2K11
Long-term storage (IEC 60721-3-1)	1K21

Classification of mechanical conditions acc. to IEC 60721

stationary use (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

* At high temperatures, depending on the enclosure design, the charging current may be reduced or switched off.

Other

Protection class	IP00
Weight	ca. 750 g

Standards and approvals

The IPM1xx1 has been developed in compliance with the following standards:

- IEC 62955
- DIN EN IEC 61851-1
- DIN EN IEC 61851-21-2
- DIN EN IEC 61439-1
- DIN EN IEC 61439-7
- IEC 62196-2
- EN 50620



Declarations of conformity

EU Declaration of conformity

The device is in compliance with the following directives:

- Low Voltage Directive (2014/35/EU)
- Directive on Electromagnetic Compatibility (2014/30/EU)

UK Declaration of Conformity

The device is in compliance with the following regulations:

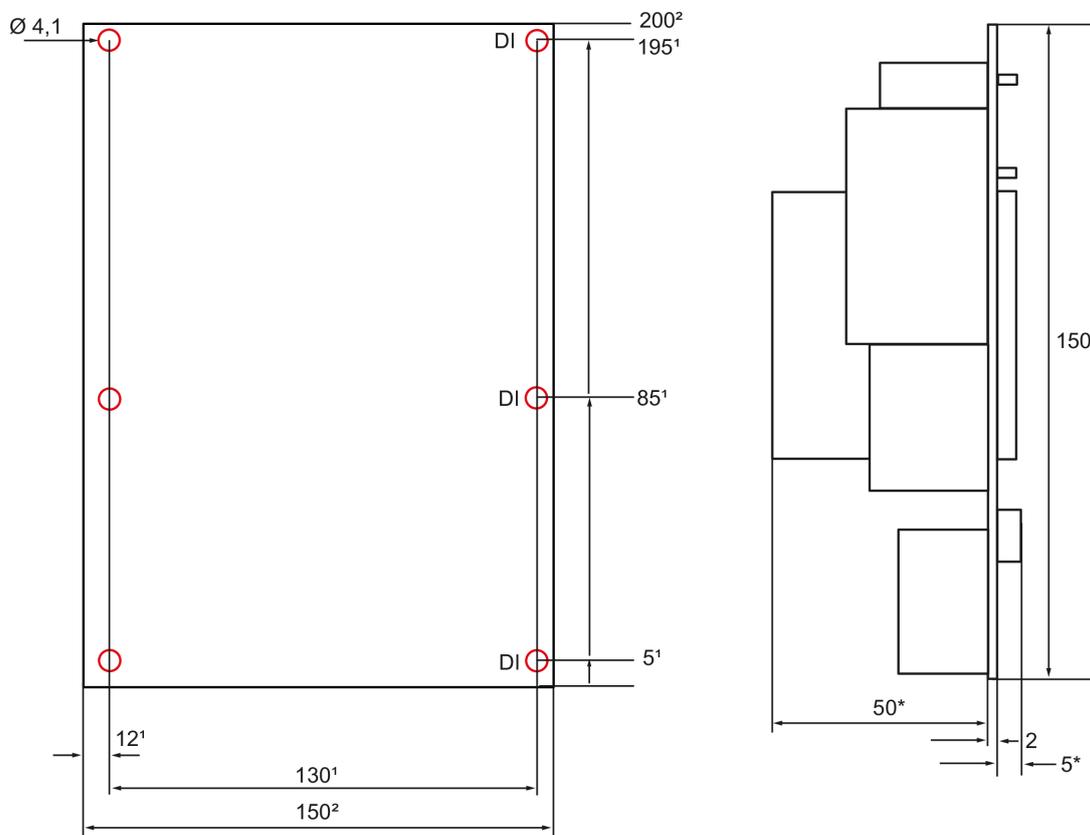
- Electromagnetic Compatibility Regulations 2016
- Electrical Equipment (Safety) Regulations 2016

Ordering data

Type	Phase switching	Phase connection	Load current measurement	Article no.	Manual no.
IPM1511	x	x	x	B94060064	D00498
IPM1301	-	-	-	B94060062	
IPM1401	-	x	-	B94060065	

Connection kit	Contents / Quantity	Article no.
Connection cable for IPM	Length 0.2 m/ 0.3 m	on request

Dimension diagram



Dimensions in mm

* max.

¹ ± 0.1 mm (recommended mounting dimensions of the manufacturer's housing: ± 0.2 mm)

² ± 0.5 mm (recommended mounting dimensions of the manufacturer's housing: ± 0.25 mm)

- or all other dimensions according to DIN ISO 2768-f

i Red markings: possible fixing points

i Recommendation for fastening:

- Pan head screws: 6 x M 3.0 or max. $\varnothing 3.5$ mm

i When manufacturing the charging station, ensure that an enclosure with protection class IP44 is used (DIN EN IEC 61439-7).



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Subject to change!
The specified standards take into account the
edition valid until 01.2026 unless otherwise
indicated.