Smart IP43 Charger 120-240 V

Natural convection cooled Bluetooth enabled

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Smart IP43 Charger 12/50(1+1)



Bluetooth sensing:
Smart Battery Sense



Bluetooth sensing:
BMV-712 Smart Battery Monitor





Smart IP43 Charger 12/50(3)

Bluetooth Smart built-in
The wireless solution to set-up, monitor, control, update and synchronise Smart IP43 Chargers.

Smart IP43 Charger (1): single output
Ideal for charging a single battery bank.

Smart IP43 Charger (1+1): two outputs to charge 2 battery banks
The second output, limited to approximately 4 A and with a slightly lower output voltage, is intended to top up a starter battery.

Smart IP43 Charger (3): three full current outputs to charge 3 battery banks
Each output can supply the full rated output current. But the total of the 3 outputs combined can never exceed the current rating of the charger.

Automatic voltage compensation
The charger compensates for voltage drop over the DC cabling by slightly increasing output voltage when the DC current increases. Please see the manual for details.

Adaptive 6-stage charge algorithm: bulk– absorption – recondition – float – storage – refresh
The Smart IP43 Charger features our well-known "adaptive" battery management system that can be preset to suit different types of batteries. The 'adaptive' feature will automatically optimise the charge process relative to the way the battery is being used.

The right amount of charge: variable absorption time
When only shallow discharges occur (a yacht connected to shore power for example) the absorption time is kept short in order to prevent overcharging of the battery. After a deep discharge the absorption time is automatically increased to make sure that the battery will be fully charged.

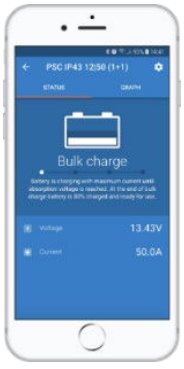
Preventing damage due to excessive gassing: the BatterySafe mode (see fig. 2)
If, in order to quickly charge a battery, a high charge current in combination with a high absorption voltage has been chosen, the charger will prevent damage due to excessive gassing by automatically limiting the rate of voltage increase once the gassing voltage has been reached (see the charge curve between 14,4 V and 15,0 V in fig. 2).

Less maintenance and aging when the battery is not in use: the Storage Mode (see fig. 1 & 2)
The Storage Mode kicks in whenever the battery has not been subjected to discharge during 24 hours. In the Storage Mode float voltage is reduced to 2,2 V/cell (13,2 V for a 12 V battery) to minimize gassing and corrosion of the positive plates. Once a week the voltage is raised back to the absorption level to 'equalize' the battery. This feature prevents stratification of the electrolyte and sulphation, a major cause of early battery failure.

Also charges Li-ion ($LiFePO_4$) batteries
Charger on-off control can be implemented by connecting a relay or open collector optocoupler output from a Li-ion BMS to the remote on-off port. Alternatively full control of voltage and current can be achieved with Bluetooth.

Fully programmable charge algorithm
The charge algorithm can be programmed with help of Bluetooth or the VE.Direct interface.
Three preprogrammed algorithms can be selected with the mode button (see specifications).

Optional external battery voltage and temperature sensing via Bluetooth
A Smart Battery Sense, SmartShunt or a BMV-712 Smart Battery Monitor can be used to communicate battery voltage and temperature to one or more Smart IP43 Chargers via VE.Smart Networking.



Remote on-off
The remote on/off consists of two terminals: Remote H and Remote L.
A remote on/off switch or relay contact can be connected between H and L.
Alternatively, terminal H can be pulled high, or terminal L can be pulled low.
See manual for details.

VE.Direct interface
For a wired data connection to a GX device such as the Cerbo GX, PC or other devices. Also enables Instant Readout functionality via VictronConnect remotely from VRM.
Please see the VictronConnect app.

Programmable relay
Can be programmed using the VE.Direct interface or a Bluetooth enabled device to trip on an alarm or other events.

Synchronised charging
Pairing two or more Smart IP43 Chargers in a VE.Smart Network, enables synchronised charging. This improves the charge efficiency and battery life.

Learn more about batteries and battery charging
For more information about adaptive charging please look under Downloads / Technical information on our website.

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Smart IP43 Charger		12/30 (1+1) & (3)	12/50 (1+1) & (3)	24/16 (1+1) & (3)	24/25 (1+1) & (3)	36/15 (1)	48/13 (1)
Input voltage		85 – 250 VAC (full power from 100 VAC, startup from 90 VAC)					
DC input voltage range		90 – 375 VDC					
Frequency		45-65 Hz					
Power factor		>0.99					
Back current drain		<1 mA					
No load power consumption		1 W					
Maximum Efficiency – 230VAC / 120VAC		95 % / 93 %	94 % / 92 %	96 % / 94 %	96 % / 94 %	96 % / 94 %	96 % / 94 %
Charge voltage – Normal mode	Absorption Float Storage	14.4V 13.8V 13.2V		28.8V 27.6V 26.4V		43.2V 41.4V 39.6V	57.6V 55.2V 52.8V
Charge voltage – High mode	Absorption Float Storage	14.7V 13.8V 13.2V		29.4V 27.6V 26.4V		44.1V 41.4V 39.6V	58.8V 55.2V 52.8V
Charge voltage – Lithium mode	Absorption Float Storage	14.2V N/A 13.5V		28.4V N/A 27V		42.6V N/A 40.5V	56.8V N/A 54V
Fully programmable		Yes, with Bluetooth and/or VE.Direct					
Maximum input current setting		3 – 10 A					
Number of battery connections		(1) models: 1 | (1+1) models: 2 (2nd output via 2 pole terminal & 4 A max) | (3) models: 3					
Charge current house battery		30 A	50 A	16 A	25 A	15 A	13 A
Low current mode		15 A	25 A	8 A	12.5 A	7.5 A	6.5 A
Temperature compensation - Default		-16 mV/°C		-32 mV/°C		-48 mV/°C	-64 mV/°C
Charge current starter battery		4 A Max (1+1 output models only)					
Charge algorithm		6-stage adaptive (3 stage for Li-ion)					
Protection		Battery reverse polarity (fuse, not user accessible) / Output short circuit / Over temperature					
Can be used as power supply		Yes, output voltage can be set with Bluetooth and/or VE.Direct					
Operating temp. range		-20 to 60 °C (0 – 140 °F) Rated output current up to 40 °C, derate linearly to 20 % at 60 °C					
Humidity (non-condensing)		max 95 %					
Remote on/off		Yes (2 pole terminal)					
Relay (programmable)		Yes (SPDT - 5 A up to 250 VAC / 5 A up to 28 VDC)					
Bluetooth		Power: +4 dBm | Frequency: 2402 – 2480 MHz					
ENCLOSURE							
Material & Color		aluminium (blue RAL 5012)					
Battery connection		Screw terminals 16 mm² (AWG6)					
AC-connection		IEC 320 C14 inlet with retainer clip (AC cord ordered separately)					
Protection category		IP43					
Weight kg (lbs)		2,7 kg (6 lbs)					
Dimensions (h x w x d)		180 x 249 x 116 mm (7.1 x 9.8 x 4.6 inch)					
STANDARDS							
Safety		EN 60335-1, EN 60335-2-29					
Emission		EN 55014-1, EN 61000-6-3, EN 61000-3-2					
Immunity		EN 55014-2, EN 61000-6-1, EN 61000-6-2, EN 61000-3-3					
Vibration		IEC68-2-6:10-150Hz/1.0G					



Retainer clip
(included)

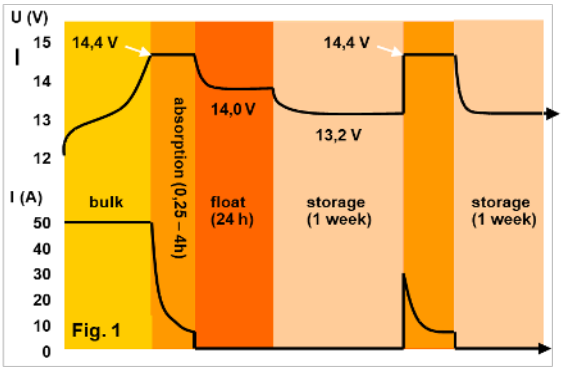


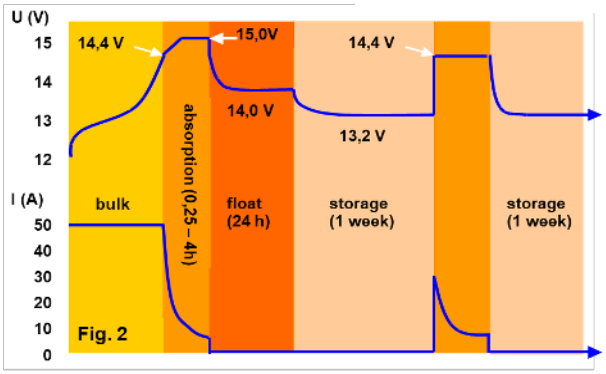
Mains Cord CEE 7/7
(must be ordered separately)



Mains Cord NEMA 5-15P plug
(must be ordered separately)

Plug options:
Europe: CEE 7/7
UK: BS 1363
Australia/New Zealand: AS/NZS 3112
US: NEMA 5-15P





Charge curves: up to the gassing voltage (fig.1), and exceeding the gassing voltage (fig.2)

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