



POWERCHARGER PRO



USER MANUAL



VALID FOR THE FOLLOWING MODELS

PFC0150-12CH10S
PFC0300-12CH15S
PFC0600-12CH20S

PFC0300-24CH10S
PFC0360-24CH12S
PFC0600-24CH15S
PFC0600-24CH20S
PFC1200-24CH30S

INTRODUCTION

This manual contains important operating and safety instructions, before starting to use the battery charger it is important to read and understand the safety instructions in this manual.

Safety notes

- Before each use please check the battery charger, the connection cable and the connector. If any malfunction is detected do not use it! It is strictly forbidden to open the device. Repairs may only be carried out by qualified technicians using original spare parts. A charger, a cable and / or a damaged connector increases the risk of fatal electric shocks.
- Do not place the charger on highly flammable surfaces or environments (ex .: paper, cloth etc ...). The overheating of the device during the charging phases can increase the risk of fire.
- During operation the device should be placed in a well-ventilated place.
- If the power supply cable is damaged it must be replaced by a qualified technician to eliminate the risk of accidents.

WARNING

- DO NOT never charge a cold or non-rechargeable battery!
- Keep the device out of the reach of children
- The device must be protected from sunlight or direct heat sources to prevent overheating.
- To reduce the risk of malfunctions do not block the ventilation bores.
- DO NOT install the unit in a sealed environment, otherwise it may overheat.
- To avoid the risk of electric shock and / or fire, make sure that the power supply system is in good condition.
- DO NOT use the charger with damaged cables and / or with inadequate section.
- DO NOT use the battery charger in an environment with high humidity or in direct contact with splashes of water and / or other liquid or in the rain.

FEATURES

The photos of the product in this manual are only for reference with the purpose of explanation; the product you have purchased may be different.

This smart battery charger in the standard version is used to charge lead-acid batteries GEL or AGM, upon request it is possible to modify the charging curves to the standard lead- acid flooded batteries or lithium-ion batteries or LiFePO4. Please read carefully the label on the product and verify that the default settings of the charging algorithm are appropriate for the type of battery to be charged.

Always keep within reach and near the charger this user manual for easy reference on essential safety, use and maintenance information.

The information on this manual may be subject to modifications without any prior notification.

NDS Energy reserves the right to make changes and improvements to the product at any time without notice and without obligation to relate these changes to previously distributed devices.

Smart battery charger (main features):

- High frequency and high-tech battery charger
- Universal Input 100 to 240VAC with a highly advanced PFC
- Charging curves entirely controlled by micro controller
- Designed to have a high efficiency in all operating conditions
- Thermal protection against overheating
- Operating status indicated by 3 LED (Green - Yellow - Red)

OPTIONAL

- LEDs extension for a remote indication
- Soft start and automatic reset of the charging curve when a new battery is connected.
- Ability to change the charging curves by DIP-SWITCHES
- Ability to change the charging current by DIP-SWITCHES
- Equipped with a Normally Open (NO) relay for main line presence warning.

NOTES

All options can be added and available on the charger only after customer request. Check the label of the product to verify the features and options in your device.

All the smart Battery Chargers have the PFC circuit with universal input.

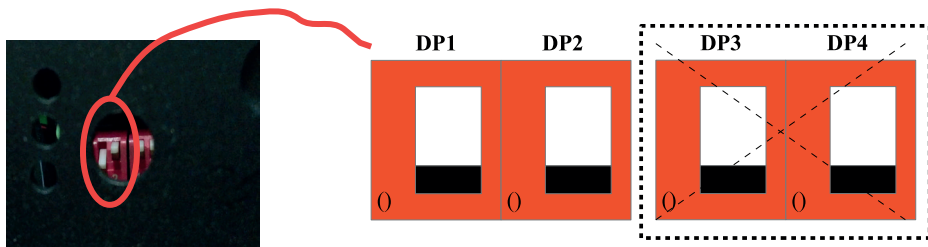
CHARGING CURVE SELECTION

Before installing and using the charger, please set the most suitable charging curve according to the type of battery to be charged, in fact, the device is equipped with DIP-SWITCH to select various charging curves, as shown in the following table:

DP1	DP2	PHASES	DESCRIPTION
OFF	OFF	IUIa - AGM	For AGM batteries
OFF	ON	IUIa - Acd	For Lead Acid Flooded traction batteries
ON	OFF	IUUa	Generic curve for GEL and AGM batteries (Default setting)
ON	ON	IU - LiFePO4	For LiFePO4 lithium battery
ON	ON	IUIa - GEL	<i>For GEL batteries and all Lead Acid Flooded (Only for model 12V - 10A)</i>

The DIP-SWITCHES are behind a black plastic cover on the front panel of the device, so in one of the two shorter sides.

In some models, there are 4 DIP-SWITCHES but it should be considered only the first two on the left, the other two are of no use.



FUNCTIONING

After setting the DIP-SWITCHES of the charger, by connecting it to the battery and to the mains, the device signals the operating status with LEDs of different colors.

According to the model it can be find 3 or 5 LED indicators, as shown in the following pictures:

The LEDs on the charger have the following reports:

Battery charger with 3 LEDs

LED status	Indication
Constant or flashing RED	Battery with inverted poles or too high voltage
Constant YELLOW	On charge
Flashing YELLOW	Battery disconnected or too low voltage
Constant GREEN	Battery charged



Battery charger with 5 LEDs



LED status	Indication
1 lashing RED	Battery with too high voltage
Constant RED	Battery with inveted poles
Constant ORANGE	Battery disconnected
Flashing ORANGE	Self-diagnosis of the charger failed
Constant ORANGE + YELLOW	On charge
Constant YELLOW	Capacity of the battery on charge
Constant GREEN	Battery charged

Some devices have two pairs of output cables that may also have the same color but of different section: **The pair of cables of larger section is the power output of the charger, then must be connected to the battery pack, while the other pair consists of a dry contact of a relay NORMALLY OPEN.** Connecting one cable to the battery voltage, the Normally Open contact, can be used to turn on a 12V lamp (or LED) when the main line is connected.

If the pair of cables with the larger section is BROWN-BLUE color, the POSITIVE is the BROWN cable.

The cooling fan/fans are electronically controlled by the microcontroller which decides the power and speed according to the conditions of the internal and environment temperature.

MODELS

PF12CH25S – 12V 10A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	14,4V (2,4V/Cell)
Output - Float Charge	13,5V – 13,9V (2,27V/Cell)
Output current	10A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L106x W128 x H56.5 mm
Weight	0,95kg (cables excluded)

PF12CH25S – 12V 15A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	14,4V (2,4V/Cell)
Output - Float Charge	13,5V – 13,9V (2,27V/Cell)
Output current	15A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L145 x W128 x H56.5 mm
Weight	1,33kg (cables excluded)

PF24CH20S – 24V 20A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	20A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L223.2 x W128 x H56.5 mm
Weight	2,12kg (cables excluded)

PF24CH30S – 24V 30A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	30A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L280 x W134 x H77.2 mm
Weight	3,13kg (cables excluded)

PF2405S – 24V 5A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	5A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L106 x W128 x H56.5 mm
Weight	0.95kg (cables excluded)

PF24CH10S – 24V 10A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	10A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L145 x W128 x H56.5 mm
Weight	1,33kg (cables excluded)

PF24CH12S – 24V 12A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	12A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L208 x W111 x H56 mm
Weight	1,56kg (cables excluded)

PF24CH15S – 24V 15A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	28,8V (2,4V/Cell)
Output - Float Charge	27V - 27,8V (2,27V/Cell)
Output current	15A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L223.2 x W128 x H56.5 mm
Weight	2,12kg (cables excluded)

PF12CH25S – 12V 20A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	14,4V (2,4V/Cell)
Output - Float Charge	13,5V – 13,9V (2,27V/Cell)
Output current	20A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L223.2 x W128 x H56.5 mm
Weight	2,12kg (cables excluded)










PF12CH25S – 12V 25A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	14,4V (2,4V/Cell)
Output - Float Charge	13,5V – 13,9V (2,27V/Cell)
Output current	25A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L223.2 x W128 x H56.5 mm
Weight	2,12kg (cables excluded)

PF36CH25S – 36V 25A

Description	Technical Features
Input voltage	100VAC – 240VAC \pm 10% Universal
Frequency	50Hz - 60Hz
Output - Boost Charge	43,2V (2,4V/Cell)
Output - Float Charge	40,5V – 41,7V (2,27V/Cell)
Output current	25A \pm 0,5A
Short-circuit protection	Auto reset at the end of short-circuit condition
Reverse polarity protection	Auto reset at the end of reverse polarity condition
Additional protections	Safe connection without sparkles on output and input Thermal protection against overtemperature
Dimensions	L280 x W134 x H77.2 mm
Weight	3,13kg (cables excluded)

SYMBOLS

	Warning, handle this device very carefully
	Read carefully and follow the instructions for use, maintenance and safety before using the battery charger. A use other than that indicated in the manual or not following these instructions may result in electric shock, fire and / or serious injury.
	Device for use in enclosed spaces protected from rain and splashes of water and liquids in general. The introduction of liquids into the battery charger may result in electric shock.
	The battery charger contains dangerous substances for the environment, so it is not allowed the free product disposal, but it is necessary to use the appropriate collection centers organized by the local municipalities or contact the manufacturer directly. Respecting this rule protects the environment.
	Do not use the device in flammable environments where a spark could cause a fire or the spreading of flames.
	Do not open the device, electric shock hazard
	CE marking certifying the conformity of the device
	Conformity marking obtained by TUV SUD
	ETL Conformity obtained for the standards UL1012, UL1564 e CSA C22.2 e NO.107.

WARRANTY

The manufacturer guarantees the proper functioning of the Power Charger Pro and undertakes to make the free replacement of parts that deteriorate for construction defects within 24 months from the date of purchase, as evidenced by the validation card (to be filled in all its part and send back to the manufacturer). The defects resulting from improper installation, use, tampering or negligence shall not be covered by warranty.

Furthermore, we assume no liability for any direct or indirect damages. The Power Charger Pro returned, even if under warranty, will have to be shipped "Freight paid" and shall be returned on as "Freight collect".

The certificate of warranty shall be valid only if accompanied by a official receipt or delivery document.

Any dispute will be under the competent jurisdiction of the court of Pescara (Italy)

Mod......**Serial n.**.....

Purchase date

Stamp and signature of the reseller



ALL THE ENERGY YOU NEED
TUTTA L'ENERGIA CHE TI SERVE



0042_MANU_PowChPro_GB00

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