

TECHNICAL MANUAL



Dolphin combi SW

Inverter / Charger Combi

Combi SW 12V 1600VA

Réf : PF.16088

Combi SW 24V 3800VA

Réf : PF.16089

SAFETY PRECAUTIONS

NOT_COMBI_SW-00



TO PREVENT ANY RISK OF ELECTRIC SHOCK OR FIRE, READ THIS MANUAL CAREFULLY BEFORE INSTALLING THE EQUIPMENT.

In the event of any problems or misunderstandings, please contact your dealer.

This equipment is not designed for use by people (including children) with diminished physical, sensorial or mental capacities, or people without experience or knowledge of such equipment, unless they have received prior instruction in the use of the equipment from a person responsible for their safety or are under the supervision of such a person. Ensure that children are supervised in order to prevent them playing with the device.

This equipment contains components that may cause electric arcs or sparks, when connecting cables, for example. To prevent any risk of fire or explosion, do not install this equipment close to flammable materials, liquids or gases.



Installation precautions

To prevent any risk of irreversible damage to the equipment, ensure that you comply scrupulously with the following recommendations.

- ▶ This device must not be installed close to a heat source.
- ▶ It must not be installed in an airtight or badly-ventilated compartment.
- ▶ The ventilation inlets must not be obstructed.
- ▶ Clearance of at least 10 cm must be allowed around the housing to guarantee adequate convection.

NOT_COMBI_SW-00

- ▶ This device must not be exposed to running water, water spray and dust of any kind.
- ▶ We recommend securing the device in a vertical position, with the cable outlet pointing downwards.
- ▶ You are formally prohibited from making mechanical alterations to the housing, including making additional holes, for example.
- ▶ Under no circumstances should this device be seen as a toy. It should therefore, quite clearly, not be left in the hands of a child.



Connection precautions.

To prevent any risk of electric shock or irreversible damage to the equipment, you should comply strictly with the following recommendations.

- ▶ This device must be installed by an authorized technician.
- ▶ The installation to which this device is connected must comply with the applicable regulations.
- ▶ This device is designed to be connected to a 230V single phase.
- ▶ The mains power line and the AC power output must feature a cut-off device with differential protection, to protect individuals against electric shocks. Refer to the device's electricity consumption characteristics to select the size and type of circuit breaker.
- ▶ Prior to starting connection, the mains cable gland in the packaging must be assembled and correctly attached to the left part of the housing (using the nut provided), in the hole designed for this purpose
- ▶ For safety reasons, the device's EARTH

SAFETY PRECAUTIONS

NOT_COMBI_SW-00

terminal (PE “Protective Earth” terminal), must be connected to the system’s physical earth (yellow & green wire of the mains cable). Refer to the wiring diagram for more information.

▶ On the battery side, it is imperative to provide an external fuse on the positive polarity. Refer to the electrical characteristics of the device consumption to choose the appropriate dimension of the fuse

▶ To prevent parasite heating, ensure that the cable cross-sections are correct and the connectors are properly tightened.

IMPORTANT : This device is not protected against battery polarity reversals. A battery connection error automatically causes the battery fuses to blow as well as irreversible damage to the circuit board.



Activation precautions

▶ To prevent any risk of electric shock on activation or during operation, the protective cover must be correctly positioned and screwed into the housing.

▶ This device complies with the applicable regulations governing transmitted interference and immunity from external disturbances (see EMC paragraph in the Technical specifications section).

▶ When in operation, take particular care that this device is not subjected to conducted or radiated interference at levels higher than the legal limits otherwise malfunctions may occur (e.g.: device too close to a powerful transmitter).

▶ In other respects, this device transmits conducted and radiated interference at levels that comply with the applicable regulations. Ensure that other sensitive equipment used in the vicinity is compatible with this device otherwise malfunctions may occur.

NOT_COMBI_SW-00

Device serial number

The serial number appears on the grey or white sticker on one side of the device. This number is aligned vertically and comprises a first number indicating the year of manufacture (e.g.: 17 for 2017), a letter indicating the month of manufacture (e.g.: C for the month of March), as well as a 4 or 5-figure number that is the product's individual serial number.



Important Note on the choice of charge curve

It is important to note that the use of an inappropriate charging cycle for the battery technology may extensively impair or even damage the latter.

This is particularly true for cycles where the charge voltages are higher than the levels recommended by the battery manufacturers.

A serious risk of overheating the batteries and releasing gases that are harmful to users' health.

SAFETY PRECAUTIONS

NOT_COMBI_SW-00

Maintenance precautions

To prevent any risk of electric shock during maintenance operations, ensure that the following recommendations are scrupulously observed before performing any maintenance on the device:

- ▶ All maintenance operations must only be carried out by a suitably qualified technician.
- ▶ In the event of damage to AC wires and/or batteries cables, these may only be replaced by a qualified person, to avoid any danger.
- ▶ The mains power supply must be disconnected (cable or switch).
- ▶ The -DC supply on the battery must also be disconnected to prevent any transfer of power.
- ▶ To allow the high voltage capacitors to discharge (on the circuit board), wait for 5 minutes before carrying out any work inside the housing.
- ▶ The damaged fuses must not be replaced in no way. They are often the consequence of a high and irrevocable damage. It is therefore unnecessary to replace them.

NOT_COMBI_SW-00

RECEIPT OF THE PRODUCT

Contents of the packaging



- ▶ The combi SW
- ▶ The user manual



- ▶ Its mains cable grommet accompanied by its mounting nut (to be installed on the housing prior to connection).

Installation introduction

The combi SW is attached using 4 or 6 x 4mm Ø screws (not supplied), depending the model to a “robust” mounting or wall.

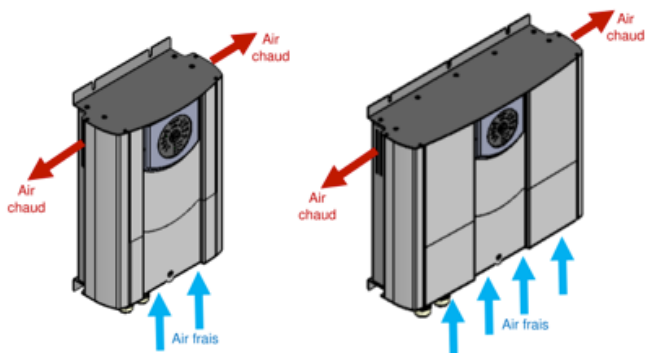
Ideally, the product should be in a vertical position, with the cable outlet pointing downwards. Clearance of at least 10 cm must be allowed around the device to guarantee optimum convection, in particular along the sides allowing the air needed for ventilation to flow in and out.

The circulation and convection direction of the air inside the charger is from right to left, viewed from the front of the product (see photo below).

CONNECTIONS

NOT_COMBI_SW-00

Ventilation direction

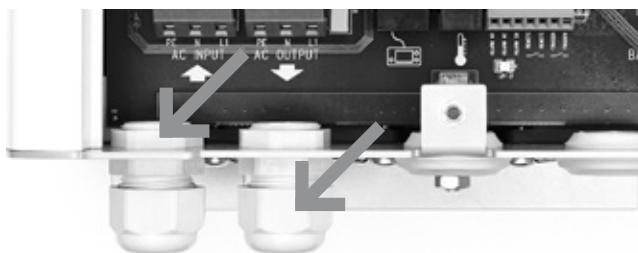


CONNECTIONS

To gain access to the charger's connections, the front hatch must be removed. To do this, simply unscrew the screw on the front hatch. The hatch is removed by rotating it.

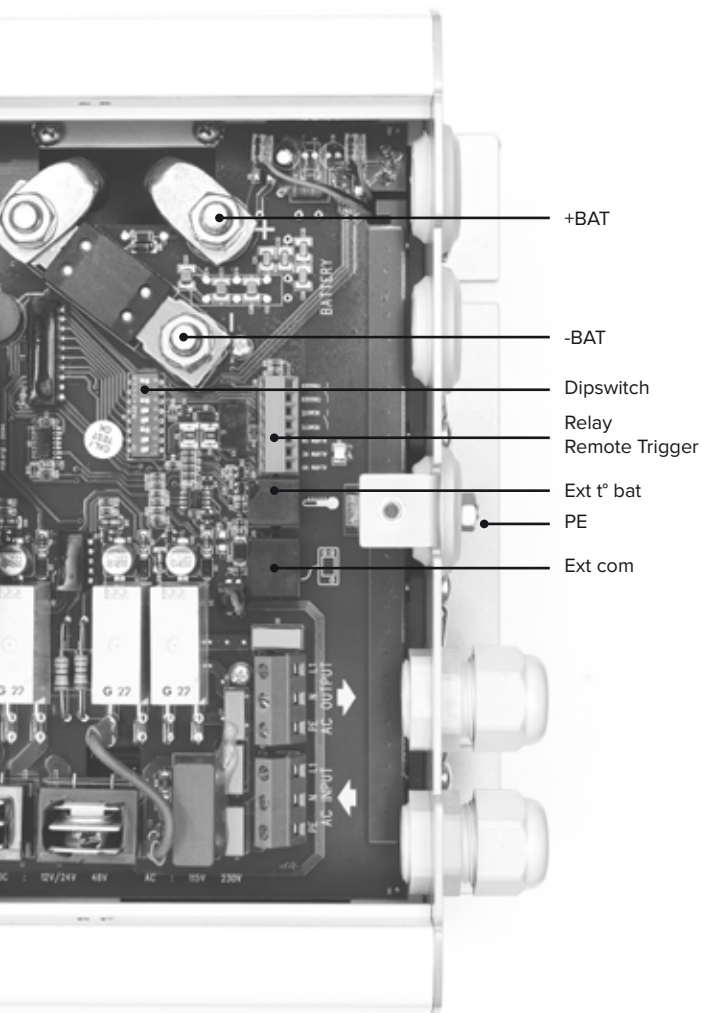
Prior to commencing connection, the mains cable gland must be positioned and attached to the housing in the hole designed for this purpose (hole on the left, when viewed from the front of the product).

The plastic nut supplied with the cable gland allows it to be attached to the housing. This nut is positioned on the inside of the housing. Ensure the correct tightening torque is applied.



NOT_COMBI_SW-00

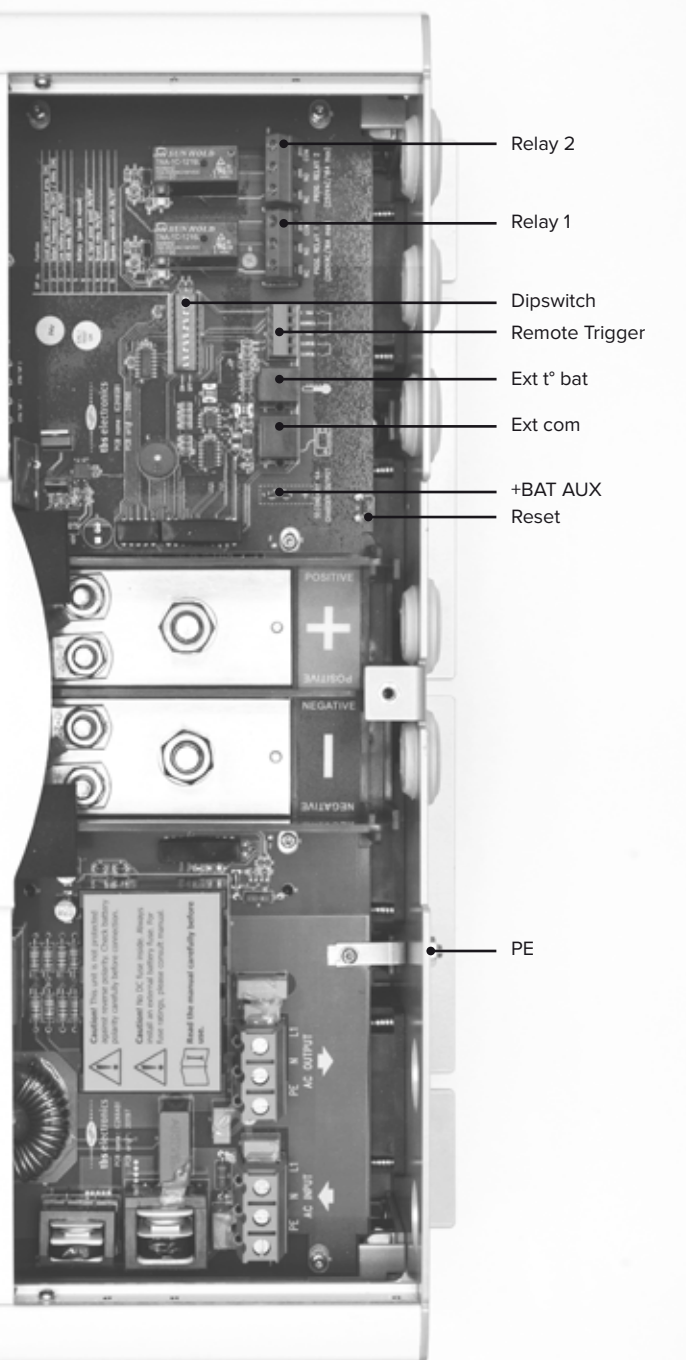
Combi SW 12V 1600VA Version



CONNECTIONS

NOT_COMBI_SW-00

Combi SW 24V 3800VA version



Relay 2

Relay 1

Dipswitch

Remote Trigger

Ext t° bat

Ext com

+BAT AUX

Reset

PE

NOT_COMBI_SW-00

AC cables

Check the quality of connections and proper tightening of connections.

For mains power, preferably use a HO7RNF-type industrial cable.

The AC mains power line must feature a cut-off device with differential protection, to specifically protect individuals against electric shocks.

Combi SW model	Cable section	Cut-off device
12V 1600VA	2.5mm ² / AWG13	16A - 30mA
24V 3800VA	4.0mm ² / AWG11	32A - 30mA

DC cables

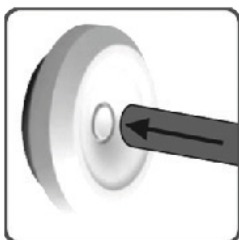
Check the quality of connections and proper tightening of connections.

Battery cables must be as direct and short as possible, if possible < 1,5m.

The access +BAT must provide a protection with serial fuses.

Combi SW model	Cables section	External fuse
12V 1600VA	50mm ² - AWG0-1	300A fast
24V 3800VA	50mm ² - AWG0-1 +BAT AUX : 2mm ²	300A fast 10A fast

These devices are equipped with airtight grommets with “automatic” opening. Simply pressing the central section of the membrane is sufficient to allow the cable to pass through the grommet.



SETTINGS








NOT_COMBI_SW-00

DP SWITCH




ON



1 2 3 4 5 6 7 8 9 10

<p>ON</p>  <p>1</p>	<p><u>Local / external programming</u> ON (external) = Not valid OFF (local) = Factory setup</p>
<p>ON</p>  <p>2</p>	<p><u>Fréquency inverter</u> ON = 60Hz OFF = 50Hz (factory setup)</p>
<p>ON</p>  <p>3</p>	<p><u>Low battery protection</u> ON = Protection enabled (factory setup) OFF = Protection disabled</p>
<p>ON</p>  <p>4</p>	<p><u>ASB mode</u> ON = ASB enabled OFF = ASB disabled (factory setup)</p>
<p>ON</p>   <p>5 6</p>	<p><u>Charging cycles</u></p> <p>Lead acid 5 = OFF - 6 = OFF ABS = 14,4V / 28,8V FLOAT = 13,5V / 27,0V</p> <p>GEL 5 = ON - 6 = OFF ABS = 14,2V / 28,4V FLOAT = 13,5V / 27,0V</p> <p>AGM (factory setup) 5 = OFF - 6 = ON ABS = 14,3V / 28,6V FLOAT = 13,3V / 26,6V</p> <p>Not valid 5 = ON - 6 = ON</p>
<p>ON</p>  <p>7</p>	<p><u>AC High power</u> OFF = High power disabled (factory setup) ON = High power enabled</p>

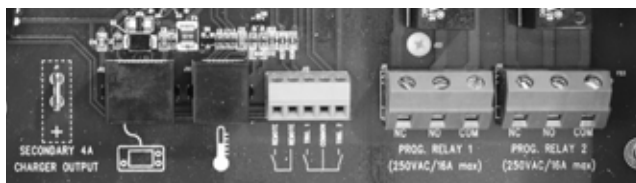
NOT_COMBI_SW-00

ON  8	<p><u>12V 1600VA – Remote control</u> ON = Remote disabled (factory setup) OFF = Remote enabled (front switch on position ON)</p> <p><u>24V 3800VA - EARTH switch</u> ON = EARTH switch enabled (factory setup) OFF = EARTH switch disabled</p>
ON  9	<p><u>24V 3800VA only</u> Reserved</p>
ON  10	<p><u>24V 3800VA only</u> ON = Remote disabled (factory setup) OFF = Remote enabled (front switch on ON position)</p>

On/Off & combi SW 12V 1600VA alarms

TRIG	Not valid
REMOTE	Allows the Remote ON/OFF of the combi depending of the position of the DIP 8 External switch : 60V 10mA
Alarm relay	Active when an alarm occurs Relay : 30V 1A or 60V 0,5A

On/Off & combi SW 24V 3800VA alarms



REMOTE	Allows the Remote ON/OFF of the combi depending of the position of the DIP 10 External switch : 60V 10mA
TRIG. 1	Not valid
TRIG. 2	Not valid
PROG RELAY 1	1RT relay, in case of battery default, over temperature and short -circuit
PROG RELAY 2	1RT relay active 2mn after the power main detection

DISPLAY

NOT_COMBI_SW-00



LEDS	Mode
5% 25% 50% 75% 100%	<u>Inverter mode</u> Output AC power <u>Charger mode</u> Charge current
Charger ON	Off No charge
	Green Charge in progress
	Red Charger disabled
	1 alt red following Battery default, high or low temperature default, ripple battery default
	3 alt red following Internal temperature default
	4 alt red following Internal default
	5 alt red following Programming error
Inverter ON	Off Inverter off
	Green Inverter on
	2 alt red following Output short-circuit
	3 alt red following Internal temperature default
	4 alt red following Internal default

NOT_COMBI_SW-00

LEDS	Mode
AC in	Off No AC voltage & by-pass open
	Green alt AC voltage near the limits & synchronization of the combi
	Green AC voltage OK & by-pass closed
	Red alt AC voltage out off limits
	Red By-pass disabled
Battery logos	Charge in progress and level, 0%, 50%, 80% and 100%

TECHNICAL SPECIFICATIONS

NOT_COMBI_SW-00

Technical specifications

Parameter	Combi SW 12V 1600VA	Combi SW 24V 3800VA
DC-AC INVERTER		
Output power	1300W nom 1600W 10mn 2500W max	2800W nom 3800W 10mn 6500W max
Output voltage	230VAC +/-2% - 50Hz +/-0,05%	
Waveform	Sinewave (THD < 5%)	
Battery voltage	10,5 - 16VDC	21 - 32VDC
Efficiency	92% max	93% max
No load consumption (ASB)	< 10W (2W)	< 20W (4W)
AC-DC BATTERY CHARGER		
Input voltage	185 - 270VAC / 45-65Hz / PF > 0,95	
Output current	60A	70A
Auxiliary output	-	4A
Cycle charge	IUoUoP	
Lead acid	14,4V / 13,5V	28,8V / 27,0V
GEL	14,2V / 13,5V	28,4V / 27,0V
AGM	14,3V / 13,3V	28,6V / 26,6V
AC BY-PASS		
Max current	16Arms	30Arms
Response time	< 5ms	
GENERAL INFORMATIONS		
Protections	Low / high battery voltage, temperature, short-circuit, high battery ripple, low AC input voltage	
Front display	LED display	
Operating t°	-20°C / +50°C	
Storage t°	-40°C / +80°C	

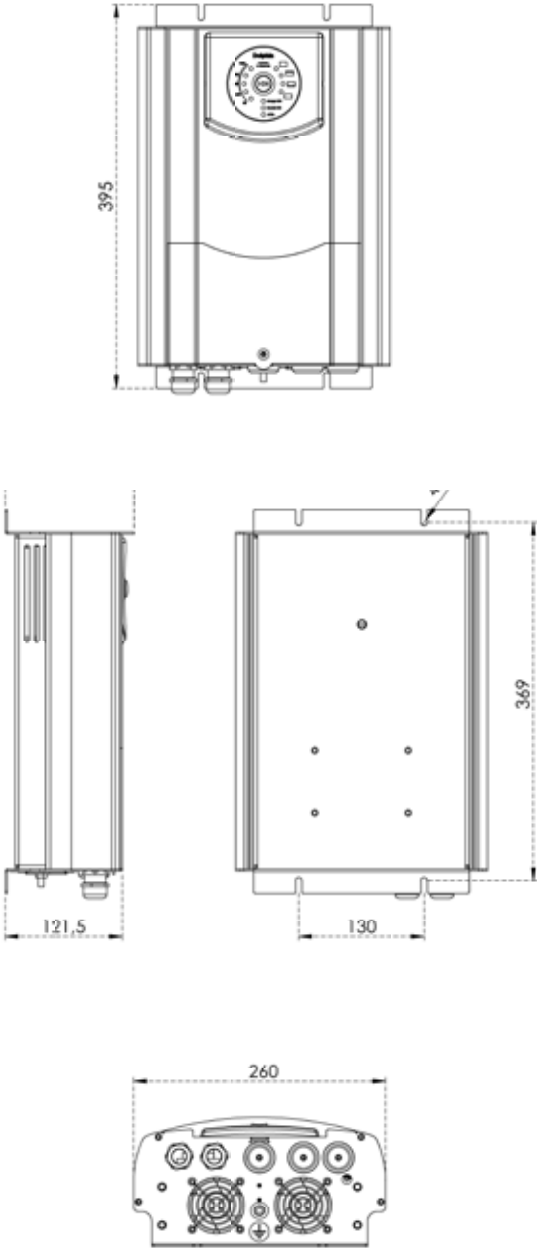
NOT_COMBI_SW-00

Paramètres	Combi SW 12V 1600VA	Combi SW 24V 3800VA
GENERAL INFORMATIONS		
Humidity	10 - 95% (no condensation)	
Convection	Forced	
Connections	Battery : M8	Battery : M10 Aux bat : Faston
	AC : Screw terminal block Alarms : Screw terminal block Remote : Screw terminal block Communication : RJ45 External t° sensor : RJ12	
Box	Painted aluminum	
Mounting	Wall mounting with screws Ø 4	
Dimensions	395 x 260 x 122mm	412 x 457 x 140 mm
Weight	11Kg	22Kg
IP	IP21	
Standards	CE CEM 2004/108/CE LVD 2006/95/CE EN60335-1 EN60335-2-29	
OPTIONS		
t° charge compensation	External battery t° sensor	
External remote display	Digital TOUCH view display	

TECHNICAL SPECIFICATIONS

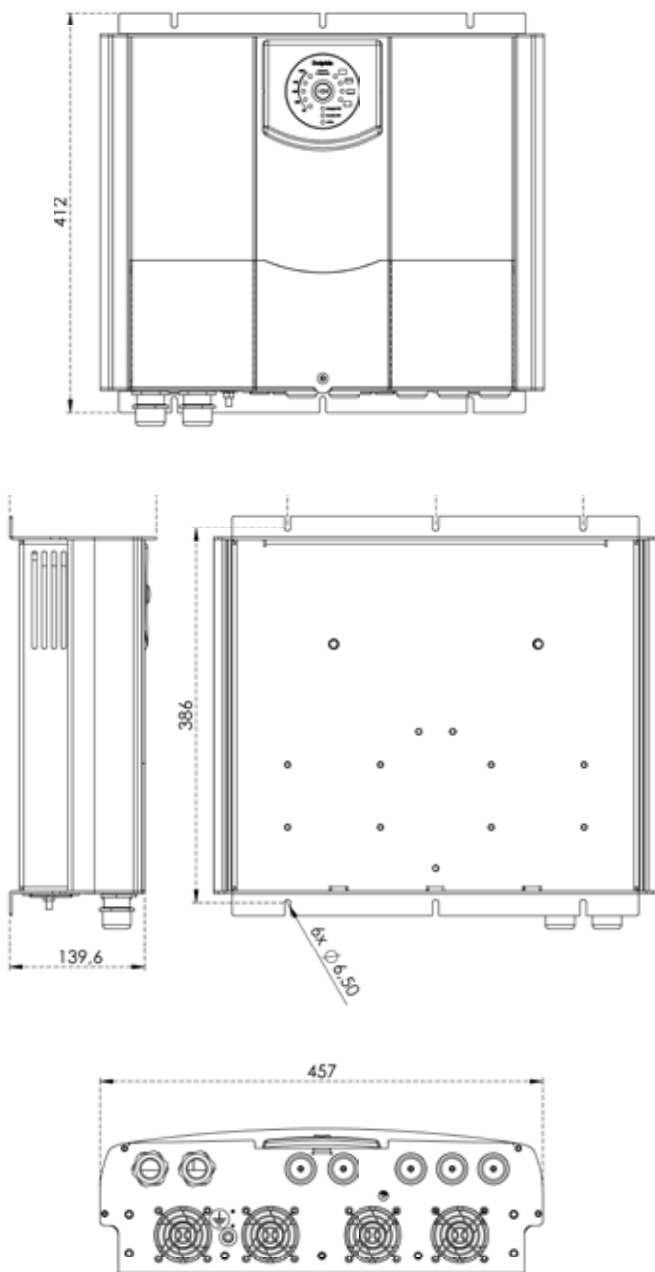
NOT_COMBL_SW-00

Dimensions of 12V 1600VA model



NOT_COMBI_SW-00

Dimensions of 24V 3800VA model



WARRANTY

NOT_COMBI_SW-00

Warranty

TO PREVENT ANY RISK OF INCORRECT USE OF THE DEVICE, CAREFULLY READ THE LIST OF POTENTIAL EVENTS OR FAULTS NOT COVERED BY THE PRODUCT WARRANTY

- ▶ This device is not protected against battery polarity reversals. Risk of irreversible damage to the equipment.
- ▶ Should the device be dropped or fall this could cause irreversible distortion of the housing as well as a “crash” of internal fans and certain electronic components.
- ▶ Modifications to the housing (additional holes in particular) could result in the scattering of swarf or metal filings onto the circuit board and, consequently, in malfunctions or irreversible damage to the equipment.
- ▶ Interference with or modifications to the circuit board could result in operating modes not originally anticipated, and consequently, in malfunctions or irreversible damage to the equipment.
- ▶ Powering the device from an unsuitable energy source (as a general rule, mains supply voltage that is too high).
- ▶ Accidental original mains supply surge or lightning strike generally causing irreversible damage to the equipment.
- ▶ Replacement of fuses with fuses with different characteristics that could cause irreversible damage to the equipment.
- ▶ Obvious connection errors causing irreversible damage to the equipment.
- ▶ Water spray or running water inside the device that could result in irreversible electronic malfunctions.

NOT_COMBI_SW-00

Precautions for scrapping

This device contains electronic components and materials that must be recycled at the end of the product's usable life, for environmental reasons.

At the end of their usable lives all devices must therefore be returned either to the local distributor or entrusted to a specialist electronic equipment recycling company.

EC compliance

This device complies with the applicable European standards and has an EC mark. Its certificate of compliance is available on request.

Dolphin
charger



info@dolphin-charger.com
www.dolphin-charger.com