8 CERTIFICATION DE CONFORMITE CE

DECLARATION CE DE CONFORMITE

aux dispositions de la directive 89/336/CEE
"Compatibilité Électromagnétique"
et aux dispositions de la directive 73/23/CEE
"Basse Tension"

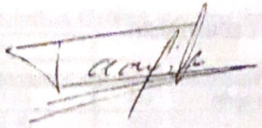
Constructeur : CRISTEC
Adresse : **47 Avenue Pierre Mendès France – 29000 Quimper/FRANCE**

Déclare que les chargeurs de batteries CPS2 :
12V/16A, 12V/25A, 12V/40A, 12V/60A, 12V/80A, 24V/08A, 24V/12A, 24V/20A, 24V/30A, 24V/50A, 24V/60A et 24V/75A,
Sont conformes aux dispositions de la directive 89/336/CEE et aux dispositions de la directive73/23/CEE.

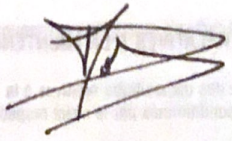
Les normes harmonisées appliquées sont les suivantes :

NF EN61000-6-1 *: Electromagnetic compatibility-Generic emission standard Part 1 : Residential, commercial and light industrial.*
NF EN61000-6-2 *: Electromagnetic compatibility-Generic immunity standard Part 2 : Residential, commercial and light industrial.*
NF EN61000-6-3 *: Electromagnetic compatibility-Generic immunity standard Part 3 : Residential, commercial and light industrial.*
NF EN61000-6-4 *: Electromagnetic compatibility-Generic immunity standard Part 4 : Residential, commercial and light industrial.*
NF EN 60950 *: Electrical safety.*

Lieu, date et signatures : Quimper, 08/02/2005
Nom et titre des signataires :



Moulay TAOUFIK, Chef Produits



Didier MARGERAND, Président

Année d'approbation du marquage CE : 2005

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1 PRECAUTIONS – WARRANTY

The CRISTEC includes the following :
- 1 metal box containing the battery charger's electronic functions
- This operating manual
This document applies to battery chargers in the CPS2 CRISTEC range as listed on the cover.
The manual is intended for users, installers and equipment maintenance staff. Please read this manual carefully before working on the charger.
This manual should be kept safely and consulted before attempting any repairs, because it contains all the information required to use the appliance.
This document is the property of CRISTEC; all the information it contains applies to the accompanying product. CRISTEC reserves the right to modify the specifications without notice.

1.1 PRECAUTIONS

Precautions regarding overheating of the appliance
This appliance is designed to be mounted on a vertical wall or partition as indicated herein.
It is imperative that there be a gap of 150mm around the charger. The installer must see to it that the temperature of the air at the input is lower than 40°C in extreme operating conditions.
Measures should also be taken to allow for the discharge of hot air on either side of the charger.
The charger must not be installed near a source of heat; it should be installed in a well-ventilated area. The charger's air inlets and outlets must not be obstructed.

Precautions regarding dust, seepage and falling water
The charger should be located so as to prevent penetration of damp, liquids, salt and dust, any of which could cause irreparable damage to the equipment and be potentially hazardous for the user.
The appliance should be installed in a dry and well-ventilated place.

Precautions regarding inflammable materials
The charger should not be used near inflammable materials, liquids or gases.
The batteries can emit explosive gases: please follow the manufacturer's instructions carefully when installing them.

Precautions regarding accidental earthing leaks
The charger's PE terminal must be earthed and connected before any of the other terminals (see relevant diagram in the appendix).
The charger must be closed before it is turned on: the cover and flap must be fixed to the charger's body with the screw provided for the purpose.
Accidental leakage current between phase and earth: standard NFC15-100 should be followed when installing.
Use the services of an electrician or professional installer to make the necessary connections. The charger should be connected to a system having a 30mA differential two-pole circuit-breaker.
Accidental leakage current between the charge circuit and the earth : accidental current leakage at the earth must be detected by means of an independent protective device outside the charger (a residual current device or an insulation detector).
The installer should decide on the rating and nature of the protection according to the risks. Special precautions should be taken on any installation prone to electrolytic phenomena. Regulations require the presence of a battery cut-off at the outputs on the + and - poles.

Precautions regarding lightning
In areas highly exposed to lightning, it may be advisable to install a lightning arrestor upstream of the charger to safeguard it against irreversible damage.

Other precautions
Never attempt to drill a hole in or machine the charger's case: this may damage components or cause metal chips or filings to fall on the charger's board.
Do not do anything that is not explicitly stated in this manual.

1.2 WARRANTY

The manufacturer disclaims the warranty and CRISTEC waives any liability whatsoever if the installation rules and instructions for use are not observed.
The warranty is valid for 36 months. It covers parts and labour for equipment returned to the Quimper plant. Only original parts recognized as being defective will be replaced under the warranty.
Our warranty does not cover :
1 – Failure to abide by this manual
2 – Any mechanical, electrical or electronic alterations to the appliance
3 – Improper use
4 – Presence of moisture

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CPS2DEA

5 – Failure to comply with power supply tolerances
6 – Incorrect connections
7 – Falls or impacts during transportation, installation or use
8 – Repairs carried out by anyone unauthorized by CRISTEC
9 – Connection of any interfaces not supplied by CRISTEC
10 – The cost of packaging ands carriage
11 – Apparent or latent damage sustained during shipment and/or handling (any such claims should be sent to the haulier)
Our warranty on no account provides for any form of compensation. CRISTEC shall not be held liable for damage incurred as a result of using the battery charger.

2 TECHNICAL SPECIFICATIONS

2.1 CPS2 12V/16A, 24V/08A, 12V/25A, 24V/12A

Model	CPS2/12-6	CPS2/24-08	CPS2/12-25	CPS2/24-12
Input / Voltage	From 85 to 265VAC, single-phase			
Frequency	From 47 to 63Hz			
Current intensity 230/115VAC	1,4A/2,9A	1,3A/2,8A	2A/4,2A	1,9A/4A
Power factor	0.9 in rated conditions			
Efficiency	> 80% in rated conditions			
Input fuses F1/F2	2 x 6.3A/250V – Ref. DEL MICRO FUSE 00346623MST			
Output Number of outputs	3 separate outputs BAT D, BAT 1 and BAT 2 (integrated distributor). Each output can be used on its own and supply the entire current.			
Overall rated current (+/-7%) / Rated power	16A/228W	08A/228W	25A/356W	12A/342W
Load curve	Type of charge selected using internal switch IU or IUoU (Boost, Absorption, Floating – factory setting).			
Type of batteries	See switch settings table			
Regulated and filtered output voltage	See switch settings table. Chargers can operate on DC supply.			
Regulation tolerance before distributor and fuses	< 2%			
Peak-to-peak ripple and noise	< 250mV	< 500mV	< 250mV	< 500mV
Automotive output fuses mounted in parallel in the BAT pole -	1 x 20A/32V (F3)	1 x 10A/32V (F3)	1 x 25A/32V (F3)	1 x 15A/32V (F3)
Environment Operating temperature	-10°C to +45°C ; +45°C to +50°C with 10% de-rating of rated Power/°C			
Cooling	Natural dissipation		Draft fan controlled by internal temperature probe 60°C +/-5°C	
Relative humidity	Up to 70% (95% with no condensation)			
Storage temperature	-20°C à +70°C			
Case / Material	Case comprises 3 parts: aluminium frame and steel flap and hood			
Paintwork Mat	black, yellow, and grey epoxy coating			
Dimensions excluding cable gland (length, height, depth)/Weight	269 x 179 x 106mm / 2,5Kg			
Fixing centre distances	247 x 110mm			
Wall screw)	4 M5 round screws			
Protection factor	IP21			
Board protection	Protected with water-repellent varnish (marine environment)			
Standards / CE/CEM markings	NF EN6100-6-1, NF EN6100-6-2, NF EN6100-6-3, NF 6100-6-4			
CE/safety markings	NF EN60950, NF EN603635-2-29			
Electrical protection	-Against leaking input surges by rupture of VDR (voltage-dependent resistor) -Against output polarity reversals by rupture of fuses -Against output short-circuits and surges -Against abnormal overheating by cutting off the charger (internal temperature probe 90°C) -Against output surges			

2.2 CPS2 12V/40A, 24V/20A, 12V/60A, 24V/30A, 48V/15A

Models	CPS2/12-40	CPS2/24-20	CPS2/12-60	CPS2/24-30	CPS2/48-15
Input Voltage	From 85 to 265VAC, single-phase				
Frequency	From 47 to 63Hz				
Current intensity 230/115VCA	3,2A/6,6A	3,1A/6,4A	4,6A/9,4A	4,4A/9A	4,3A/8,8A
Power factor	0.9 in rated conditions				
Efficiency	> 80% in rated conditions				
Input fuses F1/F2	2 x 10A/250V – 6,3x 32		2 x 15A/250V – 6,3x 32		
Output Number of outputs	3 separate outputs BAT D, BAT 1 and BAT 2 (integrated distributor). Each output can be used on its won and supply the entire current.				
Overall rated current (+/-7%)/Rated power	40A/570W	20A/570W	60A/855W	30A/855W	15A/855W
Load curve	Type of charge selected using internal switch IU or IUoU (Boost, Absorption, Floating – factory setting)				
Type of batteries	See switch settings table				
Regulated and filtered output voltage	See switch settings table. Chargers can operate on DC supply.				
Regulation tolerance before distributor and fuses	< 2%				
Peak-to-peak ripple and noise	< 250mV	< 500mV	< 250mV	< 500mV	< 1000mV
Automotive output fuses mounted in parallel in the BAT pole -	2 x 20A/32V (F3/F4)	1 x 20A/32V (F3)	3 x 20A/32V (F3/F4/F5)	2 x 15A/32V (F3/F4)	Sans
Environment Operating temperature	-10°C to +45°C ; +45°C to +60°C with 4% de-rating of rated Power/°C				
Cooling	Draft fan controlled by internal temperature probe 60°C +/-5°C				
Relative humidity	Up to 70% (95% with no condensation)				
Case Material	Case comprises 3 parts: steel frame, flap and hood				
Paintwork Mat	black, yellow, and grey epoxy coating				
Dimensions excluding cable gland (length, height, depth)/Weight	288 x 209 x 115mm / 6Kg				
Fixing centre distances	266,5 x 110mm				
Wall screw	4 M5 round screws				
Protection factor	IP21				
Board protection	Protected with water-repellent varnish (marine environment).				
Standards CE/CEM markings	NF EN6100-6-1, NF EN6100-6-2, NF EN6100-6-3, NF 6100-6-4				
CE/safety markings	NF EN60950, NF EN603635-2-29				
Electrical protection	-Against leaking input surges by rupture of VDR (voltage-dependent resistor) -Against output polarity reversals by rupture of fuses, except 48-Volt models -Against output short-circuits and surges -Against abnormal overheating by cutting off the charger (internal temperature probe 90°C) -Against output surges				

2.3 CPS2 12V/80A, 24V/50A, 24V/60A, 48V/30A, 24V/75A

Models	CPS2/12-80	CPS2/24-50	CPS2/24-60	CPS2/48-30	CPS2/24-75
Input Voltage	From 85 to 265VAC single phase	From 85 to 265VAC . Output power from 85 to 160VAC = 80%	65%	65%	53%
Frequency	From 47 to 63Hz				
Current intensity 230/115VCA	6A/12,6A	7,5A/13A	9A/15A	9A/15A	11,5A/16A
Power factor	0.9 in rated conditions				
Efficiency	> 80% in rated conditions				
Input fuses F1/F2	2 x 25A/250V – 6,3x 32	2 x 25A/250V – 6,3x 32			
Output Number of outputs	3 separate outputs BAT D, BAT 1 and BAT 2 (integrated distributor). Each output can be used on its won and supply the entire current				
Overall rated current (+/-7%)/Rated power	80A/1140W	50A/1425W	60A/1710W	30A/1710W	75A/2137W
Load curve	Type of charge selected using internal switch IU or IUoU (Boost, Absorption, Floating – factory setting)				
Type of batteries	See switch settings table				
Regulated and filtered output voltage	See switch settings table. Chargers can operate on DC supply				
Regulation tolerance before distributor and fuses	< 2%				
Peak-to-peak ripple and noise	< 500mV	< 500mV	< 500mV	< 1000mV	< 500mV
Automotive output fuses mounted in parallel in the BAT pole -	4 x 20A/32V (F3/F4/F5/F6)	2 x 25A/32V (F3/F4)	3 x 20A/32V (F3/F4/F5)	sans	4 x 20A/32V (F3/F4/F5/F6)
Environment Operating temperature	-10°C to +45°C ; +45°C to +60°C with 4% de-rating of rated Power/°C				
Cooling	Draft fan controlled by internal temperature probe 60°C +/-5°C				
Relative humidity	Up to 70% (95% sans condensation)				
Case / Material	Case comprises 3 parts: steel frame, flap and hood				
Paintwork Mat	black, yellow, and grey epoxy coating				
Dimensions excluding cable gland (length, height, depth)/Weight	350 x 260 x 135mm / 7,5Kg				
Fixing centre distances	328,5 x 154mm				
Wall screw	4 M5 round screws				
Protection factor	IP21				
Board protection	Protected with water-repellent varnish (marine environment)				
Standards / CE/CEM markings	NF EN6100-6-1, NF EN6100-6-2, NF EN6100-6-3, NF 6100-6-4				
CE/safety markings	NF EN60950, NF EN603635-2-29				
Electrical protection	-Against leaking input surges by rupture of VDR (voltage-dependent resistor) -Against output polarity reversals by rupture of fuses, except 48-Volt models -Against output short-circuits and surges -Against abnormal overheating by cutting off the charger (internal temperature probe 90°C) -Against output surges				

3 OPERATION – SETTINGS – ADJUSTMENTS - INDICATORS

3.1 OPERATING PRINCIPLE

The design of the battery chargers in the CPS2 range is based on a high-frequency split converter that transforms the AC signal into regulated and filtered DC current. They can operate as battery chargers on a DC power supply.

Once the type of battery and type of charge has been selected, operation of the battery charger is entirely automatic. It can remain connected to the batteries and does not need to be disconnected when starting up an engine (marine application), because it is equipped with rectifier diodes.

The appliance's output voltage is sufficient to recharge 1, 2 or separate 3 batteries (integrated charge distributors, separation of batteries). All models feature an output suitable for recharging an engine battery (BAT D output, marine application). The charger's maximum output is the rated current distributed to each output according to the batteries' usage needs.

Each output can deliver the rated current.
Not all the outputs have to be connected. However, if only one output is used, we recommend interconnecting outputs BAT1, BAT2 and BAT D to one another (optional).

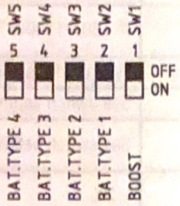
3.2 SWITCH SETTINGS – ADJUSTMENTS - INDICATORS

3.2.1 Description

The CPS2 chargers are equipped with switches allowing you to set up the charger according to the type of batteries and the application. CPS2 chargers feature the Boost function for faster recharging. This function is controlled by a timeout (4 hours +/- 10 minutes) and is automatically inhibited when the battery is fully charged: stoppage of the boost for I batteries < 15% of I rated charger.
The Boost function can also be disabled by means of a switch.

3.2.2 Switch settings and positions

SW1 : Boost selector
SW2 to SW5 : Battery type selector



3.2.3 Settings for each type of battery

Type of battery	Switch positions					CPS2 12V		CPS2 24V		CPS2 48V	
	SW5	SW4	SW3	SW2	SW1 Boost	Voltage Phase Boost*	Voltage Phase Floating*	Voltage Phase Boost*	Voltage Phase Floating*	Voltage Phase Boost*	Voltage Phase Floating*
TYPE-1 BAT. Calcium Lead Tin (e.g.: Delphi/Delco Freedom)	OFF	OFF	OFF	ON	ON	15,1V	14,4V	30,2V	28,8V	60,5V	57,6V
TYPE-2 BAT. Lead Sealed	OFF	OFF	ON	OFF	ON	14,3V	13,6V	28,6V	27,2V	57,1V	54,4V
TYPE-3 BAT. Gelled Lead or Calcium Lead	OFF	ON	OFF	OFF	ON	14,1V	13,4V	28,1V	26,8V	56,3V	53,6V
TYPE-4 BAT. Open Lead with maintenance (free electrolyte)	ON	OFF	OFF	OFF	ON	13,7V	13V	27,3V	26V	54,6V	52V
WINTERING for TYPE-1 BAT. TYPE-2 BAT. TYPE-3 BAT.	OFF	ON	OFF	OFF	ON	14,1V	13,4V	28,1V	26,8V	56,3V	53,6V
WINTERING For TYPE-4 BAT.	ON	OFF	OFF	OFF	ON	13,7V	13V	27,3V	26V	54,6V	52V

(*)Voltage on BAT 1/BAT 2 with 10% of rated current and a tolerance of +/- 1%
Voltage on BAT D = BAT 1 or BAT 2 – approx. 0.4V

3.2.4 Settings

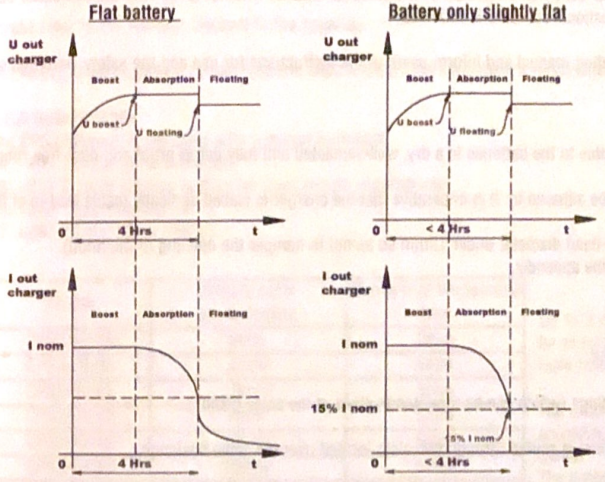
The charger's factory settings are:
TYPE-2 BAT. Sealed Lead (see table above)
BOOST in ON position
The installer should set the switches (excluding input and off-load output voltage) and possibly adjust the output voltage using potentiometer RV1 (use the appropriate tool to turn the screw of the potentiometer), depending on:
- the type of battery (contact the battery manufacturer if necessary)
- intended usage
- the cross-section and length of the output cables
- whether or not the boost function is required

For special batteries, call in a professional installer, who will make the specific settings in accordance with the accumulator manufacturer's specifications and according to the specifics of the installation.
CRISTEC disclaims any liability in case of damage to batteries or ineffective

3.2.5 Load curve

Boost in ON position

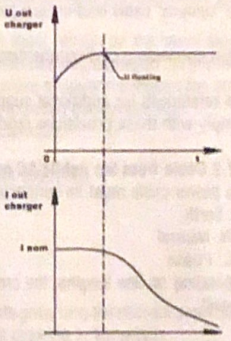
With this setting the CPS2 charger produces a 3-state load curve IUoU: Boost, Absorption, Floating.



Boost Phase: starts up automatically when the charger is turned on if the battery is flat. The current is then at maximum output.
Absorption Phase: begins when the voltage has reached the maximum Boost level. The current level starts falling.
These two phases combined last a maximum of 4 hours. If the current falls below 15% of rated current, the floating phase automatically kicks in. Duration and current intensity depend on how charged the battery is.
Floating Phase: starts after 4 hours or if output current has reached 15% of the charger's rated current. The voltage switches to the Floating value and the rated current continues to drop.

Boost in OFF position

With this setting, the CPS2 charger produces a single-stage UI type load curve. It generates a constant voltage, supplying the current required by the battery(ies). Recharging time depends on the state of the battery, being longer than when the boost is in the ON position.



3.2.6 Indicators

INDICATOR	STATE	MEANING
Green "ON"	On	- Charger is ON
	Off	- No or poor quality AC current
		- or Input fuse blown
		- or Internal charger malfunction
Yellow "Boost/Absorption"	On	- SW1 Switch : Boost in OFF position - or SW1 switch : Boost in ON position and Boost/Absorption phase completed
	Flashing	- SW1 Switch : Boost in ON position and charger in the Boost/Absorption phase
	Off	- Internal charger malfunction - or Output fuse blown
Yellow "Floating"	On	Charger current < 15% of rated current (Floating phase)
	Off	Charger current > 15% rated current

These indicators are visible from the front of the appliance through the light guides, thereby allowing operation of the appliance to be monitored.

4 INSTALLATION

This paragraph deals with installation-related arrangements.

Installation and initial commissioning should be carried out by an electrician or professional installer in accordance with the standards currently in force (for pleasure boats the applicable international standard is ISO13297).

The installer should familiarize himself with this operating manual and inform users of the instructions for use and the safety warnings set out in paragraph 5.

4.1 SITING THE CHARGER

The CPS2 charger should be installed as near as possible to the batteries in a dry, well-ventilated and fully damp-proof and dust-free room. Air circulation should be unhindered.
The recommendations specified in paragraph 1 must be adhered to. It is imperative that the charger is placed vertically (cable lead-in at the bottom).
The charger is fixed using 4 round M5 screws (screw-head diameter under 10mm so as not to hamper the opening of the hood).
Fixing centre distance: see corresponding drawing in the appendix.

4.2 WIRING

4.2.1 Cable lead-in

The mains cable lead-in is routed through a cable gland.

The battery cable lead-in is routed through cable bushings (which can be mounted in place of the cable glands).

The "options" cable lead-in (see paragraph 4.2.5, options) is routed through two slots located over the cable bushings.

When connecting or disconnecting a cable, the charger's power supply must be off and the batteries electrically insulated from the charger.

The references for additional supplies required for the appliance to operate efficiently are provided in the following paragraphs: failure to comply with these provisions renders the warranty null and void.

4.2.2 Cable from the public AC power supply network or generator

The power cable must be connected to screw terminal board K1 (PE, ACN and ACL terminals):
PE: Earth
ACN: Neutral
ACL: Phase
Depending on line lengths, the cross-section of AC power cables must be at least equal to or greater than the values provided in the table below*:

Model	Minimum cross-section and type of cable for 115VAC	Minimum cross-section and type of cable for 230VAC
CPS2/12-16	3 x 1,5 mm² H07-VK	3 x 1,5 mm² H07-VK
CPS2/24-08		
CPS2/12-25		
CPS2/24-12		
CPS2/12-40	3 x 1,5 mm² H07-VK	3 x 1,5 mm² H07-VK
CPS2/24-20		
CPS2/12-60	3 x 2,5 mm² H07-VK	3 x 1,5 mm² H07-VK
CPS2/24-30		
CPS2/48-15		
CPS2/12-80	3 x 4 mm² H07-VK	3 x 2,5 mm² H07-VK
CPS2/24-50		
CPS2/24-60		
CPS2/24-75		
CPS2/48-30		

*For applications where the electricity network may be either 115VAC or 230VAC, always choose the cross-section recommended for 115VAC.

Always use cable markers with insulating collars in accordance with installation standards governing AC network input connections.

The PE conductor (commonly called "earth", the green and yellow wire) of the AC source must be connected to the charger on the terminal provided for the purpose, and this must be done before connecting any other terminals.

Please refer to the relevant diagram in the appendix.

The rating of the upstream circuit-breakers should match the equipment's requirements.

4.2.3 Battery cable

The CPS2 charger is equipped with 4 output terminals:
K4: - BAT (minus set of batteries)
K5: +BAT D (plus start-up battery for marine-type applications)
K6: +BAT 1 (plus battery set 1)
K7: +BAT 2 (plus battery set 2)

Model	Battery cable cross-section	Diameter of the terminal hole
CPS2/12-16	6mm²	5mm
CPS2/24-08	4mm²	5mm
CPS2/12-25	10mm²	5mm
CPS2/24-12	6mm²	5mm
CPS2/12-40	16mm²	5mm*
CPS2/24-20	10mm²	5mm*
CPS2/12-60	16mm²	5mm*
CPS2/24-30	10mm²	5mm*
CPS2/48-15	10mm²	5mm*
CPS2/12-80	25mm²	5mm*
CPS2/24-50	16mm²	5mm*
CPS2/24-60	16mm²	5mm*
CPS2/24-75	25mm²	5mm*
CPS2/48-30	10mm²	5mm*

Up to 3 metres, the cross-section of the battery cables should be at least equal to or greater than the values provided in the table below:

The installer should choose the type of cable (H07-VK, MX...) according to the type of application and the applicable standards.
The cable bushings or glands must remain on the lower side of the case to avoid the linking cables being damaged on the metal walls of the case and to guarantee insulation between the active conductors and the electrical exposed conductive part.
See relevant drawing in the appendix.

* : 6mm for models with REV1 reference

4.2.4 Cable linking the earth to the installation

The charger's case should be connected to the installation's earthing system in accordance with current standards governing the relevant application.
To that effect, connect the installation-to-earth cable to the earthing screw located inside the charger (see drawing in appendix).
This cable's cross-section should be at least 2.5mm², type H07-VK and equipped with an appropriate terminal.

4.2.5 Precautions regarding electromagnetic disturbance generated by the appliance

Use shielded cables for all the connections (*). The shielding should be earthed at both the transmitting and the receiving ends.
Keep cable length and shielding connections down to a minimum. Route cables as close as possible to conductive parts ("loose" cables or loops should be avoided - cables should be flattened against conductive parts).
Keep power cables separate from battery cables.
Keep power cables separate from control cables (at least 200mm).

The cables should only supply power to this appliance; any branch-offs or short-outs intended to power another appliance are prohibited.
(*) This is a recommendation for installation rather than an obligation. The installing electrician should decide whether or not to use shielded cable depending on the EMC environment.

4.2.6 Options

The options are not bundled with standard CPS2 battery chargers; they are available from your reseller. Only options marketed by CRISTEC may be mounted with chargers.
The following options are available for the CPS2 range:

Remote On/Off charger control: reference A/M-CPS2
A 5-metre cable + On/Off switch; connect to K8 connector (see drawing in appendix)

Remote Boost control: reference BAD-CPS2
A 5-metre cable + Boost On/Off switch; connect to K11 (see drawing in appendix)

Night function (switches fan off) except for chargers CPS2/12-16 and CPS2/24-08 (no fans): reference AR-VENT-CPS2
A 5-metre cable + On/Off switch; connect to K9 connector (see drawing in appendix)

ATTENTION : use of this function automatically reduces the output power to allow the fan to be turned off. It should not be used permanently, otherwise the batteries run the risk of running down and charger operation may be prematurely affected.

Temperature probe: reference STP-CPS2
Compensates the charging voltage according to temperature
12V Charger: -18mV/°C
24V Charger: -36mV/°C
48V Charger: -72mv/°C
A 5-metre cable + probe; connect to K2 (see attached drawing)

Digital display unit: reference SEEL007852B
Displays the state of the charger (ON/OFF), the current of the charger, the voltage on each of the 3 outputs
A 10-metre cable + display unit; connect to K3

Cable for analogue display units : reference DEP-V-A-CPS2
For connecting analogue voltmeter options (1 to 4 depending on the number of outputs to be monitored: Bat D, Bat 1, Bat 2 or the voltage upstream of the distributor) and an ammeter
A 5-meter cable; connect to K10 (see drawing in appendix)

48x48mm analogue voltmeter to view the voltage of a particular output or the charger's voltage upstream of the distributor
Reference: VLT0012-CPS2 for 12Vcc chargers
Reference: VLT0024-CPS2 for 24Vcc chargers
Reference: VLT0048-CPS2 for 48Vcc chargers
Connect to K10 with option DEP-V-A-CPS2

48x48mm analogue voltmeter to view the charger's total current; connect to K10 with option DEP-V-A-CPS2

Model	Reference
CPS2/12-16	AMP 12V/16A CPS2
CPS2/12-25	AMP 12V/25A CPS2
CPS2/12-40	AMP 12V/40A CPS2
CPS2/12-60	AMP 12V/60A CPS2
CPS2/12-80	AMP 12V/80A CPS2
CPS2/24-08	AMP 24V/08A CPS2
CPS2/24-12	AMP 24V/12A CPS2
CPS2/24-20	AMP 24V/20A CPS2
CPS2/24-30	AMP 24V/30A CPS2
CPS2/48-15	AMP 48V/15A CPS2
CPS2/24-50	AMP 24V/50A CPS2
CPS2/24-60	AMP 24V/60A CPS2
CPS2/24-75	AMP 24V/75A CPS2
CPS2/48-30	AMP 48V/30A CPS2

Remote LED option : reference LED-DEP-CPS2
A 5-meter cable; connect to KLD1 / KLD2 / KLD3 (see drawing in appendix)

5 COMMISSIONING

This paragraph lists all the tasks required to bring the equipment into service.
These instructions should be followed to the letter before first turning on the appliance.

5.1 ELECTRICITY NETWORK

All CPS2 chargers can operate automatically and equally on single-phase networks from 85 to 265VAC and from 47 to 63Hz.

Generators
The CRISTEC battery charger is designed to operate on a generator. In certain cases, generators can produce high surges. Before connecting the charger, check its compatibility with the generator's characteristics: power, voltage, surges, frequency, current etc.

Power limiting switch
For models 12V/80A, 24V/50A, 24V/60A, 24V/75A and 48V/30A, a switch on the outside of the case (the cable lead-in side) limits the charger's output power (on position 1) :

Charger	Rated power =	Input current
CPS2/12-80	75%	< 6A
CPS2/24-50	75%	< 6A
CPS2/24-60	65%	< 6A
CPS2/48-30	65%	< 6A
CPS2/24-75	50%	< 6A

This may prevent the differential circuit-breaker at the beginning of the 230/115VAC line from tripping.

5.2 CHARGER COMPATIBILITY AND SETTINGS ACCORDING TO BATTERY TYPE

Before switching on, be sure to check the compatibility of voltage, current and settings according to the type of batteries connected.

Checking the load voltage
Before connecting the batteries to the charger, you must check the polarity of the accumulators. Also check the voltage of the batteries with the aid of a calibrated voltmeter. A low voltage on certain types of accumulators may indicate they have sustained irreversible damage, thereby precluding any possibility of recharging.

5.3 TURNING THE CHARGER ON AND OFF

The CPS2 charger starts operating as soon as it is switched on (input power cable connected and powered).

The CPS2 charger stops operating when it is no longer powered up (input power cable disconnected or the installation's circuit-breaker in the OFF position).

ATTENTION : if the charger On/Off option is used, the charger may not be in operation while still being powered up (dangerous voltage).

6 EQUIPMENT MAINTENANCE AND REPAIRS

6.1 OVERVIEW

This paragraph deals with equipment maintenance and repairs. Proper operation of the product and its service life are dependent on strict compliance with the following recommendations.

6.2 EQUIPMENT MAINTENANCE

Disconnect the battery charger from the AC network before starting any maintenance work.
If appliances are in a dusty atmosphere, vacuum-clean them regularly, since dust deposits may adversely affect heat release.
Check the state of battery charge every 3 months.
The tightness of nuts and screws should be checked annually to ensure efficient operation of the appliance (particularly in hostile conditions: vibrations, shocks, high variations in temperature etc.).
A full technical inspection by a CRISTEC-accredited engineer is recommended every five years. This can also be done at our plant.

6.3 EQUIPMENT REPAIR

Disconnect the battery charger from the AC power network and disconnect the batteries before undertaking any repairs.
When fuses have blown, only use fuses of the type and size recommended in this manual.
Please contact a reseller or CRISTEC for any other repairs.

7 SAFETY PRECAUTIONS

7.1 REFERENCE STANDARDS

Class I equipment compliant with standard NF EN 60950

Installation instructions are set out in standard NFC 15-100 and the specific ISO13297 standard entitled "pleasure boats – electrical systems – Installing distributed AC current".

7.2 PERSONAL SAFETY PRECAUTIONS

Only an electrician or professional installer should install the appliance.
The incoming AC power network should be cut off before working on the equipment.

7.3 PRECAUTIONS REGARDING THE RISK OF FIRE AND EXPLOSIONS

Only use the fuses listed herein.
Near batteries : keep the room well-ventilated, do not smoke, never use bare flames.

8 CE CERTIFICATION OF CONFORMITY

CE DECLARATION OF CONFORMITY

With the provisions of directive 89/336/CEE
"Electromagnetic compatibility"
And the provisions of directive 73/23/CEE
"Low voltage"

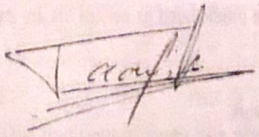
Manufacturer : CRISTEC
Address : 47 Avenue Pierre Mendès France – 29000 Quimper/FRANCE

Declare that the CPS2 battery chargers :
12V/16A, 12V/25A, 12V/40A, 12V/60A, 12V/80A, 24V/08A, 24V/12A, 24V/20A, 24V/30A, 24V/50A, 24V/60A, 24V/75A,
Conform to the provisions of directive 89/336/CEE and those of directive73/23/CEE.

The harmonized standards are as follow :

NF EN61000-6-1 *: Electromagnetic compatibility-Generic emission standard Part 1 : Residential, commercial and light industrial.*
NF EN61000-6-2 *: Electromagnetic compatibility-Generic immunity standard Part 2 : Residential, commercial and light industrial.*
NF EN61000-6-3 *: Electromagnetic compatibility-Generic immunity standard Part 3 : Residential, commercial and light industrial.*
NF EN61000-6-4 *: Electromagnetic compatibility-Generic immunity standard Part 4 : Residential, commercial and light industrial.*
NF EN 60950 *: Electrical safety.*

Place, date and signatures : Quimper, 08/02/2005
Name and position of the signatories :



Moulay TAOUFIK, Product Manager



Didier MARGERAND, Chairman

CE marking awarded in 2005

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