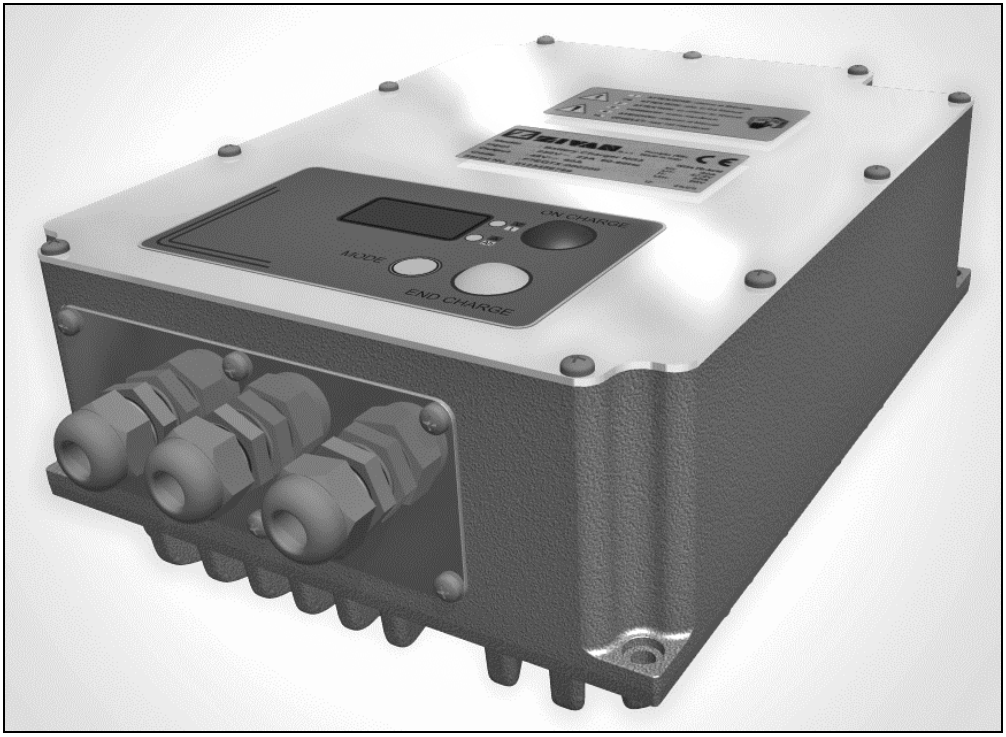
ZIVAN
BATTERY CHARGER

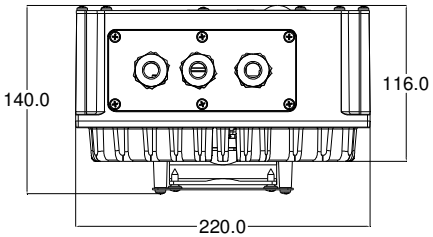
CARICA BATTERIA
BATTERY CHARGER
CHARGEUR DE BATTERIE
BATTERIE LADEGERÄT
CARGADOR DE BATERÍA

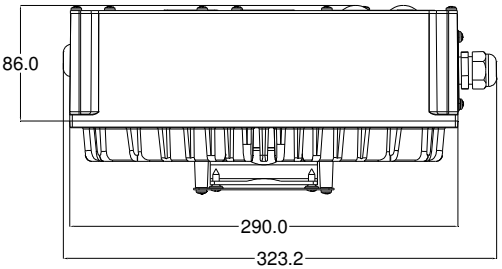
SG3 CAN Bus Interface



(I) Manuale d'uso e installazione.....3
(GB) Installation and User Manual 8

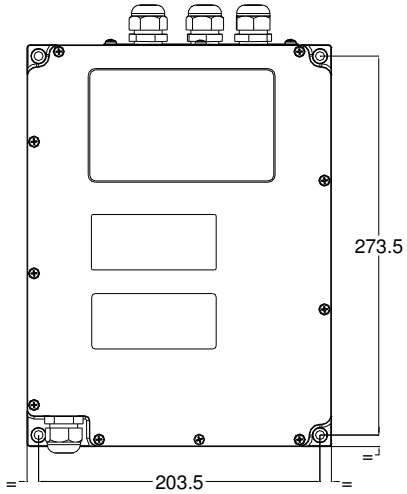
Mechanical dimension

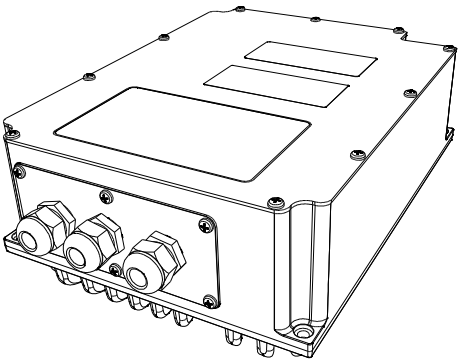




N.B. All dimensions are expressed in mm

Drilling details





N.B. All dimensions are expressed in mm

ATTENTION: To reduce the risk of electric shock, do not remove cover. Refer servicing to qualified service personnel. Disconnect the mains supply before connecting or disconnecting the links to the battery.

Read the Instruction Manual carefully before use. Verify that the selected charge curve is suitable for the type of battery You have to re-charge.

Explanation of Graphical Symbols:

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the equipment's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the equipment.

This product is covered by warranty.
The relative warranty certificate is attached to the Instructions Manual.
If the Manual is not provided with this certificate, please ask your retailer for a copy.
For further references, please write the serial number in the proper space:

Serial No. _____

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Installation and safety instructions

Battery charger SG3 plus has been designed to provide safety and reliable. It is necessary to observe the following precautions in order to avoid damage to persons and to the battery charger:

- Read the installation instructions contained in this Manual carefully. For further information put the Manual in a proper place.
- The appliance is not to be used by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge
- The appliance is not to be used by children
- Do not put the battery charger near heat sources.
- The charger can be installed in any direction. To ensure full power working install the charger in adequately ventilated area. 50mm space between charger fan and heat sink form other parts or walls is sufficient to keep the charger cooled.
- Verify that the available supply voltage corresponds to the voltage that is stated on the battery charger name plate. In case of doubt, consult a retailer or local Electric Supply Authority.
- In order to protect against electric shock, please observe the in force local regulations. If an RCD is used, it is warmly recommended the use of a class A, or better a class B switch. Warning: in case of damage, the charger may generate pulsating fault currents.
- In case of permanently connected equipment a readily accessible disconnect device shall be incorporated external to the equipment
- For pluggable equipment the socket-outlet shall be installed near the equipment and shall be easily accessible.
- For safety and electromagnetic compatibility, the battery charger has a 3-prong plug as a safety feature, and it will only fit into an earthed outlet. If you can not plug it in, chances are you have an older, non-earthed outlet; contact an electrician to have the outlet replaced. Do not use an adapter to defeat the grounding.
- To avoid damaging the power cord, do not put anything on it or place it where it will be walked on. If the cord becomes damaged or frayed, have it immediately replaced.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- If you are using an extension cord or power strip, make sure that the total of the amperes required by all the equipment on the extension is less than the extension's rating.
- Disconnect the mains supply before connecting or disconnecting the links to the battery.
- To recharge Lead Acid batteries: WARNING: Explosive Gas – Avoid flames and sparks. The battery must be positioned in a correctly cooled place.
- Do not use to charge starting batteries put on board of thermal engine cars.
- Avoid recharging of non-rechargeable batteries.
- Verify that the nominal voltage of the battery to be re-charged corresponds to the voltage stated on the battery charger name plate.
- Verify that the selected charging curve is suitable for the type of battery to be re-charged. In case of doubt, consult Your retailer. ZIVAN S.r.l. will not accept any responsibility in case of mistaken choice of the charging curve that may cause irreversible damage to the battery.
- In order to avoid voltage drop, thereby assuring 100% charge at the battery, the output cables must be as short as possible, and the diameter must be adequate for the output current.
- In case of thermal compensation of the battery voltage, put the thermal sensor in the warmest point inside the battery compartment.
- Do not try to service the battery charger yourself. Opening the cover may expose you to shocks or other hazards.
- Do not open the charger. Opening it may bring to a loss in the protection grade (IP), that may persist also after having restored the sealing.

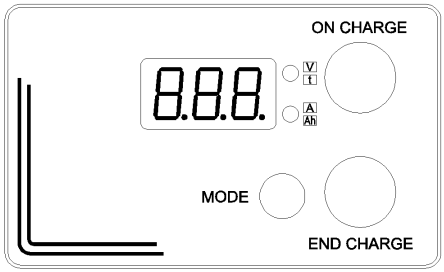
- Servicing is allowed only for the manufacture, or its service agent. In case of servicing disconnect the mains and the battery before opening the enclosure
- If the battery charger does not work correctly or if it has been damaged, unplugged it immediately from the supply socket and from the battery socket and contact a retailer.

Warning

- This user manual must be intended as part of the product.
- Do not make any modification to the product.
- Do not use for any different purposes.
- In order to guarantee the suitable protection against accidental contact to live parts, a proper connector must be installed on the output Cables

Visualization

Digital instrument (display version)



From the starting the digital instrument will display the string of the following parameters:

- **BATTERY VOLTAGE** (two-tone red upper led).
- **CURRENT** provided by the charger (two-tone red lower led).
- **TIME** in hours lacking to the end of charge (two-tone green upper led).
- **Ah** supplied (two-tone green lower led).

By pressing the MODE button, the parameters' sequence is blocked and it will be kept the last value displayed. By pressing again on the MODE button the sequence of parameters restarts.

BIG LED indicators (display version)

Colour	Description
Red	Constant or Max current phase (IUIa).
Blinking red (4s ON – 1s OFF)	Voltage control phase (IUIa).
Red and blinking green (4s ON – 1s OFF)	Overcharging phase (IUIa).
Blinking green (4s ON – 1s OFF)	Wait phase (for equalization) (IUIa).
Green	End charge (only for CU1 BA2)
Blinking green (4s ON – 1s OFF)	Equalization pulse and floating
Green and red blinking together	Connection with CanConsolle or S/S HW-SW.

BI-COLOR LED indicator (version without display)

Colour	Description
Red	Constant or Max current phase (IUIa).
Blinking red (4s ON – 1s OFF)	Voltage control phase (IUIa).
Orange	Overcharging phase (IUIa).
Blinking green (4s ON – 1s OFF)	Wait phase (for equalization) (IUIa).
Blinking Orange (1s ON – 1s OFF)	Allarm.
Green	End charge
Blinking green (4s ON – 1s OFF)	Equalization pulse and floating
Green red alternated	Connection with CanConsolle or S/S HW-SW.

Charging curve selection (display version)

You can press the MODE button according two modalities:
1. Long pressure (at least 1 second): along the battery charger setting it means ENTER
2. Short pressure (less than 1 second): along the battery charger setting it means ROLL.

Setting:

1. While pressing the MODE button light on the equipment.
2. **ROLL:** select the **node** type:
   - from 1 to 19 identifies a STAND-ALONE charger.
3. **ENTER: node** type confirmation. Next selection is to choose the **Charging Curve.**
4. **ROLL:** select the desired **Charging curve**.
   There are 3 available charging curves:
   a. CU1: IUIa curve plus equalization and maintenance;
   b. CU2: IU1U2ob curve;
   c. CU3: power supply;
5. **ENTER: Charging curve** confirmation. Next selection is to choose the **Battery type.** (Lead acid type corresponds to BA1, Gel corresponds to BA2, Ion-Li corresponds to BA3). The BA3 selection is available only if CU3 has been previously selected.
6. **ENTER: Battery type** confirmation: next level is to select the **Capacity** (only for CU1 and CU2).
7. **ROLL: Capacity** selection.
   Starting point is a nominal value and by the ROLL you can select a value included between 50% and 140% of the nominal in steps of 10%. On the display it is shown the last capacity selected.
8. **ENTER: Capacity** confirmation: then you can select the **Recharging time** (in hours).
9. **ROLL: Recharging time** confirmed .
   Starting from a suggested **Recharging time** (according to the capacity chosen at the previous step) this time can only be increased up to 20 hours max.
10. **ENTER: Recharging time** confirmation: the battery charger goes to a stand-by modality waiting that the output cables being connected to the battery binding-clamps (if connections have been done already before starting the setting, once arrived at point 10 the charger immediately starts).

Warning: if some trouble or mistake may occur along setting procedure, switch off the battery charger, then switch it on again by keeping pressed the MODE button and restart setting operation from the beginning.

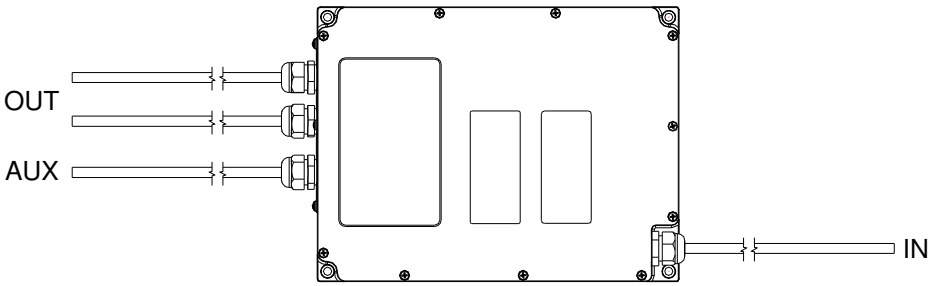
Compensation setting of the voltage drop on output cables (display version)

While charging, with a long pressure of Mode Button, you can program the voltage cables drop. Execute the following operations while charger is at maximum current.
1. Knowing the size and length (positive plus negative lengths) of the output cables, compute the voltage drop at the maximum output current.
2. Press shortly the MODE button (ROLL) until reaching the nearest voltage value to the desired one: it is possible to ROLL parameters between 0,0V e 1,5V with steps of 0,1V.
3. Press long the MODE button (ENTER) to confirm.

Charging curve (version without display)

The charger is provided of only one charging curve, which is IUIa type and includes equalization and maintenance (unless differently specified in the enclosed additional document, please read it to verify parameters.). The curve can be regulated through CANBUS protocol.

Connections



Input and output cables

INPUT: multiwires cable 3x2.5mm².

OUTPUT (currents up to 25A): Flex cable 6mm² (red wire for the positive pole, black wire for the negative).

OUTPUT (currents up to 50A): Flex cable 10mm² (red wire for the positive pole, black wire for the negative).

OUTPUT (currents up to 80A): Flex cable 16mm² (red wire for the positive pole, black wire for the negative).

OUTPUT (currents up to 100A): Flex cable 25mm² (red wire for the positive pole, black wire for the negative).

Auxiliary inputs and outputs cable

Connettore super seal 6 vie FE		
PIN	**Colore filo**	**Descrizione**
1	White	AUX1 COM
2	Brown	AUX1 NO
3	Violet	AUX1 NC
4	Grey	AUX2 COM
5	Pink	AUX2 NO
6	Red/Blue	AUX2 NC

Connettore super seal 5 vie MA		
PIN	**Colore filo**	**Descrizione**
1	Grey/Pink	Thermal sensor PT100
2	White/Yellow	Thermal Sensor NPT100
3	Yellow/Brown	Remote Led COM
4	White/Grey	Remote Led Verde
5	Grey/Brown	Remote Led Rosso

Connettore supe-seal 5 vie FE		
PIN	**Colore filo**	**Descrizione**
1	Blue	CAN NEG
2	Yellow	CAN H
3	Green	CAN L
4	Brown / Green	CAN L
5	White/ Green	CAN HT: 120Ω termination resistor internally connected to CAN H

Alarms (display version)

When an alarm situation stopping the charge occurs, the display shows one of the information below according failure detected:

<A> <alarm code identified with a 2 digits code>

Alarm table list here following:

CODE	ALARM TYPE	DESCRIPTION	STOP
A01	LOGIC FAILURE #1	Trouble on current detection	YES
A02	CAN BUS KO	Trouble on CAN communication	No
A03	WATCHDOG	Logic board mis-working	YES
A05	HIGH BATTERY TEMPERATURE	Battery temperature higher than 55°C	Temporary
A07	OVERCURRENT	Over current	Temporary
A08	HIGH TEMPERATURE	Battery charter high temperature	Temporary
A09	MISMATCH VOLTAGE	Battery voltage sensing error	Temporary
A10	TIMEOUT	Phase 1 finished for timeout	YES
A13	BATTERY DISCONNECTED	Battery disconnected	Temporary
A14	PUMP PRESSURE ERROR	Wrong Pump Pressure. Air pump working not properly	No
A15	THERMAL SENSOR FAILURE	Thermal sensor not connected o failed	No
A16	LOGIC FAILURE #2	Logic supply failure	Temporary
A17	FLASH CHECKSUM	Microcontroller Flash memory corrupted	YES
A18	EEPROM CHECKSUM	EEPROM/Flash memory corrupted	YES
A23	POWER FAILURE #1	Output current sensing circuit damaged	YES
A24	WRONG INPUT MAINS	Input mains level out of the operating range	YES
A25	SHORT OUTPUT	Short circuit at the output stage	YES
A26	WRONG MARKER EEP	EEPROM/Flash memory corrupted	YES
A27	NO MAINS	Input grid failure	Temporary
A28	LOW TEMPERATURE	Charger internal temperature below -30°C	Temporary
A29	CLOCK BATTERY OFF	Clock Calendar battery discharged or not connected	No

Notes:

A05: The charge restarts once the battery temperature reaches a value lower than 45°C.

TECHNICAL FEATURES

Ta=25°C unless otherwise specified

Mains side

Description	Symbol	Test Condition	Value and/or Range	Unit
Supply Voltage	Vin	-	110 - 230 ± 10%	Veff
Frequency	f	-	50 ÷ 60	Hz
Absorbed Maximum Current per phase. *	If_{max}	$P = P_{max}$	15	Aeff
Inrush Current	-	Vin=230Veff	< 3	A
Power Factor	cosφ	$P = P_{max}$	0.98	-
Absorbed Minimum Power	Pin_{min}	End of charge - Standby	< 5	W
Absorbed Maximum Power	Pin_{max}	$P = P_{max}$	3.3	kW

* Maximum value per model. For the effective current absorption please refer to the charger's identification label.

Battery side

Description	Symbol	Test Condition	Value and/or Range	Unit
Output current	I	-	See curve ± 5%	-
Maximum output current	I1	Phase 1	See curve ± 5%	A
Output current ripple	-	I = I1	< 5%	-
Absorbed current	I_a	Equipment turned off	< 0,5	mA
Output voltage	U	-	See curve ± 0,5%	-
Constant output voltage	U1	On the OUT clamps with I = 90% of I1	See curve ± 0,5%	V
Thermal compensation of output voltage	dU1/dT	Phase 2	Programmable (-1÷-9), default -5	mV/(°C·cell)
Operating range of Temperature Sensor	ΔT	-	from -20 to +55	°C
Output voltage ripple	-	U = U1	< 1%	-
Maximum power supplied	P_{max}	U = U1, I = I1	3000	W
Output capacity	C	-	Depend on the model (>0,2)	mF

General

Description	Symbol	Test Condition	Value and/or Range	Unit
Operating range of temperature	ΔT	-	from -20 to +50	°C
Maximum relative humidity	RH	-	90%	-
Efficiency	η	At each operation condition	≥90%	-
Maximum size	a×b×c	Without connecting cable	316×220×94,2	mm
Weight	-	With connecting cable	8	kg
Enclosure class	-	-	IP55	-
AUX1 and AUX2 contact ratings	-	-	4	A

Protection and Safety

Description	Symbol	Test Condition	Value and/or Range	Unit
Insulation	-	Mains to Battery side	1250	V_{AC}
Insulation	-	Mains side to Earth	1250	V_{AC}
Insulation	-	Battery side to Earth	1250	V_{AC}
Leakage current (EMC Filter)	I_L	Supplied equipment	< 7	mA
Input fuses	F1	Inside the equipment	20	A
Output fuse	F5	Inside the equipment	About 1.5 x I_1	A
Minimum output voltage of operation (Battery Detector)	-	Equipment turn on	See curve	V/cell
Maximum output voltage	Um	Phase 3 (IUIa - IUIUo)	See curve	V
Reverse output polarity	-	At the connection to the Battery	Protection provided by the output fuse	-
Thermal protection of semiconductors (Temperature of Thermal Alarm)	-		100	°C
Safety Requirements (Rules)	-		-	-
EMC Requirements (Rules)	-		-	-

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