Characteristics High frequency

All Zivan high frequency chargers work in accordance with the principle of SMPS (Switching Mode Power Supply) Principle: the 220 volt AC or 3 x 380V.AC of the network comes to an EMI filter. The filter is located behind the diode bridge. The mains voltage is rectified and then sufficiently smoothed (= AC / DC conversion). This high DC voltage arrives at the primary side of the transformer. The transformer for its part is switched by one or more mosfet(s) or power transistor(s). At the gate or base of the power components, a pulse-counting signal (PWM = Pulse Width Modulation) arrives. This PWM signal causes the cutting of the high input voltage with a high frequency. The PWM signal is supplied by the control stage which is on its part controlled by the control logic, which gets the information at the battery side. By switching the power component on the primary side of the transformer, there’s a pulse shaped signal at the secondary side, which is rectified backward to a much lower voltage (V) than those at the primary side but with a higher current value (A). Before this current is brought to the battery it passes again through an EMI filter which eliminates the last differences of tension and suchlike.

Result: There’s always a constant current to the battery, independent of the variations on the mains voltage.

Functioning of a zivan high frequency charger

Controlled recharging = recharging according to the state of discharge. The Zivan charger controls constantly the tension of your battery! The charger starts with a maximum charging current until the battery reaches 2.4V/cell. When the 2.4V/cell is reached, the current drops back and the charger starts to charge the battery with a charging current which comes to 4 % of the battery capacity.

So: The charge of your battery is always adapted to the state of discharge ---> the more your battery is discharged, the longer is the charge time; the less discharged, the shorter the charge time!

Maximum efficiency: Saving of approximately 25 % on your energy bill. Thanks to the use of a microprocessor which controls permanently the depth of discharge and the state of charge of your battery, the energy consumption is reduced during the charge cycles, as the charger only delivers the current needed to charge the discharged part of the battery! Also, the classic transformer is replaced by a special transformer in a HF-charger: this means less lost of warmth --> less energy loss --> more efficiency.

Advantages: less heating of the battery = less water consumption!
WHY DO HIGH FREQUENCY BATTERY CHARGERS HAVE SUCCESS?

• Because they guarantee several advantages if compared to the traditional technology ones, above all because we’re talking about “CONTROLLED” battery chargers.

• What’s the meaning of “CONTROLLED”? It means that the battery charger is able to make the optimal recharge by succeeding in controlling and adjusting the current, the voltage and all the charging parameters as stated by the batteries manufacturers.

HIGH FREQUENCY ADVANTAGES

• Exceptional charging quality.
• Up to 15% of saving on the charging costs on the energy invoice.
• Water consumption almost halved.
• Battery maintenance reduced of about 50%.
• Gas emissions reduced (lower risk of explosion).
• Weight and size about 10 times reduced:
  • Every battery charger can be built-in.

THERMAL SENSOR OPTION:

By using the thermal sensor option, the charge profile is automatically adjusted and compensated based on the battery temperature.

It is warmly suggested when the battery often works in stress conditions and/or when the climate environment is characterized by important modifications during the year.

VARIATION OF GASIFICATION VOLTAGE FOR A 80V BATTERY BASED ON BATTERY TEMPERATURE

The thermal sensor prevents damages to the battery. If an element is faulty, the rest of the battery is safeguarded.

The charger automatically stops the charge if the temperature of the battery increases above a predetermined value.

Temperature effect: As you know life of the battery is shortened if it works at higher temperatures. By using the Zivan HF charger battery life is extended.

MULTI-CURVE ZIVAN: VERSATILE, EFFICIENT RELIABLE

Flexible and intuitive to use: same item may recharge multiple battery chemistries and a wide window of battery capacities. This means reduction of the number of part numbers in customer warehouse and less references on the IT system.

By an easy adjustment, the most suitable charging profile (cyclic traction charge including week end equalization, maintenance floating charge, power supply stationary charge, other peculiar to implement) fitting to specific application (material handling: lift trucks, pallet trucks, aerial platforms, UPS& telecom systems, boating, solar, windmills, EV, NEV, AGV, LGV, industrial cleaning).

CAN BUS INTERFACE NEW RANGE: ADDITIONAL FEATURES

• Chargers units are parallelable
• Insulated can bus communication
• Data logging and clock calendar
• Storage up to 1500 cycles (corresponding to battery standard lifetime )
• Can open function: charger can work with run time parameters controlled by external devices (e.g. BMS - PC - Vehicle Master controller)
• Dynamic compensation of the voltage drop on the output cable
• Digital display shows parameters: voltage, current, charged Ah, and time left to the end of the charge
• Suitable for several battery types (Lead acid, gel, Li-Ion …)
• Flashable micro controller
### HIGH FREQUENCY CHARGERS

#### BATTERY CHARGERS

<table>
<thead>
<tr>
<th>Reference</th>
<th>Volts</th>
<th>Amp</th>
<th>IMAX</th>
<th>Charging time (Ah/C5)</th>
<th>L</th>
<th>W</th>
<th>H</th>
<th>Ah From</th>
<th>Ah To</th>
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<td>1000-1200</td>
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**Options for chargers**

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<th>Can-Bus</th>
<th>Pump</th>
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<td>NG1 / NG3 &amp; NG5 &amp; NG7 &amp; NG9 &amp; NGTOP &amp; IP54</td>
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<tr>
<td>Standard reference + P</td>
<td>NG1 &amp; NG3 / NG5 &amp; NG7 &amp; NG9 &amp; NGTOP &amp; IP54</td>
<td>NG1 &amp; NG3 / NG5 &amp; NG7 &amp; NG9 &amp; NGTOP &amp; IP54</td>
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The UBC & BC1 item references refer to lead acid traction batteries WUIA curve only.
The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.
# Battery Charger Overview

<table>
<thead>
<tr>
<th>Voltage</th>
<th>0.5 kW</th>
<th>0.7 kW</th>
<th>1 kW</th>
<th>3 kW</th>
<th>5 kW</th>
<th>9 kW</th>
<th>18 kW</th>
<th>36 kW</th>
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<tr>
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<tr>
<td>72/80 V</td>
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<tr>
<td>36/48 V</td>
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<td></td>
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<tr>
<td>24 V</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>12 V</td>
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</table>
UBC SINGLE PHASE

The Single Phase Battery Charger UBC is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and adapt them to every kind of battery. Due to its size and light weight, this model is especially suitable for on-board installation, in addition to the “on wall” installation. Consequently, the machine can be recharged from any available outlet, without driving the machine to a specific charging area.

TECHNICAL FEATURES

- Input voltage: 230 VAC ± 10%
- Current absorbed by the battery: < 1 mA
- Efficiency: > 85%
- Input frequency: 50 – 60 Hz
- Starting: forced
- Cooling: forced
- Inverse polarity protection (fuse)
- Type: 230 VAC ± 10%
- Panel: metal base, cover in self-extinguishable ABS
- Voltage: 70-95
- Weight: 0,850 kg
- Vibration Test: Sinusoidal vibrations (referring regulation IEC 60747-5-1; Shock Test (referring regulation IEC 60747-5-1);
- Size: 235 x 115 x 65 mm
- enclosure class: IP20
- CE: In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.
- Operating temperature: from –20 to +50°C
- Output short-circuit protection (fuse)
- Accuracy on output voltage: ± 0,5%
- Options: adjustable charging curves or battery capacity

Battery Voltage Charging time

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>VAC</th>
<th>I1</th>
<th>IMAX</th>
<th>Mains</th>
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<tbody>
<tr>
<td>7 - 8,5 h</td>
<td>70-95</td>
<td>120</td>
<td>12V 18A</td>
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<td>9 - 11 h</td>
<td>80</td>
<td>100</td>
<td>24V 15A</td>
<td>230</td>
<td>12,5</td>
<td>15</td>
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</tbody>
</table>

**Tension de la Batterie**

- Tensione batteria
- Tension batteria
- Tensione batteria
- Tension batteria

**Batteryoltage**

- Tension batteria
- Tension batteria

**UBC BATTERY CHARGER SINGLE-PHASE**

ZIVAN®
The Single Phase Battery Charger BC1 is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and adapt them to every kind of battery. Due to its size and light weight, this model is especially suitable for on-board installation, in addition to the “on wall” installation. Consequently, the machine can be recharged from any available outlet, without driving the machine to a specific charging area.

**BC1 SINGLE PHASE**

**TECHNICAL FEATURES**

- Input voltage: **230 VAC ± 10%**
- Input frequency: 50 – 60 Hz
- Efficiency: > 85%
- Current absorbed by the battery: < 1 mA
- Operating temperature: from −20 to +50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Accuracy on output voltage: ± 0,5%
- Cooling: forced
- Case: metal base, cover in self-extinguishable ABS
- Size: 285 x 105 x 75 mm
- Weight: 1,390 kg
- Enclosure class: IP20
- CE In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.
- Vibration Test: Sinusoidal vibrations (referring regulation IEC 68-2-6); Shock Test (referring regulation IEC 68-2-27); Bump Test (referring regulation IEC 68-2-29).
- Options: adjustable charging curves or battery capacity

### Battery Voltage vs. Charging Time

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>VAC</th>
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<th>IMAX</th>
<th>Mains</th>
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**SISTEMA QUALITÀ CERTIFICATO**

UNI EN ISO 9001:2000
NG1 BATTERY CHARGER SINGLE-PHASE

The Single-phase battery charger NG1 is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed in order to change the charging features and to adapt them to every kind of battery. The reduced size of this model allows both installation on a wall, and on-board. Consequently the battery can be recharged from any available outlet, without driving the machine to a specific charging area.

TECHNICAL FEATURES

- **Input voltage:** 230 VAC ± 10%
  115 VAC ± 10%
- **Input frequency:** 50 – 60 Hz
- **Efficiency:** > 85%
- **Minimum power absorbed:** < 5 W
- **Current absorbed by the battery:** < 0.2 mA
- **Operating temperature:** from –20 to + 50°C
- **Output short-circuit protection (fuse)**
- **Inverse polarity protection (fuse)**
- **Charging curve:** programmable
- **Accuracy on output voltage:** ± 0.5%
- **Thermal compensation of battery voltage**
  (optional with thermal sensor)
- **Acoustic alarm**
- **Auxiliary contacts of main presence and end of charge (Standard Charger) or of air pump control and end of charge (Charger with air pump)**
- **Cooling:** forced
- **Case:** Metal base, cover in self-extinguishable ABS
- **Size:** 300 x 160 x 80 mm
- **Weight:** 2.2 kg
- **Enclosure class:** IP20
- **CE** In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.

### Battery Voltage and Charging Time

<table>
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<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
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<th>IMAX</th>
<th>Mains</th>
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<td>9 - 11 h</td>
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<tr>
<td>12</td>
<td>400 - 480</td>
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<tr>
<td>24</td>
<td>240 - 290</td>
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<td>310 - 335</td>
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<td>48</td>
<td>145 - 175</td>
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<td>72</td>
<td>80 - 95</td>
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<td>105 - 110</td>
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<tr>
<td></td>
<td>12 - 13 h</td>
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<tr>
<td>12</td>
<td>520 - 480</td>
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<td>24</td>
<td>310 - 335</td>
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<tr>
<td>36</td>
<td>210 - 225</td>
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<tr>
<td>48</td>
<td>185 - 200</td>
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<tr>
<td>72</td>
<td>105 - 110</td>
<td></td>
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</tr>
</tbody>
</table>

---

**Images:**

- Battery charger diagram
- Charging curves graph

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**Height:** 380 mm

**Depth:** 180 mm

**Width:** 240 mm

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**BATTERY SUPPLIES.BE**

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**UNI EN ISO 9001:2000**
NG1 CAN BUS BATTERY CHARGER SINGLE-PHASE

POWER IS COMMUNICATION

NG1 CAN BUS

The new single-phase battery charger with CAN BUS interface represents an innovation in Zivan’s range. Its powerful “flash” microcontroller, with integrated CAN-BUS interface, paves the way for communication with other devices such as the controller, BMS, PC, DISPLAYS, etc.; allowing integration into the most advanced systems. Large onboard memory provides access to relevant items of the charge history, thereby increasing the charger’s performance and flexibility. Using a single button on the optional display, it is easy to modify charging features and parameters allowing correct matching to any type of battery (including Lithium technologies). The high power and efficiency of Zivan’s chargers guarantees significant energy savings and subsequent economic advantage. All of these features position ZIVAN as leaders in the market, providing state-of-the-art technology and high quality while maintaining a competitive price.

TECHNICAL FEATURES (idem NG1)

- Insulated CAN BUS Interface

INNOVATIVE FEATURES

- Powerful and flexible logic control with can bus connexion option
- Data logging and clock calendar functions
- Storage of up to 1000 charging cycles
- Parallelable
- Can open function: charger can work with runtime parameters controlled by an external device (e.g. bms)
- Internet connection for remote managing & flashing
- Digital display shows parameters: voltage, current, charged ah and time left to the end of charge
- Dynamic compensation of the voltage drop on the output cable
- Suitable for several battery types (Li-Ion, lead acid, gel, ni-mh, etc.)

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>VAC</th>
<th>I1</th>
<th>Code</th>
<th>IMAX</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>7 - 8,5 h</td>
<td>12V 60A</td>
<td>230</td>
<td>50</td>
<td>GGQ0CB-07040Q</td>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>24</td>
<td>9 - 11 h</td>
<td>24V 35A</td>
<td>230</td>
<td>30</td>
<td>GGBMCB-07040Q</td>
<td>36</td>
<td>7</td>
</tr>
<tr>
<td>180</td>
<td>12 - 13 h</td>
<td>24V 50A</td>
<td>230</td>
<td>37,5</td>
<td>GGB0CB-07040Q</td>
<td>45</td>
<td>8</td>
</tr>
<tr>
<td>36</td>
<td>95 - 145</td>
<td>36V 25A</td>
<td>230</td>
<td>20</td>
<td>GCCHC8B-07040Q</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>48</td>
<td>85 - 130</td>
<td>48V 22A</td>
<td>230</td>
<td>18</td>
<td>GGEHVCB-07040Q</td>
<td>21,6</td>
<td>6</td>
</tr>
<tr>
<td>72</td>
<td>50 - 70</td>
<td>72V 12A</td>
<td>230</td>
<td>10</td>
<td>GGHECB-0700Q</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

Further models are available for other battery voltages.

The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities. Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order).

ACCESSORIES

- Thermal sensor
  Compensates the recharging parameters depending on battery temperature.
- Zivan CAN console
  Software for the visualization of charging parameters through PC.

PC CONNECTION KIT

- USB to CAN adaptor
  Cable for connecting battery charger to PC through ZIVAN Can Console.
- Master-slave connection kit
  Inter-connection cable for connecting more devices in parallel (available in the following versions: MASTER-SLAVE, MASTER-2 SLAVES, MASTER-3 SLAVES).

Air pump

NG1 CAN BUS Murale
**NG3 SINGLE PHASE**

The Single Phase charger NG3 is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and to adapt them to every kind of battery. The reduced size of this model means that it can be not only installed on the wall, but also carried on-board. Consequently the battery can be charged in whichever plug available, without driving the machine to the charging area.

**TECHNICAL FEATURES**

- Input voltage: 230 VAC ± 10%
  115 VAC ± 10%
- Input frequency: 50 – 60 Hz
- Efficiency: > 85%
- Minimum power absorbed: < 5 W
- Current absorbed by the battery: < 0.5 mA
- Operating temperature: from –20 to + 50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Charging curve: programmable
- Accuracy on output voltage: ± 0.5 %
- Thermal compensation of battery voltage (optional with thermal sensor)
- Acoustic alarm
- Auxiliary contacts of main presence and end of charge (Standard Charger) or of air pump control and end of charge (Charger with air pump)
- Cooling: forced
- Case: Metal base, cover in self-extinguishable PST
- Size: 430 x 220 x 110 mm
- Weight: 5.5 kg
- Enclosure class: IP20
- CE in conformity with the requirements of the Low Voltage Directive and of the Directive EMC.

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>VAC</th>
<th>IT</th>
<th>IMAX</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>7 - 8.5 h</td>
<td>9 - 11 h</td>
<td>12-13 h</td>
<td>230</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>240-360</td>
<td>400-480</td>
<td>520-560</td>
<td>24V 60A</td>
<td>230</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>335-505</td>
<td>560-670</td>
<td>730-785</td>
<td>24V 85A</td>
<td>230</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>385-575</td>
<td>640-770</td>
<td>830-895</td>
<td>24V 95A</td>
<td>230</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>480-720</td>
<td>800-960</td>
<td>1040-1120</td>
<td>24V 100A</td>
<td>230</td>
<td>100</td>
</tr>
<tr>
<td>36</td>
<td>240-360</td>
<td>400-480</td>
<td>520-560</td>
<td>36V 60A</td>
<td>230</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>290-430</td>
<td>480-575</td>
<td>625-670</td>
<td>36V 70A</td>
<td>230</td>
<td>60</td>
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<tr>
<td>48</td>
<td>175-260</td>
<td>290-345</td>
<td>375-405</td>
<td>48V 45V</td>
<td>230</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>240-360</td>
<td>400-480</td>
<td>520-560</td>
<td>48V 60A</td>
<td>230</td>
<td>50</td>
</tr>
<tr>
<td>72</td>
<td>105-160</td>
<td>175-210</td>
<td>230-245</td>
<td>72V 25A</td>
<td>230</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>145-215</td>
<td>240-290</td>
<td>310-335</td>
<td>72V 35A</td>
<td>230</td>
<td>30</td>
</tr>
<tr>
<td>80</td>
<td>105-160</td>
<td>175-210</td>
<td>230-245</td>
<td>80V 25A</td>
<td>230</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>130-195</td>
<td>215-260</td>
<td>280-300</td>
<td>80V 30A</td>
<td>230</td>
<td>27</td>
</tr>
</tbody>
</table>

Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order). Further models are available for other battery voltages.
NG3 CAN BUS Battery Charger Single-Phase

POWER IS COMMUNICATION

NG3 CAN BUS

The new single-phase battery charger with CAN BUS interface represents an innovation in Zivan’s range. Its powerful “flash” microcontroller, with integrated CAN-BUS interface, paves the way for communication with other devices such as the controller, BMS, PC, DISPLAYS, etc.; allowing integration into the most advanced systems. Large onboard memory provides access to relevant items of the charge history, thereby increasing the charger’s performance and flexibility. Using a single button on the optional display, it is easy to modify charging features and parameters allowing correct matching to any type of battery (including Lithium technologies). The high power and efficiency of Zivan’s chargers guarantees significant energy savings and subsequent economic advantage. All of these features position ZIVAN as leaders in the market, providing state-of-the-art technology and high quality while maintaining a competitive price.

TECHNICAL FEATURES (ident NG3)

• Insulated CAN BUS Interface

INNOVATIVE FEATURES

• Powerful and flexible logic control with can bus connexion option
• Data logging and clock calendar functions
• Storage of up to 1000 charging cycles
• Paralletable
• Can open function: charger can work with runtime parameters controlled by an external device (e.g. bms)
• Internet connection for remote managing & flashing
• Digital display shows parameters: voltage, current, charged ah and time left to the end of charge
• Dynamic compensation of the voltage drop on the output cable
• Suitable for several battery types (lythium-ion, lead acid, gel, ni-mh, etc.)

### ACCESSORIES

- **Thermal sensor**: Compensates the recharging parameters depending on battery temperature.
- **Zivan CAN console**: Software for the visualization of charging parameters through PC.

### PC CONNECTION KIT

- **USB to CAN adaptor**: Cable for connecting battery charger to PC through ZIVAN Can Console.
- **Master-slave connection kit**: Inter-connection cable for connecting more devices in parallel (available in the following versions: MASTER-SLAVE, MASTER-2 SLAVES, MASTER-3 SLAVES).

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<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>VAC</th>
<th>I1</th>
<th>Code</th>
<th>IMAX</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - 8.5 h</td>
<td>12 100</td>
<td>230</td>
<td>100</td>
<td>G7AVCB-07050Q</td>
<td>100</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>7 - 11.1 h</td>
<td>24 60</td>
<td>230</td>
<td>50</td>
<td>G7BQCB-07020Q</td>
<td>60</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>7 - 12 h</td>
<td>24 85</td>
<td>230</td>
<td>70</td>
<td>G7BCBC-07030Q</td>
<td>84</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>7 - 10 h</td>
<td>24 95</td>
<td>230</td>
<td>80</td>
<td>G7BBCB-07040Q</td>
<td>96</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>7 - 12 h</td>
<td>24 100</td>
<td>230</td>
<td>100</td>
<td>G7BCBC-07030Q</td>
<td>100</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

Further models are available for other battery voltages. The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities. Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order).
**POWER IS COMMUNICATION**

**NG5/NG7/NG9 THREE PHASE**

The new three-phase battery charger with CAN BUS interface represents the innovation in Zivan’s range. Thanks to a “flash” microprocessor endowing with high calculation power and huge storage capacity it is able to view in historical perspective the main data concerning last recharging cycles, elevating its feasibility and performance. By a sole button it is easy to modify the charging features, visualize them on the display and fit them to any type of battery. The high power and efficiency of these Zivan’s chargers guarantee a significant energy saving and subsequent economic advantage. This allows to amortize within short times the investment on choosing high frequency, ranking these chargers among the leader items available on the market with the best relationship between quality and price.

**TECHNICAL FEATURES**

- **Input voltage:** 400 VAC ± 15% Three Phase
- **Input frequency:** 50 – 60 Hz
- **Efficiency:** > 93%
- **Minimum power absorbed:** < 10 W
- **Current absorbed by the battery:** < 0.5 mA
- **Operating temperature:** from −20 to + 50°C
- **Output short-circuit protection (fuse)**
- **Inverse polarity protection (fuse)**
- **Charging curve:** programmable
- **Visualization by display of the parameters:** Voltage, Current, charged Ah and time left to the end of charge
- **Accuracy on output voltage:** ± 0.5%
- **Thermal compensation of battery voltage (optional with thermal sensor)**
- **Dynamic compensation of the voltage drop on the output cable**
- **Acoustic alarm**
- **Auxiliary contacts of main presence and end of charge (Standard Charger) or of air pump control and end of charge (Charger with air pump)**
- **Cooling:** forced
- **Case:** Metal base, cover in self-extinguishable PST
- **Size:** 545 x 265 x 115 mm
- **Weight:** 9kg
- **Enclosure class:** IP20
- **CE** In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.

**INNOVATIVE FEATURES**

- **LOGIC BOARD WITH “FLASH” MICROPROCESSOR**
- **STORAGE OF OVER 250 CHARGING CYCLES**
- **EVEN MORE FLEXIBLE SOFTWARE**
- **DELAYED START**
- **MASTER AND SLAVE CONFIGURATION WITH POWER EXCEEDING 70KW**
- **DESULPHATION CHARGING CURVE**
- **SUITABLE FOR SEVERAL BATTERY TYPES (LEAD ACID, GEL, LITHIUM-ION, NI-MH, ETC.)**

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NG5 con Air pump
Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order).

More and different charging curves are available for special batteries and non-standard applications.
Visualization of the charging parameters through PC

Simplified programming without PC

By pressing the MODE button it can be selected the following:

- Node (MASTER, SLAVE, STAND ALONE)
- Battery type
- Curve type
- Battery capacity in Ah
- Recharging time

Master-Slave connection

Through the inter-connection cable it can be put in parallel up to 9 devices. The Ext connector is used to connect PC, make adjustments and readings. To set the Master, adjust Node 0: then follow step by step the procedure recommended by the system paying attention to select a battery capacity corresponding to C5.

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Model</th>
<th>Type</th>
<th>VAC</th>
<th>I1</th>
<th>Code</th>
<th>IMAX</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>7 - 8.5 h</td>
<td>480 - 720</td>
<td>800 - 960</td>
<td>1040 - 1120</td>
<td>NG5</td>
<td>24 120</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>575 - 865</td>
<td>960 - 1150</td>
<td>1250 - 1345</td>
<td>NG9</td>
<td>24 145</td>
<td>400</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>960 - 1440</td>
<td>1600 - 1920</td>
<td>2080 - 2240</td>
<td>NG9+</td>
<td>24 200</td>
<td>400</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>9 - 11 h</td>
<td>480 - 720</td>
<td>800 - 960</td>
<td>1040 - 1120</td>
<td>NG5</td>
<td>36 120</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>575 - 865</td>
<td>960 - 1150</td>
<td>1250 - 1345</td>
<td>NG9</td>
<td>36 145</td>
<td>400</td>
<td>120</td>
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<td></td>
<td></td>
<td>815 - 1225</td>
<td>1360 - 1630</td>
<td>1770 - 1905</td>
<td>NG9+</td>
<td>36 170</td>
<td>400</td>
<td>170</td>
</tr>
<tr>
<td>36</td>
<td>12 - 13 h</td>
<td>385 - 575</td>
<td>640 - 770</td>
<td>830 - 895</td>
<td>NG5</td>
<td>48 95</td>
<td>400</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>480 - 720</td>
<td>800 - 960</td>
<td>1040 - 1120</td>
<td>NG7</td>
<td>48 145</td>
<td>400</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>575 - 865</td>
<td>960 - 1150</td>
<td>1250 - 1345</td>
<td>NG9</td>
<td>48 145</td>
<td>400</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>650 - 970</td>
<td>1080 - 1295</td>
<td>1405 - 1510</td>
<td>NG9+</td>
<td>48 160</td>
<td>400</td>
<td>135</td>
</tr>
<tr>
<td>48</td>
<td>7 - 8.5 h</td>
<td>265 - 395</td>
<td>440 - 530</td>
<td>570 - 615</td>
<td>NG5</td>
<td>72 65</td>
<td>400</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>335 - 505</td>
<td>560 - 670</td>
<td>730 - 785</td>
<td>NG7</td>
<td>72 85</td>
<td>400</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td></td>
<td>430 - 650</td>
<td>720 - 865</td>
<td>935 - 1010</td>
<td>NG9</td>
<td>72 110</td>
<td>400</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>9 - 11 h</td>
<td>240 - 360</td>
<td>400 - 480</td>
<td>520 - 560</td>
<td>NG5</td>
<td>80 60</td>
<td>400</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>300 - 450</td>
<td>500 - 600</td>
<td>650 - 700</td>
<td>NG7</td>
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<td>400</td>
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<td></td>
<td></td>
<td>385 - 575</td>
<td>640 - 770</td>
<td>830 - 895</td>
<td>NG9</td>
<td>80 100</td>
<td>400</td>
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<td>12 - 13 h</td>
<td>480 - 640</td>
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<td>960 - 1120</td>
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<td>80 120</td>
<td>400</td>
<td>100</td>
</tr>
</tbody>
</table>

On the three-phase models 480Vac, the 2nd digit of the part number must be replaced by a “D” (example: GDBVCB-D70D0Q).
The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.

Further models are available for other battery voltages.
NGTOP THREE PHASE

The Three-Phase charger NGTOP is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed in order to change the charging features and to adapt them to every kind of battery. NGTOP is the highest power charger from Zivan’s production range. The high power and efficiency of this charger assures the user of considerable energy savings with subsequent economic benefit.

TECHNICAL FEATURES

- Input voltage: 400 VAC ± 15 % Three phase
- Input frequency: 50 – 60 Hz
- Efficiency: > 85%
- Minimum power absorbed: < 10 W
- Current absorbed by the battery: < 1 mA
- Operational temperature: from −20 to 50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Charging curve: programmable
- Accuracy on output voltage: ± 0.5%
- Thermal compensation of battery voltage (optional with thermal sensor)

<table>
<thead>
<tr>
<th>Battery Voltage (V)</th>
<th>Charging time (h)</th>
<th>Type</th>
<th>VAC</th>
<th>I1</th>
<th>IMAX</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>7 - 8.5</td>
<td>36V 200A</td>
<td>400</td>
<td>200</td>
<td>200</td>
<td>17</td>
</tr>
<tr>
<td>48</td>
<td>9 - 11</td>
<td>48V 170A</td>
<td>400</td>
<td>170</td>
<td>170</td>
<td>23</td>
</tr>
<tr>
<td>80</td>
<td>12 - 13</td>
<td>80V 150A</td>
<td>400</td>
<td>125</td>
<td>150</td>
<td>28</td>
</tr>
<tr>
<td>80</td>
<td>9 - 11</td>
<td>80V 150A</td>
<td>400</td>
<td>125</td>
<td>150</td>
<td>28</td>
</tr>
</tbody>
</table>

THERMAL SENSOR ADVANTAGES

- The thermal sensor prevents damages to the battery. If an element is faulty, the rest of the battery is safeguarded.
- The charger automatically stops the charge if the temperature of the battery increases above a predetermined value.
- Temperature effect: as you know life of the battery is shortened if it works at higher temperatures. By using the Zivan HF charger battery life is extended.

Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order). Further models are available for other battery voltages. More and different charging curves are available for special batteries and non-standard applications.
**ACCESSORIES**

**UBC & BC1**

- **BAT/23419**
  - SCHUKO SUPPORT - Disables the machine when the plug of the charger is removed from its location.

- **BAT/28998** 50 cm
  - **BAT/41869** 100 cm
  - **BAT/28999** 250 cm
  - **BAT/29000** 400 cm
  - KIT LED EXTENSION Ø 10 - Displays the charging phase of the charger (fixing hole Ø 14 mm).

- **BAT/29001** 28 cm
  - **BAT/41870** 250 cm
  - REMOTE INDICATOR Ø 20 - Displays the charging phase of the charger (fixing hole Ø 22 mm).

**ALL CHARGERS**

- **BAT/48423**
  - KABLE HOLDER FRAME AIR PUMP KIT.

**NG1 / NG3 / NG5 / NG7 / NG9**

- **BAT/29002** 300 cm
  - KIT LED EXTENSION Ø 10 - Displays the charging phase of the charger (fixing hole Ø 14 mm).

- **BAT/17529** 200 cm
  - **BAT/23903** 400 cm
  - REMOTE INDICATOR Ø 20 - Displays the charging phase of the charger (fixing hole Ø 14 mm).

- **BAT/22870** 200 cm
  - **BAT/23901** 500 cm (standard)
  - **BAT/48421** 10 m
  - THERMAL SENSOR AND LED INDICATOR — Ø 10 - fixing hole Ø 22 mm.

- **BAT/48422**
  - THERMAL SENSOR AND REMOTE INDICATOR — Ø 20 - fixing hole Ø 22 mm.

**NG3**

- **BAT/42150**
  - CABLES WAY THROUGH — Allows an appropriate wall installation, thanks to an adequate passage of the cables behind the charger.

- **BAT/47888**
  - ROLL BAR.

**NG5 / NG7 / NG9**

- **BAT/47886** 200 cm
  - **BAT/47887** 10 m
  - THERMAL SENSOR AND REMOTE INDICATOR — Ø 20 - fixing hole Ø 22 mm.

**NGTOP**

- **BAT/48424**
  - THERMAL SENSOR with din socket go° - Controls the constant voltage of the gasification phase depending on the battery temperature.

- **BAT/42209**
  - STAND — A support to place the charger on the ground.
**TECHNICAL FEATURES**

- Dimensions [base plate]: 630 l x 417 w x 210 h
- Cooling: Forced ventilation
- Protection: IP 54
- Case: Epoxy
- Switching frequency: 20 kHz
- Input voltage: 400 Vac ± 10 % - 480 Vac ± 10 %
- Accuracy on output voltage: ± 0,5 %
- Output short-circuit protection: Electronic
- Inverse Polarity protection: Fuse
- Adjustable curves: Infinite
- Operating Temperature: -20°C to +50°C
- Auxiliary relay: 2
- Can bus communication: up to 2 channel
- Display: Yes
- Memory: Up to 255 cycles

---

**POWER METAL GENERATION CAN BUS**

<table>
<thead>
<tr>
<th></th>
<th>24V</th>
<th>36V</th>
<th>48V</th>
<th>80V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual (A)</td>
<td>400</td>
<td>340</td>
<td>290</td>
<td>160</td>
</tr>
<tr>
<td>Tri (A)</td>
<td>600</td>
<td>510</td>
<td>435</td>
<td>240</td>
</tr>
<tr>
<td>Quad (A)</td>
<td>800</td>
<td>680</td>
<td>580</td>
<td>320</td>
</tr>
</tbody>
</table>

---

**BRAIN-BRAIN**

The BRAIN software was designed to remotely monitor huge networks of Zivan Can Bus chargers. Through the BRAIN system you easily access to overview batteries and charger conditions, verify the charging cycles and eventual alarm historical. The BRAIN is based on SQL database, making active logging from both battery monitor installed on the battery and battery charger. By this data-mining a checkup on battery efficiency and working cycle is available. Thanks to an exclusive connection software the remote management of a recharging hall is possible.
The SG3 marks a new revolution of integrating an on-board charger to an electric vehicle platform. The active PFC filter is perfectly suited for applications around the world, accepting a supply voltage from 95 to 265 VAC. The innovative configuration of its heat sink, integrated into the rugged die-cast aluminium IP65 enclosure of the charger, allows for maximum flexibility of installation and extreme working conditions. The SG3 utilizes the latest generation flash microcontroller, which is necessary to handle the multitude of possible charging algorithms installed. The isolated CANBUS interface (2.0) enables integration of the unit into the system architecture of the vehicle. The abundant storage capacity is able to save up to 1K charging cycles, allowing for a complete analysis of the behaviour of the battery and use over its lifetime. Last but not least, the SG3 is optimized to allow for high efficiency microcontroller from standard household sockets, allowing for the charging of all kinds of battery technologies.

### TECHNICAL FEATURES

- **Universal Input Voltage:** 95-265 VAC
- **Input frequency:** 50-60 Hz
- **Power factor:** 0.98
- **Efficiency:** up to 93%
- **Absorbed standby power:** < 3W
- **Absorbed current from the battery:** < 0.5 mA
- **Output voltage accuracy:** ± 0.5 %
- **Operating case temperature:** - 30°C to + 70°C
- **Galvanic Insulated CAN-BUS Interface**
- **Output short-circuit protection**
- **Inverse polarity protection (fuse)**
- **Programmable charging curve**
- **Optional: visualization by display of the parameters:** Voltage, Current, charged Ah and Time
- **Thermal compensation of battery voltage (optional with external thermal sensor)**
- **Programmable auxiliary contacts:** main presence, charge in progress, air pump function
- **Clock Calendar**
- **Data Logging**
- **Delayed start**
- **Able to be paralleled**
- **Vibration-proof structure**
- **Die cast aluminium box**
- **Size:** 324x204x142 mm
- **Weight:** 8 kg.
- **Enclosure class:** IP65
- **External Fan class:** IP55
- **CE** - In conformity with the requirements of the Low Voltage Directive and of the Directive EMC

### TABLE

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>VAC</th>
<th>Charging time 7 - 8.5 h</th>
<th>9 - 11 h</th>
<th>12 - 13 h</th>
<th>Type</th>
<th>I1 230 VAC</th>
<th>I1 120 VAC</th>
<th>Mains</th>
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<tbody>
<tr>
<td>24</td>
<td>230</td>
<td>320 - 575</td>
<td>320 - 385</td>
<td>320 - 385</td>
<td>24V 80</td>
<td>80</td>
<td>40</td>
<td>11</td>
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<tr>
<td></td>
<td>120</td>
<td>160 - 290</td>
<td>120 - 215</td>
<td>120 - 215</td>
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<td>13</td>
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<td>36</td>
<td>230</td>
<td>240 - 430</td>
<td>240 - 385</td>
<td>240 - 385</td>
<td>48V 50</td>
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<td>120 - 215</td>
<td>120 - 215</td>
<td>72V 35</td>
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<tr>
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<td>230</td>
<td>200 - 360</td>
<td>200 - 300</td>
<td>200 - 300</td>
<td>80V 30</td>
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<td>15</td>
<td>14</td>
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<tr>
<td></td>
<td>120</td>
<td>100 - 180</td>
<td>100 - 140</td>
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<td>84V 30</td>
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<tr>
<td></td>
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<td>70 - 125</td>
<td>70 - 125</td>
<td>70 - 125</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Product range under expansion. For further models please contact us.

The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.

**Charging curves specimen**
The single-phase SG6 represents the innovation in Zivan’s product range. It is a rugged high frequency battery charger sealed to IP65 housed in a strong die cast aluminium enclosure. Thanks to its IMS technology, its small size and a vibration-proof structure, it can be easily installed as an on-board charger. The powerful flash microcontroller, with integrated CAN-BUS interface, enables it to communicate with other devices such as the controller, BMS, PC, display, etc.; allowing integration into the most advanced systems. The SG6 properly applies the correct charge curve for all different battery types (GEL, Li-ion, LiPo, NiMh, Pb etc.). The new SG6 has the possibility to save up to 1000 charging cycles, with several fields for every record, to monitor the behaviour of the battery. Through the CLOCK CALENDAR option it is possible to date all events for history analysis.

**SG6 SINGLE FASE**

**TECHNICAL FEATURES**

- **Input Voltage:** 250 VAC ± 10% 115 VAC ± 10%
- **Input frequency:** 50-60 Hz
- **Efficiency:** up to 93%
- **Absorbed minimum power:** < 5W
- **Operating temperature (case):** from -30° to + 70°C
- **Charging curve:** programmable
- **Optional: visualization by display of the parameters:** Voltage, Current, charged Ah and time left to the end of charge
- **Accuracy on output voltage:** ± 0.5 %
- **Thermal compensation of battery voltage (optional with external thermal sensor)**
- **Programmable auxiliary contacts:** main presence (default), battery charger state, fan management

**Further models are available for other battery voltages. The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.**

**Charging curves specimen**

<table>
<thead>
<tr>
<th>Battery Voltage</th>
<th>Charging time</th>
<th>Type</th>
<th>I1</th>
<th>IMAX</th>
<th>Code</th>
<th>Mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 VAC</td>
<td>7 - 8.5 h</td>
<td>12 60</td>
<td>50</td>
<td>60</td>
<td>G6HRQ9-12000Q</td>
<td>7</td>
</tr>
<tr>
<td>24 VAC</td>
<td>9 - 11 h</td>
<td>24 50</td>
<td>50</td>
<td>50</td>
<td>G6HQQ9-12000Q</td>
<td>11</td>
</tr>
<tr>
<td>36 VAC</td>
<td>12 - 13 h</td>
<td>36 55</td>
<td>45</td>
<td>55</td>
<td>G6CPQ9-12000Q</td>
<td>14</td>
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<tr>
<td>48 VAC</td>
<td>15</td>
<td>48 45</td>
<td>35</td>
<td>42</td>
<td>G6ENQ9-12000Q</td>
<td>15</td>
</tr>
<tr>
<td>72 VAC</td>
<td>18</td>
<td>72 26</td>
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<td>80 24</td>
<td>20</td>
<td>24</td>
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<tr>
<td>84 VAC</td>
<td>24</td>
<td>84 24</td>
<td>20</td>
<td>24</td>
<td>G6HHQ9-12000Q</td>
<td>15</td>
</tr>
<tr>
<td>96 VAC</td>
<td>28</td>
<td>96 21</td>
<td>18</td>
<td>21</td>
<td>G6MHQQ9-12000Q</td>
<td>15</td>
</tr>
</tbody>
</table>

**Die cast aluminium box**
- **Clock Calendar**
- **Insulated Can Interface**
- **Data Logging**
- **Delayed start**
- **Able to parallel up to 9 units**
- **Cover in self-extinguishable Nylon 6/6**
- **Vibration-proof structure**
- **Size:** 250x220x90 mm
- **Weight:** 5 kg
- **Enclosure class:** IP65
- **CE In conformity with the requirements of the Low Voltage Directive and of the Directive EMC**
MULTIVOLTAGE BATTERY CHARGER

CONSTANT CURRENT GENERATOR CAN BUS

The New Current Generator with CAN BUS is a fully digital device with a double function: constant Current Generator and Battery Charger, with CAN BUS interface. Versatility, efficiency, and on the spot service remain its fundamental points of strength, combined together with the innovative features of CAN BUS chargers: “flash” microprocessor endowing enabling high calculation power and huge storage capacity, regulation of all charging features by a single button, and the possibility to view in historical data concerning previous charge cycles.

AS CURRENT GENERATOR:
Allows recovery of sulphated or total discharged batteries. Using MODE button, a constant current charge can be sustained for a long duration, achieving de-sulphation of batteries.

AS BATTERY CHARGER:
Allows the recharge of batteries from 2 to 96 V nominal, with adjustable current from 0 to 50 A, and selectable time from 1 to 100 hours.

TECHNICAL FEATURES

THREE-PHASE CURRENT GENERATOR Mod. NG7 CAN BUS

- Input voltage: 400 VAC ± 15 % Three phase
- Input frequency: 50 - 60 Hz
- Minimum power absorbed: < 10 W
- Current absorbed from the battery: < 0.5 mA
- Operating temperature: from -20 to + 50°C
- Output short-circuit protection
- Inverse polarity protection (fuse)
- Programmable operating mode: Battery Charger/Current Generator
- Visualization by display of the parameters: Voltage, Current, charged Ah, Time left to the end of charge (Charger mode) or Time spent (Current Generator mode)
- Charging curve: programmable (Charger mode)

- Dynamic compensation of the voltage drop on the output cable (Charger mode)
- Auxiliary contacts for beginning and end of charge
- Accuracy on output voltage: ± 0.5%
- Acoustic and visual alarm
- Cooling: forced
- Case: Metal base, cover in self-extinguishable ABS
- Size: 545 x 265 x 115 mm
- Weight: 9 Kg.
- Enclosure class: IP20
- CE In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.

Programming without PC

By pressing the MODE button the user can select between Charger and Current Generator mode. On the digital panel the following parameters can be displayed:

- Charging mode:
  - Battery type
  - Battery voltage
  - Curve type
  - Battery capacity in Ah

- Current generator mode:
  - Battery voltage
  - Current
  - Desulphation/charging time

ACCESSORIES

BAT/42209
A support to place the Charger on the ground.

BATTERY SUPPLIES.BE