BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

THE ELECTRONIC CHARGER OF THE FUTURE FOR ALL TYPES OF BATTERIES!

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

HIGH FREQUENCY 0,5 → 36kW

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.

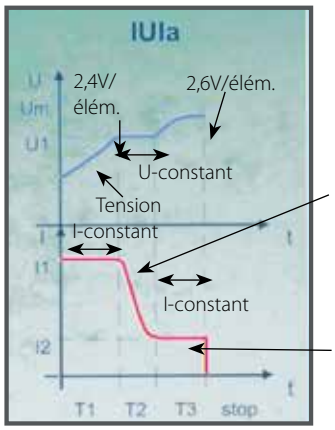
Functioning of a zivan high frequency charger

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 us 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!



IUIa: IUIa: Constant I - constant U - constant I - turn off

I = current (ampere)

U = tension (volt)

The current decreases: to keep and not to increase the 2,4V/elem.: less water consumption.

Final charge: 4% of the battery capacity

1Kw Transformer Classical charger	1Kw Transformer HF-Charger
±0,75 Significant loss of warmth!	±0,85 Almost no loss of warmth!

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.

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 ADVANTAGES

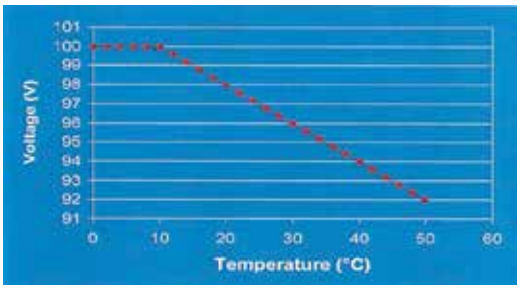
- Exceptional charging quality.
- Up to 15% of saving on the charging costs on the energy invoice.
- Water consumption almost halved.
- Battery maintenance reduced of about 50%.
- Gas emissions reduced (lower risk of explosion).
- Weight and size about 10 times reduced:
  ➔ Every battery charger can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

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

Reference	Volts	Amp	IMAX	Charging time (Ah/C5)			L	W	H	Ah	Ah
				7-8,5h	9-11h	12-13h				From	To
UBC 12/18	12	15	18	70-95	120		235	115	65	70	120
BC1 12/35	12	30	36	145	190	240	285	105	75	145	240
NG1 12/60	12	50	60	240-360	400-480	520-560	300	160	80	240	560
UBC 24/6	24	6		45	50	55	235	115	65	45	55
UBC 24/15	24	12,5	15	80	100	125	235	115	65	80	125
BC1 24/30	24	25	30	200	250	300	285	105	75	200	300
NG1 24/30-35	24	30	36	145-215	240-290	310-335	300	160	80	145	335
NG1 24/40-45	24	37,5	45	180-270	300-360	390-420	300	160	80	180	420
NG3 24/60	24	50	60	240-360	400-480	520-560	430	220	110	240	560
NG3 24/80-95	24	80	96	385-575	640-770	830-895	430	220	110	385	895
NG3 24/100	24	100	100	480-720	800-960	1040-1120	430	220	110	480	1120
NG5 24/100	24	100	120	480-720	800-960	1040-1120	545	265	115	480	1120
NG9 24/120	24	120	144	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 24/200	24	120	200	960-1440	1600-1920	2080-2240	545	265	115	960	2240
NG1 36/20-25	36	20	24	95-145	160-190	210-225	300	160	80	95	225
NG3 36/60	36	50	60	290-430	480-575	625-670	430	220	110	290	670
NG9 36V 145A	36	120	144	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 36/200	36	170	170	815-1225	1360-1630	1770-1905	545	265	115	815	1905
NG1 48/15-18	48	18	21,6	85-130	145-175	185-200	300	160	80	85	200
NG3 48/45	48	36	43,2	175-260	290-345	375-405	430	220	110	175	405
NG3 48/60	48	50	60	240-360	400-480	520-560	430	220	110	240	560
NG5 48/80-95	48	80	96	385-575	640-770	830-895	545	265	115	385	895
NG7 48/120	48	100	120	480-720	800-960	1040-1120	545	265	115	480	1120
NG9 48V 145A	48	120	144	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 48/160	48	135	160	650-970	1080-1295	1405-1510	545	265	115	650	1510
NGTOP 48/170-200	48	170	170	815-1225	1360-1630	1770-1905	490	290	610	815	1905
NG1 72/10-12	72	10	12	50-70	80-95	105-110	300	160	80	50	110
NG3 72/35	72	30	36	145-215	240-290	310-335	430	220	110	145	335
NG5 72/55-65	72	55	66	265-395	440-530	570-615	545	265	115	265	615
NG7 72/70-85	72	70	84	335-505	560-670	730-785	545	265	115	335	785
NG9 72/100-110	72	90	108	430-650	720-865	935-1010	545	265	115	430	1010
NG5 80/50-60	80	50	60	240-360	400-480	520-560	545	265	115	240	560
NG7 80/65-75	80	62,5	75	300-450	500-600	650-700	545	265	115	300	700
NG9 80/80-100	80	80	96	385-575	640-770	830-895	545	265	115	385	895
NG9PLUS 80/120	80	100	120	480-640	800-960	960-1120	545	265	115	480	1120
NGTOP 80/125-150	80	125	150	600-900	1000-1200	1300-1400	490	290	610	600	1400

Options for chargers	Reference	
Pump	Standard reference + P	NG1 / NG3 & NG5 & NG7 & NG9 & NGTOP & IP54

The UBC e 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

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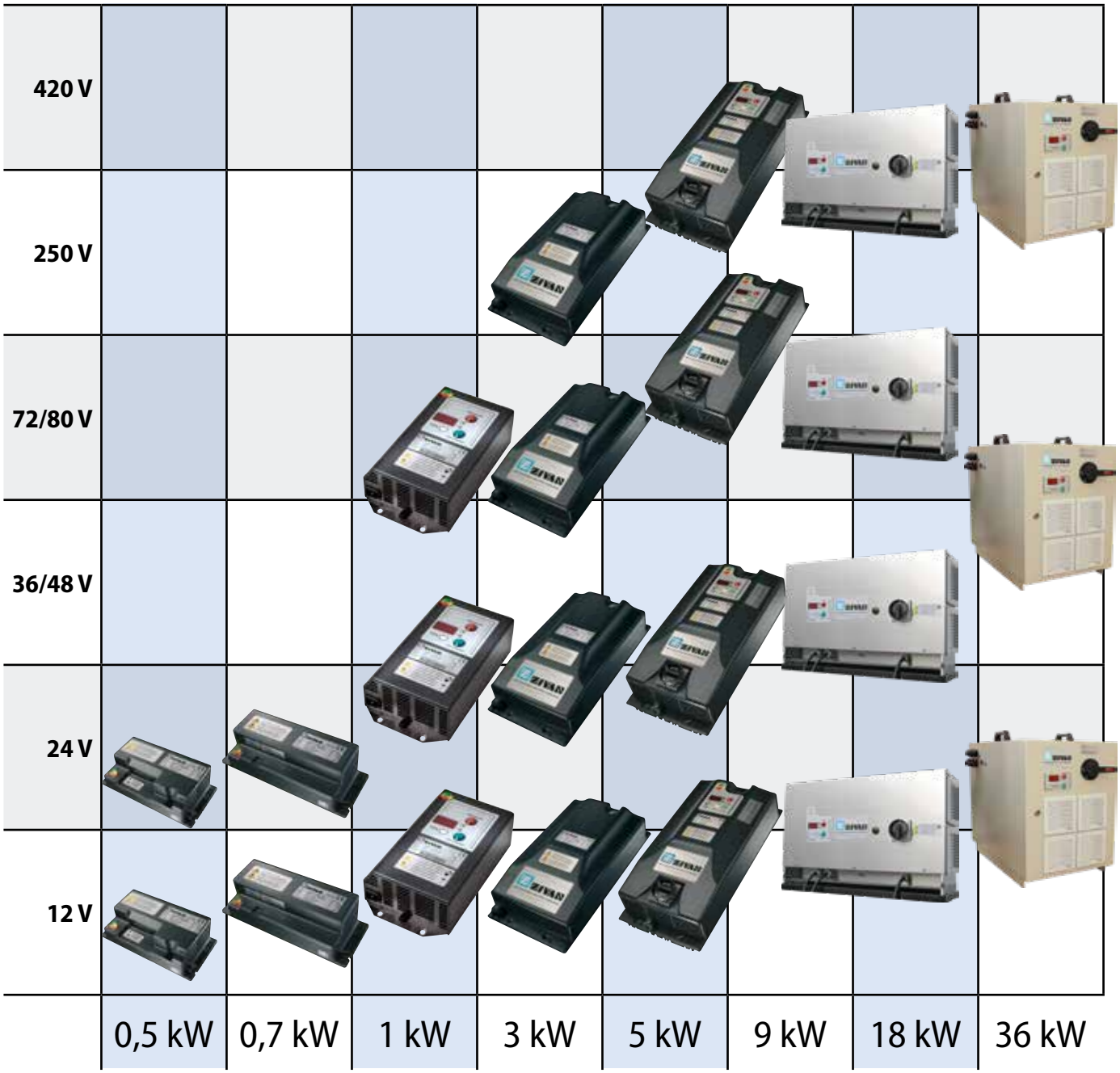

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

UBC BATTERY CHARGER SINGLE-PHASE

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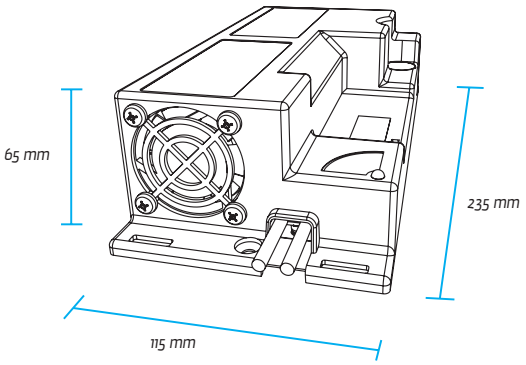


UBC SINGLE PHASE

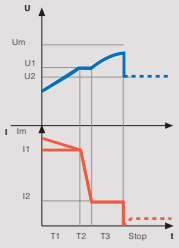
The Single Phase Battery Charger UBC is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and adapt them to every kind of battery. Due to its size and light weight, this model is especially suitable for 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

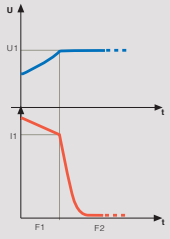
- Input voltage: 230 VAC ± 10%
  115 VAC ± 10%
- Input frequency: 50 – 60 Hz
- Efficiency: > 85%
- Current absorbed by the battery: < 1 mA
- Operating temperature: from –20 to +50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Accuracy on output voltage: ± 0,5%
- Cooling: forced
- Case: metal base, cover in self-extinguishable ABS
- Size: 235 x 115 x 65 mm
- Weight: 0,850 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	Charging time							
	7 - 8,5 h	9 - 11 h	12 - 13 h	Type	VAC	I1	IMAX	Mains
12	70-95	120		12V 18A	230	15	18	2
24	80	100	125	24V 15A	230	12,5	15	3

IUIa/WUIa



WUo



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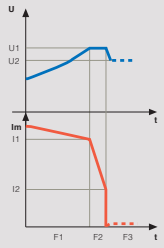

BC1 BATTERY CHARGER SINGLE-PHASE

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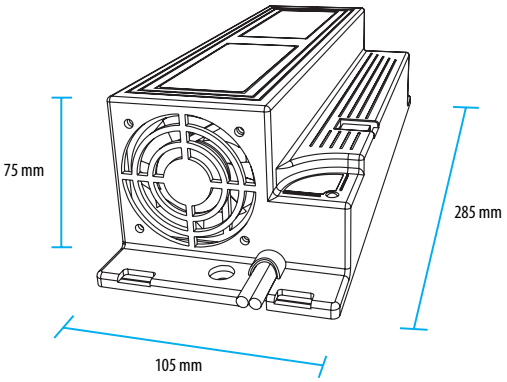
HIGH FREQUENCY BATTERY CHARGERS



BC1 SINGLE PHASE

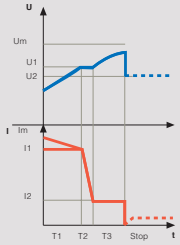
The Single Phase Battery Charger BC1 is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and adapt them to every kind of battery. Due to its size and light weight, this model is especially suitable for 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.

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	Charging time							
	7 - 8,5 h	9 - 11 h	12 - 13 h	Type	VAC	I1	IMAX	Mains
12	145	190	240	12V 35A	230	30	36	3
24	200	250	300	24V 30A	230	25	30	5

IUIa/WUIa



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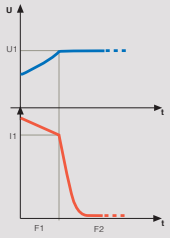

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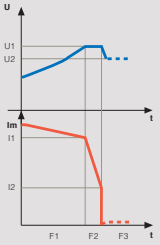

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

NG1 CAN BUS BATTERY CHARGER SINGLE-PHASE

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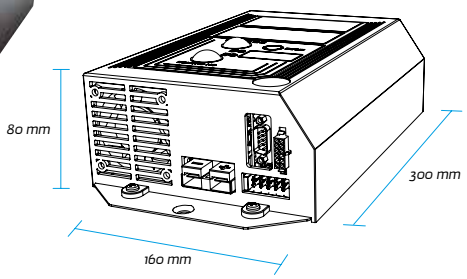
HIGH FREQUENCY BATTERY CHARGERS



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

- Insulated CAN BUS Interface
- 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.

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 run-time 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, NiMH, etc.)

Battery Voltage	Charging time			Type	VAC	I1	Code	IMAX	Mains
	7 - 8,5 h	9 - 11 h	12 - 13 h						
12	240 - 360	400 - 480	520 - 560	12V 60A	230	50	GGAQCB-07040Q	60	5
24	145 - 215	240 - 290	310 - 335	24V 35A	230	30	GGBMCB-07040Q	36	7
	180 - 270	300 - 360	390 - 420	24V 50A	230	37,5	GGBOCB-07040Q	45	8
36	95 - 145	160 - 190	210 - 225	36V 25A	230	20	GGCHCB-07040Q	24	6
48	85 - 130	145 - 175	185 - 200	48V 22A	230	18	GGEHCVB-07040Q	21,6	6
72	50 - 70	80 - 95	105 - 110	72V 12A	230	10	GGHECB-07000Q	12	6

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).

Air pump
NG1 CAN BUS Murale

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

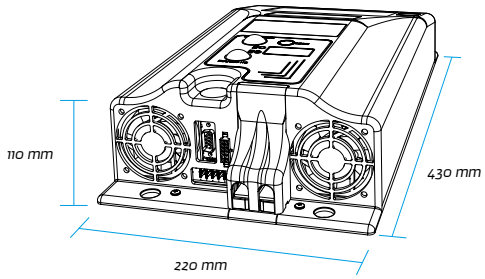
Inter-connection cable for connecting more devices in parallel (available in the following versions: MASTER-SLAVE, MASTER-2 SLAVES, MASTER-3 SLAVES).

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 stateof-the-art technology and high quality while maintaining a competitive price.



ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

TECHNICAL FEATURES

- Insulated CAN BUS Interface
- 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.

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 run-time 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, NiMH, etc.)

Battery Voltage	Charging time			Type	VAC	I1	Code	IMAX	Mains
	7 - 8,5 h	9 - 11 h	12 - 13 h						
12	480 - 720	800 - 960	1040 - 1120	12 100	230	100	G7AVCB-07050Q	100	11
24	240 - 360	400 - 480	520 - 560	24 60	230	50	G7BQCB-07020Q	60	11
	335 - 505	560 - 670	730 - 785	24 85	230	70	G7BSCB-07030Q	84	15
	385 - 575	640 - 770	830 - 895	24 95	230	80	G7BTCB-07030Q	96	17
	480 - 720	800 - 960	1040 - 1120	24 100	230	100	G7BVCB-07030Q	100	22
36	240 - 360	400 - 480	520 - 560	36 60	230	50	G7CQCB-07020Q	60	16
	290 - 430	480 - 575	625 - 670	36 70	230	60	G7CRCB-07020Q	72	19
48	175 - 260	290 - 345	375 - 405	48 45	230	36	G7ENCB-07020Q	43,2	16
	240 - 360	400 - 480	520 - 560	48 60	230	50	G7EQCB-07020Q	60	22
72	105 - 160	175 - 210	230 - 245	72 25	230	22	G7HICB-07020Q	26,4	14
	145 - 215	240 - 290	310 - 335	72 35	230	30	G7HMCB-07020Q	36	19
80	105 - 160	175 - 210	230 - 245	80 25	230	22	G7IICB-07000Q	26,4	16
	130 - 195	215 - 260	280 - 300	80 30	230	27	G7ILCB-07020Q	32,4	19

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).

Air pump
NG3 CAN BUS Murale

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).

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

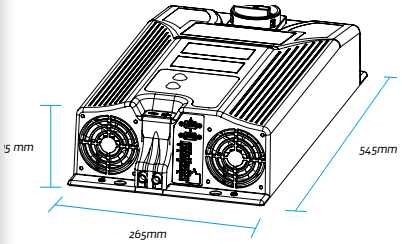
NG5/NG7/NG9 CAN BUS
BATTERY CHARGER THREE-PHASE

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

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.



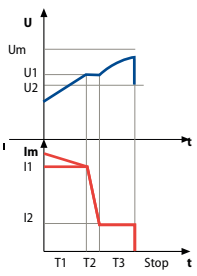
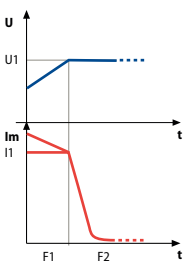
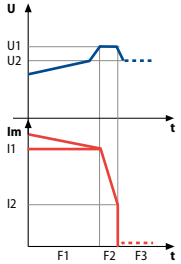
TECHNICAL FEATURES

- 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

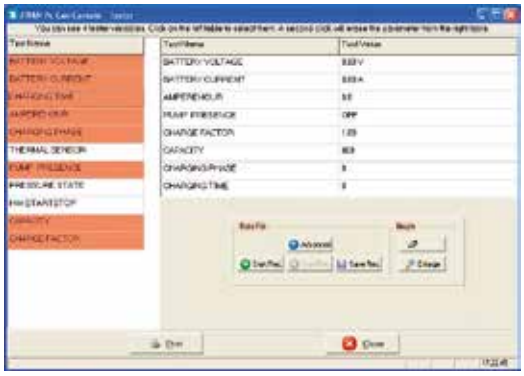
- LOGIC BOARD WITH "FLASH" MICROPROCESSOR
- STORAGE OF OVER 250 CHARGING CYCLES
- EVEN MORE FLEXIBLE SOFTWARE
- DELAYED START
- MASTER AND SLAVE CONFIGURATION WITH POWER EXCEEDING 70KW
- DESULPHATION CHARGING CURVE
- SUITABLE FOR SEVERAL BATTERY TYPES (LEAD ACID, GEL, LITHIUM-ION, NI-MH, ETC.)

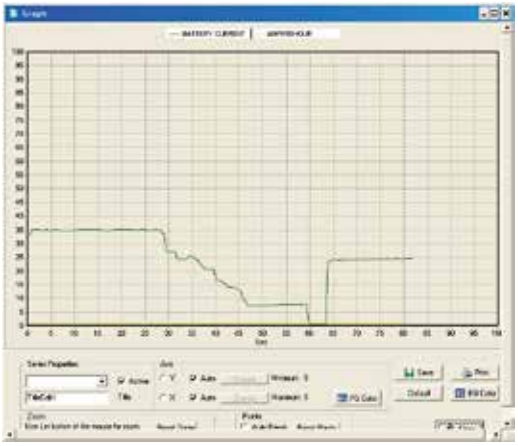
NG5 with Air pump
Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order).

IUIa/WUIa	IUo/WUo	IU_1U_2oB/WU_1U_2oB
		

More and different charging curves are available for special batteries and non-standard applications

Visualization of the charging parameters through PC

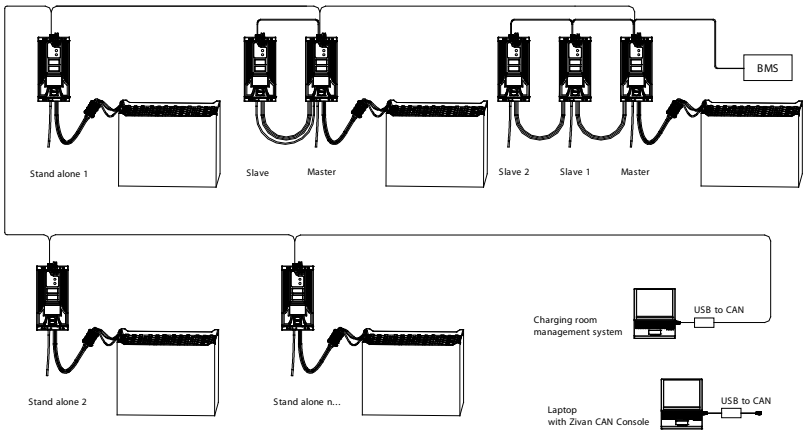




Simplified programming without PC

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, ad just Node 0: then follow step by step the procedure recommended by the system paying attention to select a battery capacity corresponding to C5.

Battery Voltage	Charging time			Model	Type	VAC	I1	Code	IMAX	Mains
	7 - 8,5 h	9 - 11 h	12 - 13 h							
24	480 - 720	800 - 960	1040 - 1120	NG5	24 120	400	100	G9BVCB-D70D0Q	120	5
	575 - 865	960 - 1150	1250 - 1345	NG9	24 145	400	120	G9BZCB-D70E0Q	144	6
	960 - 1440	1600 - 1920	2080 - 2240	NG9+	24 200	400	120	G9BXCB-D70P0Q	200	8
36	480 - 720	800 - 960	1040 - 1120	NG5	36 120	400	100	G9CVCB-D70D0Q	120	7
	575 - 865	960 - 1150	1250 - 1345	NG9	36 145	400	120	G9CZCB-D70E0Q	144	9
	815 - 1225	1360 - 1630	1770 - 1905	NG9+	36 170	400	170	GJCKCB-470E0X	170	12
48	385 - 575	640 - 770	830 - 895	NG5	48 95	400	80	G9ETCB-D70D0Q	96	8
	480 - 720	800 - 960	1040 - 1120	NG7	48 120	400	100	G9EVCB-D70D0Q	120	10
	575 - 865	960 - 1150	1250 - 1345	NG9	48 145	400	120	G9EZCB-D70E0Q	144	12
	650 - 970	1080 - 1295	1405 - 1510	NG9+	48 160	400	135	G9EWCB-D70P0Q	162	13
72	265 - 395	440 - 530	570 - 615	NG5	72 65	400	55	G9HRCB-D70D0Q	66	8
	335 - 505	560 - 670	730 - 785	NG7	72 85	400	70	G9HSCB-D70D0Q	84	14
	430 - 650	720 - 865	935 - 1010	NG9	72 110	400	90	G9HUCB-D70D0Q	108	13
80	240 - 360	400 - 480	520 - 560	NG5	80 60	400	50	G9IQCB-D70D0Q	60	8
	300 - 450	500 - 600	650 - 700	NG7	80 75	400	62,5	G9ISCB-D70D0Q	75	10
	385 - 575	640 - 770	830 - 895	NG9	80 100	400	80	G9ITCB-D70D0Q	96	13
	480 - 640	800 - 960	960 - 1120	NG9+	80 120	400	100	GJIVCB-470E0Q	120	10

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.

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

NGTOP BATTERY CHARGER THREE-PHASE

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 everye 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.

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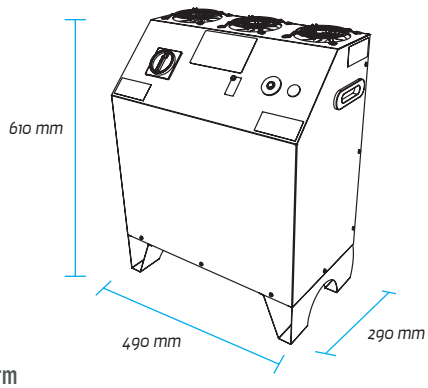
HIGH FREQUENCY BATTERY CHARGERS



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)
- 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
- Size: 490 x 290 x 610 mm
- Weight: 30 kg
- Enclosure class: IP20
- CE In conformity with the requirements of the Low Voltage Directive and of the Directive EMC.

Battery Voltage	Charging time			Type	VAC	I1	IMAX	Mains
	7 - 8,5 h	9 - 11 h	12 - 13 h					
36	960 - 1140	1600 - 1920	2080 - 2240	36V 200A	400	200	200	17
48	815 - 1225	1360 - 1630	1770 - 1905	48V 170A	400	170	170	23
80	600 - 900	1000 - 1200	1300 - 1400	80V 150A	400	125	150	28

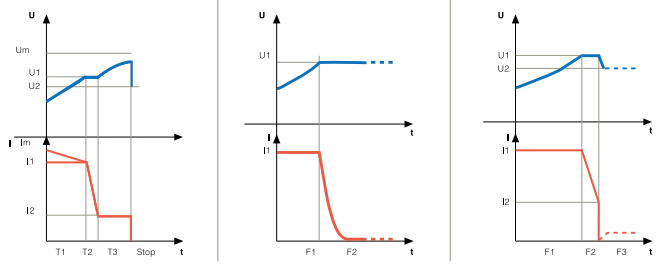
Every model is available for air lift batteries (please, allocate the correct code in the Purchase Order).

Further models are available for other battery voltages.

More and different charging curves are available for special batteries and non-standard applications.

Main charging curves

IUIa/WUIa | IUo | IU_1U_2oB



More and different charging curves are available for special batteries and non-standard applications.

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.

Please insert the sensor in the middle of the battery, along the free space among cells for a depth of around 20 cm.
Never inside the cells, because acid damages the sensor!

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

LED EXTENSION Ø 5 - fixing hole Ø 6,5 mm.

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/47694 3 m

BAT/49406 3 m with micro fit

Remote indicator diameter 20 Displays the charging phase of the charger.

ZIV/P14011 2 m

ZIV/P14014 5 m

ZIV/Z-P14025 2 m with micro fit 12P

Thermal sensor - controls the charging voltage depending on the battery temperature.

BAT/48422 2 m

Thermal sensor and led indicator diameter 10.

BAT/47886	200 cm
BAT/47887	10 m

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/42209

STAND – A support to place the charger on the ground.

NGTOP

BAT/48424

THERMAL SENSOR with din socket 90° - Controls the constant voltage of the gasification phase depending on the battery temperature.

BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

NG9 80/100 SS

NG9 80/100 IP54 INO

STAINLESS STEEL

NG5 NG7 NG9 METAL GENERATION

	24V	36V	48V	80V
Current (A)	200	160	70, 100	96, 100, 120

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 comunication: up to 2 channel
- Display: Yes
- Memory: Up to 255 cycles

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.

POWER METAL GENERATION CAN BUS

	24V	36V	48V	80V
Dual (A)	400	340	290	160
Tri (A)	600	510	435	240
Quad (A)	800	680	580	320

TECHNICAL FEATURES

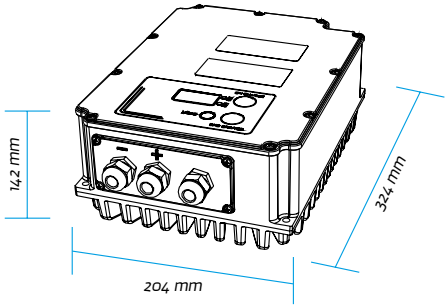
- Cooling: Forced ventilation
- Protection: IP 54
- Case: Metal epoxy painted
- Switching frequency: 20 kHz
- Input voltage:
  400 Vac ± 10 % - 480 Vac ± 10 %

SG3 SEALED BATTERY CHARGER SINGLE-PHASE

SG3 SINGLE FASE

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 conversion from standard household sockets, allowing for the charging of all kinds of battery technologies.

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS



TECHNICAL FEATURES

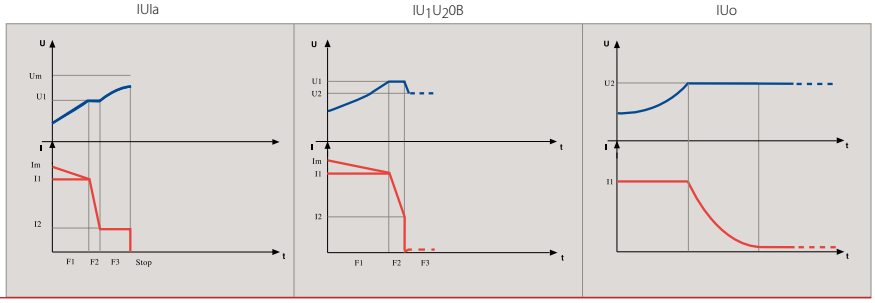
- Universal Input Voltage: 95-265 VAC
- Input frequency: 50-60 Hz
- Power factor: 0,98
- Efficiency: up to 93%
- Absorbed standby power: < 3W
- Absorbed current from the battery: < 0,5 mA
- Output voltage accuracy: ± 0,5 %
- Operating case temperature: - 30° to + 70°C
- Galvanic Insulated CAN-BUS Interface
- 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

Battery Voltage	VAC	Charging time			Type	I1 230 VAC	I1 120 VAC	Mains
		7 - 8,5 h	9 - 11 h	12 - 13 h				
24	230 120	320 - 575 160 - 290	640 - 770 320 - 385	830 - 895 415 - 450	24V 80	80	40	11
36	230 120	240 - 430 120 - 215	480 - 576 240 - 285	624 - 672 310 - 330	36V 60	60	30	13
48	230 120	200 - 360 100 - 180	400 - 480 200 - 240	520 - 560 260 - 280	48V 50	50	25	14
72	230 120	140 - 252 70 - 125	280 - 330 140 - 175	360 - 390 180 - 195	72V 35	35	18	15
80	230 120	120 - 215 60 - 105	240 - 290 120 - 145	310 - 335 155 - 175	80V 30	30	15	14
84	230 120	120 - 215 60 - 105	240 - 290 120 - 145	310 - 335 155 - 175	84V 30	30	15	15
96	230 120	100 - 180 50 - 90	200 - 240 100 - 120	260 - 300 130 - 105	96V 25	25	13	14

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

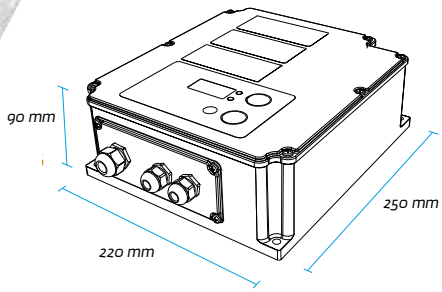


BATTERY CHARGERS

HIGH FREQUENCY CHARGERS

SG6 SEALED BATTERY CHARGER SINGLE-PHASE

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS



SG6 SINGLE FASE

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.

TECHNICAL FEATURES

- Input Voltage: 230 VAC ± 10% 115 VAC ± 10%
- Input frequency: 50-60 Hz
- Efficiency: up to 93%
- Absorbed minimum power: < 5W
- Absorbed current from the battery: < 0,5 mA
- 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
- 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

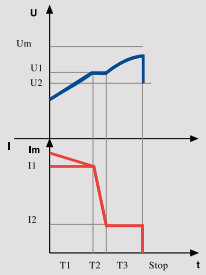
Battery Voltage	VAC	Charging time			Type	I1	IMAX	Code	Mains
		7 - 8,5 h	9 - 11 h	12 - 13 h					
12	230	240 - 360	400 - 480	520 - 560	12 60	50	60	G6ARQ9-12000Q	7
24	230	240 - 360	400 - 480	520 - 560	24 50	50	50	G6BQQ9-12000Q	11
36	230	215 - 325	360 - 430	470 - 505	36 55	45	55	G6CPQ9-12000Q	14
48	230	170 - 250	280 - 335	365 - 390	48 45	35	42	G6ENQ9-12000Q	15
72	230	105 - 160	175 - 210	230 - 245	72 26	22	26	G6HIQ9-12000Q	14
80	230	95 - 145	160 - 190	210 - 225	80 24	20	24	G6IHQ9-12000Q	14
84	230	85 - 130	145 - 175	185 - 200	84 24	20	24	G6LHQ9-12000Q	15
96	230	85 - 130	145 - 175	185 - 200	96 21	18	21	G6MHQ9-12000Q	15

Further models are available for other battery voltages.

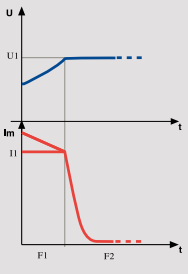
The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.

Charging curves specimen

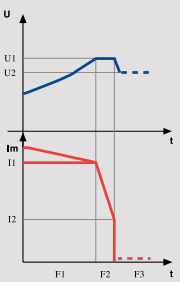
IUIa/WUIa



IUo/WUo



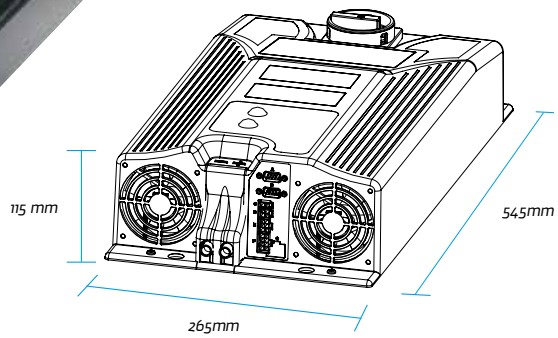
IU_1U_20B/WU_1U_20B



MULTIVOLTAGE BATTERY CHARGER

CONSTANT CURRENT GENERATOR CAN BUS

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS



MULTI VOLTAGE CHARGER

CONSTANT CURRENT GENERATOR

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 96V nominal, with adjustable current from 0 to 50 A, and selectable time from 1 to 100 hours.

TECHNICAL FEATURES

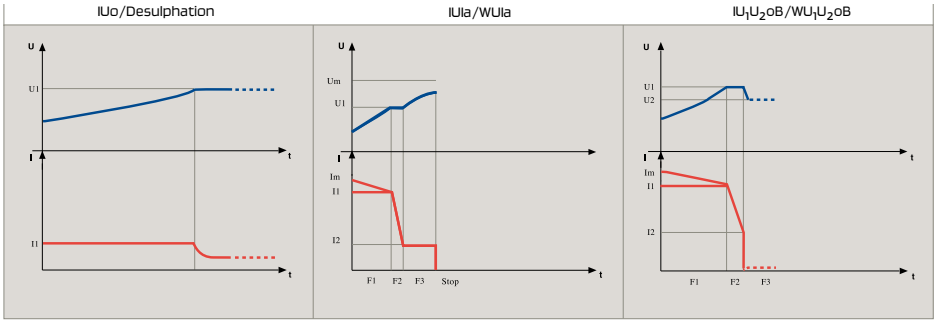
THREE-PHASE CURRENT GENERATOR Mod. NG7 CAN BUS

- 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.

▶ BAT/17254

Battery Voltage	VAC	Charging time			Type	I1	IMAX	Code	Mains
		10 h	11 - 12 h	13 - 18 h					
2 V -> 96 V	400	50 - 400	450 - 520	560 - 950	2-96 50	50	60	G9MRCG-D70D0X	1 A -> 15 A

Charging curves specimen



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.