Chargers

ZIVAN - HIGH-FREQUENCY CHARGERS

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

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

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.

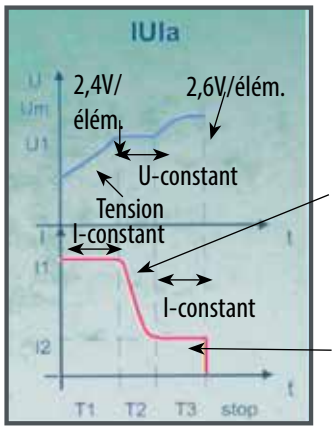
FUNCTIONING OF A ZIVAN HIGH FREQUENCY CHARGER

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 energy & 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

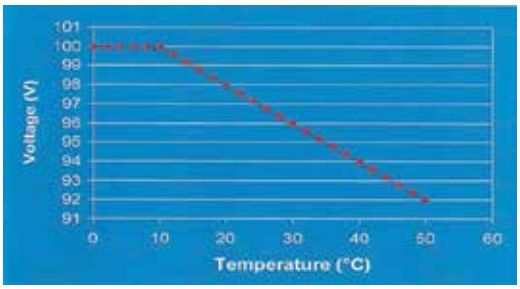
- Exceptional charging quality.
- Up to 15% of saving on the charging costs on the energy invoice.
- Water consumption almost halved.
- Battery maintenance reduced of about 50%.
- Gas emissions reduced (lower risk of explosion).
- Weight and size about 10 times reduced:
  ➔ Every battery charger can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

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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	15,0	18,0	70-95	120		235	115	65	70	120
BC1 12/35	12	30,0	36,0	145	190	240	285	105	75	145	240
NG1 12/60	12	50,0	60,0	240-360	400-480	520-560	300	160	80	240	560
UBC 24/6	24	6,0		45	50	55	235	115	65	45	55
UBC 24/15	24	12,5	15,0	80	100	125	235	115	65	80	125
BC1 24/30	24	25,0	30,0	200	250	300	285	105	75	200	300
NG1 24/30-35	24	30,0	36,0	145-215	240-290	310-335	300	160	80	145	335
NG1 24/40-45	24	37,5	45,0	180-270	300-360	390-420	300	160	80	180	420
NG3 24/60	24	50,0	60,0	240-360	400-480	520-560	430	220	110	240	560
NG3 24/80-95	24	80,0	96,0	385-575	640-770	830-895	430	220	110	385	895
NG3 24/100	24	100,0	100,0	480-720	800-960	1040-1120	430	220	110	480	1120
NG5 24/100	24	100,0	120,0	480-720	800-960	1040-1120	545	265	115	480	1120
NG9 24/120	24	120,0	144,0	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 24/200	24	120,0	200,0	960-1440	1600-1920	2080-2240	545	265	115	960	2240
NG1 36/20-25	36	20,0	24,0	95-145	160-190	210-225	300	160	80	95	225
NG3 36/60	36	50,0	60,0	290-430	480-575	625-670	430	220	110	290	670
NG9 36V 145A	36	120,0	144,0	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 36/200	36	170,0	170,0	815-1225	1360-1630	1770-1905	545	265	115	815	1905
NG1 48/15-18	48	18,0	21,6	85-130	145-175	185-200	300	160	80	85	200
NG3 48/45	48	36,0	43,2	175-260	290-345	375-405	430	220	110	175	405
NG3 48/60	48	50,0	60,0	240-360	400-480	520-560	430	220	110	240	560
NG5 48/80-95	48	80,0	96,0	385-575	640-770	830-895	545	265	115	385	895
NG7 48/120	48	100,0	120,0	480-720	800-960	1040-1120	545	265	115	480	1120
NG9 48V 145A	48	120,0	144,0	575-865	960-1150	1250-1345	545	265	115	575	1345
NG9PLUS 48/160	48	135,0	160,0	650-970	1080-1295	1405-1510	545	265	115	650	1510
BG15 48V 270A	48	225,0	270,0	1260-1620	1800-2160	2340-2520	767	362	540	900	2520
NG1 72/10-12	72	10,0	12,0	50-70	80-95	105-110	300	160	80	50	110
NG3 72/35	72	30,0	36,0	145-215	240-290	310-335	430	220	110	145	335
NG5 72/55-65	72	55,0	66,0	265-395	440-530	570-615	545	265	115	265	615
NG7 72/70-85	72	70,0	84,0	335-505	560-670	730-785	545	265	115	335	785
NG9 72/100-110	72	90,0	108,0	430-650	720-865	935-1010	545	265	115	430	1010
NG5 80/50-60	80	50,0	60,0	240-360	400-480	520-560	545	265	115	240	560
NG7 80/65-75	80	62,5	75,0	300-450	500-600	650-700	545	265	115	300	700
NG9 80/80-100	80	80,0	96,0	385-575	640-770	830-895	545	265	115	385	895
NG9PLUS 80/120	80	100,0	120,0	480-640	800-960	960-1120	545	265	115	480	1120
BG15 80V 160A	80	135,0	160,0	750-960	1070-1290	1390-1500	767	362	540	536	1500

Options for chargers	Reference	
Pump	Standard reference + P	NG1 / NG3 & NG5 & NG7 & NG9 & NG9PLUS & 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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UBC BATTERY CHARGER SINGLE-PHASE

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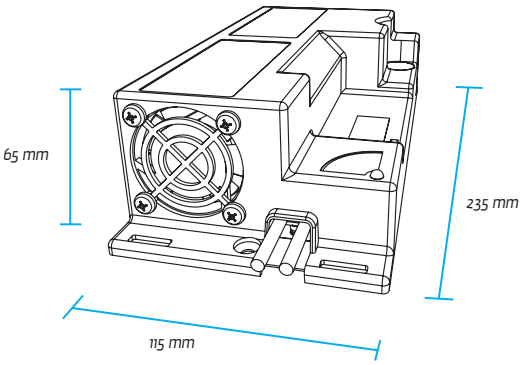


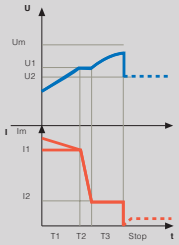
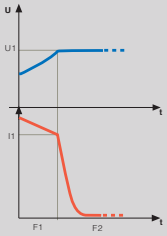
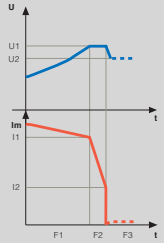
UBC SINGLE PHASE

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	WU_1U_2oB
		

BC1 BATTERY CHARGER SINGLE-PHASE

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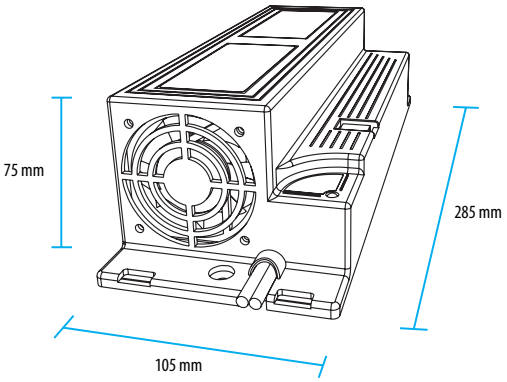
HIGH FREQUENCY BATTERY CHARGERS



BC1 SINGLE PHASE

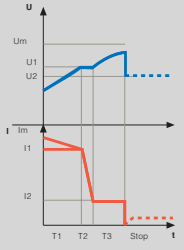
The Single Phase Battery Charger BC1 is an innovative device with extraordinary versatility, reliability and efficiency. Different software may be installed to change the charging features and adapt them to every kind of battery. Due to its size and light weight, this model is especially suitable for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

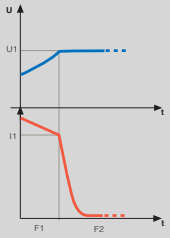
- Input voltage: 230 VAC ± 10%
- Input frequency: 50 – 60 Hz
- Efficiency: > 85%
- Current absorbed by the battery: < 1 mA
- Operating temperature: from –20 to +50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Accuracy on output voltage: ± 0,5%
- Cooling: forced
- 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

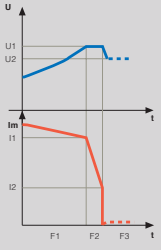
IUIa/WUIa



WUo



WU_1U_2oB



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ZIVAN - HIGH-FREQUENCY CHARGERS

NG1 CAN BUS BATTERY CHARGER SINGLE-PHASE

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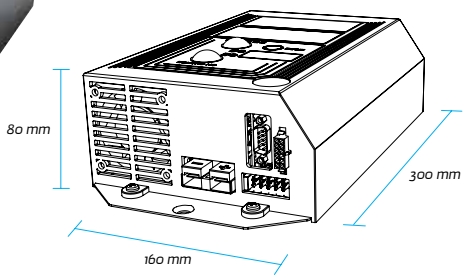
HIGH FREQUENCY BATTERY CHARGERS



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	50,0	GGAQCB-07040Q	60,0	5
24	145 - 215	240 - 290	310 - 335	24V 35A	230	30,0	GGBMCB-07040Q	36,0	7
	180 - 270	300 - 360	390 - 420	24V 50A	230	37,5	GGBOCB-07040Q	45,0	8
36	95 - 145	160 - 190	210 - 225	36V 25A	230	20,0	GGCHCB-07040Q	24,0	6
48	85 - 130	145 - 175	185 - 200	48V 22A	230	18,0	GGEHCVB-07040Q	21,6	6
72	50 - 70	80 - 95	105 - 110	72V 12A	230	10,0	GGHECB-07000Q	12,0	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 acid circulation 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.

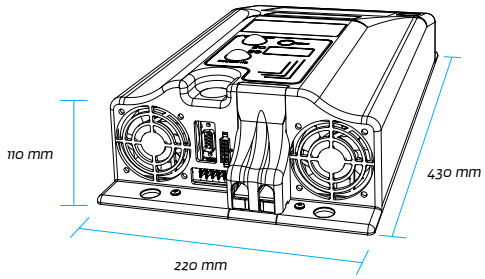
Master-slave connection kit
Inter-connection cable for connecting more devices in parallel (available in the following versions: MASTER-SLAVE, MASTER-2 SLAVES, MASTER-3 SLAVES).

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	100,0	11
24	240 - 360	400 - 480	520 - 560	24 60	230	50	G7BQCB-07020Q	60,0	11
	335 - 505	560 - 670	730 - 785	24 85	230	70	G7BSCB-07030Q	84,0	15
	385 - 575	640 - 770	830 - 895	24 95	230	80	G7BTCB-07030Q	96,0	17
	480 - 720	800 - 960	1040 - 1120	24 100	230	100	G7BVCB-07030Q	100,0	22
36	240 - 360	400 - 480	520 - 560	36 60	230	50	G7CQCB-07020Q	60,0	16
	290 - 430	480 - 575	625 - 670	36 70	230	60	G7CRCB-07020Q	72,0	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	60,0	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	36,0	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 acid circulation 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

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PC CONNECTION KIT

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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).

Chargers

ZIVAN - HIGH-FREQUENCY CHARGERS

NG5/NG7/NG9 CAN BUS

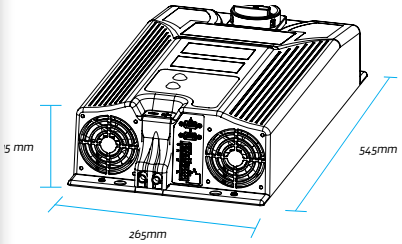
BATTERY CHARGER THREE-PHASE

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.

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS



TECHNICAL FEATURES

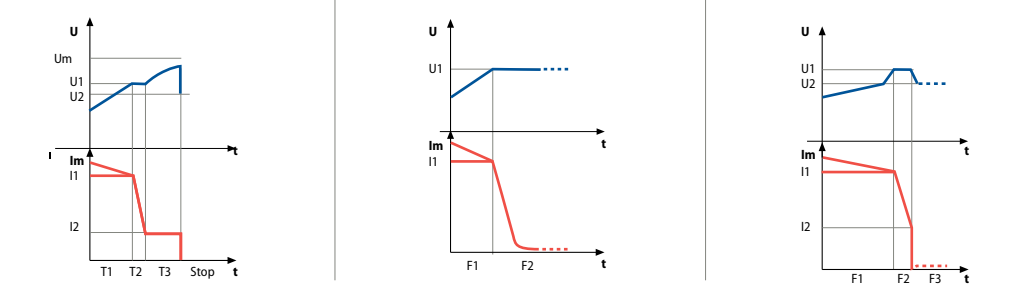
- Input voltage: 400 VAC ± 15% Three Phase
- Input frequency: 50 – 60 Hz
- Efficiency: > 87%
- Minimum power absorbed: < 10 W
- Current absorbed by the battery: < 0,5 mA
- Operating temperature: from –20 to+ 50°C
- Output short-circuit protection (fuse)
- Inverse polarity protection (fuse)
- Charging 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 ABS
- 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.

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

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.)

IUIa/WUIa	IUo/WUo	IU_1U_2oB/WU_1U_2oB



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

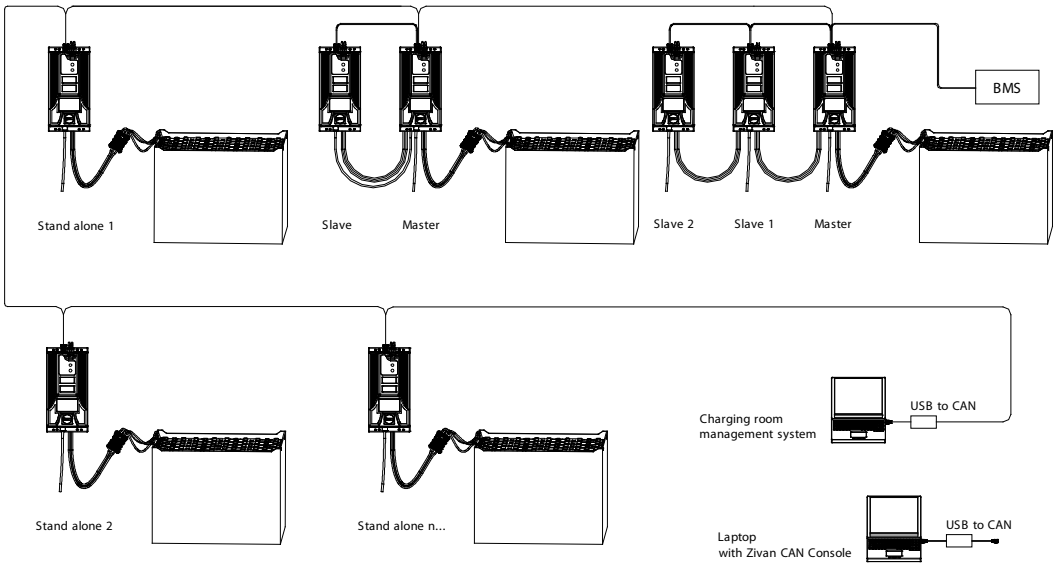
Simplified programming without PC

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	100,0	GJBVCB-D70D0Q	120	5
	575 - 865	960 - 1150	1250 - 1345	NG9	24 145	400	120,0	GJBZCB-D70E0Q	144	6
	960 - 1440	1600 - 1920	2080 - 2240	NG9+	24 200	400	120,0	GJBXCB-D70P0Q	200	8
36	480 - 720	800 - 960	1040 - 1120	NG5	36 120	400	100,0	GJCVCB-D70D0Q	120	7
	575 - 865	960 - 1150	1250 - 1345	NG9	36 145	400	120,0	GJCZCB-D70E0Q	144	9
	815 - 1225	1360 - 1630	1770 - 1905	NG9+	36 170	400	170,0	GJCKCB-470E0X	170	12
48	385 - 575	640 - 770	830 - 895	NG5	48 95	400	80,0	GJETCB-D70D0Q	96	8
	480 - 720	800 - 960	1040 - 1120	NG7	48 120	400	100,0	GJEVCB-D70D0Q	120	10
	575 - 865	960 - 1150	1250 - 1345	NG9	48 145	400	120,0	GJEZCB-D70E0Q	144	12
	650 - 970	1080 - 1295	1405 - 1510	NG9+	48 160	400	135,0	GJEWCB-D70P0Q	162	13
72	265 - 395	440 - 530	570 - 615	NG5	72 65	400	55,0	GJHRCB-D70D0Q	66	8
	335 - 505	560 - 670	730 - 785	NG7	72 85	400	70,0	GJHSCB-D70D0Q	84	14
	430 - 650	720 - 865	935 - 1010	NG9	72 110	400	90,0	GJHUCB-D70D0Q	108	13
80	240 - 360	400 - 480	520 - 560	NG5	80 60	400	50,0	GJIQCB-D70D0Q	60	8
	300 - 450	500 - 600	650 - 700	NG7	80 75	400	62,5	GJISCB-D70D0Q	75	10
	385 - 575	640 - 770	830 - 895	NG9	80 100	400	80,0	GJITCB-D70D0Q	96	13
	480 - 640	800 - 960	960 - 1120	NG9+	80 120	400	100,0	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.

Chargers

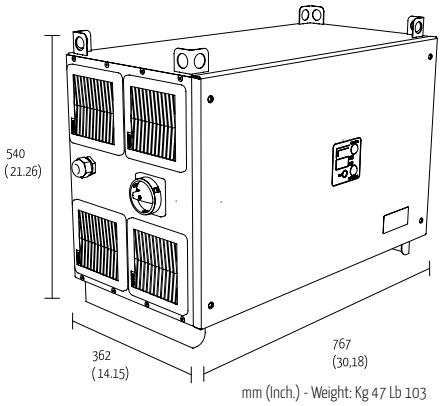
ZIVAN - HIGH-FREQUENCY CHARGERS

BG15 BATTERY CHARGER THREE-PHASE

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

BG15 THREE PHASE

The charger's heart is a flashable microprocessor equipped with Can Bus interface suitable to several devices connection (PC, BMS, CONTROLLER). Its memory is able to record and store up to 1000 charging cycles insuring a complete analysis on the battery behavior and its use. High power allows fast and opportunity charging to any kind of battery and all adjustments can be done by its programmable display. Through the MODE button you can select the battery chemistry (lead acid, gel, AGM, Li-Ion), choose among multiple charging profiles (IUIA, IU1U20, IU0), battery capacities and reduces times of recharge according to specific application. A desulphation charge and a delayed start is available as well as a stainless steel box to prevent corrosion in open-air application.



mm (Inch.) - Weight: Kg 47 Lb 103

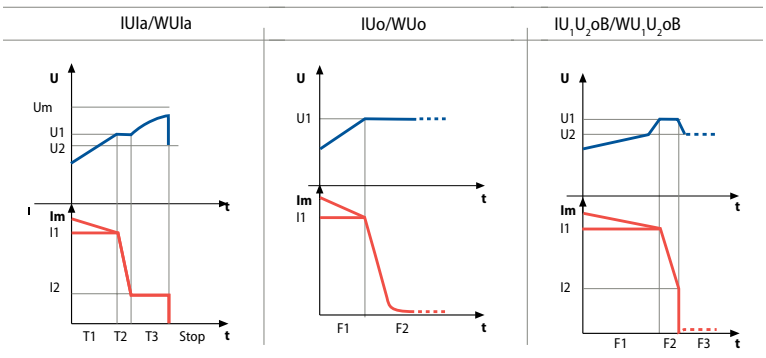
TECHNICAL FEATURES

- Input voltage: 400 VAC ± 15 % Three phase
- Input frequency: 50 – 60 Hz
- Efficiency: > 87%
- Minimum power absorbed: < 20 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)
- Thermal Alarm
- Cooling: forced
- Case: Metal
- Size: 767 x 540 x 362 mm
- Weight: 47 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					
48	1260-1620	1800-2160	2340-2520	48V 270A	400	270	270	26
80	750-960	1070-1290	1390-1500	80V 160A	400	200	160	32

Every model is available for acid circulation 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.



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!***

Chargers
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

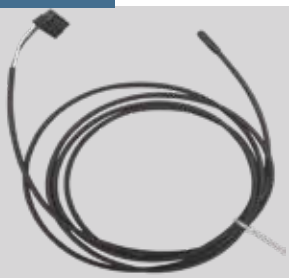
BAT/48423

CABLE 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.

Chargers

ZIVAN - IP54 RANGE

NG9 80/100 IP54 INO

STAINLESS STEEL

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

NG5 NG7 NG9 METAL GENERATION

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

TECHNICAL FEATURES

- Dimensions [base plate]: 630 l x 417 w x 210 h
- Cooling: Forced ventilation
- Protection: IP 54
- Case: Inox
- 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

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

Chargers

ZIVAN - ULTRA FAST CHARGERS - HF

The charger's heart is a **flashable microprocessor** equipped with Can Bus interface suitable to several devices connection (PC, BMS, CONTROLLER).

Its **memory** is able to record and store up to 1000 charging cycles insuring a complete analysis on the battery behavior and its use.

High power allows fast and opportunity charging to any kind of battery and all adjustments can be done by its programmable display.

Through the **MODE button** you can select the battery chemistry (lead acid, gel, AGM, Li-Ion), choose among multiple charging profiles (IUIA, IU1U20, IU0), battery capacities and reduces times of recharge according to specific application.

A desulphation charge and **a delayed start** is available as well as a stainless steel box to prevent corrosion in open-air application.

▶ **BG9**

for the 9kW model
H 444 x W 211 x D 694

▶ **BG15**

for the 15kW model
H 540 x W 362 x D 767

▶ **BG18**

for the 18kW model
H 540 x W 362 x D 767

- Flashable microcontroller: for any update and modification
- Large Internal Memory: (250 cycles for monthly reports, extendable to 1000 yearly)
- Optimized Battery life time: Programmable Desulphation and seasonal Thermal compensation
- More than 1000 available algorithms: over 30 years development and test experience in cooperation with Market Leaders
- Flexible Software with variable Set Points: Programmable start of charge cycle adjustable V-A-Time for any curve creation
- Multifunction charger: opportunity, fast, ultra fast charging capability
- Remote Battery and Charger Monitoring: ZIVAN Proprietary DATA DRONE integrated system for customer server based data capture
- LI-ION ready
- CAN BUS Modular architecture: matches with Battery Data Logger
- Adjustable cable voltage drop compensation: dynamic adjustment of the voltage drop depending on current output

	VAC	Type	Ah	Charging time			
				2 h	6 h	8 h	12h
B9	480 or 400	24 200	500 - 1700	400	400 - 800	400 - 1500	1600 - 1700
	480 or 400	36 150	500 - 1500	300	400 - 600	650 - 1100	1100 - 1500
	480 or 400	48 150	500 - 500	300	400 - 600	650 - 1000	1200 - 1500
	480 or 400	80 120	500 - 1400	240	300 - 400	400 - 770	800 - 1400
	480 or 400	96 80	250 - 800	150	100 - 250	250 - 550	600 - 800
BG15	400	48V 270A	900 - 2520	-	900	1620	2340
	400	80V 160A	536 - 1500	-	536	964	1393
BG18	480 or 400	24 340	500 - 1700	400 - 700	750 - 1400	1450 - 1700	-
	480 or 400	36 300	500 - 1500	400 - 600	700 - 1200	1250 - 1500	-
	480 or 400	48 300	500 - 1500	400 - 600	700 - 1200	1250 - 1500	-
	480 or 400	80 240	500 - 1700	400	400 - 800	400 - 1500	1600 - 1700
	480 or 400	96 160	500 - 1500	300	400 - 560	600 - 1100	1200 - 1500

For battery technologies: Lead Acid, AGM, Gel, LI-ION

Chargers

ZIVAN - ULTRA FAST CHARGERS - HF

▶ MG18 - Box type "2"

for the 18kW model
H 825 x W 472 x D 402

▶ MG27 - Box type "3"

for the 27kW model
H 255 x W 173 x D 306

▶ MG36 - Box type "4"

for the 36kW model
H 255 x W 173 x D 306

A turnkey system made by a battery data logger and the zivan data drone app enables an overview over forklift, battery and recharge as well as on maintenance and operating costs in real time

EFFICIENCY AND SAFETY

IP54 protection degree suitable for outdoor, heavy duty applications. The battery is everyday charged up to 80% to avoid gas emissions. The charger is equipped with a 55°safety cutoff and seasonal dynamic compensation of gas value depending on ambient temperature.

It is provided with a every day / once a week / never / on demand adjustable equalization charge in order to prevent possible battery degradation (cells unbalancing, plates sulfatisation). the equalization profile consists of an IUIA 17A/100 charge followed by a proper balancing phase. the equalization profile guarantees a 100% battery S.O.C. the system is able to reboost a huge battery capacity range from 500 up to 1500Ah

CONSIDERABLE SAVING

The scope of the ultra fast range is to avoid recharging battery room installations, to reduce battery replacements enabling the truck to work for up to 3 shifts per day nonstop by adding as much as possible Ah by intermediate or opportunity charging cycles during breaks. We recommend using onefast-charger for each lift truck and applying the necessary adjusting specific for that particular battery. The system modulates the charging cycle depending on the battery depth of discharge (dod) and the battery temperature by real time communication with battery data logger.

The multi-module charger box includes several can bus units in a master/slave configuration network up to 36KW power.

The data drone software provides report charts which are wifi-stored in a protected and customised cloud.

- Flashable microcontroller: for any update and modification
- Large Internal Memory: (250 cycles for monthly reports, extendable to 1000 yearly)
- Optimized Battery life time: Programmable Desulphation and seasonal Thermal compensation
- More than 1000 available algorithms: over 30 years development and test experience in cooperation with Market Leaders
- Flexible Software with variable Set Points: Programmable start of charge cycle adjustable V-A-Time for any curve creation
- Multifunction charger: opportunity, fast, ultra fast charging capability
- Remote Battery and Charger Monitoring: ZIVAN Proprietary DATA DRONE integrated system for customer server based data capture
- LI-ION ready
- CAN BUS Modular architecture: matches with Battery Data Logger
- Adjustable cable voltage drop compensation: dynamic adjustment of the voltage drop depending on current output

	VAC	Type	Ah	Charging time			
				2 h	6 h	8 h	12h
MG18	400	24 340	500 - 1700	450 - 700	750 - 1400	1450 - 1700	-
	400	36 300	500 - 1500	400 - 600	700 - 1200	1250 - 1500	-
	400	48 300	500 - 1500	400 - 600	700 - 1200	1250 - 1500	-
	400	80 240	500 - 1700	400	400 - 800	400 - 1500	1600 - 1700
	400	96 160	500 - 1500	300	400 - 560	600 - 1100	1200 - 1500
MG27	400 or 480	36/48 480	500 - 1700	500 - 900	500 - 1700	500 - 1700	-
	400 or 480	72/80 360	500 - 1700	500 - 700	500 - 1700	500 - 1700	-
	400 or 480	96 270	500 - 1500	500	500 - 840	500 - 1500	-

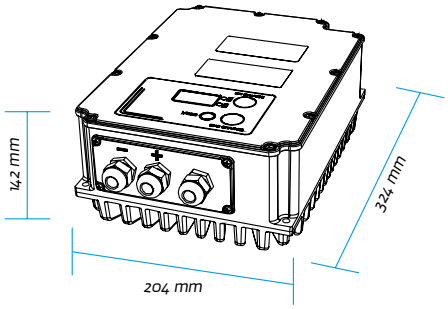
For battery technologies: Lead Acid, AGM, Gel, LI-ION

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

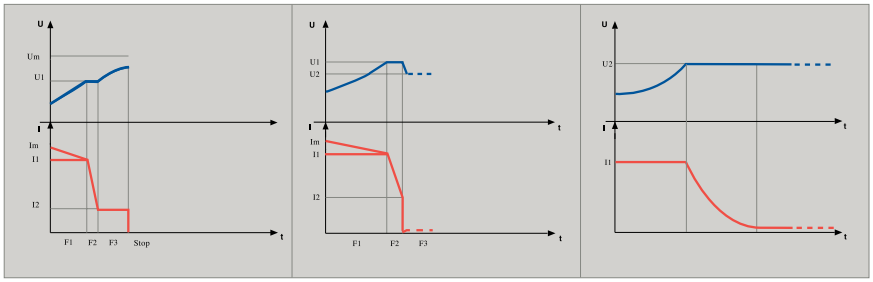
- Universal Input Voltage: 95-265 VAC
- Input frequency: 50-60 Hz
- Power factor: 0,98
- Efficiency: up to 93%
- Absorbed standby power: < 3W
- Absorbed current from the battery: < 0,5 mA
- Output voltage accuracy: ± 0,5 %
- Operating case temperature: - 30° to + 70°C
- Galvanic Insulated CAN-BUS Interface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

IUIa IU1U2oB IUo



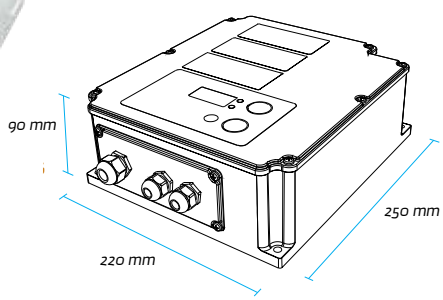
Charging curves specimen

Chargers

ZIVAN - IP66 RANGE

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

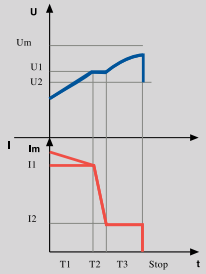
Battery Voltage	VAC	Charging time			Type	I1	IMAX	Code	Mains
		7-8,5 h	9-11 h	12-13 h					
12	230	240 - 360	400 - 480	520 - 560	12 60	50	60	G6ARQ9-12000Q	7
24	230	240 - 360	400 - 480	520 - 560	24 50	50	50	G6BQQ9-12000Q	11
36	230	215 - 325	360 - 430	470 - 505	36 55	45	55	G6CPQ9-12000Q	14
48	230	170 - 250	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.

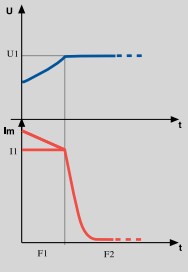
The recharging times are purely indicative and refer to batteries discharged at the 80% of their capacities.

Charging curves specimen

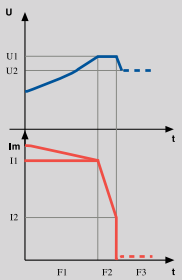
IUIa/WUIa



IUo/WUo



IU1U20B/WU1U20B



BATTERY DATA LOGGER
12-80V - WI-FI

INCLUDED
- Current sensor
- Electrolyte level sensor
- Thermal sensor

Optional:

- The datalogger can be programmed by PC with following tools:
  - CAN To USB Converter (ZIV/Z-C13105)
  - CAN Cable (BAT/49317)
- The datalogger can be programmed by WIFI:
  - Internet connection of your PC by hardware cable or UMTS
  - Datalogger connection by WIFI

▶ BAT/49294

THANKS TO THE ZIVAN DATALOGGER THE BATTERY CAN COMMUNICATE WITH THE CHARGER = PERFECTLY CHARGED BATTERY UPON DISCHARGE OF THE BATTERY

▶ BAT/49206 (Universal WiFi datalogger)

The data logger is connected to an industrial vehicle battery. It monitors the main battery parameters, recording all essential values then ensuring its utmost care and efficiency.

By external sensors (bidirectional current sensor, thermic sensor, liquid level sensor) all battery data can be read, recorded and broadcasted along working and charging cycle of the machine.

Collected data allows detecting battery status as well as introducing appropriate corrections to charging process insuring an extended battery lifetime.

By battery CAN Bus charger it is possible to modify real-time the charge algorithm.

MORE INFO: SEE PAGE 106

ZIVAN®
HIGH FREQUENCY BATTERY CHARGERS

TAKE ME SYSTEM MASTER UNIT

OVERVIEW

The Take Me System is a simple yet very effective way to properly manage a charging room, made of up to 20 Zivan CanBus battery chargers. The Master Unit infact will track the charging process of all the chargers it is connected to, in order to determine which charge has ended first and communicate it to the user who needs to pick up a battery in the charging room. In this way you will make sure that all your battery fleet is regularly cycled, instead of having just a few over-cycled batteries.

To inform the user which battery is ready for being picked up, the Master Unit forces on the green BIG LED in the related charger. All the chargers, when set to work for the Take Me System, will have the red BIG LED on. As soon as the battery is picked up, the Master Unit will light on the green BIG LED of the charger who finished the charge second, and so on.

BASIC PRINCIPLES

The Master Unit tracks the charging process of all the battery chargers connected to the CanBus; as soon as a charger finishes the charging process (that is, completing equalization), the Master Unit will save that node in a First-In First-Out (FIFO) queue. The first charger in the queue will have its green BIG LED turned on; all the other chargers will have the red BIG LED on. This is true as long as each charger have the Take Me option enabled and the communication from the Master Unit is correctly working. If one of these conditions is not met, the charger will light up the BIG LED accordingly to its original specification.

By drawing the correct battery, the drawing queue will be shifted down. Any charger that completes a charge will be placed on top of the queue.

By drawing a battery which is not the one indicated by the Master Unit, the system will enter an alarm state (wrong battery drawing). This means that, for 60 seconds, the buzzer of both the charger and the Master Unit will beep. Additionally, the Master Unit enables the Auxiliary Output.

The Take Me System has been designed in order to be user-fault-tolerant. For this reason, if the wrongly taken battery is reconnected within the 60 seconds limit, the alarm condition is cleared: the charger will resume the charge from the point it was interrupted and the Master Unit will insert the charger node in the position it was occupying before the alarm, like shown in the image below. In this case, the system completely recovers from the fault, just like it never happened.

AUTOMATIC WATERVALVE

▶ BAT/48449

Automatic Watervalve (220V)
Works on every charger.
The valve is connected by the charger which gives the “end of charge” signal and opens the valve for an xx adjustable time.

▶ BAT/48450

For Zivan CANBUS version > 1.06

Chargers

AQ-TRON® STANDARD CHARGERS 12 HOURS - WA

AQ-TRON®

TECHNICAL SPECIFICATIONS Wa

- Mains input 230/400Vac ±5% 50-60Hz
- Characteristics of charge current Wa
- Microprocessor controlled charging process
- Clear and recognisable visualisation of charging level through 5mm LEDs and display
- Display and acoustic Safety timer over the 12h
- Last 5 charge cycles saved on board memory
- Starting charge automatic or manual
- Suitable for rated battery voltages from 12V - 24V - 36V - 48V - 80V
- Maintanance charge
- Phase failure signalling
- Intelligent post-charge
- Conformity to European normative CE marking

RECOMMENDATIONS

Before buying a charger, next data must be determined:

a) CHARGE CYCLE

We advise you to consider your choice of the battery, and to examine all our chargers. Every model was designed for a specific application. Before you choose, check the next points:

1) Is the battery totally or partly discharged when it's connected to the charger?
2) How much time is there to charge the battery?
3) Do you need a charger which can charge batteries with different tension and capacity? Contact us!

AQ-TRON® PRACTICAL 12 HOUR CHARGER TO KEEP YOUR BATTERIES IN TOP CONDITION

	Ref.	Tension (V)	Power supply (V)	Current (A)	Dim. X x Y x H	Average C5 (Ah)
12 V	AQ12M15	12	230	15	250 x 160 x 180	75
	AQ12M20	12	230	20	250 x 160 x 180	110
	AQ12M25	12	230	25	250 x 160 x 180	140
	AQ12M30	12	230	30	340 x 260 x 260	170
24 V	AQ24M10	24	230	10	250 x 160 x 180	55
	AQ24M15	24	230	15	250 x 160 x 180	75
	AQ24M20	24	230	20	250 x 160 x 180	110
	AQ24M25	24	230	25	340 x 260 x 260	140
	AQ24M30	24	230	30	340 x 260 x 260	170
	AQ24M40	24	230	40	340 x 260 x 260	220
	AQ24M50	24	230	50	340 x 260 x 260	290
	AQ24M60	24	230	60	340 x 260 x 260	360
	AQ24M80	24	230	80	340 x 260 x 260	460
	AQ24T80	24	3x400	80	500 x 350 x 400	460
	AQ24M100	24	230	100	500 x 350 x 400	600
	AQ24T100	24	3x400	100	500 x 350 x 400	600
	AQ24T120	24	3x400	120	500 x 350 x 400	750
	AQ24T140	24	3x400	140	500 x 350 x 400	875
36 V	AQ36M20	36	230	20	340 x 260 x 260	110
	AQ36M25	36	230	25	340 x 260 x 260	140
	AQ36M30	36	230	30	340 x 260 x 260	170
	AQ36M40	36	230	40	340 x 260 x 260	220
	AQ36M50	36	230	50	340 x 260 x 260	290
	AQ36M60	36	230	60	500 x 350 x 400	360
	AQ36M80	36	230	80	500 x 350 x 400	460
	AQ36T80	36	3x400	80	500 x 350 x 400	460
	AQ36T100	36	3x400	100	500 x 350 x 400	600
	AQ36T120	36	3x400	120	500 x 360 x 900	750
	AQ36T140	36	3x400	140	500 x 360 x 900	875
48 V	AQ48M50	48	230	50	500 x 350 x 400	290
	AQ48T50	48	3x400	50	500 x 350 x 400	290
	AQ48M60	48	230	60	500 x 350 x 400	360
	AQ48T60	48	3x400	60	500 x 350 x 400	360
	AQ48M80	48	230	80	500 x 350 x 400	460
	AQ48T80	48	3x400	80	500 x 350 x 400	460
	AQ48M100	48	230	100	500 x 360 x 900	600
	AQ48T100	48	3x400	100	500 x 360 x 900	600
	AQ48T120	48	3x400	120	500 x 360 x 900	750
	AQ48T160	48	3x400	160	500 x 360 x 900	1000
72 V	AQ72T80	72	3x400	80	500 x 360 x 900	460
	AQ72T100	72	3x400	100	500 x 360 x 900	600
	AQ72T120	72	3x400	120	500 x 360 x 900	750
80 V	AQ80T80	80	3x400	80	500 x 360 x 900	460
	AQ80T100	80	3x400	100	500 x 360 x 900	600
	AQ80T120	80	3x400	120	500 x 360 x 900	750
	AQ80T140	80	3x400	140	500 x 360 x 900	875
	BAT/19591	UNIVERSAL TRANSFORMATION KIT 12V-96V				

M = monofase / monophasé / mono-phase T = driefase / triphasé / three-phase

Chargers

AQ-TRON® EQUIPMENT

AQ-TRON®

- ▶ BAT/34544 Electronic card for single phase charger
- ▶ BAT/34543 Electronic card for three-phase charger
- ▶ BAT/34545 Rectifier bridge for single phase charger 20 A
- ▶ BAT/21090 Rectifier bridge for single phase charger 30 A
- ▶ BAT/15417 Rectifier bridge for single phase charger 40 A
- ▶ BAT/34548 Rectifier bridge for single phase charger 50 A
- ▶ BAT/33100 Rectifier bridge for single phase charger 60 A
- ▶ BAT/34550 Rectifier bridge for three-phase charger 60 A
- ▶ BAT/34551 Rectifier bridge for three-phase charger 80 A
- ▶ BAT/34552 Rectifier bridge for three-phase charger 100 A
- ▶ BAT/34553 Rectifier bridge for three-phase charger 120 A
- ▶ BAT/34554 Rectifier bridge for three-phase charger 140 A
- ▶ BAT/34555 Single phase fuses 20/30/40/60/80A
- ▶ BAT/34556 Three-phase fuses 80/100/120/140/160A

CHECKLIST

1. ✓ Compact size
2. ✓ Solid body
3. ✓ Simple use
4. ✓ Clear indication of the charge phase
5. ✓ Equalization charge
6. ✓ Safety timer
7. ✓ CE-label
8. ✓ Exact calibration of the mains voltage
9. ✓ Connection cables included

▲ BAT/33368

Protecting cage for chargers
Size: 520 x 380 x 920 (h)

▲ BAT/33369

Protecting cage for chargers
Size: 520 x 380 x 460 (h)

Chargers

FUSES FOR BATTERY CHARGERS

DIN 72581 CERAMIC

Center distance: 30

Ref.	Amp.
BAT/18200	30
BAT/18202	50
BAT/18204	80
BAT/18206	100
BAT/18208	150

DIN 72582 CERAMIC

Center distance: 30

Ref.	Amp.
BAT/17120	30
BAT/17121	50
BAT/17122	80
BAT/17126	100
BAT/18214	150

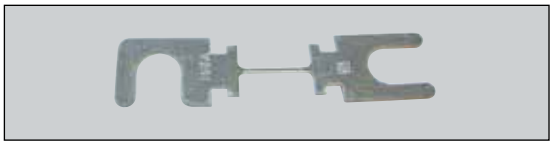
DIN 43561 CERAMIC

Center distance: 60

Ref.	Amp.
BAT/17661	35
BAT/18218	40
BAT/17662	50
BAT/18220	63
BAT/18222	80
BAT/17663	100
BAT/18224	125
BAT/18226	135
BAT/18228	150
BAT/18230	160
BAT/18232	175
BAT/18234	200
BAT/18236	225
BAT/17565	250
BAT/17569	275
BAT/17566	300
BAT/18238	325
BAT/17567	355
BAT/17412	400
BAT/18240	425
BAT/18242	500

DIN 43560 CERAMIC

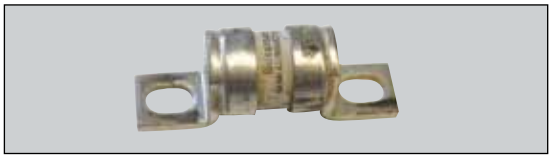
Center distance: 60



Ref.	Amp.
BAT/16669	35
BAT/16670	40
BAT/16671	50
BAT/16672	63
BAT/16673	80
BAT/16674	100
BAT/17129	125
BAT/17132	135
BAT/17135	150
BAT/17137	160
BAT/17139	175
BAT/17141	200
BAT/18247	225
BAT/18249	250
BAT/18251	275
BAT/18253	300
BAT/18255	325
BAT/18257	355
BAT/18259	400
BAT/18261	425
BAT/18263	500

TYPE LET 240V

Center distance: 42



Ref.	Amp.
BAT/18426	25
BAT/18430	35
BAT/18432	50
BAT/18434	63
BAT/18436	80
BAT/18438	100
BAT/18440	125
BAT/18442	160
BAT/18444	180

Chargers

AQ-TRON® INDUSTRIAL CHARGERS

RECOMMENDATIONS

Before buying a charger, next data must be determined:

a) CHARGE CYCLE

We advise you to consider your choice of the battery, and to examine all our chargers. Every model was designed for a specific application. Before you choose, check the next points:

1) Is the battery totally or partly discharged when it's connected to the charger?
2) How much time is there to charge the battery?
3) Do you need a charger which can charge batteries with different tension and capacity? Contact us!

b) TENSION OF THE CHARGER

The tension of the charger must be the same as that of the battery: 2.0V per cell.

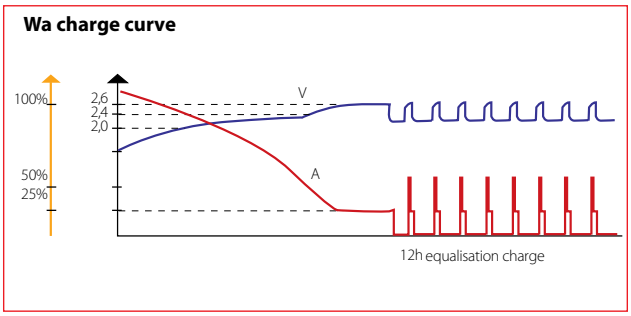
c) CHARGE CURRENT

The charge current must be chosen in accordance with the battery capacity. With charge current, we mean the current which is given by the charger when the battery is at its nominal voltage (2.0V/cell). The current decreases to 50% when the battery tension rises up to 2,4V/cell and to 25% when 2.65V/cell is reached. For example: 48V - 100A / 57,6V - 50A / 63.6V - 25A.

Wa charge curve

Wa charge curve:

Consists in a principal charge phase and a final charge phase. The charger starts to charge with a maximal current (100 %), during the charge, the battery tension increases and the charge current decreases correspondingly. When 2.4V/cell is reached, the charge current is decreased to 50 % and the principal charge phase is ended. During the final charge phase, the charge current decreases to 25 %, and a battery tension of 2.65V/cell is reached (= full battery tension).



CAPACITY TABLE FOR AQ-TRON® BATTERY CHARGERS

BATTERY DATA		POWER REQUIRED	MAXIMUM CURRENT AND FUSES					
			SINGLE-PHASE		THREE PHASE			
VOLT V	AMP A	MAIN POWER KVA	VOLT 230	FUSE aM	VOLT 230	FUSE aM	VOLT 400	FUSE aM
24	25	0.90	3.9	6,3				
24	30	1.08	4.7	6,3				
24	40	1.44	6.3	8,0	3.6	6	2.1	4
24	60	2.16	9.4	12,0	5.4	8	3.1	4
24	80	2.88	12.5	16,0	7.2	12	4.2	6
24	100	3.60	15.7	20,0	9,0	16	5.2	8
24	120	4.32			10.9	20	6.2	10
24	140	5.04			12.7	20	7.3	12
36	30	1.62	7,0	12,0	4.1	6	2.3	4
36	40	2.16	9.4	16,0	5.4	8	3.1	4
36	60	3.24	14.1	20,0	8.1	12	4.7	8
36	80	4.32	18.8	32,0	10.9	16	6.2	10
36	100	5.40	23.5	40,0	13.6	20	7.8	12
36	120	6.48	28.2	50,0	16.3	25	9.4	12
36	140	7.56			19,0	32	10.9	16
48	40	2.88	12.5	20,0	7.2	12	4.2	6
48	60	4.32	18.8	32,0	10.9	16	6.2	10
48	80	5.76	25,0	40,0	14.5	25	8.3	12
48	100	7.20			18.1	32	10.4	16
48	120	8.64			21.7	35	12.5	20
48	140	10.08			25.3	40	14.6	25
48	160	11.52					16.6	25
72	60	6.48			16.3	25	9.4	16
72	80	8.64			21.7	35	12.5	20
72	100	10.80			27.1	40	15.6	25
72	120	12.96					18.7	32
72	140	15.12					21.8	40
72	160	17.26					25,0	40
80	60	7.20			18.1	32	10.4	16
80	80	9.60			24.1	40	13.9	25
80	100	12.00			30.2	50	17.3	25
80	120	14.40					20.8	32
80	140	16.80					24.3	40
80	160	19.20					27.7	50
80	180	21.60					31.2	50
96	60	8.64			21.7	35	12.5	20
96	80	11.52			29,0	50	16.6	25
96	100	14.40					20.8	40
96	120	17.28					25,0	40
96	140	20.16					29.1	50
96	160	23.04					33.3	50
96	180	25.92					37.5	63