



Waterproof High Frequency charger

- Made in Europe
- One profile : the correct charging curve is programmed in the factory and will avoid mistakes when assembled
- Compatible charge curve for mostly all standard batteries.
Version 'WET' : compatible for the most Semi-Traction, Monoblocs and Deep-Cycles
Version 'AGM' : compatible for all Lead Carbon (DLC) and AGM (DAB) batteries
Other profiles possible on demand
- Operating Temperature: from -30°C to +65°C
- Storage Temperature: from -40°C to +95°C
- Humidity: from 5% to 95%
- Altitude: up to 2000 mt
- Protection Grade: IP67
- V in = 180 - 264 V AC

Inclusive:

- Battery temperature sensor : the temperature of the battery will influence the charging curve and will increase the safety of the charging process and life time of the battery
- Remote charge indicator
- Interlock safety system : will prevent the vehicle from starting when the battery charger is still connected to the grid.

IP67

IP67

With a **protection degree of IP67**, the battery charger is completely resistant to water and dust. It can resist to brief period of total immersion in water.



On-board use

With the protection degree of IP67, the special box used and an innovative building technology, make the charger resistant to vibrations, to bumps and bad weather so is **perfect for on-board use**.



Safe and reliable

The battery charger is **completely safe and reliable** for long operation work and charging cycles thanks to the many safety control of which it's equipped with.

Among these, we can find:

- External and internal thermal probe
- Short circuit protection
- Overcurrent protection
- Self-diagnosis for anomalies



High efficiency

The WP series offers an efficiency of $\geq 94\%$ and a power factor $\geq 0,99$.



Ideal for every battery

Based on the installed charging curve, it's possible to charge any type of battery (AGM, GEL, Lead Acid, Lithium). There is a fixed curve per charger, this curve can not be changed.



Low batteries

The charger reads the voltage of the battery and through the wide ranges that the program allows, the standard charging cycle will begin following the standard charging parameters even if the voltage read from the battery is very low.



Plug-n-play

All the models are supplied with the Schuko power supply plug that allows an immediate put in use of the charger without the need to install special industrial plugs.



PFC and Soft Start

The series is equipped with **Active PFC** to follow the European standards.

Also programmed with **Soft Start** to avoid absorption peaks when the charger is switched on and avoid damage caused to the battery by the initial charging current peak.

TECHNICAL DATA SHEET

AQHF WP-series

Models

Every box of this series was specifically developed based on the control card that it will host to allow an optimal heat dissipation also in extremely hot and humid environments.

Severe tests were applied to guarantee a long-lasting duration over time.

Model	Voltage	Current	Power Supply	Battery Capacity Ah (C5)			Module	Dimensions (mm)
			Amp (A)	8h	10h	12h		
AQHF12-10 WP	12 V	10 A	2	80	100	120	1	187 x 122 x 70
AQHF12-15 WP		15 A	2	120	150	180	1	187 x 122 x 70
AQHF12-20 WP		20 A	2	160	200	240	1	187 x 122 x 70
AQHF12-25 WP		25 A	2	200	250	300	2	210 x 128 x 79
AQHF24-10 WP	24 V	10 A	2	80	100	120	1	187 x 122 x 70
AQHF24-15 WP		15 A	2	120	150	180	1	187 x 122 x 70
AQHF24-20 WP		20 A	3	160	200	240	1	187 x 122 x 70
AQHF24-25 WP		25 A	3	200	250	300	2	210 x 128 x 79
AQHF24-30 WP		30 A	4	240	300	360	3	210 x 142 x 78
AQHF24-35 WP		35 A	4	280	350	420	4	210 x 168 x 88
AQHF24-40 WP		40 A	5	320	400	480	4	210 x 168 x 88
AQHF24-50 WP		50 A	6	400	500	600	4	210 x 168 x 88
AQHF36-10 WP	36 V	10 A	2	80	100	120	1	187 x 122 x 70
AQHF36-15 WP		15 A	2	120	150	180	1	187 x 122 x 70
AQHF36-20 WP		20 A	4	160	200	240	1	187 x 122 x 70
AQHF36-25 WP		25 A	5	200	250	300	2	210 x 128 x 79
AQHF36-30 WP		30 A	6	240	300	360	3	210 x 142 x 78
AQHF36-50 WP		50 A	9	400	500	600	5	315 x 200 x 117
AQHF48-12 WP	48 V	12 A	3	80	100	120	1	187 x 122 x 70
AQHF48-15 WP		15 A	4	120	150	180	1	187 x 122 x 70
AQHF48-20 WP		20 A	6	160	200	240	2	210 x 128 x 79
AQHF48-25 WP		25 A	8	200	250	300	2	210 x 128 x 79
AQHF48-30 WP		30 A	8	240	300	360	4	210 x 168 x 88
AQHF48-35 WP		35 A	10	280	350	420	4	210 x 168 x 88
AQHF48-40 WP		40 A	10	320	400	480	5	315 x 200 x 117
AQHF48-50 WP		50 A	12	400	500	600	5	315 x 200 x 117
AQHF72-10 WP	72 V	10 A	4	80	100	120	2	210 x 128 x 79
AQHF72-15 WP		15 A	6	120	150	180	2	210 x 128 x 79
AQHF72-20 WP		20 A	8	160	200	240	3	210 x 142 x 78
AQHF72-25 WP		25 A	8	200	250	300	4	210 x 168 x 88
AQHF72-30 WP		30 A	11	240	300	360	5	315 x 200 x 117
AQHF72-35 WP		35 A	13	280	350	420	6	348 x 189 x 94

Each type available with AGM or WET profile. Other profiles possible on demand. If you wish to order a charger with a specific profile, you can put "AGM" or "WET" behind the reference. Example: AQHF48-25 WP AGM.

Charging process

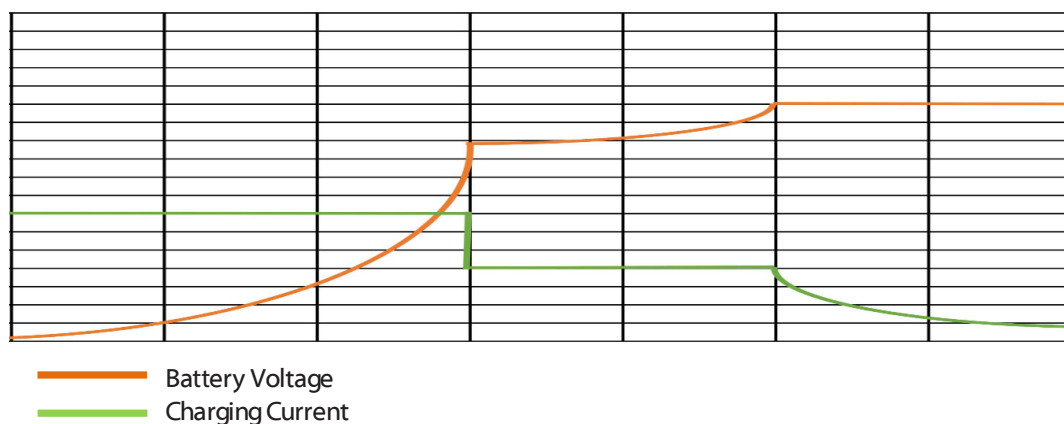
- Once the battery is connected to the charger, if the battery voltage is inside an allowed range, the charge will automatically begin
- The red light will start to glow to indicate the battery is connected and below 80%. Above 80% the yellow light will start to glow. Upon reaching 100% the green light will start to glow and it will be possible to de-attach the charger from the battery
- When the battery is fully charged, the charging process will be automatically interrupted
- In case of values outside the allowed range or in case the charge reaches the safety timer, the charge will automatically be interrupted
- In case of power failure during the charging phase, the charger will automatically resume the charge when the power failure is over

Charging curve

The standard charging curve installed inside the chargers of the WP Series is divided in different stages. In every stage, the charging current is subject to variations predetermined by the charging curve installed based on the typology of the battery (Lead Acid, AGM, GEL, Lithium, etc etc).

The charging curve stages are:

- S1 – The current rises slowly (soft start) upon reaching the maximum nominal current
- S2 – The maximum nominal current is kept until the predetermined voltage of the battery type (for example 2,4V/C ell for lead acid batteries) is reached
- S3 – Upon reaching the predetermined soil, the current drops to 2/3 of the maximum nominal current until reaching the second predetermined voltage (for example 2,55 V/C ell for lead acid batteries)
- S4 – Upon reaching the second threshold, the current drops to 1/3 of the maximum nominal current until the final charging current is reached (for example 2,68 V/C ell for lead acid batteries)
- S5 – The charger keeps the voltage constant and variates the current until the charge is completed



Final charging voltages

Battery Type	Final charging voltage
WET	2,4 V/Cell
GEL	2,35 V /Cell
AGM	2,38 V/Cell

TECHNICAL DATA SHEET

AQHF WP-series

LED colors

<u>LED Color</u>	<u>Description</u>	
Green/Red alternate flash	Battery not connected	Battery Charging Status
Red flash	Battery from 0% to 80%	
Yellow Flash	Battery from 80% to 100 %	
Green flash	Battery at 100%	
Red/Green/Red	Over voltage / Over current	Anomalies and faults
Red/Green/Red/Green	Environment temperature too high or too low	
Green/Red	Charger overheating	
Red/Green	Output under voltage	
Red/Green/Red/Green/Red	Input AC anomaly	

Troubleshooting

LED Color	Description	Solutions
Green/Red alternate flash	Battery not connected	Check if the connection between battery and charger is loose, if there is reverse polarity or if the battery voltage too low
Red/Green/Red	Over voltage / Over current	If this error occurs often, return to factory for repair/inspection
Red/Green/Red/Green	Environment temperature too high or too low	Check the environment temperature and make sure the ventilation is good. Also check the temperature sensor location.
Green/Red	Charger overheating	Check if the environment temperature is too high and if ventilation is good
Red/Green	Output under voltage	Return to factory for repair/inspection
Red/Green/Red/Green/Red	Input AC anomaly	Check the input voltage to match the charger specifics and plug connection



**CAREFULLY READ THE FOLLOWING INSTRUCTIONS BEFORE CONNECTING THE DEVICE TO THE MAINS VOLTAGE AND/OR TO THE BATTERY.
ALSO MAKE SURE THAT THE SIZE OF THE DEVICE IS ADEQUATE TO THE BATTERY CONNECTED TO IT.**

Carefully read these instructions to use the device at its best and avoid potential problems in future.
We strongly advise to carefully follow all information and advice mentioned to guarantee a safe use of the device

The correct utilization of the device will increase its working life and maximize efficiency.
In case of suggestions, advices or error noticed in this manual, your notifications will be very much appreciated to improve the quality of our service.

Preparation

- Make sure that the power supply connector and charging connector are installed. If not, contact a technician to install the connectors properly dimensioned for the device and for the mains voltage network
- Make sure that the mains voltage plug where the device is connected is properly grounded and protected by adequate safety devices
- Make sure that the size of the device is adequate for the battery connected to it (check attached label)
- Make sure that the device is located in an adequate location for a proper use
- Avoid the placing of the device in areas with sparks and/or flames because the battery generates explosives gases during the charge
- Make sure that the battery cells are in good condition and verify the presence of short circuits
- Make sure that there are no objects on top of the battery cells before starting the charging cycle

Network and battery connection

- Before connecting the charger to the mains voltage, make sure that the voltage of the network is adequate for the device:
 - o Input 220Vac $\pm 15\%$ or 110Vac $\pm 15\%$
 - o 50 / 60 Hz
- Connect the charger to the battery pack before connecting the charger to the AC outlet
- Make sure that the AC plug is firmly connected to the AC outlet
- It is suggested to use the proper bi-polar connectors without the possibility of reverse polarity on the battery. Verify also the correct connection of the cables in the connector's contacts

Warranty

This device is built by following high qualitative standards to assure its high quality. Every single construction phase is overviewed by specialized personnel.

The warranty is granted ONLY AND IF Battery Supplies agrees that the damage claimed is caused by faulty parts installed during the construction or assembly of the device.

In the event of a warranty claim, the customer will have to dispatch the unit in question to Battery Supplies, if it is then deemed that the fault/damage was caused by faulty parts installed during the constructions or assembly, Battery Supplies will provide a replacement of the faulty part/component to restore the optimal state of the device.

The duration of the warranty is **12 months** from the moment when the unit leaves the Battery Supplies warehouse (except if there are others agreement between Battery Supplies and the customer/distributor).

The warranty IS NOT GRANTED if:

- The unit has been tampered with or **OPENED**
- The unit has been damaged by misuse and/or bad installation
- The unit has been damaged by a use that is not what it was built for
- The unit has been damaged by third party or environment causes
- The unit has been damaged by the surrounding environment
- The unit has been damaged during transportation

This warranty does not cover in any case the replacement of the device or any compensation for costs, injuries, direct or indirect damages caused by unit fault (production stop included).

For any legal claims, the court of Kortrijk (Belgium) will be responsible and will handle the matter.

To request assistance or in case of problems, contact the nearest authorized dealer or directly contact Battery Supplies.