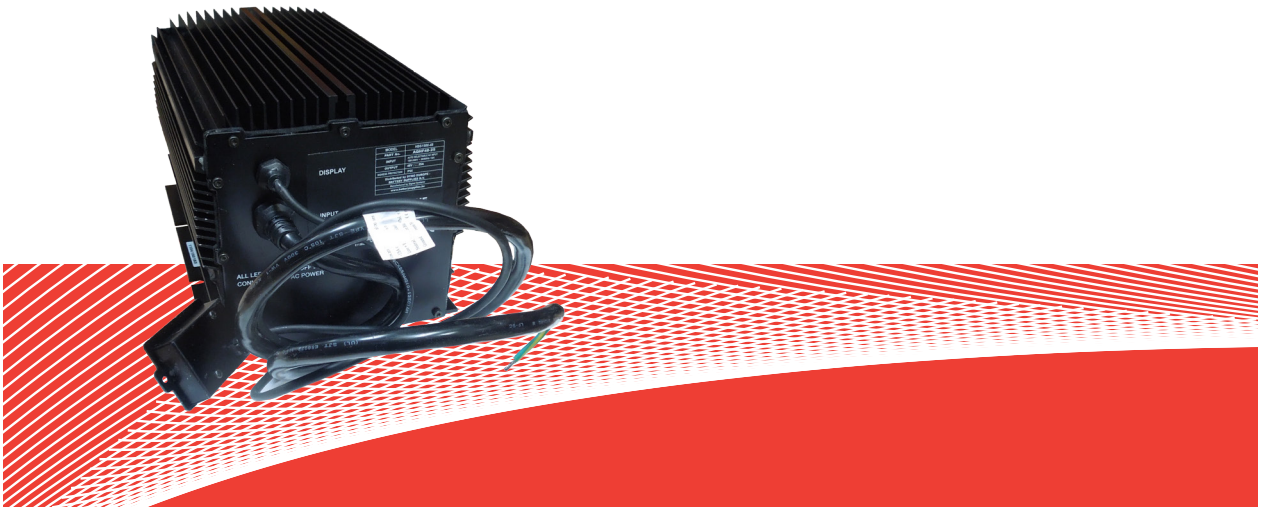
TECHNICAL DATA SHEET

AQHF48-25



Model		AQHF48-25	
Max. Output Power/Nominal Voltage		1500Watt / 48V	
Main Technology		Switching Mode (ZVS)	
Mechanical Max. Size, Weight		286L *180W*165H(mm), 7.5Kg	
The Number of Charging Profiles		Two profiles for Flooded DYNO batteries.	
AC Input	Input Voltage	Single Phase, Auto selectable Dual AC input	
		Rated	AC 100 – 240V
		Operating	85~137VAC / 170 ~264VAC
	Frequency	50/60 Hz	
	Input Current	18A_max at 96VAC, 9A_max at 170VAC	
DC Output	Output Voltage	59V_max, IE profile (Yellow wire loop closed) 64V_max, IEI profile (Yellow wire loop open, CUT)	
	Output Current	25A max (Derated output current with <95VAC)	
	Current Ripple	Less than 10%	
Efficiency		More than 90%	
Features	Current limiting	Yes	
	No spark	Yes	
	Bad cell discrimination	Yes	
	Maintenance charging restart	50V	

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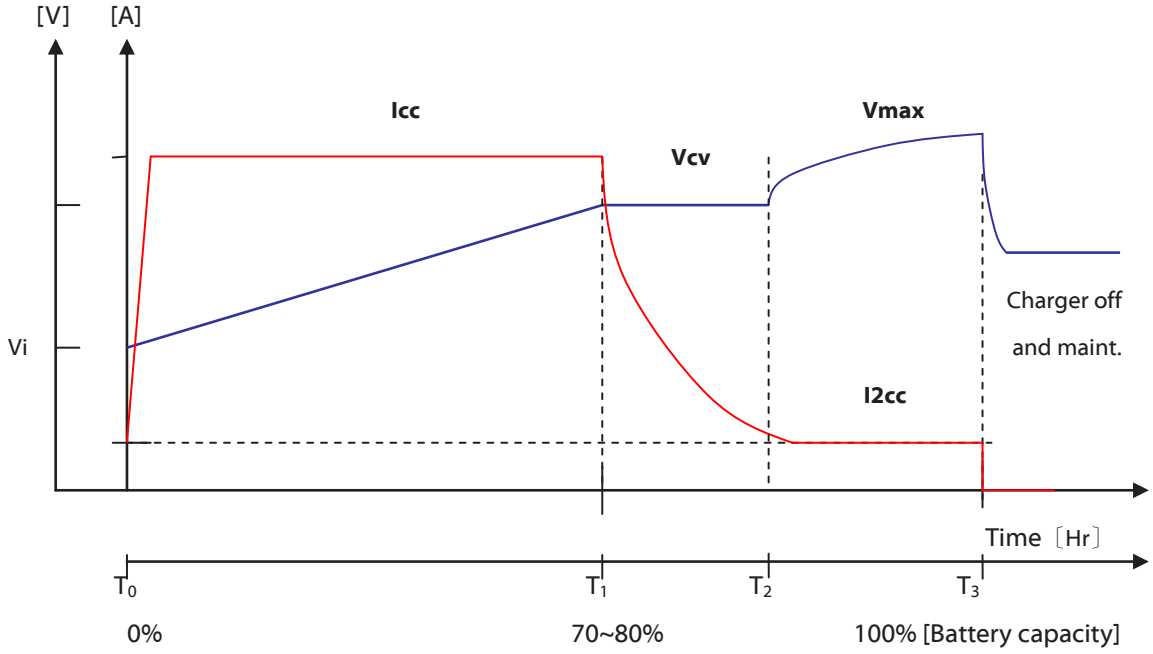
Protective Function	Reverse polarity, Short circuit protection Over temperature protection(Power reduction) Input and Output, Over voltage /Under voltage protection Output connection open
LED Display	Charging cycle progress / Bad cell discrimination / Fault display
Cooling & Sealing	Convection cooling / Water-proof

Additional Features	Reduction of output power due to internal temperature: The Charger starts to reduce the output current gradually when the internal temperature gets too high. The charger stops at excessive temperature, and restarts automatically when the internal temperature decreases to a normal range. Extremely low voltage charging: As long as the battery voltage is at least 4V the charger will start. Deeply discharged batteries take a longer time to charge then normal batteries and may require two charge cycles.
Regulation & Standard Marking	CE

Charging profile for flooded lead acid (Yellow wire loop cut)



【Charging Curve】

Voltage Vi is initial battery voltage when battery is connected with charger.

Vcv = 58V (Flooded lead acid), Vmax=64V, I2cc = 7A

1) During bulk mode from To to T1, approximately 70 - 80% of battery capacity is returned. During this part of the charge cycle the charging current is held constant while the battery voltage rises. The charging current I_{cc} generally varies between 24-25A with most batteries during this portion of charging. There is some variation of charging current due to AC input voltage and low AC voltages (less then 95VAC) may result in decreased charging current. The charger smoothly increases the charging current to the constant current value when charging starts.

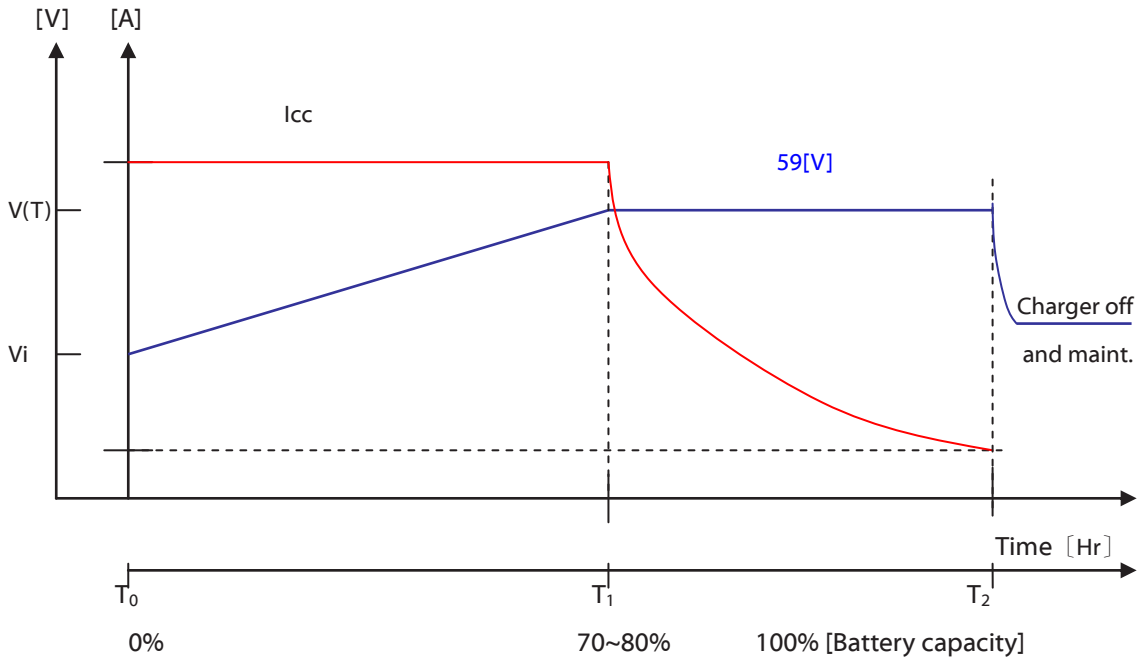
2) During absorption mode from T1 to T2, This is also called the "constant voltage" stage of charging. During the constant voltage phase, the charge voltage limit is regulated to the Vcv, and the current is allowed to gradually drop.

3) During finishing mode from T2 to T3, Once the current drops to the finish rate setting I2cc, the charge phase will change from constant voltage to constant current. The current I2cc varies depending on the selection of charging profile, the charging current is held constant while the battery capacity is fully returned.

4) After charging is complete, after T3, charger is turned off and goes into maintenance mode. The batteries are maintained above the 85% charge condition when the batteries are in storage for long periods of time. If the voltage drops below 25V due to self-discharge during storage, the

charger will restart and complete a charge cycle.

Modified two stage charging cycle (Yellow wire loop closed)



【Charging Curve】

Voltage Vi is initial battery voltage when battery is connected with charger.

1) At bulk mode from To to T1, approximately 80% of battery capacity is returned. This is also called the "constant current" stage of charging. The charging current I_{cc} generally vary between 24-25A with most batteries during this portion of charging and there is some variation of charging current due to AC input voltage.

2) At absorption mode from T1 to T2, approximately 20% of battery capacity is returned.

3) At float mode after T2, charger is turned off and goes into maintenance mode. The batteries are maintained above the 85% charge condition when the batteries are in storage for long periods of time. If the voltage drops below 50V due to self-discharge during storage, the charger will restart and complete a charge cycle.

CAUTION: USER MUST CHECK THE BATTERY MANUFACTURER'S RECOMMENDED CHARGING PROFILE.

Procedure Selecting Charging Profile

Manual charger profile is selectable by connecting a yellow wire loop before power-up and the selected profile is valid until power is turned off.

- IE profile, YELLOW WIRE LOOP CLOSED
- IEI profile, YELLOW WIRE LOOP OPEN (CUT)

Normal operation

1. Connect the DC output wires to the battery.

2. Connect the power supply cord to a properly grounded 100VAC/50 or 60 Hz, 115VAC/60 Hz, or 230 or 240VAC/50 or 60 Hz. socket. This charger automatically senses and adjusts to the AC input voltage.

3. The charger will start automatically within a few seconds. Once the charging starts, the LED's indicate the charging progress as described in the following **Operating and Fault Codes** table. The charger will start even with severely discharged batteries (down to 4V or lower terminal voltage).

4. The charger goes into maintenance mode after the batteries are fully charged, and the 100% LED is steady "on". In this mode, the charger no longer supplies power to the batteries, but it continues to monitor battery voltage. If the voltage drops below 50V due to self-discharge during storage, the charger will re-start and complete a charge cycle.

5. Turn off the charger by disconnecting AC cord.

Note 1) The charger is not damaged if the equipment is operated while charging. The charger's current limit function and over voltage protection allows this operation. Any and all safety issues related to operation of the equipment while charging must be examined before use.
Note 2) The charging time is affected by numerous factors including battery Amp-Hour capacity, depth of discharge, battery temperature, and battery condition (new, old, or defective).

Operating and Fault Codes

CHRG YLW LED	80% GRN LED	100% GRN LED	Fault RED LED	CONDITION
Off	Off	Off	Off	No AC power to charger
On	Off	Off	Off	Normal operation, charger is charging
On	On	Off	Off	Normal, battery is over 80% charged
Off	Off	On	Off	Normal, battery is 100% charged
X	X	X	On	battery pack probably bad, weak or a bad cell
Off	Off	Off	One flash	Output open circuit or short circuit or reverse polarity connection of charger to battery. Battery voltage is too high (may be connected to wrong voltage battery)
Off	Off	Off	Two flash	Charger has timed-out at 22 hrs – battery pack probably bad or a bad cell.

Note1) X in the table means "don't care". LED may be off or on