



IMPORTANT:

THIS CHARGER AUTOMATICALLY DETECTS THE NUMBER OF CELLS OF THE CONNECTED BATTERY AND OUTPUTS FACTORY PRESET AMP-HOUR AND CHARGE PROFILE. THE AMP-HOUR AND CHARGE PROFILE MUST BE RE-PROGRAMMED BEFORE CHARGING BATTERY FOR THE FIRST TIME. SEE BELOW FOR DETAILS.

INPUT POWER CONNECTION

The chargers are shipped from the factory connected for the input voltage specified on your purchase order. A "STOP/CAUTION" label, located inside the door, indicates the factory set input voltage. The AC input cable is to be connected to the proper AC INPUT terminals within the charger cabinet.

SETUP PARAMETERS

Amp-Hour Rating Factory set: 425AH.

Nameplate (located on front door) indicates the allowable range.

Charge Profiles Factory set: Flooded Profile

- FLD (Flooded): I/E/I - 17A per 100AH / 2.37V per Cell / 5A per 100AH
- AGM1 (AGM Sealed #1): I/E/I - 17A per 100AH / 2.40V per Cell / 3A per 100AH
- GEL1 (GEL Sealed #1): I/E - 17A per 100AH / 2.33V per Cell
- COLD (Flooded Tubular/Cold Storage): I/E/I - 17A per 100AH / 2.45V per Cell / 5A per 100AH
- AGM2 (AGM Sealed #2): I/E/I - 15A per 100AH / 2.37V per Cell / 3A per 100AH
- GEL2 (GEL Sealed #2): I/E/I - 16A per 100AH / 2.40V per Cell / 1.5A per 100AH
- USER (User Defined): I/E/I - High Rate Current: 10 to 17A/100AH

Gassing Voltage: 2.30 to 2.45V/Cell - Low Rate Current: 1 to 5A/100AH - Finish Rate Timer 3 or 6 hrs

Start Delay Factory set: No Delay Automatic Start

- D 0 No Delay – Automatic start
- D 1 to D 13 1 to 13 hour start delay
- MS Manual start – Press F4 to start
- 12:00 Time of day start delay

Automatic Equalize Factory set: No Equalize Selected

- E 0 No Equalize set
- E 1 to E 14 *Setup Mode:* Indicates how often Equalize cycle occurs (every 1-14 charge cycles)
Review Mode: Indicates number of charge cycles remaining until next Equalize
- WKN Equalize occurs if the charge cycle ends during Saturday or Sunday

Automatic Refresh Factory set: Refresh every 24 hours

- R 0 No Refresh cycle set
- R 6 to R 90 Refresh cycle occurs every 6, 12, 18, ..., 90 hours after charge complete

Cool-down Display Factory set: Display elapsed time after charge complete

- CD Y Display elapsed time after charge complete
- CD N Display "CHARGE COMPLETE" after charge complete

FRONT PANEL CONTROL MENU

Setup Mode This mode is accessible when the charger is powered and the battery is not connected. All factory preset parameters such as Amp-hour Rating, Charge Profile, Start Delay, Equalize Charge, Refresh Frequency and Clock can be re-programmed by pressing the push buttons and rotating the front panel rotary switch.








Note: 1. Use the small flat screwdriver (stored in door pocket) to rotate S2 to the desired display value.

2. Press F1 and F2 simultaneously at anytime to exit the setup mode and return to "CHARGER READY".


Review Mode This mode is accessible when the charger is powered and the battery is not connected. All preset parameters such as Start Option, Equalize Option, Refresh Option, Clock Time, Amp-Hour Rating, Charge Profile and Archived Charge Data may be reviewed by pressing the push buttons.

Operating Mode This mode is accessible during charging. Push buttons are used to interrupt charge, select equalize cycle and review charge data.





AMP-HOUR AND PROFILE SETUP MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	OF1 OF2 OF3 OF4	CHARGER READY	Charger is in Idle Mode without battery connected
2	OF1 OF2 ●F3 ●F4	CODE (flashing)	Press F3 and F4 simultaneously during "CHARGER READY"
3	 S2	"1" then "2" then "3"	Enter 3 digit password using rotary switch S2. (1,2,3 for the 1st time)
4	OF1 OF2 OF3 OF4	SETUP	Setup Mode Entered - Blue LED flashing
5	OF1 OF2 ●F3 OF4	CL 6 or CL 12	Press F3 - Minimum Cell Count is displayed
6	OF1 OF2 ●F3 OF4	425	Press F3 - Previously set AH is displayed
7	 S2	750	Change AH using S2 if necessary or go to the next step - 425,474,510,540,600,680,750,765,865,965,1050,1190,1450
8	OF1 OF2 ●F3 OF4	FLD	Press F3 - Previously set Charge Profile is displayed
9	 S2	AGM1	Change Charge Profile using S2 if necessary or go to the next step - FLD, AGM1, GEL1, COLD, AGM2, GEL2, USER
10	●F1 OF2 OF3 OF4	CL 9	Press F1 to save and the next Cell Count will be displayed
11	OF1 OF2 ●F3 OF4	425	Repeat from Step 6 for EACH Cell Count
12	●F1 OF2 OF3 OF4	SETUP or USER	Press F1 to save - If User Profile is selected once, you will be prompted for User Settings; otherwise go to step 21
13	OF1 OF2 OF3 OF4	17	Previously set User Hi Rate Current is displayed
14	 S2	15	Change High Rate Current using S2 if necessary or go to the next step - 10, 11, ..., 17A
15	●F1 OF2 OF3 OF4	2.37	Press F1 to save - Previously set User Gassing Point is displayed
16	 S2	2.35	Change User Gassing Point using S2 if necessary or go to the next step - 2.30, 2.31, ..., 2.45
17	●F1 OF2 OF3 OF4	5	Press F1 to save - Previously set User Finish Rate Current is displayed
18	 S2	3	Change User Finish Rate Current using S2 if necessary or go to the next step -1, 2, 3, 4, 5
19	●F1 OF2 OF3 OF4	T6	Press F1 to save - User Finish Rate Timer is displayed
20	 S2	T 3 or T 6	Change User Finish RateTimer using S2 if necessary or go to the next step - 0 : T3, 1 : T6
21	●F1 OF2 OF3 OF4 ●F1 ●F2 OF3 OF4	SETUP CHARGER READY	Press F1 to save and return to Setup Mode - Continue another setup or press F1 & F2 simultaneously to exit

CLOCK SETUP MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	OF1 OF2 OF3 OF4	SETUP	Setup Mode - If not, press F3 and F4 during "CHARGER READY" then enter the password using S2 to enter the Setup Mode
2	OF1 ●F2 OF3 OF4	0:00	Press F2 - Previously set Time of Day is displayed
3	OF1 OF2 ●F3 OF4	1:00	Press and hold F3 to adjust Hour if necessary
4	OF1 OF2 OF3 ●F4	0:01	Press and hold F4 to adjust Minute if necessary
5	●F1 OF2 OF3 OF4	MON	Press F1 to save - Previously set Day of Week is displayed
6	 S2	TUE	Change Day of Week using S2 if necessary or go to the next step
7	●F1 OF2 OF3 OF4 ●F1 ●F2 OF3 OF4	SETUP CHARGER READY	Press F1 to save and return to Setup Mode - Continue another setup or press F1 & F2 simultaneously to exit

START, EQUALIZE, REFRESH AND COOL-DOWN DISPLAY OPTIONS SETUP MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	OF1 OF2 OF3 OF4	SETUP	Setup Mode - If not, press F3 and F4 during "CHARGER READY" then enter the password using S2 to enter the Setup Mode
2	OF1 OF2 OF3 ●F4	D 0	Press F4 - Previously set Start Delay option is displayed
3	 S2	D 2	Change Start Delay using S2 if necessary or go to the next step - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, MS, 0:00
4	●F1 OF2 OF3 OF4	E 0	Press F1 to save - Previously set Equalize Option is displayed
5	 S2	E 5	Change Equalize using S2 if necessary or go to the next step - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, WKN
6	●F1 OF2 OF3 OF4	R 0	Press F1 to save - Previously set Refresh Option is displayed
7	 S2	R 36	Change Refresh using S2 if necessary or go to the next step - 0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90 hours
8	●F1 OF2 OF3 OF4	CD Y	Press F1 to save - Previously set Cool-down Time Display Option is displayed
9	 S2	CD N	Change Cool-down Time Display Option using S2 if necessary or go to the next step - (0: Y - displayed, 1: N - not displayed)
10	●F1 OF2 OF3 OF4 ●F1 ●F2 OF3 OF4	SETUP CHARGER READY	Press F1 to save and return to Setup Mode - Continue another setup or press F1 & F2 simultaneously to exit

PASSWORD SETUP MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	OF1 OF2 OF3 OF4	SETUP	Setup Mode - If not, press F3 and F4 during "CHARGER READY" then enter the password using S2 to enter the Setup Mode
2	●F1 OF2 OF3 OF4	P123	Press and HOLD F1 for 3 seconds - Default or Preset password is displayed
3	OF1 OF2 ●F3 ●F4	P255	Press F3 and F4 simultaneously to increment password. Release both buttons at desired password
4	●F1 OF2 OF3 OF4 ●F1 ●F2 OF3 OF4	SETUP CHARGER READY	Press F1 to save and return to Setup Mode - Continue another setup or press F1 & F2 simultaneously to exit

REVIEW MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	OF1 OF2 OF3 OF4	CHARGER READY	Charger is in Idle Mode without battery connected
2	●F1 OF2 OF3 OF4	LAST	Press F1 - Charge Data of the last cycle
3	●F1 OF2 OF3 OF4	AH 1234	Press F1 - Returned Amp-Hour is displayed
4	●F1 OF2 OF3 OF4	CT 5:40	Press F1 - Total Charge Time is displayed
5	●F1 OF2 OF3 OF4	SV 2.13	Press F1 - Start of Charge Voltage is displayed
6	●F1 OF2 OF3 OF4	FV 2.64	Press F1 - End of Charge Voltage is displayed
7	●F1 OF2 OF3 OF4	HRT 2:05	Press F1 - Time in High Rate is displayed
8	●F1 OF2 OF3 OF4	SC 127	Press F1 - Start Charge Current is displayed
9	OF1 ●F2 OF3 OF4	ARC1...ARC 9	Press F2 ANY TIME to select a Charge Cycle (1-9)
10	●F1 OF2 OF3 OF4	AH 1234	Repeat Step 3 for charge data of the selected cycle
11	OF1 OF2 ●F3 OF4	CL 6	Press F3 ONCE - Amp-Hour, Charge Profile for each cell count will be sequentially displayed.
12	OF1 OF2 OF3 ●F4	D 0	Press F4 ONCE - Start Delay, Equalize Option, Refresh Option, Clock will be sequentially displayed.

LAMP TEST

	<input type="radio"/> OF1 <input checked="" type="radio"/> F2 <input checked="" type="radio"/> F3 <input type="radio"/> OF4	Press F3 & F4 simultaneously during "CHARGER READY" All segments of the display and all LED's illuminate
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OPERATING MODE

STEPS	INPUTS	DISPLAY	DESCRIPTION
1	<input type="radio"/> OF1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	123	Charge is on - Output Current is displayed
2	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	LAST	Charge Data of the last cycle
3	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	AH 1234	Press F1 - Returned Amp-Hour is displayed
4	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	CT 5:40	Press F1 - Total Charge Time is displayed
5	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	SV 2.13	Press F1 - Start of Charge Voltage is displayed
6	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	FV 2.64	Press F1 - End of Charge Voltage is displayed
7	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	HRT 2:05	Press F1 - Time in High Rate is displayed
8	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	SC 127	Press F1 - Start Charge Current is displayed
9	<input type="radio"/> OF1 <input checked="" type="radio"/> F2 <input type="radio"/> OF3 <input type="radio"/> OF4	ARC1	Press F2 ANY TIME to select a Charge Cycle (1-9)
10	<input checked="" type="radio"/> F1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input type="radio"/> OF4	AH 1234	Repeat Step 3 for charge data of the selected cycle
11	<input type="radio"/> OF1 <input type="radio"/> OF2 <input checked="" type="radio"/> F3 <input type="radio"/> OF4	STOP PB PRESSED	Press F3 to interrupt the charge cycle
12	<input type="radio"/> OF1 <input type="radio"/> OF2 <input type="radio"/> OF3 <input checked="" type="radio"/> F4	E 123	Press F4 to manually select Equalize Cycle - Character "E" will appear on the 1st digit - Press F4 again to de-select

CHARGER OPERATING PROCEDURE

Starting the charge cycle

Depending on the preset starting mode, the charge cycle can be started in the following modes:

Immediate start - Delayed start in hours - Automatic start at a preset time of day - Manual start by pressing Start/Equalize button (F4)

Charging the battery

Once the charge begins, the charger will go through the following steps:

- Display the selected Amp-hour to be output.
- Display the selected charge profile.
- Display the detected number of cells of the battery under charge.
- Countdown from 9 to 0 with all the LED's flashing.
- Energize the contactor connecting power to the charger. The green CHARGING LED will illuminate.
- Display the output current.
- The output current will increase slowly until it reaches the preset high rate current. The charger will control the output current and voltage as defined in the preset profiles.
- The charge cycle will complete automatically by the method determined by the charge profile, the readout will display cool-down time (default) or "CHARGE COMPLETE".

Manual termination

While charging, manual termination is accomplished by pressing the red STOP push button switch located on the front panel. Always press the STOP button before disconnecting the battery.



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