



# IMPAQ™

**BATTERY CHARGERS  
MODEL: EI1/EI3**



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## 1. Features


- 1.1. Microprocessor-controlled
- 1.2. Compatible with battery voltages of 12, 24, 36, 48, 60, 64, 72 and 80
- 1.3. Unique profile for charging Thin Plate Pure Lead (TPPL)
- 1.4. Unique profiles for NexSys® battery charge applications. Flooded, Gel, VRLA, Opportunity, Cold storage, NexSys® bloc batteries and NexSys® 2V batteries.
- 1.5. Fully programmable to unique fleet requirements
- 1.6. Battery chemistry agnostic - TPPL, Flooded and Gel Lead Acid

## 2. Technical Information

### 2.1. Main nameplates (UL model number) vs. Configured Rating (Part number) labels

- 2.1.1. There are two nameplates located on the outside of the charger. The Main nameplate includes the UL model number and the ratings of the cabinet at its full capacity, while the "Configured Ratings" nameplate includes the Part number and the ratings of the cabinet as configured. **The Configured Ratings nameplate label must be replaced when adding or removing modules permanently in the field.**
- 2.1.2. The Part number is required in any discussion or correspondence regarding this unit.


### 2.1.3 Name plate labels



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2866 BERNVILLE ROAD  
READING, PA 19605  
WWW.ENERSYS.COM

|              |             |
|--------------|-------------|
| UL Model No. | EI3-IN-6Y   |
| Serial No.   | RXH00566545 |
| Battery Type | L-A         |
| Max AH*      | 1000 AH     |
| No. Cells    | 32          |
| Max Modules* | 4           |
| Hertz        | 50/60       |
| Phase        | 3           |
| AC Volts     | 480 V       |
| Max AC Amps* | 19.2 A      |
| Max DC Amps* | 160 A       |
| DC Volts     | 64 V        |

\*Maximum values reflect a full cabinet load. If less than full, and when adding/removing modules, refer to Configured Ratings label for these values and to the Breaker/Fuser Chart in the owners manual for size selection.



### CONFIGURED RATINGS

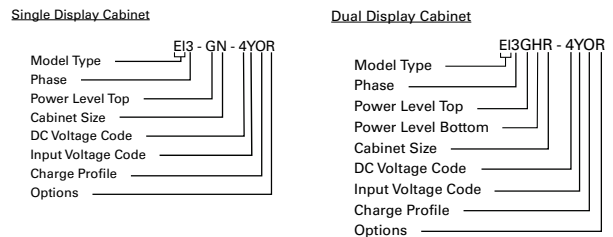
|          |           |
|----------|-----------|
| Part No. | EI3-IN-6Y |
|          |           |
| AH:      | 750 AH    |
|          |           |
| Modules: | 3         |
|          |           |
| AC Amps: | 14.4 A    |
|          |           |
| DC Amps. | 120 A     |

### 2.1.4. Name plate label definitions

| Item                 | Description  |
|----------------------|--|
| <b>UL Model No</b>   | UL recognized number that indicates the ratings of the cabinet at its full capacity  |
| <b>Serial Number</b> | Provides date code   |
| <b>Battery type</b>  | L-A: Lead Acid; Li-ion: Lithium-ion  |
| <b>Max AH</b>        | Maximum amp-hours capacity of this cabinet   |
| <b>No. Cells</b>     | Number of battery cells this unit will charge. <b>Any battery connected to the charger output should have the same number of cells</b>                                   |
| <b>Max Modules</b>   | Maximum number of modules the cabinet can hold   |
| <b>Hertz</b>         | AC input voltage frequency. <b>Under no conditions operate the charger at a different frequency or from a generator with unstable frequency</b>                          |
| <b>Phase</b>         | Number "3" indicates a Three Phase Charger and number "1" indicates a Single Phase Charger   |
| <b>AC Volts</b>      | Nominal voltage for which this charger is rated to operate   |
| <b>Max AC Amps</b>   | Maximum AC Amps for which this cabinet is rated  |
| <b>Max DC Amps</b>   | Maximum output DC Amps for which this charger is rated   |
| <b>DC Volts</b>      | Nominal DC output voltage of the charger   |
| <b>Part Number</b>   | Indicates the complete information about the charger   |
| <b>AH</b>            | Largest Amperes-Hours (AH) capacity of the battery this charger is designed to charge efficiently as configured  |
| <b>Modules</b>       | Actual number of power modules installed in the charger cabinet  |
| <b>AC Amps</b>       | AC current drawn by the charger with the number of power modules shown in Configured Ratings nameplate   |
| <b>DC Amps</b>       | DC current that this charger will deliver to a discharged battery with the number of power modules installed   |
| <b>CEC</b>           | Logo is applied to chargers that are certified with the California Energy Commission in compliance with Appliance Efficiency Regulations                                 |
| <b>cULus</b>         | Logo is applied to chargers that have been tested to applicable standards and requirements by Underwriter Laboratories (UL) and the Canadian Standards Association (CSA) |



### 2.1.5. Part number decoder



### 2.1.6. Output power letter codes

| Letter Code | Output Power (kW) | Number Modules | Module Power (kW) |
|-------------|-------------------|----------------|-------------------|
| A           | 1.0               | 1              | 1.0               |
| B           | 2.0               | 2              | 1.0               |
| C           | 3.0               | 3              | 1.0               |
| D           | 4.0               | 4              | 1.0               |
| E           | 5.0               | 5              | 1.0               |
| F           | 6.0               | 6              | 1.0               |
| G           | 2.5/2.5*          | 1              | 3.5/2.5*          |
| H           | 7.0/5.0*          | 2              | 3.5/2.5*          |
| I           | 10.5/7.5*         | 3              | 3.5/2.5*          |
| J           | 14.0/10.0*        | 4              | 3.5/2.5*          |
| K           | 17.5              | 5              | 3.5               |
| L           | 21.0              | 6              | 3.5               |
| M           | 24.5              | 7              | 3.5               |
| N           | 28.0              | 8              | 3.5               |

\*Three Phase/Single Phase

### 2.1.7. Cabinet size (number of modules available) and DC cable size

| Letter Code | Module Positions | Standard Cable Gauge | Comments                   |
|-------------|------------------|----------------------|----------------------------|
| K           | 1                | 10 AWG               | One slot, 1 kW cabinet     |
| L           | 2                | 1/0                  | Two slot, 3.5 kW cabinet   |
| M           | 3                | 4 AWG                | Three slot, 1 kW cabinet   |
| N           | 4                | 3/0                  | Four slot, 3.5 kW cabinet  |
| P           | 6                | 2/0                  | Six slot, 1 kW cabinet     |
| P           | 6                | 3/0                  | Six slot, 3.5 kW cabinet   |
| R           | 8                | 3/0                  | Eight slot, 3.5 kW cabinet |

### 2.1.8. DC line voltage letter codes

| Number Code | Output Voltage(s) |
|-------------|-------------------|
| 1           | 12                |
| 2           | 24                |
| 3           | 36/48             |
| 4           | 24/36/48          |
| 5           | 72/80             |
| 6           | 64                |
| 7           | 60                |

### 2.1.9. AC line voltage letter codes

| Letter Code | Voltage(s) (volts rms) | Line Frequency (Hertz) | Comments        |
|-------------|------------------------|------------------------|-----------------|
| A           | 120                    | 50/60                  | 120 VAC only    |
| C           | 600                    | 50/60                  | 600 VAC only    |
| G           | 208/220/240            | 50/60                  | 208/220/240 VAC |
| Y           | 480                    | 50/60                  | 480 VAC only    |

### 2.1.10. Charge profile letter codes

| Letter Code | Charger Profile | Description   |
|-------------|-----------------|---|
| C           | Cold Storage    | IEI (constant current, constant voltage, constant current) type with several user configurable parameters specifically designed for cold storage applications.  |
| G           | Gel-Bloc        | IEI (constant current, constant voltage, constant current) charging profile designed for gelled electrolyte type sealed lead acid batteries.  |
| O           | Opportunity(*)  | Designed for opportunity charging operations. It includes a start rate of up to 25% C6 and an equalize charge performed once a week. The weekly equalize charge can be programmed to run automatically. |
| T           | NXBLOC          | Designed for NexSys <sup>®</sup> TPPL bloc batteries at 0.2 to 0.7 C6 charging rates.   |
| T2          | NXSTND          | Designed for NexSys <sup>®</sup> TPPL 2V batteries at 0.2 to 0.25 C6 charging rates.  |
| V           | VRLA            | IEIE (constant current, constant voltage, constant current, constant voltage) profile type for Valve Regulated Lead Acid (VRLA) batteries.  |

### 2.2. (\*) Opportunity profile options

**2.2.1. Operation:** In Opportunity charging mode, the user can charge the battery during breaks, lunch, or any available time during the work schedule. The Opportunity charge profile allows the battery to be safely charged while it is kept in a partial state of charge between 20% and 80% of C6 throughout the work week. Sufficient time should be scheduled after the weekly equalize charge to allow battery cooling and to perform periodical electrolyte level checks.

**2.2.2. Daily Charge:** This option can be set to add additional daily charging time, if the work schedule allows. It should be considered only when the daily work demand requires additional capacity.

### 2.3. Equalization charging

**2.3.1.** Equalization charging for traditional flooded lead acid batteries, performed after normal charging, balances the electrolyte densities in the battery's cells.

**2.3.2. NOTE:** The factory default is Daily Charge **DISABLED, 6-8 hours Equalize, Sunday at 00 hour for flooded, 2-hour week / maintenance charge for NexSys<sup>®</sup> battery charge profiles.**

### 2.4. Block out time

**2.4.1.** This function inhibits the charger from charging the battery during the block out time window. If a charge cycle has started before the block out window it is inhibited during the block out window and will automatically restart the charge cycle at the end of the block out window.

### 2.5. Refresh charging

**2.5.1.** Refresh or maintenance charging enables the charger to maintain the battery at maximum state of charge as long as it is attached to the charger.

### 2.6. Specialty charger option list

| Suffix   | Description                   |
|----------|-------------------------------|
| C6       | 6 Ft of AC Cord               |
| C10      | 10 Ft of AC Cord              |
| C12      | 12 Ft of AC Cord              |
| C18      | 18 Ft of AC cord              |
| L13      | 13 Ft of DC cable             |
| L18      | 18 Ft of DC cable             |
| L25      | 25 Ft of DC cable             |
| L30      | 30 Ft of DC cable             |
| PLC      | Programmable Logic Controller |
| R        | Remote ready                  |
| IR       | Remote Installed              |
| LM2      | Late Break/Early Make         |
| Ethernet | Network Connection            |

## 3. Safety Precautions

- Warning:** The shipping pallet must be removed for proper and safe operations.
- This manual contains important safety and operating instructions. Before using the battery charger, read all instructions, **cautions** and **warnings** on the battery charger, the battery and the product using the battery.
- Read and understand all setup and operating instructions before using the battery charger to prevent damage to the battery and to the charger.
- Do not** touch non-insulated parts of the output connector or the battery terminals to prevent electrical shock.
- During charge, lead acid batteries produce hydrogen gas which can explode if ignited. Never smoke, use an open flame or create sparks in the vicinity of the battery. Ventilate well when the battery is in an enclosed space.
- Unless charger is equipment with LM2 (Late Break/Early Make) feature **Do not** connect or disconnect the battery plug while the charger is on. Doing so will cause arcing and burning of the connector resulting in charger damage or battery explosion.
- Lead acid batteries contain sulfuric acid which causes burns. **Do not** get in eyes, on skin or on clothing. In cases of contact with eyes, flush immediately with clean water for 15 minutes. Seek medical attention immediately.
- Only factory-qualified personnel should install, set up and service this equipment. De-energize all AC and DC power connections before servicing the charger.
- The charger is **not** for outdoor use.
- Do not** expose the charger to moisture. Operating **conditions** should be 32°F (0°C) to 113°F (45°C); 0 to 70% relative humidity.
- Do not** operate the charger if it has been dropped, received a sharp impact, or otherwise damaged in any way.
- For continued protection and to reduce the risk of fire, install chargers on a non-combustible surface.
- For NexSys<sup>®</sup> iON batteries, use only EnerSys<sup>®</sup> battery packs that include the battery management system and all necessary protection for the battery pack integral to the pack.
- The DC cables of the charger emit low power magnetic fields in their surroundings (<5cm). People with medical implant devices should avoid being near charger while charging.

## 4. Installation

### 4.1. Location

- For safe operation, choose a location which is free of excess moisture, dust, combustible material, and corrosive fumes. Also, **avoid high temperature (above 113°F (45°C))** or potential liquid spill on the charger.
- Do not** obstruct the openings in the charger for air ventilation.
- Follow charger warning label when mounting on or over a combustible surface.
- It is recommended to mount the charger **at least 28 inches radial distance** away from the closest top edge of the battery.

## 4. Installation (cont.)

### 4.2. Cabinet mounting

- 4.2.1. The charger must be mounted on a wall, stand, shelf or floor in a vertical position. The minimum distance between two chargers must be 12 inches.
- 4.2.2. The charger must be installed with four 5/16-inch bolts or with the bracket supplied. Charger should be permanently fastened in place.
- 4.2.3. For shelf mounting, part number 159-6LA22723 is required – two per charger.

### 4.3. Electrical connections

- 4.3.1. To prevent failure of the charger, make sure it is connected to the correct line voltage. Follow your local and National Electric Code (NEC) in making these connections.
- 4.3.2. **WARNING: Make sure the power source is OFF and the battery is disconnected before connecting the input power to the terminals of the charger.**

### 4.4. Connecting input power

- 4.4.1. Connect the input power to the appropriate terminals and apply appropriate torque as follow:

| Phase | Power (kW) | Cabinet (Bay) | Terminals | Torque (in-lbs) |
|-------|------------|---------------|-----------|-----------------|
| 1     | 1          | 1 and 3       | L* N*     | 6               |
| 1     | 2.5/3.5    | 4             | L2 L3     | 15              |
| 3     | 2.5/3.5    | 4 and 6       | L1 L2 L3  | 15              |
| 3     | 2.5/3.5    | 8             | L1 L2 L3  | 25              |

\*For 208/220/240V 1 kW single phase, connect L1 to Terminal L and L2 to terminal N.

- 4.4.2. Three phase chargers are not phase rotation sensitive and work with a grounded Delta or Wye electrical service configuration.

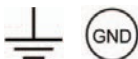
### 4.5. AC circuit protection

- 4.5.1. The user must provide suitable branch circuit protection and a disconnect method from the AC power supply to the charger to allow for safe servicing.
- 4.5.2. **CAUTION: Risk of Fire. Use only on circuits provided with branch circuit protection in accordance with the Breaker/Fuse Chart table in this manual, and the National Electrical Code, NFPA 70.**

| AC Amps (A) | Breaker Fuse Size (A) |
|-------------|-----------------------|
| 1 - 12      | 15                    |
| 12.1 - 16   | 20                    |
| 16.1 - 20   | 25                    |
| 20.1 - 24   | 30                    |
| 24.1 - 28   | 35                    |
| 28.1 - 32   | 40                    |
| 32.1 - 36   | 45                    |
| 36.1 - 40   | 50                    |
| 40.1 - 48   | 60                    |
| 48.1 - 56   | 70                    |
| 56.1 - 64   | 80                    |
| 64.1 - 72   | 90                    |
| 72.1 - 80   | 100                   |
| 80.1 - 88   | 110                   |
| 88.1 - 100  | 125                   |

### 4.6. Grounding the charger

- 4.6.1. Connect ground wire to terminal marked with either of the two symbols to the right and apply same torque value per the table in section 4.4.1.
- 4.6.2. **DANGER: FAILURE TO GROUND THE CHARGER COULD LEAD TO FATAL ELECTRIC SHOCK. Follow National Electric Code for ground wire sizing.**

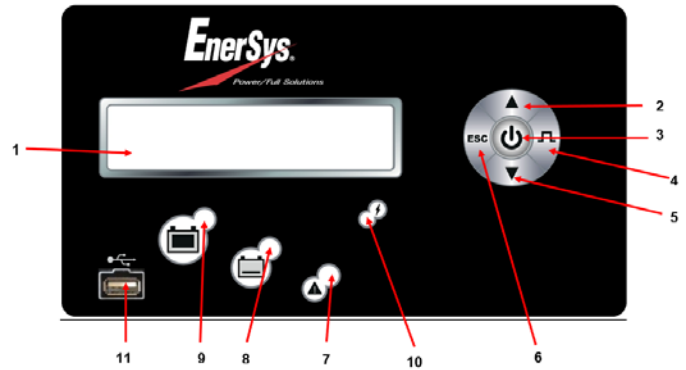


### 4.7. DC connector polarity

- 4.7.1. DC plug polarity
- 4.7.2. The charging cables are connected to the DC output of the charger: the red charging cable (POS) is connected to the positive busbar of the charger, and the black charging cable (NEG) is connected to the negative busbar of the charger. The output polarity of the charger must be observed when connecting to the battery. Improper connection will open the DC fuses in the power modules.

## 5. Operating Instructions

### 5.1. Control panel features



| Reference | Function                        | Description  |
|-----------|---------------------------------|--|
| 1         | LCD Display                     | Display charger operation info/menus   |
| 2         | Navigate UP button              | Navigate menus / Change values   |
| 3         | ENTER/STOP and START button     | Select menu items / Enter values / Stop and restart battery charge   |
| 4         | Navigate RIGHT/EQUALIZE button  | Scroll right / Start equalize or desulfation   |
| 5         | Navigate DOWN button            | Navigate menus / Change values   |
| 6         | Navigate LEFT/ESC button        | Enter main menu / Scroll left / Exit menus   |
| 7         | RED fault indicator             | OFF = no fault<br>FLASHING = ongoing fault detected<br>ON = fault  |
| 8         | YELLOW charging indicator       | OFF = charger off or battery not available<br>ON = charging in progress                                    |
| 9         | GREEN charge complete indicator | OFF = charger off or battery not available<br>FLASHING = cooling phase<br>ON = battery ready and available |
| 10        | BLUE AC supply indicator        | OFF = AC missing<br>ON = AC present  |
| 11        | USB port                        | Download memos / Upload software   |

### 5.2. Menu access

When the charger is idle, press and hold <ESC>, the Main Menu is then displayed. The main menu is automatically exited after 60 seconds of inactivity or can be exited voluntarily by pressing the <ESC> button.

#### 5.2.1. Main Menu

All menus are accessed from Main Menu; a detailed description of each menu is included in the next sections of this manual. The menus that require a password are not displayed until the correct password has been entered.

The menus provide access to the following functions:

- View last 200 charging cycles (Memo menu).
- View of faults, alarms, etc. (Status menu).
- USB functions (USB menu).
- Setting of date, language and others (Parameters menu).
- Management of password (Password menu)

### 5.3. Memorizations

#### 5.3.1. Memorizations Display Screen

The charger can display the details of the last 200 charge cycles. The display below shows one charge stored in memory. MEMO 1 is the latest charge memorized. After memorizing the two-hundredth charge, the oldest record is deleted and replaced by the next oldest.





## 5. Operating Instructions (cont.)

### 5.3.2. Displaying a Charge Cycle

Proceed as follows:

1. Select a record (MEMO x) using the ▲/▼ buttons.
2. Display the first History screen by pressing Enter.
3. Display the second History screen by pressing ▼
4. Return to the Main Menu by pressing Esc.

The charge history is displayed; use the ▲/▼ to scroll through the parameters.

### 5.3.3. Memorization Data

| Memo     | Description                                |
|----------|--|
| Profile  | Selected profile                           |
| Capacity | Rated battery capacity (AH)                |
| U batt   | Rated battery voltage (V)                  |
| Temp     | Battery temperature at start of change (F) |
| % init   | Battery voltage at start of charge (%)     |
| U start  | Battery voltage at end of charge (Vpc)     |
| U end    | Battery voltage at end of charge (Vpc)     |
| I end    | Current at end of charge                   |

| Memo     | Description                            |
|----------|--|
| Chg Time | Time of the change cycle (minutes)     |
| AH       | Amp-hours returned during charge cycle |
| SoC      | Start of charge date and time          |
| DBa      | Battery disconnect date and time       |
| Status   | Partial or complete                    |
| Fault    | Fault Codes                            |
| CFC      | Termination code (for service tech)    |

### 5.4. Status

This menu displays the status of the charger's internal counters (number of normal and partial charges, faults by type, etc.).

#### 5.4.1. Status Screen



| Status   | Description   |
|----------|---|
| Charge   | Total of number of charges - corresponds to the total of normally terminated charges and charges terminated with or by faults |
|          | Number of charges normally terminated   |
|          | Number of charges abnormally terminated   |
| DF1 etc. | Number of faults recorded by the charger (see Fault Codes)  |
| TH       | Number of charger temperature faults  |

### 5.5. USB

This menu provides access to the USB function to update software.

#### 5.5.1. Update Software

Updates charger's internal software. The software is provided by EnerSys®.

### 5.6. Parameters

#### 5.6.1. Date/Hour

Sets date and time of the charger. The clock has a battery backup which will preserve the time when power to the charger is off.

#### 5.6.2. Language

Selects the language displayed in the menus.

#### 5.6.3. Region

Selects the format for date, metric (EU) or imperial (US) units for temperature, length and cable gauge.

#### 5.6.4. Display

Set screen saver function.

Contrast

Modifies the display contrast level (20 to 29).

#### 5.6.5. Screen Saver

Enable or Disable the screen saver function.

#### 5.6.6. Delay

Set the time the screen stays illuminated. The delay time is adjustable in minutes up to one hour and 59 minutes.

#### 5.6.7. Daylight Savings

Enables or disables automatic clock adjustment for daylight savings time. When enabled, time will move ahead one hour at 02:00 on the second Sunday in March and will move back one hour at 02:00 on the first Sunday of November. The charger must be powered up at the time of the change for it to take effect.

### 5.7. Password

This is where the password is entered to gain access to service level menus by authorized EnerSys® service personnel.

### 5.8. Charging the Battery

At this point, the charger should have been set up by a qualified service person. Charging can only begin when a battery of the proper type, capacity and voltage is connected to the charger.

With the charger in wait mode (no battery connected) and without pressing the Stop/Start button, the display will show the following information:

#### 5.8.1. Charger Idle Display



| Ref. | Description                      |
|------|----------------------------------|
| 1    | Charge DC voltage/Charge current |
| 2    | Firmware version                 |
| 3    | Selected charge profile          |
| 4    | System time                      |
| 5    | System date                      |
| 6    | Connect battery                  |

#### 5.8.2. Starting a Charge Cycle

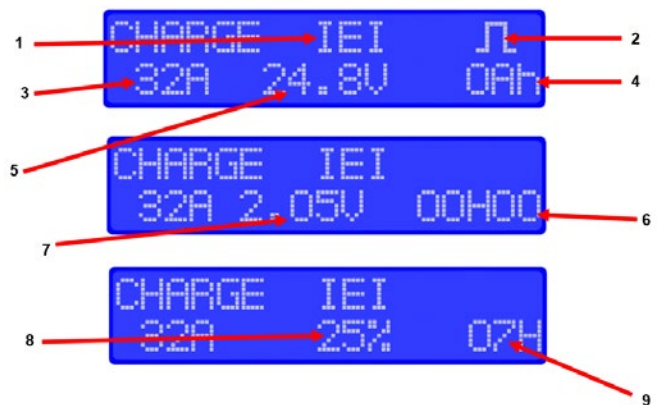
The charger will start automatically when a battery is connected or if the Stop/Start button is pushed if the battery is already connected.

#### 5.8.3. Delayed Start

If the charger was programmed for delayed start, charging will begin following that delay. When the battery is plugged in to the charger, the display shows the time remaining before the programmed charging starts.

#### 5.8.4. Effective Charge

A few moments into the effective charge, the display will begin alternating between the following charging information:



| Ref | Description                           |
|-----|---------------------------------------|
| 1   | Charge profile                        |
| 2   | Pending equalize symbol (if selected) |
| 3   | Charge current                        |
| 4   | Charge AH                             |
| 5   | Charge voltage (total V)              |
| 6   | Charge time                           |
| 7   | Charge voltage (V/c)                  |
| 8   | Percent of charge                     |
| 9   | Estimated remaining charge time       |

## 5. Operating Instructions (cont.)

### 5.8.5. End of Charge without Equalization

The green complete LED comes on after proper end of charge. The green complete LED is on and the display shows AVAIL. The display alternates between:

- Total charging time
- Amp/hrs restored to the battery

Any other lit LED indicates a problem during charging. Please refer to paragraph Control Panel for more information.

If the battery remains plugged in and refresh charge has been enabled, refreshes will occur to maintain an optimal charge.

The battery is now ready for use. Push the ON/OFF button before unplugging the battery.

### 5.8.6. End of Charge with Equalization

An Equalize charge can be started manually or automatically.

### 5.8.7. Manual Equalization Start

1. At the end of charge (green LED on or flashing), press on the <EQUALIZE> button. The equalize button can also be pressed any time during the charge and an equalize charge will be started after charging is complete.

NOTE: When an Equalize is manually started, the output current will be set to the value saved in the charger configuration.

2. The start of the equalization charge is indicated by the message EQUAL. During the equalization charge, the charger displays the output current and alternates: the battery voltage, voltage per cell and remaining time.

3. The battery will be available when the green LED comes back on and the display shows

4. The battery is now ready for use. If the battery remains plugged in and refresh charge has been enabled, refreshes will occur to maintain an optimal charge. Push the ON/OFF button before unplugging the battery.

### 5.8.8. Automatic Equalization Start

If an equalization day has been programmed in Charger configurations the equalization charge will start automatically on the programmed day of the week after charging is complete.

NOTE: The factory default IEI Equalize, 6 hour Equalize, Sunday at 00 hour.

The battery will be available when the green LED comes back on and the display shows AVAIL. The battery is now ready for use. If the battery remains plugged in and refresh charge has been enabled, refreshes will occur to maintain an optimal charge. Push the ON/OFF button before unplugging the battery.

## 6. Fault codes

In case of a fault, one of the corresponding fault codes listed below will appear on the display. If it is a critical fault, charging will stop and the red Fault LED will be illuminated.

### 6.1 Fault Display



## 7. Service and Troubleshooting

### 7.1. Fault Display

| Error  | Cause  | Solution  |
|--------|--|---|
| DF-CUR | Current fault before DF1 (can be low mains, phase missing or faulty module)              | Call for Service  |
| DF1    | Critical current fault, all modules are on DF1 fault (check the mains and phase missing) | Call for Service  |
| DF2    | Output fuse fault, battery reverse polarity  | Check the correct connection of the battery (reversed polarity cables) and the output fuse.   |
| DF3    | Incorrect Battery voltage for charger setting  | Too high or too low battery voltage. Battery voltage must be between 1.6V and 2.4V per cell for Lead Acid technology. Use proper charger for battery. |

## 7. Service and Troubleshooting (cont.)

### 7.1. Fault Display (cont.)

| Error            | Cause   | Solution  |
|------------------|---|---|
| DF4              | Overdischarge   | Charge continues.   |
| DF5              | Battery or charger setting inspection (Ah security, charge timeout, negative voltage Dv/Dt)                                     | DF5 appears when the charging profile has been achieved with a fault condition, that can be a current increase in regulation phase demonstrating a battery heating or a badly programmed regulation voltage, or the charging time is too long and has exceeded the safety limit. Check charging parameters: profile, temperature, capacity, cables. Check the battery (defective cells, high temperature, water level). |
| DF7              | Air pressure pump fault. Current Di-Dt, thermal run away.   | Call for Service  |
| TH               | Charger Thermal fault, all modules are on thermal fault (check air flow, and ambient temperature).                              | Verify the proper operation of the fans and/or absence of too high ambient temperature, or there is poor natural ventilation to the charger.  |
| TH-Amb           | Ambient temperature too high  | Move the charger in a place with lower ambient temperature. Follow instructions on installation and safety  |
| DFMOD            | Module faulty (refer to Module Menu to know the fault type)   | Call for Service  |
| MOD DEF          | Module is unplugged or not answer   | Clean the module or the backplane connection. If not working Call for Service   |
| MOD DFC          | Module Converter faulty, the module can't output the maximum current (check the AC phases, and AC fuse)                         | Check power supply.   |
| MODTH            | Module thermal fault (check the air flow, ambient, refer to Module Status Description to check the internal temperature sensor) | Check that the fan(s) is (are) working correctly and/or that the ambient temperature is not too high or whether there is poor natural ventilation to the charger. <b>If all modules are in thermal fault, a TH fault will follow.</b>   |
| MOD FUS          | Module output fuse damaged  | Call for Service  |
| MOD Err          | Module internal error   | Call for Service (check the Module status description)  |
| MOD VBAT         | Battery voltage is corrupted vs Fuse voltage and VLMFB vs Modules   | Call for Service (check the voltage reading on the Module Status Description)   |
| TH-LOCK          | Module is locked because of repetitive thermal events   | Check the Exx,CDV file to make action before to reset the locking or Call for Service   |
| POWER MODULE OFF | No CANBUS communication between display and module  | Check ribbon cable, AC mains, Module plugged, idle = off or Call for Service  |
| DF-VREG          | Modules don't follow the regulation voltage setting   | Call for Service (replace the faulty module)  |
| DF-ID            | Menu setting does not match the module type (ie: Cell setting = 12V, Module type 40 cells)                                      | Use correct module.   |
| CANBUSERROR      | CAN bus error   | Call for Service  |
| DEFEEP           | Memory access denied  | Call for Service  |
| DEFRTC           | clock access denied   | Call For Service  |

**7.2. Maintenance and service**

**7.2.1. WARNING: THERE ARE DANGEROUS VOLTAGES WITHIN THE BATTERY CHARGER CABINET. ONLY A QUALIFIED PERSON SHOULD ATTEMPT TO ADJUST OR SERVICE THIS BATTERY CHARGER.**

**7.2.2.** The charger requires minimal maintenance. Connections and terminals should be kept clean and tight. The unit (especially the heatsink) should be periodically cleaned with a low pressure air to prevent any excessive dirt build up on components. Care should be taken not to bump or move any adjustments during cleaning. Make sure that both the AC lines and the battery are disconnected before cleaning. The frequency of this type of maintenance depends on the environment in which this unit is installed. For service, contact your sales representative or call: 1-800-ENERSYS (USA) 1-800-363-7797

**7.2.3.** Any data, descriptions or specifications set forth herein are subject to change without notice. Before using the product(s), the user is advised and cautioned to make its own determination and assessment of the suitability of the product(s) for the specific use in question and is further advised against relying on the information contained herein as it may relate to any general use or indistinct application. It is the ultimate responsibility of the user to ensure that the product is suited, and the information is applicable to the user's specific application. The product(s) featured herein will be used under conditions beyond the manufacturer's control and therefore all warranties, either express or implied, concerning the fitness or suitability of such product(s) for any particular use or in any specific application, are disclaimed. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself.

8.1 kW Technical Specifications

| 1 kW Technical Specifications |             |                |       |              |           |           |    |                 |                   |
|-------------------------------|-------------|----------------|-------|--------------|-----------|-----------|----|-----------------|-------------------|
| Part Number                   | AC Input    |                |       |              |           | DC Output |    |                 | Charger Cable AWG |
|                               | Voltage     | Max Amps       | Phase | Min Cord AWG | NEMA Plug | Cells     | kW | Max Current (A) |                   |
| EI1-AK-1A                     | 120         | 4.7            | 1     | 16           | 5-15      | 6         | 1  | 35              | 10 AWG            |
| EI1-AK-2A                     | 120         | 5.4            | 1     | 16           | 5-15      | 12        | 1  | 20              | 10 AWG            |
| EI1-AK-3A                     | 120         | 6              | 1     | 16           | 5-15      | 18/24     | 1  | 14/11           | 10 AWG            |
| EI1-AM-1A                     | 120         | 4.7            | 1     | 16           | 5-15      | 6         | 1  | 35              | 4 AWG             |
| EI1-BM-1A                     | 120         | 9.4            | 1     | 16           | 5-15      | 6         | 2  | 70              | 4 AWG             |
| EI1-BM-2A                     | 120         | 10.8           | 1     | 16           | 5-15      | 12        | 2  | 40              | 4 AWG             |
| EI1-BM-3A                     | 120         | 12             | 1     | 16           | 5-15      | 18/24     | 2  | 28/22           | 4 AWG             |
| EI1-CM-1A                     | 120         | 14.4           | 1     | 14           | 5-20      | 6         | 3  | 105             | 4 AWG             |
| EI1-CM-2A                     | 120         | 16.2           | 1     | 12           | 5-20      | 12        | 3  | 60              | 4 AWG             |
| EI1-CM-3A                     | 120         | 18             | 1     | 12           | 5-30      | 18/24     | 3  | 42/33           | 4 AWG             |
| EI1-BP-1A                     | 120         | 9.4            | 1     | 16           | 5-15      | 6         | 2  | 70              | 2/0               |
| EI1-BP-2A                     | 120         | 10.8           | 1     | 16           | 5-15      | 12        | 2  | 40              | 2/0               |
| EI1-BP-3A                     | 120         | 12             | 1     | 16           | 5-15      | 18/24     | 2  | 28/22           | 2/0               |
| EI1-CP-1A                     | 120         | 14.4           | 1     | 14           | 5-20      | 6         | 3  | 105             | 2/0               |
| EI1-CP-2A                     | 120         | 16.2           | 1     | 12           | 5-20      | 12        | 3  | 60              | 2/0               |
| EI1-CP-3A                     | 120         | 18             | 1     | 12           | 5-30      | 18/24     | 3  | 42/33           | 2/0               |
| EI1-DP-1A                     | 120         | 18.8           | 1     | 12           | 5-30      | 6         | 4  | 140             | 2/0               |
| EI1-DP-2A                     | 120         | 21.6           | 1     | 12           | 5-30      | 12        | 4  | 80              | 2/0               |
| EI1-DP-3A                     | 120         | 24             | 1     | 12           | 5-30      | 18/24     | 4  | 56/44           | 2/0               |
| EI1-EP-1A                     | 120         | 23.5           | 1     | 12           | 5-30      | 6         | 5  | 175             | 2/0               |
| EI1-EP-2A                     | 120         | 27             | 1     | 8            | 5-50      | 12        | 5  | 100             | 2/0               |
| EI1-EP-3A                     | 120         | 30             | 1     | 8            | 5-50      | 18/24     | 5  | 70/55           | 2/0               |
| EI1-FP-1A                     | 120         | 28.2           | 1     | 8            | 5-50      | 6         | 6  | 210             | 2/0               |
| EI1-FP-2A                     | 120         | 32.4           | 1     | 8            | 5-50      | 12        | 6  | 120             | 2/0               |
| EI1-FP-3A                     | 120         | 36             | 1     | 8            | 5-50      | 18/24     | 6  | 84/66           | 2/0               |
| EI1-AM-1G                     | 208/220/240 | 2.8/2.6/2.4    | 1     | 16           | 6-15      | 6         | 1  | 35              | 4 AWG             |
| EI1-AM-2G                     | 208/220/240 | 5.4/5.1/4.7    | 1     | 16           | 6-15      | 12        | 1  | 35              | 4 AWG             |
| EI1-BM-1G                     | 208/220/240 | 5.6/5.2/4.8    | 1     | 16           | 6-15      | 6         | 2  | 70              | 4 AWG             |
| EI1-BM-2G                     | 208/220/240 | 10.8/10.2/9.4  | 1     | 16           | 6-15      | 12        | 2  | 70              | 4 AWG             |
| EI1-BM-3G                     | 208/220/240 | 11.6/11.2/10   | 1     | 16           | 6-15      | 18/24     | 2  | 48/36           | 4 AWG             |
| EI1-CM-1G                     | 208/220/240 | 8.4/7.8/7.2    | 1     | 16           | 6-15      | 6         | 3  | 105             | 4 AWG             |
| EI1-CM-2G                     | 208/220/240 | 16.2/15.3/14.1 | 1     | 12           | 6-20      | 12        | 3  | 105             | 4 AWG             |
| EI1-CM-3G                     | 208/220/240 | 17.4/16.8/15   | 1     | 12           | 6-30      | 18/24     | 3  | 72/54           | 4 AWG             |
| EI1-BP-1G                     | 208/220/240 | 5.6/5.2/4.8    | 1     | 16           | 6-15      | 6         | 2  | 70              | 2/0               |
| EI1-BP-2G                     | 208/220/240 | 10.8/10.2/9.4  | 1     | 16           | 6-15      | 12        | 2  | 70              | 2/0               |
| EI1-BP-3G                     | 208/220/240 | 11.6/11.2/10   | 1     | 16           | 6-15      | 18/24     | 2  | 48/36           | 2/0               |
| EI1-CP-1G                     | 208/220/240 | 8.4/7.8/7.2    | 1     | 16           | 6-15      | 6         | 3  | 105             | 2/0               |
| EI1-CP-2G                     | 208/220/240 | 16.2/15.3/14.1 | 1     | 12           | 6-20      | 12        | 3  | 105             | 2/0               |
| EI1-CP-3G                     | 208/220/240 | 17.4/16.8/15   | 1     | 12           | 6-30      | 18/24     | 3  | 72/54           | 2/0               |
| EI1-DP-1G                     | 208/220/240 | 11.2/10.4/9.6  | 1     | 16           | 6-15      | 6         | 4  | 140             | 2/0               |
| EI1-DP-2G                     | 208/220/240 | 21.6/20.4/18.8 | 1     | 12           | 6-30      | 12        | 4  | 140             | 2/0               |
| EI1-DP-3G                     | 208/220/240 | 23.2/22.4/20   | 1     | 12           | 6-30      | 18/24     | 4  | 96/72           | 2/0               |
| EI1-EP-1G                     | 208/220/240 | 14/13/12       | 1     | 14           | 6-20      | 6         | 5  | 175             | 2/0               |
| EI1-EP-2G                     | 208/220/240 | 27/25.5/23.5   | 1     | 8            | 6-50      | 12        | 5  | 175             | 2/0               |
| EI1-EP-3G                     | 208/220/240 | 29/28/25       | 1     | 8            | 6-50      | 18/24     | 5  | 120/90          | 2/0               |
| EI1-FP-1G                     | 208/220/240 | 16.8/15.6/14.4 | 1     | 12           | 6-30      | 6         | 6  | 210             | 2/0               |
| EI1-FP-2G                     | 208/220/240 | 32.4/30.6/28.2 | 1     | 8            | 6-50      | 12        | 6  | 210             | 2/0               |
| EI1-FP-3G                     | 208/220/240 | 34.8/33.6/30   | 1     | 8            | 6-50      | 18/24     | 6  | 144/108         | 2/0               |



9. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |             |                |       |              |           |           |              |                            |                   |
|---------------------------------|-------------|----------------|-------|--------------|-----------|-----------|--------------|----------------------------|-------------------|
| Part Number                     | AC Input    |                |       |              |           | DC Output |              |                            | Charger Cable AWG |
|                                 | Voltage     | Max Amps       | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)            |                   |
| EI3-GL-4G                       | 208/220/240 | 7.4/7.0/6.4    | 3     | 14           | L15-20    | 12/18/24  | 3.5          | 40/40/40                   | 1/0               |
| EI3-HL-4G                       | 208/220/240 | 14.8/14.0/12.8 | 3     | 14           | L15-20    | 12/18/24  | 7            | 80/80/80                   | 1/0               |
| EI3-GN-4G                       | 208/220/240 | 7.4/7.0/6.4    | 3     | 14           | L15-20    | 12/18/24  | 3.5          | 40/40/40                   | 3/0               |
| EI3-HN-4G                       | 208/220/240 | 14.8/14.0/12.8 | 3     | 14           | L15-20    | 12/18/24  | 7            | 80/80/80                   | 3/0               |
| EI3-IN-4G                       | 208/220/240 | 22.2/21.0/19.2 | 3     | 10           | L15-30    | 12/18/24  | 10.5         | 120/120/120                | 3/0               |
| EI3-JN-4G                       | 208/220/240 | 29.6/28.0/25.6 | 3     | 8            | CS8365C*  | 12/18/24  | 14           | 160/160/160                | 3/0               |
| EI3-IP-4G                       | 208/220/240 | 22.2/21.0/19.2 | 3     | 10           | L15-30    | 12/18/24  | 10.5         | 120/120/120                | 3/0               |
| EI3-JP-4G                       | 208/220/240 | 29.6/28.0/25.6 | 3     | 8            | CS8365C*  | 12/18/24  | 14           | 160/160/160                | 3/0               |
| EI3-KP-4G                       | 208/220/240 | 37.0/35.0/32.0 | 3     | 8            | HW**      | 12/18/24  | 17.5         | 200/200/200                | 3/0               |
| EI3-LP-4G                       | 208/220/240 | 44.4/42.0/38.4 | 3     | 6            | HW**      | 12/18/24  | 21           | 240/240/240                | 3/0               |
| EI3-MR-4G                       | 208/220/240 | 51.8/49/44.8   | 3     | 6            | HW**      | 12/18/24  | 24.5         | 280/280/280                | 3/0               |
| EI3-NR-4G                       | 208/220/240 | 59.2/56/51.2   | 3     | 4            | HW**      | 12/18/24  | 28           | 320/320/320                | 3/0               |
| EI3GGR-4G                       | 208/220/240 | 14.8/14.0/12.8 | 3     | 14           | L15-20    | 12/18/24  | 3.5<br>3.5   | 40/40/40<br>40/40/40       | 3/0<br>3/0        |
| EI3GHR-4G                       | 208/220/240 | 22.2/21.0/19.2 | 3     | 10           | L15-30    | 12/18/24  | 3.5<br>7.0   | 40/40/40<br>80/80/80       | 3/0<br>3/0        |
| EI3HHR-4G                       | 208/220/240 | 29.6/28.0/25.6 | 3     | 8            | CS6365C*  | 12/18/24  | 7.0<br>7.0   | 80/80/80<br>80/80/80       | 3/0<br>3/0        |
| EI3HIR-4G                       | 208/220/240 | 37.0/35.0/32.0 | 3     | 6            | HW**      | 12/18/24  | 7.0<br>10.5  | 80/80/80<br>120/120/120    | 3/0<br>3/0        |
| EI3IIR-4G                       | 208/220/240 | 44.4/42.0/38.4 | 3     | 6            | HW**      | 12/18/24  | 10.5<br>10.5 | 120/120/120<br>120/120/120 | 3/0<br>3/0        |
| EI3IJR-4G                       | 208/220/240 | 51.8/49.0/44.8 | 3     | 6            | HW**      | 12/18/24  | 10.5<br>14.0 | 120/120/120<br>160/160/160 | 3/0<br>3/0        |
| EI3JJR-4G                       | 208/220/240 | 59.2/56.0/51.2 | 3     | 4            | HW**      | 12/18/24  | 14.0<br>14.0 | 160/160/160<br>160/160/160 | 3/0<br>3/0        |
| EI3-GL-5G                       | 208/220/240 | 7.7/7.3/6.7    | 3     | 14           | L15-20    | 36/40     | 3.5          | 25/25                      | 1/0               |
| EI3-HL-5G                       | 208/220/240 | 15.4/14.6/13.4 | 3     | 10           | L15-30    | 36/40     | 7            | 50/50                      | 1/0               |

\* Non NEMA plug \*\* Hard-Wired only

9. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |             |                |       |              |           |            |              |                    |                   |
|---------------------------------|-------------|----------------|-------|--------------|-----------|------------|--------------|--------------------|-------------------|
| Part Number                     | AC Input    |                |       |              |           | DC Output  |              |                    | Charger Cable AWG |
|                                 | Voltage     | Max Amps       | Phase | Min Cord AWG | NEMA Plug | Cells      | kW           | Max Current (A)    |                   |
| EI3-GN-5G                       | 208/220/240 | 7.7/7.3/6.7    | 3     | 14           | L15-20    | 36/40      | 3.5          | 25/25              | 3/0               |
| EI3-HN-5G                       | 208/220/240 | 15.4/14.6/13.4 | 3     | 10           | L15-30    | 36/40      | 7            | 50/50              | 3/0               |
| EI3-IN-5G                       | 208/220/240 | 23.1/21.9/20.1 | 3     | 10           | L15-30    | 36/40      | 10.5         | 75/75              | 3/0               |
| EI3-JN-5G                       | 208/220/240 | 30.8/29.2/26.8 | 3     | 8            | CS8365C*  | 36/40      | 14           | 100/100            | 3/0               |
| EI3-IP-5G                       | 208/220/240 | 23.1/21.9/20.1 | 3     | 10           | L15-30    | 36/40      | 10.5         | 75/75              | 3/0               |
| EI3-JP-5G                       | 208/220/240 | 30.8/29.2/26.8 | 3     | 8            | CS8365C*  | 36/40      | 14           | 100/100            | 3/0               |
| EI3-KP-5G                       | 208/220/240 | 38.5/36.5/33.5 | 3     | 6            | HW**      | 36/40      | 17.5         | 125/125            | 3/0               |
| EI3-LP-5G                       | 208/220/240 | 46.2/43.8/40.2 | 3     | 6            | HW**      | 36/40      | 21           | 150/150            | 3/0               |
| EI3-MR-5G                       | 208/220/240 | 53.9/51.1/46.9 | 3     | 6            | HW**      | 36/40      | 24.5         | 175/175            | 3/0               |
| EI3-NR-5G                       | 208/220/240 | 61.6/58.4/53.6 | 3     | 4            | HW**      | 36/40      | 28           | 200/200            | 3/0               |
| EI3GGR-5G                       | 208/220/240 | 15.4/14.6/13.4 | 3     | 12           | L15-30    | 36/40      | 3.5<br>3.5   | 25/25<br>25/25     | 3/0<br>3/0        |
| EI3GHR-5G                       | 208/220/240 | 23.1/21.9/20.1 | 3     | 10           | L15-30    | 36/40      | 3.5<br>7.0   | 25/25<br>50/50     | 3/0<br>3/0        |
| EI3HHR-5G                       | 208/220/240 | 30.8/29.2/26.8 | 3     | 8            | CS6365C*  | 36/40      | 7.0<br>7.0   | 50/50<br>50/50     | 3/0<br>3/0        |
| EI3HIR-5G                       | 208/220/240 | 38.5/36.5/33.5 | 3     | 6            | HW**      | 36/40      | 7.0<br>10.5  | 50/50<br>75/75     | 3/0<br>3/0        |
| EI3IIR-5G                       | 208/220/240 | 46.2/43.8/40.2 | 3     | 6            | HW**      | 36/40      | 10.5<br>10.5 | 75/75<br>75/75     | 3/0<br>3/0        |
| EI3JIR-5G                       | 208/220/240 | 53.9/51.1/46.9 | 3     | 6            | HW**      | 36/40      | 10.5<br>14.0 | 75/75<br>100/100   | 3/0<br>3/0        |
| EI3JIR-5G                       | 208/220/240 | 61.6/58.4/53.6 | 3     | 4            | HW**      | 36/40      | 14.0<br>14.0 | 100/100<br>100/100 | 3/0<br>3/0        |
| EI3-GL-4Y                       | 400         | 5.6            | 3     | 14           | L16-20    | 12, 18, 24 | 3.5          | 70/65/60           | 1/0               |
| EI3-HL-4Y                       | 400         | 11.2           | 3     | 14           | L16-20    | 12, 18, 24 | 7            | 140/130/120        | 1/0               |
| EI3-GN-4Y                       | 400         | 5.6            | 3     | 14           | L16-20    | 12, 18, 24 | 3.5          | 70/65/60           | 3/0               |
| EI3-HN-4Y                       | 400         | 11.2           | 3     | 14           | L16-20    | 12, 18, 24 | 7            | 140/130/120        | 3/0               |
| EI3-IN-4Y                       | 400         | 16.8           | 3     | 12           | L16-30    | 12, 18, 24 | 10.5         | 210/195/180        | 3/0               |
| EI3-JN-4Y                       | 400         | 22.4           | 3     | 10           | L16-30    | 12, 18, 24 | 14           | 280/260/240        | 3/0               |

\* Non NEMA plug \*\* Hard-Wired only

9. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |          |          |       |              |           |           |              |                            |                   |
|---------------------------------|----------|----------|-------|--------------|-----------|-----------|--------------|----------------------------|-------------------|
| Part Number                     | AC Input |          |       |              |           | DC Output |              |                            | Charger Cable AWG |
|                                 | Voltage  | Max Amps | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)            |                   |
| EI3-IP-4Y                       | 400      | 16.8     | 3     | 12           | L16-30    | 12/18/24  | 10.5         | 210/195/180                | 3/0               |
| EI3-JP-4Y                       | 400      | 22.4     | 3     | 10           | L16-30    | 12/18/24  | 14           | 280/260/240                | 3/0               |
| EI3-KP-4Y                       | 400      | 28       | 3     | 8            | CS8165C*  | 12/18/24  | 17.5         | 320/320/300                | 3/0               |
| EI3-LP-4Y                       | 400      | 33.6     | 3     | 8            | CS8165C*  | 12/18/24  | 21           | 320/320/320                | 3/0               |
| EI3GGR-4Y                       | 400      | 11.2     | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>3.5   | 70/65/60<br>70/65/60       | 3/0<br>3/0        |
| EI3GHR-4Y                       | 400      | 16.8     | 3     | 12           | L16-30    | 12/18/24  | 3.5<br>7.0   | 70/65/60<br>140/130/120    | 3/0<br>3/0        |
| EI3HHR-4Y                       | 400      | 22.4     | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>7.0   | 140/130/120<br>160/160/120 | 3/0<br>3/0        |
| EI3HIR-4Y                       | 400      | 28       | 3     | 8            | CS8165C*  | 12/18/24  | 7.0<br>10.5  | 140/130/120<br>210/195/180 | 3/0<br>3/0        |
| EI3IIR-4Y                       | 400      | 33.6     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>10.5 | 210/195/180<br>210/195/180 | 3/0<br>3/0        |
| EI3IJR-4Y                       | 400      | 39.2     | 3     | 6            | HW**      | 12/18/24  | 10.5<br>14.0 | 210/195/180<br>280/260/240 | 3/0<br>3/0        |
| EI3JJR-4Y                       | 400      | 44.8     | 3     | 6            | HW**      | 12/18/24  | 14.0<br>14.0 | 280/260/240<br>280/260/240 | 3/0<br>3/0        |
| EI3-GL-5Y                       | 400      | 5.6      | 3     | 14           | L16-20    | 36/40     | 3.5          | 40/36                      | 1/0               |
| EI3-HL-5Y                       | 400      | 11.2     | 3     | 14           | L16-20    | 36/40     | 7            | 80/72                      | 1/0               |
| EI3-GN-5Y                       | 400      | 5.6      | 3     | 14           | L16-20    | 36/40     | 3.5          | 40/36                      | 3/0               |
| EI3-HN-5Y                       | 400      | 11.2     | 3     | 14           | L16-20    | 36/40     | 7            | 80/72                      | 3/0               |
| EI3-IN-5Y                       | 400      | 16.8     | 3     | 12           | L16-30    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JN-5Y                       | 400      | 22.4     | 3     | 10           | L16-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-IP-5Y                       | 400      | 16.8     | 3     | 12           | L16-30    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JP-5Y                       | 400      | 22.4     | 3     | 10           | L16-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-KP-5Y                       | 400      | 28       | 3     | 8            | CS8165C*  | 36/40     | 17.5         | 200/180                    | 3/0               |
| EI3-LP-5Y                       | 400      | 33.6     | 3     | 8            | CS8165C*  | 36/40     | 21           | 240/216                    | 3/0               |
| EI3-MR-5Y                       | 400      | 39.2     | 3     | 6            | HW**      | 36/40     | 24.5         | 280/252                    | 3/0               |
| EI3-NR-5Y                       | 400      | 38.4     | 3     | 6            | HW**      | 36/40     | 28           | 320/288                    | 3/0               |

\* Non NEMA plug \*\* Hard-Wired only

9. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |          |          |       |              |           |           |              |                    |                   |
|---------------------------------|----------|----------|-------|--------------|-----------|-----------|--------------|--------------------|-------------------|
| Part Number                     | AC Input |          |       |              |           | DC Output |              |                    | Charger Cable AWG |
|                                 | Voltage  | Max Amps | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)    |                   |
| EI3GGR-5Y                       | 400      | 9.6      | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>3.5   | 40/36<br>40/36     | 3/0<br>3/0        |
| EI3GHR-5Y                       | 400      | 14.4     | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>7.0   | 40/36<br>80/72     | 3/0<br>3/0        |
| EI3HHR-5Y                       | 400      | 19.2     | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>7.0   | 80/72<br>80/72     | 3/0<br>3/0        |
| EI3HIR-5Y                       | 400      | 24       | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>10.5  | 80/72<br>120/108   | 3/0<br>3/0        |
| EI3IIR-5Y                       | 400      | 28.8     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>10.5 | 120/108<br>120/108 | 3/0<br>3/0        |
| EI3IJR-5Y                       | 400      | 33.6     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>14.0 | 120/108<br>160/144 | 3/0<br>3/0        |
| EI3JJR-5Y                       | 400      | 38.4     | 3     | 6            | HW**      | 12/18/24  | 14.0<br>14.0 | 160/144<br>160/144 | 3/0<br>3/0        |
| EI1-GL-2Y                       | 480      | 5.8      | 1     | 14           | L8-20     | 12        | 3.5          | 80                 | 1/0               |
| EI1-GL-3Y                       | 480      | 7.1      | 1     | 14           | L8-20     | 18/24     | 3.5          | 50/50              | 1/0               |
| EI1-HL-2Y                       | 480      | 11.6     | 1     | 14           | L8-20     | 12        | 7            | 160                | 1/0               |
| EI1-HL-3Y                       | 480      | 14.2     | 1     | 14           | L8-20     | 18/24     | 7            | 100/100            | 1/0               |
| EI1-HN-2Y                       | 480      | 11.6     | 1     | 14           | L8-20     | 12        | 7            | 160                | 3/0               |
| EI1-HN-3Y                       | 480      | 14.2     | 1     | 14           | L8-20     | 18/24     | 7            | 100/100            | 3/0               |
| EI1-IN-2Y                       | 480      | 17.4     | 1     | 12           | L8-30     | 12        | 10.5         | 240                | 3/0               |
| EI1-IN-3Y                       | 480      | 21.3     | 1     | 12           | L8-30     | 18/24     | 10.5         | 150/150            | 3/0               |
| EI1-JN-2Y                       | 480      | 23.2     | 1     | 12           | L8-30     | 12        | 14           | 320                | 3/0               |
| EI1-JN-3Y                       | 480      | 28.4     | 1     | 8            | CS8465C*  | 18/24     | 14           | 200/200            | 3/0               |
| EI3-GL-4Y                       | 480      | 4.8      | 3     | 14           | L16-20    | 12/18/24  | 3.5          | 80/80/60           | 1/0               |
| EI3-HL-4Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 12/18/24  | 7            | 160/160/120        | 1/0               |
| EI3-GN-4Y                       | 480      | 4.8      | 3     | 14           | L16-20    | 12/18/24  | 3.5          | 80/80/60           | 3/0               |
| EI3-HN-4Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 12/18/24  | 7            | 160/160/120        | 3/0               |
| EI3-IN-4Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 12/18/24  | 10.5         | 240/240/180        | 3/0               |
| EI3-JN-4Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 12/18/24  | 14           | 320/320/240        | 3/0               |
| EI3-IP-4Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 12/18/24  | 10.5         | 240/240/180        | 3/0               |

\* Non NEMA plug \*\* Hard-Wired only

8. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |          |          |       |              |           |           |              |                            |                   |
|---------------------------------|----------|----------|-------|--------------|-----------|-----------|--------------|----------------------------|-------------------|
| Part Number                     | AC Input |          |       |              |           | DC Output |              |                            | Charger Cable AWG |
|                                 | Voltage  | Max Amps | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)            |                   |
| EI3-JP-4Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 12/18/24  | 14           | 320/320/240                | 3/0               |
| EI3-KP-4Y                       | 480      | 24       | 3     | 10           | L16-30    | 12/18/24  | 17.5         | 320/320/300                | 3/0               |
| EI3-LP-4Y                       | 480      | 28.8     | 3     | 8            | CS8165C*  | 12/18/24  | 21           | 320/320/320                | 3/0               |
| EI3GGR-4Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>3.5   | 80/80/60<br>80/80/60       | 3/0<br>3/0        |
| EI3GHR-4Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>7.0   | 80/80/60<br>160/160/120    | 3/0<br>3/0        |
| EI3HHR-4Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>7.0   | 160/160/120<br>160/160/120 | 3/0<br>3/0        |
| EI3HIR-4Y                       | 480      | 24       | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>10.5  | 160/160/120<br>240/240/180 | 3/0<br>3/0        |
| EI3IIR-4Y                       | 480      | 28.8     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>10.5 | 240/240/180<br>240/240/180 | 3/0<br>3/0        |
| EI3IJR-4Y                       | 480      | 33.6     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>14.0 | 240/240/180<br>320/320/240 | 3/0<br>3/0        |
| EI3JJR-4Y                       | 480      | 38.4     | 3     | 6            | HW**      | 12/18/24  | 14.0<br>14.0 | 320/320/240<br>320/320/240 | 3/0<br>3/0        |
| EI3-GL-5Y                       | 480      | 4.8      | 3     | 14           | L16-20    | 36/40     | 3.5          | 40/36                      | 1/0               |
| EI3-HL-5Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 36/40     | 7            | 80/72                      | 1/0               |
| EI3-GN-5Y                       | 480      | 4.8      | 3     | 14           | L16-20    | 36/40     | 3.5          | 40/36                      | 3/0               |
| EI3-HN-5Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 36/40     | 7            | 80/72                      | 3/0               |
| EI3-IN-5Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JN-5Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-IP-5Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JP-5Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-KP-5Y                       | 480      | 24       | 3     | 10           | L16-30    | 36/40     | 17.5         | 200/180                    | 3/0               |
| EI3-LP-5Y                       | 480      | 28.8     | 3     | 8            | CS8165C*  | 36/40     | 21           | 240/216                    | 3/0               |
| EI3-IN-6Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 64        | 10.5         | 120                        | 2/0               |
| EI3-MR-5Y                       | 480      | 33.6     | 3     | 8            | CS8165C*  | 36/40     | 24.5         | 280/252                    | 3/0               |
| EI3-NR-5Y                       | 480      | 38.4     | 3     | 6            | HW**      | 36/40     | 28           | 320/288                    | 3/0               |

\* Non NEMA plug \*\* Hard-Wired only



8. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |          |          |       |              |           |           |              |                            |                   |
|---------------------------------|----------|----------|-------|--------------|-----------|-----------|--------------|----------------------------|-------------------|
| Part Number                     | AC Input |          |       |              |           | DC Output |              |                            | Charger Cable AWG |
|                                 | Voltage  | Max Amps | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)            |                   |
| EI3GGR-5Y                       | 480      | 9.6      | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>3.5   | 40/36<br>40/36             | 3/0<br>3/0        |
| EI3GHR-5Y                       | 480      | 14.4     | 3     | 14           | L16-20    | 12/18/24  | 3.5<br>7.0   | 40/36<br>80/72             | 3/0<br>3/0        |
| EI3HHR-5Y                       | 480      | 19.2     | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>7.0   | 80/72<br>80/72             | 3/0<br>3/0        |
| EI3HIR-5Y                       | 480      | 24       | 3     | 10           | L16-30    | 12/18/24  | 7.0<br>10.5  | 80/72<br>120/108           | 3/0<br>3/0        |
| EI3IIR-5Y                       | 480      | 28.8     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>10.5 | 120/108<br>120/108         | 3/0<br>3/0        |
| EI3IJR-5Y                       | 480      | 33.6     | 3     | 8            | CS8165C*  | 12/18/24  | 10.5<br>14.0 | 120/108<br>160/144         | 3/0<br>3/0        |
| EI3JJR-5Y                       | 480      | 38.4     | 3     | 6            | HW**      | 12/18/24  | 14.0<br>14.0 | 160/144<br>160/144         | 3/0<br>3/0        |
| EI3-GL-4C                       | 600      | 3.8      | 3     | 10           | L17-30    | 12/18/24  | 3.5          | 80/80/60                   | 1/0               |
| EI3-HL-4C                       | 600      | 7.6      | 3     | 10           | L17-30    | 12/18/24  | 7            | 160/160/120                | 1/0               |
| EI3-GN-4C                       | 600      | 3.8      | 3     | 10           | L17-30    | 12/18/24  | 3.5          | 80/80/60                   | 3/0               |
| EI3-HN-4C                       | 600      | 7.6      | 3     | 10           | L17-30    | 12/18/24  | 7            | 160/160/120                | 3/0               |
| EI3-IN-4C                       | 600      | 11.4     | 3     | 10           | L17-30    | 12/18/24  | 10.5         | 240/240/180                | 3/0               |
| EI3-JN-4C                       | 600      | 15.2     | 3     | 12           | L17-30    | 12/18/24  | 14           | 320/320/240                | 3/0               |
| EI3-IP-4C                       | 600      | 11.4     | 3     | 10           | L17-30    | 12/18/24  | 10.5         | 240/240/180                | 3/0               |
| EI3-JP-4C                       | 600      | 15.2     | 3     | 12           | L17-30    | 12/18/24  | 14           | 320/320/240                | 3/0               |
| EI3-KP-4C                       | 600      | 19       | 3     | 10           | L17-30    | 12/18/24  | 17.5         | 320/320/300                | 3/0               |
| EI3-LP-4C                       | 600      | 22.8     | 3     | 10           | L17-30    | 12/18/24  | 21           | 320/320/320                | 3/0               |
| EI3GGR-4C                       | 600      | 7.6      | 3     | 14           | L17-30    | 12/18/24  | 3.5<br>3.5   | 80/80/60<br>80/80/60       | 3/0<br>3/0        |
| EI3GHR-4C                       | 600      | 11.4     | 3     | 14           | L17-30    | 12/18/24  | 3.5<br>7.0   | 80/80/60<br>160/160/120    | 3/0<br>3/0        |
| EI3HHR-4C                       | 600      | 15.2     | 3     | 12           | L17-30    | 12/18/24  | 7.0<br>7.0   | 160/160/120<br>160/160/120 | 3/0<br>3/0        |

\* Non NEMA plug \*\* Hard-Wired only

8. 3.5 kW Technical Specifications

| 3.5 kW Technical Specifications |          |          |       |              |           |           |              |                            |                   |
|---------------------------------|----------|----------|-------|--------------|-----------|-----------|--------------|----------------------------|-------------------|
| Part Number                     | AC Input |          |       |              |           | DC Output |              |                            | Charger Cable AWG |
|                                 | Voltage  | Max Amps | Phase | Min Cord AWG | NEMA Plug | Cells     | kW           | Max Current (A)            |                   |
| EI3HIR-4C                       | 600      | 19       | 3     | 10           | L17-30    | 12/18/24  | 7.0<br>10.5  | 160/160/120<br>240/240/180 | 3/0<br>3/0        |
| EI3IIR-4C                       | 600      | 22.8     | 3     | 10           | L17-30    | 12/18/24  | 10.5<br>10.5 | 240/240/180<br>240/240/180 | 3/0<br>3/0        |
| EI3IJR-4C                       | 600      | 26.6     | 3     | 8            | 3765C*    | 12/18/24  | 10.5<br>14.0 | 240/240/180<br>320/320/240 | 3/0<br>3/0        |
| EI3JJR-4C                       | 600      | 30.4     | 3     | 8            | 3765C*    | 12/18/24  | 14.0<br>14.0 | 320/320/240<br>320/320/240 | 3/0<br>3/0        |
| EI3-GL-5C                       | 600      | 3.8      | 3     | 10           | L17-30    | 36/40     | 3.5          | 40/36                      | 1/0               |
| EI3-HL-5C                       | 600      | 7.6      | 3     | 10           | L17-30    | 36/40     | 7            | 80/72                      | 1/0               |
| EI3-GN-5C                       | 600      | 3.8      | 3     | 10           | L17-30    | 36/40     | 3.5          | 40/36                      | 3/0               |
| EI3-HN-5C                       | 600      | 7.6      | 3     | 10           | L17-30    | 36/40     | 7            | 80/72                      | 3/0               |
| EI3-IN-5C                       | 600      | 11.4     | 3     | 10           | L17-30    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JN-5C                       | 600      | 15.2     | 3     | 12           | L17-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-IP-5C                       | 600      | 11.4     | 3     | 10           | L17-30    | 36/40     | 10.5         | 120/108                    | 3/0               |
| EI3-JP-5C                       | 600      | 15.2     | 3     | 12           | L17-30    | 36/40     | 14           | 160/144                    | 3/0               |
| EI3-KP-5C                       | 600      | 19       | 3     | 10           | L17-30    | 36/40     | 17.5         | 200/180                    | 3/0               |
| EI3-LP-5C                       | 600      | 22.8     | 3     | 10           | L17-30    | 36/40     | 21           | 240/216                    | 3/0               |
| EI3GGR-5C                       | 600      | 7.6      | 3     | 14           | L17-30    | 36/40     | 3.5<br>3.5   | 40/36<br>40/36             | 3/0<br>3/0        |
| EI3GHR-5C                       | 600      | 11.4     | 3     | 14           | L17-30    | 36/40     | 3.5<br>7.0   | 40/36<br>80/72             | 3/0<br>3/0        |
| EI3HHR-5C                       | 600      | 15.2     | 3     | 12           | L17-30    | 36/40     | 7.0<br>7.0   | 80/72<br>80/72             | 3/0<br>3/0        |
| EI3HIR-5C                       | 600      | 19       | 3     | 10           | L17-30    | 36/40     | 7.0<br>10.5  | 80/72<br>120/108           | 3/0<br>3/0        |
| EI3IIR-5C                       | 600      | 22.8     | 3     | 10           | L17-30    | 36/40     | 10.5<br>10.5 | 120/108<br>120/108         | 3/0<br>3/0        |
| EI3IJR-5C                       | 600      | 26.6     | 3     | 8            | 3765C*    | 36/40     | 10.5<br>14.0 | 120/108<br>160/144         | 3/0<br>3/0        |
| EI3JJR-5C                       | 600      | 30.4     | 3     | 8            | 3765C*    | 36/40     | 14.0<br>14.0 | 160/144<br>160/144         | 3/0<br>3/0        |
| EI3-MR-5C                       | 600      | 26.6     | 3     | 8            | 3765C*    | 36/40     | 24.5         | 280/252                    | 3/0               |
| EI3-NR-5C                       | 600      | 30.4     | 3     | 8            | 3765C*    | 36/40     | 28           | 320/288                    | 3/0               |

\* Non NEMA plug

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