Lester Electrical ChargerConnect™

App Users Guide

For use with Summit Series® II battery chargers

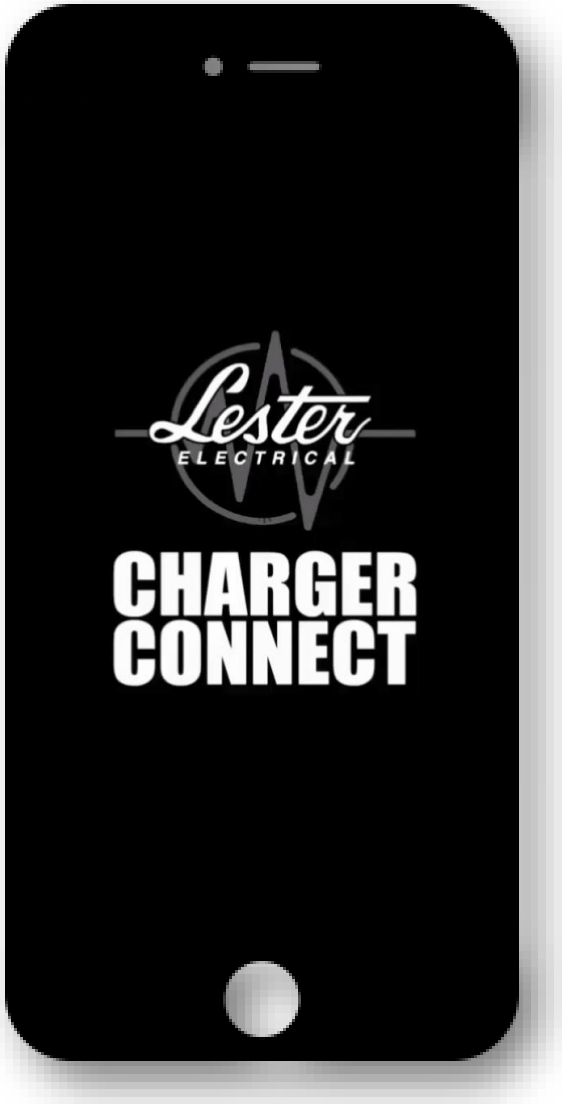
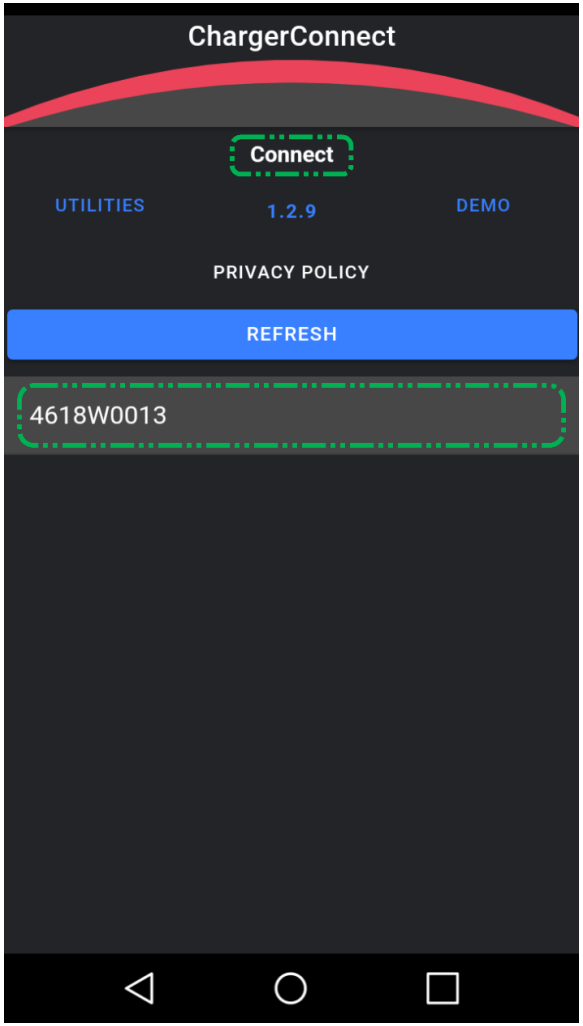


TABLE OF CONTENTS

Introduction

Lester Electrical ChargerConnect™ App User's Guide

Lester Electrical Summit Series® II chargers feature Bluetooth wireless communication, which can be accessed using an Apple® or Android™ smart phone, tablet, or similar device. Download the ChargerConnect app for your device by visiting the App Store® or the Google Play™ store and searching for "ChargerConnect".



The Summit Series II charger communication electronics are DC powered, so the charger must be connected to a valid battery pack to communicate with it via Bluetooth. The ChargerConnect application (app) requires both the Bluetooth and location services to be enabled on the mobile device for proper operation.

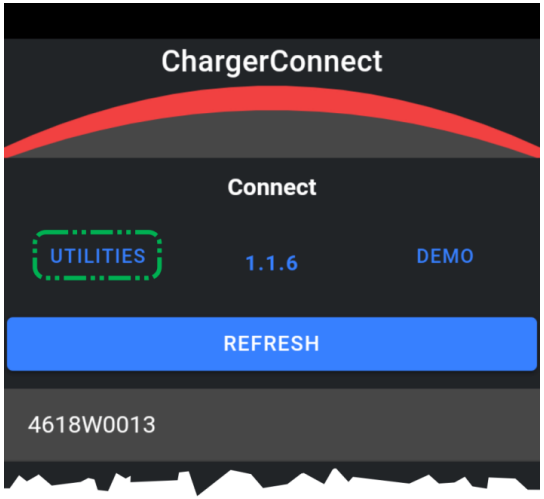
Connect

Once the charger is connected to a valid battery pack, open the ChargerConnect app and from the Connect menu select the charger's serial number you want to connect to from the list of available chargers. If the serial number of your charger is not listed, touch the "Refresh" bar to re-scan for available chargers. While connected, the Red, Yellow, and Green LEDs on the charger will slowly blink at the same time until the Bluetooth communication is disconnected from the charger. If the unit was actively charging before the Bluetooth connection was made, it will continue to charge while connected unless stopped via the app.

Note: Upon initial connection, only display menu items are available to be selected and viewed. Menu items with parameter settings and profile selections are grayed out and can't be selected until you login using the LOGIN/REGISTER menu which is described below.

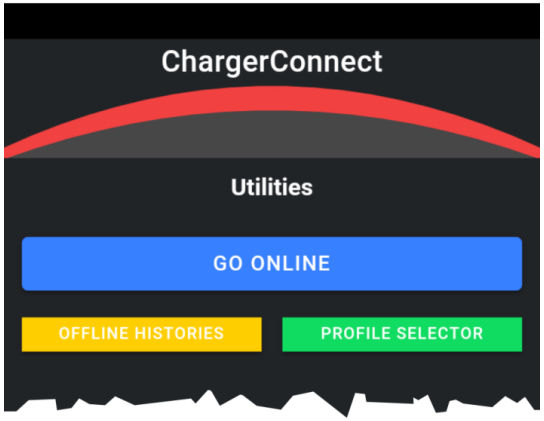
Utilities

If there are no Summit II chargers available to establish a Bluetooth connection with, you can tap the “Utilities” button on the Connect menu to access off-line information.



“Offline Histories” - If you have previously downloaded charge cycle history records from a charger to your smart phone or tablet (device), these records can be accessed when you are not connected to the charger. Select the desired charger serial number from the list of charger serial numbers that have charge cycle history records stored locally on your device. After selecting a charger serial number, you will have the option to view the charge cycle history records that are stored locally on your device for this charger serial number and upload these records to the ChargerConnect Cloud (see the “History” section for additional details).

A common use for the Utilities menu is to transfer downloaded charge cycle history records from chargers in a location where your smart device does not have Internet access. You can use Utilities to upload these charge cycle history records to the ChargerConnect Cloud later when your device does have Internet access.



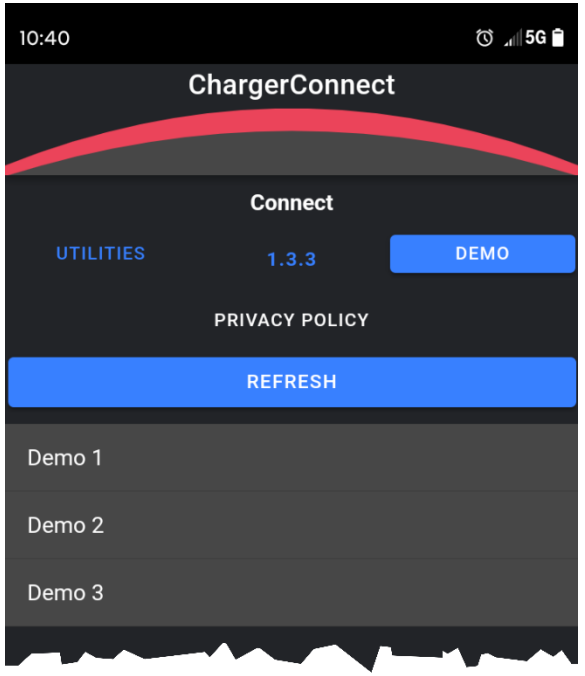
“Profile Selector” - Also available in Utilities, by clicking on the green “Profile Selector” button, is an offline Battery Profile Selector tool. See “Battery Profile Selector” section for full details on this tool. Fill in answers to the questions using the drop down lists to provide you the recommended battery profile based on the information submitted. When finished with the tool, use “Back” option listed at top left of screen to return to Utilities main screen.

When finished with the Utilities off-line mode, click the blue “Go Online” button to return to the Connect screen.

Demo

The information provided in this mode is available without establishing a Bluetooth connection with a Summit II charger.

The Demo mode is provided to simulate connecting to a Summit II charger and demonstrates how the menus and buttons function when connected to a charger. There are three Demos available to choose from with different charger setups and simulated charging parameters. Use these Demos to practice and get familiar with the Apps capabilities without having to connect to a charger. Access to any settable menus or parameters requires a Login/Register just like per normal use. All three Demos are in a charging state, so stop the charger at the bottom of the Dashboard menu if you want to simulate modifying any parameters. No changes to the Demo modes can be made, but the process simulates real time activities and menus.



Dashboard

The Dashboard is the first screen that will appear when connection to the charger is established. This display provides an overview of programmable settings and charging status of your Summit Series® II charger.

Charger ID – Displays the ID of the charger. This field is factory set to be blank. To customize the Charger ID, tap the open space in line with the start of the battery profile number and a cursor and keyboard will appear.

Vehicle ID – Displays the ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. To customize this setting, use the same procedure listed under the Charger ID section.

Battery Profile – Displays the profile number of the active battery profile. A description of this profile, including the compatible batteries, is available on the "Battery Profile" screen.

System Profile - Displays the profile number of the active system profile, the setup file used to configure the battery charger to the application.

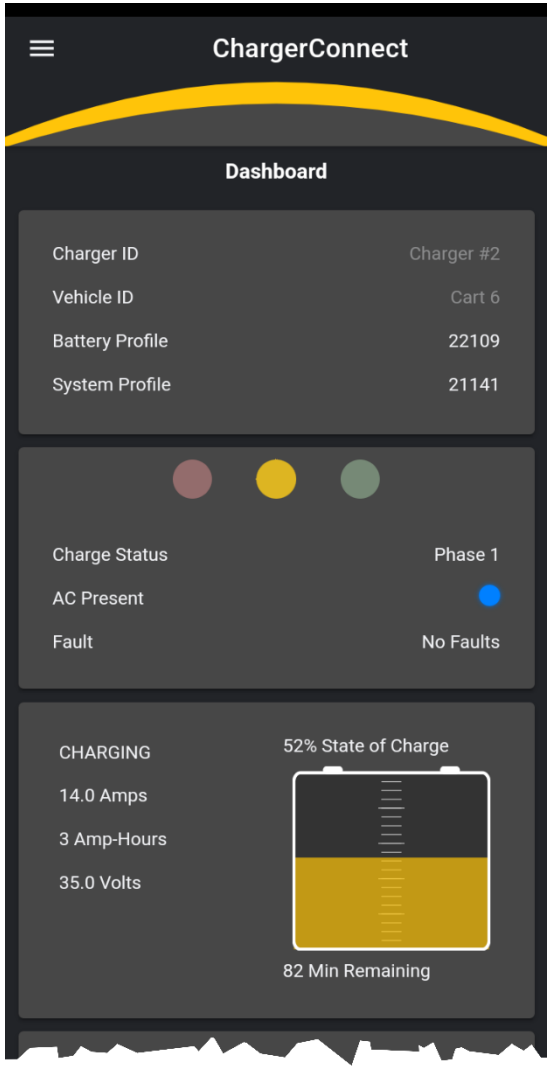
LED Display – Displays the same charge status LEDs that are present on the charger. Details regarding the LEDs can be found in the charger user's manual.

Charge Status – Displays the active charge cycle phase.

AC Present – Indicates AC input power is present at the charger by illuminating the field's blue LED, which corresponds to the blue "AC Present" LED on the charger.

Fault – Displays any active faults. Descriptions of the faults, as well as instructions for resolving them, are detailed in the charger user's manual.

NOTE: Depending on the screen size of the smart phone or tablet (device) you are using, you may need to scroll down to see all the fields on many of the different screens of the App.



Charge Time Remaining – Displays the estimated charge time remaining in minutes.

Output Current – Displays the DC output current in amps.

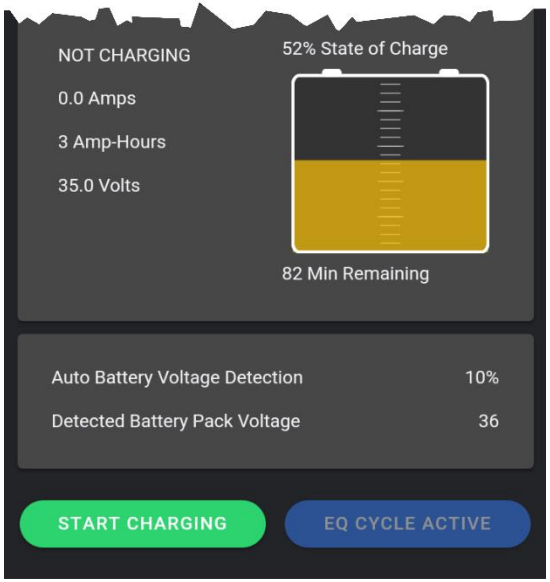
Amp-Hours Charged – Displays the number of amp-hours charged.

Battery Voltage – Displays the battery pack voltage in volts.

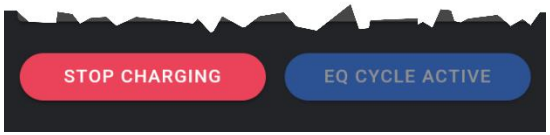
Battery State of Charge – Displays the estimated State of Charge (SOC) of the battery pack as a percentage and graphically.

Auto Battery Voltage Detection (if enabled) – When Auto Voltage Mode is active this field displays the status of the proprietary algorithm that selects the correct voltage settings for the charger. *See the "Auto Voltage Mode" section for details regarding Auto Voltage Mode.*

Detected Battery Pack Voltage (if enabled) – When Auto Voltage Mode is active, this field displays the detected battery pack voltage once the proprietary algorithm mentioned in the Auto Battery Voltage Detection reaches 100% completion.



Manual Stop/Start Button – Tapping this button will stop a charge cycle (red button) or start a charge cycle (green button).

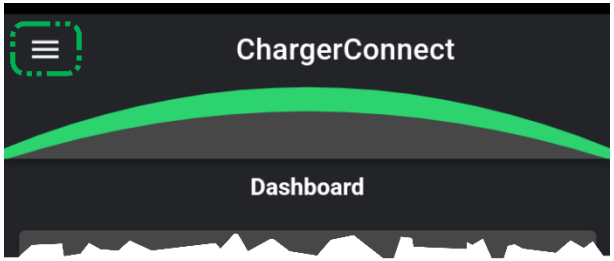


Manual Equalize/Balance Button – If the active battery profile includes an Equalize or Balance phase, this button will be active, otherwise it will be grayed out. The Equalize and Balance phases of battery profiles are typically triggered based on a variety of events (a certain number of charge cycles occurring, etc.). This button provides a method to manually trigger an Equalize or Balance to occur if instructed to do so by your battery manufacturer, distributor, or dealer. This button will also be grayed out if the active charge cycle already has an Equalize or Balance phase triggered.

Navigation Menu

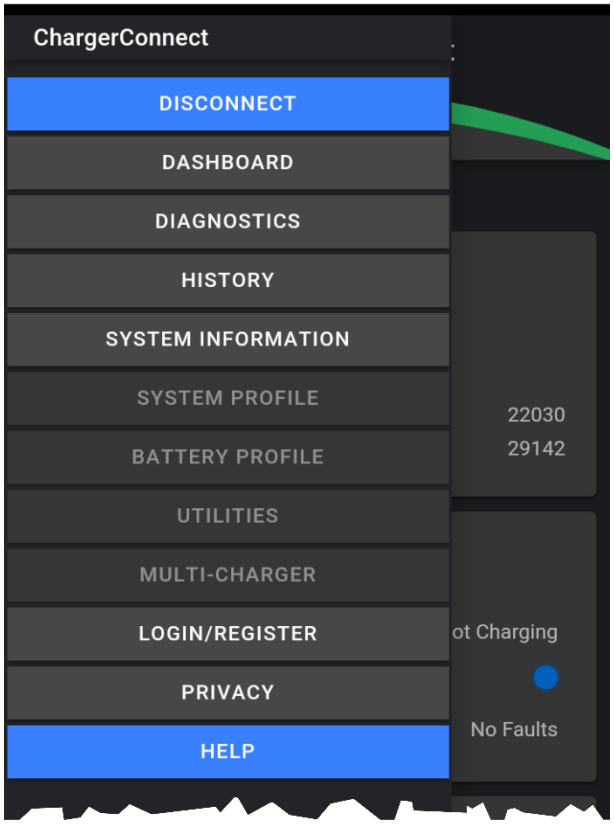
The Navigation menu allows access to the various sections within the ChargerConnect app.

The Navigation Menu can be accessed by tapping the three (3) horizontal lines (Hamburger) in the upper left-hand corner of the app.



Note: Upon initial connection, only display menu items are available to be selected and viewed. Menu items with parameter settings and profile selections are grayed out and can't be selected until you login using the LOGIN/REGISTER menu which is described below. This helps protect the charger from unauthorized changes. The login feature will track charger settings changes and who made the changes for troubleshooting purposes.

Note: Depending on the firmware version of the charger to which you are connecting, some menu items like UTILITIES and MULTI-CHARGER are never selectable as the firmware doesn't support them.



Disconnect

This menu item disconnects the Bluetooth connection between the charger and your smart phone or tablet (device) and returns you to the "Connect" screen.

Note: If the connected charger is actively charging, the "History", "System Profile", "Battery Profile", and "Utilities" menu items will be disabled. The "Manual Stop/Start Button" on the "Dashboard" screen can be used to (1) stop the active charge cycle to access these menu items and (2) start a new charge cycle prior to disconnecting from the charger.

Diagnostics

The Diagnostics tab displays summarized data of the charger's present status.

Amp meter – Displays the DC output current in amps and graphically.

Voltmeter – Displays the battery pack voltage in volts and graphically.

State of Charge (SOC) – Displays the estimated State of Charge (SOC) of the battery pack as a percentage. This is not available for some types of batteries.

Min Remaining – Displays the estimated charge time remaining in minutes. This is not available for some types of batteries.

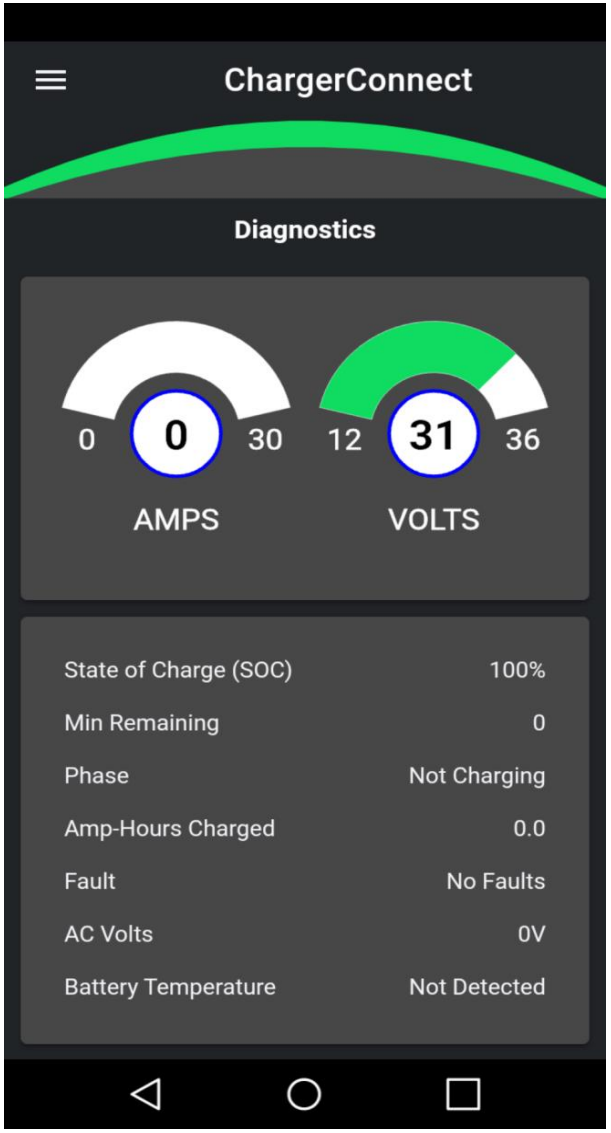
Phase – Displays the active charge cycle phase.

Amp-Hours Charged – Displays the number of amp-hours charged.

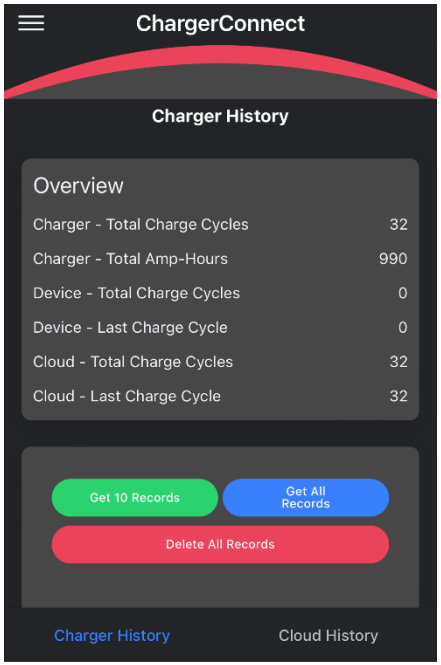
Fault – Displays any active faults. Descriptions of the faults, as well as instructions for resolving them, are detailed in the charger user's manual.

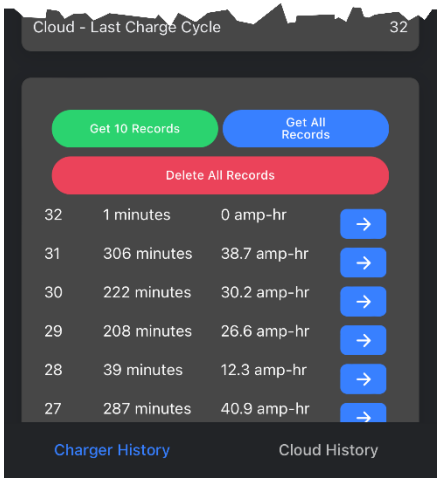
AC Volts – Displays the AC input voltage in volts.

Battery Temperature – Displays the battery temperature in °C if a battery temperature sensor is connected to the charger. If a battery temperature sensor is not connected to the charger, "Not Detected" is displayed in this field.



History





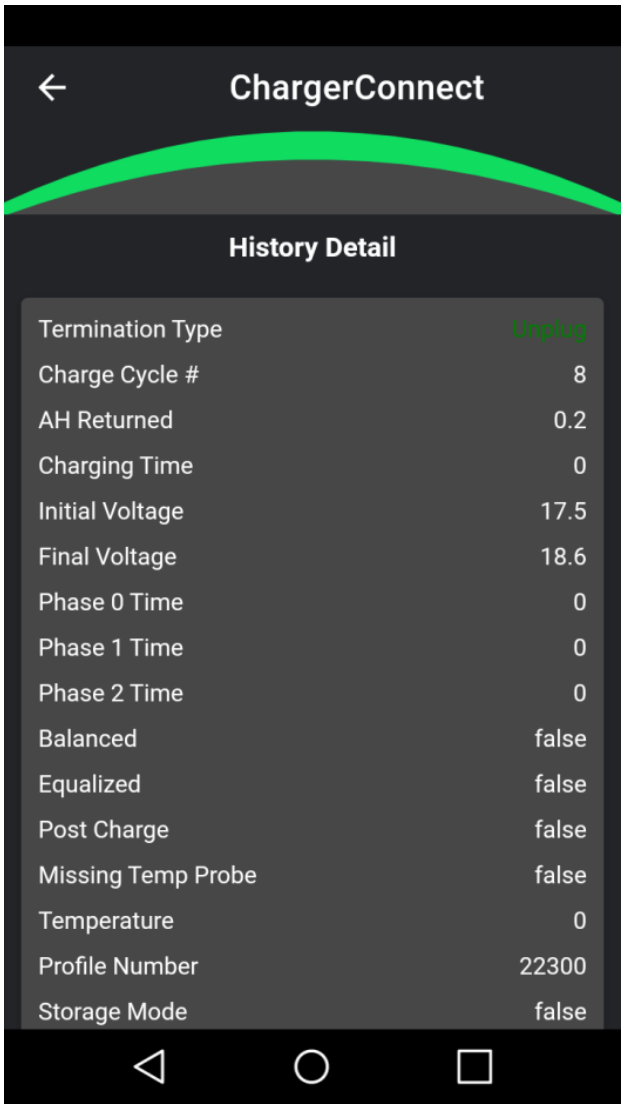
The Summit II Charger stores up to 255 historical charge records that can be used to diagnose issues that may occur during normal product usage. Valuable information such as termination records and charger run times are available in this app feature.

Charger Histories Tab

- **Overview Section**
  - **Charger**
    - **Total Charge Cycles** – Total charge cycles that the connected charger has recorded.
    - **Total Amp-Hours** – Total amp-hours that the connected charger has recorded.
  - **Device**
    - **Total Charge Cycles** – Total charge cycle history records that have been downloaded from the connected charger to your smart phone or tablet (device).
    - **Last Charge Cycle** – Number of the last charge cycle history record that has been downloaded from the connected charger to your smart phone or tablet (device).
  - **Cloud**
    - **Total Charge Cycles** – Total charge cycle history records that have been downloaded from the connected charger and uploaded to the ChargerConnect Cloud.
    - **Last Charge Cycle** – Number of the last charge cycle history record that has been downloaded from the connected charger and uploaded to the ChargerConnect Cloud.
- **Get 10 Records Button** – Tap to download the latest 10 charge cycle history records that have not been previously downloaded from the connected charger to your smart phone or tablet (device).
- **Get All Records Button** – Tap to download all charge cycle history records that have not been previously downloaded from the connected charger to your smart phone or tablet (device).
- **Delete All Records Button** – Tap to delete all charge cycle history records from your smart phone or tablet (device) that have been previously downloaded from the connected charger.
- **Records Section** – Individual charge cycle history records that have been downloaded from the connected charger are displayed in this section and can be selected to view the data (see “History Details” below).

History Detail

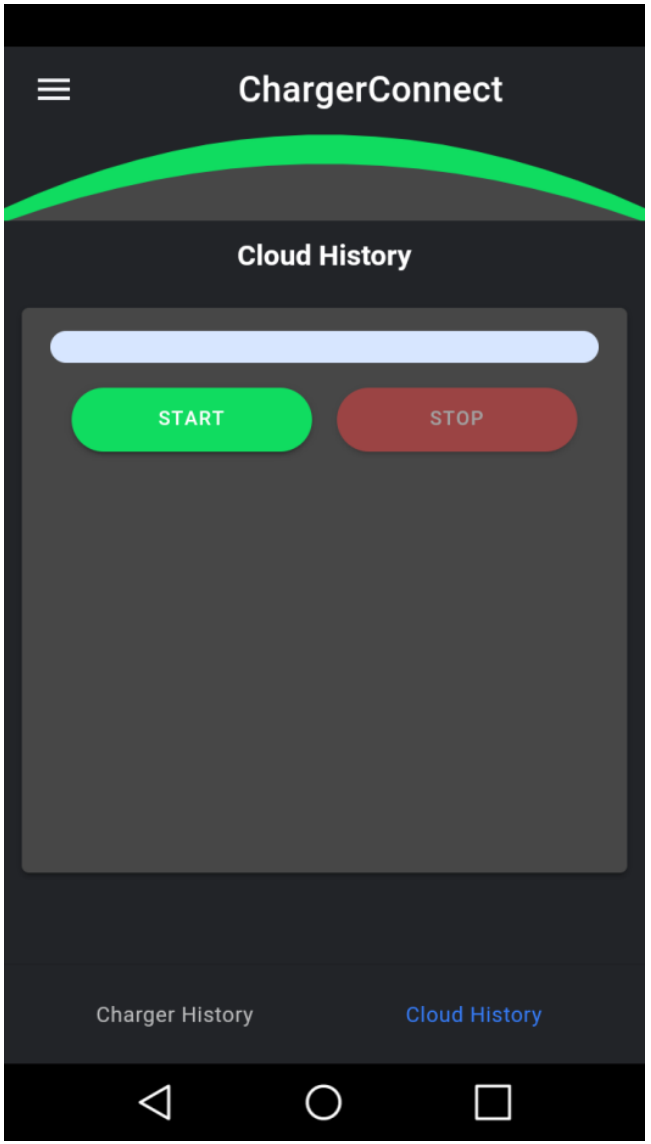
After tapping either “GET 10 RECORDS” or “GET ALL RECORDS” the data from the charger will be displayed in a new section below the selection buttons. Press the blue arrow key next to the charge record to view the “History Details” screen for that record. This area displays the data for an individual charge cycle history record. When you have finished reviewing the data, you can use the “Back” button (found at top left of history screen) to return to the “Charger Histories” tab.



Cloud History

To “push” the charge history records to a cloud server for off-line viewing, select the “Cloud History” selection in the bottom right-hand corner of the “Charger History” screen. Tapping the “START” button will upload all the charge cycle history records that have been downloaded from the connected charger to your smart phone or tablet (device) to the ChargerConnect Cloud. Once the records have been uploaded, they can be accessed from any smart phone, tablet, laptop, or PC via ChargerConnect.net using the charger serial number.

ChargerConnect.net will require a user account to be set up to view the registered information. Data uploaded and registered to the cloud server can be exported to Microsoft Excel or Microsoft Notepad for offline viewing.



System Information

The “System Information” screen is for the display of information only. No fields on this screen can be edited.

Serial Number – Displays the serial number of the connected charger.

Model Number – Displays the model number of the connected charger.

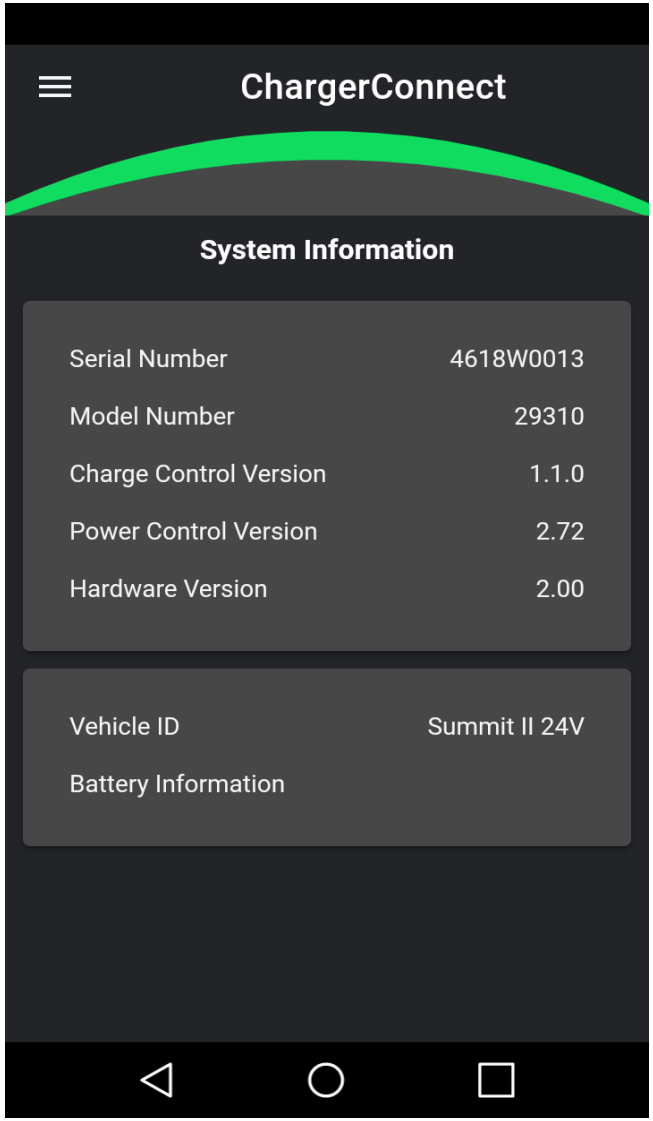
Charge Control Version – Displays the version of charge control firmware on the connected charger.

Power Control Version – Displays the version of power control firmware on the connected charger.

Hardware Version – Displays the hardware version of the connected charger.

Vehicle ID – Displays the ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. The Vehicle ID can be set/modified on the “Dashboard” and “System Profile” screens.

Battery Information – For future use. Not currently active.



System Profiles

(See app screenshots below)

The system profile selection identifies the settings of the charger that affect the operation and can only be accessed after Login. Pre-established system profiles can be changed to support functions such as onboard or shelf applications, as well as single volt and multi-volt operation.

Charger ID – The ID of the charger. This field is factory set to be blank. The Charger ID can be set/modified on the "System Profile" and "Dashboard" screens.

Vehicle ID – The ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. The Vehicle ID can be set/modified on the "System Profile" and "Dashboard" screens.

System Profile - Displays the profile number of the active system profile, the setup file used to configure the battery charger to the application.

Cable Gauge (AWG) – The gauge of the DC cable in American Wire Gauge (AWG). This field is used to correctly compensate for the voltage drop of the DC cable.

Cable Length (feet) – The length of the DC cable in feet [one direction only, not the sum of the length of both the positive (+) and negative (-) wires]. This field is used to correctly compensate for the voltage drop of the DC cable.

On Board check box – Checked  for On-Board and unchecked  for Off-Board.

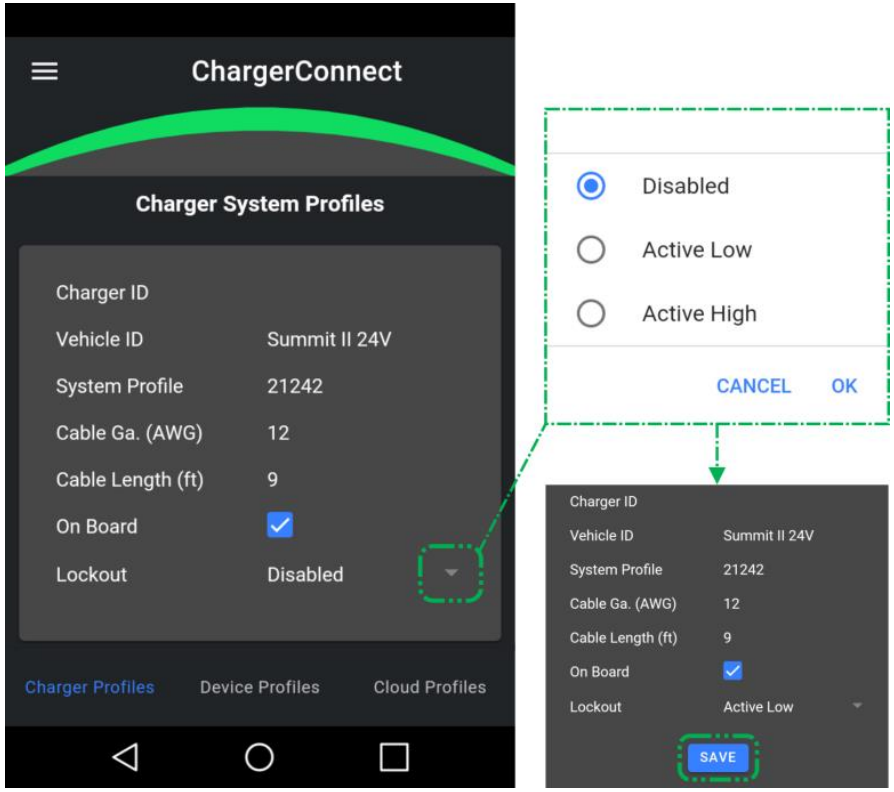
On-Board chargers are designed to be mounted on electric vehicles/equipment. While the DC output is connected to a battery pack of the proper voltage, a charge cycle automatically starts when the AC input plug is connected to AC power (unless a safety period of time has not passed since the successful completion of the previous charge cycle). Disconnecting the DC output from the battery pack IS NOT REQUIRED to automatically start a new charge cycle.

Off-Board chargers are designed to be used in shelf or portable applications. While the AC input plug is connected to live AC power, a new charge cycle automatically starts when the DC output is connected to a battery pack of the proper voltage. Disconnecting and reconnecting AC power while the DC output remains connected to a battery pack WILL NOT automatically start a new charge cycle. Disconnecting the DC output from the battery pack IS REQUIRED to automatically start a new charge cycle.

NOTE: A charger configured as On-Board <u>can</u> be used in a shelf or portable application where the DC output connector/plug is connected and disconnected from the vehicle, but a charger configured as Off-Board should <u>not</u> be used in an application where it is mounted on a vehicle with the DC output permanently connected to the battery pack because the charger will not automatically start a new charge cycle when AC power is applied to the charger.

Lockout – Vehicles with 3 or 4 wire DC connect cables may have a lockout option. This setting allow the user to custom configure the status of the charger lockout output signal that is used to enable/disable the vehicle during charging operations.

- *Disabled – Lockout output does not change state when AC is connected. Set to this state when used with EZGO 3-Pin connector.*
- *Active Low – Lockout output pulled low (to system ground) when AC is connected.*
- *Active High – Lockout output pulled high (to +Bat) when AC is connected (active feature only on 1050W V2 and 1425W V2 chargers).*



Auto Voltage Profile Mode (*See app screenshots on following page)*
Select Summit Series II charger models support automatic multi-voltage DC charging, referred to as Auto Voltage Mode.

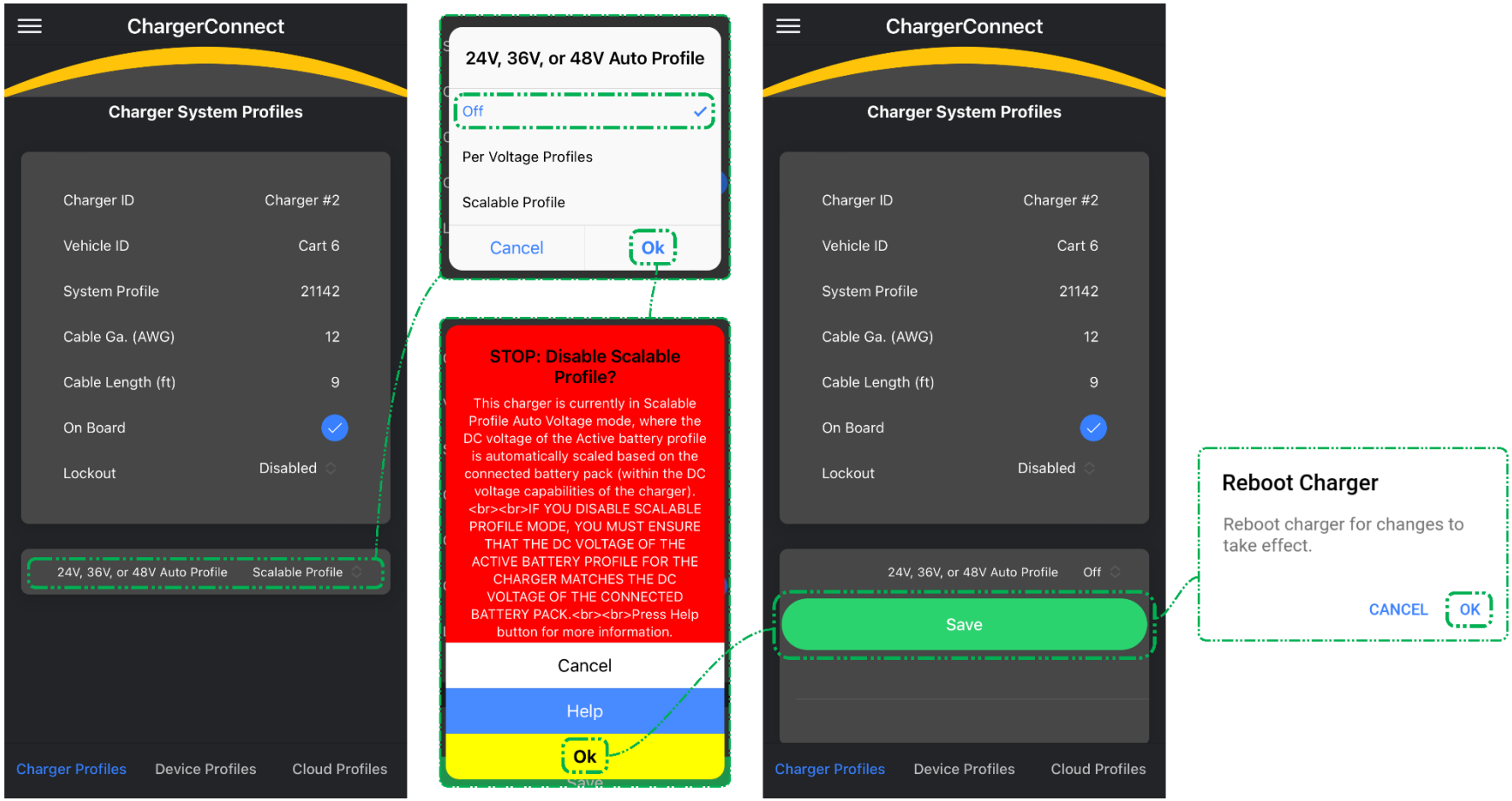
Auto Voltage Mode provides automatic DC output voltage detection and adjustment so that battery packs of nominal 48V and 36V (650W 48V, 36V, and 48-36V models) or nominal 48V, 36V, and 24V (1050W and 1425W V2 models) can be charged with a single charger without any configuration changes needing to be made to the charger when switching between battery packs of different nominal voltages**. Auto Voltage Mode will not detect 42V battery systems. (This change requires manual programming)**

When the connected charger model supports Auto Voltage Mode, the "System Profile" screen will include an "Auto Profile" selection box, which provides the following three (3) options:

- **OFF**: Single voltage mode – Set this value to OFF if you are charging only one voltage of battery pack. **You <u>MUST</u> ensure that the nominal DC voltage of the "Active Battery Profile" for the charger matches the nominal DC voltage of the connected battery pack.**
  - **650W 24V model**: This model supports 24V only, so this setting should be set to OFF.
- **PER VOLTAGE PROFILES**: This mode is primarily used when the charger will be charging nominal battery packs of different types and/or capacities so using the "Scalable Profile" mode is not appropriate. All voltages must be assigned a battery profile for this mode to be used.
  - **650W 48V, 36V, and 48-36V models**: A battery profile can be assigned for 48V, and a different battery profile can be assigned for 36V. The proper battery profile is automatically selected based on the connected battery pack.
  - **1425W V1 36V, 24V, and 36-24V models**: A battery profile can be assigned for 36V, and a different battery profile can be assigned for 24V. The proper battery profile is automatically selected based on the connected battery pack.
  - **All 1050W and 1425W V2 models**: A battery profile can be assigned for 48V, a different battery profile can be assigned for 36V, and yet a different battery profile can be assigned for 24V. The proper battery profile is automatically selected based on the connected battery pack.
- **SCALABLE PROFILE**:
  - **650W 48V, 36V, and 48-36V models**: the nominal DC voltage of the "Active Battery Profile" is automatically scaled to 48V or 36V based on the connected battery pack.
  - **1425W V1 36V, 24V, and 36-24V models**: the nominal DC voltage of the "Active Battery Profile" is automatically scaled to 36V or 24V based on the connected battery pack.
  - **All 1050W and 1425W V2 models**: the nominal DC voltage of the "Active Battery Profile" is automatically scaled to 48V, 36V, or 24V based on the connected battery pack.

NOTE: If the charger is currently set to "Per Voltage Profiles" or "Scalable Profile" mode, and you set the "Auto Profile" selection box to "Off", you MUST ensure that the nominal DC voltage of the "Active Battery Profile" for the charger matches the nominal DC voltage of the connected battery pack via the "Battery Profiles" screen.

When Auto Voltage Mode is active (either "Per Voltage Profiles" or "Scalable Profile") the "Dashboard" screen provides the status of the proprietary algorithm that executes at the beginning of the charge cycle by displaying the "Auto Battery Voltage Detection" as a status percentage and the "Detected Battery Pack Voltage" (see the "Dashboard" section).

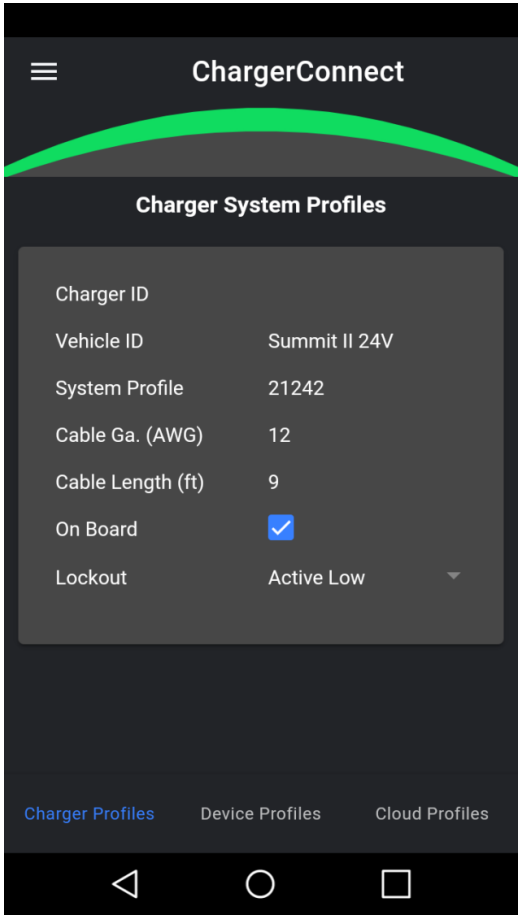


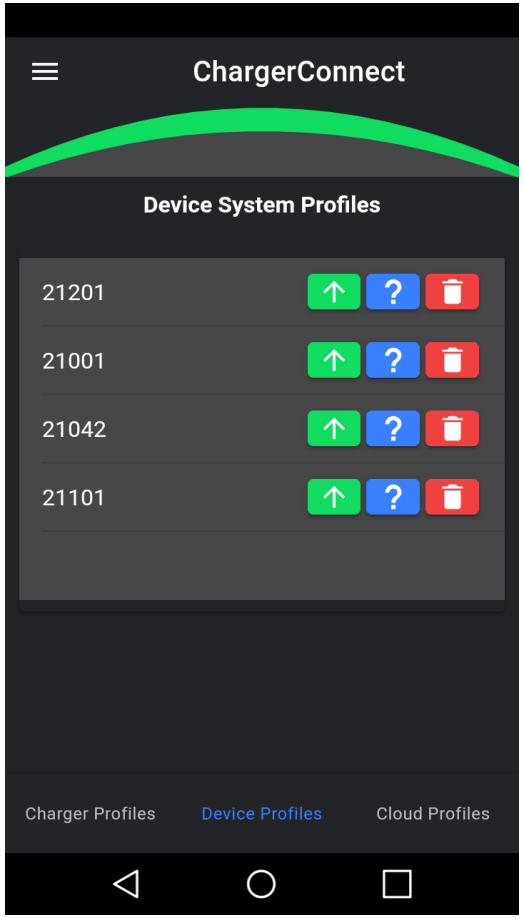
Device Profiles

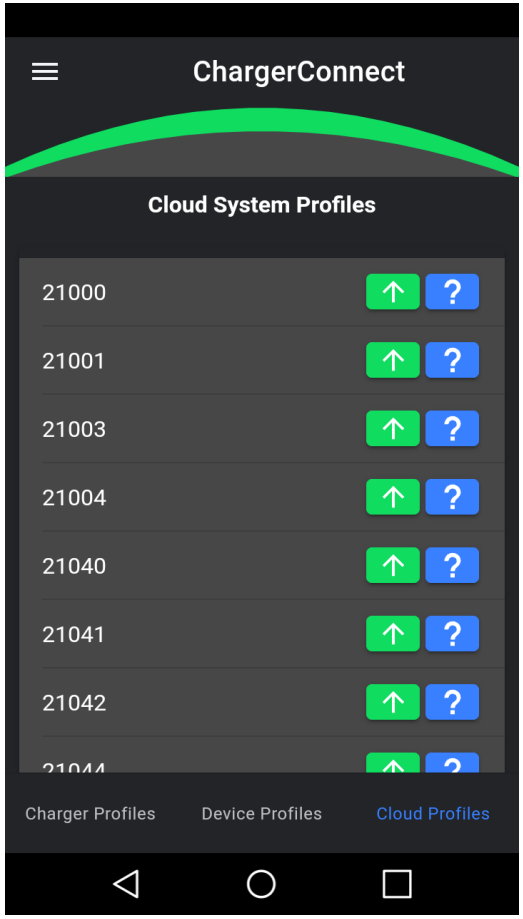
- Lists all system profiles available on your smart phone or tablet (device).
- Upload a system profile that resides on your smart phone or tablet (device) to the connected charger via the green arrow button. 
- Blue question mark buttons provide detailed descriptions of the system profiles. 
- Delete system profiles that reside on your smart phone or tablet (device) via the red trash can button. 

Cloud Profiles

- Lists all system profiles available for download from the ChargerConnect Cloud.
- Download system profiles from the Cloud to your smart phone or tablet (device) via the green arrow buttons. 
- Blue question mark buttons provide detailed descriptions of the system profiles. 


ChargerConnect
Charger System Profiles
Charger ID
Vehicle ID
Summit II 24V
System Profile
21242
Cable Ga. (AWG)
12
Cable Length (ft)
9
On Board
Lockout
Active Low
Charger Profiles
Device Profiles
Cloud Profiles


ChargerConnect
Device System Profiles
21201
21001
21042
21101
Charger Profiles
Device Profiles
Cloud Profiles


ChargerConnect
Cloud System Profiles
21000
21001
21003
21004
21040
21041
21042
Charger Profiles
Device Profiles
Cloud Profiles

Battery Profiles

(See app screenshots below)

Battery Profiles are the unique battery charging algorithms which are required to fully charge various chemistries of batteries and can only be accessed after Login.

Charger Profiles Tab (pre-loaded profiles – can store up to 20)

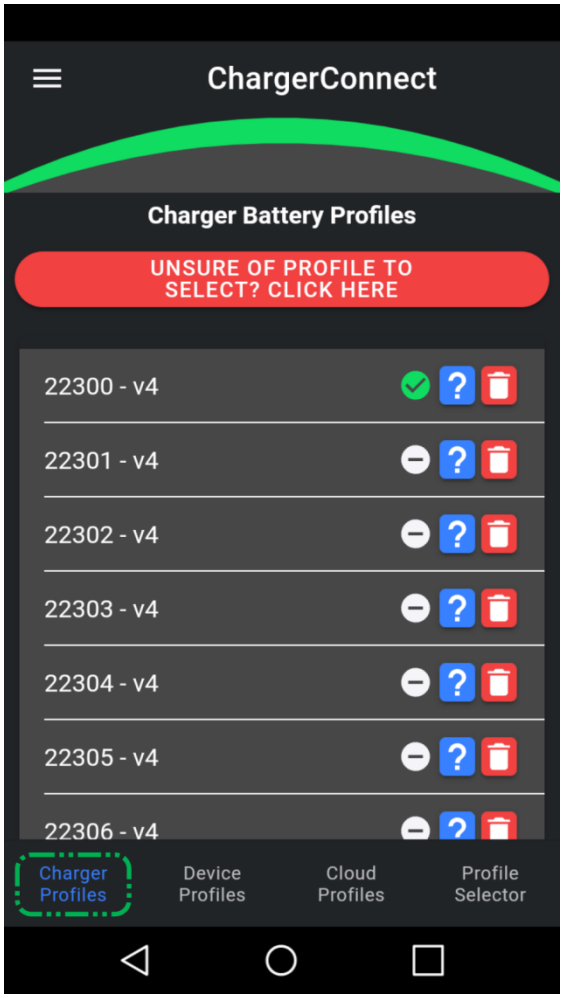
- Lists all battery profiles available on the connected charger.
- Set the "Active Battery Profile" via the green check mark. 
- Blue question mark buttons provide detailed descriptions of the battery profiles. 

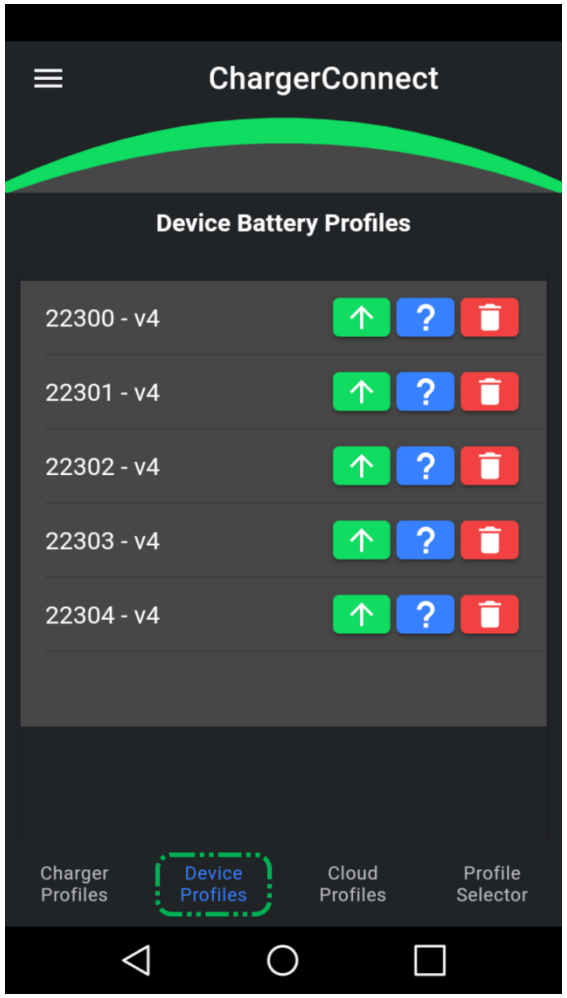
Device Profiles Tab

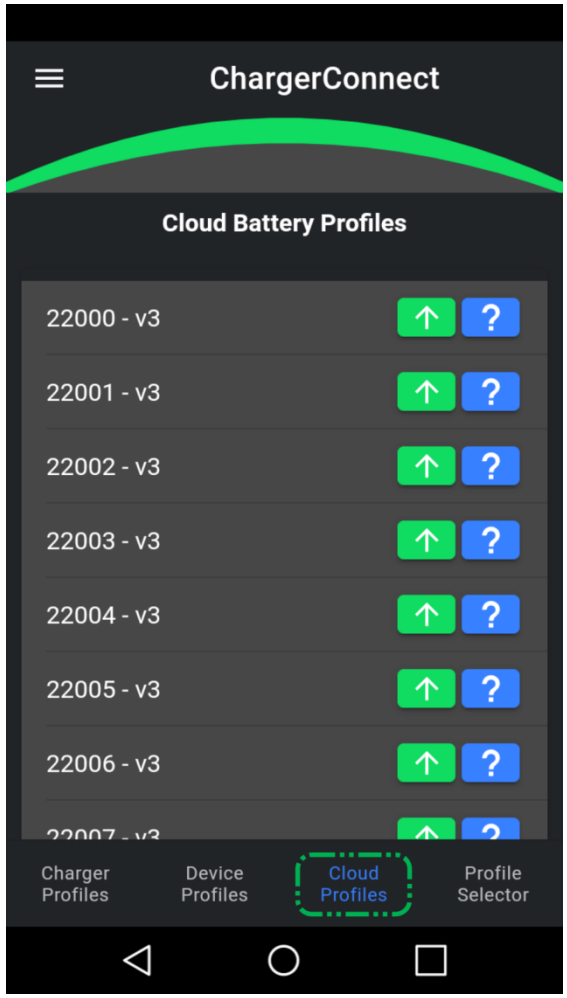
- Lists all battery profiles available on your smart phone or tablet (device).
- Upload battery profiles that reside on your smart phone or tablet (device) to the connected charger via the green arrow buttons 
  - You will be required to select the "Profile Slot Number". Summit Series II chargers can store up to 20 battery profiles locally. The local battery profiles are stored in "Slots", which are numbered 0-19. You can either select an empty Slot to store the battery profile that will be uploaded to the charger or a Slot that currently contains a battery profile, in which case the battery profile will be overwritten.
  - **NOTE: When a battery profile is uploaded to the connected charger, it automatically becomes the <u>Active</u> profile on the charger.**
- Blue question mark buttons provide detailed descriptions of the battery profiles. 
- Delete battery profiles that reside on your smart phone or tablet (device) via the red trash can button. 

Cloud Profiles Tab

- Lists all battery profiles available for download from the ChargerConnect Cloud.
- Download battery profiles from the Cloud to your smart phone or tablet (device) via the green arrow buttons. 
- Blue question mark buttons provide detailed descriptions of the battery profiles. 


ChargerConnect
Charger Battery Profiles
UNSURE OF PROFILE TO SELECT? CLICK HERE
22300 - v4
22301 - v4
22302 - v4
22303 - v4
22304 - v4
22305 - v4
22306 - v4
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector


ChargerConnect
Device Battery Profiles
22300 - v4
22301 - v4
22302 - v4
22303 - v4
22304 - v4
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector


ChargerConnect
Cloud Battery Profiles
22000 - v3
22001 - v3
22002 - v3
22003 - v3
22004 - v3
22005 - v3
22006 - v3
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector

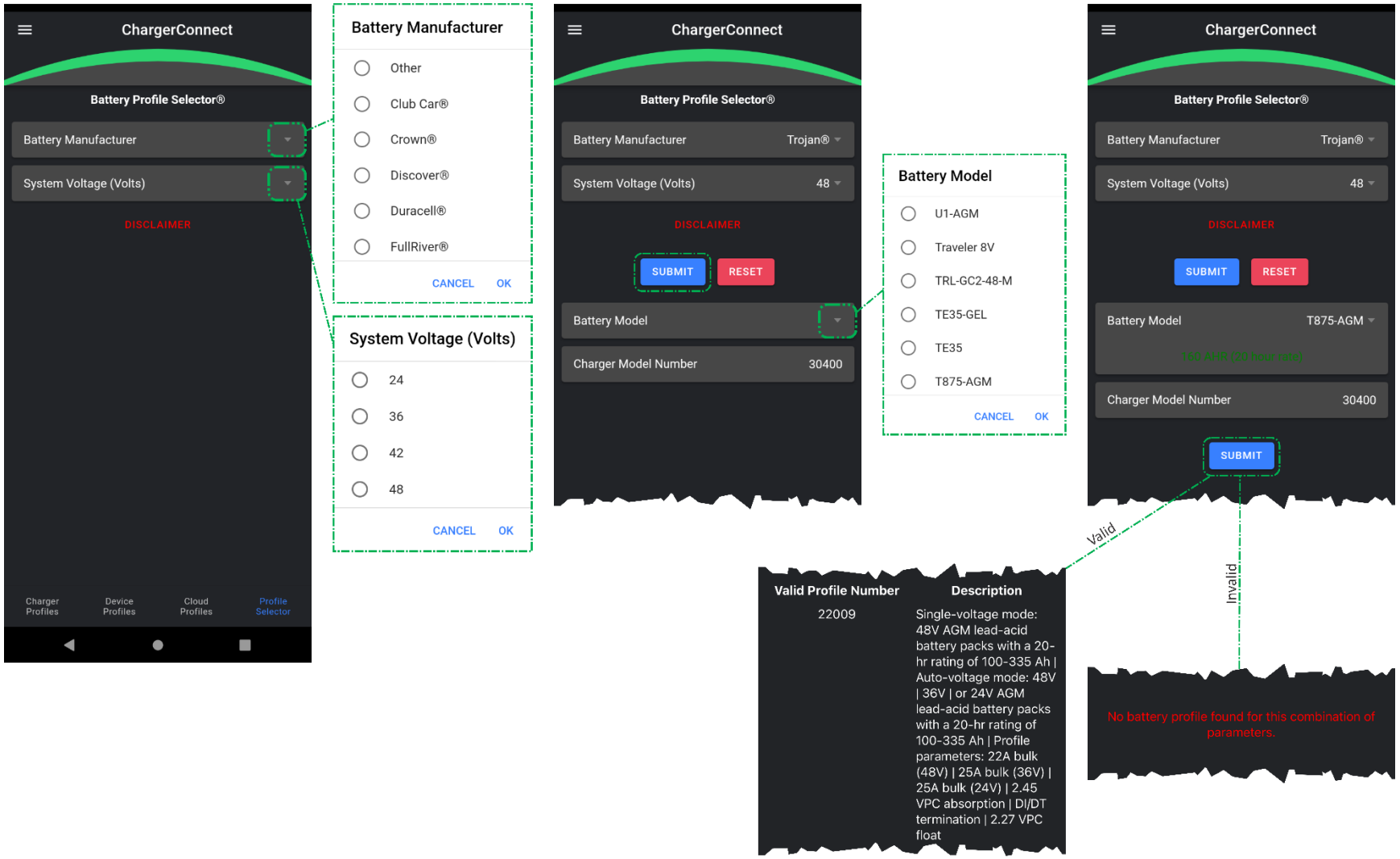
Battery Profile Selector®

Use this menu if you are unaware of the specific profile number required to charge your batteries. The Battery Profile Selector® will provide a recommended battery profile based on the battery manufacturer, system voltage, battery model, and charger model. This tool is accessible as a tab under "Battery Profile" menu and by clicking the red "Unsure of Profile to Select? Click Here" red button on the "Charger Profiles" tab of "Battery Profile" menu.

- Touch the down arrow next to the "Battery Manufacturer" to view and select the brand of the vehicle batteries. If your brand is not listed, select "Other".
- Touch the down arrow next to the "System Voltage" and choose the voltage of the vehicle.
- Touch the "Submit" button to send your battery information to the database.
- Touch the down arrow next to the "Battery Model" and choose the model # of the batteries.

The Charger Model # will automatically populate, touch the submit button to view the recommended profile. Details of the suggested profile will be listed, then touch the "Make Profile Active" button to send the new battery profile to the charger.

The charger needs to reboot to make the battery profile change, select "OK" to finalize the profile change request.


ChargerConnect
Battery Profile Selector®
Battery Manufacturer
System Voltage (Volts)
DISCLAIMER
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector
Battery Manufacturer
Other
Club Car®
Crown®
Discover®
Duracell®
FullRiver®
CANCEL
OK
System Voltage (Volts)
24
36
42
48
CANCEL
OK
ChargerConnect
Battery Profile Selector®
Battery Manufacturer
Trojan®
System Voltage (Volts)
48
DISCLAIMER
SUBMIT
RESET
Battery Model
Charger Model Number
30400
Battery Model
U1-AGM
Traveler 8V
TRL-GC2-48-M
TE35-GEL
TE35
T875-AGM
CANCEL
OK
ChargerConnect
Battery Profile Selector®
Battery Manufacturer
Trojan®
System Voltage (Volts)
48
DISCLAIMER
SUBMIT
RESET
Battery Model
T875-AGM
100 AHR (20 hour rate)
Charger Model Number
30400
SUBMIT
Valid
Invalid
Valid Profile Number
Description
22009
Single-voltage mode: 48V AGM lead-acid battery packs with a 20-hr rating of 100-335 Ah | Auto-voltage mode: 48V | 36V | or 24V AGM lead-acid battery packs with a 20-hr rating of 100-335 Ah | Profile parameters: 22A bulk (48V) | 25A bulk (36V) | 25A bulk (24V) | 2.45 VPC absorption | DI/DT termination | 2.27 VPC float
No battery profile found for this combination of parameters.

Utilities CAN

The Utilities menu is used to set up the charger CAN communication parameters as required for your application and can only be accessed after Login. **If your application is not using CAN, do not change any of these variables.**

Charger Node ID – Node ID of the charger for CANOpen networks.

Remote Node ID – Node ID of the device the charger is communicating with for CANOpen networks.

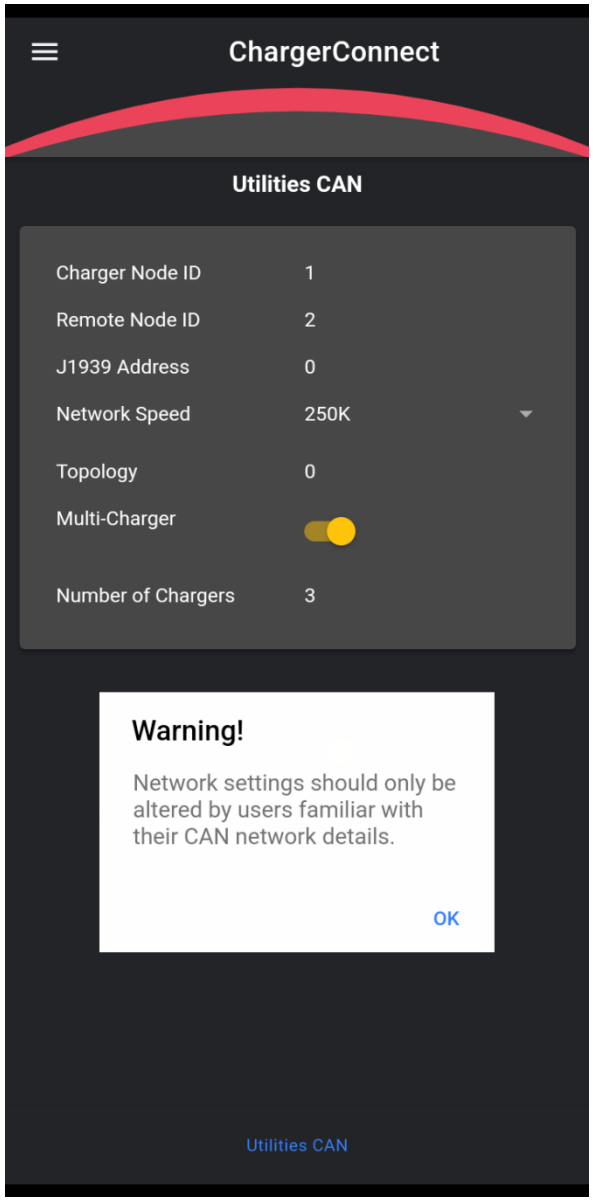
J1939 Address – Address of the charger when using J1939 network protocol.

Network Speed – Set the CAN network speed using this parameter.

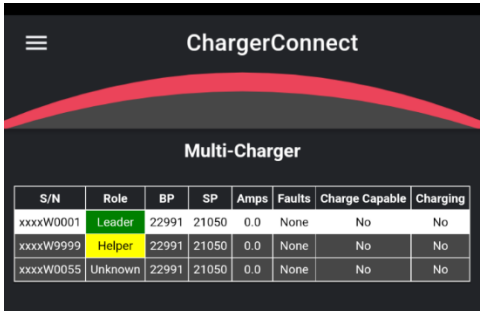
Topology – This value is set based on the battery BMS communication protocol requirements. Contact your dealer, battery manufacturer or Lester for the proper value. If this is not set up properly a CAN communication error will occur.

Multi-Charger – If you are using this charger in parallel with other chargers on a battery set, turn this switch on to enable the chargers to talk to each other for peak charging performance.

Number of Chargers – If you are using chargers in parallel, set this parameter to the number of chargers being used on a single battery set.



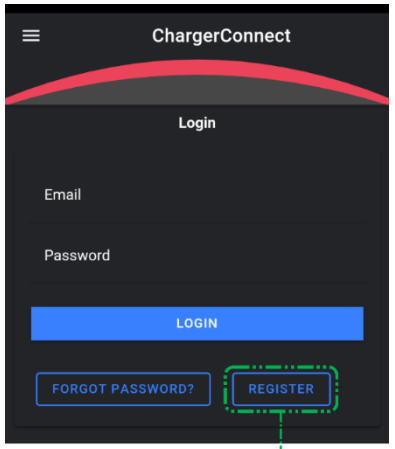
Multi-Charger

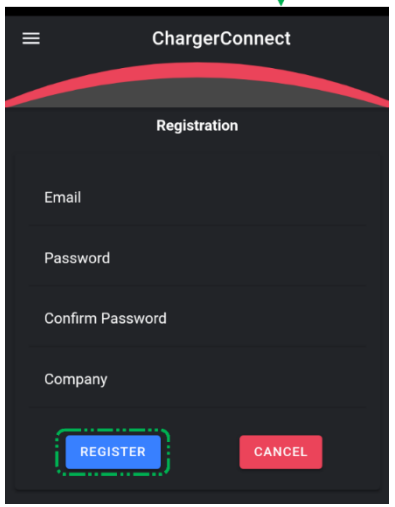


The Multi-Charger menu is used to display charger information when chargers are set up for parallel operation on a battery set. Charger information, status, and data are shown for the number of chargers selected on the Utilities menu.

If one of the parallel chargers is not working, the system will adjust and continue to charge the batteries.

Login/Registration





If you are a new user and have never registered, then press the REGISTER button. If you have already registered, then your email and password will auto-populate, so press the LOGIN button for access.

On the Registration screen enter your email address, a password, and company name if applicable. Press the REGISTER button which will pop up a message stating an email has been sent to the email address used for this registration. Press the OK button to continue.

Go to your email account and open the Lester Electrical Email Confirmation and click on the link. This will open the chargerconnect.net website to enter your email address to complete the email confirmation and registration process. You will receive another email letting you know your email was confirmed.

Go back to the ChargerConnect app Login menu and you will see that your Email and Password have auto populated. Press the LOGIN button to access all available menu items.

Note: User information is only used per the Privacy Policy found on the Privacy menu. If later you wish to delete your login information, refer to the Privacy menu documented below.

Privacy

The Privacy menu allows you to access the Lester Electrical Privacy Policy used with Lester websites and the ChargerConnect App. This also allows you to delete the user information and email linked to your registration account.