



# **Owner Manual**

## **Remote Monitoring and Control System**

Energy Command AGS+



# Table of Contents

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1. IMPORTANT SAFETY INSTRUCTIONS .....	1
1.1 Warning, Caution, and Note Styles Used in This Manual .....	1
1.2 General Safety Precautions .....	1
2. INTRODUCTION .....	3
2.1 About this Manual .....	3
2.2 List of Abbreviations .....	3
2.3 How to Obtain Service .....	3
3. PRODUCT OVERVIEW .....	5
3.1 EC-AGS+ Compatibility .....	5
3.2 Certifications .....	6
4. DESCRIPTION .....	7
4.1 EC-AGS+ Features .....	7
4.2 EC-AGS+ Gateway .....	7
4.3 Temperature Sensor .....	7
5. INSTALLATION AND SETUP .....	9
5.1 System Overview .....	9
5.2 Supplied Hardware .....	9
5.3 Additional Hardware .....	9
5.4 Installation Items Not Supplied .....	10
5.5 Installation Instructions .....	10
5.5.1 Mount Components .....	10
5.5.2 Connect Components .....	12
5.6 Mobile Application Setup .....	14
5.6.1 System Requirements .....	14
5.6.2 Getting Started .....	14
5.6.3 Configure System Using App .....	14
5.7 Installation and Setup Test .....	27
6. EC-AGS+ MOBILE APPLICATION .....	29
6.1 Menu Bar .....	29
6.2 User Profile .....	29
6.3 Generator Set Dashboard .....	30
6.4 Settings .....	31
6.5 Contact .....	32
6.6 Alerts .....	33
7. OPERATION .....	35
7.1 Manual Generator Set Operation .....	35
7.2 Automatic Generator Set Operation .....	35
7.2.1 Safety Feature .....	35

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7.2.2 Adaptive Cycle Management .....	36
8. TROUBLESHOOTING .....	37
8.1 App Does Not Install, Initialize, or Crashes .....	37
8.2 Unable to Pair Temperature Sensor to Gateway.....	37
8.3 Mobile Device Does Not Communicate or Pair to Gateway.....	37
8.4 Generator Set Does Not Start in Manual Mode.....	38
8.5 Generator Set Does Not Start in Auto Mode .....	38
8.6 Generator Set Starts Unexpectedly .....	39
8.7 Generator Set Does Not Stop.....	40
8.8 Generator Set Stops Unexpectedly .....	41
8.9 Generator Set Does Not Run A/C .....	42
8.10 House Battery State-of-Charge is Inaccurate .....	42
8.11 Temperature is Inaccurate .....	42
8.12 Clock is Inaccurate.....	43
8.13 Accelerometer Fault.....	43
9. TEMPERATURE SENSOR BATTERY REPLACEMENT .....	45
10. PARTS INFORMATION .....	47
10.1 Standard Parts .....	47
10.2 Conditional Parts.....	47
APPENDIX A. CONNECTIVITY DIAGRAMS.....	49
A.0 Gas Generator Set Gateway Harness.....	51
A.1 Gas Generator Set Y-Harness .....	52
A.2 Diesel Generator Set Gateway Harness .....	53
A.3 Diesel Generator Set Y-Harness.....	54

# 1 Important Safety Instructions


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## 1.1 Warning, Caution, and Note Styles Used in This Manual

The following safety styles and symbols found throughout this manual indicate potentially hazardous conditions to the operator, service personnel, or equipment.

 <b>DANGER</b>
<i>Indicates a hazardous situation that, if not avoided, will result in death or serious injury.</i>

 <b>WARNING</b>
<i>Indicates a hazardous situation that, if not avoided, could result in death or serious injury.</i>

 <b>CAUTION</b>
<i>Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.</i>

<b>NOTICE</b>
Indicates information considered important, but not hazard-related (e.g., messages relating to property damage).

## 1.2 General Safety Precautions

The Energy Command AGS+ is used to remotely monitor, and start and stop generator sets. All of the safety precautions for the equipment being monitored and controlled by the Energy Command AGS+ must be observed. Refer to the appropriate Operator Manual for important safety precautions.

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# 2 Introduction

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## 2.1 About this Manual

This Owner Manual provides the instructions necessary for operating, installing, and troubleshooting the Energy Command AGS+ (EC-AGS+).

## 2.2 List of Abbreviations

Abbreviation	Definition
A/C	Air Conditioner
AC	Alternating Current
AGS	Automatic Generator Starting
EC-AGS+	Energy Command AGS+
LPG	Liquid Petroleum Gas
RV	Recreational Vehicle

## 2.3 How to Obtain Service

When the EC-AGS+ requires servicing, contact information is shown on the Contact screen of the EC-AGS+ App. The Contact screen contains the generator set model.

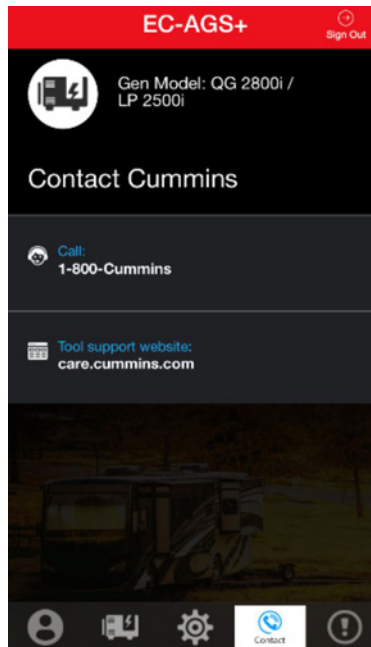


FIGURE 1. CONTACT

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# 3 Product Overview

The EC-AGS+ is an Automatic Generator Starting (AGS) system that provides wireless, manual and automatic control of Onan diesel, gas, and Liquid Petroleum Gas (LPG) engine driven Alternating Current (AC) generator sets through a mobile application. The EC-AGS+ automatically starts the generator set when the battery becomes discharged or temperature exceeds user settings. When the battery is charging or the Air Conditioner (A/C) no longer requires power, the EC-AGS+ automatically turns off the generator set.

The EC-AGS+ also provides critical system information such as battery state-of-charge and key operational information. Key operational information includes quiet time and generator set service fault messages. The EC-AGS+ is only used for Onan Recreational Vehicle (RV) and commercial mobile generator sets.

## 3.1 EC-AGS+ Compatibility

The EC-AGS+ is used with Onan RV fixed-mounted generator sets only. Any other use invalidates the warranty.

The EC-AGS+ is compatible with the following Onan generator set models.

**TABLE 1. QUIET DIESEL MODELS**

Model	Type	kW	EC-AGS+ Kit
HDKA	QD 6000/QD 8000	6/6.5/7.5/8	A065U740
HDKB	QD 5000/QD 5500	5	A065U740
HDKC	QD 10000/QD 12500	10/12.5	A065U740

**TABLE 2. GASOLINE/LPG MODELS**

Model	Type	kW	EC-AGS+ Kit
HGJBB	QG 2800/LP 2500	2.5/2.8	A065U664
HGLAA	QG 2800i/LP 2500i	2.5/2.8	A065U664
HGJAA	QG 5500/LP 5500 QG 7000/LP 6500	5.5/7	A065U664
HGJAB	QG 5500/LP 5500 QG 7000/LP 6500	5.5/7	A065U664
HGJAD	QG 5500/LP 5500 QG 7000/LP 6500	5.5/7	A065U664
HGJAE	QG 5500/LP 5500 QG 7000/LP 6500	5.5/7	A065U664
KY	QG 4000/LP 3600	3.6/4	A065U664

The EC-AGS+ can be used with the following discontinued models with limited functionality.

**TABLE 3. DISCONTINUED MODELS**

<b>Model</b>	<b>Type</b>	<b>kW</b>	<b>EC-AGS+ Kit</b>
HDCAA	QD 10000	10	A065U740*
HDCAB	QD 12500	12.5	A065U740*
KV	QG 2800/QG 2300/ QG 2500 LP/QG 2000 LP	2.8/2.3/2.5/2.0	A065U664*
KVD	QG 2800/QG 2500/ QG 2500 LP/QG 2000 LP	2.8/2.5/2.0	A065U664*

\* Fault codes displayed will not be accurate and reliable performance is not guaranteed.

## 3.2 Certifications

The EC-AGS+ is designed to be installed in accordance with the following installation standards:

- NFPA 70 - National Electric Code
- ANSI A119.2 (NFPA 1192) - Standard of Recreational Vehicles
- California Administrative Code Title 25, Chapter 3
- CAN/CSA - Z240.6 2 - Recreational Vehicles

The EC-AGS+ meets or exceeds the requirements of the following codes and standards:

- FCC15 with class B device category
- ICES-003 with class B device category
- RoHS
- IP6k7 rated

# 4 Description

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## 4.1 EC-AGS+ Features

The EC-AGS+ system includes the following features:

- Operates at a nominal voltage of 12 V
- Operates on 8–16 VDC
- Provides up to 3 temperature sensors with independent temperature settings for multiple A/C zones in the vehicle
- Bluetooth connectivity for iOS and Android operating systems to remotely control and monitor the generator set.
  - Generator set fault monitoring
  - Quiet time settings
  - Technician access mode
  - Over-the-air gateway firmware updates
  - Automatic starting and stopping of the generator set

## 4.2 EC-AGS+ Gateway

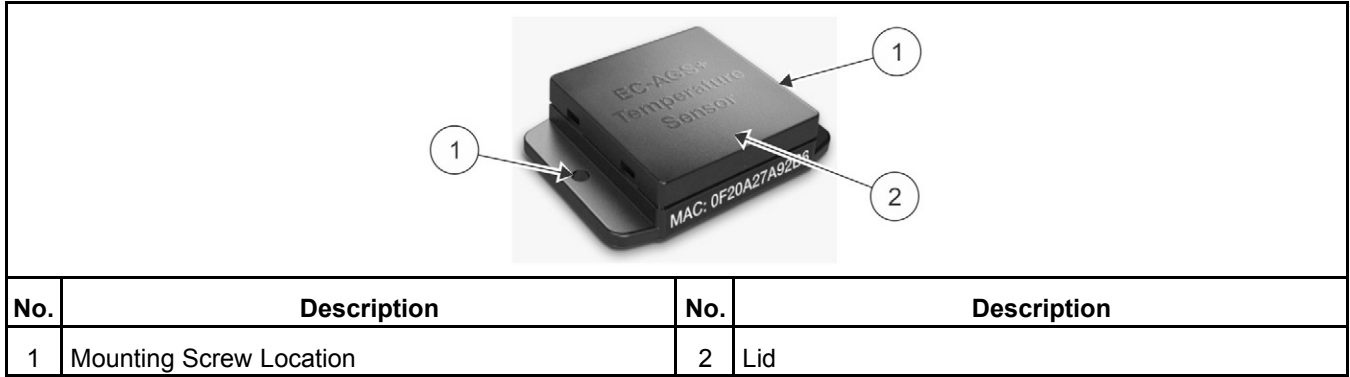
The EC-AGS+ gateway is set up and configured locally to work with the generator set. The mobile application provides system information through Bluetooth. Manual operations are communicated from the application to the connected generator set. A 12-pin connector connects the gateway to the generator set.



FIGURE 2. EC-AGS+ GATEWAY 12-PIN CONNECTOR

## 4.3 Temperature Sensor

Up to 3 temperature sensors can be mounted inside the vehicle. The lid is removed to access the sensor's battery.



**FIGURE 3. TEMPERATURE SENSOR**

# 5 Installation and Setup

## 5.1 System Overview

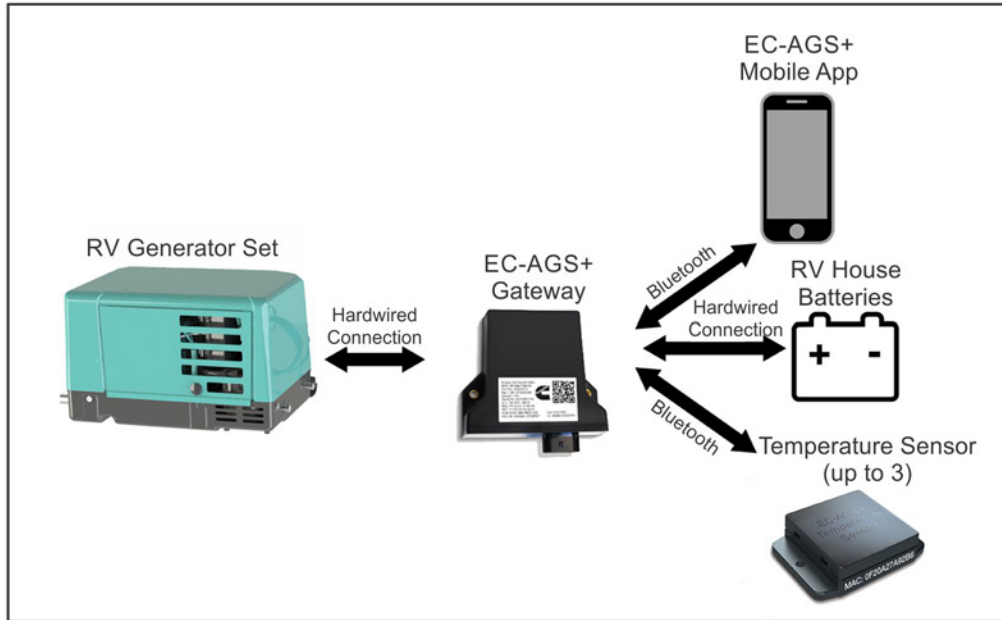


FIGURE 4. SYSTEM OVERVIEW

## 5.2 Supplied Hardware

TABLE 4. SUPPLIED HARDWARE

Hardware	Description
EC-AGS+ Gateway	Allows wireless communication between the generator set and mobile device.
Harness	5 foot standard harness used to connect the EC-AGS+ gateway to the generator set and battery source.
Temperature Sensor (with Mounting Screws)	Detects temperature within the vehicle. Mounting screw length may need to be adjusted for proper installation.
Y-harness	Required to connect the EC-AGS+ gateway in parallel with the remote start/stop switch on the generator set.

## 5.3 Additional Hardware

In addition to the supplied hardware, an extended 10 foot harness may be required to connect the EC-AGS+ gateway to the generator set and battery source.

## 5.4 Installation Items Not Supplied

The following items may be required before beginning installation and are not supplied.

**TABLE 5. INSTALLATION ITEMS NOT SUPPLIED**

Item	Recommended Specification	Quantity
EC-AGS+ Mounting Screws	3/4 inch drilling screws	2
Hook up Wire (required for extension)	SAE-1138 approved 18 AWG wires	2
Waterproof Crimp Butt Connectors	Compatible to 18 AWG wire	3
Fuse	5 Amp fuse for circuit protection	1
Battery Terminals	Ring terminals	3
Tie Wraps	Weather resistant nylon tie wraps	6

## 5.5 Installation Instructions

### **⚠ WARNING**

***Accidental starting of the generator set can cause severe personal injury or death due to electrocution or contact with moving parts. Disconnect the starting (battery cables before performing service. Batteries emit hydrogen, a highly explosive gas.***

***Thoroughly ventilate the battery compartment before removing battery cables. Remove the negative (-) cable(s) first to reduce the risk of arcing.***

### **⚠ CAUTION**

***Always disconnect a battery charger from its AC source before disconnecting the battery cables. Otherwise, disconnecting the cables can result in voltage spikes high enough to damage the DC control circuits.***

Before starting installation, it is mandatory to remove the negative cable of the generator set starting battery.

### 5.5.1 Mount Components

#### **⚠ CAUTION**

##### ***High Ambient Temperature***

***High ambient temperature can cause damage to the EC-AGS+ gateway.***

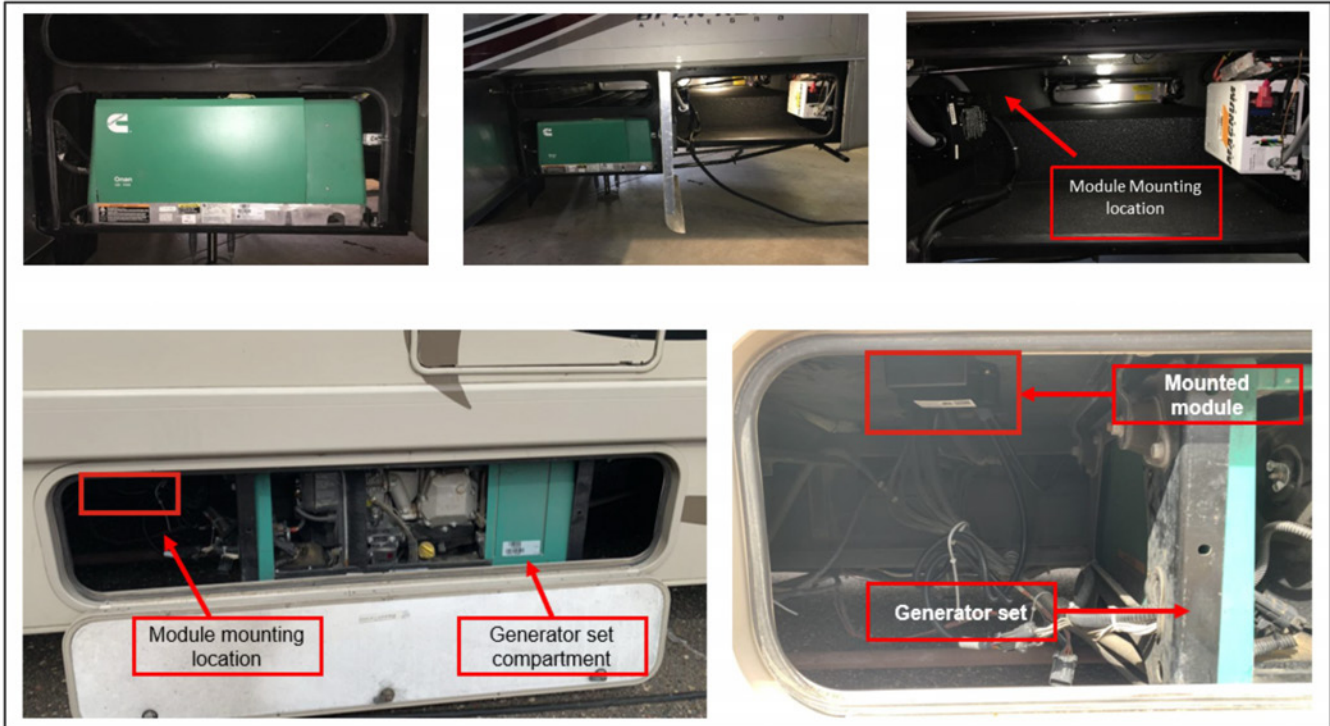
***Do not install the EC-AGS+ gateway directly inside the generator set compartment.***

Mount the EC-AGS+ gateway in a suitable location.

- Make sure EC-AGS+ gateway is easily accessible.
- EC-AGS+ gateway dimensions: 120 mm x 108 mm x 38 mm (4.72 in x 4.25 x 1.5 in)
- EC-AGS+ gateway temperature range: -40–70 °C (-40–158 °F)
- Location should not interfere with drilling of screws, fasteners, harness plug, or enclosure.

- Routing of harness should meet all national and local codes and wires must be protected from all hot, sharp, and abrasive surfaces.
- Mounting holes must not interfere with the generator set compartment vapor and fire-resistant barrier.

Drill holes for the fastening screws and mount the EC-AGS+ gateway using mounting screws.



**FIGURE 5. MOUNTING EXAMPLES**

#### **NOTICE**

The location of the generator set control varies by installation. Tools required and the cutout material (wood, metal, plastic, etc.) differ. The size of the cutout holes must be determined by the installer.

Mount the temperature sensor(s) in a suitable location.

- Near an A/C thermostat (one for each zone, 3 maximum)
- Dimensions: 51 mm x 70 mm x 17 mm (2 in x 2.76 x 0.67 in)
- Temperature range: -40–85 °C (-40–185 °F)

#### **NOTICE**

For multizone thermostats, one sensor is required per zone (maximum of 3).

Drill 2 holes for screws and mount the sensor.

## 5.5.2 Connect Components

### **⚠ WARNING**

#### ***Hazardous Gases***

***Exhaust gases are hazardous and can cause severe personal injury or death.  
Seal all holes to prevent the entrance of exhaust gases into the vehicle interior.***

### **⚠ CAUTION**

#### ***Electrical Generator Equipment***

***Incorrect connections can damage generator set controls, remote devices, and interconnect wiring.  
Make sure that the leads between the connections are properly connected.***

### **⚠ CAUTION**

#### ***Electrical Induction***

***Electrical induction can cause operational problems when DC wires are run with AC wires.  
Route the control harness separately from AC load wires.***

The harness battery connection wiring is single conductors of 0.81–1.29 mm (16–20 AWG) wire formed into a wiring harness.

- All cabling must be rated for the environment, temperature, and applicable standards.
- All cabling should have a minimum separation of 127 mm (5 in) from AC power sources.
- Wires should be free from tension at both ends and over the length of each run.
- UTP cable bends or radii should be no less than 8 times the cable diameter.

To connect the EC-AGS+ gateway:

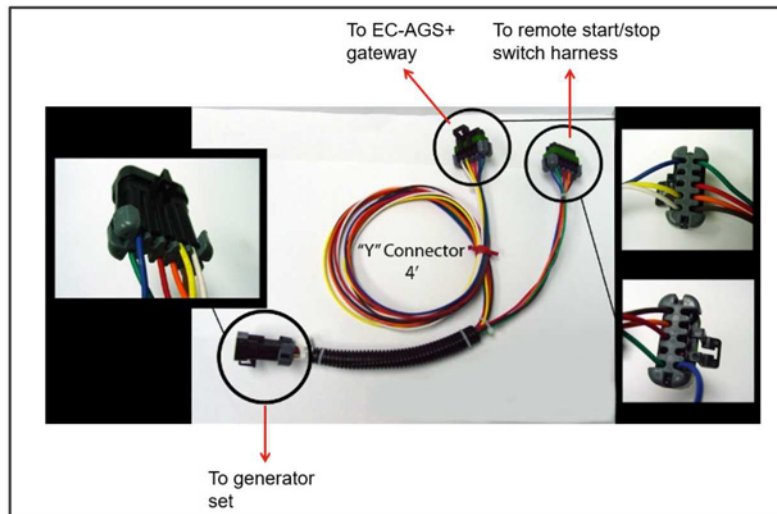
1. Plug the 12-pin connector from the harness to the EC-AGS+ gateway.
2. Route the other end of the harness from the EC-AGS+ gateway to the Y-harness.
  - For gas generator sets, plug the 8-pin EC-AGS+ harness connector into either lead of the Y-harness.

### **NOTICE**

**Only one gateway or MON communication device can be connected to the generator set.**

- For diesel generator sets, plug the 10-pin EC-AGS+ harness connector into the longer lead of the Y-harness. If the EC AGS+ is not connected to the correct lead of the Y-harness (longer one), the control will not work properly.





**FIGURE 6. Y-HARNESS (DIESEL SHOWN)**

3. Connect the main lead of the Y-harness to the generator set.

**NOTICE**

**Seal any holes where the harness passes through bulkheads.**

4. Connect the remaining Y-harness connector to the remote start/stop switch harness.
5. Route the red wire lead from the harness to the positive terminal of the generator set starting battery and extend as necessary using butt connectors.

**NOTICE**

**The power connection must be connected to an unswitched power source.**

6. It is recommended to provide circuit protection by installing a 5 Amp fuse in the red wire lead.

**⚠ WARNING**

***Faulty grounding can lead to fire and electrocution, resulting in severe personal injury or death.***

***Make sure the ground connection is secured.***

7. Locate the common ground location on the vehicle and route the black wire lead to the common ground, and extend if necessary.
8. Route the grey wire lead to the engine battery positive terminal and extend as necessary.

**NOTICE**

**This is an optional connection used to monitor the vehicle engine battery.**

9. Insert battery ring terminal to the wires.
10. Connect the wires.
11. Use cable ties at not less than 0.5 m (20 in) intervals to keep the wire bundle neat. Use protective sheathing where necessary to protect the wires from sharp edges.

To connect temperature sensor(s):

1. Remove the lid from the sensor using a small flathead screwdriver.
2. Remove the plastic battery tab from the sensor to enable the battery to provide power to the sensor.
3. Place the lid back on the sensor.

## 5.6 Mobile Application Setup

The EC-AGS+ gateway and temperature sensor(s) are controlled and monitored through Bluetooth using the EC-AGS+ mobile application.

The app is used to start and stop the generator set remotely when Auto mode is enabled. The following generator set parameters can be monitored:

- House and engine battery levels
- AC voltage
- Fault conditions
- Maintenance reminders
- Exercise reminders

### 5.6.1 System Requirements

The operator range of the EC-AGS+ app is approximately 30 feet from the EC-AGS+ gateway and temperature sensor(s).

The following software is required for the mobile device:

- Operating System: iOS with OS version 13.x and above or Android OS version 8.x and above
- Bluetooth: version 4.2 and above

### 5.6.2 Getting Started

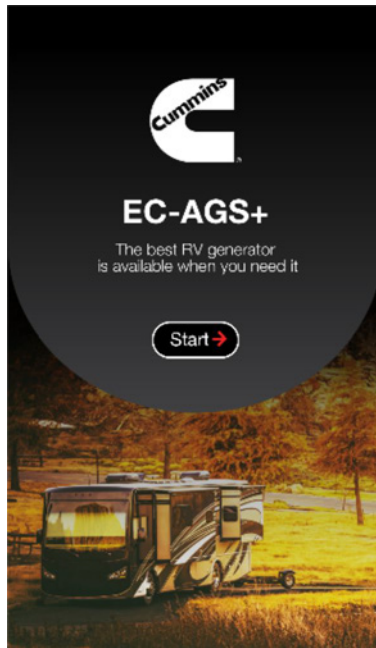
1. Download the EC-AGS+ app from the AppStore for iOS or Play Store for Android on a mobile device.
2. Reconnect the generator set negative (-) battery cable to power on the EC-AGS+ gateway.
3. Verify that the EC-AGS+ gateway is powered by observing the LED located on the EC-AGS+ gateway. It should be blinking every 5 seconds.
4. Turn on Bluetooth on the device containing the app.

### 5.6.3 Configure System Using App

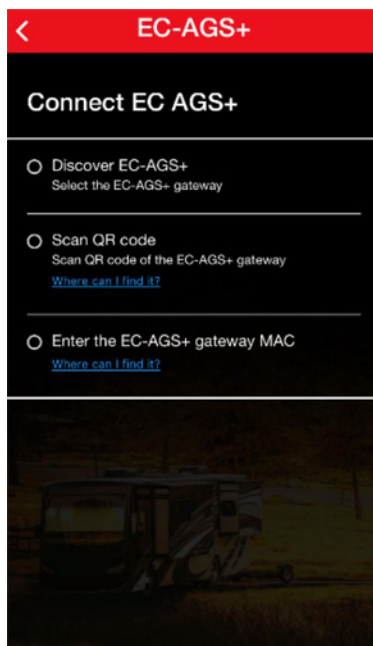
#### **NOTICE**

**For first time set up or after factory reset, the vehicle must be kept stationary for at least 30 seconds to allow for the EC-AGS+ gateway accelerometer to be configured properly.**

1. Select the EC-AGS+ App.

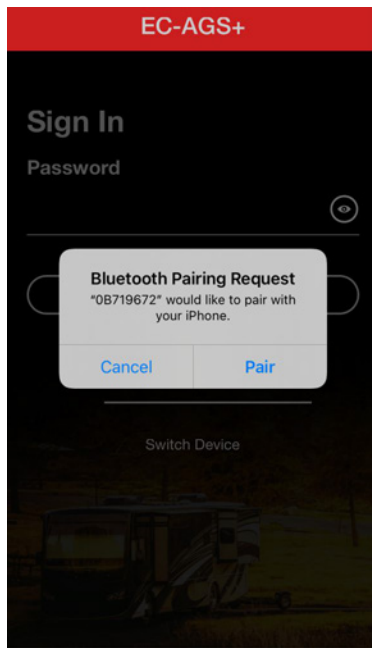


2. Select **Start**.



3. Select an option to connect the EC-AGS+ gateway to the app.
  - Discover EC-AGS+ - Detects the EC-AGS+ gateway through Bluetooth. Select the last 4 digits of the gateway's MAC address to connect.
  - Scan QR code - In scanner window, scan the code on the generator set to connect.
  - Enter the EC-AGS+ gateway password - Enter the complete MAC address of the EC-AGS+ gateway to connect.

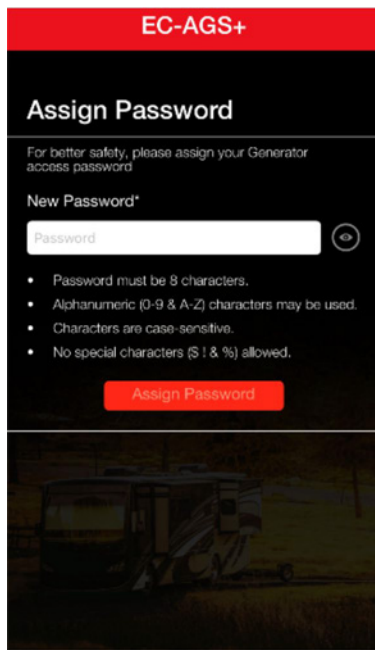
When Discover EC-AGS+ is selected, a screen is displayed to allow pairing of the device to Bluetooth.



4. If Discover EC-AGS+ was selected, select **Pair** to pair the device to Bluetooth.
5. The End User License Agreement is displayed when connected.

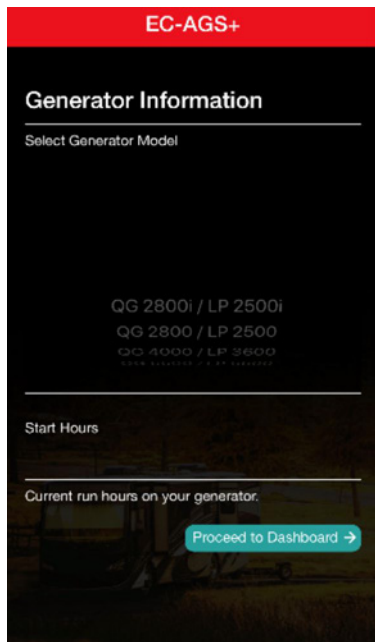


6. Read the agreement to the end and select **Agree** to continue.



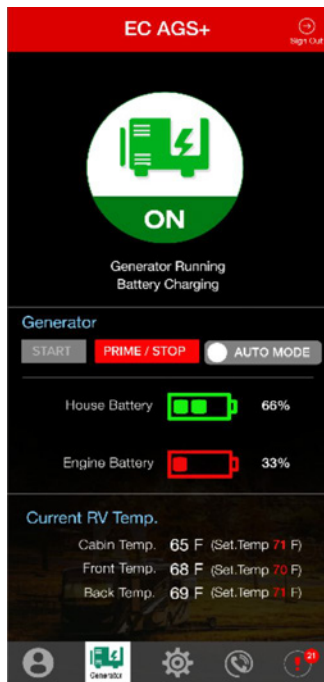
7. If logging in for the first time, a new password entry is required. Create a new password according to the provided specifications. The password is used to access the app after the first time.

Select **Assign Password**.



8. Select the generator set model and type from the options provided. Enter the Start Hours from the hour meter on the generator set if available.

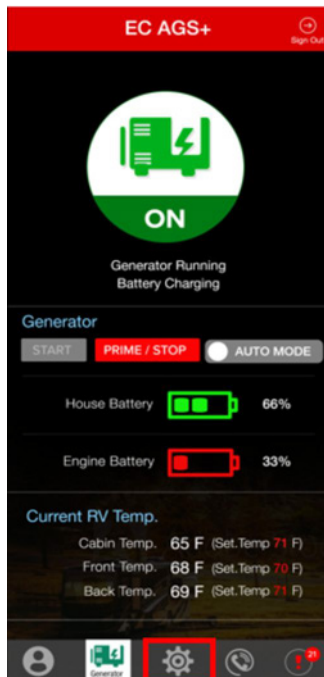
Select **Proceed to Dashboard**.



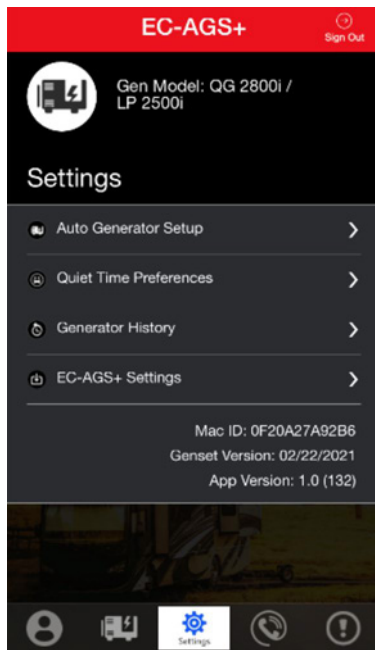
The dashboard provides generator set status and allows the user to start and stop the generator set, enable/disable Auto Mode, and monitor the battery and temperature sensor information.

### 5.6.3.1 Temperature Sensor Setup

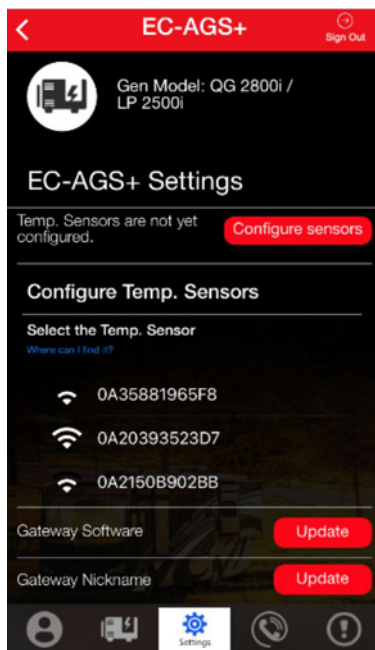
1. Navigate to the Dashboard screen.



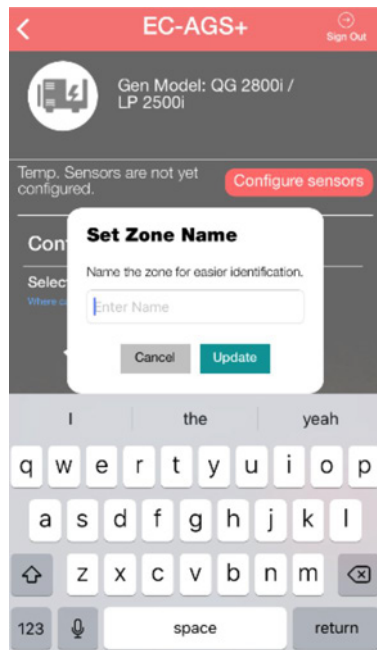
2. Select the settings icon on the bottom of the screen.



3. Select **EC-AGS+ Settings**.



4. Select **Configure sensors**. Select the desired temperature sensor's MAC address.

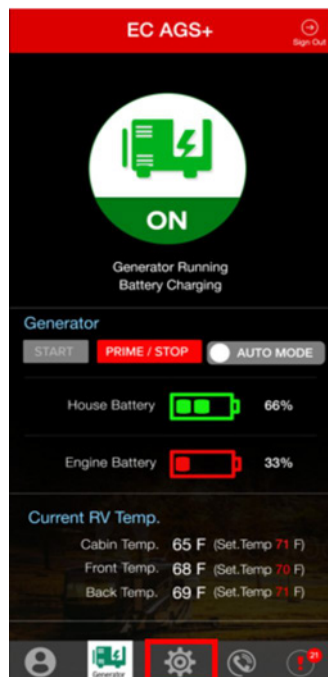


5. Enter a name for temperature sensor zone and select **Update**. Select **Add more sensors** and repeat for any additional temperature sensors.

### 5.6.3.2 Gateway Nickname

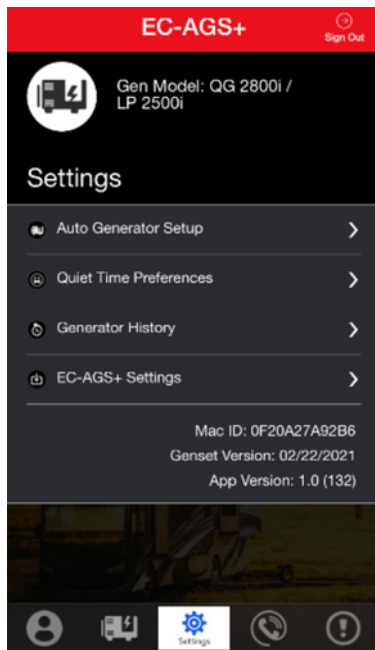
A gateway nickname is used for easier identification of the EC-AGS+ gateway.

1. Navigate to the Dashboard screen.

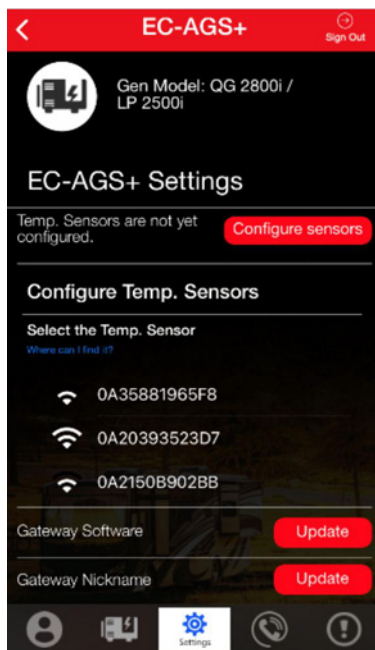


2. Select the settings icon on the bottom of the screen.

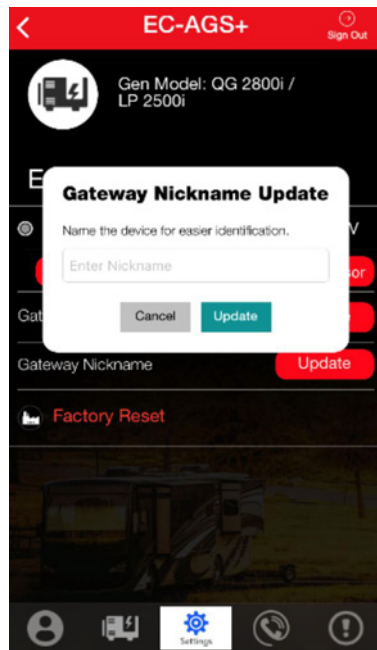




3. Select **EC-AGS+ Settings**.



4. Select **Update** for Gateway Nickname.



5. Enter a nickname for the gateway and select **Update**.

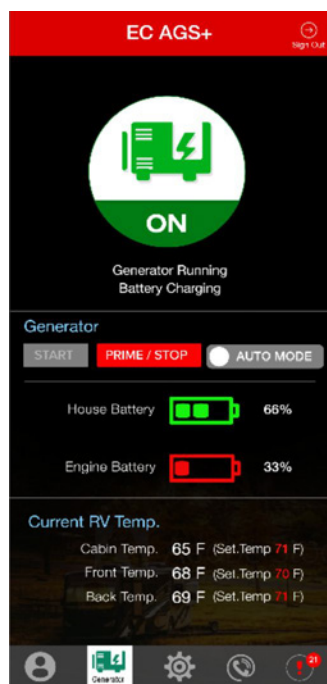
### 5.6.3.3 AGS Setup

The AGS can be enabled by selecting AUTO MODE or setting Air Conditioning Sense or Battery Sense parameters.

If Auto mode parameters are not preconfigured, Auto mode is enabled based on the battery state-of-charge.

Temperature sensors need to be configured before Air Conditioning Sense can be enabled. The Air conditioning sense temperature is the temperature at which the generator set should start automatically.

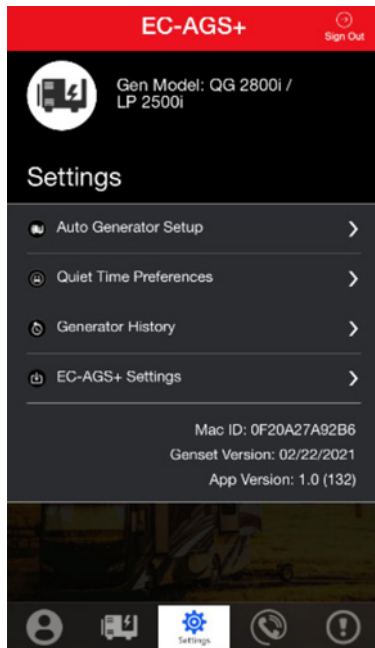
Navigate to the Dashboard screen.



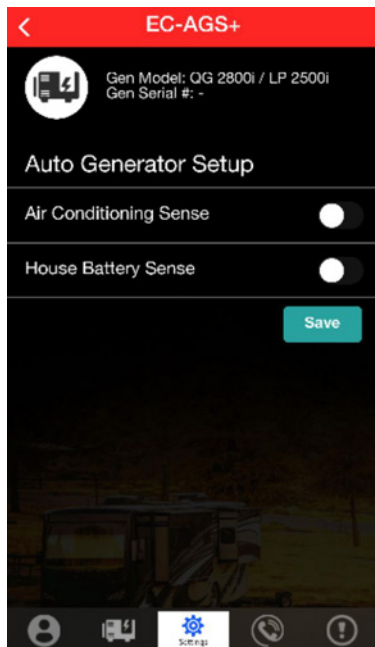
To set up with Auto mode, select the **AUTO MODE** button to enable.

To set up with Air Conditioning Sense:

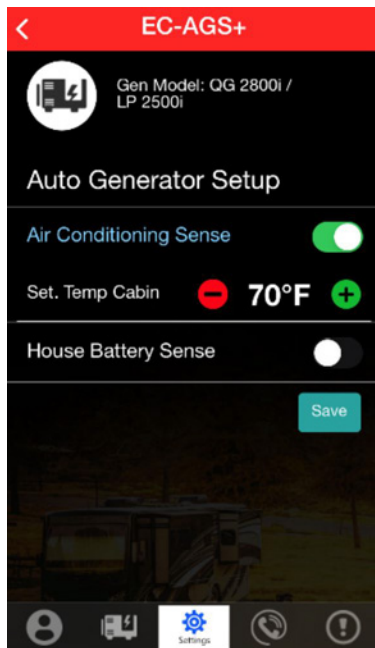
1. Select the settings icon on the bottom of the screen.



2. Select **Auto Generator Setup**.



3. Enable **Air Conditioning Sense**.



4. Select **-** or **+** to adjust the temperature setting. It is recommended that the EC-AGS+ be used as a thermostat. Adjust the temperature setting to the desired coach temperature and set the RV house temperature 3–5 °F below the coach temperature. For example, if the desired coach temperature is 70 °F, set the EC-AGS+ temperature setting to 70 °F and the RV house thermostat to 65 °F. This ensures a steady air conditioner demand, keeping the generator set from turning on until the coach is above 70 °F.

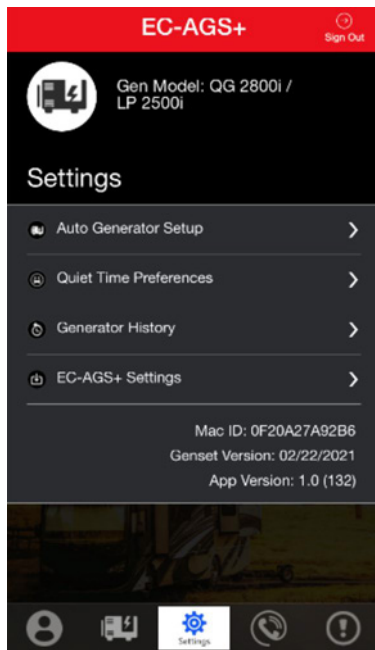
#### NOTICE

**The A/C should be set to On or Auto for the EC-AGS+ App to work effectively in conjunction with the A/C thermostat.**

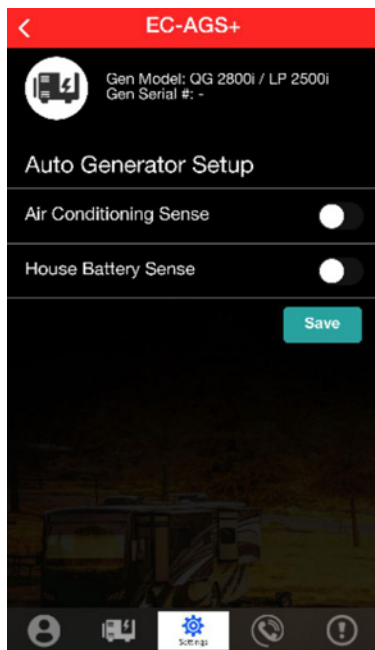
5. Select **Save**.

To set up with House Battery Sense:

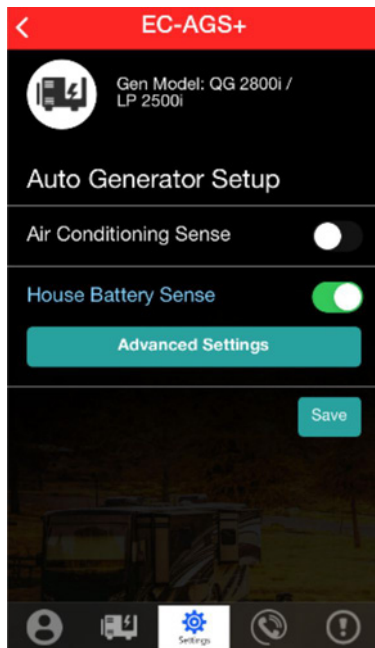
1. Select the settings icon on the bottom of the screen.



2. Select **Auto Generator Setup**.



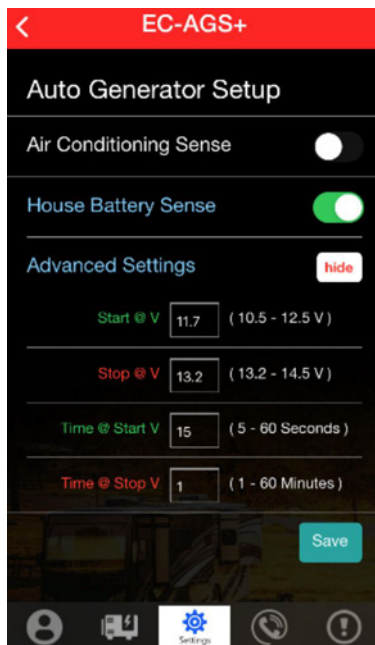
3. Enable **House Battery Sense**.



4. Select **Advanced Settings**.

#### NOTICE

It is recommended that only qualified personnel that understand the charging system and have verified its operator voltages should change the house battery sense settings.

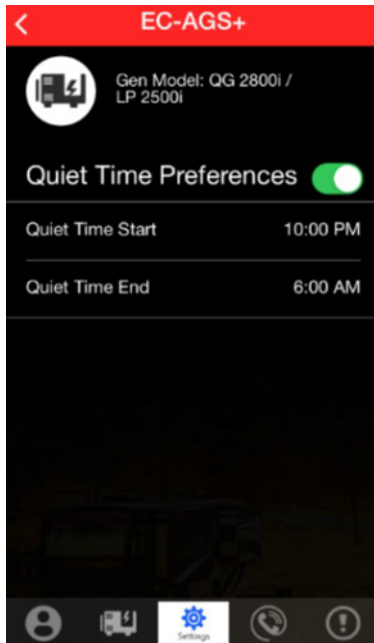


5. Enter the house battery voltages and times at which the generator set starts and stops automatically. Default values are shown.
  - Start @ V - Voltage house battery needs to reach for the generator set to start automatically.
  - Time @ Start V - Length of time that the house battery is below the start voltage before the generator set starts automatically.
  - Stop @ V - Voltage house battery needs to reach for the generator set to stop automatically.

- Time @ Stop V - Length of time that the house battery is above the stop voltage before the generator set stops automatically.

6. Select **Save**.

Quiet time prevents the generator set from starting between the start and end times. Time is local time. Navigate to Settings and select **Quiet Time Preferences**. Enable Quiet Time Preferences and set the Quiet Time Start and End times.



## 5.7 Installation and Setup Test

1. Verify generator set operating using the Start/Stop switch located on the generator set to start and stop the generator set.
2. Verify manual start/stop of the generator set from the app dashboard by selecting the **START** and **PRIME/STOP** buttons.
3. Check the operation of the temperature sensors.
  - a. On the app dashboard, enable Auto mode.
  - b. Verify that Air Conditioning Sense is enabled.
  - c. Confirm that the current and set temperatures are displayed on the app dashboard.
4. In AGS, the generator set should start automatically when the settings are met.
  - a. Check that the remote Start/Stop switch indicator flashes while the generator set engine is cranking.
  - b. Verify that the generator set starts and continues to run and that the Start/Stop switch indicator is illuminated (no longer flashing).
5. Verify that the accelerometer is functioning in AGS by driving the vehicle at 10 mph and checking that AGS is automatically disabled on the app dashboard.
6. Verify delayed shutdown:
  - a. Enable AGS and allow the generator set to start.
  - b. In the app, immediately disable AGS.

- c. Confirm that the generator set shuts down in 10 minutes.



# 6 EC-AGS+ Mobile Application

Operation is performed using the EC-AGS+ App.

## 6.1 Menu Bar

The menu bar is displayed on the bottom of the screen.

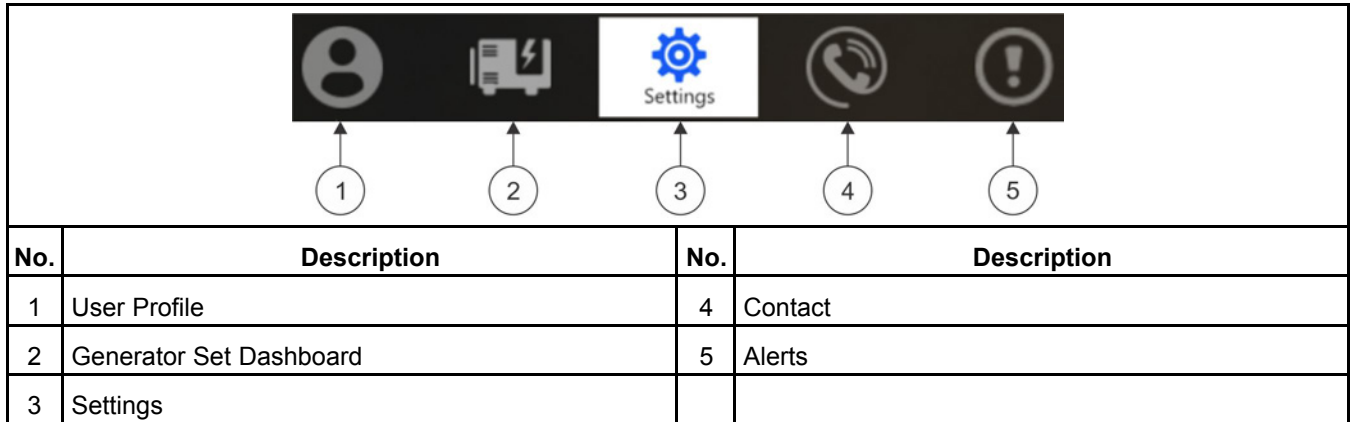


FIGURE 7. MENU BAR

## 6.2 User Profile

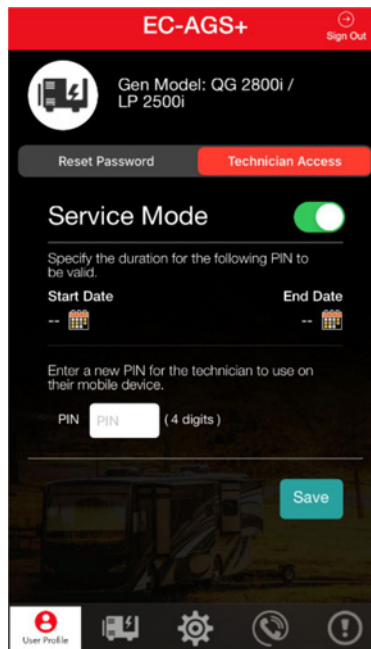


FIGURE 8. USER PROFILE

Select **Reset Password** to reset the password.

Account owners have access to all functionality and information in the app. The Technician Access allows the account owner to give temporary access for maintenance or service. A service technician can access the owner app from their own device with a pin provided by the owner. Access is provided for the dashboard, settings, and alerts screen.

To provide access to a service technician:

1. Select **Technician Access**.
2. Enable Service Mode.
3. Use the calendar to provide a start and end date for the duration of service.

NOTICE
<b>Make sure that the duration allows enough time for the service event and any unexpected delays.</b>

4. Enter a 4-digit pin for the technician.
5. Select **Save**.

The service technician connects to the customer's gateway and enters the pin for the password.

## 6.3 Generator Set Dashboard

The dashboard provides generator set status and allows the user to start and stop the generator set, enable/disable Auto Mode, and monitor the battery and temperature sensor information.

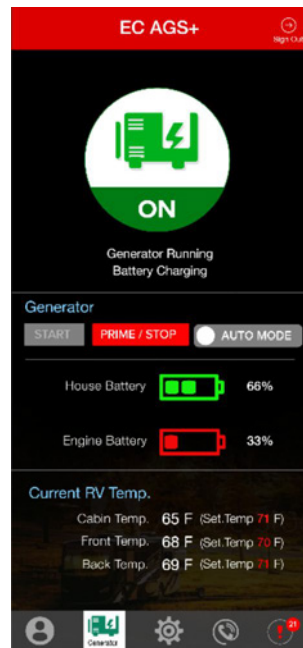
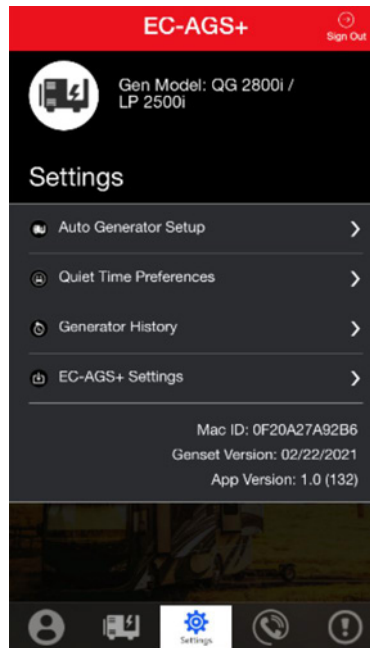


FIGURE 9. GENERATOR SET DASHBOARD

## 6.4 Settings



**FIGURE 10. SETTINGS**

Select **Auto Generator Setup** to set up AGS parameters.

Select **Quiet Time Preferences** to set up the quiet time start and end times.

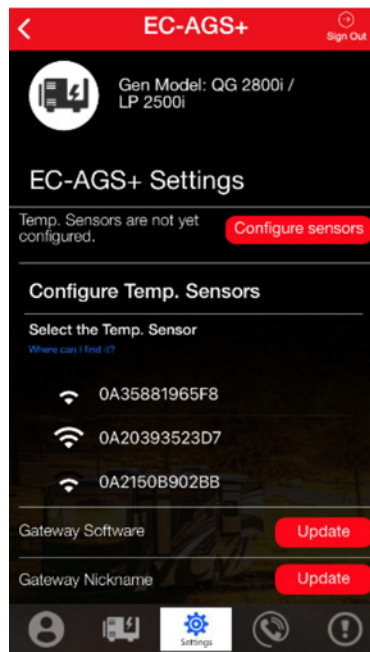
Select **Generator History** to display event history details for the last 50 events, and generator set fault codes and descriptions.

Select **EC-AGS+ Settings** to configure temperature sensors, update gateway software, enter gateway nickname, and perform a factory reset.

### NOTICE

**Performing a factory reset resets the password, technician access dates and pin, generator set model, and hour meter. AGS parameters and quiet time settings are removed and Auto mode is disabled.**

It is recommended that the EC-AGS+ App always has the latest software to ensure proper operation.

**FIGURE 11. EC-AGS+ SETTINGS**

Select **Update** for Gateway Software. If no update is available, a popup message is displayed with that information. If an update is available, make sure the gateway has power and is connected through Bluetooth with the app before performing the update.

### NOTICE

**Do not remove power or start the generator set when a software update is in progress. Doing so can interrupt the update and cause issues with the software.**

## 6.5 Contact

The Contact screen provides a phone number and link to for contacting Cummins support.

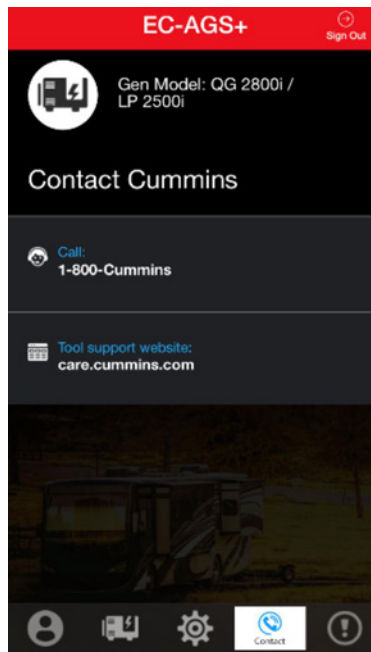


FIGURE 12. CONTACT

## 6.6 Alerts

The Alerts screen displays maintenance and exercise reminders, firmware update availability, and gateway accelerometer faults.

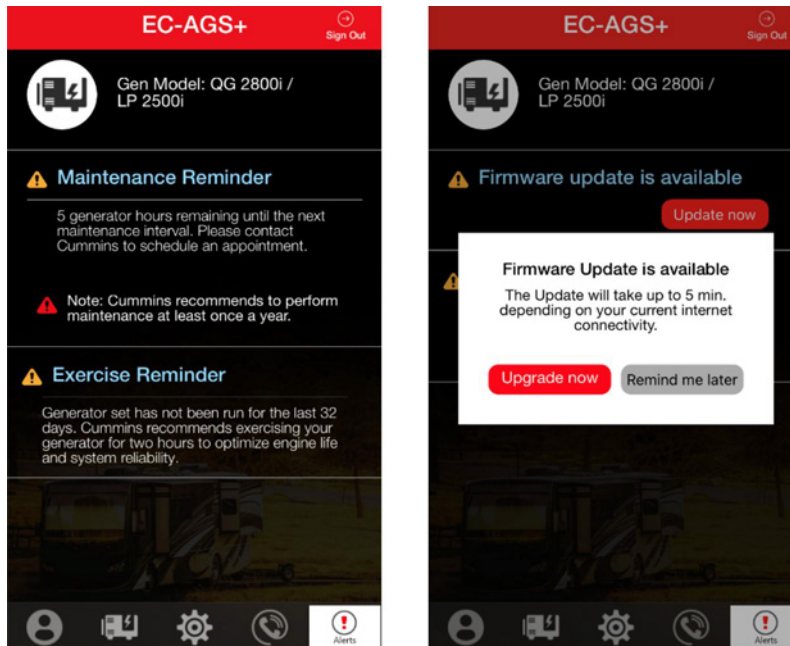


FIGURE 13. ALERTS

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# 7 Operation

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## 7.1 Manual Generator Set Operation

The generator set is manually started and stopped using the **START** and **STOP/PRIME** buttons on the app dashboard.

### NOTICE

**When a generator set or remote Start/Stop switch is operated manually, AGS is disabled.**

When started, the generator set cranks until it starts. If it does not start on the first attempt, the EC-AGS+ retries to start in 40 seconds. The generator set cranks until a fault code for over crank is displayed in the app.

## 7.2 Automatic Generator Set Operation

### ⚠ WARNING

#### *Automated Machinery*

***Accidental or remote starting of the generator set can cause severe personal injury or death.***

***Disconnect and uninstall any other systems capable of automatically controlling the generator set to prevent unintended start or stop.***

### ⚠ WARNING

#### *Toxic Gases*

***Inhalation of exhaust gases can cause asphyxiation, carbon monoxide poisoning, and death.***

***Do not run the generator set or enable AGS when the RV is indoors or in a confined space.***

### ⚠ WARNING

***The generator set/control is not a life support system. It can stop without warning. Children, persons with physical or mental limitations, and pets could suffer personal injury or death.***

***A personal attendant, redundant power, or alarm system must be used if generator set operation is critical.***

When AGS is enabled, the generator set is automatically started and stopped based on the temperature in the RV or house battery level.

### 7.2.1 Safety Feature

The EC-AGS+ has a safety feature to help prevent automatic operation when it may be unsafe. A built-in accelerometer in the EC-AGS+ gateway monitors vehicle motion. If a significant vehicle acceleration is detected, AGS is disabled. AGS should only be used when the vehicle is in a safe location.

If the EC-AGS+ has been in AGS for 30 days, AGS is disabled.

**NOTICE**

If the gateway is remounted, a factory reset of the device is required to recalibrate the device. Do not perform a factory reset while the vehicle is in motion.

**NOTICE**

Use of AGS is not allowed if the house battery is below 9 volts.

## 7.2.2 Adaptive Cycle Management

AGS has unique features to minimize repeated starting and stopping of the generator set (also called short cycling) and to pre-fill the battery prior to the start of Quiet Time.

### 7.2.2.1 Limit Short Cycling




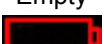
When in automatic mode, the minimum run time is 10 minutes, even if the automatic run request has been satisfied. For example, if the A/C only needs to run for 6 minutes to cool the coach, the generator set continues to run for a minimum of 10 minutes before stopping.

If a new run request is detected during the minimum run, the adaptive cycle management feature limits short cycling by extending the run time as required.

### 7.2.2.2 Quiet Time Prefill

Two hours prior to the beginning of Quiet Time, the EC-AGS+ checks the battery level. If the batteries are not full, the EC-AGS+ starts the generator set to charge the batteries.

The table below provides battery state-of-charge estimates and automatic generator set behavior based on the EC-AGS+ AGS/Quiet Time settings.

Battery State	To Decrement Battery Voltage Averages		To Increment Battery Voltage Averages		Auto/Quiet Comments
	1-Minute Average	1-Hour Average	1-Minute Average	1-Hour Average	
Full 			<ul style="list-style-type: none"> <li>Stable for 2 minutes</li> <li>1-minute average <math>\leq</math> 1-hour average</li> </ul>	$\geq 13.1$	Auto/Quiet - generator set stops due to full battery. Requires battery voltage conditions: <ul style="list-style-type: none"> <li>1-minute average stable for 2 minutes</li> <li>1-minute average <math>&lt;</math> 1-hour average</li> <li>1-hour average <math>\geq 13.1</math></li> </ul>
Medium 	$< 12.5$	$< 12.5$	Has been $> 12.5$	$> 13.4$	Quiet - Start for quiet time battery prefill.
Low 	$< 11.8$	$< 12.1$	$> 12.5$		Auto/Quiet - Generator starts due to low battery.
Empty 	$< 10.5$	$< 10.5$			



# 8 Troubleshooting

---

Troubleshooting provides corrective actions for symptom-based faults. If a problem is not resolved after taking the corrective actions suggested, see [Section 2.3 on page 3](#) to obtain service.

## 8.1 App Does Not Install, Initialize, or Crashes

### A. Check Mobile Device OS Compatibility

If the mobile device OS is not compatible, update the OS or switch to a mobile device with a compatible OS.

### B. Check App Version

Make sure the app version is the most recent available. If an update is available or the version is not the most recent, update the app.

## 8.2 Unable to Pair Temperature Sensor to Gateway

### A. Check Temperature Sensor Battery Voltage

If the temperature sensor coin cell battery is not producing the minimum operating voltage, replace the battery.

### B. Check Temperature Sensor Bluetooth

Make sure that the temperature sensor is within Bluetooth range to the gateway. If necessary, move the temperature sensor or gateway within range.

## 8.3 Mobile Device Does Not Communicate or Pair to Gateway

### A. Check Mobile Device Bluetooth

1. Make sure Bluetooth is enable on the mobile device and enable if necessary.
2. Make sure that the mobile device is within Bluetooth range to the gateway. If necessary, move the mobile device within range.
3. Make sure other Bluetooth devices can connect to the mobile device. If not, troubleshoot the mobile device.

### B. Check Service Mode Settings

If attempting to connect via Service Mode, make sure that Service Mode is enabled on the gateway owner's mobile app and the PIN is known. If necessary, enable Service Mode or obtain correct PIN.

### C. Check Gateway Battery Voltage

If the gateway batteries do not have the minimum gateway operating voltage, charge or replace the batteries.

## D. Check Gateway to Battery Harness Continuity

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness battery terminals and battery pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

## E. Check Gateway Firmware Version

Make sure the gateway firmware version is the most recent available. If an update is available or the version is not the most recent, update the firmware.

## F. Check Gateway Bluetooth

1. Make sure that the gateway is within Bluetooth range to the mobile device. If necessary, move the gateway within range.
2. Make sure gateway can connect to other properly configured mobile devices. If necessary, replace the gateway.

## G. Check Gateway Functionality

Make sure the heartbeat LED on the gateway is active. If the heartbeat LED is not active, replace the gateway.

# 8.4 Generator Set Does Not Start in Manual Mode

## A. Check Generator Set Faults

1. Start the generator set using the local generator set control switch.
2. Check the generator set fault codes and refer to generator set troubleshooting.

### NOTICE

Generator set fault codes displayed on the EC-AGS+ App are issues with the generator set, not the EC-AGS+ hardware or app.

## B. Check Gateway to Generator Set Harness Continuity

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness generator set connector pins and connector pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

# 8.5 Generator Set Does Not Start in Auto Mode

## A. Check Generator Set Faults

1. Start the generator set using the local generator set control switch.
2. Check the generator set fault codes and refer to generator set troubleshooting.

**NOTICE**

Generator set fault codes displayed on the EC-AGS+ App are issues with the generator set, not the EC-AGS+ hardware or app.

**B. Check for Accelerometer Fault**

If the Accelerometer Fault notification is active in the app Alerts screen, Auto mode cannot be engaged. Replace the gateway.

**C. Check Temperature Sensor Setting**

Make sure that the temperature setting is correct. If the generator set is not starting before the A/C, adjust the temperature setting.

**D. Check Quiet Time Settings**

Make sure that the Quiet Time settings are set correctly. If the generator set is not starting before Quiet Time, adjust the settings.

**E. Check Mobile Device Clock Setting**

Make sure that the mobile device is set to the correct time and time zone. If not, set to the correct time and time zone.

**NOTICE**

If settings are changed, the mobile device needs to be connected to the gateway for the time to be updated.

**F. Check House Battery Start Voltage Setting**

Make sure that the house battery start voltage is set correctly. If the generator set is not starting before the battery charger would start charging, adjust the setting.

**G. Check House Battery Start Time Setting**

Make sure that the house battery start time is set correctly. If the generator set is starting from temporary voltage drops, adjust the setting.

**H. Check Gateway to Generator Set Harness Continuity**

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness generator set connector pins and connector pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

## 8.6 Generator Set Starts Unexpectedly

**A. Check Temperature Sensor Setting**

Make sure that the temperature setting is correct. If the generator set is not starting before the A/C, adjust the temperature setting.

## B. Check Quiet Time Settings

Make sure that the Quiet Time settings are set correctly. If the generator set is not starting before Quiet Time, adjust the settings.

## C. Check Mobile Device Clock Setting

Make sure that the mobile device is set to the correct time and time zone. If not, set to the correct time and time zone.

### NOTICE

If settings are changed, the mobile device needs to be connected to the gateway for the time to be updated.

## D. Check House Battery Start Voltage Setting

Make sure that the house battery start voltage is set correctly. If the generator set is not starting before the battery charger would start charging, adjust the setting.

## E. Check House Battery Start Time Setting

Make sure that the house battery start time is set correctly. If the generator set is starting from temporary voltage drops, adjust the setting.

# 8.7 Generator Set Does Not Stop

### NOTICE

Generator set can be stopped with local and remote physical control switches.

## A. Check Temperature Sensor Setting

Make sure that the temperature setting is correct. If the generator set is not starting before the A/C, adjust the temperature setting.

## B. Check Quiet Time Settings

Make sure that the Quiet Time settings are set correctly. If the generator set is not starting before Quiet Time, adjust the settings.

## C. Check Mobile Device Clock Setting

Make sure that the mobile device is set to the correct time and time zone. If not, set to the correct time and time zone.

### NOTICE

If settings are changed, the mobile device needs to be connected to the gateway for the time to be updated.

## D. Check House Battery Stop Voltage Setting

Make sure that the house battery stop voltage is set correctly. If the generator set is not stopping before the battery charger would stop charging, adjust the setting.

## E. Check House Battery Stop Time Setting

Make sure that the house battery stop time is set correctly. If the generator set is continuing to run long enough after reaching the stop voltage, adjust the setting.

## F. Check Gateway to Generator Set Harness Continuity

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness generator set connector pins and connector pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

# 8.8 Generator Set Stops Unexpectedly

## A. Check for Accelerometer Fault

If the Accelerometer Fault notification is active in the app Alerts screen, Auto mode cannot be engaged. Replace the gateway.

## B. Check Temperature Sensor Setting

Make sure that the temperature setting is correct. If the generator set is not starting before the A/C, adjust the temperature setting.

## C. Check Quiet Time Settings

Make sure that the Quiet Time settings are set correctly. If the generator set is not starting before Quiet Time, adjust the settings.

## D. Check Mobile Device Clock Setting

Make sure that the mobile device is set to the correct time and time zone. If not, set to the correct time and time zone.

### NOTICE

If settings are changed, the mobile device needs to be connected to the gateway for the time to be updated.

## E. Check House Battery Stop Voltage Setting

Make sure that the house battery stop voltage is set correctly. If the generator set is not stopping before the battery charger would stop charging, adjust the setting.

## F. Check House Battery Stop Time Setting

Make sure that the house battery stop time is set correctly. If the generator set is continuing to run long enough after reaching the stop voltage, adjust the setting.

---

## G. Check Gateway to Generator Set Harness Continuity

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness generator set connector pins and connector pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

## 8.9 Generator Set Does Not Run A/C

### A. Check Temperature Sensor Setting

Make sure that the temperature setting is correct. If the generator set is not starting before the A/C, adjust the temperature setting.

### B. Check Temperature Sensor Battery Voltage

If the temperature sensor coin cell battery is not producing the minimum operating voltage, replace the battery.

### C. Check Temperature Sensor Bluetooth

Make sure that the temperature sensor is within Bluetooth range to the gateway. If necessary, move the temperature sensor or gateway within range.

### D. Check Quiet Time Settings

Make sure that the Quiet Time settings are set correctly. If the generator set is not starting before Quiet Time, adjust the settings.

### E. Check Gateway Battery Voltage

If the gateway batteries do not have the minimum gateway operating voltage, charge or replace the batteries.

## 8.10 House Battery State-of-Charge is Inaccurate

### A. Check Gateway to Battery Harness Continuity

1. Replace any damaged pins and connectors.
2. Measure the resistance between the gateway harness battery terminals and battery pins at the gateway connector (see [Appendix A on page 49](#)).
3. If the resistance is greater than 10 Ohms, repair or replace harness.

## 8.11 Temperature is Inaccurate

### A. Check Temperature Sensor Battery Voltage

If the temperature sensor coin cell battery is not producing the minimum operating voltage, replace the battery.

## B. Check Temperature Sensor Bluetooth

Make sure that the temperature sensor is within Bluetooth range to the gateway. If necessary, move the temperature sensor or gateway within range.

# 8.12 Clock is Inaccurate

## A. Check Mobile Device Clock Setting

Make sure that the mobile device is set to the correct time and time zone. If not, set to the correct time and time zone.

<b>NOTICE</b>
<b>If settings are changed, the mobile device needs to be connected to the gateway for the time to be updated.</b>

# 8.13 Accelerometer Fault

## A. Check for Accelerometer Fault

If the Accelerometer Fault notification is active in the app Alerts screen, Auto mode cannot be engaged. Replace the gateway.

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# 9 Temperature Sensor Battery Replacement

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The temperature sensor battery has an indicator that indicates when the battery needs to be replaced. The installed battery has a life expectancy of 4 years. It is recommended that the battery be replaced when it is below 2.5 V. The battery is a 2450 coin battery.

Make sure the generator set is not set to start in Auto mode.

1. Remove the top cover of the temperature sensor using a small flathead screwdriver.

**NOTICE**

**Take extra precaution when removing the temperature sensor cover. Pushing on the cover too hard can damage or break it.**

2. Slide the battery out of the battery holder and remove the battery.
3. Slide the new battery into the battery holder and replace the cover.

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# 10 Parts Information

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## 10.1 Standard Parts

TABLE 6. STANDARD PARTS

Part Number	Description	Quantity
A064X814	EC-AGS+ Gateway	1
A064X817	5 Foot Harness, Diesel	1
044-00135	Y-Harness, Diesel	1
A064X815	5 Foot Harness, Gas	1
044-00087	Y-Harness, Gas	1
A064X819	Temperature Sensor	1

## 10.2 Conditional Parts

Part Number	Description	Quantity
A065L014	10 Foot Extended Harness, Diesel	1
A065L013	10 Foot Extended Harness, Gas	1

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# Appendix A. Connectivity Diagrams

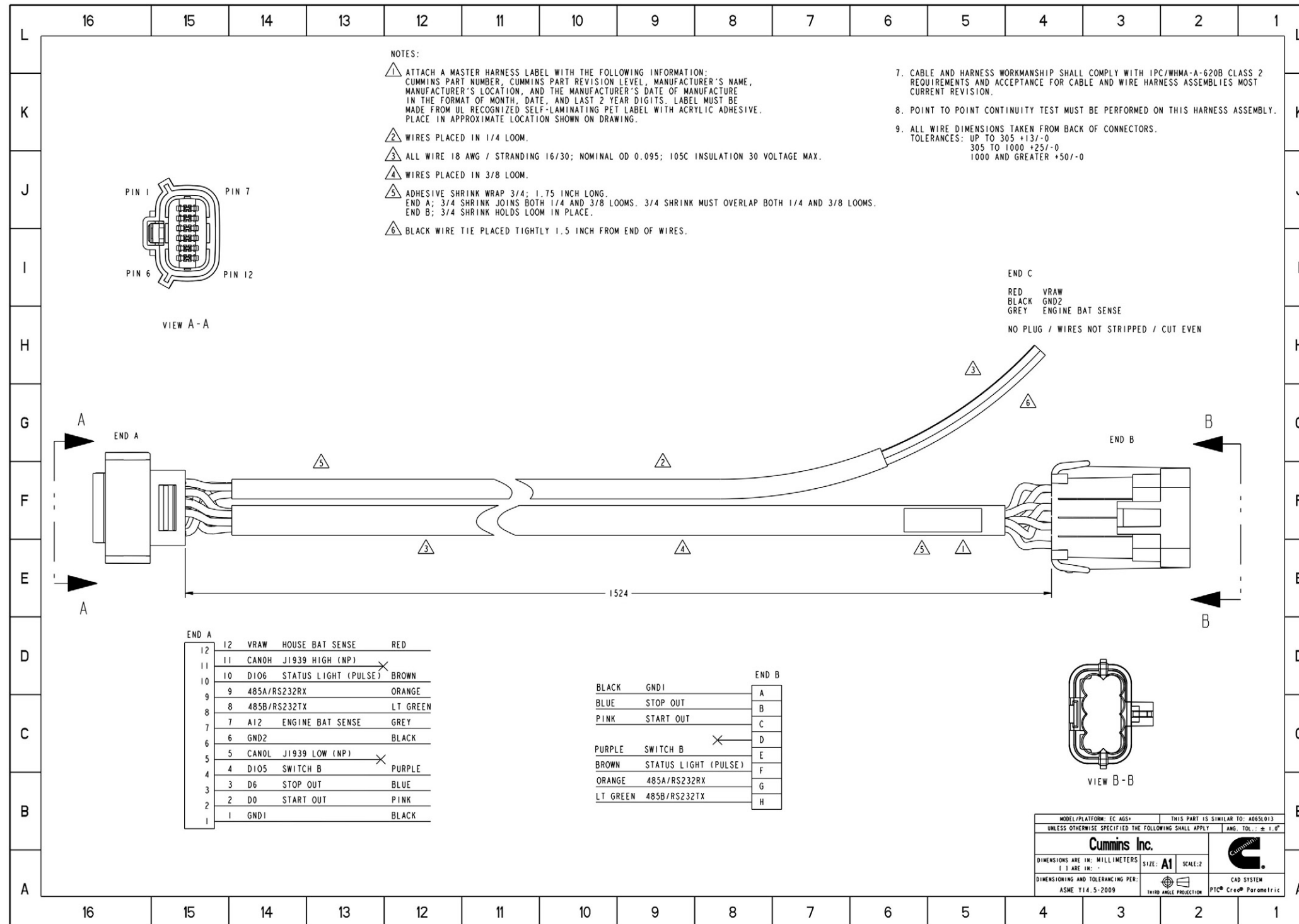
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## Table of Contents

Figure 14. Gas Generator Set Gateway Harness .....	51
Figure 15. Gas Generator Set Y-Harness .....	52
Figure 16. Diesel Generator Set Gateway Harness .....	53
Figure 17. Diesel Generator Set Y-Harness .....	54

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# A.0 Gas Generator Set Gateway Harness



Part Number: **A064X815** Part Revision: **C**  
Part Name: **HARNESS,CONTROL**

**FIGURE 14. GAS GENERATOR SET GATEWAY HARNESS**

# A.1 Gas Generator Set Y-Harness

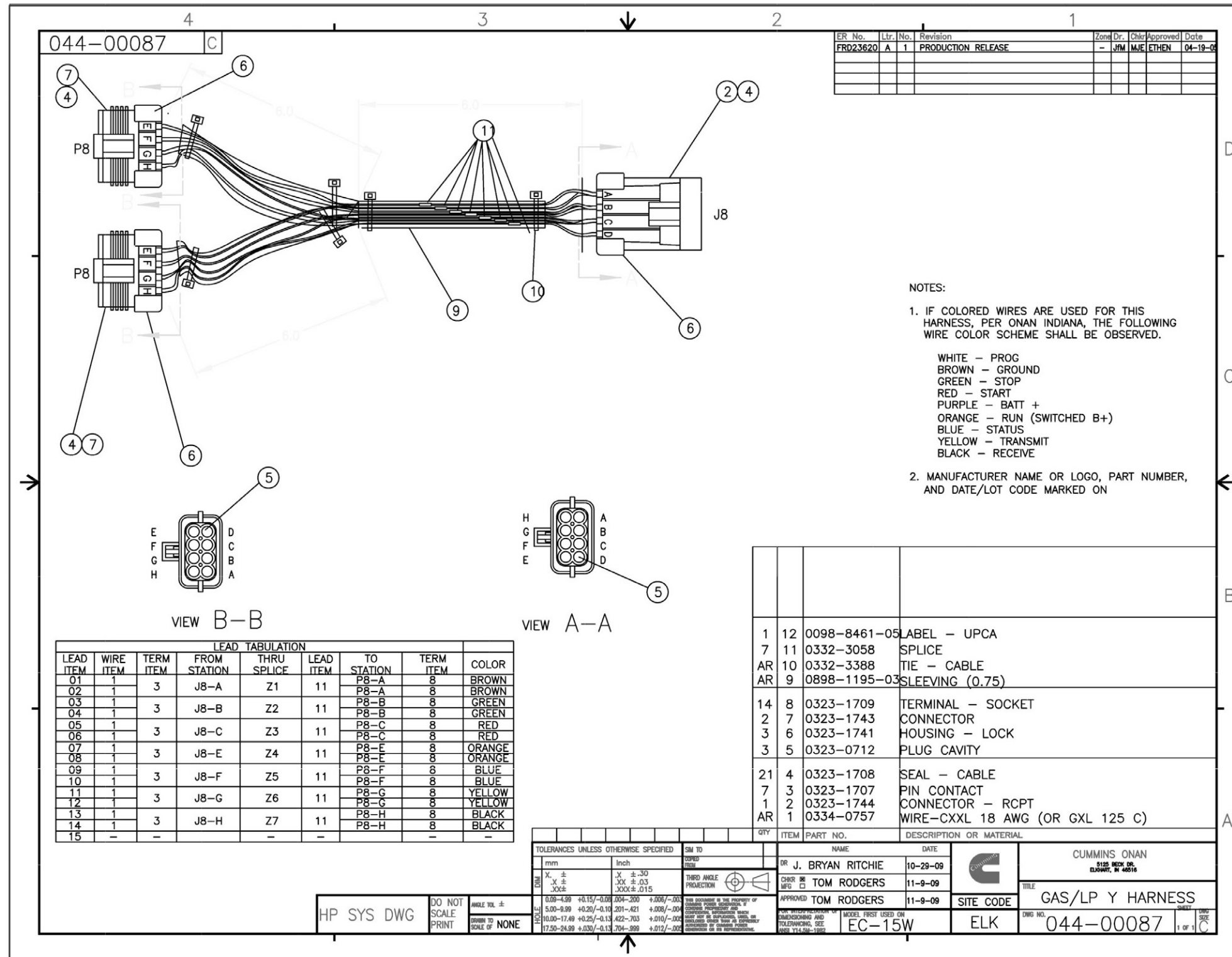
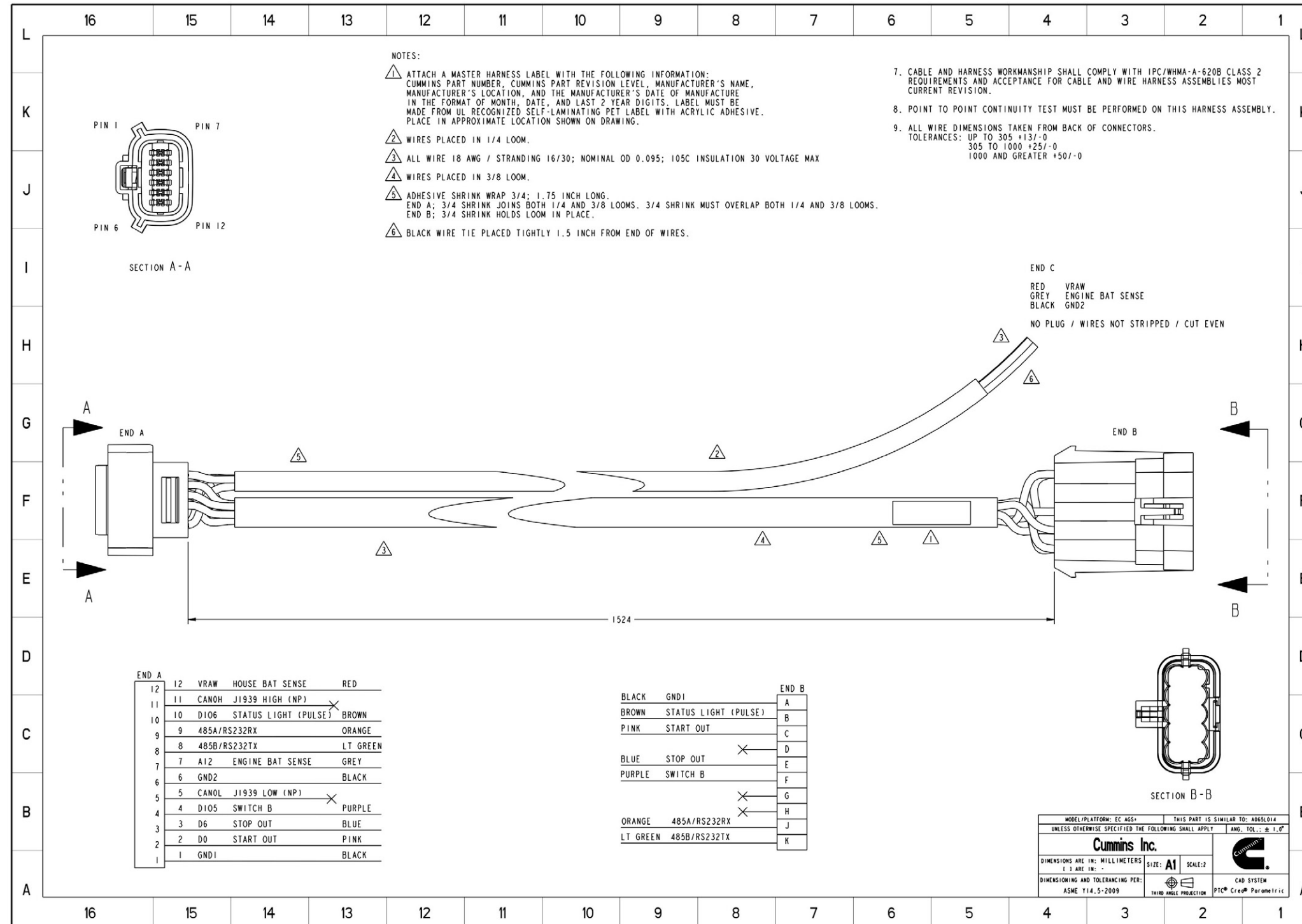


FIGURE 15. GAS GENERATOR SET Y-HARNESS



## A.2 Diesel Generator Set Gateway Harness



Part Number: **A064X817** Part Revision: **D**  
Part Name: **HARNESS,CONTROL**

FIGURE 16. DIESEL GENERATOR SET GATEWAY HARNESS

### A.3 Diesel Generator Set Y-Harness

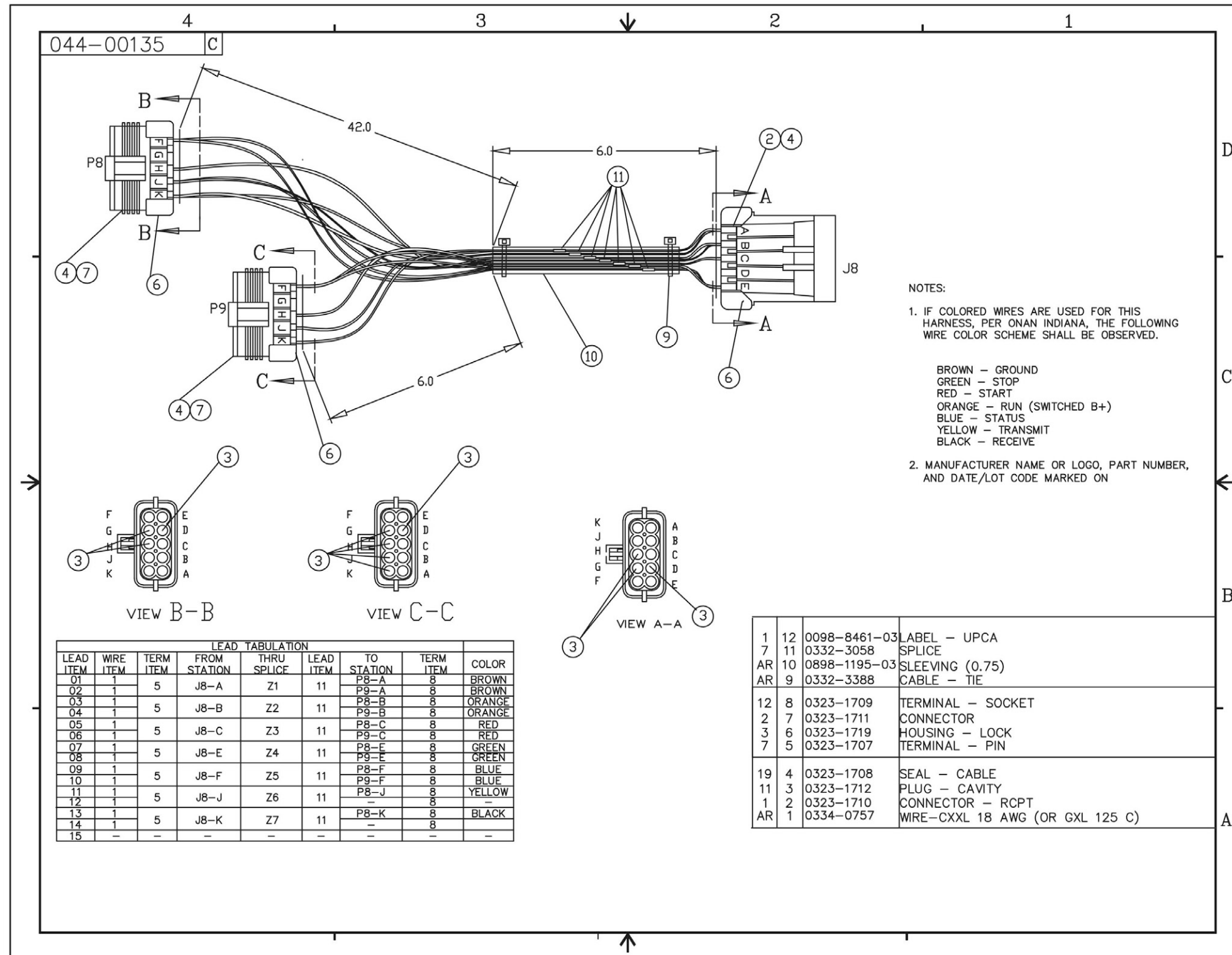


FIGURE 17. DIESEL GENERATOR SET Y-HARNESS



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