



**GoPlug Pro 40 EV Charger  
Installation and User Guide**



# GoPlug Pro 40 Installation and User Guide

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## Version 2.4

## GoPlug Pro 40 EV Charging Station

GoPlug Pro 40 is one of the most advanced, full-featured, standards-based charging station on the market. It is field proven to be safe and reliable for many years of use. It provides unique safety features at a price that the competition simply cannot match. GoPlug Pro 40 was designed by charging industry experts who have put together the best hardware and software features. Contact us at [www.goplug.com](http://www.goplug.com).

## About this Manual

- Installation Instructions
- Wi-Fi Configuration
- Errors and Warnings
- Copyrights and Trademarks
- Download by typing this link: <http://bit.ly/gp40guide>
- Point your phone or tablet camera at this symbol:



## Contact Support

[www.goplug.com](http://www.goplug.com)  
[support@goplug.com](mailto:support@goplug.com)

(833) 378-6566

GoPlug Factory Service  
160 J Street unit 2262  
Fremont, CA 94536

## Important Safety Information

Read these instructions carefully and review the charging instructions in your vehicle owner's manual before charging your electric vehicle. The symbols shown below may be found in this manual or on labels affixed to the charger unit.



**CAUTION:** *Be careful.* You may do something that damages the equipment.



**WARNING:** *Danger.* You could be injured. Before you work on any electrical equipment, be aware of the hazards involved with electrical circuitry and use standard practices to prevent accidents.

## Instructions for Preventing Fire or Electric Shock

When using GoPlug Pro 40, follow basic electrical safety precautions.

- Charge electric vehicles that have an approved SAE-J1772 charge port only. Consult the vehicle's owner manual to determine if the vehicle is equipped with this charge port.
- Position the charging cable so it will not be stepped on, tripped over, or damaged.
- Do not attempt to repair or service GoPlug Pro 40 yourself. The charger contains no user-serviceable parts.
- Do not operate your GoPlug Pro 40 if it or the SAE-J1772 charge cable is open, cracked, frayed, or otherwise visibly damaged. Contact an electrician or a service representative immediately.
- This unit is not designed for use in commercial garages that are used for the repair of internal combustion vehicles and which may contain flammable vapors, such as petroleum or gasoline fumes.
- Do not place your fingers inside of the coupler end of the SAE-J1772 charge cable.
- Do not allow children to operate this device. Be sure there is adult supervision when GoPlug Pro 40 is being used.



**WARNING:** Turn off the electrical power to your GoPlug Pro 40 before servicing or cleaning the unit. Unplug from the outlet or turn off the corresponding breaker in the circuit breaker panel.

## Notes on Ventilation

Some electric vehicles with a lead-acid (or similar) traction battery require an external ventilation system to prevent the accumulation of hazardous or explosive gases when charging indoors. Please consult the vehicle owner's manual to determine if your vehicle requires ventilation during indoor charging.

Vehicles that conform to the SAE-J1772 standard are able to signal that they require an exhaust fan. GoPlug Pro 40 is not equipped to control ventilation fans. Do not charge the vehicle with the unit if ventilation is required.



**CAUTION:** DO NOT CHARGE a vehicle indoors if it requires ventilation. Contact your service representative for information.

## FCC INFORMATION

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This product has been designed to protect against Radio Frequency Interference (RFI). However, there are some instances where high powered radio signals or nearby RF-producing equipment (such as digital phones, RF communications equipment, etc.) could affect operation.

If you suspect there is interference from your GoPlug, please perform the following steps before consulting a GoPlug sales or service representative.

- Reorient or relocate nearby electrical appliances or equipment during charging.
- Turn off nearby electrical appliances or equipment during charging.



**CAUTION:** Changes or modifications to this product by other than an authorized service facility may void FCC compliance.

## GoPlug Pro 40 Features

- Wi-Fi Connectivity
- 9.6 kW Maximum Power
- Adjustable Output Current / Power
- Suitable for In/Outdoor Installations
- Time-of-Day Scheduling
- Real-Time Clock (Battery Backup)
- Time Zone Settings
- Automatic Date and Time Sync
- 25-foot J1772 Cable
- Color LCD Display
- Portability (Small Size and Weight)
- 3-Year Manufacturer Warranty



## Technical Specifications

GoPlug Pro 40 supports a wide voltage range (90 - 264V). Consequently, it can be powered from a regular 120V wall outlet as well as a 240V appliance or RV outlet. GoPlug is equipped with a standard NEMA 14-50 RV-style inlet plug.

**Table 1: GoPlug Pro 40 Technical Details and Specifications**

AC Input		
Operating Voltage		120 - 240 VAC, single-phase
AC Frequency		50 ... 60Hz
Input Plug		NEMA 14-50
Current	208 V	3-Phase Wye-connected: any two conductors and ground Single-phase: L1, L2 and ground
	240 V	
AC Output		
Current	50A Circuit	10A Minimum - 40A Maximum
Output Power	120 VAC	1200 W - 1440 W
	240VAC	2400 W - 9600 W
Output Connector		SAE J1772
Features		
Display	Type	LCD (16x2)
	Backlight	RGB color
Temperature Sensor		Yes
Real-time Clock (Battery Backup)		Yes
Time Day Scheduling		Yes
Current Measurement		Yes
Energy Counter in kWh		Yes
Wi-Fi Connectivity		802.11 b/g/n, controls interface via browser and mobile app
Remote Control Options	Power Level	Yes
	Output Current	Yes
	Session Energy	Yes
	Time Day Timer	Yes
	Date and Time	Yes
Safety		
Power Interlock		Yes
SAE J1772 Pilot Signal		Yes
Safety Ground Monitoring		Yes
Ground Fault Interrupt (GFI)		20 mA (CCID20)
Welded Contact Detection		Yes
Self-Test		On start-up and before each charging session
Electric Vehicle ID		Yes
Building Ventilation Control		No

Warranty		
Duration	3 Years	
Properties		
Weight (Including Cable)	4.5 kg / 10.0 lbs.	
Dimensions	mm	300 x 140 x 112
	Inches	8.75 x 5.25 x 3.30
Environment	Rating	IP 65
	Max. Humidity	95% (noncondensing)
	Installation	Indoor or Outdoor
	Operating Temp.	-22 °F to +122 °F (-30 °C to +50 °C)
	Storage Temp.	-40 °F to +176 °F (-40 °C to +80 °C)
Output Cable Length	25 ft	
Agency Approvals		
Safety	Not listed, designed to meet	
	UL 2594, UL 2231, NEC 625, SAE J1772	
Communications	FCC Part 15 Class B	

## Package Contents

- 120 V Plug Adapter
- Plug Handle Holster
- Wood Screws
- Installation and User Guide
- Quick Start Guide

## Operating GoPlug Pro 40

GoPlug Pro 40 is a compact EV charger that connects electric vehicles and hybrids safely to the grid. GoPlug is ready to use, simply plug & play. Just unwrap the NEMA 14-50 plug and SAE-J1772 charge cable, then plug in the short input cable into a wall socket, and the long output cable into the vehicle's charge port.

The vehicle will immediately initiate a charging session using a dedicated signal in the output cable. Within a few seconds, GoPlug will turn on and will commence charging your vehicle.

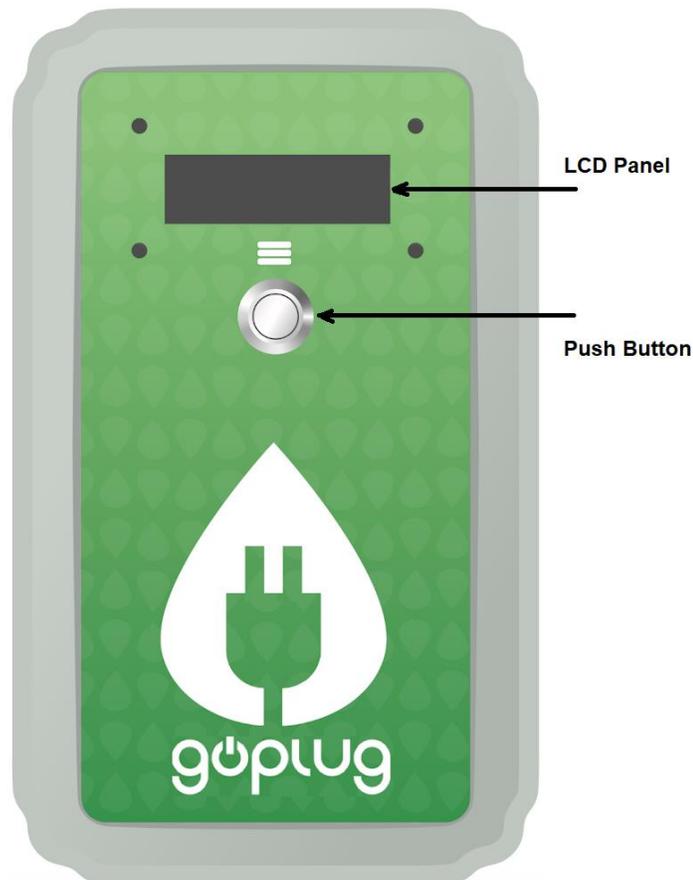
Please note that after an average day worth of driving, your vehicle's traction battery pack will need a couple of hours to charge fully. Overnight charging is the most convenient and economical way to fuel a

plug-in vehicles. This will help maintain the battery and ensure the vehicle's full range will be available for use the next day.

When the vehicle's battery is full, GoPlug will automatically turn off. You can disconnect at any time (or interrupt a charging session in progress) by pressing and holding down the push button on the connector handle and pulling it out of the vehicle's charge port.

GoPlug Pro comes with a 16-character LCD display and three LED indicator lights on the front panel. There is a panel push button below the indicator lights that can be used to pause and un-pause charging or to configure and set your GoPlug's operating parameters.

**Figure 1.** Front panel of GoPlug Pro 40.



## Display Color Semantics

Display color indicates charging status:

- Green: Ready to charge
- Yellow: Vehicle plugged in
- Blue: Actively charging
- Red: Critical error condition
- Purple: Paused or timer active

Figure 2. Green LCD display indicating device state, charge settings and energy total



Figure 3. Blue LCD display indicating an active charging session



Figure 4. Purple LCD display indicating paused or sleeping state



Figure 5. Red LCD display indicating an error state



## Push Button Function

### SHORT PRESS - PAUSE

1. Press the front panel push button at any time and GoPlug will immediately PAUSE charging
2. Press the button again to un-pause and resume charging
3. Some vehicles may not restart automatically after a pause. In this case, unplug the connector from the charging port of the vehicle and then plug back in.

**Figure 6.** LCD display indicating ready to charge and paused device state, charge settings and energy totals.



### LONG PRESS – SETTINGS MENU

1. Long-press the front panel push button the at any time to enter the SETTINGS menu
2. Short press to navigate to the next menu item. Long press to select a menu item.

**Figure 7.** LCD display indicating ready to charge and device settings menu



## Quick Start Guide

### Wall Connection

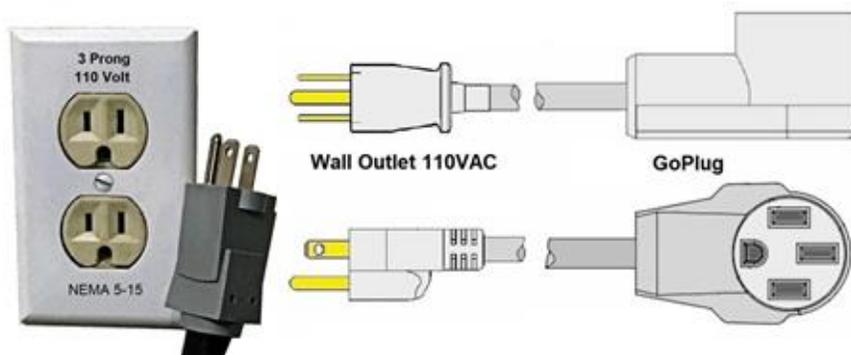
GoPlug Pro 40 connects to a NEMA type 14-50 four-prong wall outlet. This high-power outlet is recommended to deliver maximum power from your charger. Use a qualified electrician to install the outlet to ensure the safety of your wiring.

**Figure 8.** Four-prong NEMA 14-50 outlet is recommended for maximum power delivery.



**Note:** Other types of wall outlets can be also used with an adapter for lower power or current levels. This includes standard 110VAC outlets, formally known as NEMA 5-15 receptacles. For temporary operation on a lower current setting, please see “Set Max Charge Current” on page 14.

**Figure 9.** Other types wall outlets can be also used with an adapter for lower power or current levels



## Connecting to a Wi-Fi Network

GoPlug will display its unique Wi-Fi Access Point network ID and the default password during power-on (Fig. 10 below). To pair your GoPlug with your home Wi-Fi network, first connect directly to GoPlug's AP using a computer, tablet, or a mobile device. You will see the Wi-Fi access point projected by the charger. The digits "1234" in the example below will be uniquely derived from the serial number of your GoPlug.

After connecting to your GoPlug, you will be able to select or enter your local Wi-Fi network name and enter its password. GoPlug will pair to your network and will subsequently reboot. You can connect to your GoPlug by typing <http://goplug.local> in a web browser, connecting to GoPlug's IP address directly or using the status page on our website: <http://www.goplug.com/status>.

**Figure 10.** LCD display indicating access point network ID *GoPlug\_1234* and password *gopluggo*



**Figure 11.** Connecting a Windows 10 laptop to GoPlug's access point

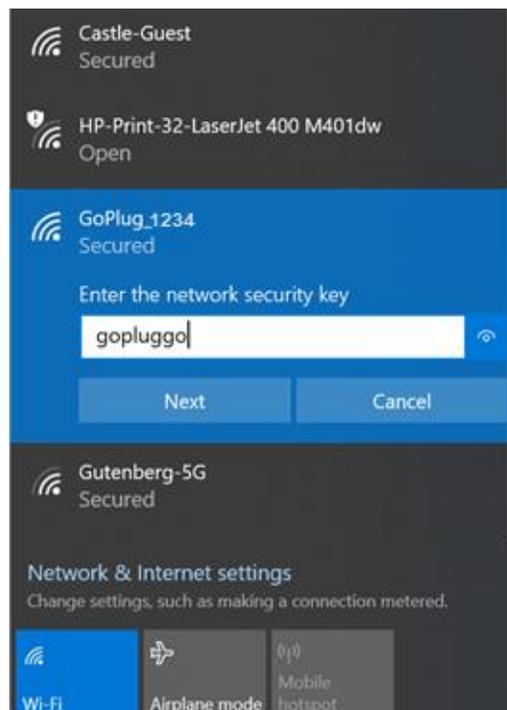


Figure 12. Network selection screen as seen on a laptop web browser when connected to GoPlug's AP



## WiFi Setup

**Mode:** Access Point (AP)

Connect to network:

Select	Network	Signal Strength
<input checked="" type="radio"/>	Castle-Guest	-59
<input type="radio"/>	Gutenberg	-71
<input type="radio"/>	HP-Print-32-LaserJet 400 M401dw	-72

**Network:**

**Passkey:**

Connecting to a WiFi network is not essential. GoPlug can be configured and controlled while in WiFi AP (Access Point) Standalone Mode:

After GoPlug Pro 40 is paired to your home Wi-Fi network, it will automatically reboot. On the display, you will see its assigned host IP address such as 192.168.1.XXX, 10.0.0.XXX or similar. To confirm your GoPlug's Wi-Fi connection, please open a web browser.

Then type <http://192.168.1.XXX> where 192.168.1.XXX is your GoPlug's actual local IP address. Alternatively, type <http://goplug.local> in a web browser or newer or visit the status page on our website: <http://www.goplug.com/status>.

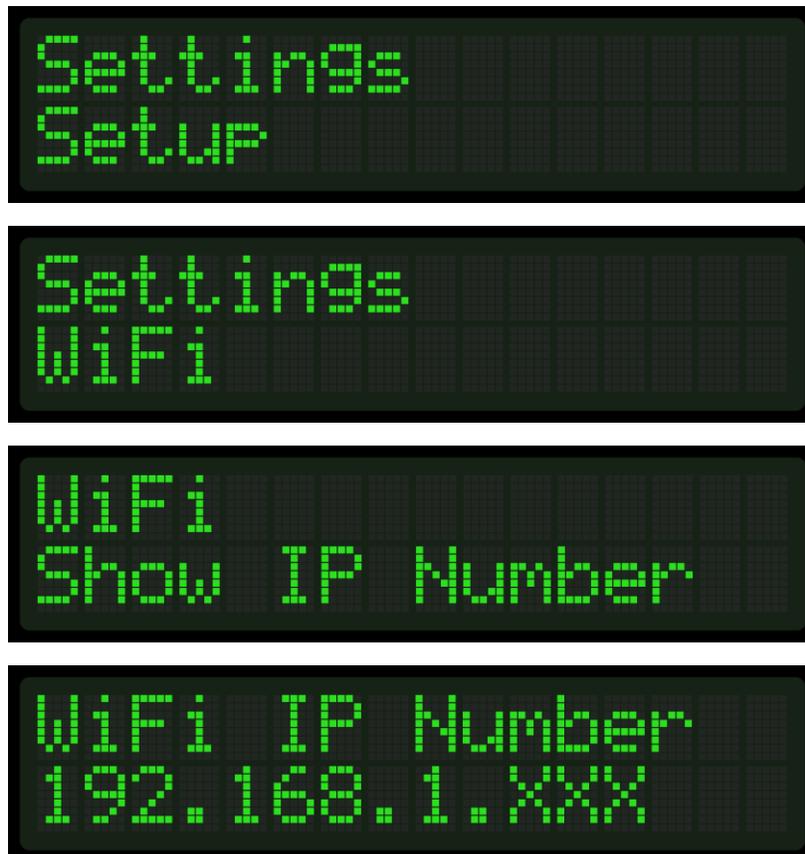
**Note:** The GoPlug mobile app can assist you with initial Wi-Fi pairing as well as the day-to-day activities.

Get the GoPlug app for Android from Google: <https://play.google.com/store/apps/details?id=com.goplugcharge>. The GoPlug app for iOS devices is on the Apple App Store: <https://apps.apple.com/us/app/goplug/id1560591666>.

Troubleshooting tips: if you have difficulty determining if your GoPlug is connected to your Wi-Fi network, please show the GoPlug IP address:

1. Long press to **SELECT**.
2. Long press to **SELECT Setup**.
3. Long Press to **SELECT WiFi**.
4. Long Press to **SELECT Show IP Number**.

**Figure 13.** LCD display screen menu sequence to show the assigned Wi-Fi IP number



## Set Maximum Charging Current

Set the maximum charge current remotely through Wi-Fi or using the pushbutton. Absolute maximum is 80% of the circuit rating. Please keep in mind that the device will be internally limited to 48 A.

- 50 A Breaker – 40 A Max Amps
- 40 A Breaker – 32 A Max Amps
- 30 A Breaker – 24 A Max Amps
- 20 A Breaker – 16 A Max Amps
- 15 A Breaker – 12 A Max Amps
- 12 A Breaker – 10 A Max Amps

Set using the push button on the front panel.

5. Long press to **SELECT**.
6. Quick press to **SKIP**.
7. Long Press to **SELECT Current**.
8. Quick Press to **SKIP** forward.
9. Long Press to **SELECT**.

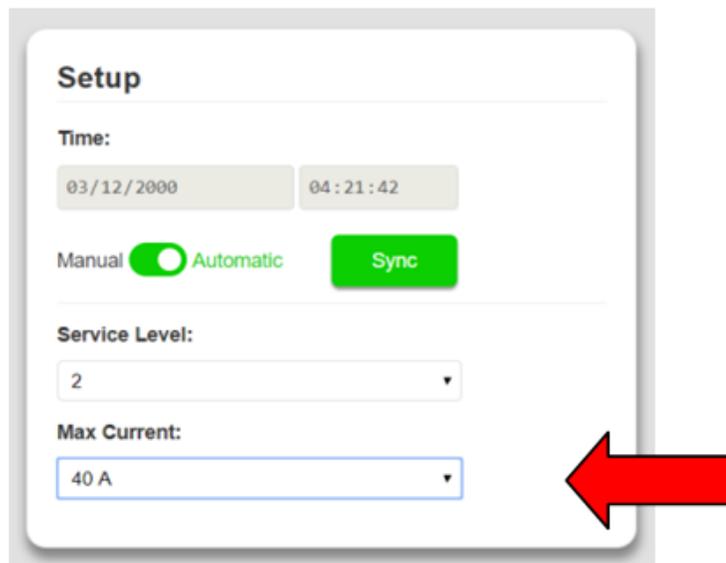
**Figure 14.** LCD display screen menu sequence to set maximum current



Set remotely through Wi-Fi.

1. Connect to your GoPlug using a web browser or a mobile app.
2. Click or tap on **System**.
3. Select the desired value in the **Max Current** dropdown.
4. Wait a moment for the setting to persist.
5. Click or tap on **GoPlug**.
6. Verify the **Max Current** field value under **Sensor Readings**.

**Figure 15.** Maximum current setting displayed in a web browser or in the mobile app



## Set a Time-of-Day Timer

You can set a START and STOP time of day timer to restrict your vehicle charging to specific hours. The timer is set remotely through Wi-Fi.

1. Click on the **Time zone** dropdown and select your time zone.
2. Click **Set time** to set the internal clock.
3. Click on the **Start** time dropdown and select a time of day.
4. Click the **Stop** time dropdown and select a time of day.
5. Click **Set**.

**Figure 16.** Set the device date and time (including time zone) in a web browser or in the mobile app.

**Setup**

**Time:**

11/29/2020 04:20:46

**Time zone:**

America/Los\_Angeles

Set time

**Service Level:**

Auto

**Max Current:**

20 A

**Figure 17.** Set time of day charging timer in a web browser or in the mobile app

**Charge Options**

Pause

**Energy limit:**

none

**Timer:**

Start: 12:30 AM Stop: 07:30 AM

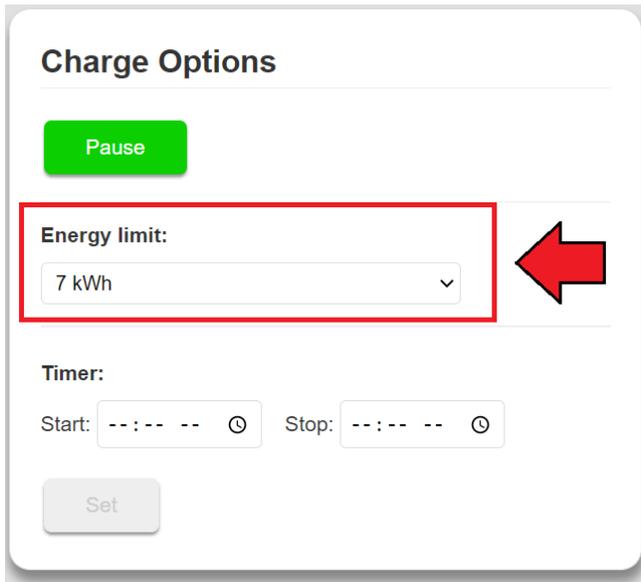
Set

## Set Session Energy Limits

You can set an energy limit for your current charge session. Please note that the vehicle must be plugged in before setting the session energy limit. Also note that the limit will only apply to that charging session. It will clear one the session ends, or the vehicle is unplugged.

1. Plug the vehicle in.
2. Select the time limit in minutes.
3. Click **Set**.

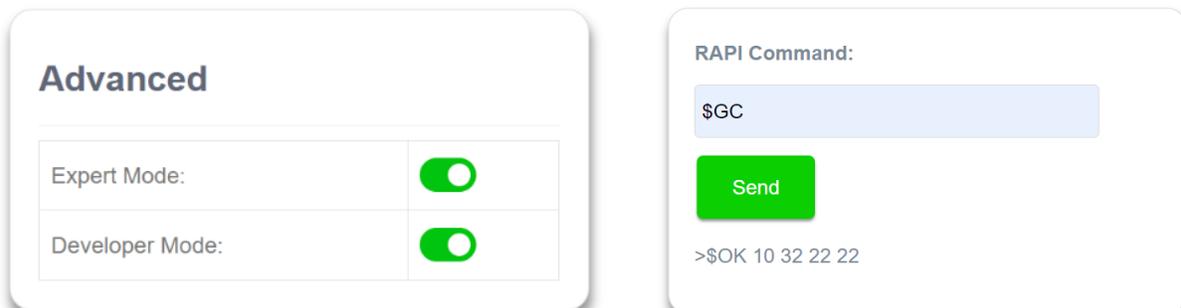
**Figure 18.** Set session energy limit in a web browser or in the mobile app.



## Expert and Developer Mode

To access both extended expert settings and the RAPI programming interface, please turn the **Expert Mode** and **Developer Mode** on. Extended export options will become available in the control UI. The programming interface can be accessed by selecting the **RAPI** tab. Each command must start with a dollar “\$” sign. Full reference of the command language is provided on pages 24 to 32.

**Figure 19.** Expert and developer mode in a web browser or in the mobile app.



## Wall Unit Mounting Instructions

Locate the wall mounting position for your GoPlug. The incoming NEMA 14-50 plug is attached to a three feet cable. Please position the EV charger so that the plug can safely reach the NEMA 14-50 socket. Please ensure that the input cable is not strained or bent in a sharp angle.

The bottom edge of the EV charger enclosure should be at least 40" above the ground for indoor installations. Make sure that the display and indicator lights on the front of your GoPlug can clearly be seen by anyone using the device.



**WARNING:** For safety, always turn off power at the circuit breaker panel prior to plugging it in or wiring it to the service lines. Likewise, turn off the circuit breaker prior to unplugging it or disconnecting the unit from the service lines.

### Mounting for Wall Construction

1. Select a convenient place to mount your G40A near the wall outlet. GoPlug is lightweight enough to be supported by drywalls, but it is recommended to find at least one stud for a more secure installation. GoPlug supports both permanent and removable installations.
2. Please refer to the included mounting template
3. Drill 1/8" pilot holes and use #1/4" bolt-on.
4. Use a beam level to ensure that the charger is level horizontally
5. Hang GoPlug Pro 40 onto the wall

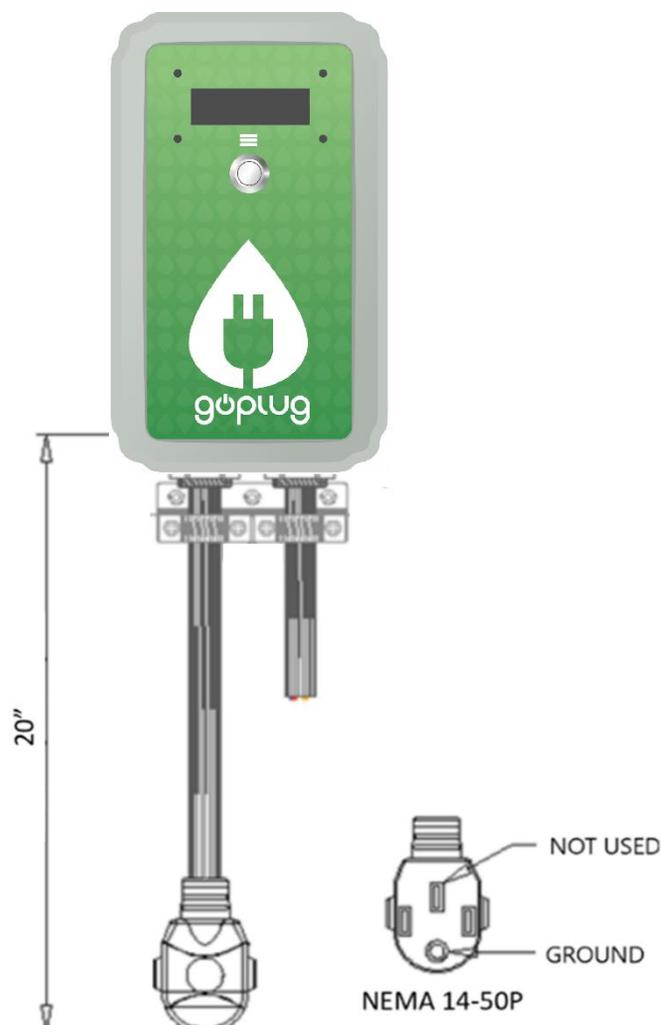
**Note:** Mount to a stud or use anchors for dry walls or concrete depending on the building.

## Wiring and Wall Receptacle Instructions

GoPlug Pro 40 connects to a NEMA type 14-50 wall outlet. This high-power outlet is recommended to get the most power from your GoPlug. A qualified electrician is recommended to install the outlet and ensure its safety and code-compliance of your wiring. Other wall outlets can be also used with an adapter for lower-power current levels.

GoPlug Pro 40 is fitted with a NEMA 14-50 plug extending from the bottom of the enclosure. Safety standards limit its length, including the plug head. The standard length of the input cord is 20". For this reason, the unit must be mounted above the NEMA receptacle and must also be located within 40" of it.

**Figure 20:** Preferred orientation of the NEMA receptacle below the GoPlug Pro 40.



In NEMA 14-50P configurations, the ground pin is located at the furthest point on the plug. We recommend that a NEMA 14-50R receptacle is oriented accordingly, so the ground socket is at the lowest point.

## Grounding Instructions

This product must be grounded. If this product malfunctions, grounding provides a path of least resistance for electric current to reduce the risk of electric shock.

The plug-in GoPlug Pro 40 is equipped with a supply cord having an equipment grounding conductor and a grounding plug. The plug must be plugged into an appropriate receptacle that is professionally installed and grounded in accordance with all local codes and ordinances.



**WARNING:** Improper connection of the equipment grounding conductor may result in an electric shock. Check with a qualified electrician if you have any doubt that the product is properly grounded. Do not modify the plug provided with the product. If it does not fit the outlet, have a proper outlet installed by a qualified electrician.

## Moving and Storage Instructions

Always turn off input power to the plug at the circuit breaker panel prior to plugging or unplugging a GoPlug Pro 40 into a NEMA socket.

When transporting the unit, do not lift or carry the entire unit by the charge cable. Do not lift or carry the entire unit by the input conductors (GoPlug Pro 40) or the NEMA plug from the unit.

The EV charger has a non-operational storage temperature range of -40°C to +80°C (-40°F to +176°F).

**NOTE:** GoPlug Pro 40 is intended for permanent installations. For mounting requirements, consult the Mounting Procedures section of this manual.

## Amperage Adjustments

GoPlug software will allow you to adjust the maximum amperage that can be delivered to the vehicle. If you plan to operate your GoPlug on a circuit that cannot accommodate a 40 A current draw, such as a dryer circuit, you or your electrician will need to set the maximum allowed current to a lower setting appropriate for the circuit. This can be accomplished by navigating the display menu using the pushbutton on the front lid or through the Wi-Fi remote control interface using a web browser or a mobile app.

## Technical Installation Instructions and Schematics

### Warnings and Cautions



**CAUTION:** To reduce the risk of fire, connect only to a circuit provided with the appropriate maximum branch circuit over current protection in accordance with the National Electrical Code, ANSI/NFPA 70 (US) or the Canadian Electric Code C22.2 NO. 280-13 (Canada)

Service Connections for Standard & Ruggedized GoPlug Pro 40

- Connection/Receptacle Type: NEMA 14-50R
- Circuit Breaker Rating: 40A/50A



**CAUTION:** This is a single-phase device. Do not connect all three phases of a three-phase feed! You may use any two phases of a three-phase wye-transformer feed. The center point of the three phases (usually used as Neutral) must be grounded somewhere in the system. A Neutral connection is not required by GoPlug Pro 40. Only Line 1, Line 2, and Ground are required, as shown in **Figure 22**.



**CAUTION:** The two phases used must each measure 120 V to Neutral. Earth Ground must be connected to Neutral at only one point, usually at the service entry breaker panel.



**CAUTION:** Warranty is void if this unit is not wired properly.



**WARNING:** Only a qualified electrician should perform the installation. The installation must be performed in accordance with all local electrical codes and ordinances.

Only 3 wires are connected, but care must be taken that the service transformer secondary connection is known, and the three wires from the main circuit breaker panel are connected and labeled correctly. **Figures 21**, and **22** below show the most common service transformer secondary wiring formats.

Notice that L1, L2, & ground are labeled on each diagram. Those transformer outputs correspond to the same inputs on GoPlug Pro 40. Also, each of the two 3-phase diagrams shows an L3 output, which is not used.

Do not connect all three phases of a 3-phase secondary to GoPlug Pro 40. This is a single-phase device.

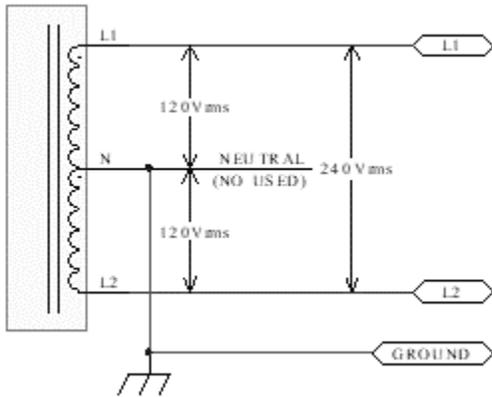
The Neutral at the service panel must be connected to Earth Ground somewhere in the system on any of the three connection arrangements. Ground-fault protection is not possible unless the Neutral (center-tap on the service transformer) is connected to an Earth Ground. If no Ground is provided by the electrical service, a grounding stake must be driven into the Ground nearby, following local electrical codes. The grounding stake must be connected to the ground bar in the main breaker panel, and Neutral connected to Ground at that point.



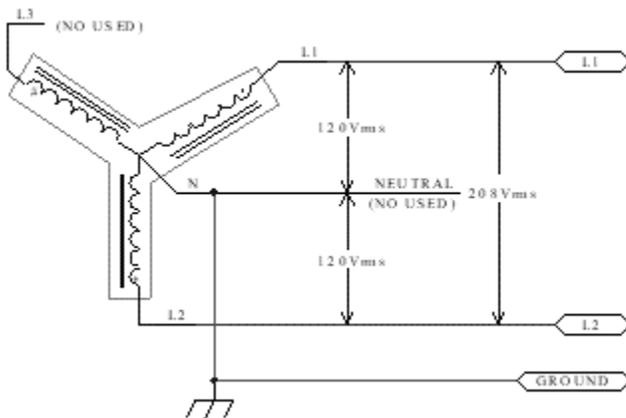
**WARNING:** Local electrical codes must always be followed when installing the grounding stake.

The following illustrate the two-service transformer secondary connections used in North America.

**Figure 21: 240V Single Phase**



**Figure 22: 208V 3-Phase, Wye-Connected**



**NOTE:**

With a wye-connected secondary, any two of the legs can be used to provide 208V to GoPlug Pro 40. For example, L1 & L2, or L1 & L3, or L2 & L3. Leave the unused leg open. Do not connect it to a Neutral bar, or to ground. Be sure the center point is grounded to Earth somewhere in the system.

## Troubleshooting

### Self-Test and Error States

GoPlug Pro 40 has multiple internal protection functions, such as ground fault, overtemperature, stuck relay and other faults. The LCD display will indicate the error time

GoPlug performs a self-testing sequence during start up and every time before beginning to charge to ensure all safety features are working properly including:

- GFCI - Ability to respond to a 20 mA ground fault
- Missing Ground
- Welded Relay Contact Monitor
- Pilot line status with Vehicle Identification
- Internal Temperature

## Self-Test and Error States

Error	Description	Comment
<b>NO GROUND</b>	GoPlug lost connection to ground	Please ensure that GoPlug is properly grounded. If the ground fault persists, please contact GoPlug technical support.
<b>STUCK RELAY</b>	Power was detected when the line should be open.	Please contact GoPlug technical support.
<b>OVER TEMPERATURE</b>	The temperature inside the enclosure has exceeded a safe operating threshold.	If the ambient temperature is high, please try to keep GoPlug out of direct sunlight. Please contact GoPlug technical support if an over-temperature condition occurs frequently.
<b>GFCI FAULT</b>	GoPlug has detected a ground current leakage of more than 20 mA	Vehicle charging suspended. GoPlug will periodically repeat the GFCI self-test and resume vehicle charging if possible. If the GFCI fault persists or regularly reoccurs, please contact GoPlug technical support.
<b>DIODE CHECK</b>	GoPlug did not detect the presence of an electric vehicle even though the J1772 charging cable is connected to a car	Please ensure that the cable plug handle is dry and clean. If the fault persists, please contact GoPlug technical support.
<b>VENT REQUIRED</b>	GoPlug has detected the presence of a vehicle requiring ventilation during charging	Please verify that the vehicle requires ventilation. This is typically the case with car that use lead-acid batteries. If the issue re-occurs and the vehicle does not require ventilation, please contact GoPlug technical support.

## RAPI Command Reference

The RAPI protocol is divided in four categories: asynchronous notifications that transmit and post system state changes, system functions that alter system behavior, set functions that alter certain system parameters and get functions that read and return the currently effective system parameters.

Each RAPI command consists of two ASCII characters and each instruction starts with a '\$' control character. Instructions can be followed by parameters that can be transmitted in either hexadecimal, integer or in ASCII format. Parameters can be followed by a sequence ID. Each command set is terminated by the '^' control end character followed by an optional 8-bit XOR of all the characters beginning with the '\$' control start character and preceding the '^' control end character. The XOR checksum is immediately followed by a carriage return (**0x0D**).

GoPlug will respond to each RAPI request with response formatted in a similar manner. The response to a successful request will begin with the same start control character '\$' immediately followed by the letters 'OK'. This initial response sequence can be followed by optional parameters and a sequence ID echoing the sequence ID transmitted through the request instruction set. Each instruction set is terminated character followed by an 8-bit XOR of all the ASCII characters following the '\$' start character and preceding the '^' end character. The XOR checksum is immediately followed by a carriage return (**0x0D**).

The response to an unsuccessful request will begin with the same start control character '\$' immediately followed by the letters 'NK'. This initial response sequence can be followed by optional parameters and a sequence ID echoing the sequence ID transmitted through the request instruction set. Each instruction set is terminated by the '^' control character followed by an 8-bit XOR of all the characters beginning the '\$' start character and preceding the '^' end character. The XOR checksum is immediately followed by a carriage return (**0x0D**).

### Command Format

```
$cc {p1 p2 ... pn}[:ss][^xk]\r
```

\$ = start character

cc = 2-character op code

pn = 0-n parameters, depending on command

:ss = (optional) 2-digit hexadecimal sequence ID to echo back in response (Response Format below)

^xk = (recommended) 2-digit hexadecimal XOR checksum of all characters preceding ^, including \$

\r = termination character, 0x0D (ASCII carriage return)

### Response Format

```
$OK {p0 ... pn}{:ss}^xk\r
```

```
$NK {p0 ... pn}{:ss}^xk\r
```

pn = 0-n command-specific response parameters

:ss = (required) 2-digit hexadecimal sequence id which was sent in the the command being responded to. Not sent if request did not include a sequence ID

^xk = (required) 2-digit hexadecimal XOR checksum of all characters preceding ^, including \$

\r = termination character, 0x0D (ASCII carriage return)

## Asynchronous Notifications

Asynchronous notifications are sent by the EVSE without receiving a command, e.g. \$AT 03 03

Code	Parameters	Description	Sample
<b>AB</b>	postcode fwver	<b>Boot Notification</b>  Sets boot notification with POST code, firmware version. At startup before POST, <b>\$AB</b> sent with postcode <b>FF</b> . <b>\$AB</b> is sent a second time after power on diagnostics complete, with the result code	<b>\$AB FF</b> <b>6.4.0^15</b>
	postcode(hexadecimal) FF = pre-boot 00 = no POST errors 07 = bad ground 08 = relay contacts stuck shut 09 = GFCI self-test failure  fwver(string) = firmware version		<b>\$AB 00</b> <b>6.4.0^15</b>
<b>AT</b>	evsestate pilotstate currentcapacity vflags	<b>EVSE State Change</b>  sent whenever there is a change in any of the parameters	\$AT 01 01 12 0000^40
	evsestate(hex): see EVSE States below pilotstate(hex): same as evsestate		<b>\$AT 03 03</b> <b>23 0140^35</b>
	currentcapacity(decimal): amps offered by the pilot: may be lower than maximum allowed		\$AT 02 02 40 0108^39
	vflags(hex): see vflags bit definitions below		
<b>AW</b>	request	<b>WiFi Request</b>  Optional: sent from EVSE menu selection	<b>\$AW 0^22</b>
	0 = reset WiFi network 1 = factory reset		<b>\$AW 1^23</b>

## **EVSE States**

**00h** : Unknown

**01h** : Ready (Not Connected): J1772 EVSE STATE A - pilot +12VDC

**02h** : EV Connected: J1772 EVSE STATE B - pilot 9V, PWM on

**03h** : Charging: J1772 EVSE STATE C - pilot 6V, PWM on

**04h** : Vent Required: J1772 EVSE STATE D - pilot +3VDC

**05h** : Diode Check Failed

**06h** : GFCI Fault

**07h** : No Ground

**08h** : Stuck Relay (contacts welded shut)

**09h** : GFI Self-test Failed

**0Ah** : Over Temperature Error

**0Bh** : Over Current Error (EV was drawing more current than allowed by pilot)

**FEh** : EVSE Paused (e.g. timer, or charging paused by user) pilot +12VDC, PWM off, even if EV connected

**FFh** : EVSE Disabled (out of service) pilot +12VDC

## **vflags for \$AT Asynchronous Notification**

**0002h** : Hard fault state

**0008h** : EVSE locked pending authentication (see \$FF A, \$S4)

**0040h** : Contactor is closed (charging)

**0100h** : EV is connected

**1000h** : Delay timer is enabled

## System Functions

System functions alter the behavior of the device. Aside from enabling or disabling the EVSE, system functions can turn certain device behaviors on or off. Additionally, system functions can show arbitrary text on the LCD display. Device reboot and reset round of the system functions.

Code	Parameters	Description	Sample Request	Sample Response
F0	val	<b>Enable/disable LCD update</b>	\$F0 0^42	\$OK^20
	0 = disable updates 1 = enable updates	After receiving \$F0 0, EVSE suspends its own updates of LCD and only displays messages sent via \$FP until it receives \$F0 1	\$F0 1^43	\$OK^20
FB	color	<b>Set Lighting Color</b>	\$FB 0^30	\$OK^20
	0 =light off 1 = red 2 = green 3 = yellow 4 = blue 5 = violet 6 = teal 7 = white	Set lighting of trim effects on the EVSE, such as LCD backlight or activity indicator color.	\$FB 1^31	\$OK^20
			\$FB 2^40	\$OK^20
			\$FB 3^33	\$OK^20
			\$FB 4^34	\$OK^20
			\$FB 5^35	\$OK^20
			\$FB 6^36	\$OK^20
			\$FB 7^37	\$OK^20
FD		<b>Disable EVSE</b>	\$FD^26	\$OK^20
	Not ready error state: pilot low, PWM OFF			
FE		<b>Enable EVSE</b>	\$FE^27	\$OK^20
	Enable normal EVSE operations			
FF	feature val	<b>Disable or Enable EVSE Features</b>	\$FF D 0^50	\$OK^20
	feature: A = Auto Lock D = Diode Check F = GFCI self test G = Ground Check R = Stuck Relay Check T = Temperature	Auto Lock: When auto lock is enabled, EVSE automatically locks itself when EV is unplugged.	\$FF D 1^51	\$OK^20
			\$FF E 0^51	\$OK^20
			\$FF E 1^50	\$OK^20
		When auto lock is disabled, EVSE remains unlocked until it is manually locked by \$S4 1 See documentation of \$S4 for more detail	\$FF F 0^52	\$OK^20
			\$FF F 1^53	\$OK^20
			\$FF G 0^50	\$OK^20

	Monitoring V = Vent Required Check  val: 0 = disable 1 = enable		\$FF G 1^50	\$OK^20
			\$FF R 0^50	\$OK^20
			\$FF R 1^50	\$OK^20
			\$FF T 0^50	\$OK^20
			\$FF T 1^50	\$OK^20
			\$FF V 0^50	\$OK^20
			\$FF V 1^50	\$OK^20
FP	x y string x = column (0-15) y = row (0-1) string = text to display	Display Text on LCD  Display text on LCD starting at column X, row Y. Spaces in the string must be replaced with character 0x01	\$FP 0 0 GoPlugAPI^4D	\$OK^20
			\$FP 0 1 Ver1.0.0^62	\$OK^20
			\$FP 0 1 Ver1.0.0^62	\$NK^20
FR		Reset EVSE  Reboots the device	\$FR^30	\$OK^20
FS		Sleep(Pause) EVSE  Paused state: pilot high, PWM OFF	\$FR^31	\$OK^20

## Set Commands

Set functions alter certain attributes of the device's behavior. Aside from setting the output current or the service level, there are session time and energy limits, device time and timer settings, as well as calibration settings.

Code	Parameters	Description	Sample Request	Sample Response
S1	YY MM DD HH MM SS (all values decimal)  YY=2-digit year MM=month 1-12 DD=day 1-31 HH=hour 0-23 MM=minute 0-59 SS=second 0-59	Set Clock/Calendar	\$S1 20 02 15 20 20 25^45	\$OK^20

S2	val = 0 = disable = 1 = enable	<b>Set Ammeter Calibration Mode</b>  Selects ammeter calibration mode: 0 (OFF) or 1 (ON).	\$S2 0^55	\$OK^20
			\$S2 1^54	\$OK^20
S3	cnt(decimal)  cnt = time limit / 15 min (1-255) 0 = cancel	<b>Set Charging Session Time Limit</b>  Session limit in 15-minute multiples when an EV is connected: 0 to 255. Command is accepted only if EV is connected. Charging stops when time limit is reached or EV disconnects. Overrides \$ST timer. Charging will continue until time limit reached, even if clock is past \$ST off time.	\$S3 0^54	\$OK^20
			\$S3 4^50	\$OK^20
S4	val  0 = unlocked 1 = locked	<b>Set Authorization Lock</b>  <b>Prevents unauthorized use: 0 (unlocked) or 1 (locked). Won't charge until unlocked. Lock icon or some other indicator should be displayed when locked. If auto lock is enabled (\$FF A 1), EVSE automatically locks itself after EV is unplugged.</b>	\$S4 0^53	\$OK^20
			\$S4 1^54	\$OK^20
SA	scale offset scale(decimal): scale factor offset(decimal): offset factor	<b>Set Ammeter Scale and Offset</b>  Ammeter calibration	\$SA 176 230^37	\$OK^20
SC	amps [v]  amps(decimal) = maximum pilot amps v(character) = (optional) volatile flag	<b>Set Current Capacity</b>  Sets the offered current by the pilot. The amps must between 6-16A(L1) or 6-80A(L2), and must not exceed the hardware capability. If 'v' parameter is not specified, the value is saved to non-volatile memory. If 'v' parameter is specified, amps returns to its previously saved value upon reboot.  if amps < minimum current capacity, will set to minimum and return \$NK ampsset if amps > maximum current capacity, will set to maximum and return \$NK ampsset if in over temperature status, raising current capacity will fail and return \$NK ampsset	\$SC 0^24	\$NK 6^37
			\$SC 30^17	\$OK 30^03
			\$SC 40^10	\$OK 40^04
			\$SC 100^25	\$NK 80^09

<b>SH</b>	kwh(decimal) = charge limit in kWh 0 = cancel charge limit	<b>Set Charging Session kWh Limit</b>  Command is accepted only if EV is connected. Charging stops when kWh limit is reached or EV disconnects. Overrides <b>\$ST</b> timer. Charging will continue until kWh limit reached, even if clock is past <b>\$ST</b> off time.	<b>\$SH 10^1E</b>	<b>\$OK^20</b>
			<b>\$SH 10^1E</b>	<b>\$NK^20</b>
			<b>\$SH 5^2A</b>	<b>\$OK^20</b>
<b>SK</b>	wh(decimal) = total accumulated watt-hours	<b>Set Accumulated Wh</b>	<b>\$SK 0^2C</b>	<b>\$OK^20</b>
			<b>\$SK 1000^1D</b>	<b>\$OK^20</b>
<b>SL</b>	servicelevel A = auto-detect 1 = service level 1 2 = service level 2	<b>Set J1772 Service Level</b>	<b>\$SL 1^2A</b>	<b>\$OK^20</b>
			<b>\$SL 2^29</b>	<b>\$OK^20</b>
			<b>\$SL A^5A</b>	<b>\$OK^20</b>
<b>SM</b>	scale offset scale(decimal): scale factor offset(decimal): offset factor	<b>Set Voltmeter Scale and Offset</b>  Voltmeter calibration	<b>\$SM 298 12018^33</b>	<b>\$OK^20</b>
<b>ST</b>	starthr startmin endhr endmin (all values decimal) starthr = starting hour 0-23 startmin = starting minute 0-59 endhr = ending hour 0-23 endmin = ending minute 0-59	<b>Set Timer - Start and End Time</b>	<b>\$ST 0 0 0 0^23</b>	<b>\$OK^20</b>
			<b>\$ST 24 00 06 00^23</b>	<b>\$OK^20</b>

## Get Commands

Get functions query certain attributes of the device's behavior. Aside from returning the output current or the service level, they read session time and energy limits, device time and timer settings, as well as calibration settings.

Code	Response Parameters	Description	Sample Request	Sample Response
<b>G0</b>	state	<b>Get EV Connected State</b>	<b>\$G0^53</b>	<b>\$OK 0^30</b>
				<b>\$OK 1^31</b>

	0=disconnected 1=connected 2=unknown			\$OK 2^40
<b>G3</b>	cnt minutes = cnt*15	<b>Get Session Time Limit Count</b>	\$G3^50	\$OK 2^12
<b>G4</b>	status  0=unlocked 1=locked	<b>Get Locked Status</b>	\$G4^57	\$OK 0^10 \$OK 1^11
<b>GA</b>	scale(decimal) offset(decimal)	<b>Get Ammeter Calibration</b>	\$GA^22	\$OK 22^20
<b>GC</b>	min max pilot  min(decimal) = minimum amps max(decimal) = maximum amps pilot(decimal) = amps offered by pilot	<b>Get Current Capacity Range</b>	\$GC^20	\$OK 6 40^17
<b>GD</b>	starthr startmin endhr endmin  starthr(decimal) = starting hour (0-23) startmin(decimal) starting minute (0-59) endhr(decimal) = ending hour (0-23) endmin(decimal) = ending minute (0-59)	<b>Get Delay Timer</b>	\$GD^27	\$OK 0 0 0 0^20
<b>GE</b>	amps sflags  amps(decimal) = amps offered by pilot sflags(hexadecimal) = settings bits 0001h=service level 2 0002h=diode check disabled 0004h=ground check disabled 0010h=welded contactor check disabled 0020h=auto service lvl chk disabled 0100h=monochrome LCD 0200h=GFI self test disabled 0400h=temperature monitoring disabled	<b>Get Settings</b>	\$GE^26	\$GE 23 0101^22
<b>GF</b>	gfi nognd stuckrelay (all values hex, max FFh)	<b>Get Fault Counters</b>  Maximum trip count: 255	\$GF^25	\$OK 6 0 0^16
<b>GG</b>	milliamps millivolts  milliamps(decimal)=milliamps output current millivolts(decimal)=millivolts output voltage	<b>Get EVSE Output Current and Voltage</b>	\$GG^24	\$OK 305164 242^11 \$OK 305164 -1^39

	if either reading not supported, return -1			\$OK -1 -1^20
<b>GH</b>	kwh(decimal)  if no limit set, kwh = 0	<b>Get Session Charge Limit</b>  <b>Charging stops when session kWh limit is reached</b>	\$GH^2B	\$OK 5^15
<b>GM</b>	scale(decimal) offset(decimal)	<b>Get Voltmeter Calibration</b>	\$GM^2E	
<b>GP</b>	temp1 temp2 temp3  temperatures all decimal, tenths of a degree Celcius. If a temperature sensor is not installed, return -2560	<b>Get Temperature</b>	\$GP^33	\$OK 233 - 2560 - 2560^40
<b>GS</b>	evsestate elapsed pilotstate vflags  evsestate(hex): EVSE state (see above) elapsed(dec): elapsed charge time in seconds of current or last charging session pilotstate(hex): same as evsestate vflags(hex): see vflags above	<b>Get EVSE State, Elapsed Charging Time</b>	\$GS^30	\$OK 01 6767 01 0000^20
				\$OK 02 31 02 0100^23
				\$OK 03 31 03 0140^27
<b>GT</b>	YY MM DD HH MM SS (all values decimal)  YY=2-digit year MM=month 1-12 DD=day 1-31 HH=hour 0-23  MM=minute 0-59 SS=second 0-59	<b>Get Time and Date</b>	\$GT^37	\$OK 20 02 15 20 20 25^23
<b>GU</b>	ws whacc  ws(decimal): watt-seconds used in current or last charging session whacc(decimal): watt-hours accumulated - total watt hours used across all charging sessions	<b>Get Energy Usage</b>  <b>session and accumulated energy usage</b>	\$GU^36	\$OK 4359600 4400^1D
<b>GV</b>	fwrev(string) rapirev(string)	<b>Get Firmware and Protocol Version</b>	\$GV^35	\$OK E6.4.0 6.0.0^61

## Maintenance

GoPlug Pro 40 requires no maintenance other than occasional cleaning.



**WARNING:** To reduce the risk of electrical shock or equipment damage, exercise caution while cleaning the unit and the EV charge connector cable.

- Turn off the EV charger at the circuit breaker before cleaning.
- Clean the EV charger using a soft cloth lightly moistened with mild detergent solution.

## Limited Warranty

### Product 3-Year Parts and 3-year Factory Labor

GoPlug shall provide the above referenced warranty with respect to the products to representative, its sub-representatives, and their customers. GoPlug warrants this product to be free from defects in material and workmanship. The warranty period shall commence on the date of installation date (first use). If a Product installation date is not communicated to GoPlug, the product purchase date shall serve as the warranty commencement date.

If this product is defective in materials or workmanship during the warranty period, GoPlug will, at its option, repair or replace the product. Repair parts and/or replacement products may be either new or reconditioned at GoPlug's discretion. This limited warranty does not cover service or parts to repair damage due to improper installation or use, including but not limited to improper connections with peripherals, external electrical faults, accident, disaster, misuse, abuse or modifications to the product not approved in writing by GoPlug. Any service repair outside the scope of this limited warranty shall be at applicable rates and terms then in effect. This warranty covers factory parts and factory labor only; it does not cover field service or removal and replacement of the product or any other costs.

All other express and implied warranties for this product including the warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Some states do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above limitation may not apply to you. If this product is not as warranted, your sole and exclusive remedy shall be repair or replace as provided above. In no event will GoPlug, any of its authorized sales and service representatives, or its parent company be liable to customer or any third party for any damages more than the purchase price of the product.

This limitation applies to damages of any kind including any direct or indirect damages, lost profits, lost saving or other special, incidental, exemplary, or consequential damages whether for breach of contract, tort or otherwise or whether arising out of the use of or inability to use the product, even if GoPlug or an authorized GoPlug representative or dealer has been advised of the possibility of such damages or of any claim by any other party. Some states do not allow the exclusion or limitation of incidental damages for some products, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

## Obtaining Warranty Service

Call your nearest authorized Service Representative or GoPlug at (833) 378-6566. You will receive information about how service for the product will be provided. Please provide proof of purchase of the product and the purchase date before any warranty service can be performed: [support@goplug.com](mailto:support@goplug.com), GoPlug Factory Service, 160 J Street unit 2262, Fremont, CA 94536 or by calling (833) 378-6566.

## Contact Support

[www.goplug.com](http://www.goplug.com)  
[support@goplug.com](mailto:support@goplug.com)

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