GoPlug Pro 32 EV Charger
Installation and User Guide

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Version 3.0

GoPlug Pro 32 EV Charging Station

GoPlug Pro 32 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 32 was designed by charging industry experts who have put together the best hardware and software features. Contact us at 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/gp32guide**
- Point your phone or tablet camera at this symbol:

Contact Support

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(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 show 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 the GoPlug Pro 32, 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 the GoPlug Pro 32 yourself. The charger contains no user-serviceable parts.
- Do not operate your GoPlug Pro 32 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 the GoPlug Pro 32 is being used.

WARNING: Turn off the electrical power to your GoPlug Pro 32 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 32 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 32 Features

- Wi-Fi Connectivity
- 7.6 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
- 18-foot J1772 Cable
- Monochrome LCD Display
- Portability (Small Size and Weight)
- 3-Year Manufacturer Warranty


goplug

Technical Specifications

GoPlug Pro 32 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 32 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
	240 V	Single-phase: L1, L2 and ground
AC Output		
Current	40A Circuit	10A Minimum - 32A Maximum
Output Power	120 VAC	1200 W - 1440 W
	240VAC	2400 W - 7600 W
Output Connector		SAE J1772
Features		
Display	Type	LCD (20x2)
	Backlight	Monochrome
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)		5 mA (CCID5)
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)		5.00 kg / 11.0 lbs.
Dimensions	mm	300 x 140 x 112
	Inches	11.8 x 5.5 x 4.4
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		18 ft
Agency Approvals		
Safety		CSA Listed: UL 2594, UL 2231
		NEC 625, SAE J1772
Communications		FCC Part 15 Class B

Package Contents

- Wall Mounting Bracket
- Plug Handle Holster
- Six Wood Screws
- Installation and User Guide

Operating GoPlug Pro 32

GoPlug Pro 32 is a compact EV charger that connects electric vehicles and hybrids safely to the grid.

GoPlug 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 20-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 the GoPlug Pro 32.

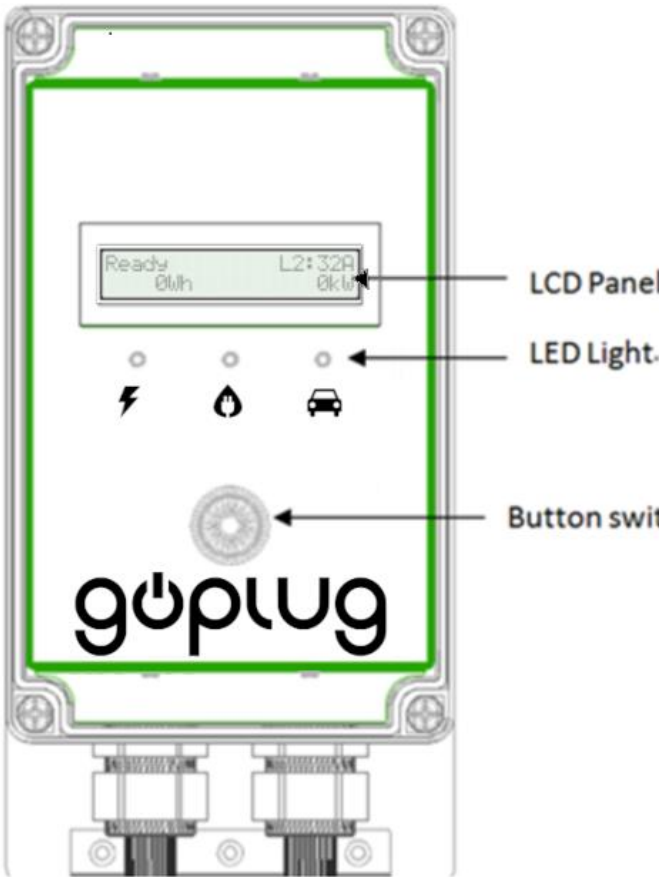
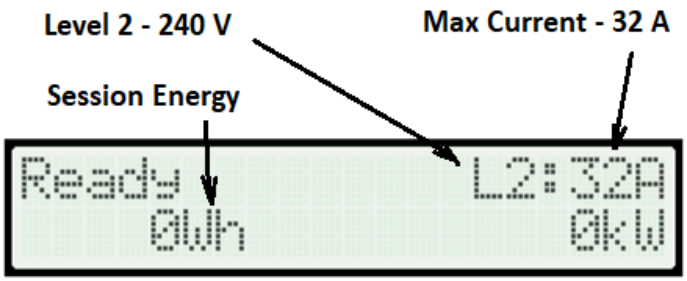


Figure 2. LCD display indicating device state, charge settings and energy total



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 3. 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 4. LCD display indicating ready to charge and device settings menu

Quick Start Guide

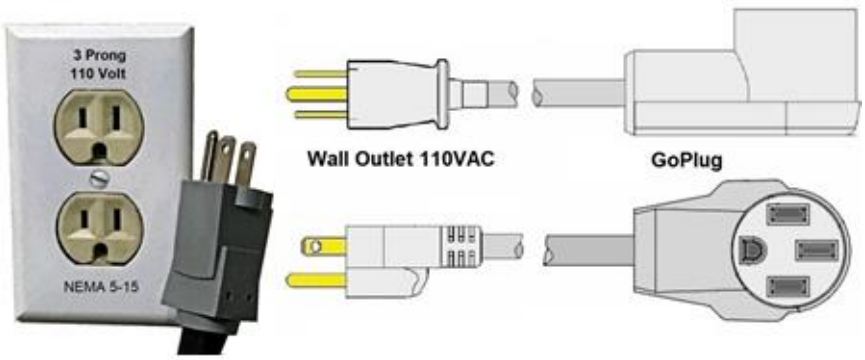
Wall Connection

The GoPlug Pro 32 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 5. Four-prong NEMA 14-50 outlet is recommended for maximum power delivery

Note: Other types 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 13. For permanent installations, you can have an electrician set the maximum allowable current via the DIP switches located within the enclosure or request a GoPlug configured for your circuit current limit.

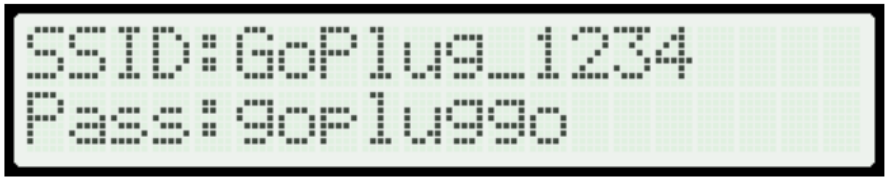
Figure 6. Other types wall outlets can be also used with an adapter for lower power or current levels



Connect to a Wi-Fi Network

You can connect your GoPlug to your Apple or Android smart phone, or to a tablet or desktop computer including Windows and iOS devices. Through WiFi, a GoPlug can connect simultaneously to several devices. GoPlug Pro 32 will initially boot up as a standalone Wi-Fi Access Point. It displays its unique WiFi Access Point (AP) network ID on the LCD display during power-on (Fig. 6 below).

Figure 7. LCD display indicating the access point network ID and password



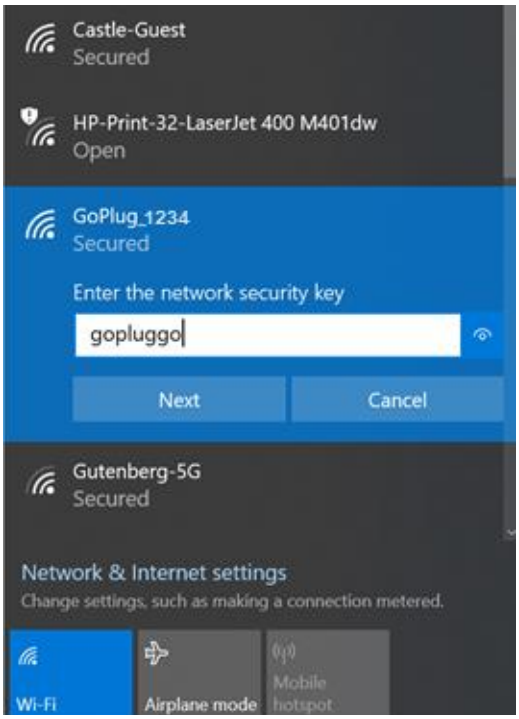
AP Name: ***GoPlug_1234***

Password: ***gopluggo***

To pair your GoPlug with your home Wi-Fi network, first connect directly to the GoPlug's AP using a computer, tablet, or a mobile phone. You can use any Windows, MacOS, Linux, iOS, Android, etc. device with a web browser. Open the NETWORK SETTINGS control panel on your device, and you will see a **GoPlug_1234** in the list of available Wi-Fi networks. This is the WiFi broadcast by the GoPlug.

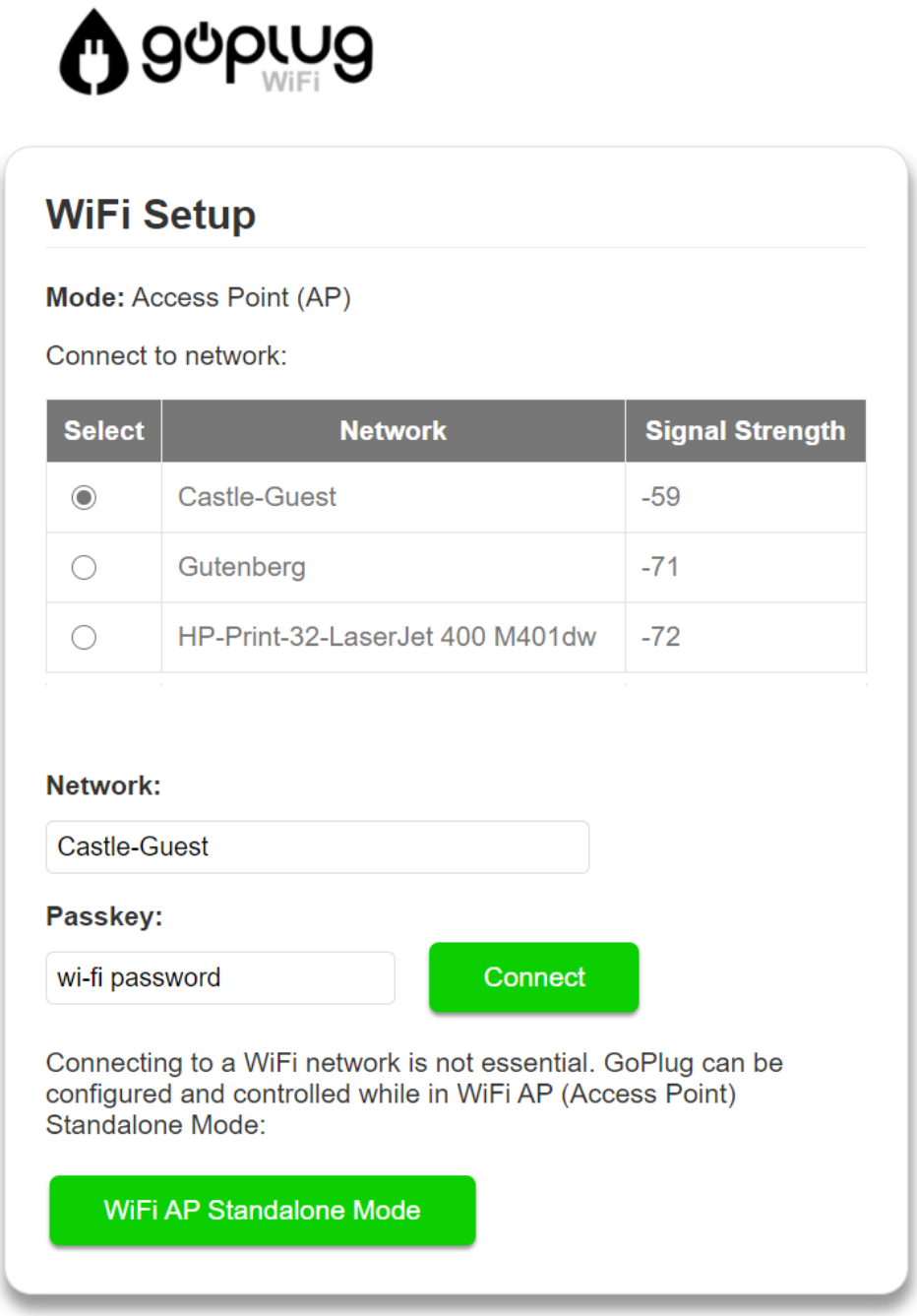
The digits "**1234**" in **GoPlug_1234** are the serial number of your device. In this guide, we use the numbers "1234) for simplicity. Please substitute the 4-digit numbers that you see.

Figure 8. Connecting a Windows 10 laptop to GoPlug's access point



Once your device is connected to your GoPlug's access point, you will be presented with a list of available Wi-Fi networks to connect your GoPlug to. Please either select or enter the SSID of your Wi-Fi network and provide its password.

Figure 9. Network selection screen displayed on a laptop web browser



1. After the GoPlug Pro 32 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** or similar
2. To confirm your GoPlug's Wi-Fi connection, please open a web browser
3. Then type **http://192.168.1.XXX** where **192.168.1.XXX** is your GoPlug's IP address
4. Alternatively, type **http://goplug.local** in a web browser on iOS, OSX, Windows 10 or newer

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 is 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 10. 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 32 A.

- 50 A Breaker – 32 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.

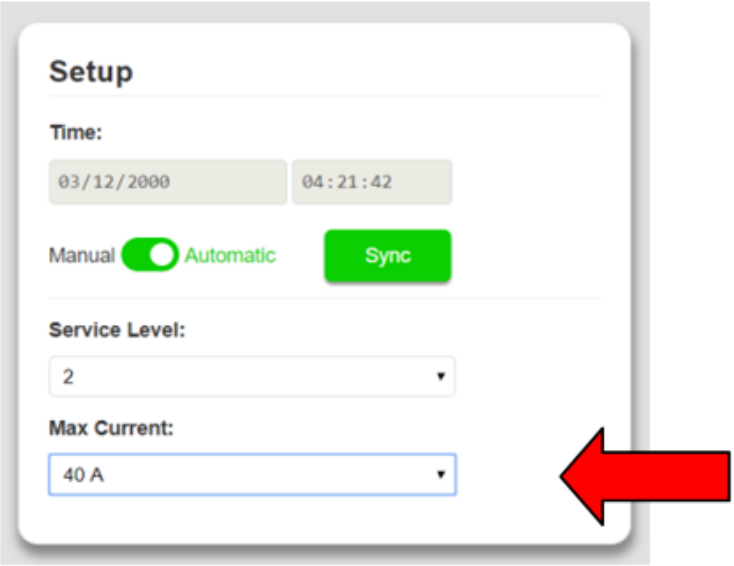
5. Long press to **SELECT**.
6. Quick press to **SKIP**.
7. Long Press to **SELECT Current.**
8. Quick Press to **SKIP** forward.
9. Long Press to **SELECT**.

Figure 11. 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 12. 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 13. Set the device date and time (including time zone) a web browser or in the mobile app

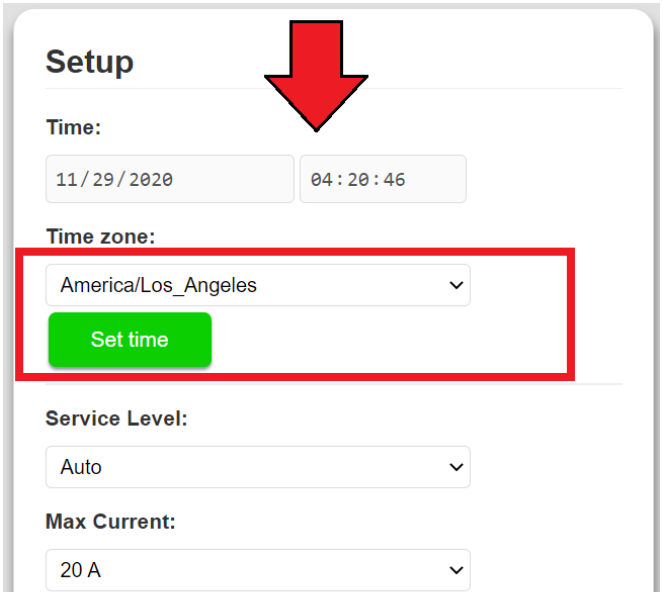
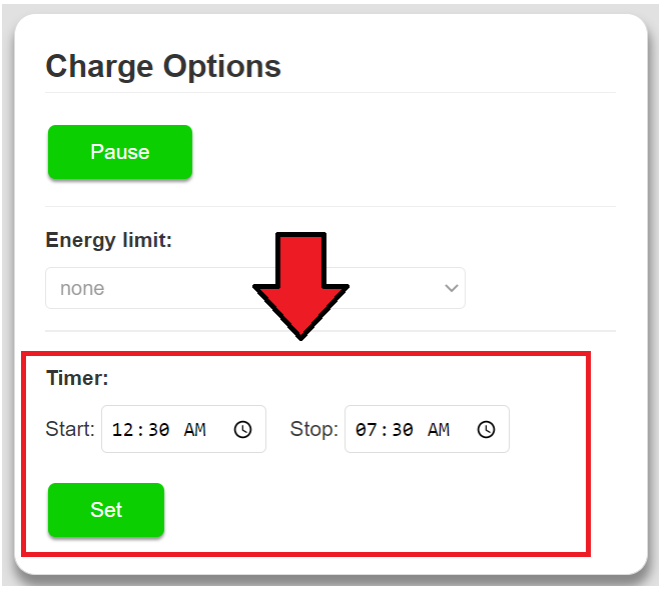


Figure 14. Set time of day charging timer a web browser or in the mobile app

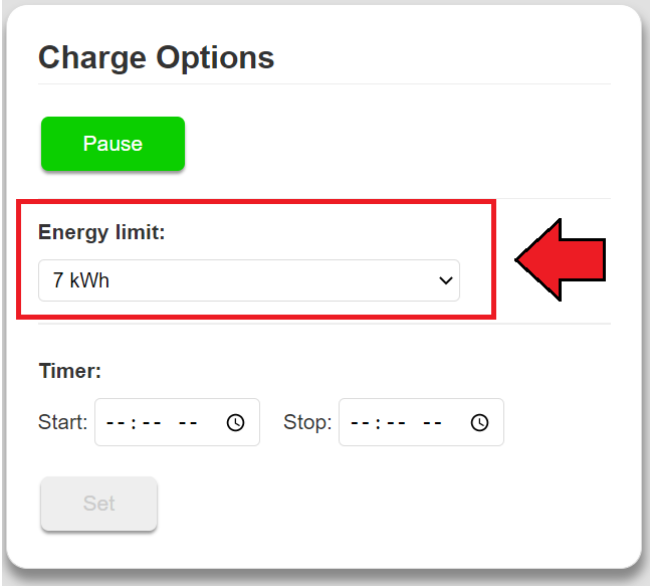


Set Session Energy Limits

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.

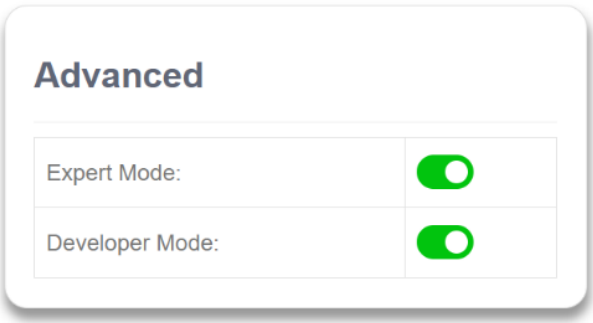
1. Plug the vehicle in.
2. Select the time limit in minutes.
3. Click **Set**.

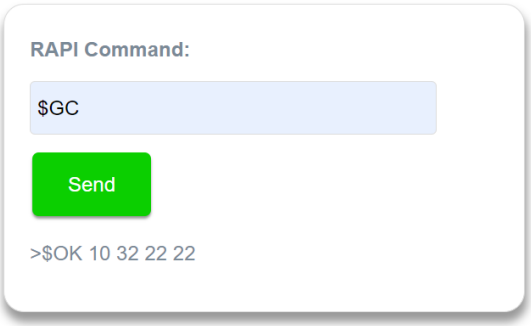
Figure 15. Set session energy limit a web browser or in the mobile app



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 27 to 35.





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. Use a wall screw (x1) to secure one side of the wall bracket into the stud closest to the installation area. Use a beam level to ensure that the bracket is level horizontally, then use a wall screw (x1) to secure the other side of the bracket into the wall. Size #10-24 lag screws are recommended for x1 (please see **Figure 16** below this paragraph).

2. 2. Hang the GoPlug Pro 32 onto the wall bracket (see **Figure 17** on the next page).

3. **Optional**: Use a wall screw (x1) to secure the bottom of the enclosure bracket to the wall (see **Figure 18** further below).

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

Figure 16. Wall bracket for GoPlug 32 – the charger slides in from the top

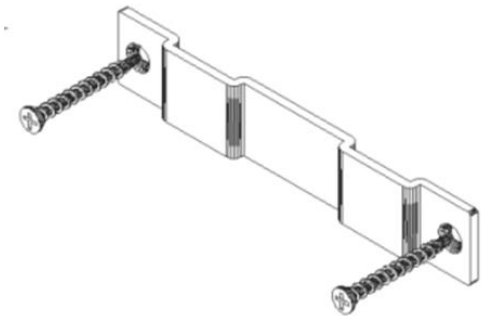


Figure 17. Sideview of the enclosure depicting charger installation in the wall bracket

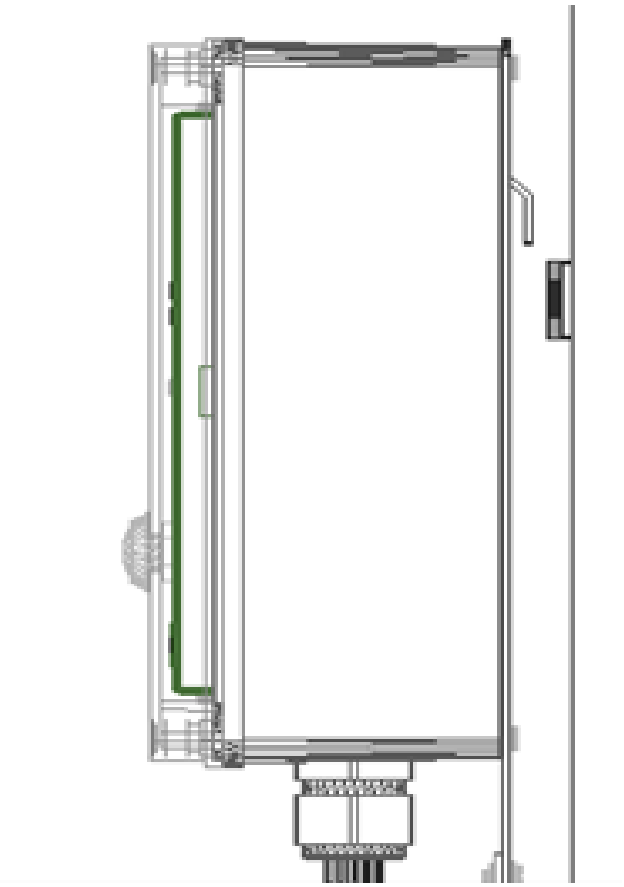


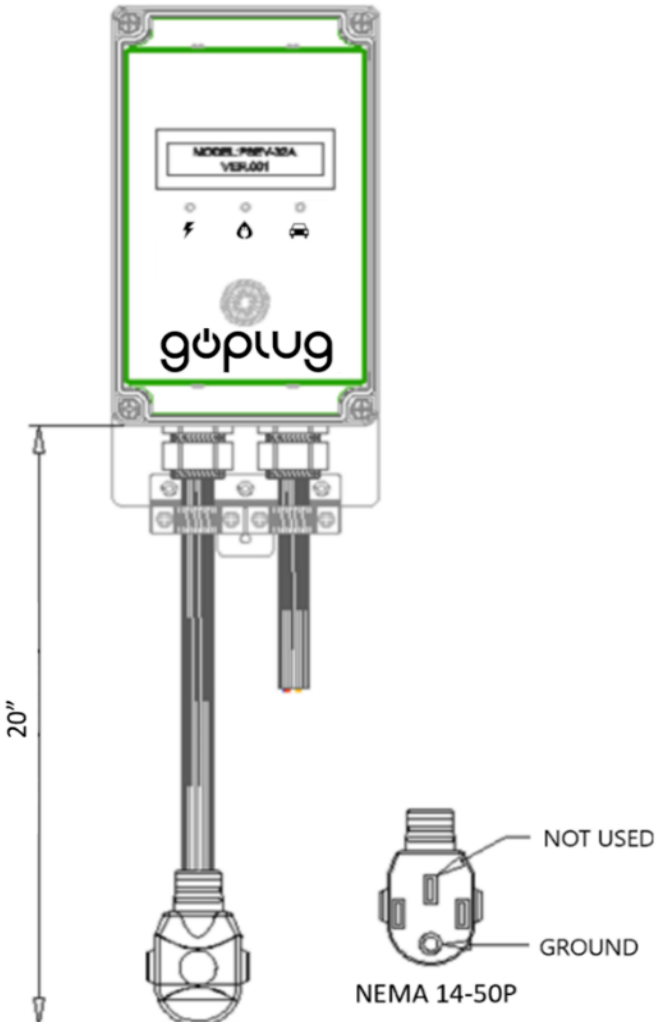
Figure 18. Frontal sideview depicting the retaining screw at the bottom of the enclosure

Receptacle Instructions

The GoPlug Pro 32 is fitted with a NEMA 14-50 plug extending from the bottom of the enclosure. Regulations limit this plug to a maximum of 40” in length, including the plug head. For this reason, the unit must be mounted above the NEMA receptacle and must also be located within 40” of it.

Note: The standard length of the plug is 20”; other sizes need to be customized.

Figure 19: Preferred orientation of the NEMA Receptacles Below the Plug-in GoPlug Pro 32.



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 32 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 32 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 32) 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 32 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. Note that the software cannot exceed the current capacity of the device which is set through the DIP switches described below. GoPlug will arrive with the DIP switch set to 32 A. If you plan to operate your GoPlug on a circuit that cannot accommodate a 32 A current draw, such as a dryer circuit, you or your electrician may elect to set the DIP switch to a lower setting. This was, GoPlug software cannot be inadvertently set to a higher current capacity than what your electrical circuit is capable of.

DIP Switch Settings

- The amperage adjustment digital switch should be set by a qualified technician only.
- The purpose of the amperage adjustment digital switch is to limit the maximum power that can be set through software and delivered by the charging station to the vehicle.
- The digital switch is located on the left side of the GoPlug Pro 32. Open the cover to set it up. The numbers of these four switches are 1, 2, 3, and 4 from bottom to top (see **Figure 20**).

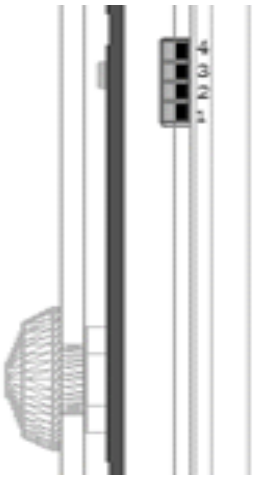
- The switch forward is on, backward is off, after setting you can see the set output current on the LCD screen.
- The 4-DIP switch can be configured. (see **Table 2**):

Table 2: Output Current Setting

DIP Switch Number	Maximum Output Current Setting				
	32A	28A	24A	20A	16A
1	**ON**	OFF	OFF	OFF	OFF
2	N/A	**ON**	OFF	OFF	OFF
3	N/A	N/A	**ON**	OFF	OFF
4	N/A	N/A	N/A	**ON**	OFF

Note: N/A means that the maximum output current is the same whether the switch is ON or OFF

Figure 20: Sideview of the open enclosure depicting the location and position of the DIP switches



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 32

- 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 the GoPlug Pro 32. Only Line 1, Line 2, and Ground are required, as shown in **Figure 4.**

CAUTION: The two phases used must each measure 120V 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 3**, and **4** 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 the GoPlug Pro 32. 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 the GoPlug Pro 32. 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 diagrams illustrate the two-service transformer secondary connections used in North America.

Figure 21: 240V Single Phase

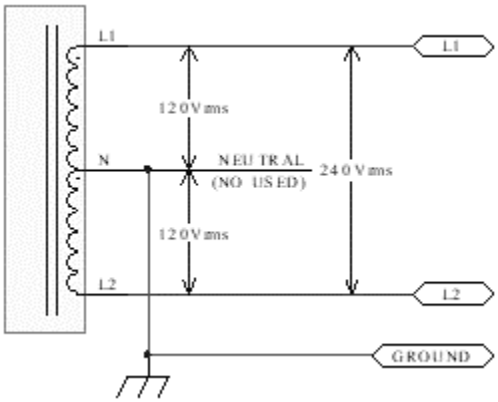
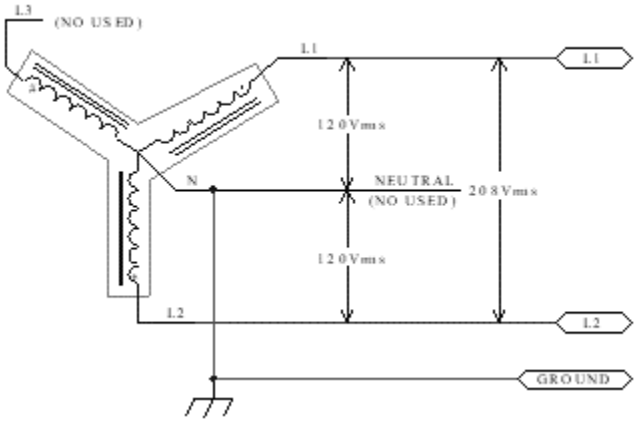


Figure 22: 208V 3-Phase, Wye-Connected



NOTE:

With a wye-connected secondary, any two of the legs can be used to provide 208V to the GoPlug Pro 32. 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

Fault Reset

1. The GoPlug Pro 32 has multiple internal protection functions, such as input voltage, communication signal of the vehicle and other faults. If there are three consecutive faults in a minute, the unit will turn off and fault lock.

2. The LCD display will show:
   FAULT LOCKED (line 1)
   Push Button to Reset (line 2)

3. The LCD panel displays the cause of fault at the same time.

There are three LED indicator lights on the front panel, all of which can change color (see Figure 2). These display contents are detailed in Table 1 below.

Figure 23. LED indicator lights on the GoPlug Pro 32.

Display	What it Means
GRID STATUS - Left Indicator Light	
Green	READY: Grid voltage is nominal
Red	ERROR: Grid voltage is too low or too high
Off	GoPlug not plugged in or a fault is present
CHARGER STATUS - Middle Indicator Light	
Green	READY: GoPlug Pro 32 is ready
Orange (Flashing)	WAITING: GoPlug Pro 32 is waiting
Red	ERROR: Please see LCD for error details
Off	Finished charging
CAR STATUS - Right Indicator Light	
Orange (Flashing)	CHARGING: Vehicle is charging
Green	FINISHED: Power at less than 0.5 kW
Red	PAUSE: GoPlug Pro 32 is waiting
Off	Finished charging

The GoPlug Pro 32 has a 2-line LCD display on the front panel, and the contents displayed in various operating modes are shown in the Table 2 below.

Table 4: LCD Display Status:

Mode	LCD display	Function Description
On Idle	Line1 : MODEL: GoPlug Pro 32 Line2 : Ver.001	Line 1: EVSE Model Line 2: Version Number
	Line1 : OUTPUT SETTING Line2 : 32 A (max)	Display set maximum output current value
	Line1 : INPUT VOLTAGE Line2 : 240 V /60.0 Hz	Display input voltage and frequency
Waiting	Line1 : WAITING TIME Line2 : 0H:MM:SS	Shows remaining wait time, hours: minutes: seconds
Ready	Line1 : EVSE IS READY Line2 : **** Line2 : **** Line2 : ****	EVSE and Vehicle have been connected and waiting for the Vehicle to charge.
Charging	Line1 : CHARGING Line2 : 7.68KW 7.6KWH	Display charging power(kW) and total charged amount (KWH)
	Line1 : CHARGING Line2 : 32 A 240 V	Display the charging current and voltage value
Pause	Line1 : PAUSE Line2 : Push Button to Run	On charging cycle, press the button immediately pause. （Press button again to Run）
Finished	Line1 : FINISHED Line2 : 0.2KW 20.0KWH	On the Charging cycle the power is at less than 0.5kW.
	Line1 : LAST CHARGE Line2 : 10.0KWH	The vehicle stopped charging and GoPlug Pro 32 turned off.
GFCI Fault	Line1 : GFCI FAULT Line2 : After15:00 Restart	GFCI fault protection, after 15 minutes restart automatically.
	Line1 : GFCI FAULTLOCKED Line2 : Need to Repair	If occurred 3 GFCI faults within 1 hour, EVSE shut down and locked, needs to be repaired
Fault Locked	Line1 : FAULT LOCKED Line2 : Push Button to Reset	If occurred 3 faults within 1 minute, the EVSE will shut down and locked. Push Button to Reset
	Line1 : FAULT LOCKED Line2 : XXXX Fault	XXXX is the various Fault Event, shown in Table 3.

Table 5: Error Codes and Fault Events

Fault Event	Fault Description
OCP Fault	Over-current protection
OTP Fault	Over-temperature protection
System Supply Fault	EV Charger Internal Fault
Grid Fault	Input voltage or frequency exceeds the allowable range
EV Fault	Electric Vehicle Fault

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
AB	postcode fwver 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	**Boot Notification** Sets boot notification with POST code, firmware version. At startup before POST, **$AB** sent with postcode **FF**. **$AB** is sent a second time after power on diagnostics complete, with the result code	**$AB FF 6.4.0^15** **$AB 00 6.4.0^15**
AT	evsestate pilotstate currentcapacity vflags evsestate(hex): see EVSE States below pilotstate(hex): same as evsestate currentcapacity(decimal): amps offered	**EVSE State Change** sent whenever there is a change in any of the parameters	$AT 01 01 12 0000^32 **$AT 03 03 23 0140^35** $AT 02 02 32 0108^39

	by the pilot: may be lower than maximum allowed		
	vflags(hex): see vflags bit definitions below		
AW	request 0 = reset WiFi network 1 = factory reset	**WiFi Request** Optional: sent from EVSE menu selection	$AW 0^22 $AW 1^23

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 0 = disable updates 1 = enable updates	**Enable/disable LCD update** After receiving $F0 0, EVSE suspends its own updates of LCD and only displays messages sent via $FP until it receives $F0 1	**$F0 0^42**	**$OK^20**
			$F0 1^43	**$OK^20**
FB	color 0 =light off 1 = red 2 = green 3 = yellow 4 = blue 5 = violet 6 = teal 7 = white	**Set Lighting Color** Set lighting of trim effects on the EVSE, such as LCD backlight or activity indicator color.	**$FB 0^30**	**$OK^20**
			$FB 1^31	**$OK^20**
			$FB 2^32	**$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		**Disable EVSE** Not ready error state: pilot low, PWM OFF	**$FD^26**	**$OK^20**
FE		**Enable EVSE** Enable normal EVSE operations	**$FE^27**	**$OK^20**
FF	feature val feature: A = Auto Lock D = Diode Check F = GFCI self test G = Ground Check R = Stuck Relay Check T = Temperature Monitoring V = Vent Required Check	**Disable or Enable EVSE Features** Auto Lock: When auto lock is enabled, EVSE automatically locks itself when EV is unplugged. When auto lock is disabled, EVSE remains unlocked until it is manually locked by $S4 1 See documentation of $S4 for more detail	**$FF D 0^50**	**$OK^20**
			$FF D 1^51	**$OK^20**
			$FF E 0^51	**$OK^20**
			$FF E 1^50	**$OK^20**
			$FF F 0^52	**$OK^20**
			$FF F 1^53	**$OK^20**
			$FF G 0^50	**$OK^20**
			$FF G 1^50	**$OK^20**
			$FF R 0^50	**$OK^20**

	val: 0 = disable 1 = enable		**$FF R 1^50**	**$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	**Set Ammeter Calibration Mode** 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	**Set Charging Session Time Limit** 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	**Set Authorization Lock** **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 ($FF A 1), EVSE automatically locks itself after EV is unplugged.**	**$S4 0^53**	**$OK^20**
			$S4 1^54	**$OK^20**
SA	scale offset scale(decimal): scale factor offset(decimal): offset factor	**Set Ammeter Scale and Offset** Ammeter calibration	**$SA 176 230^37**	**$OK^20**
SC	amps [v] amps(decimal) = maximum pilot amps v(character) = (optional) volatile flag	**Set Current Capacity** 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**
SH	kwh(decimal) = charge limit in kWh	**Set Charging Session kWh Limit** Command is accepted only if EV is connected.	**$SH 10^1E**	**$OK^20**
			$SH 10^1E	**$NK^20**

	0 = cancel charge limit	Charging stops when kWh limit is reached or EV disconnects. Overrides **$ST** timer. Charging will continue until kWh limit reached, even if clock is past **$ST** off time.	**$SH 5^2A**	**$OK^20**
SK	wh(decimal) = total accumulated watt-hours	**Set Accumulated Wh**	**$SK 0^2C**	**$OK^20**
			$SK 1000^1D	**$OK^20**
SL	servicelevel A = auto-detect 1 = service level 1 2 = service level 2	**Set J1772 Service Level**	**$SL 1^2A**	**$OK^20**
			$SL 2^29	**$OK^20**
			$SL A^5A	**$OK^20**
SM	scale offset scale(decimal): scale factor offset(decimal): offset factor	**Set Voltmeter Scale and Offset** Voltmeter calibration	**$SM 298 12018^33**	**$OK^20**
ST	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	**Set Timer - Start and End Time**	**$ST 0 0 0 0^23**	**$OK^20**
			$ST 24 00 06 00^23	**$OK^20**

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
G0	state 0=disconnected 1=connected 2=unknown	**Get EV Connected State**	**$G0^53**	**$OK 0^30**
				$OK 1^31
				$OK 2^32

G3	cnt minutes = cnt*15	**Get Session Time Limit Count**	**$G3^50**	**$OK 2^12**
G4	status 0=unlocked 1=locked	**Get Locked Status**	**$G4^57**	**$OK 0^10** **$OK 1^11**
GA	scale(decimal) offset(decimal)	**Get Ammeter Calibration**	**$GA^22**	**$OK 22^20**
GC	min max pilot min(decimal) = minimum amps max(decimal) = maximum amps pilot(decimal) = amps offered by pilot	**Get Current Capacity Range**	**$GC^20**	**$OK 6 32^17**
GD	starthr startmin endhr endmin starthr(decimal) = starting hour (0-23) startmin(decimal) starting minute (0-59) endhr(decimal) = ending hour (0-23) endmin(decimal) = ending minute (0-59)	**Get Delay Timer**	**$GD^27**	**$OK 0 0 0 0^20**
GE	amps sflags amps(decimal) = amps offered by pilot sflags(hexadecimal) = settings bits 0001h=service level 2 0002h=diode check disabled 0004h=ground check disabled 0010h=welded contactor check disabled 0020h=auto service lvl chk disabled 0100h=monochrome LCD 0200h=GFI self test disabled 0400h=temperature monitoring disabled	**Get Settings**	**$GE^26**	**$GE 23 0101^22**
GF	gfi nogn stuckrelay (all values hex, max FFh)	**Get Fault Counters** Maximum trip count: 255	**$GF^25**	**$OK 6 0 0^16**
GG	milliamps millivolts milliamps(decimal)=milliamps output current millivolts(decimal)=millivolts output voltage	**Get EVSE Output Current and Voltage**	**$GG^24**	**$OK 305164 242^11** **$OK 305164 -1^39**
	if either reading not supported, return -1			**$OK -1 -1^20**

GH	kwh(decimal) if no limit set, kwh = 0	**Get Session Charge Limit** **Charging stops when session kWh limit is reached**	**$GH^2B**	**$OK 5^15**
GM	scale(decimal) offset(decimal)	**Get Voltmeter Calibration**	**$GM^2E**	
GP	temp1 temp2 temp3 temperatures all decimal, tenths of a degree Celcius. If a temperature sensor is not installed, return -2560	**Get Temperature**	**$GP^33**	**$OK 233 -2560 -2560^32**
GS	evsestate elapsed pilotstate vflags evsestate(hex): EVSE state (see above) elapsed(dec): elapsed charge time in seconds of current or last charging session pilotstate(hex): same as evsestate vflags(hex): see vflags above	**Get EVSE State, Elapsed Charging Time**	**$GS^30**	**$OK 01 6767 01 0000^20** **$OK 02 31 02 0100^23** **$OK 03 31 03 0140^27**
GT	YY MM DD HH MM SS (all values decimal) YY=2-digit year MM=month 1-12 DD=day 1-31 HH=hour 0-23 MM=minute 0-59 SS=second 0-59	**Get Time and Date**	**$GT^37**	**$OK 20 02 15 20 20 25^23**
GU	ws whacc ws(decimal): watt-seconds used in current or last charging session whacc(decimal): watt-hours accumulated - total watt hours used across all charging sessions	**Get Energy Usage** **session and accumulated energy usage**	**$GU^36**	**$OK 4359600 4400^1D**
GV	fwrev(string) rapirev(string)	**Get Firmware and Protocol Version**	**$GV^35**	**$OK E6.4.0 6.0.0^61**

Maintenance

The GoPlug Pro 32 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, GoPlug Factory Service, 160 J Street unit 2262, Fremont, CA 94536 or by calling (833) 378-6566.

Contact Support

www.goplug.com
support@goplug.com

(833) 378-6566

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