EcoPlug ™ Energy Saver

EP-1

User Manual v 1.7
(Mobile v 1.9a/1.7i, Firmware v 1.8)

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April 2026

https://www.asr-web.com/ecoplug

Innovate!

Contents

Description

In this age of climate change there is a lot of focus on new green technologies and energy production but less on optimization of conventional technology energy usage. Many of these legacy systems will be with us for years to come as we transition to this new era. This innovation (patent pending) focuses on immediately reducing our carbon footprint without any significant capital outlay or additional pressure on resources manufacturing alternatives. We could all make a huge impact simply by using less energy with products we already own without compromising on operability. This device optimizes a conventional 15A 120V plug-in with these key features:

- 9 multi-use modes for a wide range of applications
- Integrated current sensing for power costing feedback with bi-colour status LED
- Automatic WiFi time synchronization for accuracy of events
- Full operability down to -40°C with military grade components
- Fail-safe normally closed relay switching architecture for temperatures below -40°C
- Intuitive virtual mechanical timer dial for setting events
- Peak hours/cycling management with automated utility provider synchronization for available HFED zones in Canada
- Mobile Bluetooth integration
- AC powered, no batteries required with settings saved to EEPROM
- Watchdog reset
- SPE-1000 inspected for electrical safety

Application Examples

- Block heaters
- Propane tank blankets
- Lighting automation
- Greenhouse climate control

Specifications

Operating Temperature*: -40°C to 60°C
Temperature Accuracy: +/- 2°C
AC Input (nominal): 120V, 60Hz
AC Load (maximum): 15A
AC Draw (typical): 20mA
Current Accuracy: +/- 0.1A
Time Synchronization: pool.ntp.org
Communications: BLE (V4. 2), class 2/2.4GHz WiFi
Programming: 9 multi-use modes, 7 day * 48 events timer
Dimensions (L x W x H): 150mm x 75mm x 50mm
Weight: 410g

*Normally closed relay will ensure power to load beyond this temperature range.

Precautions

1. Combined loads should not exceed 15A or the maximum combined capacity of the whole circuit including any extension cord ratings.
2. Do not immerse the unit in water or install in a location where there is the likelihood of water incursion.
3. Do not open the unit, there is a risk of electrical shock hazard and/or permanent damage. Opening the unit will void any warranty.
4. Ensure that the temperature probe on the side of the unit is clear of any heat sources, not in direct sun and preferably sheltered from wind otherwise the accuracy of the readings could be affected.

Installation Instructions

1. Mount the unit with 4 screws through the flanges allowing for enough cable reach and plug directly into a grounded receptacle, ideally this should be under building eves and within range of WiFi service for timer applications.
2. If required run a grounded extension cord to the load using a grounded splitter when distributing to multiple loads.
3. Once the load is connected and if not already on (I), temporarily toggle off (O) the manual bypass switch on the side of the unit to disengage the controller. The status LED should turn red to confirm that the load is drawing power (minimum 0.25A), otherwise a green state indicates that the unit is receiving power only. Make sure to toggle the switch back on (I) to engage the controller before leaving unless it is desirable to override any programming.
4. Download, install and run the EcoPlug app for your mobile device from either Apple App Store (iOS based) or Google Play Store (Android based). Note that the screenshots shown in this documentation are from the Android version but the iOS version will be similar.
5. Follow the prompts on the Wizard screen (details below) to connect.
6. Steps 7 to 10 must be done in order and separately by tapping on Update each time.
7. Go to Settings screen (details below) from menu, the unit will identify itself as "EcoPlug *node ID*" under COM. Select this first if more than one EcoPlug is in range.
8. Set a new PIN if desired.
9. To differentiate between multiple EcoPlug units it may be desirable to set a unique node ID.
10. Select UTC offset.
11. Go to Mode screen (details below) from menu and select desired operating mode.
12. If applicable go to Timer screen (details below) from menu and set events.
13. If applicable go to Thermostat screen (details below) from menu and set threshold temperature.
14. If applicable go to Eco screen (details below) from menu and set peak hours/cycling parameters.
15. On Status screen tap –/+ to adjust the kWh rate to apply to cost.

Wizard (Connect)

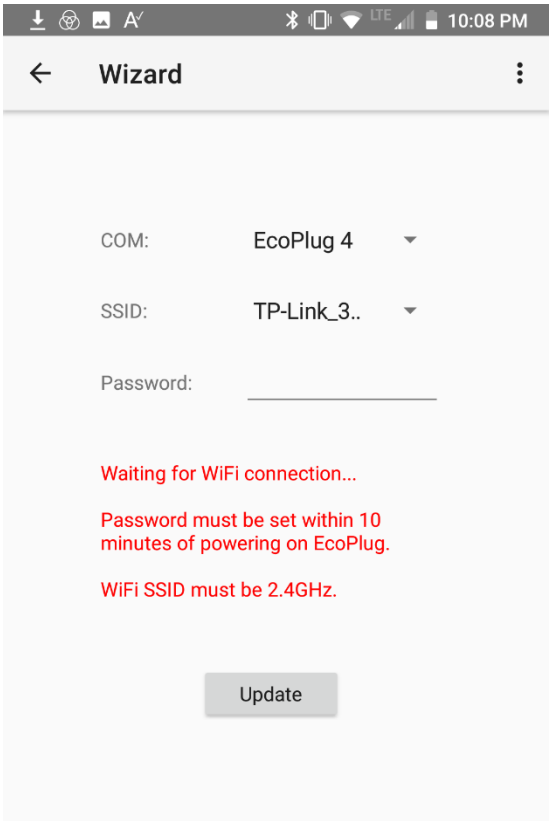
The Wizard screen will display automatically when there is no active connection to a unit, if any required system services are off these will be prompted for. A WiFi data stream will attempt to be established at the last known IP address if applicable.

Any units in close proximity will broadcast "EcoPlug *node ID*" under COM. If multiple units are present plug in each one in turn when initially connecting.

The mobile device itself must be connected to WiFi, only 2.4GHz signals are supported.

SSID password can be alphanumeric and must not include the "|" (pipe) delimiter, it must be set within 10 minutes of plugging in (power on).

Tap Update when available to set parameters, there will be a delay while the unit reboots and attempts to connect.

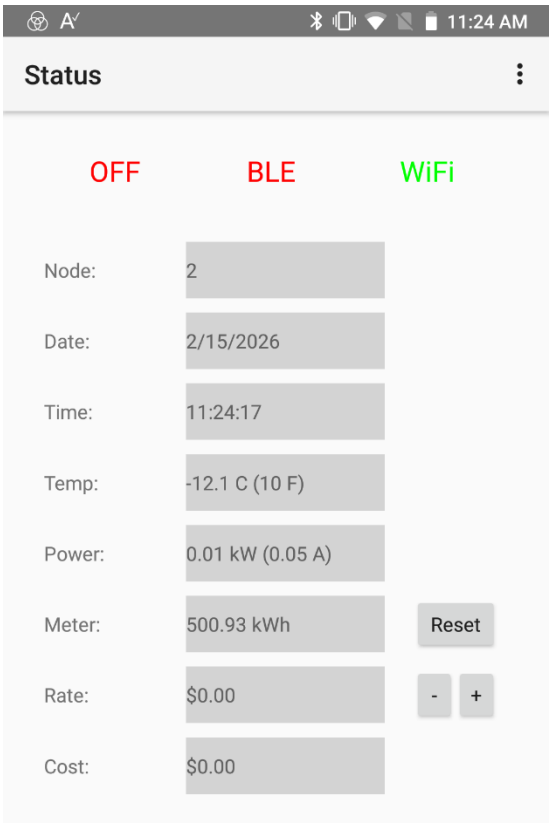


Status (Data)

The Status screen shows real-time data for the connected device including node ID, date, time temperature, power, cumulative power meter, power rate and cumulative power cost.

The top bar shows ON (green) when power is applied to the load and OFF (red) when interrupted. If the load is activated and cycling the ON/OFF will be shown in blue (see Eco below). BLE (green) indicates a Bluetooth configuration connection and WiFi (green) indicates a WiFi data connection, either one will display in red when a connection is not present. For timer applications a WiFi connection is required for time synchronization, see Settings below for more details.

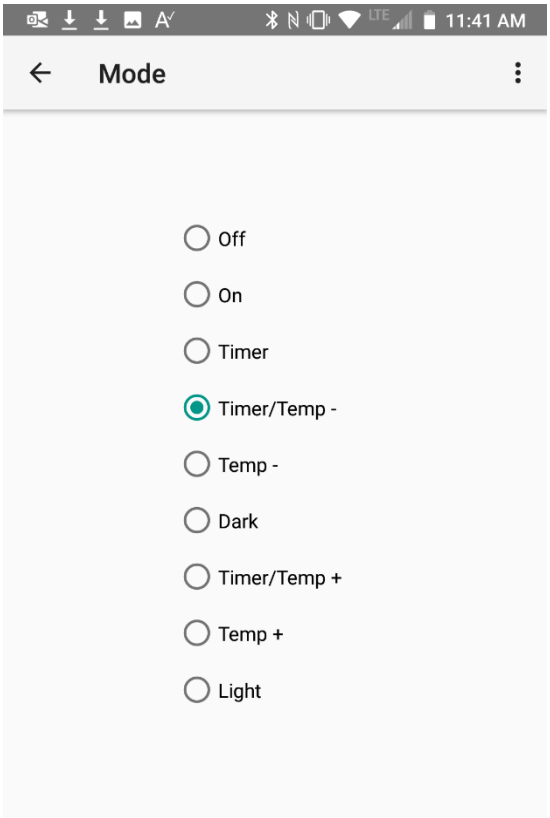
Tap Reset to zero the cumulative power meter and – /+ to adjust the kWh rate to apply to cost. The effective rate for your area can be calculated by dividing your monthly power bill by the kWh used.



Mode (Functions)

The Mode screen sets one of nine programming modes for a wide range of applications.

Off: Always off.
On: Always on.
Timer: On when specific events selected (see Timer below).
Timer/Temp-: On as per timer AND when temperature is equal to or below thermostat threshold (see Thermostat below).
Temp-: On when temperature is equal to or below thermostat threshold.
Dark: On when light sensor is dark.
Timer/Temp+: On as per timer AND when temperature is equal to or above thermostat threshold.
Temp+: On when temperature is equal to or above thermostat threshold.
Light: On when light sensor is exposed to light.

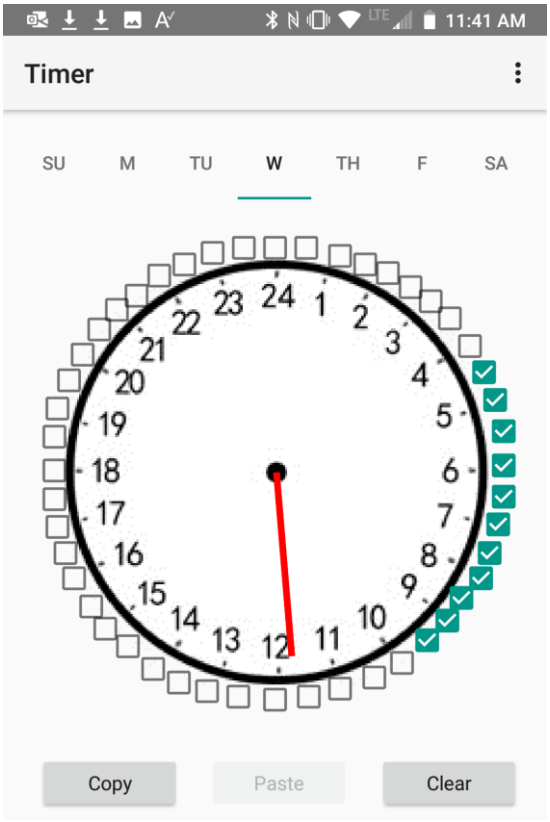


Timer (Events)

The Timer screen sets up to 48 events in half hour increments on a 24 hour virtual mechanical timer dial for each day of the week. A red hour hand will show the synchronized time when the current day is selected and WiFi is connected (see Status above).

Tap on the relevant day and select the appropriate events to schedule power to the load. Tap events with your smallest finger as the boxes are close together on the dial.

Tap Copy to capture all events from the selected day to the clipboard, Paste to transfer them to a selected day and Clear to erase them for the selected day.



Thermostat (Threshold)

The Thermostat screen sets the temperature threshold for activating the load, use the slider or tap -/+ to adjust.

To prevent excessive cycling the temperature must be equal to or less than the set value for a period of 5 minutes before the load is switched on in temp– or timer/temp- modes (see Mode above).

Conversely the temperature must be equal to or greater than the set value for a period of 5 minutes before the load is switched on in temp+ or timer/temp+ modes.

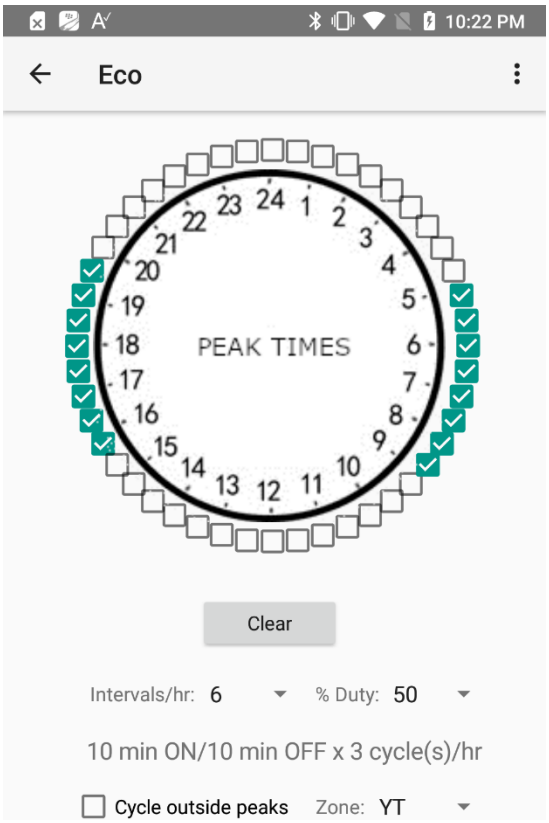
In either case the load is switched off immediately if the temperature crosses the threshold again in the opposite direction. Note that it does take some time for the temperature reading to equalize to surroundings when first installing the unit.

Eco (Peak Hours/Cycling)

The Eco screen defines peak hours in half hour increments on a 24 hour dial. Tap events with your smallest finger as the boxes are close together on the dial.

Tap Clear to erase all events.

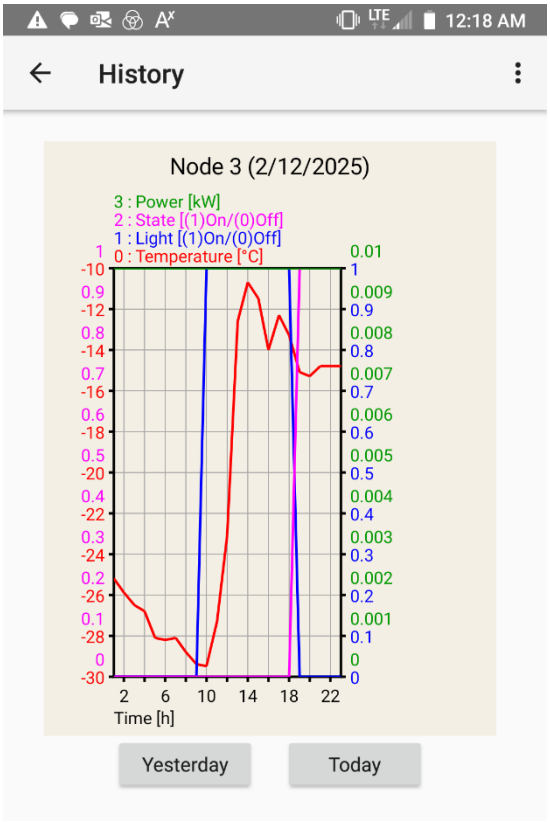
Select cycling intervals/duty cycle and the caption below will describe the resulting behaviour. Toggle the "Cycle outside peaks" option to apply the cycling interval regardless of defined peak times. Cycling will only be applied if all mode conditions are met (see Mode above). Set the cycling interval to 0 to turn off load during peak times and set it to 1 to disable cycling altogether. Select a zone to automate utility provider peak synchronization for available HFED zones in Canada based on 2 hour windows either side of peaks the previous day. Note that this feature will be disabled if any of the events are modified.



History (Graph)

The History screen displays a rolling 24 hour window of data from the device for remote monitoring. Monitored parameters include Temperature, Light, State and Power. Note that the device must be connected once locally to enable this feature.

Tap Today or Yesterday to display the appropriate day.



Settings (Configuration)

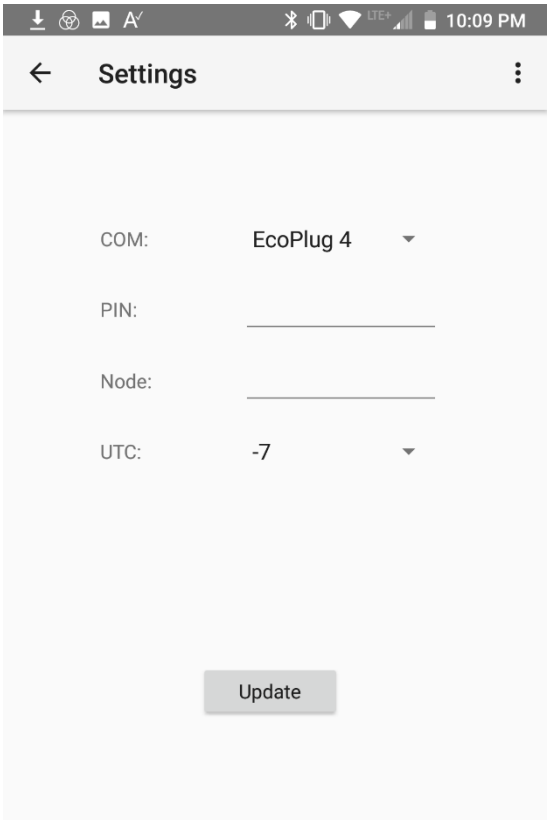
Refer to steps 6 though 10 in Installation Instructions above for additional details on procedure, settings will persist between sessions of the app.

Any units in close proximity will broadcast “EcoPlug *node ID*” under COM.

PIN provides an optional added layer of security for communication with the device and can only be reset within 10 minutes of plugging in (power on). It must be a 4 digit numeric sequence in the range 0000 to 9999 (default 1111). Once set you do not need to re-enter the PIN when making changes unless configuring a unit with a different PIN.

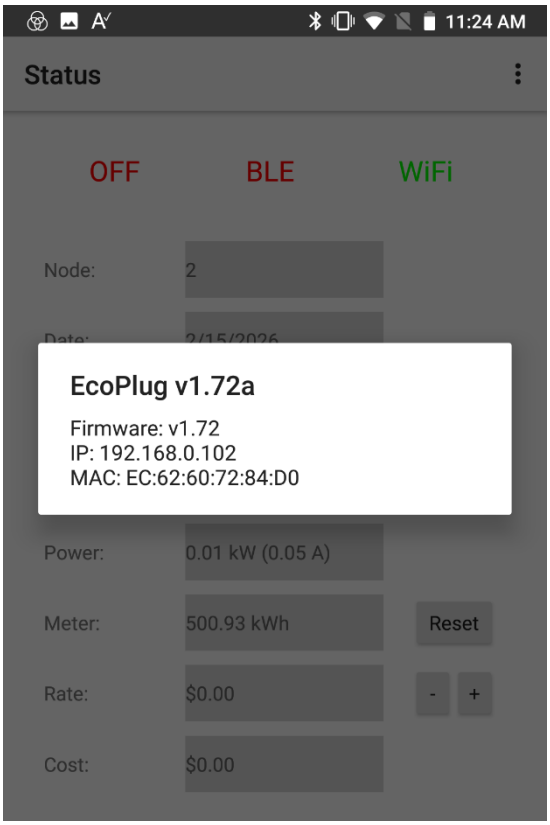
Node must be an ID number in the range 1 to 999 (default 1), any change will be broadcast on next power on.

UTC is the offset to apply to the synchronized time for your area.



About (Details)

The About window displays the current app and firmware versions, IP address (see Firmware below) and unique WiFi MAC address.

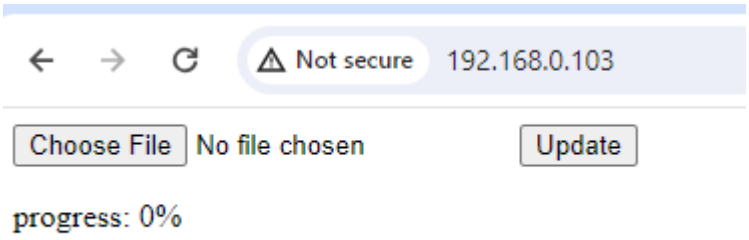


Firmware (Update)

This unit supports over-the-air (OTA) firmware updates as they become available using WiFi.

1. Setup WiFi (see Settings/Installation Instructions above).
2. Query the device IP (see About above).
3. Exit the program to disconnect from unit.
4. Download update from: https://www.asr-web.com/support
5. Input the IP from step 2 into the address bar of a browser.
6. Click/tap Choose File and select .bin file downloaded from step 3.
7. Click/tap Update and wait for progress to confirm 100%.
8. Repeat step 2 to confirm updated firmware version is installed.

For security, steps 5 through 7 must be completed within 10 minutes of plugging in (power on).



Troubleshooting

Problem	Solution
Load will not activate.	• Check extension cord connection. • Temporarily toggle off (O) the manual bypass switch on the side of the unit to disengage the controller, this will allow power to the load as a check. • Check Mode screen and verify that all conditions are satisfied.
Cannot connect device to WiFi.	• Power cycle the device, for security the WiFi settings can only be updated within 10 minutes of powering on. • Check that the SSID is 2.4GHz. • Check that the device is within range. • Check WiFi password. • Connect mobile device to same SSID.
Device is not responding to app.	• Power cycle the device and reset PIN (if set), for security this can only be done within 10 minutes of powering on.
Cannot update firmware.	• Power cycle the device, for security the firmware can only be updated within 10 minutes of powering on. • Check that device is connected to WiFi.
LED not showing red for load.	• Load must be drawing at least 0.25A.
LED not turning on.	• Check circuit breaker. • Internal fuse may be blown, send unit in for servicing.