



**Electric
MotorWerks**



WattBox 200 Installation Instructions

EMotorWerks and JuiceBox are marks used by Electric Motor Werks. Other brand and product names are trademarks or registered trademarks of their respective holders.

The manufacturer offers a full one year warranty on its pre-assembled charging stations and smart meters. The warranty covers parts, factory labor, and shipping if required.

If you are not 100% satisfied with your purchase, you can return the product for a refund. Please note that a 10% restocking fee will apply unless the return is the result of a manufacturing defect. The customer will be responsible for shipping costs. Customers can return a product for up to 30 calendar days from the date of purchase.

Any returned product must be in the same condition it was received, and in the original packaging. A receipt is required (electronic receipt is OK). Note that custom-built charging stations and DIY kits are not returnable. Any damaged or missing items must be reported to our customer support within 48 hours of delivery. In case you received a defective item please notify the customer support team. Electric Motor Werks will identify the problem, and offer an appropriate solution, such as repair or exchange.

Electric Motor reserves the right to change specifications and product offerings without notice. Where possible, Electric Motor Werks will substitute products with equivalent or better functionality and specifications.

DANGER
<p>Hazard of Electric Shock, Arc Flash or Explosion</p> <ul style="list-style-type: none">• Please follow safe electrical work practices at all times. Please see NFPA 70E or applicable local codes.• This equipment must be installed by a licensed electrician.• Turn off all power supplying equipment before working on or inside the equipment. Use a properly rated voltage-sensing device to confirm that power is off.• Only use UL-listed or UL-recognized insulated conductors to install this product.• Please read and follow all the instructions before attempting to install this product. <p>Failure to follow these instructions can result in death or serious injury.</p>

A licensed electrician should possess the skills and knowledge related to the construction and operation of this electrical equipment, and its installation. The electrician should have received safety training to recognize and avoid the hazards involved. No responsibility is assumed for any consequences arising out of the use of this material.

CAUTION
<p>Risk of Equipment Damage</p> <ul style="list-style-type: none">• This product is designed to work with specific current transformers (CTs) from EKM, which have been supplied along with the device by Electric Motor Werks. Please do not use other CTs with this product without consulting Electric Motor Werks or EKM Metering.

NOTICE
<ul style="list-style-type: none">• Please note that this product is not intended for life safety applications.• Please do not install this product in hazardous or classified locations.• The installer is responsible for conformance with the NEC and all applicable local codes.

FCC Part 15 Information

Note: This equipment has been tested by the manufacturer and found to comply with the limits of a class A digital, device pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense. Any modifications of this product without the express authorization of the manufacturer will nullify this statement.

Overview

WattBox 200 has been carefully designed to meet the requirements of the CPUC submetering pilot, which has been funded by PG&E, SCE and SDG&E. It's intended to be used alongside an NRTL-certified level 2 charging station to submeter the EV load for the purposes of the PEV Pilot. Once connected, the device will begin logging data, and monitor the EV load with only minimal configuration. The device will read the input from the supplied current transformer (CT) with revenue-grade accuracy.

Features and Specifications

Input Voltage	90-265 VAC single phase, 50/60 Hz
Current Transformer	200A
Serial Port	RS-485
Meter Accuracy:	Class 0.5 with California approval for revenue grade metering
WiFi	2.4 GHz 802.11 b/g/n
North America	-30C to 70C, 95% RH, non-condensing
UL	UL 61010-1 Listed
FCC	CFR 47 Part 15, Class C

Installation Checklist

A WattBox 200 system has the following components:

- WattBox 200 Smart Energy Monitor
- WiFi antenna
- Attached current transformer rated to 200A
- Attached line-tap cable
- Level 2 NRTL-certified EV charging station (not supplied)

Other requirements:

- WiFi data connection 2.4 GHz 802.11 b/g/n
- DHCP (static IP addresses may be supported)
- Internet-connected device with web browser access

Warning – These installation/servicing instructions are for use by a licensed electrician only. To avoid electrical shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

General guidelines:

- Only licensed electricians should install the WattBox 200 submeter. The mains voltages can be lethal.
- Follow all applicable local and national electrical and safety codes.
- The current sensor must be routed to the phase to be measured. Disconnect not required for the neutral wire.
- Equipment must be disconnected from HAZARDOUS LIVE voltages before access.
- Before applying power, please check that all the wires are securely installed by tugging on each wire.
- Do not install the submeter where it may be exposed to temperatures below -30°C or above 70°C , excessive moisture, dust, salt spray, or other contamination. The meter requires an environment no worse than pollution degree 2 (normally only non-conductive pollution; occasionally, a temporary conductivity caused by condensation must be expected).
- Do not drill mounting holes using the WattBox as a guide; the drill chuck can damage the screw terminals, and metal shavings can fall into the connectors, causing an arc risk.
- If the meter is installed incorrectly, the safety protections may be impaired

Mounting and Connecting the Device

- 1) Begin by identifying the location for mounting WattBox. Ensure the distance from the panel or charging station does not exceed the length of line-tap cable. Mount in a location close to the circuit breaker/disconnect switch. Provide at least 4 inches of space around all edges of the enclosure (Fig. 5).
- 2) Mount WattBox using four #8 screws (not included). At least two of the mounting screws must be securely attached to a structural wall component such as a stud.
- 3) Connect the metal wire jacket to the ground for safe operation. It's connected to the WattBox enclosure (Fig. 1 & 3).
- 4) Fit current sensor (CT) around L1. Make sure the arrow is facing towards the load in the direction of flow (Fig. 1 & 2).
- 5) Attach current sensor (CT) leads to WattBox. Connect the black wire to the green lead from WattBox, and the white wire to the white lead. Use a wire nut or other attachment. The leads are left unattached to aid in installation (Fig. 4).
- 6) Connect the black wire to the breaker, lug or an appropriate line-tap device on L1 (Fig. 1 & 3).
- 7) Connect the red wire to the breaker, lug or an appropriate line-tap device on L2. If the vehicle is charged from a wall outlet, and 120V needs to be monitored instead of 240V, please connect the red wire to the neutral wire (Fig. 1 & 3).
- 8) The embedded meter should start cycling through display values, which are visible when the lid is removed (Fig. 6).
- 9) Configure WiFi network access (pages 6 & 7).

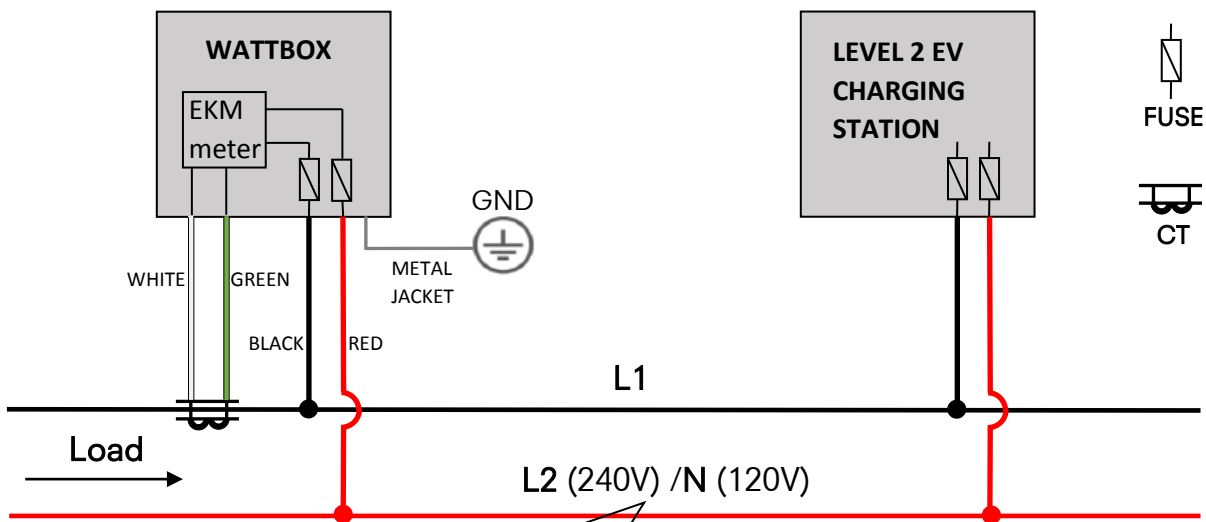


Fig. 1: WattBox wiring diagram

Most EV charging stations use 240V power. **Do not connect "N"** unless your EVSE is 120V (Level 1). **Use L1 and L2 instead.**



Fig. 2: Current transformer (CT) orientation

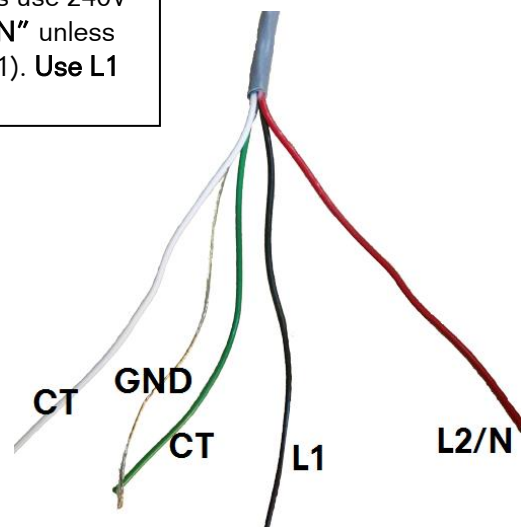


Fig. 3: WattBox wire color coding

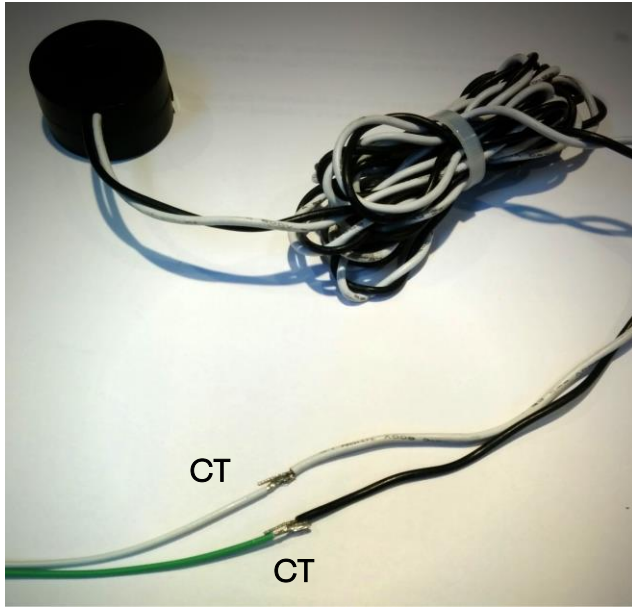


Fig. 4: Attaching WattBox wire leads to current transformer

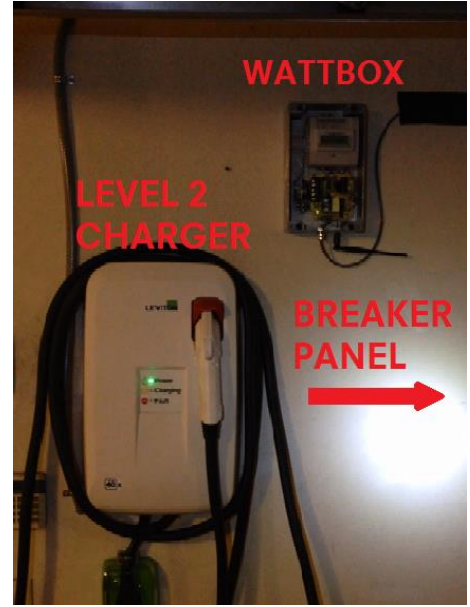


Fig. 5: Sample WattBox installation

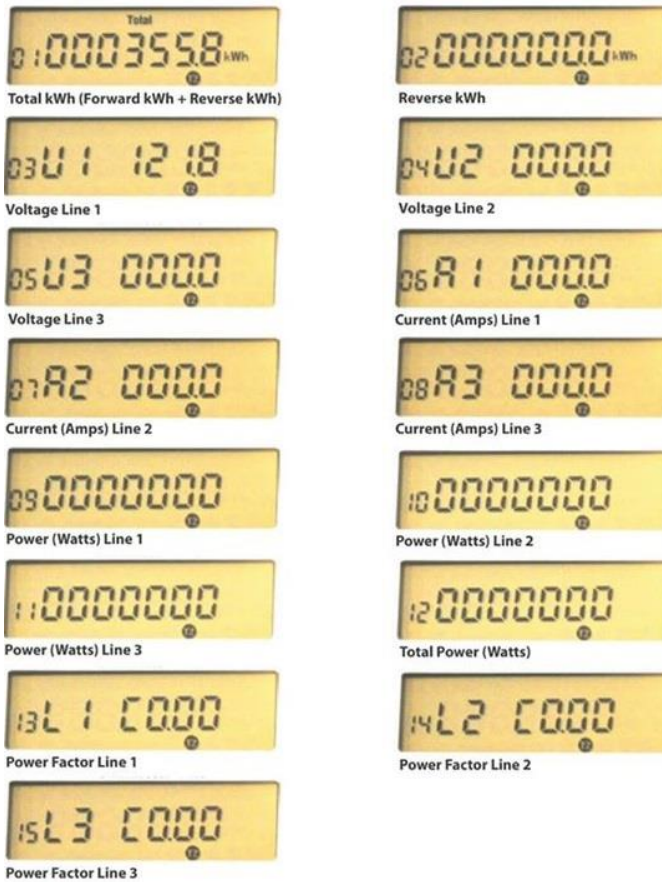


Fig. 6: Display values for EKM Omnimeter II UL v.3

WiFi Network Access Provisioning

- 1) Once WattBox has been powered on, it will enter access-point mode, which will create a device-specific WiFi network. This local network will exist for 5 minutes, and will allow you to access the device from any browser-enabled computer or smart phone. Please power-cycle WattBox, if you wanted to start over or needed more time.
- 2) Please connect to the aforementioned WiFi network named **WattBox-XXX** on any personal computer or smartphone. Note that the name always starts with **WattBox**, but the last three characters vary from device to device (Fig. 7).
- 3) When prompted for a password, please enter **GoElectric**. The authentication protocol is WPA2 (Fig. 8).
- 4) Once you have connected to the WattBox access point, please navigate to <http://setup.com> on a computer or smart phone. In a few moments, you should see a list of WiFi networks your WattBox has detected.
- 5) Please select the name of your local WiFi network (SSID) from the list, and enter your network password (Fig. 9).
- 6) Once your local WiFi network is provisioned, please press the **Connect** button. After about 10-20 seconds, the browser session should time out, WattBox should shut down its AP network, and connect to the Internet through the local WiFi.
- 7) Please look at the bottom of the WattBox enclosure, and note the 28-digit unit ID number (Fig. 10).
- 8) On your computer or smart phone, please navigate to the link referenced below. Be sure to replace "XXXX" at the end with the 28-digit unit ID number http://emotorwerks.com/cgi-bin/JuiceBox/JB_data.pl?timeunit=1&ID=XXXX (Fig. 11).

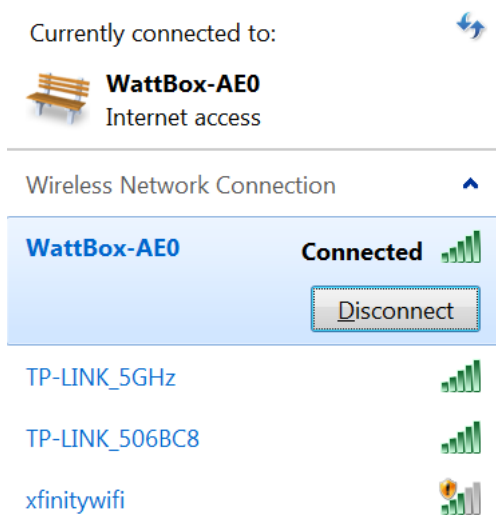


Fig. 7: WattBox access point WiFi network

Type the network security key

Security key:

Hide characters

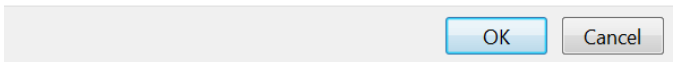


Fig. 8: WattBox access point WiFi network password

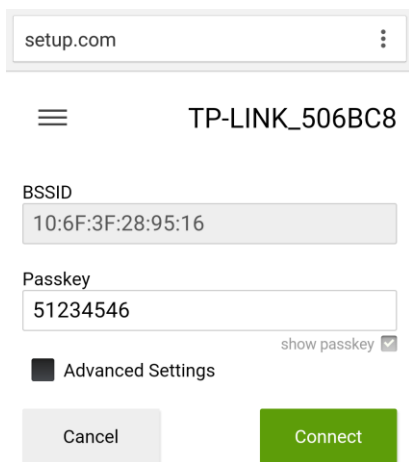


Fig. 9: WiFi configuration via <http://setup.com>



Fig. 10: WattBox ID number – in this example 010005152003133502020155921

JuiceBox Data Visualization Page - auto-refresh in 60 seconds

NO RESULTS. Have you entered a correct JuiceBox ID???

Query:

```
select FROM_UNIXTIME(time), V, Wh/10, Wh_total, W/10, A/10, IP from JB_log where ID='010005152003133502020155921' order by time DESC limit 100 Identification:
```

Total Lifetime Energy Delivered by this unit: kWhrs

Total Lifetime Savings from driving electric (approximated): \$

[\[Zoom Out\]](#) [\[Zoom In\]](#)

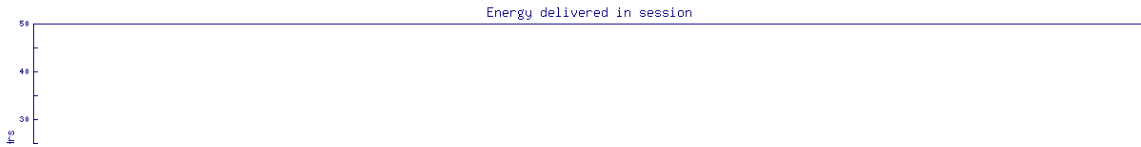


Fig. 11: Data visualization on EMotorWerks website – in this example http://emotorwerks.com/cgi-bin/JuiceBox/JB_data.pl?timeunit=1&ID=010005152003133502020155921