Only trained and certified electricians are allowed to install, replace, or service. Working with electrical systems such as panels with energy supply can lead to major injuries.
Safety Warning and Recommendations

Hazards and Cautions:

- Working with electrical systems such as panels with energy supply can lead to major injuries. Only trained and certified electricians are allowed to install, replace, or service.
- Take care when connecting devices and sensors to supply/power panels.
- Locate the emergency power-off switch in the room in which you are working. If an electrical accident occurs, you can quickly turn off the power.
- Look carefully for and remove possible hazards in your work area, such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- When working with high energy power supply make sure you have the proper personnel protective equipment (PPE).
- Perform hazard assessments as required, and determine the PPE needed to protect workers. Additional PPE, such as fall protection equipment, respirators, chemical-resistant or cut-resistant gloves, and chaps, may be required, depending on the results of the hazard assessment.
- Depending on the job task to be performed, wear PPE appropriate for the task. This generally includes, but is not limited to, safety glasses, face shields, hard hats, safety shoes, insulating (rubber) gloves with leather protectors, insulating sleeves, and flame-resistant (FR) clothing.
- Do not work alone if hazardous conditions exist.

General Safety Recommendations:

- Keep the chassis area clear and dust-free during and after installation.
- Keep tools and chassis components away from walk areas.
- Do not wear loose clothing that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- Wear safety glasses when working under conditions that might be hazardous to your eyes.
- Do not perform any action that creates a hazard to people or makes the equipment unsafe.
Installation Checklist

Please ensure all materials, components, and accessories are ready prior to an installation. This checklist will help you plan your install.

**Completed Site Survey (Project Scope)**
Prior to installation, a Site Survey should be completed by the Service Provider. The survey will inform you what hardware goes where at the installation site. If you do not have a completed Site Survey or have questions contact support@buddy.com please have Customer and Building names ready when calling.

**Service Provider has been informed of the installation schedule**
Service Provider should be informed of the installation schedule at least 48 hours in advance so they can ensure an installation support representative will be available.

**Ohms, antennas, Mini UPS 5V power adapters, and mounting plates**
If there is no metal surface to mount the Ohm unit, find a suitable location with access to a nearby outlet and install the metal mounting plate. If any CT clips will be attached to the Ohm, it will also need to be near the electrical panel.

**Ohm Links, antennas, and power adapters**
Each Ohm Link should have a 9V AC-AC and 5V DC adapters for reading voltage. 5V is necessary and 9V is optional for real power (high accuracy). If the Link will run on batteries in a single-phase installation, have (3) AA lithium Ion batteries per Link.

**Ohm Senses**
You will need: Mounting tape or Velcro tape and AA batteries. (2 batteries per Ohm Sense unit).

**Installation tools**
You may need a drill, drill bits, mounting screws, wire cutters, zip ties, cable straps, screw drivers, spare breakers, etc., to properly install Buddy Ohm.

**Electrical outlet parts**
If a new outlet needs to be installed, be sure to have all the necessary components like a junction box, outlet, faceplate, and wires.

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**The Hardware**

- **Buddy Ohm** - The main base unit which other devices communicate with. Buddy Ohm connects via cellular network to Buddy Cloud.

- **Ohm Link** - This device monitors electricity and communicates back to Buddy Ohm over radio frequency (433 Mhz). Ohm Links have more input ports than Buddy Ohm units.

- **Ohm Sense** - This sensor wirelessly measures temperature and humidity and communicates with Buddy Ohm over radio frequency (433 Mhz).

- **Ohm Pulse** - Pulse sensor used for monitoring water, gas and steam. This device communicates with Buddy Ohm and Ohm Link units via RJ45 cable, but can also be wired to an Ohm Sense unit as well.

- **Ohm View** - This device displays a public-facing dashboard onto a TV or monitor using HDMI connection.
Installing the Buddy Ohm

Buddy Ohm is the main base unit which other devices communicate with. Buddy Ohm connects via cellular network to Buddy Cloud.

Inside the Ohm box is the Ohm device and an antenna.

Open the top cover of the Buddy Ohm device and install the antenna to the Ohm.

Power on the Buddy Ohm using the power supply.

Note: Use the 5 volts power supply.

After you plug in your power supply, the cellular dongle will flash green or blue for less than a minute. After a minute, the light should change to solid green.

Note: If the light doesn’t become solid blue, that means there is no cellular connection and the Ohm is unable to connect to the Internet. See troubleshooting options below for alternative connections to the internet.
Installing Current Transformers (CTs)

Note: This step includes working with the electrical panel rack. If required, contact a qualified electrical expert.

Locate the electrical panel.

Important: Ensure CTs are installed observing correct polarity (facing the proper direction). You will receive a negative reading in your Ohm Portal if CTs have been installed in the wrong direction. When installing a current transformer (CT), the arrow printed on its plastic case has to point to the load you want to monitor, away from the breaker or source.

Open the panel cover using the necessary tools, if needed.

Use the required amperage CT clips and install to the desired circuit(s) that you want to measure.
Installing Ohm Link

The Ohm Link device monitors electricity and communicates back to Buddy Ohm over radio frequency (433 Mhz). Ohm Links have more input ports than Buddy Ohm units.

Inside the Link box is the Ohm Link device and an antenna.

Open the top cover of the Link.

Install the antenna to the Link.

Insert the aux cord to the desired CT host (CT1, CT 2, CT 3, CT 4).

Power on the Link using both power supplies, 5V DC and 9V AC.

**Important:** After the power supplies are plugged in press the Reset button, see images below. This will make sure the device is being seen properly in the Ohm Portal.

Look for a green light to flash on.

Place the Link cover back to its original position.

**Mounting Information**

Using the magnetic back cover on Link, mount the Link on a metal surface.

*Note:* If you are seeing a low signal strength icon next to your device, try repositioning it closer to the Buddy Ohm.
Installing Ohm Sense

The Ohm Sense wirelessly measures temperature and humidity and communicates with Buddy Ohm over radio frequency (433 Mhz).

Open the top cover of the Sense.
Install the double (AA) batteries.

Look for a green light to turn on.
Place the top cover back to its original position.
The black antenna may sit outside of the case to improve range, if needed.

Mounting Information

Use mounting tape on the back of the Sense and mount the Sense in the desired location.
About Ohm Pulse

The optical Ohm Pulse sensor is used to detect light pulses from digital meters and works with Buddy Ohm, Ohm Link and Ohm Sense units.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Temperature Range</td>
<td>-10 deg C to +60 deg C</td>
</tr>
<tr>
<td></td>
<td>The PVC cable limits the sensors operational range</td>
</tr>
<tr>
<td>Pulse Light Level</td>
<td></td>
</tr>
<tr>
<td>Ambient Light Levels</td>
<td>Refer Installation Note 2</td>
</tr>
<tr>
<td>Cable Length</td>
<td>1 meter</td>
</tr>
<tr>
<td>Termination</td>
<td>RJ45 for Link/Ohm</td>
</tr>
<tr>
<td>Active Power Consumption (LED on)</td>
<td>1.2mA @ 3.3V</td>
</tr>
<tr>
<td></td>
<td>2.1mA @ 5V</td>
</tr>
<tr>
<td>Standby Power Consumption (LED off)</td>
<td>0.25uA @3.3V</td>
</tr>
<tr>
<td></td>
<td>35uA @ 5V</td>
</tr>
</tbody>
</table>

See Installation notes on next page.
Installation Notes

DIP switch 1 MUST be ON *(Ohm Link and Ohm Sense)*. 
*The switch is located inside the Ohm Sense and Ohm Link.*

Open the top cover of the Ohm Link and Ohm Sense and locate the switch as shown below

![Ohm Link](image1.png) ![Ohm Sense](image2.png)

Please note, using the optical pulse sensor will reduce the battery life of Ohm Sense and Ohm Link.

<table>
<thead>
<tr>
<th>Product</th>
<th>Estimated Battery Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohm Sense</td>
<td>3-6 months</td>
</tr>
<tr>
<td>Ohm Link</td>
<td>2-3 months</td>
</tr>
</tbody>
</table>

To ensure proper installation, please support the wiring of the Pulse Sense with either cable ties or cable support clips.

![Pulse Sense](image3.png)

Make sure the optical sensor is positioned directly over the flashing LED of the meter you are monitoring. Poor alignment can affect the results.

If high accurate power readings are required, this sensor should be connected to Buddy Link on AC power or on Buddy Ohm. This does not affect normal energy reporting.
Troubleshooting

I am seeing (-)negative energy readings on my Feed Cards in the Ohm Portal:

- This means a CT clip was installed improperly, ensure CTs have polarity (facing the proper direction).

I am not seeing any data on my energy Feed Cards in the Ohm Portal:

- Try resetting the Buddy Ohm.
- It is best to plug CTs into the device before powering it on.

Sense is reporting, but the Sense's Feed Card in the Ohm Portal often turns red:

- Remove the Sense's cover and take the antenna (the black wire) out of the case, on a straight vertical line. Please make sure the Buddy Ohm is installed in a vertical position, in the highest location possible, and free from features that could interfere with RF communication.
- If the problem persists, consider relocating the Sense closer to the Buddy Ohm.

Sense stopped reporting. Portal widget solid red:

- Remove the plastic cover from the Sense and make sure the green LED light next to the terminal block blinks every 10 seconds. If not, replace the batteries.

After provisioning an Ohm Link, the associated Feed Card(s) in the Ohm Portal remain(s) yellow:

- Make sure all provisioned inputs are firmly plugged in (both CTs 3.5mm jacks and power adapters cables).
- Make sure the antenna is firmly installed.
- Power cycle the Ohm Link (remove all power sources, or press the small push-button installed on the PCB).

All Feed Cards in the Ohm Portal are red:

- Make sure the Ohm's antenna is firmly installed and check the Buddy Ohm's connectivity through “Connected Devices” in the Ohm Portal.
- If you do not have access to the Ohm Portal you can cycle the Buddy Ohm's menu by pressing the front button, and check for connectivity info like external IP.
- If Ohm is offline, power cycle it.

Contact Support

Online: www.buddy.com/support

Email: support@buddy.com

Additional Documentation

Ohm Installation Guide

Ohm Portal User Manual

Ohm Product Specifications

Find additional documents and guides online, visit www.buddy.com/support.
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