powerflex
EDF Renewables

Liteon 48 EV Charger

Installation Guide

Operated by PowerFlex X

Liteon 48 EV Charger Installation Guide Operated by PowerFlex

Revision 1.0.0

PRODUCT SPECIFICATIONS

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. However, because continuous improvement is a goal at PowerFlex, we reserve the right to make product modifications at any time. To communicate any inaccuracies or omissions in this manual, send an e-mail to: site-support@powerflex.com.

SAFETY CONCERNS

This manual contains important instructions for the safe installation, operation, and maintenance of SC48, IC48, and IC48 POS chargers. Unless stated, the Liteon 48 instructions apply to all three models.

This guide contains important instructions for the Liteon 48 that must be followed during installation and maintenance. Special symbols are used throughout the guide:

	**Warning:** Indicates a hazardous situation that could result in injury or death.
	**Risk of electric shock:** Indicates components or a procedure that risks electric shock or injury.
	**Caution:** Indicates a hazardous situation that could result in minor injury equipment damage.
Note:	**Note:** A best practice alert, tip, or technique that results in successful results.

Getting technical assistance

To get assistance for Liteon 48 installation or commissioning, please contact PowerFlex support at site-support@Powerflex.com during the hours of 9 am to 5 pm (PST).

Risk of Electric Shock. Always follow basic electrical safety precautions when installing and using this product, including wearing appropriate personal protection equipment. This product should only be installed by a trained electrical professional.

Follow these safety instructions when *installing* this product:

- Always follow local building and electrical codes when installing the charger.
- The charger should be installed by a qualified technician.
- Use appropriate personal electrical protection throughout the installation and especially when installing or connecting the power distribution cable.
- Type B, C, or D breaker should be installed in the upstream AC distribution box, with the current rating corresponding to the desired charger max output current (see specifications in this guide).
- Disconnect switch for each ungrounded conductor of AC input shall be provided by others in accordance with the National Electric Code, ANSI/NFPA 70.

In addition, be sure to follow these safety instructions when *using* this product:

- Read these instructions completely before using this product.
- This device should be supervised when used around children.
- Do not put your fingers into the electric vehicle connector.
- Do not use this product if the flexible power cord or EV cable is frayed, has broken insulation, or shows any other signs of damage.
- Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other signs of damage.
- To reduce the risk of fire, connect only to a circuit provided with branch circuit over-current protection in accordance with CSA C22.1–15 Canadian Electrical Code, Part 1 (Canada); NOM-001-SEDE Electrical installations (utility) (Mexico); or ANSI / NFPA 70 National Electrical Code (USA).
- To avoid the risk of fire or electric shock, do not use this device with an extension cord.
- The local inspection authority will determine the suitability of a flexible cord in accordance with CE Code, Part I, Rule 4-012.
- Do not remove the cover of the device or attempt to open the enclosure, as there is a risk of electric shock. There are no user serviceable parts inside. Refer servicing to a qualified service personnel.
- Do not install the charger near flammable, explosive, or combustible material.

FCC Part 15 Compliance

This device complies with FCC Part 15, which stipulates that radio frequency devices comply with specific radio emission limits.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

To satisfy FCC radio frequency exposure requirements, a distance of 20 cm (7.9 inches) or more should be maintained between the antenna of this device and persons during device operation.

Caution. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the equipment's warranty.

Contents

Getting Started

Welcome

This guide instructs how to install the Liteon 48 in preparation for energizing and commissioning with the PowerFlex system. This manual contains important instructions for the safe installation, operation, and maintenance that applies to SC48, IC48, and IC48 POS EV chargers.

An overview of the Liteon 48

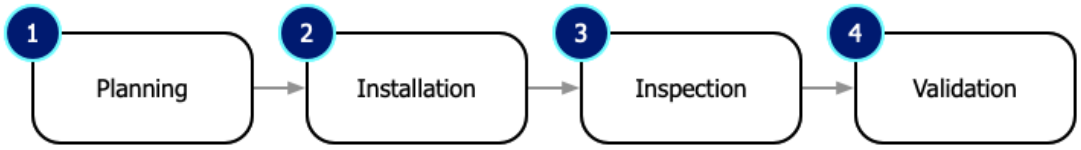
The Liteon 48 is an EV charger designed and distributed by PowerFlex. It has an LCD screen and one preinstalled *charging cable for charging EVs*.

The Liteon 48 offers the following features:

- IK10 and NEMA 4 for indoor and outdoor use
- Multiple installation configurations: wall, single pedestal, back-to-back pedestal, or side-to-side pedestal
- Up to 48A at 240VAC, maximum output power: 11.5kW
- OCPP 1.6 JSON (OCPP 2.0 compatible) internal network connectivity
- Wi-Fi external connectivity or optional LAN
- For Liteon IC48 and IC48 POS: Wi-Fi with LAN and LTE
- Standard LED indicator with 3.5” LCD screen
- 25-foot charging cable

How to use this guide

To complete the installation of a Liteon 48 EV charger to a wall or pedestal, there are four steps:



1. **Planning:** Inspect the Liteon 48 box contents and gather the tools necessary to install the EV charger.
2. **Installation:** Mount the Liteon 48 enclosure and connect wiring as required at your site.
3. **Inspection:** Record site information and start the commissioning process.
4. **Validation:** Energize the Liteon 48 and confirm that everything is up and running.

Although these steps appear to be a sequence of steps, some activities may be performed in parallel (or in a slightly different order). To further assist in Liteon 48 installation, refer to the following information in this guide:

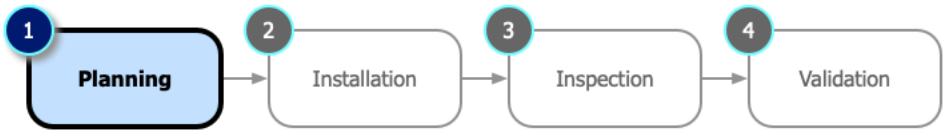
- Checklist of things to do during the installation
- Technical specifications

Other guides that will help with site installation:

- *Nexus Core Installation Guide* — includes download and instructions for how to use the PowerFlex app and how to energize and commission the PowerFlex system.

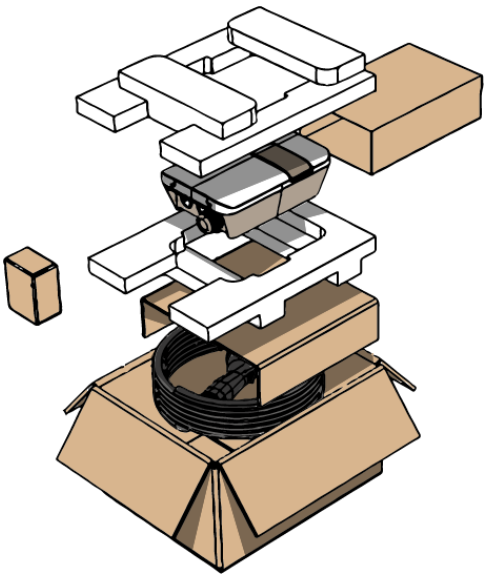
Setting up the Liteon 48

Step 1: Planning



What's in the box

Liteon 48 chargers are shipped with the following components. Carefully remove from the shipping box (holster is included but not used):



Cable for charging EVs (at the bottom of the box)

Liteon 48 charger (charging cable connected)

Mounting bracket (attached to the back of the charger)

The Liteon holster in the small accessory box is not used. A separate Z holster is provided separately by PowerFlex to be used in the installation.

Note: Once you have removed the charger from the box, consider leaving the thin plastic film on the front cover's LED screen until it is completely mounted.

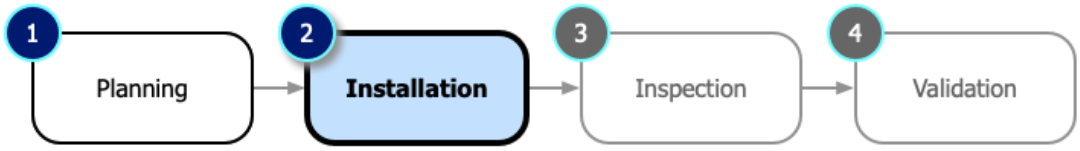
What you'll need

You can install the Liteon 48 charger on a wall or pedestal. Check your site plan and before installing the wall-mounted charger, gather the following tools and equipment:

- M4 T-20 Torx screwdriver (or drill insert)
- 4x M6 screws for masonry or #12 tapping screws (for walls with wood studs) (not supplied by PowerFlex)
- Battery-powered drill with torque control
- ¼" drill bit and ¼" plastic anchors with screws used for mounting the backplate to a concrete wall
- ⅜" drill bit and bolts for installing retractor or wall anchors
- ¾" #8/#12 self-drilling roofing screws with (rubber/weather resistant washers) for pedestals
- Digital multimeter (or voltmeter) for measuring AC voltage at the junction box to investigate charger fault conditions
- 3x AWG #6 wire nuts per charger for securing wiring inside the junction box (use Polaris connectors for AWG #4 installations if the charger is located approximately 100 feet from the breaker)
- 3x ferrules for crimping AWG #6 or #4 input wires connecting to the charger's terminal block
- Level (preferably a torpedo level) to ensure the charger's bracket is mounted/positioned correctly
- Pencil (or magic marker) to mark where drilling should occur

Now that you have unpacked the Liteon 48 and have gathered the necessary tools and parts, you're ready to perform the installation on site.

Step 2: Installation



To install the Liteon 48, you'll do the following:

- Mount the EV charger to a concrete wall
- Mount the EV charger to a pedestal
- Install cable management

Before continuing with any installation, practice this safety measure:

⚠ Make sure that electrical breakers are switched off so that no electricity is flowing during installation.

Most wall-mounting instructions in the next section will apply even if you plan to mount the charger to a pedestal. (So, don't skip the following section entitled "Mounting the Liteon 48 on a wall.")

Mounting the Liteon 48 on a wall

This picture shows how the EV charger, charging cable, and charging nozzle in a mounted holster would look once installed on a wall. (The electric junction box is located to the left.)

Note: Screws (and wall anchors) are not supplied by PowerFlex.

1. **Identify where the charger is to be installed on the wall.**

Installation notes:

- To comply with ADA standards, the bottom of the LCD screen should be no higher than 48" (1.21 m). This means that the bottom of the Liteon 48 charging station should be no higher than 41" (1.04 m). Always verify with regulatory authorities to ensure compliance.

- Make sure that the location of the charger is compatible with the location (or expected location) of a mounted junction box where the wires from the electrical panel will terminate.

2. **Take off the front cover.**

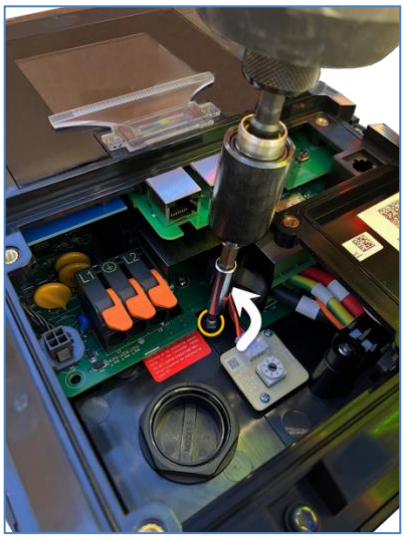
Loosen 2x M4 T-20 security Torx screws underneath the charger front cover.

Carefully remove the front cover. The two screws should remain loosely inserted into the charger front cover.

3. **Remove 5x M4 T-20 security Torx screws (circled) and carefully lift the internal cover.**

Put the screws in a safe place! You'll need them in a few minutes.

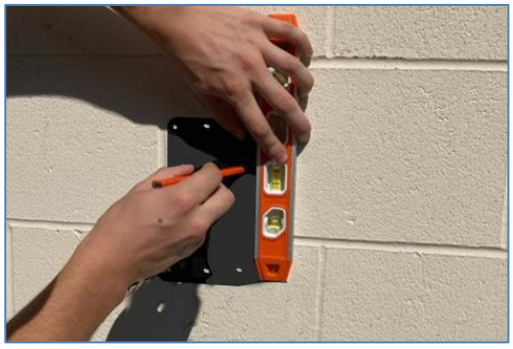
4. **With the inner cover of the charger removed, release the single M6 T-20 Torx screw (circled) holding the mounting bracket in place.**



Remove the *mounting bracket* (also called backplate) from the back of the charger.

5. **Attach the mounting bracket on a wall.**

Hold the mounting bracket on the wall at the proper location from the ground (refer to the placement information in task 1 from the previous page). Use a level to ensure the plate is level (L), and mark the positions for either 2 (or 4) screws on the wall (R).



Note: For best results, use a torpedo level and if only two screws are used, always mark the middle holes.

6. **Drill into the wall.**

Place the mounting bracket to the side and pre-drill ¼" (or similar based on the screws you intend to use).

Note: In the picture above, you'll notice the wiring junction box already mounted on the wall to the lower left.

7. **Attach the mounting bracket to the wall.**

Attach the mounting bracket using M6 screws (for masonry) or #12 tapping screws (for walls with wood studs).

Note: The protruding lip must be at the top.

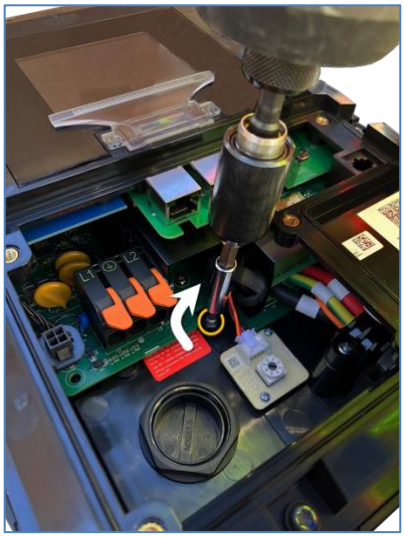
8. **Attach the charger to the mounting bracket.**

On the back of the charger, you should notice the indentation near the top. Slide the charger onto the mounting bracket's lip.

Then drop the charger down so that the locking screw is aligned with the mounting bracket.

9. **Secure the charger to the mounting bracket.**

To lock the charger into place, fasten the charger to the mounting bracket by tightening the M6 screw.



10. **Connect the chargers' wires to the circuit branch wires in a mounted junction box.**

If using 4-foot (or less) #8 AWG SOOW power cabling, install a 1-inch cable gland onto the connecting box (L) and to the bottom of the charger (R). If using a 1-foot liquid-tight conduit (metallic or non-metallic), install a 1-inch liquid-tight connector to the bottom of the Liteon 48 and a 1-inch liquid-tight connector to the junction box. Install the 1-inch flexible conduit between the two connectors.

⚠ Splicing wires inside the junction box is not recommended when using a liquid-tight conduit.

Note: PowerFlex recommends that the junction box be located within 24 inches of the charger for both types of wiring installation. You can use a single junction box for two Liteon 48 chargers.

⚠ Use cable gland waterproof connectors, if necessary.

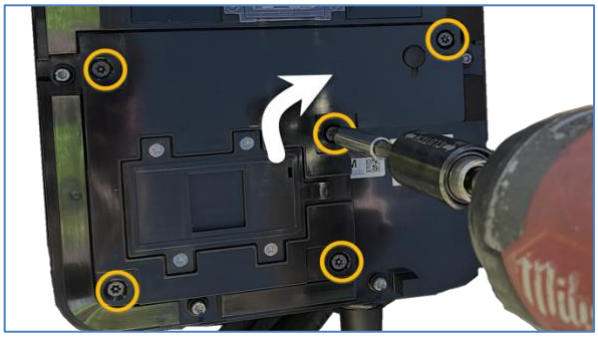
11. Connect wires to the charger.

Acquire 3x 18 mm long ferrules (inset) and strip back the SOOW power cables covering to expose about 3/4-inch of wire (L). Insert ferrules to on each end of the three wires and crimp to ensure a tight fit (R).

Lift the orange tabs on the inside of the charger (L) and insert the ferrules into the terminal block (each is appropriately labeled in the photo). Close the orange tabs and perform a "pull test" to ensure each wire is secure (R).

12. **Close the charger's inside cover and the front cover.**

Reinsert the inner cover with the 5x M4 T-20 Torx screws (L). Carefully (A) place the cover and (B) secure with the 2x M4 T-20 security Torx screws (R).



The entire front cover must be secured.

The photo below shows the upper right side has a gap that would allow inclement weather to affect the electronics inside of the charger.

If this happens, loosen the screws, reset the front cover, and retighten the screws.

What's next

For safety reasons, always make sure to close the front opening of the junction box.

Now that the Liteon 48 has been mounted on a wall, go ahead and remove the plastic film over the LCD panel (just above the front cover panel you just attached). In the next section, "Mounting the Liteon 48 on a pedestal," we'll summarize pedestal mounting steps. (**Hint:** It is very similar to the wall mounting instructions.)

In the last section of this chapter, "Finishing up with cable management," you will learn how to manage the placement of the charging cable system. These instructions apply to either wall or pedestal installation.

Mounting the Liteon 48 on a pedestal

Note: The mounting instructions for the Liteon 48 charger on a pedestal are nearly the same as those used in mounting a charger to a wall (see the previous section "Mounting the Liteon 48 on a wall"). Except for the actual mounting bracket installation (steps 6 and 7) and connecting the wires from the junction box to the charger's terminal block (step 10), it is assumed that you will attach the charger to either a 6-foot or 8-foot PowerFlex pedestal (with wiring snaked through the pedestal).

An installed Liteon 48 EV charger on a pedestal

Attaching mounting bracket to a pedestal

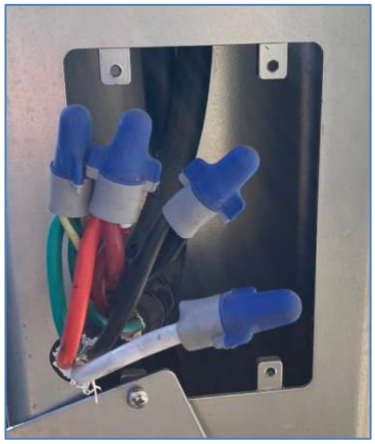
Connecting wiring from the pedestal to the charger

Installation notes specific to pedestal mounts:

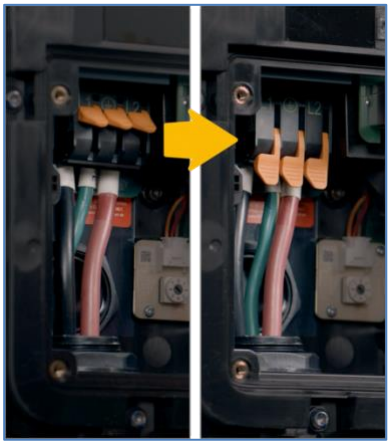
- PowerFlex recommends that the base of the station should be between 48" and 58" (1.219 m to 1.473 m) from the ground. To be ADA compliant, the bottom of station's LCD screen panel should be no higher than 48" (1.2 m) from the ground.

- Make sure that the location of the charger is compatible with the location (or expected location) of a mounted junction box where the wires from the electrical panel will terminate.

- Pass the charger wiring cable through the hole and connect to the circuit branch opening in the pedestal. Connect the cables with wire nuts inside the pedestal to the junction box.



- To connect with a ferrule connector to the charger, lift the orange tab, insert the wire onto a specific terminal block plug, and snap down the orange tab to lock in place. Repeat for all three wires.



- For any pedestal, PowerFlex recommends using ¾" long #8-#12 self-drilling roofing screws with (rubber/weather resistant washers).

⚠ For safety reasons, make sure that any exposed wiring is covered up.

Finishing up with cable management

Cable management is important to complete for every EV charger installation. This includes the installation of the following:

- A charging connector holster
- A cable retractor or a high-point anchor

Install a charging connector holster

At the end of a charging cable is a charging connector that is inserted into a vehicle for charging.

For safety reasons, the charging connector should be hung up when not in use. Instead of the holster included in the Liteon 48 box, two holsters are offered by PowerFlex.

Direct holster

Z holster

Both holsters come with two sets of screws to be used depending on where it will be installed. For pedestal installation, install the holster underneath the station using the four screws. For wall installation, install the holster on a nearby wall using the four anchor screws.

Install a cable retractor or a high-point anchor

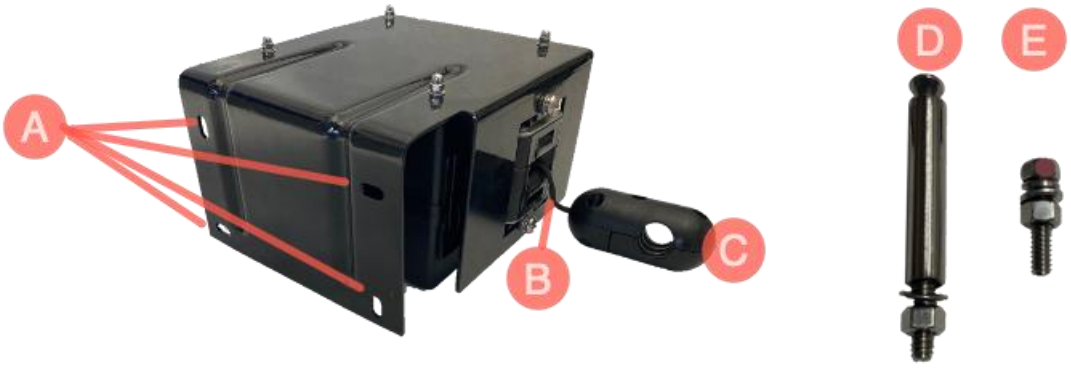
Another key cable management feature improves safety by keeping the charging cable off the ground, avoiding the risk of tripping, and reduces cable wear.

PowerFlex offers a *cable retractor* provides spring-loaded tethered support and suspends a charging cable above the mounted charger when not in use. A cable retractor releases the charging cable when a vehicle is being charged.

A cable retractor can be installed for either wall or pedestal installations with two simple steps:

1. Mount the retractor to the wall or pedestal
2. Mount the charging cable to the cable retractor

The cable retractor provided by PowerFlex has the following components:



	Description
A	Mounting holes on the cable retractor
B	Cable retractor rope (on the cable retractor)
C	Cable clamp (on the cable retractor)
D	4x 3/8" wall anchor bolt for mounting on the wall (with washer and nut)
E	4x 3/8" short bolts for mounting on a pedestal (with washer and nut)

To mount the retractor to the wall or pedestal:

1. Identify the best location for the cable retractor. We recommend 2-3 feet above the mounted charger.
2. Place the retractor on the surface, use a level to make sure it is straight, and mark the four screw locations on the wall or pedestal.
3. Place the retractor to the side. Using a 3/8" drill bit, drill holes at the four marked screw locations.
4. Remove the nut and washer from the wall-mounting nuts and bolts.
5. Insert each bolt with a wall anchor in the drilled holes.
6. Place the retractor and the washers on the bolts and secure by tightening the nuts with a wrench socket.

Note: If mounting on a pedestal, use the four short bolts to secure the cable retractor.

PowerFlex does not recommend installing the retractor on drywall or plasterboard.

To mount the cable to the retractor:

1. Pull the *cable retractor rope* so that the cable clamp touches the floor and Is firmly in position. The cable clamp is shown below:

2. Unscrew the two screws on the retractor's *cable clamp*:

3. Insert the charging cable in the cable clamp (both front and back view shown):

4. Put the cable clamp pieces back together and then reinsert the nuts and bolts (back view shown):

Installation notes:

- Place the cable clamp along the charging cable, at least 2 feet to the top of the charger. Also, Give the cable slack to the bottom of the charger (not shown in the picture):

Ensure the cable is not twisted between the charger and the cable clamp.

It is possible to mount two charger units onto one pedestal facing opposite directions.

The *high-point anchor* is an alternative to the cable retractor that is not provided by PowerFlex. This simple assembly can be mounted on a wall or onto a pedestal.

1. Using a ¾" metal cable clamp with rubberized cushions, route the charging cable 2-3 feet above the charger. Make sure there are no twists in the cable.

2. Install a cable clamp to hold the cable.

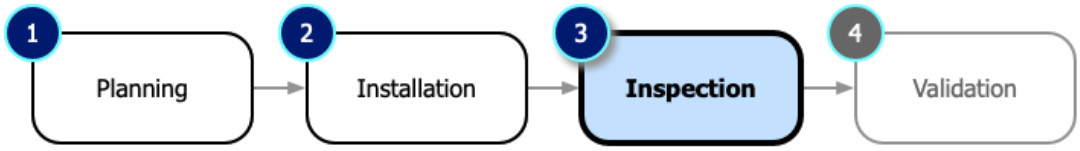
3. Use a ¼" diameter screw with a wall anchor as appropriate for the wall material to secure the cable clamp to the wall.

Before proceeding to the next step …

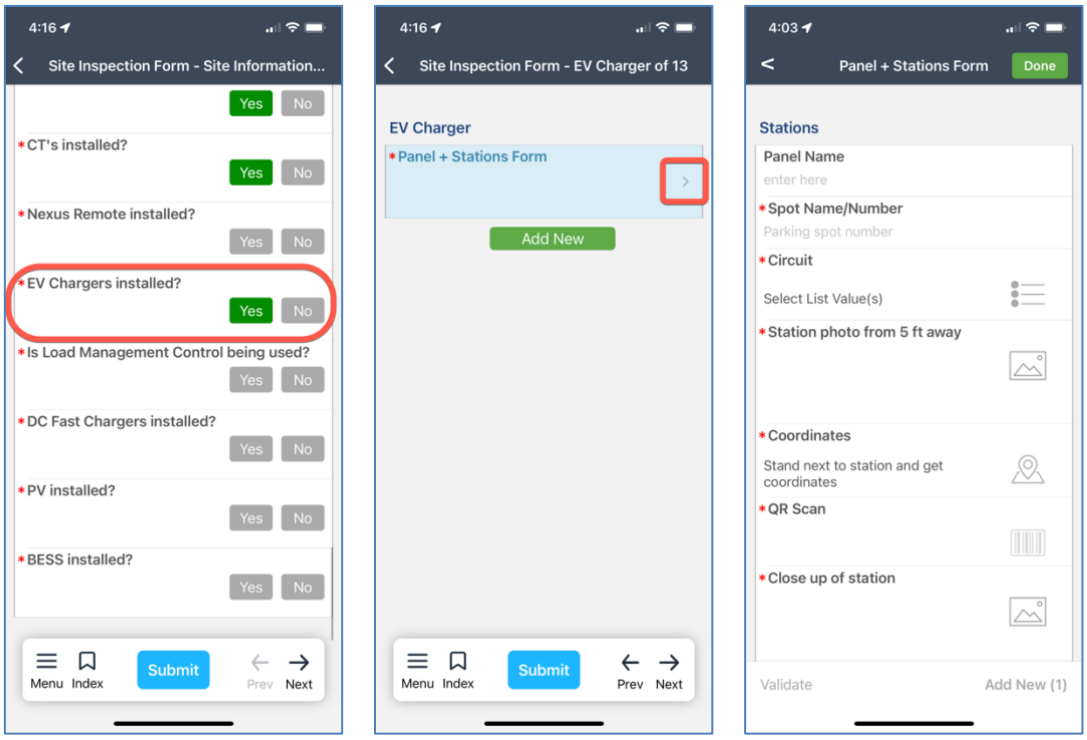
- Confirm that the Liteon 48 charger is securely mounted to a wall or pedestal.
- Perform a quick verification that all cables to the charger enclosure are fully connected.

Step 3: Inspection

Inspection is performed once the entire PowerFlex system is ready to be energized, commissioned, and validated. Inspection is where installation information is recorded and a request for commissioning with PowerFlex is initiated.



PowerFlex uses a customized mobile app, available from either Google Play or Apple Store, called FastField Forms (FFF). This app enables installers to gather important installation information and photographs for each Liteon 48 charger being installed:

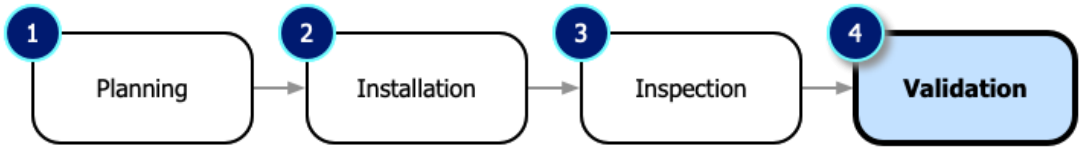


More about using the app ...

- *Nexus Core Installation Guide* — includes download and instructions for how to use the app and how to energize and commission the PowerFlex system.

Step 4: Validation

Once the Liteon 48 charger information is entered along with the rest of the PowerFlex site information is recorded in the app, the installer submits the forms to PowerFlex for review and commissioning. After the approval from PowerFlex, the final validation step should be performed.



LED light indicators on the front of the charger indicate the most common status conditions that may occur during charger operation (once power is applied):

Display	LED light	Description
STANDBY		If solid green, the charger is in standby mode and ready for use. (This status indicates that everything is connected and operational.)
READY/ TERMINATING		If flashing green, the vehicle connector is inserted in the vehicle's charging inlet and is being authorized or suspending (terminating) a session.
CHARGE		If flashing blue, a vehicle is currently being charged.
FAULT		If solid red, there is a serious problem (flashing red indicates that a problem may be recoverable).

Note: During the commissioning process, PowerFlex may ask you to mitigate issues back on site.

To learn more about ...

- Inspection and validation for PowerFlex systems, refer to the *Nexus Core Installation Guide*.

Installation checklist

Done	Task
Step 1: Planning	
☐	Identify the location where the Liteon 48 EV charger will be installed at the site
☐	Unbox the Liteon 48 and verify everything is included
☐	Gather all the required tools before going onsite for the installation
Step 2: Installation	
☐	Install the Liteon 48 securely to a wall or pedestal
☐	Attach power, communications, and ground bond cables to the enclosure
☐	Ensure all external connections are properly sealed and junction box (and any wires) are not exposed
☐	Install the charging connector holster (one of two types available from PowerFlex for cable management)
☐	Install a cable retractor or a high-point anchor (cable management)
Step 3: Inspection and step 4: Validation (usually performed after mounting)	
☐	Gather information from the site using the app
☐	Submit site information to PowerFlex
☐	Get OK to energize and finalize the installation from PowerFlex support
☐	Energize power to the Liteon 48 (and to the entire PowerFlex system)
☐	Coordinate with PowerFlex to ensure that end-to-end diagnostics run successfully

Appendix A: Technical Specifications

The technical specifications for Liteon 48 is available online for viewing at:

Liteon SC48 and IC48

Liteon IC48 POS

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