Wall Charge Spot Installation Manual

(Single Socket and Double Socket Models)

Confidential

Catalog No. 941-0003-01

Revision 2.2, June 2012

The description of the model given in this manual is based on the specifications at the time of writing. This manual covers all existing functions for the model described.

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Rev. #	Description of Change	Department	Approved by	Date
1.0	Baseline version	R&D	N/A	
		SDO	Ilan Zarbiv	08/25/2012
		Safety	N/A	
2.0	Addition of single socket Wall CS.	R&D	N/A	
		SDO	Ilan Zarbiv	10/01/2012
		Safety	N/A	
2.1	Addition of instructions for installing single socket Wall CS on a pole.	R&D	N/A	
		SDO	Ilan Zarbiv	01/01/2012
		Safety	N/A	
2.2	Addition of instructions for replacing the cable (appendix)	R&D	N/A	
		SDO	Ilan Zarbiv	06/19/2012
		Safety	N/A	

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CHAPTER 1 SCOPE

1.1 ABOUT THIS DOCUMENT

The purpose of this manual is to provide instructions for preparing a site for the Charge Spot (CS) installation, and to provide instructions for installing a Wall CS.

Note: *In this manual, the term 'local', when used in conjunction with regulations, codes, and licenses, refers to local and national regulations, codes, and licenses.*

1.2 INTENDED AUDIENCE

This manual is intended for contractors responsible for preparing sites for CS installation and installing CSs.

1.3 TERMS AND DEFINITIONS

Table 1: Terms and Definitions

Term	Definition
Activation	Process of activating a CS, after the infrastructure is installed and tested.
Charge Spot (CS)	The component responsible for coordinating circuit connections to all relevant sockets. Provides battery charging services.
Control Pilot (CP)	Used for analog communication between the CS and the electric car (logical interface). The CP circuit is a 12V circuit that both the CS and the electric car monitor and manipulate in order to communicate.
Global Infrastructure Deployment (GID)	Processes relating to the transformation of materials, components and products into Better Place assets at the global level.
Global System for Mobile Communications (GSM)	Standard developed to describe technologies for 2G digital cellular networks.
GND	Ground.
LCC	Local Communication Controller.
MCB	Mini Circuit Breaker
NFPA	National Fire Protection Association.
OpCo	Operating Company.
Operations Center (OC)	Information and communication center connecting all facets of the Better Place solution for each market.
OSHA	Occupational Safety and Health Administration.
OTA	Over the Air.
RCD	Residual Current Device
Subscriber Identification Module (SIM)	Integrated circuit that securely stores the service-subscriber key. A SIM is used to identify a subscriber on mobile telephony devices.

1.4 WARNINGS, CAUTIONS, AND NOTES

Warning: *A warning provides important information about a procedure, which if not followed, may result in death or injury to personnel.*

Caution: *A caution provides important information about a procedure, which if not followed, may result in damage to equipment.*

Note: *A note provides additional information about the current topic.*

CHAPTER 2 INTRODUCTION TO CHARGE SPOTS

This chapter provides an overview of the Better Place CSs and describes the installation process. The CS is the interface between an electric car and the local electric power grid, enabling you to easily and efficiently recharge your electric car. The Better Place CS has been tested and approved by worldwide standards organizations. CSs are available in sites such as multi-unit residential areas, corporate parking lots (both indoor and outdoor), and public parking lots, as well as single family homes.

The Better Place CS offers the following features:

- A standards-based plug that enables recharging, regardless of the car's manufacturer, model, or car specifications
- Easy to use
- Safe operation
- Easy maintenance. Each CS comprises one backbone which is the brain of the unit. If a malfunction occurs, the removal and replacement of the backbone is simple and quick.
- Centralized monitoring by a central Operating Center. Centralized monitoring enables:
  - Centralized supervision of all CSs
  - CS management and control
  - Information gathering in real-time, for example, status verification of each CS, the battery in each electric car, electricity resources, the number of electric cars that are currently recharging, etc.
  - Efficient customer validation
- Compact, minimalistic design
- Long-term reliability

Better Place offers two CS designs:

- Standing CSs
- Wall CSs

Note: *This manual describes how to install a Wall CS. For information on installing a standing CS, see the* Standing CS Installation Manual.

2.1 WALL CSS

A Wall CS is usually installed in places where a vertical surface is available to support the unit, such as underground parking lots and multi-storey parking structures. The Wall CS is connected to the wall or any other vertical surface using a bracket supplied by Better Place.

The physical dimensions of a double socket Wall CS are 279 mm (width) x 557 mm (height) x 214 mm (depth).

Figure 1: Double Socket Wall CS Elements

The physical dimensions of a single socket Wall CS are 270 mm (width) x 450 mm (height) x 205 mm (depth).

Figure 2: Single Socket Wall CS

2.2 WALL CS MODELS

All Wall CS models offer charging capabilities. However, different models offer different additional functionalities.

Table 2 provides a list of features that can be found on different Wall CS models.

Table 2: Wall CS Models

Type	GSM	Meter	Cables	Sockets
Wall CS with a Meter and GSM	X	X		2
Wall CS with a Meter		X		2
Wall CS with GSM	X			2
Wall CS				2
Wall CS with Fixed Cables, a Meter, and GSM	X	X	X	2
Wall CS with Fixed Cables and a Meter		X	X	2
Wall CS with Single Socket, Fixed Cable, with a Meter and GSM	X	X	X	1

The Wall CS models are as follows:

- **Wall CS with a Meter and GSM (without cables)** – Includes two sockets for charging, wireless GSM-GPRS (2.5G) communication capability, and an electric meter that monitors and measures the consumed electricity.
- **Wall CS with a Meter (without cables or GSM)** – Includes two sockets for charging and an electric meter that monitors and measures the consumed electricity. When a GSM is not included, communication is enabled via an LCC.
- **Wall CS with GSM (without cables or a meter)** – Includes two sockets for charging, and wireless GSM-GPRS (2.5G) communication capability.
- **Wall CS (without cables, a meter, or GSM)** – Includes two sockets for charging. Communication is enabled via an LCC.
- **Wall CS with Fixed Cables, a Meter, and GSM** – Includes two sockets and cables for charging, an electric meter that monitors and measures the consumed electricity, and wireless GSM-GPRS (2.5G) communication capability.
- **Wall CS with Fixed Cables and a Meter (without GSM)** – Includes two sockets and cables for charging and an electric meter that monitors and measures the consumed electricity. Communication is enabled via an LCC.
- **Wall CS with Single Socket, Fixed Cable, with a Meter and GSM** – Includes one fixed cable for charging, an electric meter that monitors and measures the consumed electricity, and wireless GSM-GPRS (2.5G) for communication capability.

Note: *For double and single socket Wall CSs with a fixed cable, only single phase electric power is supported.*

2.3 WALL CS INSTALLATION OVERVIEW

The Wall CS installation process includes all communication and electrical systems associated with the unit, based on the specific site plan. To complete the Wall CS installation with its associated communication and electrical systems, infrastructure components such as conduits, manholes, and junction boxes are needed.

The infrastructure design for the Wall CS is determined by the local OpCo. Therefore, infrastructure installation procedures may vary.

Local codes determine the underground infrastructure type. Site conditions may define excavation requirements. However, whatever the environment, the Better Place installation process is generic and can be localized for deploying anywhere.

2.3.1 Double Socket Wall CS Installation Overview

Figure 3 through Figure 6 illustrate sample infrastructure and installation procedures for double socket Wall CSs.

Note: *When installing the double socket Wall CS, the cables must enter the Wall CS from the bottom of the Wall CS.*

Figure 3: Determine Bracket Location

Figure 4: Install Junction Box and Power Raceway

Figure 5: Install Conduit and Bracket

Figure 6: Mount Double Socket Wall CS

2.3.2 Single Socket Wall CS Installation Overview

Figure 7 through Figure 12 illustrate sample infrastructure and installation procedures for single socket Wall CSs.

Note: *When installing the single socket Wall CS, the cables may enter the Wall CS from the top, bottom, or back of the Wall CS.*

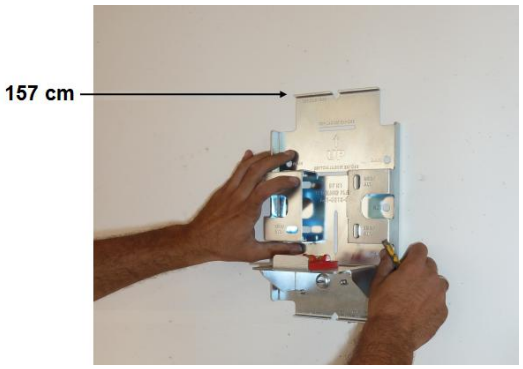


Figure 7: Install Four Rods in the Marked Wall

Figure 8: Mark the Wall with Leveling Jig

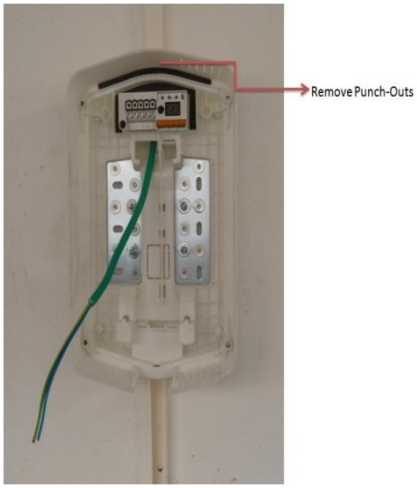


Figure 9: Affix the Infrastructure Adapter

Figure 10: Wire the Fast Connector

Figure 11: Installed Single Socket Wall CS

Figure 12: Mounted Single Socket Wall CS

CHAPTER 3 SAFETY PRECAUTIONS

3.1 GENERAL PRECAUTIONS

Warning: *Comply with all local laws and regulations regarding this installation.*

Warning: *Comply with all local electrical codes when installing a CS.*

Warning: *Only trained and qualified personnel are allowed to install, replace, or service this equipment. All other inspections should be carried out by Better Place personnel.*

Warning: *When installing or replacing the unit, connect to ground first and disconnect from ground last.*

Warning: *Disposal of this product must be in accordance with all local laws and regulations.*

3.2 SAFETY STANDARDS

Both Occupational Safety and Health Administration (OSHA) and the National Fire Protection Association (NFPA) 70E Standard for Electrical Safety in the Workplace require an Electrical Hazard Analysis prior to beginning work on or near electrical conductors that are, or may become, energized. The analysis must include checking all electrical hazards such as shock, Arc-Flash, Arc-Blast, and burns.

The NFPA 70E Article 110.8(B)(1) specifically requires that the Electrical Hazard Analysis cover all areas of the electrical system that operate at 50 volts or greater. The results of the Electrical Hazard Analysis determine the work practices, protection boundaries, personal protective equipment, and other procedures required to protect employees from Arc-Flash or contact with energized conductors.

- Unless there is a compelling safety issue such as life-support equipment, alarm systems, hazardous location ventilation, or lighting, required for safety, OSHA requires that circuits be de-energized and the system be placed in an Electrically Safe Work Condition before any work is performed.
- When placing equipment in an Electrically Safe Work Condition, always follow proper Lockout/Tagout procedures.
- An Electrical Hazard Analysis must be performed on all circuits 50 volts and higher that may be worked on while energized.
- Hazards must be identified and warning labels must be applied to all equipment that may be worked on while energized.
- Workers must be trained to use all equipment properly, briefed on hazards and safety precautions, and be certified to work on energized equipment. Training and certification must be documented.
- All work performed on energized equipment must be preceded by a job briefing and a signed Energized Electrical Work Permit.
- When working on or approaching energized circuits, proper protective clothing must be worn. The minimum flame retardant clothing, safety glasses, and protective gloves and equipment must meet OSHA and NFPA 70E guidelines.
- Be certain there is adequate lighting for the tasks to be performed. Portable lighting must be fully insulated so that it will not accidentally cause short circuits when used near energized components.

- Use barricades or barriers to warn unqualified individuals from entering the area.
- Be prepared for the unexpected. Make sure emergency communications and trained medical personnel are available if something goes wrong.
- Use current-limiting overcurrent protective devices wherever possible to reduce potential electrical hazards.
- Electrical safety in the workplace can only be attained when workers and employers diligently follow OSHA, industry, and local accepted standards and regulations.
- Read all instructions before installing this product.
- The CS should be supervised when used around children.
- Do not place fingers inside the electrical vehicle connector.
- Do not use this product if the flexible power cord or electric car cable shows signs of:
  - Frayed ends
  - Damaged insulation
  - Any other signs of damage
- Do not use this product if the enclosure or the electric car's connectors are broken, cracked, or shows any other signs of damage.
- This product is rated for a maximum ambient temperature of 40˚C.

3.3 Instructions Pertaining to the Risk of Fire or Electric Shock

The following are important safety installation instructions:

- Only authorized personnel are permitted onsite during the installation procedure.
- All workers must wear clothing suitable for the work environment.
- Protective equipment must be resistant to heat, fire, chemicals, and electricity, as necessary.
- All workers must wear protective footwear when exposed to hazards that include, but are not limited to, sharp objects, heavy objects, slipping, electricity, and harsh chemical agents.
  Footwear providing protection from impact, electrical hazards, and punctures must meet the applicable requirements of one of the following:
  - ANSI Z41: Footwear providing protection from impact and compression hazards.
  - EN 388: Footwear providing protection from mechanical risks.
- All workers must wear protective gloves when exposed to hazards that include, but are not limited to, sharp objects, heavy objects, and vibrations.
  Gloves providing protection from cuts, punctures, vibrations, and constricted blood flow to the hands must meet the applicable requirements of one of the following:
  - ANSI/International Safety Equipment Association (ISEA) 105.
  - EN 420: General – Gloves.
- Only a qualified electrician may perform the electrical installation and testing of the CS unit.

3.4 Hazard of Electric Shock, Explosion, or Arc Flash

This CS is designed to be used only with an SAE J1772 compatible electric car. Failure to follow these instructions will result in death or serious injury:

- Read all instructions before using this product.
- Wear appropriate personal protective equipment (PPE) and follow safe electrical work practices. See *NFPA 70E*.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.

- Always use a properly rated voltage sensing device to confirm that the power is off.
- Do not use this product if the enclosure is broken, cracked, open, or shows any other indication of damage.
- Do not change the electric vehicle connector.
- Follow wiring instructions as marked on the inside of the equipment.
- Ensure that the ambient temperature rating printed on the product nameplate is not exceeded.
- Follow all grounding instructions.
- This equipment has arcing or sparking parts that must not be exposed to flammable vapors.
- This equipment must be located at least 18 inches (460 mm) above ground level and according to local regulations.
- Do not use or modify this device to be portable. This device is to be used as permanently mounted equipment only.

CHAPTER 4 PREPARING FOR WALL CHARGE SPOT INSTALLATION

This chapter provides information about unpacking and verifying components and tools for a Wall CS installation.

Level 1 quality inspection is mandatory prior to the installation of any Wall CS in the field, performed by the local OpCo team. Level 1 quality inspection ensures that the Wall CS package is not damaged and contains all of the required components, and that none of the components were damaged during shipping.

Note: *If there is a discrepancy between the packing list and the components listed in* Package Components *on page 77, the packing list should be used to ensure that all components are included in the package.*

Note: *If you are installing a Wall CS-OTA (Over the Air) with GSM, each Wall CS requires a GSM SIM card. The GSM SIM card of your locale should be installed prior to Wall CS installation.*

4.1 UNPACKING THE DOUBLE AND SINGLE SOCKET WALL CS COMPONENTS

This section provides information on verifying the contents of the Wall CS package.

Note: *When transporting and moving equipment, take the appropriate safety measures. To avoid injury, moving and installing equipment by hand must meet ergonomic guidelines.*

4.1.1 Double Socket Wall CS Packages

Before opening the Wall CS packages:

- Ensure that all units scheduled for installation have arrived and are not damaged.
- Ensure that labels are fixed to all packages.
- Ensure that the Wall CS model details match the installation plan.

Figure 13: Double Socket Wall CS Packages

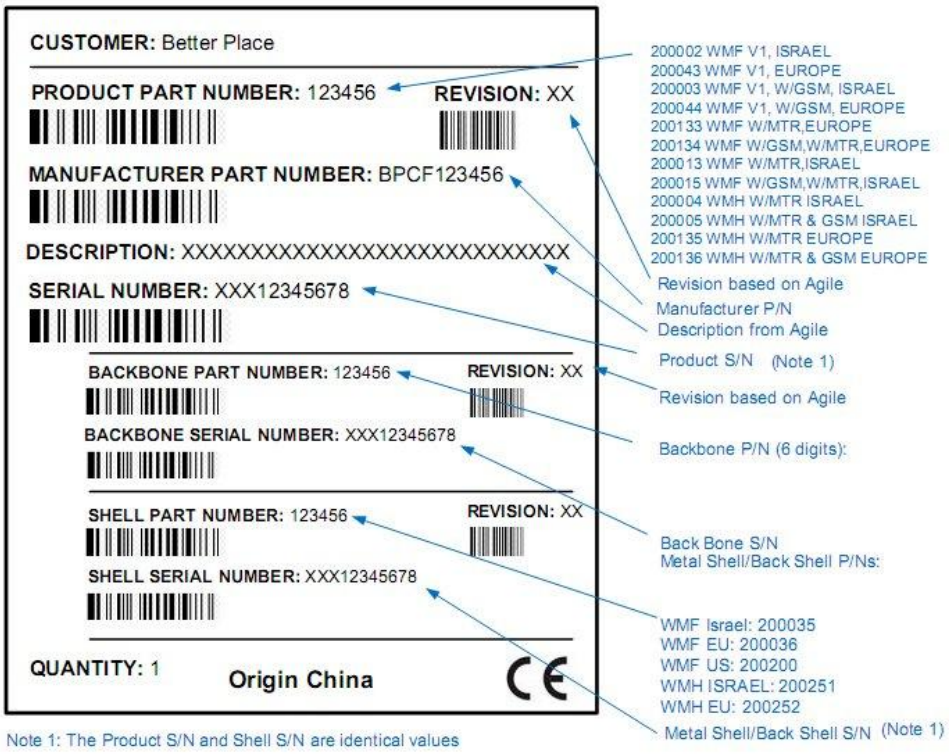


Figure 14: Double Socket Wall CS Package Label

Figure 15: Double Socket Wall CS Infrastructure Package Label

4.1.2 Single Socket Wall CS Package

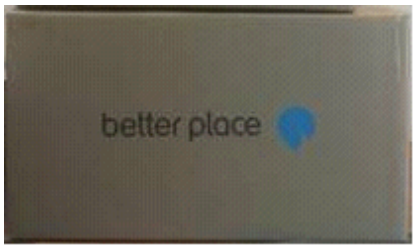


Figure 16: Single Socket Wall CS Package

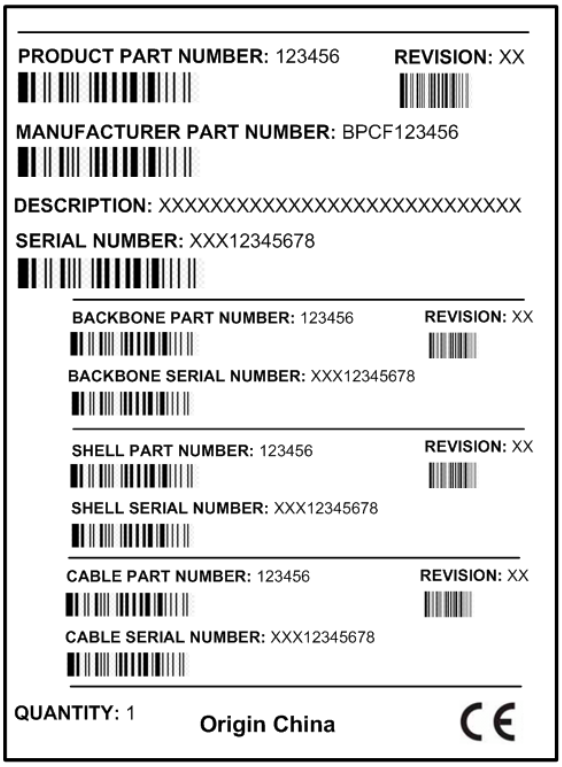


Figure 17: Single Socket Wall CS Package Label

4.1.3 Inspecting the Package Components

It is important to inspect package components before installing the Wall CS to ensure that no parts were damaged during shipping.

To inspect the package components:

1. Open the box and ensure that the contents include all of the components listed in Package Components on page 77.

Note: *The figures below display only the double socket Wall CS. However, for most of the items that should be inspected, there is an equivalent on the single socket Wall CS.*

2. Inspect the following:
   - Ensure that the Wall CS is not damaged or scratched, cracked, or dented, and that the paint on the Wall CS is not peeling.
   - Ensure that all labels are attached properly and that the edges of the labels do not protrude outside of the designated area.

Figure 18 through Figure 20 display the labels.

Figure 18: Reflective Logo

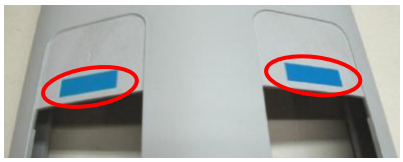


Figure 19: Cyan Labels

Figure 20: External Technical Label

- Ensure that the cable (if included) and the cable connector are not damaged.
- Ensure that the part and serial numbers on the technical label match the part and serial numbers on the shipping package label.
- Ensure that the backbone part and serial numbers on the fast connector labels match the part and serial numbers on the shipping package label. Figure 21 and Figure 22 display the backbone part number and serial number on the fast connector labels.

Figure 21: Serial Number on the Backbone

Figure 22: Male Fast Connector Labels

- Ensure that the top and bottom caps of the Wall CS are properly mated with the front and back shells (double socket Wall CS only). Figure 23 and Figure 24 display properly and improperly mated caps.

Figure 23: Properly Mated Cap

Figure 24: Improperly Mated Caps

- The front and back shells are secured to each other with six screws (double socket Wall CS only). Ensure that the screws do not protrude from the hole in the shell. Figure 25 displays a properly seated screw.
- Ensure that there is no deformation of the front and back shells (double socket Wall CS only). Figure 25 displays deformation of a shell.

Figure 25: Properly Seated Screw in Deformed Shell

- Ensure that the CS and cover is properly mated (single socket Wall CS only).

4.2 VERIFYING REQUIRED PARTS

This section lists all of the parts required for installing a Wall CS.

4.2.1 Verifying Required Parts Supplied by Better Place

This topic provides a list of parts that need to be verified for the double socket and single socket Wall CS.

4.2.1.1 Verifying Double Socket Wall CS Parts

Each double socket Wall CS is packaged in two boxes. Table 3 and Table 4 list the contents of the two boxes supplied by Better Place.

Table 3: Double Socket Wall CS Parts Supplied by Better Place (Box One)

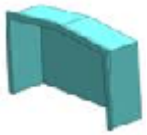
#	Item Number	Description	Picture	Quantity
1	600-0007-01	PKG, COMPLETE PACKAGE, WALL MOUNT, INFRASTRUCTURE, CS		1
2	541-0002-01	SM, ASSY, WALL BRACKET, SAE1020, CS WMH+WMF		1
3	510-0009-02	PLST, FAST CONNECTOR WATER COVER, ABS 765A, CS WM		1
4	340-0001-01	CON, FAST CONNECTOR, FEMALE, PHOENIX		1
5	361-0025-01	CBLASSY, AWG6, YEL/GRN, WITH WIRE END, WM INFRASTRUCTURE		1
6	380-0001-01	TERM, TERMINAL LUG, NON-ISOLATED, 16MM2, M6, DIN46234		1
7	430-0040-02	SCR, SCREW, STEEL, ZINC PLATED BLUE, M5X8, TORX HD (T25)		2
8	440-0006-02	NUT, DIN934, ISO4032, STAINLESS STEEL, M6		2
9	450-0010-02	WSH, ZINC PLATED STEEL, LOCK WASHER, CURVED, DIN128A, M6		2
10	450-0013-02	WSH, STAINLESS STEEL, FLAT WASHER, DIN125A-A4, M6		2

Table 4: Double Socket Wall CS Parts Supplied by Better Place (Box Two)

#	Item Number	Description	Picture	Quantity
11	600-0002-01	PKG, COMPLETE PACKAGE, WMF, V1 CS		1
12	110-0009-01	TOPASSY, WALL MOUNT FLOATING, BACKBONE, CS		1
13	511-0014-02	PLST, ASSY, FRONT SHELL, RTP301RF UV, WM		1
14	510-0005-02	PLST, TOP CAP, EXL9330, WM		1
15	511-0013-03	PLST, ASSY, BACK SHELL, RTP301RF UV, CS WMH+WMF		1
16	430-0042-01	SCR, SCREW, M5x16, STAINLESS STEEL, TORX HD (T25)		4

4.2.1.2 Verifying Double Socket Wall CS Labels

Verify that you have correct double socket Wall CS label (IL, AUS, DK).

Table 5: Double Socket Wall CS Labels

#	Item Number	Description	Picture	Quantity
1	200530	OPN,UI LABEL,BLUE,WM SHEL,RIGHT,CS V1,DK		1
2	200531	OPN,UI LABEL,BLUE,WM SHEL,LEFT,CS V1,DK		1
3	200532	OPN,UI LABEL,BLUE,WM SHEL,RIGHT,CS V1,IL		1
4	200533	OPN,UI LABEL,BLUE,WM SHEL,LEFT,CS V1,IL		1
5	200535	OPN,UI LABEL,BLUE,WM SH,RIGHT,CS V1,AUS		1
6	200536	OPN,UI LABEL,BLUE,WM SHEL,LEFT,CS V1,AUS		1

Note: *Each OpCo has its own CS labels.*

4.2.1.3 Verifying Single Socket Wall CS Parts

Each single socket Wall CS is packaged in one box. Table 6 lists the contents of the box supplied by Better Place.

Table 6: Single Socket Wall CS Parts Supplied by Better Place

#	Item Number	Description	Picture	Quantity
1	600-0031-01	PKG, COMPLETE PACKAGE, H1, WM, INFRASTRUCTURE		1
2	110-0076-01	TOPASSY, WM, HOME H1, INFRASTRUCTURE ADAPTOR		1
3	600-0030-01	PKG, COMPLETE PACKAGE, H1, SKIN		1
4	110-0096-01	TOPASSY, SKIN, BLUE, HOME, CS H1		1
8	200270	OPN, WALL MOUNT, HOME 2.5M, CS H1 -Or- OPN, WALL MOUNT, HOM E 4.5M, CS H1		1
9	200377			1
10	200271	OPN, WALL MOUNT, HOME 2.5M, BACKBONE, CS H1		1
11	200380	OPN, WALL MOUNT, HOME 4.5M, BACKBONE, CS H1		1

4.2.2 Verifying Single Socket Wall CS Labels

Verify that you have correct double socket Wall CS label (IL, AUS, DK).

Table 7: Single Socket Wall CS Labels

#	Item Number	Description	Picture	Quantity
1	200524	OPN,UI LABEL,BLUE,SKIN WINDOW,CS H1,DK		1
2	200525	OPN,UI LABEL,BLUE,SKIN WINDOW,CS H1,IL		1
3	200526	OPN,UI LABEL,BLUE,SKIN WINDOW,CS H1,AUS		1

Note: *Each OpCo has its own CS labels.*

4.2.3 Verifying Required Parts Supplied by the Installer

The Wall CS installation requires additional components that must be supplied by the installer. Table 8 lists the parts supplied by the installer.

Note: *The required number of parts per unit is not included. This is determined by the number of Wall CSs that will be installed per site. Bring extra parts to ensure that the installation process is not delayed due to inadequate supplies.*

Table 8: Parts Supplied by the Installer

Name	Image
• M8/65mm sleeve anchors (for double socket Wall CS) • M6 sleeve anchors (for single socket Wall CS)	
Zip ties	
• Threaded M8 rods (necessary for mounting on walls that are not straight) (for double socket Wall CS) • Threaded M6 rods (necessary for mounting on walls that are not straight) (for single socket Wall CS)	
• M8 nuts (for double socket Wall CS) • M6 nuts (for single socket Wall CS)	
Shielded AWG24 STD CAT5E single strand communication cable (LCC sites only)	
RJ-45 connector	

4.3 Verifying Required Tools

Industry standard insulated tools must be used for all electric work. This section lists tools required for installing the Wall CS.

4.3.1 Tools Supplied by Better Place

Table 9 lists the tools supplied by Better Place.

Table 9: Tools Supplied by Better Place

Name	Image
Leveling jig	
Leveling plate (for single socket Wall CS only)	

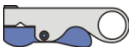
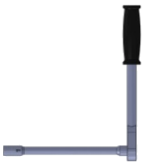
Name	Image
Car simulator dongle	
Hanging car simulator	
Better Place membership card	
Multimeter	
RJ-45 socket	

4.3.2 Tools Supplied by Installer

Table 10 lists the tools supplied by the installer.

Table 10: Tools Supplied by Installer

Name	Image
Utility knife	
M10 wrench	
Allen head screwdrivers (2.5 mm, 3 mm, 4 mm, 5 mm)	
Small flat head screwdriver	
Mid-size Phillips head screwdriver	
23 cm bubble level (necessary for the single socket Wall CS installation)	
P-Touch printer (model PT-1400\2470) or similar label printer compatible with the P-Touch cassette (TZ135 ½")	

Name	Image
White over clear, P-Touch cassette (TZeS135 ½")	
Drill (for walls) and appropriate M8 drill bit	
Cable and wire stripper	
Tubular terminal crimper	
Socket set (ratchet) handle with extension M10 socket	
Wire crimper	
Radio detector (if excavation is necessary)	

CHAPTER 5 SITE PREPARATION

This chapter provides information about setting up the installation area prior to installing the Wall CS.

5.1 ENGINEERING RULES

This section describes the engineering requirements for installing the Wall CS.

5.1.1 Wiring and Routing Requirements

- Wiring, routing cables, grounding, and infrastructure installation must be performed according to local electrical requirements and regulations.
- All electrical routing and connections must be performed by an experienced and certified electrician with experience in local regulations and standards.
- When routing cables through the Wall CSs, all cables must be long enough to enable the electrician to perform required operations.
- If more than 2 OTA CSs are to be installed in a site, a communication conduit and CAT5E cable should be routed between each of the CSs.
- Fast connector wiring capability: A maximum of 16 mm^2 diameter conductor wire can be connected to the fast connector.

5.1.2 Ground Connection Requirements

In case of CSs in a chain connected to the same power supply, any single failure in the installation or in the CS shall never conduct to a ground resistor measured from any socket outlet or connector (if attached cable) less than:

- 150 ohm if the numbers of sockets is <10 for all the charge spots connected to the same power supply
- 75 ohm if the numbers of sockets is <20 for all the charge spots connected to the same power supply
- 30 ohm if the numbers of sockets is >=20 for all the charge spots connected to the same power supply

In case of an installation defect in TN mode (in particular for events such as an upstream neutral break before PE separation) the ground connection will be maintained and the maximum resistant value will be:

- For installations completed before 2010: 150 ohm
- For installations starting in 2012: 167 ohm

Ground quality and Loop Tests (LT) should be according to safety and local regulation and must be performed and ensured after installation of each site or unit.

5.1.3 Communication Requirements

- Identifying and activating SIM cards must be performed prior to the Wall CS installation.
- Shielded AWG24 STD CAT5E single strand communication type cables must be used for all communication installations.
- For underground installations, separate conduits must be used for communication and power cables.

- If CAT5e communication cables share cable tray space with power cables, a minimum distance defined by local regulations must be maintained between the communication and power cables.
- If a communication cabinet is necessary, comply with all local rules and regulations. For more information, see *Installing the Communication Cabinet* on page 67.

5.1.4 Single Socket Electricity Requirements

Warning: *The single socket Wall CS is not protected with its own MCB/RCD. Therefore, an external dedicated MCB/RCD is needed and should be installed according to local electrical requirements and regulations.*

Table 11: Electrical Requirements for MCB/RCD

Option	Devices	Requirements
1	MCB	20A characteristic, curve C
	RCD	Type A, curve C, 30 mA tripping current
2	RCBO	Integrated part (MCB+RCD) with the same technical requirements as option 1

5.2 Wall CS Location Requirements

This section describes the engineering requirements for installing the Wall CS.

5.2.1 Double Socket Wall CS

To ensure that double socket Wall CSs are not damaged by moving or parked cars, they must be installed at an appropriate height from the ground and distance from the nearest car's tire. All installation distances must comply with local regulations and standards.

The recommended distances for double socket Wall CSs are:

- Double socket Wall CSs must be installed so that the top of the wall bracket is 143 cm above ground level.
- A clearance of 30 cm on both sides of the infrastructure must be available (for the use of the screwdriver).
- A minimum of 70 cm between the edge of the electric car's rear tires and the Wall CS is recommended.
- To prevent electric cars from getting too close to the Wall CS, a wheel stop should be fixed to the pavement.

Figure 26: Height and Distance Requirements for Double Socket Wall CS

5.2.2 Single Socket Wall CS

To ensure that single socket Wall CSs are not damaged by moving or parked cars, they must be installed at an appropriate height from the ground and distance from the nearest car's tire. All installation distances must comply with local regulations and standards.

The recommended distances for single socket Wall CSs are:

- Single socket Wall CSs must be installed so that the top of the leveling plate is 157 cm above the ground level.
- If installing the Wall CS on a wall that faces the rear of the electric car:
  - A minimum of 70 cm between the edge of the electric car's rear tires and the wall is recommended.
  - To prevent electric cars from getting too close to the Wall CS, a wheel stop should be fixed to the pavement.

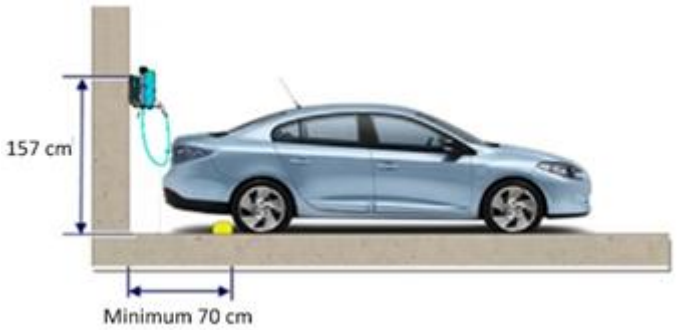


Figure 27: Height and Distance Requirements for Single Socket Rear Wall CS Installation

- If installing the Wall CS on a wall that faces the side of the electric car:
  - Install the Wall CS towards the front or rear of the electric car (over the wheels) to enable the Wall CS cable to easily reach the charging socket on the electric car.
  - If you cannot install the Wall CS towards the front or rear of the electric car, ensure that the doors of any electric car parked near the Wall CS will not damage the Wall CS when opened.
  - Under all circumstances, ensure that pedestrians can easily pass between the electric car and the wall on which the Wall CS is mounted.

Note: *The depth of the single socket Wall CS with the cable connected to the Wall CS is ~35 cm.*

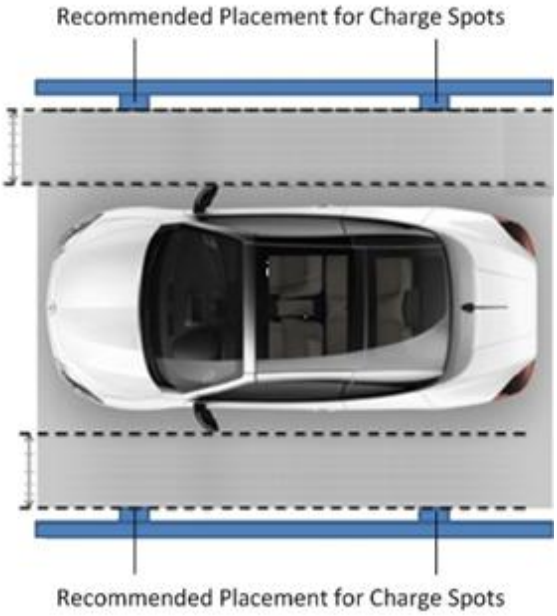


Figure 28: Distance Requirements for Side Wall CSs Installation

5.3 PREPARING THE INSTALLATION SITE

This section provides information on preparing the installation site.

5.3.1 Before Starting the Installation

Caution: *Before you begin any installation procedures, review safety precautions with all employees.*

Before starting the installation:

- Verify that you have the correct and most-updated site layout plans containing the infrastructure layout, including electricity, water, phone, gas, and cable layout, etc.
- Verify that you received approval from the property owner to begin the installation.
- Confirm that all personnel installing and maintaining the Wall CS are properly certified to perform the necessary tasks.
- For Wall CS-OTA installations, confirm with the Operations Center (OC) that the SIM cards are activated, to avoid a delay in the Wall CS activation.

5.3.2 Defining the Installation Site Area

This section describes how to define the installation area.

To define the installation area:

1. Isolate the Wall CS installation area using road barriers, warning tape, and appropriate warning signs.

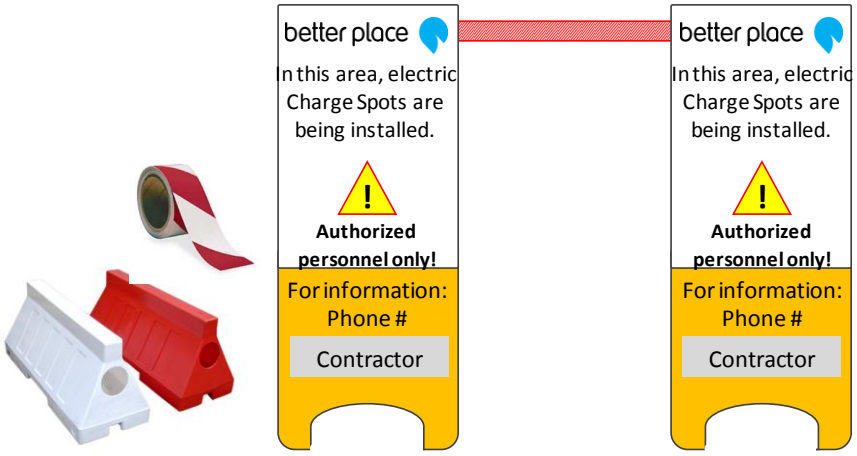


Figure 29: Warning Tape, Road Barriers, and Warning Signs

2. Park vehicles containing equipment as near to the site as possible. This ensures optimal protection of all equipment.
3. Identify the location of the site's electric cabinet.

Note: *If excavation is necessary to bring the cables to the area, refer to the* Standing CS Installation Manual*.*

4. Wire the following cables to the Wall CS site location:
    - Power (via conduit and cable tray) – As defined in the site plan.
    - Communication (via conduit) – One CAT5E communication cable.
    - Spare conduit.

Note: A *communication wire (via a conduit) is needed in case of:*

- *An external LCC installation – The external LCC is required for installations with four (4) or more CSs at one site and for sites with RF communication issue (RSSI less than -85Dbm).*
- *An OTA CSs installation site – A site with 2 to 3 OTA CSs*

Continue with the instructions for installing a Wall CS:

- To install a double socket Wall CS, refer to *Installing a Double Socket Wall* CS on page 31.
- To install a single socket Wall CS, refer to *Installing a Single Socket Wall* CS on page 47.

CHAPTER 6 INSTALLING A WALL CHARGE SPOT

This chapter provides detailed instructions for installing a Wall CS.

- To install a double socket Wall CS, refer to *Installing a Double Socket Wall* CS on page 31.
- To install a single socket Wall CS, refer to *Installing a Single Socket Wall* CS on page 47.

6.1 INSTALLING A DOUBLE SOCKET WALL CS

The following is the order of the procedures for installing a double socket Wall CS:

1. Mounting the Wall Bracket
2. Leveling the Wall Bracket
3. Attaching the Fast Connector
4. Wiring the Fast Connector
5. Testing the CS Communication Circuit
6. Assembling the Wall CS

6.1.1 Mounting the Wall Bracket

To mount the wall bracket:

1. Position the wall bracket on the wall as level as possible so that the top of the wall bracket is 143 cm above ground level.

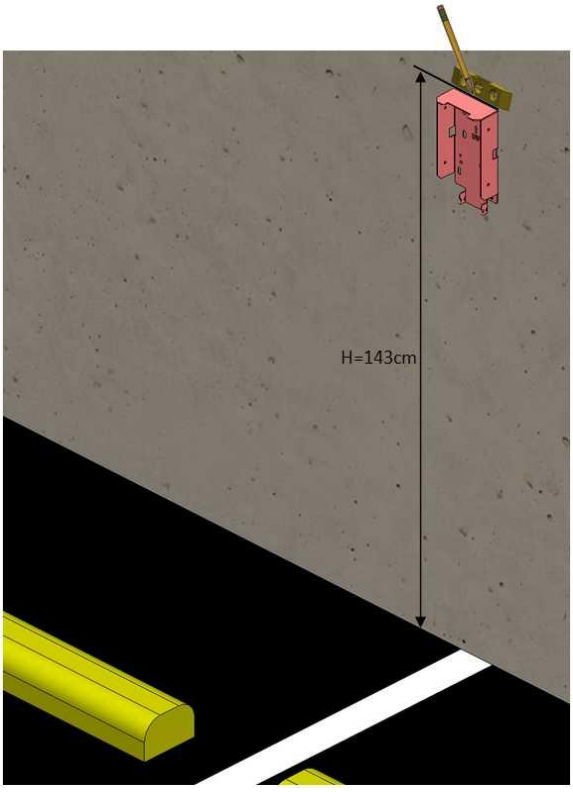


Figure 30: Positioning the Wall Bracket

2. Mark the positions of the wall bracket's holes on the wall.

   Two sets of holes are provided. Figure 31 displays the default and alternative sets of holes.

Note: *The alternative set of holes should only be used if you encounter difficulty using the default holes.*

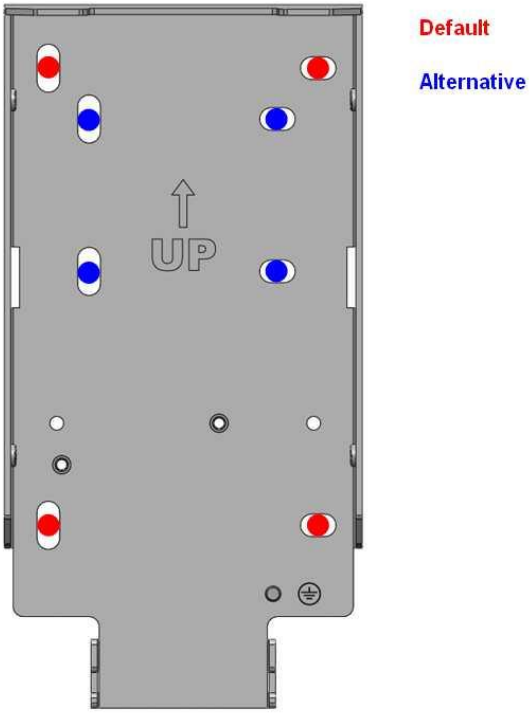


Figure 31: Wall Bracket Holes

3. Attach the wall bracket to the wall on a flat wall as follows:
   a. Drill four (4) holes at the marked locations.
   b. Attach the wall bracket to the wall using four (4) 8 mm anchors. To enable leveling, do not tighten.
4. Attach the wall bracket to the wall on a rounded wall or pillar:
   a. Drill four (4) holes at the marked locations.
   b. Insert four (4) M8 threaded rods into the holes.
   c. Fasten one (1) nut on each threaded rod, leaving space before the wall.
   d. Slide a washer over each threaded rod.
   e. Place the wall bracket on the threaded rods. Ensure that the threaded rods protrude 10-30 mm from the wall bracket.

Figure 32 and Figure 33 display a wall bracket attached to a rounded wall.

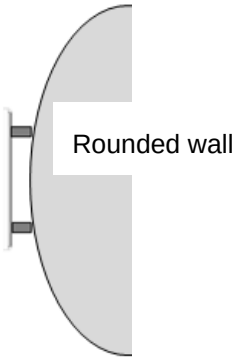


Figure 32: Rounded Wall Top View

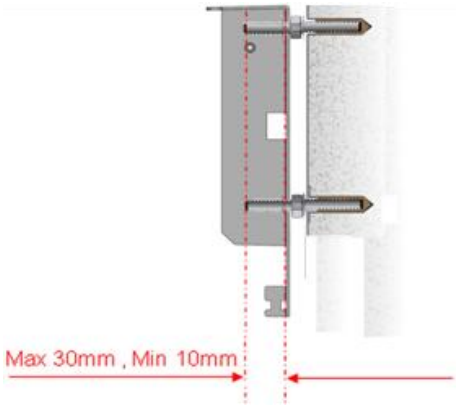


Figure 33: Rounded Wall Side View

6.1.2 Leveling the Wall Bracket

After mounting the Wall CS, you must level the wall bracket using the leveling jig.

Figure 34: Wall CS Leveling Jig

To level the wall bracket:

1. Position the leveling jig's holes over the fast connector's docking sleeves on the wall bracket.

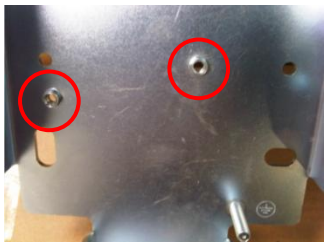


Figure 35: Fast Connector Docking Sleeves

Figure 36: Leveling Jig Fixed to the Bracket

Figure 37: Bracket is Level

2. For a flat wall, tighten the anchors until the leveling jig's bubble levels indicate that the wall bracket is level.
3. For a rounded wall:
   a. Adjust each nut until the leveling jig's bubble levels indicate that the wall bracket is level.
   b. Place a washer over each threaded rod.
   c. Place and tighten a nut on each threaded rod.

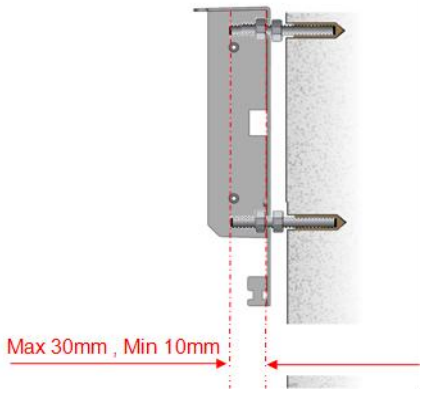


Figure 38: Level Rounded Wall Bracket

4. Remove the leveling jig.

6.1.3 Attaching the Fast Connector

This section describes how to attach the fast connector to the wall bracket,

To attach the fast connector:

1. Position the fast connector water cover over the docking sleeves on the wall bracket.
2. Press the fast connector water cover firmly into place.

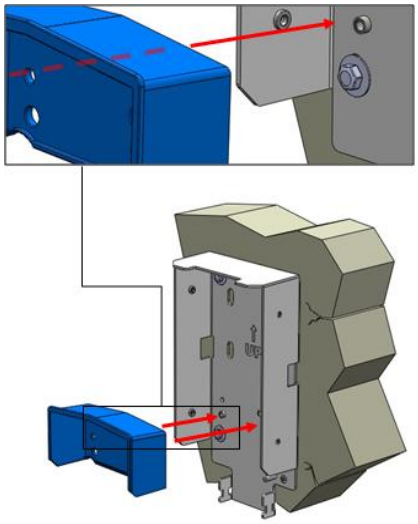


Figure 39: Positioning the Fast Connector Water Cover

3. Attach the female fast connector to the fast connector water cover with two BN 15857 M5 X 8 Torx screws.

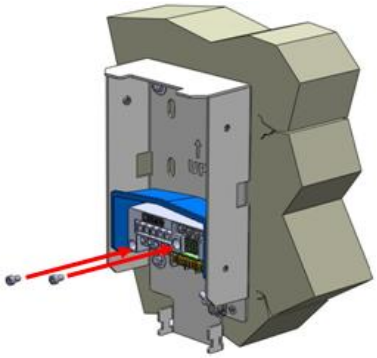


Figure 40: Female Fast Connector Connected to the Water Cover

6.1.4 Wiring the Fast Connector

This section describes how to connect the power, ground, and communication cables.

To wire the fast connector:

1. Wire the cables via cable trays and conduits to the Wall CS site location. Wire the power and communication cables via different conduits. The site is now wired with the following cables:
    - **Power** – As defined in the site plan and according to the requirements in *Single Socket Electricity Requirements* on page 26
    - **Ground** – One main ground cable according to the requirements in *Ground Connection Requirements* on page 25

Note: *Single socket and double socket Wall CSs are class I devices which require a PE connection. You must follow all local regulations when making this connection.*

- **Communication** – Two communication cable ends per Wall CS.

Note: *The communication cable is only necessary if communication is implemented via an LCC. An LCC is required for installations with four (4) or more CSs at one site and for sites with special communication issues.*

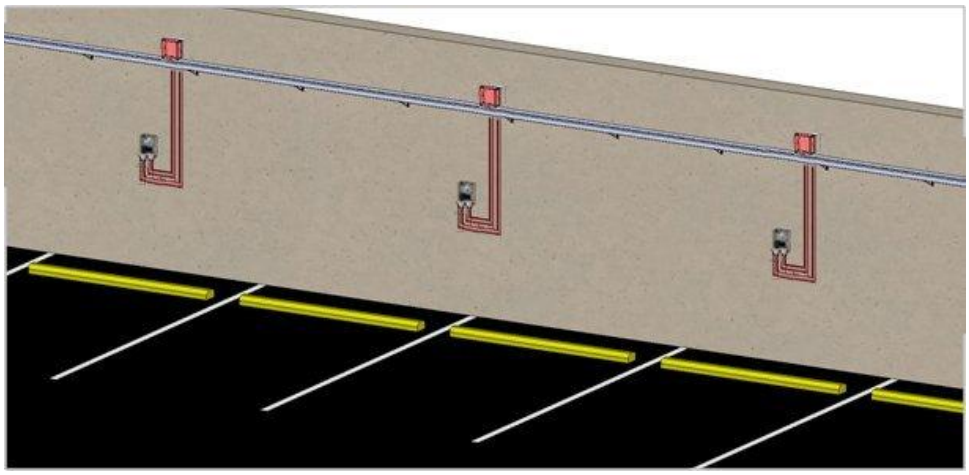


Figure 41: Cables Wired to the Site Location

2. Strip 79 mm from the main power cable jacket. Then strip 14 mm off each internal wire jacket, leaving 65 mm between the wire jackets and the main jacket.
3. Attach and crimp a wire tubular terminal to the ground strand in the power cable.

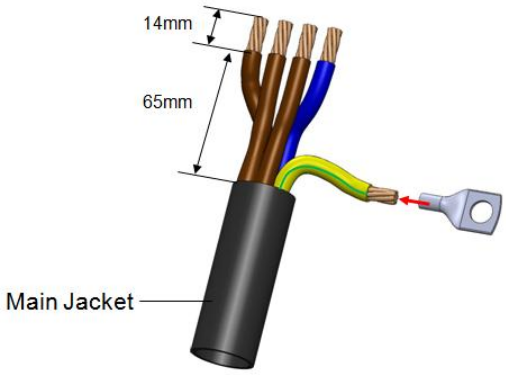


Figure 42: Power Cable Stripping

Note: *Ensure that the main power cable jacket does not continue beyond the lower cutout of the mounting plate. See* Figure 44*.*

4. Connect the power cable wires to the fast connector as follows:
   - Three (3) live wires (L) to the three leftmost terminals.
   - One (1) neutral wire to the fourth terminal from the left.
5. Connect the open wire from the short ground cable (supplied by Better Place), to the fast connector's ground slot.
6. Unscrew the bolt on the wall bracket's ground stud.
7. Connect the two ground tubular terminals to the wall bracket's ground stud as follows (Figure 43):
   a. Connect the tubular terminal from the power cable to the wall bracket's ground stud (1).
   b. In the following order, place a washer (2), a spring washer (3) and a bolt (4) on top of the tubular terminal (1).
   c. Connect the tubular terminal from the short ground cable (supplied by Better Place) to the wall bracket's ground stud (5).
   d. In the following order, place a washer (6), a spring washer (7), and a bolt (8) on top of the tubular terminal.

   Figure 43 displays the order in which the hardware is placed on the ground stud.

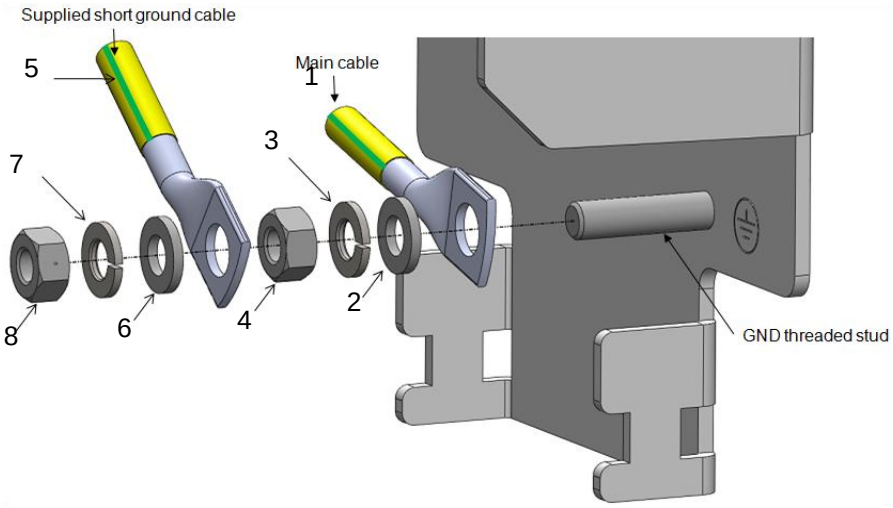


Figure 43: Ground Wire Tubular Terminals Connected to the Ground Stud

The Wall CS infrastructure is complete, and includes the following components:

- A four-strand (three-phase and one (1) neutral) power cable.
- A ground cable.

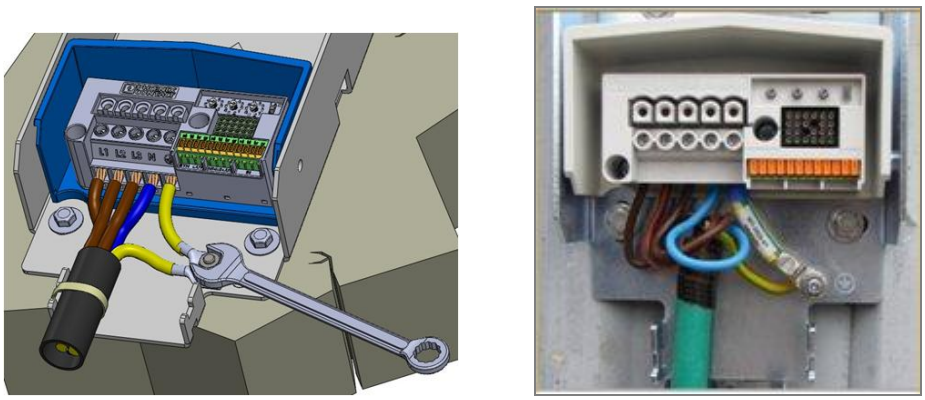


Figure 44: Power and Ground Cables Connected to the Fast Connector

8. If installing a Wall CS-OTA, proceed to step 14. If an external LCC is used for communication, proceed to step 9.
9. Strip 20 mm of the jacket on each end of the communication cable. Make sure not to remove the wires' insulation.
10. For the CS **closest** to the communication cabinet:
    a. Insert one end of the communication cable coming from the communication cabinet into the RS-485 **IN** slots of the fast connector.
    b. Connect this CS to another CS in a chain, by connecting the other end of the communication cable to the fast connector RS-485 **OUT** slots.
    c. Attach an RJ-45 connector to the end of the communication cable coming from the cabinet. Connect the wires as described in Table 12. Note that the pin numbering is from right to left (Figure 45 and Figure 46).

Table 12: RJ-45 Communication Cable Assignment

RJ-45 Pin	Fast Connector RS-485	Color
1	Optional GND (ground)	White-Orange (w-og)
2	Data +	Green (gr)
3	Mandatory GND (ground)	Orange (og)
4	Data -	White-Green (w-gr)
5	NA	
6		
7		
8		

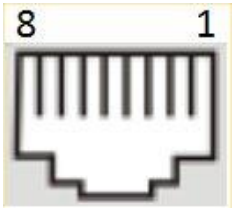


Figure 45: RJ-45 Connector Pin Assignment

Figure 46: RJ-45 Connector

11. For the CSs in the **middle** of the chain:
    a. Insert one end of the communication cable coming from the previous CS into the RS-485 **IN** slots of the fast connector.
    b. Connect this CS to another CS in a chain, by connecting the other end of the communication cable to the fast connector RS-485 **OUT** slots.
12. For the CS **last** in the chain, insert the end of the communication cable coming from the **previous** CS into the RS-485 IN slots of the fast connector. The communication cable is now connected to all of the CSs.

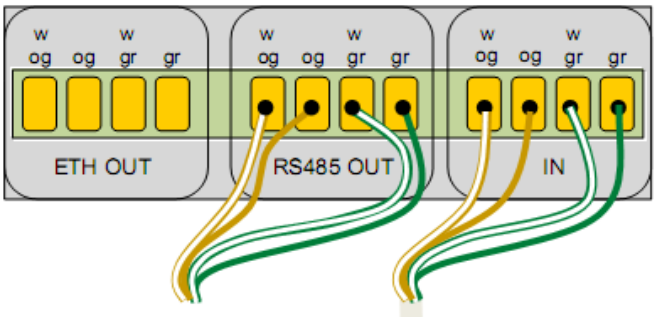


Figure 47: Fast Connector Communication Cable Wiring

Note: *Verify that the strands connected to the OUT slots are inserted in the same order as in the IN slots.*

13. Use zip ties to fasten the power cable to the left side of the wall bracket and the communication cable to the right side of the wall bracket.

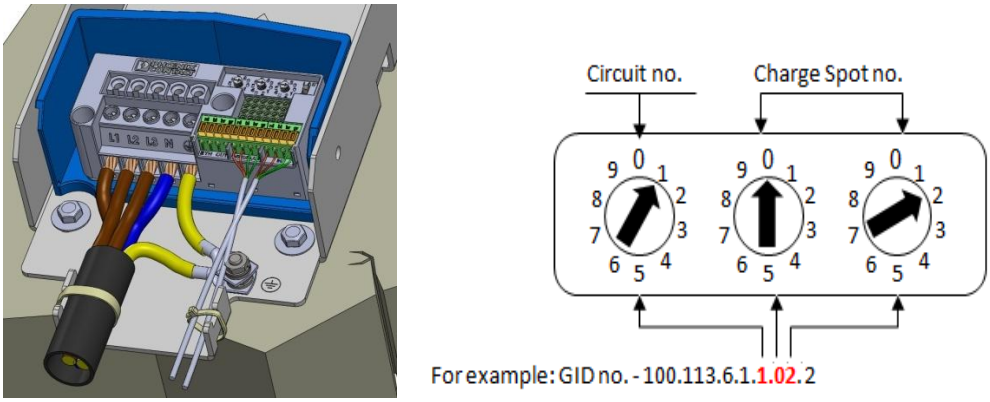


Figure 48: Fast Connector Cables with Zip Ties and Wall CS Configuration Example

14. Configure the rotary dials in each Wall CS at the site as follows:
    a. Turn the rotary dial on the far left to the circuit number of the circuit to which the Wall CS is connected.
    b. Turn the two dials on the right to the Wall CS number.
15. Set the LAST/ELSE switch as follows:
    - **All CSs except the last in the chain** – Move the dip switch to **ELSE**.
    - **Last CS in the chain** – Move the dip switch to **LAST**.

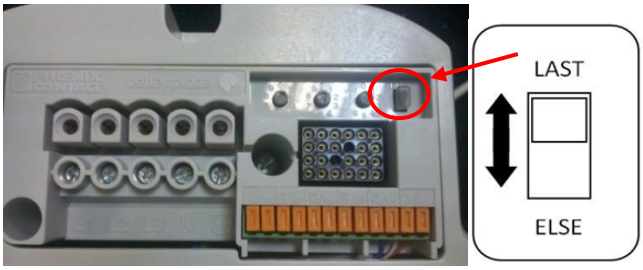


Figure 49: LAST/ELSE Switch

16. Continue with the instructions for testing the CS communication circuit. See *Testing the CS Communication Circuit* on page 43.

6.1.5 OTA-CSs Site Installation

The following provides instructions for chaining up to 3 OTA CSs in a site to support 3-phase charging management. This procedure is applicable to new CS installations and CSs that have already been installed and is relevant for Standing and Wall CSs.

For an installed site, if there is no spare conduit, you will need to add another conduit. Standing CSs require excavation. Be sure to follow all local and safety regulations and ensure that the current cables are not damaged during excavation.

The Fast Connector CS's rotary switches are set as followings:

- Leading Phase L1 set to 1 0 1 (will be the Master CS for that circuit)
- Leading Phase L2 set to 1 0 2
- Leading Phase L3 set to 1.0.3

Note: *In case of more than one circuit, the master (first) CS is set as follows:*

- *CS#1 in Circuit 2 set to 2 0 1*
- *CS#1 in Circuit 3 set to 3 0 1*

Note: *Any changes in the CS rotary dial must be updated in the GTM topology.*

Note: *The master CS RS-485 port is connected from the OUT slot. There is no connection to the IN slot as with the LCC. The master CS OUT is connected to the second CS IN slot and the last CS is connected to the IN slot only.*

The following table provides configuration examples for a chain with 2 CSs and 3 CSs.

Table 13: Configuration Examples for a Chain with 2 CSs and 3 CSs

Leading Phase	L1	L2	L3
2 CSs in a Circuit Example			
CS #	CS#1	CS#2	N/A
Rotary Switches (For Circuit #1)	1 0 1	1 0 2	N/A
Last/Else	Last	Last	N/A
OTA	Mandatory	Optional	N/A
RS-485	Out	In	N/A
3 CSs in a Circuit Example			
CS #	CS#1	CS#2	CS#3
Rotary Switches (For Circuit #1)	1 0 1	1 0 2	103
Last/Else	Last	Else	Last
OTA	Mandatory	Optional	Optional
RS-485	Out	In + Out	In

N/A = Not Applicable

Before beginning this installation, verify the following:

- The site has no more than 3 CSs.
- The infrastructure (power cable) supports 3-phase wiring and adheres to local regulations.
- All the CSs in the chain should be connected together with a communication cable. (Separate conduits are needed.)
- If the CS is already installed, turn off the main breaker in the electricity cabinet and secure it with a LOTO device while working on the CS. Turn the main breaker on only after completing the installation.
- All CSs must be connected to the same 3-phase circuit.

Note: *If there is more than one circuit, each circuit must have its own communication chain, i.e., if there are 2 CSs on one circuit and one CS on another circuit, then the 2 CS on the same circuit will be connected with one communication cable and the CS on the second circuit will remain a standalone OTA CS.*

To install an OTA-CS site:

1. Turn the rotary dial on the left to the circuit number of the circuit to which the CS is connected and turn the two dials on the right to the relevant CS number.

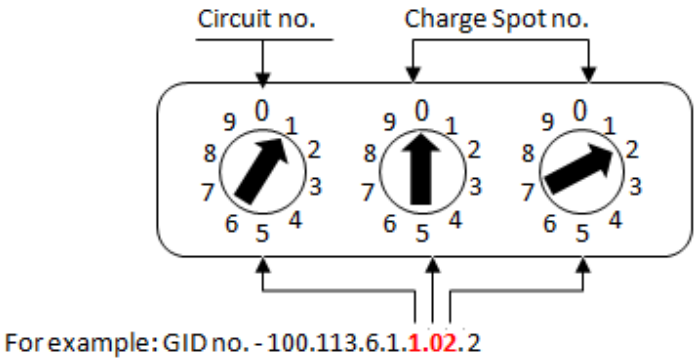


Figure 50: Setting the Rotary Dials

Note: *If the CS is already installed, do not change the rotary dial.*

2. Set the LAST / ELSE dip switch as follows:
   - For the master and last CS, move the dip switch to LAST.
   - For the middle CS (if there are 3 CSs in the chain), move the dip switch to ELSE.

Figure 51: LAST/ELSE Switch for OTA-CSs Site Installation

3. Wire the CS using a CAT5 cable.
4. For a standing CS, cut the loop of the communication cable. For a Wall CS, use a junction box.
5. Strip 20 mm from the jacket of each end of the CAT5 cable. Ensure that you do not to remove the wires' insulation.
6. Connect the first CS to another CS in the chain using the CAT5 cable.
7. Connect the other end of the CAT5 cable to the Fast Connector RS-485 OUT slot.

Note: *It is recommended to use the L1 CS as the leading phase.*

8. For the CSs in the middle of the chain:
   a. Insert one end of the CAT5 cable coming from the previous CS into the RS-485 IN slot of the Fast Connector.
   b. Connect this CS to another CS in the chain by connecting the other end of the CAT5 cable to the Fast Connector RS-485 OUT slot.

9. For the last CS in the chain, insert the end of the communication cable coming from the previous CS into the RS-485 IN slot of the Fast Connector.

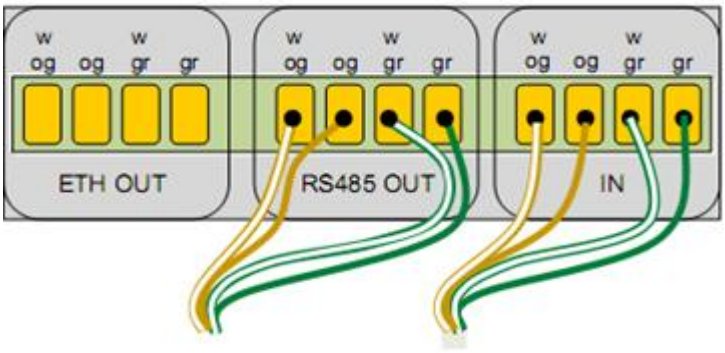


Figure 52: Wiring the Fast Connector

Note: The above figure is an example of the wiring for the second CS in a chain. Ensure that *the wires connected to the OUT slots are inserted in the same order as for the IN slots.*

6.1.6 Testing the CS Communication Circuit

This section describes how to test the CS communication circuit.

To test the CS communication circuit:

1. Connect the RJ-45 connector coming from the first CS to a female RJ-45 connector.
2. Using a multimeter, connect the probes to Pins 1 and 2 of the female RJ-45 connector and measure the electrical impedance. The expected electrical impedance is ~100Ω.

Figure 53: Testing Resistance

   - If the resistance is infinite, ensure that the LAST/ELSE switch on the last CS on the circuit is on **Else** and recheck the resistance.
   - If the resistance is above 120Ω, ensure that the LAST/ELSE switches on all of the CSs on the circuit other than the last one are on **Else** and recheck the resistance.

3. If the resistance tests failed, measure the impedance resistance of the communication chain to isolate the fault, as follows:

   a. Connect a male fast connector to the female fast connector.
   b. Connect multimeter probes to Pins 1 and 2 of the male fast connector's communication ports.

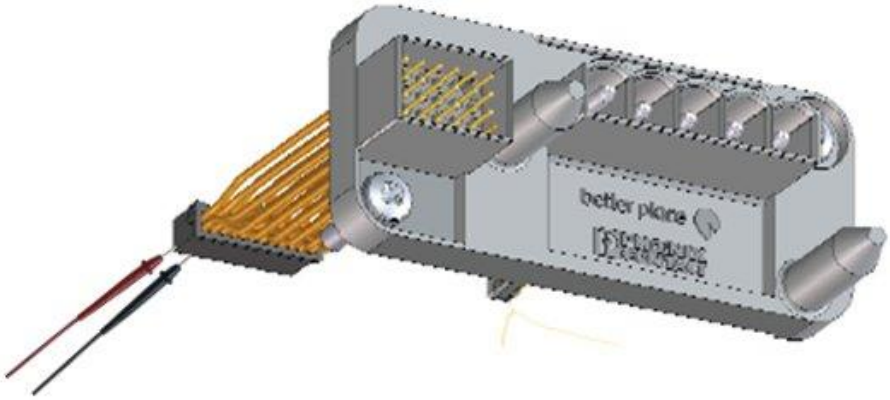


Figure 54: Testing Impedance Resistance via the Fast Connector

4. After the resistance tests succeed, attach the communication cable to the RS-485 **P1-P4** port (as defined in the site plan) on the LCC.

6.1.7 Assembling the Wall CS

This section describes how to assemble the Wall CS.

To assemble the Wall CS:

1. Position the Wall CS over the wall bracket.
2. Press the Wall CS onto the wall bracket until it snaps into place on both sides.

Note: *Verify that the Wall CS unit snaps into place.*

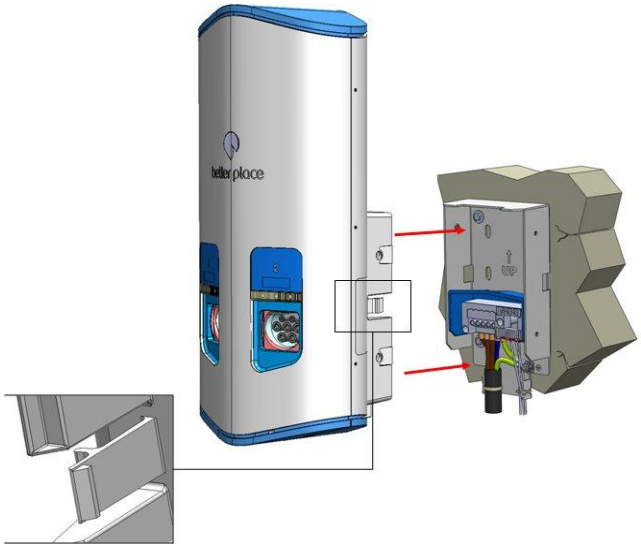


Figure 55: Wall CS Snapped into Place

3. Connect the Wall CS to the wall bracket using four M5 X 16 Torx screws.

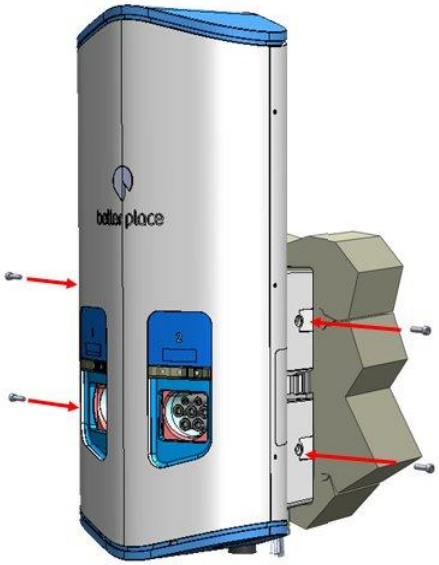


Figure 56: Wall CS Connected to the Bracket

4. Stick the ID labels to the Wall CS as follows:
   a. Using the P-Touch printer, print the identification number of each socket.

Note: *For information on printing with the P-Touch printer, refer to* Configuring P-Touch Printer *on page 105.*

   b. Stick each sticker to the correct indented cavity on the Wall CS. The left cavity is Socket 1. The right cavity is Socket 2.

Note: *Pay attention to the Label Direction of both left and right Wall CSs.*

Figure 57: Stick the ID Labels to the Wall CS

The Wall CS is installed.

Figure 58: Installed Wall CS

Note: *If an LCC will be used for communication at the site, proceed to* Installing the Communication Cabinet *on page 67.*
If an LCC is not used for communication at the site, proceed to Activating the Wall Charge Spot *on page 71.*

6.2 INSTALLING A SINGLE SOCKET WALL CS

You can install a single socket Wall CS on a wall or pole.

- **Installing on a pole:** For instructions on installing a single socket Wall CS on a pole, refer to *Installing a Single Socket Wall Charge Spot on a Pole* on page 91.
- **Installing on a wall:** This section provides instructions for installing a single socket Wall CS on a wall.

Installing a single socket Wall CS on a wall includes the following procedures:

- Drilling the Infrastructure Adapter Holes
- Preparing the Infrastructure Adapter
- Mounting the Infrastructure Adapter
- Wiring the Infrastructure Adapter
- Wiring the Fast Connector
- Testing the Wall CS Communication Circuit
- Assembling the Wall CS

6.2.1 Drilling the Infrastructure Adapter Holes

This section provides information on drilling the holes required for mounting the infrastructure adapter on the wall.

6.2.1.1 Preparing the Leveling Plate

To prepare the leveling plate:

1. Determine the infrastructure and wiring location.
2. Position the leveling jig's holes over the leveling plate docking sleeves, and fix the leveling jig's magnet to the leveling plate.

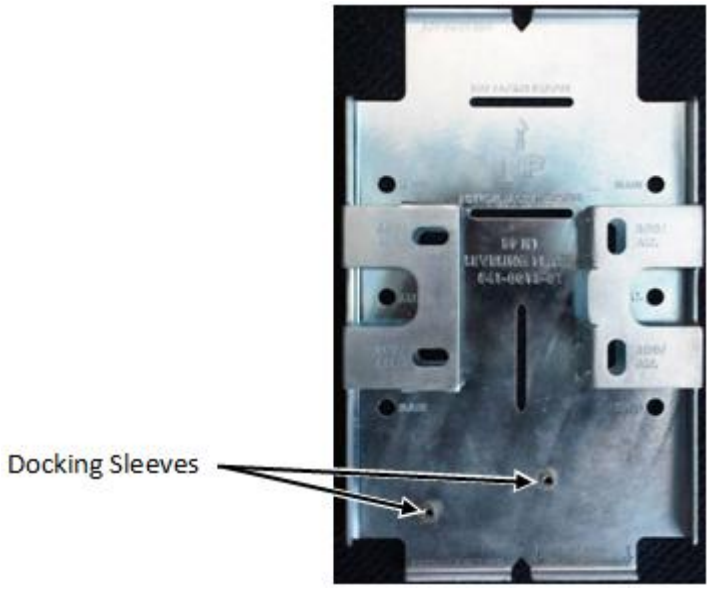


Figure 59: Level Plate Docking Sleeves

Figure 60: Level the Jig Fixed to the Bracket

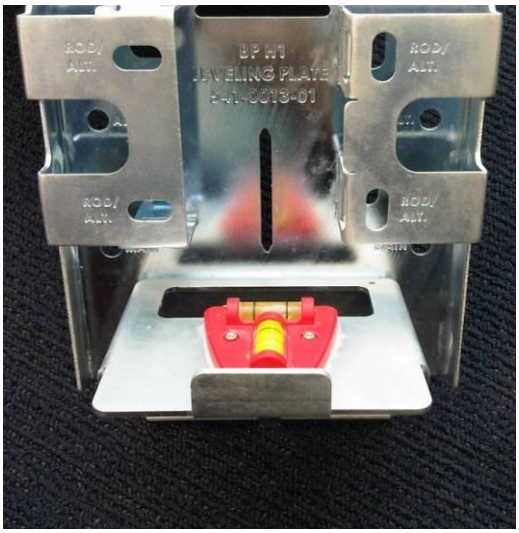


Figure 61: Bracket is Level

3. Position the leveling plate on the wall so that the top of the leveling plate is 157 cm from the floor.

Figure 62: Measure 157 cm for the Single Socket Wall CS

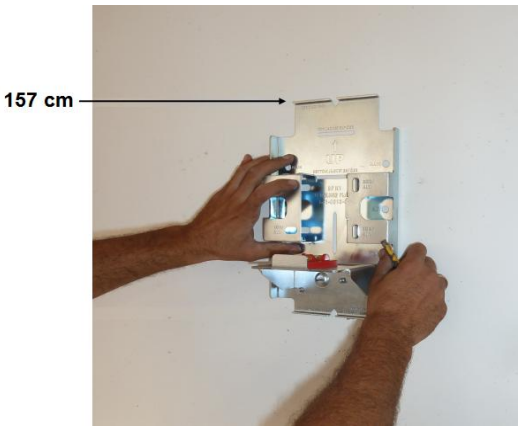


Figure 63: Level Plate Top Edge 157 cm from the Floor

6.2.1.2 Drilling on a Straight Wall

To drill the infrastructure adapter holes on a straight wall:

1. Adjust the position of the leveling plate until the two bubbles levels (on the leveling jig) indicate that it is level.

Figure 64: Leveling Plate is Level

2. Mark the following cutouts on the leveling plate on the wall (Figure 65):
   - Top conduit
   - Centered
   - Bottom conduit
3. The cables for the single socket Wall CS may enter the Wall CS from above the Wall CS, from below the Wall CS, or from the wall behind the Wall CS. Mark the following positions of the leveling plate on the wall based on the direction from which the cables will be routed to the Wall CS (Figure 65):
   - If cabling from the top of the Wall CS, mark the top cable jacket.
   - If cabling from the bottom of the Wall CS, mark the bottom cable jacket.
   - If cabling from behind the Wall CS, mark the bottom cable jacket.

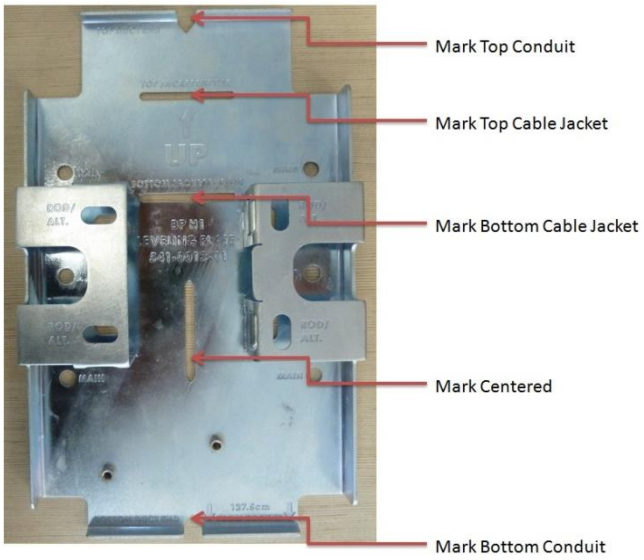


Figure 65: Level Plate Markings for Straight Walls

4. Mark the drilling positions of the holes in the leveling plate as follows:
   - There are ten holes in the leveling plate for marking the drilling positions. Four of the holes are labeled **MAIN**. If possible, drill through these holes.
   - Two holes are labeled **ALT**. If you have difficulty drilling one or two of the **MAIN** holes, drill the holes labeled **ALT.** to mark alternative positions.
   - Four holes are labeled **ROD/ALT**. If you have difficulty drilling the **MAIN** and **ALT** holes, drill the holes labeled **ROD/ALT.** to mark alternative positions.

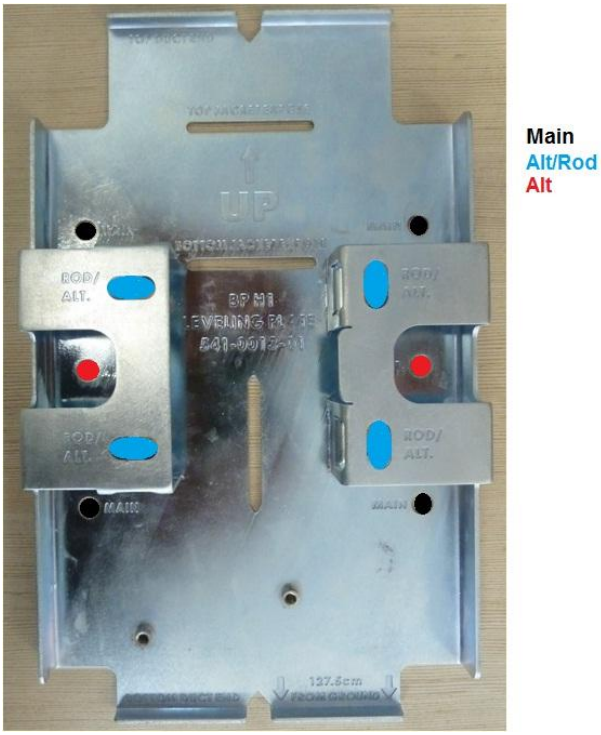


Figure 66: Level Plate Drill Holes

5. Set aside the leveling plate.
6. Drill holes at the marked locations.

6.2.1.3 Drilling on a Curved Wall

To drill the infrastructure adapter holes on a curved wall:

1. Adjust the position of the leveling plate until the two bubble levels on the leveling jig indicate that it is level (Figure 61).
2. Mark the following cutouts of the leveling plate on the wall (Figure 65):
   - Top conduit.
   - Centered.
   - Bottom conduit.
3. The cables for the single socket Wall CS may enter the Wall CS from above the Wall CS, from below the Wall CS, or from the wall behind the Wall CS. Mark the following positions of the leveling plate on the wall based on the direction from which the cables will be routed to the Wall CS (Figure 65):
   - If cabling from the top of the Wall CS, mark the top cable jacket.
   - If cabling from the bottom of the Wall CS, mark the bottom cable jacket.
   - If cabling from behind the Wall CSS, mark the bottom cable jacket.

4. Mark the drilling positions of the **ROD/ALT.** holes in the leveling plate.

Figure 67: Level Plate Drill Holes for Curved Wall

5. Set aside the leveling plate.
6. Drill holes at the marked locations.
7. Install four (4) M6 threaded rods into the holes.
8. Fasten two (2) nuts on each threaded rod.

Figure 68: Threaded Rods with Nuts

9. Using the external nuts, screw the rod tightly into the wall.
10. Screw the nuts that are closer to the wall to the end.
11. Screw the external nuts leaving a gap of approximately 5 mm between the external nut and the nut that is closer to the wall.

12. Place the leveling plate on the threaded rods. Ensure that the leveling plate is as close as possible to the wall and that the threaded rods protrude from the back of the leveling plate between 20 - 30 mm.
13. Adjust the external nuts until the leveling jig's bubble levels indicate that the leveling plate is level.
14. Open the nuts closer to the wall and tighten against the external nut.

Note: *After tightening the nuts, ensure that the rods are between the rod leveling plate indicators.*

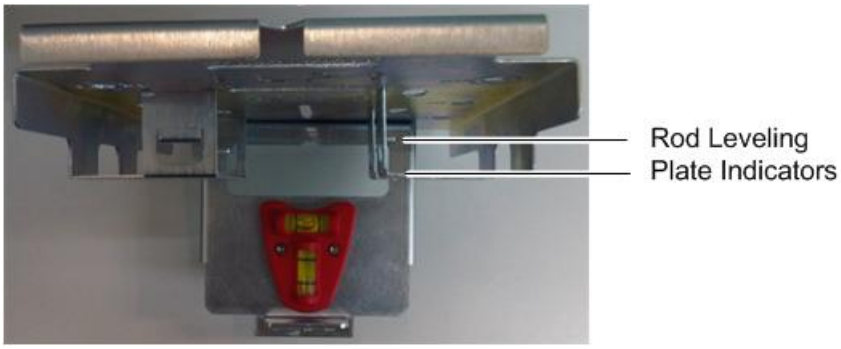


Figure 69: Rods between the Rod Leveling Plate Indicators

15. Remove the leveling plate.

6.2.2 Preparing the Infrastructure Adapter

The cables for the single socket Wall CS may enter the Wall CS from above the Wall CS, from below the Wall CS, or from the wall behind the Wall CS. The cables must be routed to the infrastructure adapter via cable trays and conduits. Separate conduits must be used for power and communication cables.

To prepare the infrastructure adapter, remove the plastic punch-outs to allow the cables to be inserted into the infrastructure adapter. In addition, if the cables enter the Wall CS from the top, remove some of the black foam pad.

To prepare the infrastructure adapter:

1. Remove the plastic punch-outs. Figure 70 displays the top punch-outs.

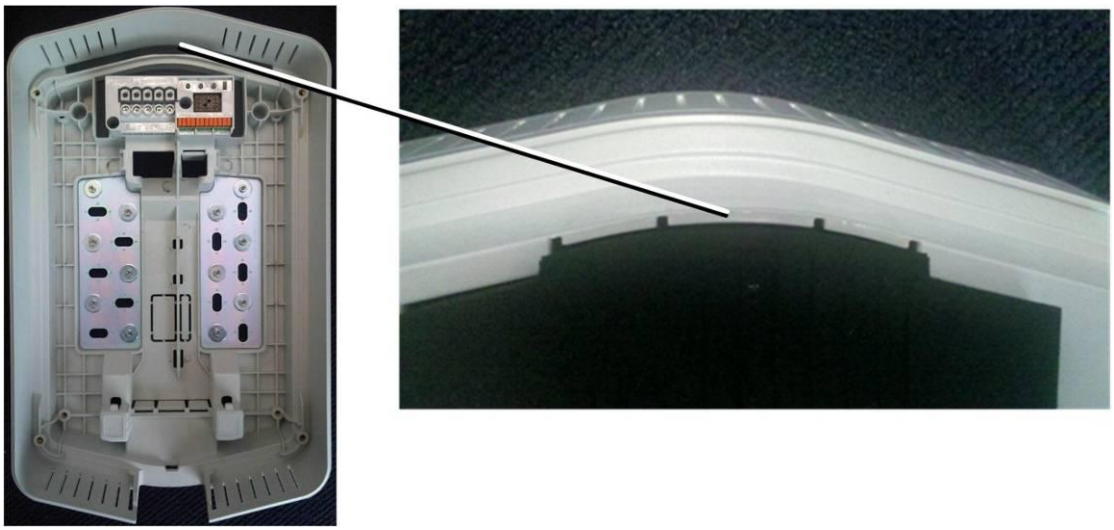


Figure 70: Top Installation Plastic Punch-Outs

Note: *The top plastic punch-outs are located behind the infrastructure adapter and may be more difficult to remove than the other punch-outs. Take care not to damage the infrastructure adapter when removing the top plastic punch-outs.*

Figure 71 displays the bottom punch-outs.

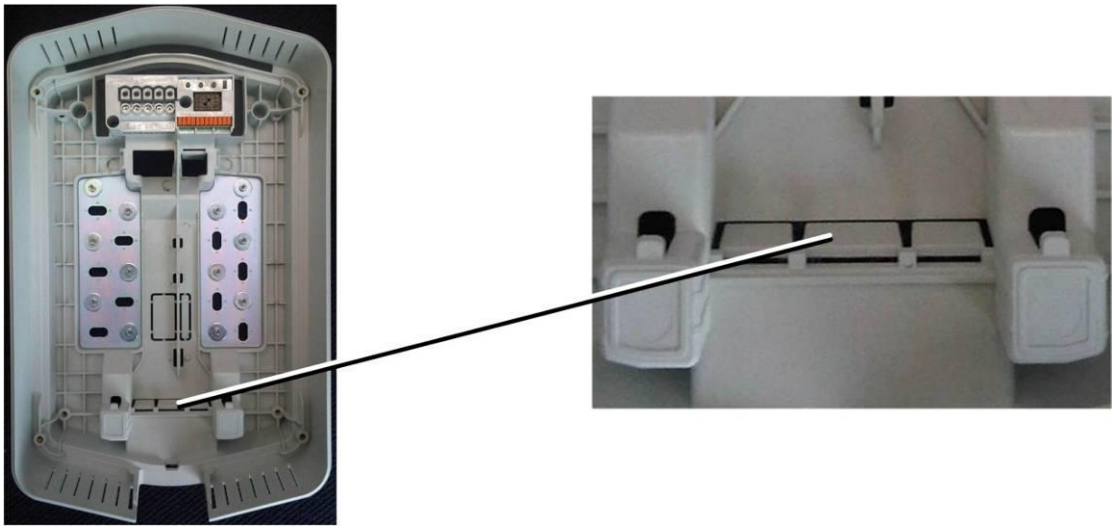


Figure 71: Bottom Installation Plastic Punch-Outs

Figure 72 displays the back punch-outs.

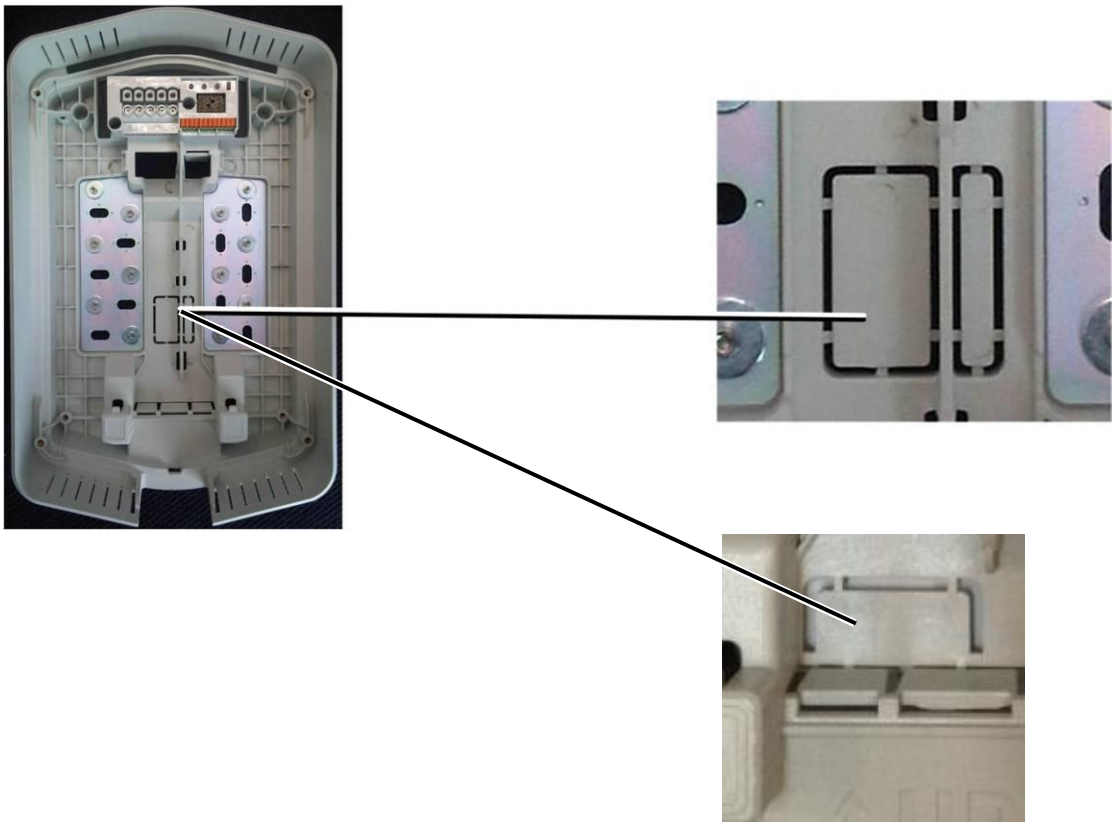


Figure 72: Back Installation Plastic Punch-Outs

2. If the cables enter the infrastructure adapter from the top, using your fingers, remove the appropriate pre-cut foam pad with enough space to pull the wiring through.

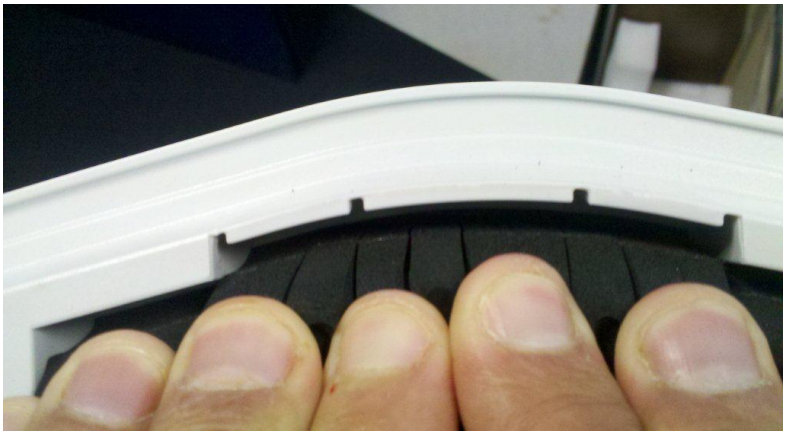


Figure 73: Top Plastic Punch-Outs with Foam

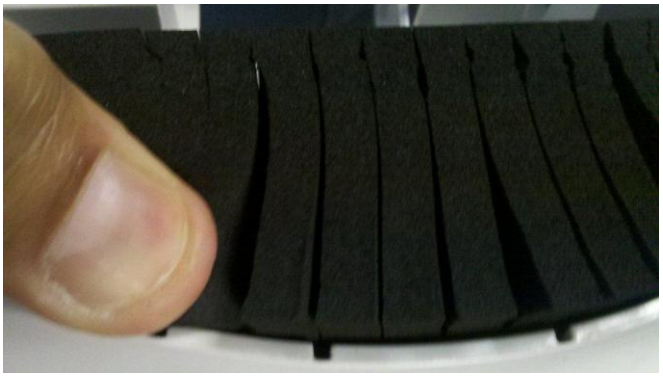


Figure 74: Top Foam

6.2.3 Mounting the Infrastructure Adapter

To mount the infrastructure adapter:

1. Strip the outer insulation from the cable in accordance with the mark made on the wall (refer to Figure 65).
2. Attach the infrastructure adapter to the wall using one of the following methods:
   - **For flat walls:** Use four (4) 6 mm anchors to attach the infrastructure adapter to the wall. To enable leveling, do not tighten completely.
   - **For rounded walls:**
     a. Place the infrastructure adapter on the threaded rods.
     b. Place a spring washer, a regular washer, and a nut over each threaded rod. To enable leveling, do not tighten completely.

Note: *If the cables enter the infrastructure adapter from behind, thread the cables through the removed punch-out before attaching the infrastructure adapter to the wall.*

3. Check that the infrastructure adapter is level (Figure 75).

Figure 75: Leveling the Infrastructure Adapter

4. If necessary, straighten the infrastructure adapter by hand so that it is level.
5. Tighten the anchors/nuts.

6.2.4 Wiring the Infrastructure Adapter

Warning: *Before wiring the infrastructure adapter verify that the power cable at the main power cabinet is not connected to the RCB.*

To wire the infrastructure adapter:

1. Thread the cables through the removed punch-outs.

Note: *If the cables enter the infrastructure adapter from behind, the cables should already be in place.*

2. Bring the cable to the fast connector.
3. Use zip ties to attach the cable to the back of the infrastructure adapter.

Figure 76 displays the fully wired Wall CS with the cables coming from the top of the Wall CS.

Figure 76: Cables Wired from Top of Wall Bracket

Figure 77 displays the fully wired Wall CS with the cables coming from the bottom of the Wall CS.

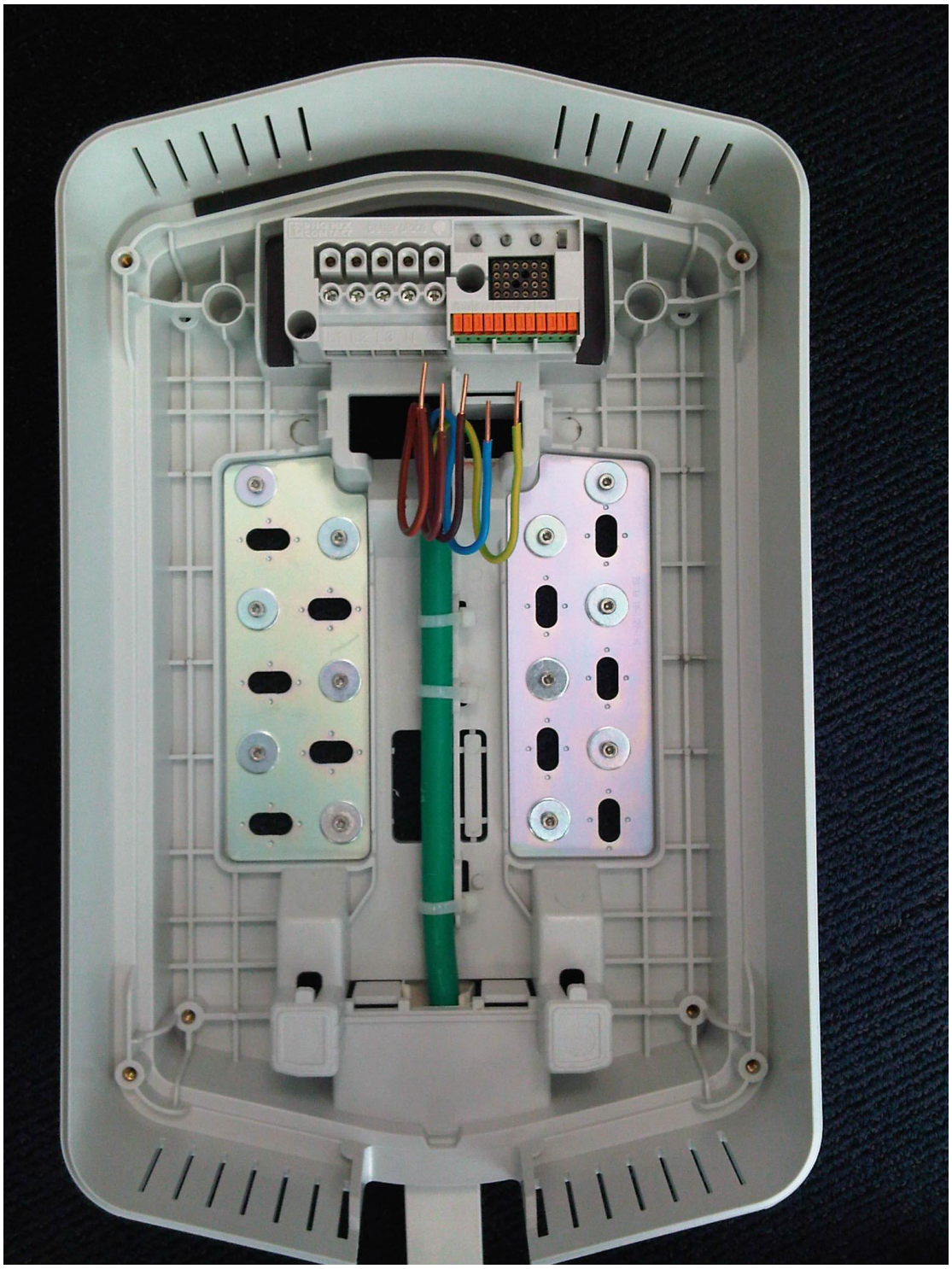


Figure 77: Cables Wired from Bottom of Wall Bracket

Figure 78 displays the fully wired Wall CS with the cables coming from behind the Wall CS.

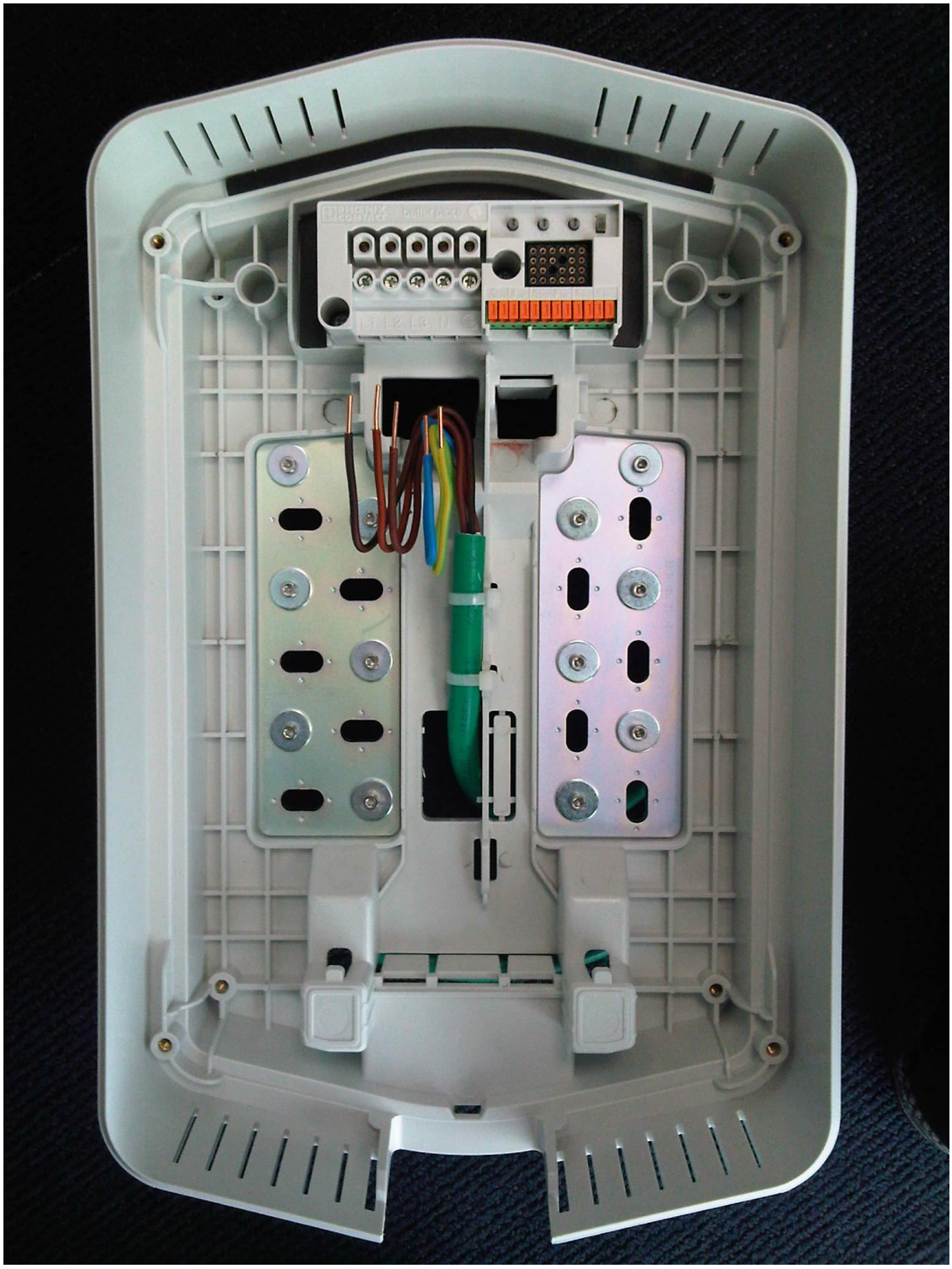


Figure 78: Cables Wired from Middle of Wall Bracket

6.2.5 Wiring the Fast Connector

The site is now wired with the following cables:

- Power (according to the requirements in *Single Socket Electricity Requirements* on page 26)
- Ground (according to *Ground Connection Requirements* on page 25)

Note: *Single socket and double socket Wall CSs are class I devices which require a PE connection. You must follow all local regulations when making this connection.*

- Communication (according to *Communication Requirements* on page 25)

Note: *For instructions on wiring a fast connector at a site with more than one single socket Wall CS, see* Wiring the Fast Connector *on page 36. Note that there may be minor differences between the single socket Wall CS and the instructions referred to above.*

To wire the power cable to the fast connector:

1. Route the power cable through the left conduit in the infrastructure adapter.
2. Strip 14 mm of insulation from each strand of the power cable.
3. Bend the strands of the power cable into an ‘S’ configuration to provide flexibility and spare wire for the future, if necessary.
4. Zip tie the power cable to the middle bridge.

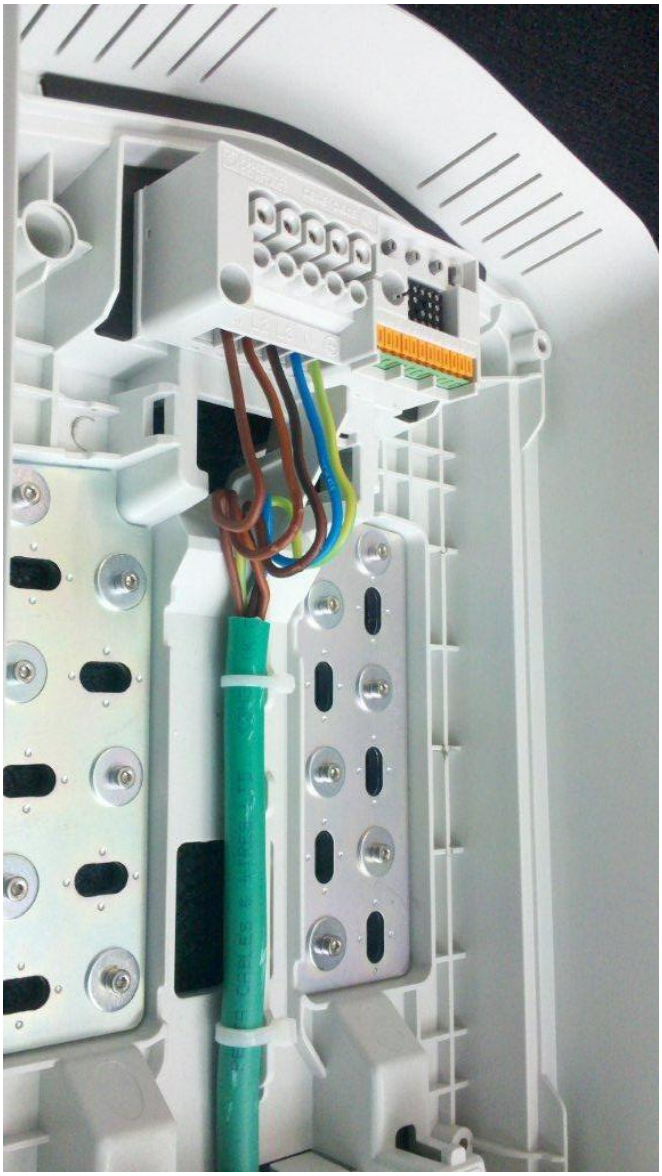


Figure 79: Power Cable Strands in 'S' Configuration

5. Connect the power cable wires to the fast connector as follows:
   - Three (3) live wires (L) to the three leftmost terminals.

Note: *The single socket Wall CS uses single phase power. Therefore, only one of the three live wires is actually carrying electricity. This wire must be connected to the leftmost terminal (L1) on the fast connector.*

   - One (1) neutral wire (N) to the fourth terminal from the left.
   - One (1) ground wire (⏚) to the rightmost terminal.

To wire the communication cable to the fast connector:

1. Route the communication cable through conduit on the right side in the infrastructure adapter.
2. Connect the communication cable wires to the fast connector by inserting the end of the communication cable into the RS-485 IN slots of the fast connector.
3. Zip tie the communication cable to the middle bridge.

4. Configure the rotary dials (Figure 48) in the Wall CS as follows:
   a. Turn the rotary dial on the far left, to the circuit number of the circuit to which the Wall CS is connected.
   b. Turn the two dials on the right to the Wall CS number.
5. Set the LAST/ELSE switch to **LAST**.

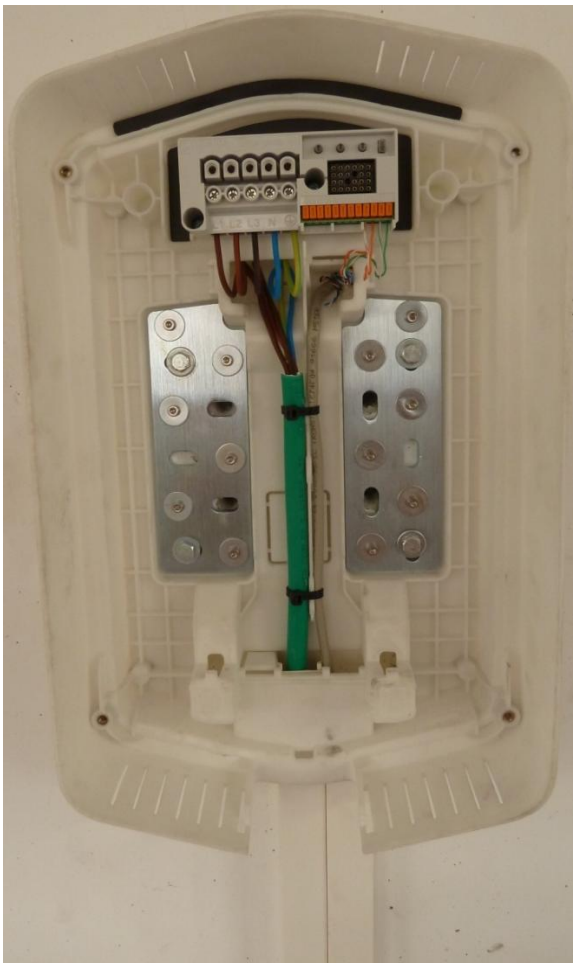


Figure 80: Power and Communication Cables Connected to the Fast Connector

Note: *The communication cable runs in a conduit separate from the power cable.*

6.2.6 Testing the Wall CS Communication Circuit

Test the Wall CS's communication circuit. For information on testing the Wall CS's communication circuit, see *Testing the CS Communication Circuit* on page 43.

6.2.7 Assembling the Wall CS

If you need to replace the cable, see *Replacing Single Socket* Wall CS Cables on page 107.

To assemble the Wall CS:

1. Attach the Wall CS to the infrastructure adapter.

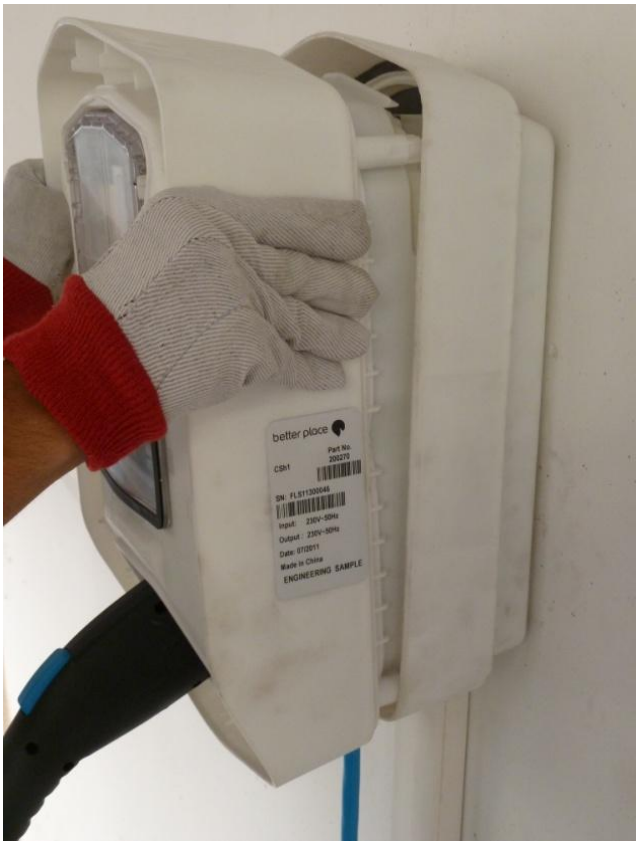


Figure 81: Attaching the Wall CS to the Infrastructure Adapter

Note: *To avoid damaging or scratching the cable's electric car side interface, store the interface in the cable holster or somewhere it cannot be damaged.*

2. Tighten the four recessed screws in the corners of the Wall CS. The recessed screws are marked with arrows (Figure 83).

Figure 82: Tighten Single Socket Wall CS Screws

Figure 83: Recessed Screw

3. Ensure that the CS cable does not reach the ground. If it does, fix the installation.
4. Remove the backing from the service label.
5. Affix the label to the inside of the Wall CS cover.
6. Using the P-Touch printer, print the GID of the Wall CS on the other label.

Note: *For information on printing with the P-Touch Printer, refer to* Configuring P-Touch Printer *on page 105.*

7. Remove the backing from the GID label.
8. Affix the GID label to the inside of the Wall CS cover on top of the service label so that the GID is visible from the outside of the Wall CS cover.
9. Remove the fixed cable from the socket.
10. Ensure that the pins at the bottom of the Wall CS cover are fully retracted.
11. Insert the top of the Wall CS cover so that the plastic pins sit in the slots at the top of the Wall CS.
12. Push the bottom of the Wall CS cover until it mates properly with the Wall CS.
13. Open the screws on the bottom of the Wall CS cover, locking the cover into place.

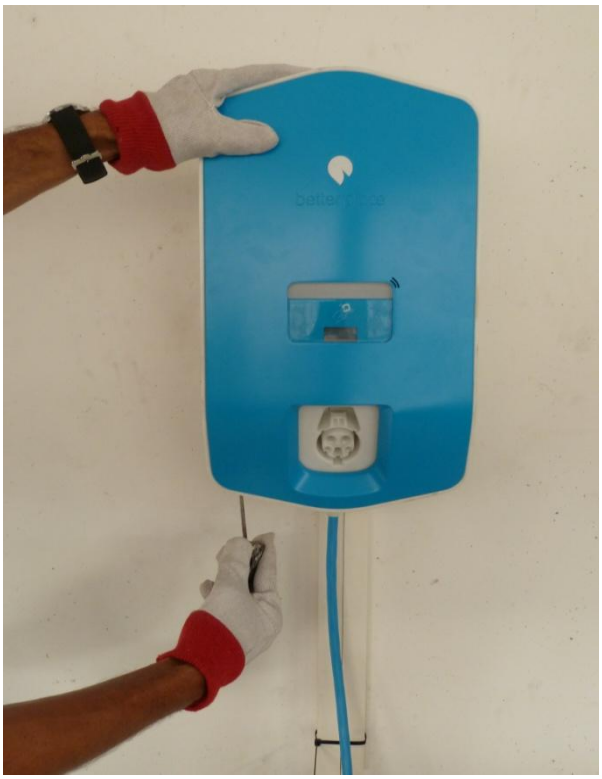


Figure 84: Lock Wall CS Cover in Place

14. Place the fixed cable in the socket.
15. Enter the site information (topology site (panel, circuit, add-ons, and remarks) in the information label located on the left side of the infrastructure adapter.

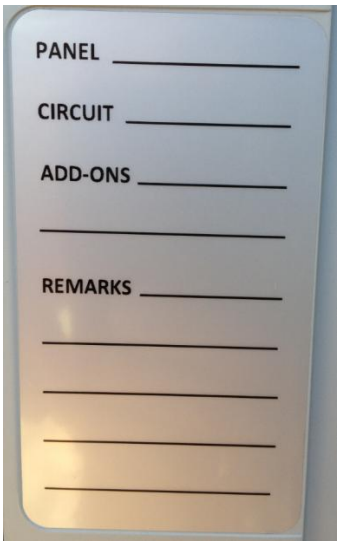


Figure 85: Information Label

Figure 86: Installed Single Socket Wall CS

Note: *If installing a 4.5 m cable on an H1 CS, see the midway hook installation instructions in the* CS Grid Accessories *manual.*

CHAPTER 7 INSTALLING THE COMMUNICATION CABINET

When four (4) or more CSs are installed at a site, communication between the CSs and the OC is implemented via an LCC and a communication cabinet must be installed at the site. This chapter describes how to install the communication cabinet.

Note: *The type of cabinet installed at the site is determined by local regulations and requirements and must be installed according to manufacturer's instructions. This procedure is provided as an example only.*

To install the communication cabinet:

1. Measure and mark the cabinet location according to plan and cabinet specifications.

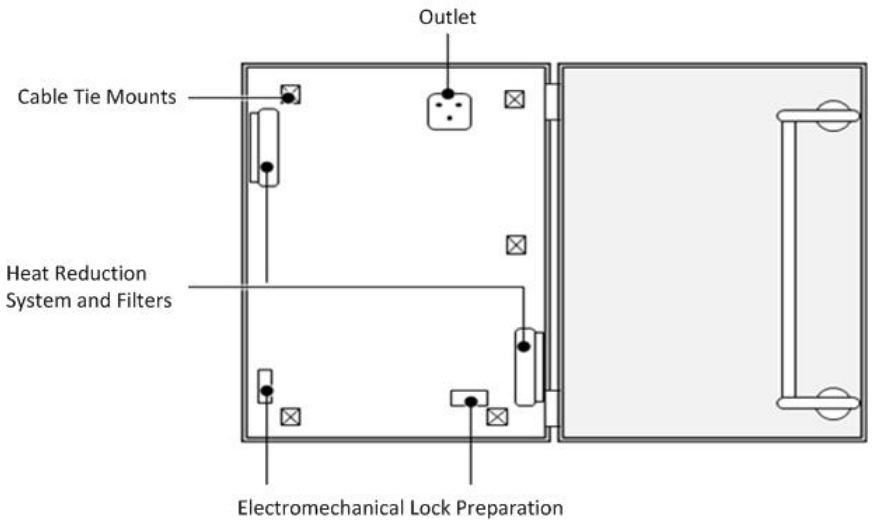


Figure 87: Communication Cabinet (Example)

2. Using a bubble level, confirm that the cabinet is level.
3. Install the cabinet components according to the manufacturer's instructions and the local cabinet's plan.

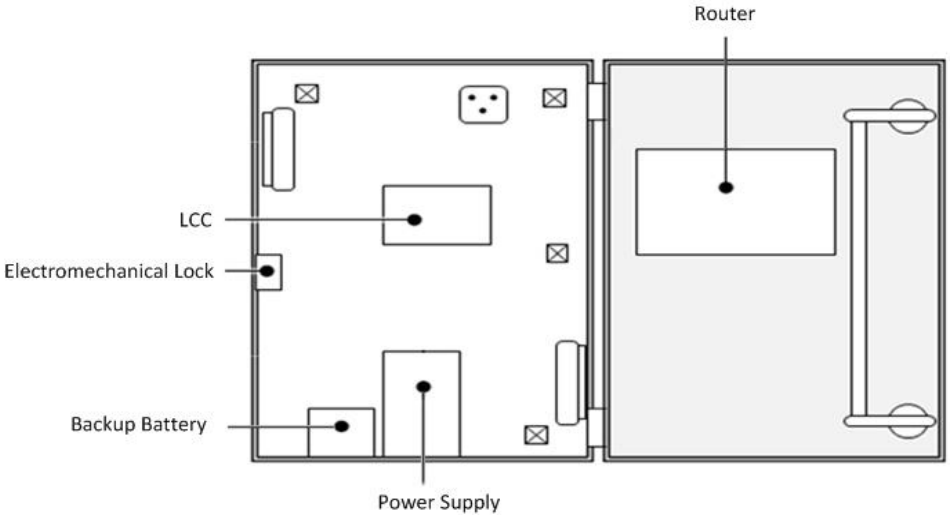


Figure 88: Communication Cabinet Components (Example)

4. Connect the wires to the communication cabinet.

Figure 89: Communication Cabinet Wiring

5. Depending on your installation configuration, connect either an external antenna or a landline to the telecom panel.

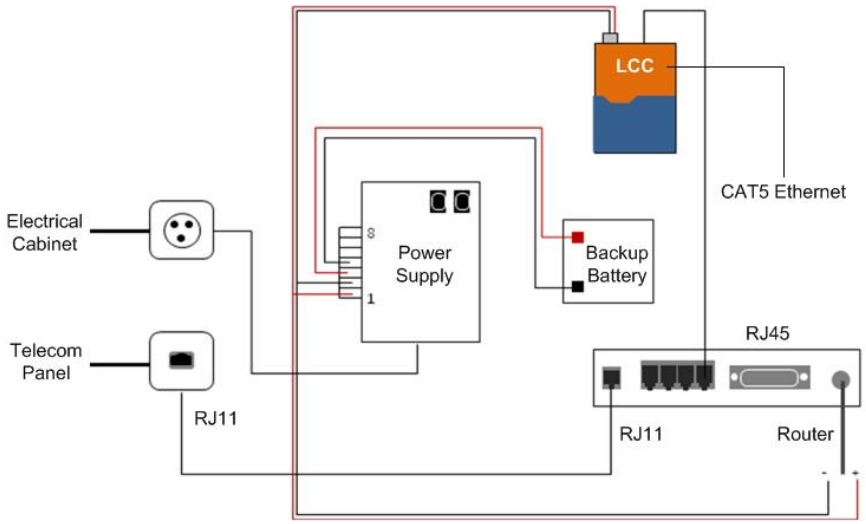


Figure 90: Communication Cabinet Connections (Example)

6. Turn on the power and notify the OC to activate communication.

CHAPTER 8 ACTIVATING THE WALL CHARGE SPOT

This chapter describes how to activate each Wall CS.

Note: *Identifying and activating SIM cards on the provider's side must be performed prior to the Wall CS installation, since a malfunction in the carrier's systems can delay Wall CS activation.*

To activate the Wall CS:

1. Confirm that the site identifiers are correct. Verify that:
   - The serial number that appears on the Wall CS backbone and fast connector match.
   - The GID number corresponds to the Wall CS/fast connector serial number.
   - For Wall CS-OTAs: The SIM number installed in the Wall CS is correct.
   - For Wall CSs communicating via LCC: The SIM number in the router is correct.

   See Inspecting the Package Components on page 15.
2. Notify the OC that the Wall CSs are installed and ready for provisioning, mutual ATP, and activation. If your site is using an LCC for communication, provisioning is done on the router and the LCC.
   - For Wall CS-OTAs: The OC identifies and activates the SIM cards installed in the Wall CSs.
   - For sites with an LCC: The OC identifies and activates the SIM card on the edge router only (unless a landline is used).

   The OC performs tests to confirm communication.
3. Turn on the power to the Wall CS.

Note: *Do not leave the installation site until the OC completes all communication tests. Testing Wall CSs requires assistance and cooperation from on-site personnel.*

APPENDIX A TECHNICAL SPECIFICATIONS

This appendix describes the Wall CS's technical specifications.

Table 14: Double Socket Wall CS Technical Specifications

Feature	Description	Comments
General		
Input Voltage	230V/400V ~	
Input Frequency	50 Hz	
Input Current	34A	Maximum current.
IEC 61851-1 Mode	Mode 3	
Charging Power	3.7kW (230V~ 16A 50Hz)	1-Phase.
Maximum Charging Power per Socket Outlet	11kW (230/400V~16A 50Hz)	3-Phase.
Maximum Number of Socket Outlets	2	
Socket-outlet Type	IEC-62196-2 Type II	
Socket-Outlet Retaining	Plug lock Mechanism	
Number of Charging Cables (version-specific)	2	
Charging Cable Length	230 cm	
Charging Cable Connector	IEC-62196-2 Type I	Must comply with SAE J1772.
Electrical		
Residual Current Device	30mA Residual	Type A.
Circuit Breakers	16A	Curve C.
Classification	Class I	
Electrical Energy Meter	Class I	Meter order option.
Environmental		
IP Level	IP55	
Operating Temperatures	-25°C to +40°C	
User Interface		
LEDs	White and Red	
Audio	Two Tones	
RFID	ISO-14443	Type A/B.
Communication		
Land-line	RS485 (D+, D-, GND)	1.5KV isolation.
Wireless	GSM/GPRS Class 10	OTA order option.

Feature	Description	Comments
Size		
Wall Mount	557 x 214 x 279 mm	[W x L x D]
Weight		
Without Charging Cables	10 Kg	
With Charging Cables	11 Kg	
Compliance		
General		
	IEC 61851 – 1 / 22	
	IEC 62196 – 1 / 2	
Safety		
	IEC 60950 – 1 / 22	
	IEC 60439 – 1 / 3	
EMC		
	EN 61000-6-1	
	EN 61000-6-3	
	EN 301489 – 1 / 3	
	EN 301489-7	Relevant to units equipped with GSM only.
R&TTE		
	EN 300330-2	
	EN 301511	Relevant to units equipped with GSM only.

Table 15: Single Socket Wall CS Technical Specifications

Feature	Description	Comments
General		
Input Voltage	230V~	
Input Frequency	50 Hz	
Input Current	18A	Maximal current.
Output Charging Power	3.7KW	230V ~ /16A.
Electric car Connector Type	IEC 62196-2 Type I	SAE J1772.
	IEC 61851-1 Mode	Mode 3.
Electric car Connector Retaining	Built-in Connector retaining	Lockable retaining device.
Electrical		
Residual Current Device	Not included	Requires external upstream installation of 30mA Type A **dedicated** RCD.
Circuit Breaker	Not included	Requires external upstream installation of 20A curve C **dedicated** MCB.
Classification	Class I	
Electrical Energy Meter	Class I Accuracy	Certified by KEMA.
Environmental		
IP Level	IP55	
Operating Temperatures	-25°C to +40°C	
User Interface		
LEDs	White and Red	
Audio	Two Tones	
RFID	ISO-14443	Type A/B.
Communication		
Land-line	Primary Isolated RS485	1.5KV isolation.
	Auxiliary RS485 DC Output Supply	Non-isolated. 5V / 1A.
Wireless	GSM/GPRS Class 10	Cinterion MC55i module.
Mechanical		
Wall Mount [W x L x D]	270 x 450 x 205 mm	
Pole Mount [W x L x D]	270 x 450 x 272 mm	

Feature	Description	Comments
Weight		
Without Charging Cables	10 Kg	
With Charging Cables	11 Kg	
Compliance		
General		
	IEC 61851 – 1 / 22	
	IEC 62196 – 1 / 2	
Safety		
	IEC 60950 – 1 / 22	
	IEC 60439 – 1 / 3	
EMC		
	EN 61000-6-1	
	EN 61000-6-3	
	EN 301489 – 1 / 3	
	EN 301489-7	
R&TTE		
	EN 300330-2	
	EN 301511	

APPENDIX B PACKAGE COMPONENTS

This appendix lists the double socket Wall CS package components.

Table 16: Double Socket Wall CS Package Components

Level	Part Number	Description	Qty
Backbone			
	200140	WALL MOUNT FLOAT, W/GSM, BACKBONE, CS	1
	200145	WALL MOUNT FLOAT, W/MTR, BACKBONE, CS	1
	200144	WALL MOUNT FLOAT, W/MTR&GSM, BACKBONE, CS	1
Covers			
	200167	SPARE, TOP CAP, V1 WM CS	1
	200165	SPARE, FRONT SHELL, V1 WM CS	1
	200168	SPARE, BOTTOM CAPS, V1 WM CS	1
	200222	SPARE, SCREW, TOP AND BOTTOM CAPS, WM	1
RFID			
	200325	SPARE, RFID ANTENNA WM, CS	1
	200323	SPARE, RFID READER, CS	1
GSM			
	200090	SPARE, TOPASSY, GSM BOARD, CS	1
	200221	SPARE, NUT, M12, SECURE METAL SHELL	1
Socket			
	200316	SPARE, SOCKET MODULE WM, CS	1
	200317	SPARE, SOCKET MODULE WMF, CS	1
AC Fan			
	200320	SPARE, AC FAN, WM W/METER, CS	1
	200321	SPARE, AC FAN, WM NON METER, CS	1
DC Fan			
	200322	SPARE, DC FAN, WM, CS	1
Power Supply			
	200313	SPARE, AC POWER SUPPLY, CS	1
Main Board			
	200314	SPARE, MAIN BOARD, P2 VER, CS	1
	200326	SPARE, FAST CONNECTOR FEMALE, CS	1

Level	Part Number	Description	Qty
Thermal Sensor			
	200329	SPARE, THERMAL SENSOR, CS	1
Label			
	200035	BACK SHELL WITH LABEL, WMF, ISRAEL	1
	200036	BACK SHELL WITH LABEL, WMF, EUROPE	1
	200183	SPARE, SET OF REFLECTOR LABELS, WM CS	1
	200185	SPARE, SET OF USER LABELS, IL, WM CS	1
	200188	SPARE, SET OF USER LABELS, USA, WM CS	1
	200190	SPARE, SET OF USER LABELS, DK, WM CS	1
	200192	SPARE, SET OF USER LABELS, AUS, WM CS	1
	200251	OPN, BACK SHELL WITH LABEL, WMH, CS IL	1
	200252	OPN, BACK SHELL WITH LABEL, WMH, CS EU	1
MCB			
	200330	OPN, SPARE, MCB, 1x6A, DIN, CS	1
	200331	OPN, SPARE, MCB, 3x16A, DIN, CS	1
	200332	OPN, SPARE, RCCB, 40A/30mA, TYPE A, DIN, CS	1
Infrastructure			
	200164	OPN, SPARE, INFRASTRUCTUR, SET SCREWS, WM CS	1
	200328	OPN, SPARE, FAST CONNECTOR, MALE, WM, CS	1
	200012	OPN, WALL MOUNT FLOATING, BACKBONE, CS	1
Screws			
	200180	OPN, SPARE, FRONT TO BACK SHELLS, SCREWS, WM CS	1
	200169	OPN, SPARE, MOUNTING SCREWS, WM CS	1
	010-0067-01	SPARE PARTS, FULL LIST, CS	

APPENDIX C SAMPLE SITE DEPLOYMENT

This appendix displays a sample site deployment. The figures are for illustrative purposes only and do not necessarily represent Better Place recommendations.

C.1 DOUBLE SOCKET WALL CS SAMPLE DEPLOYMENT

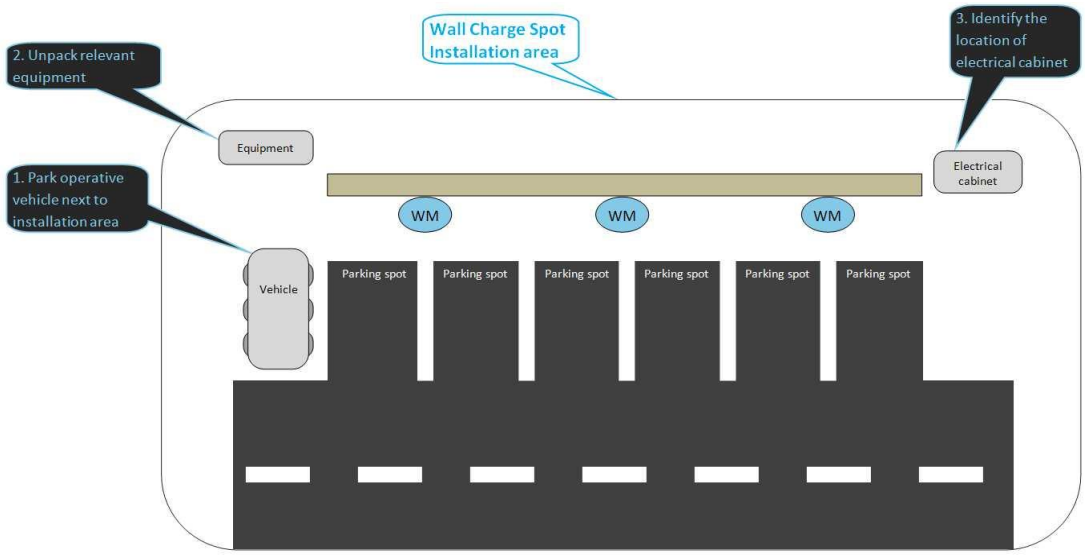


Figure 91: Sample Site Layout

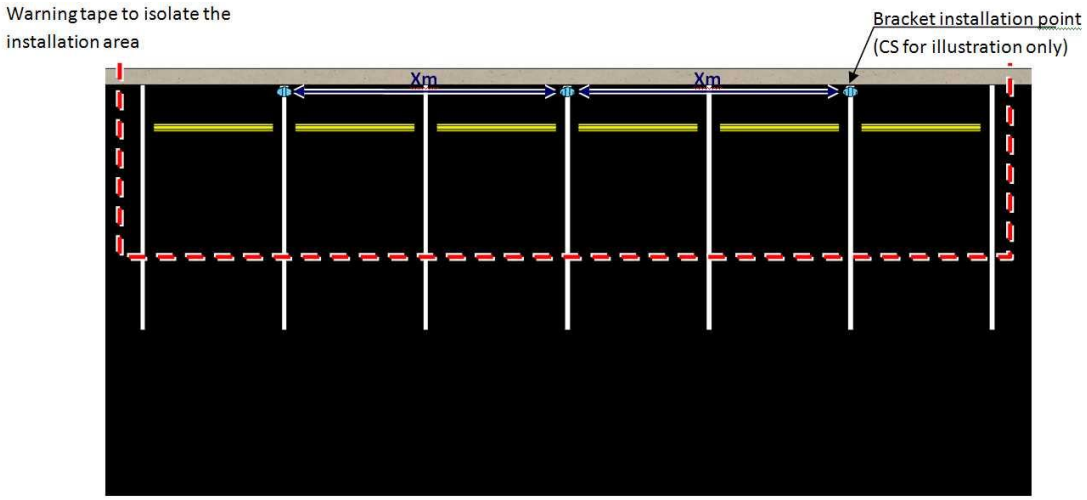


Figure 92: Isolate the Installation Area

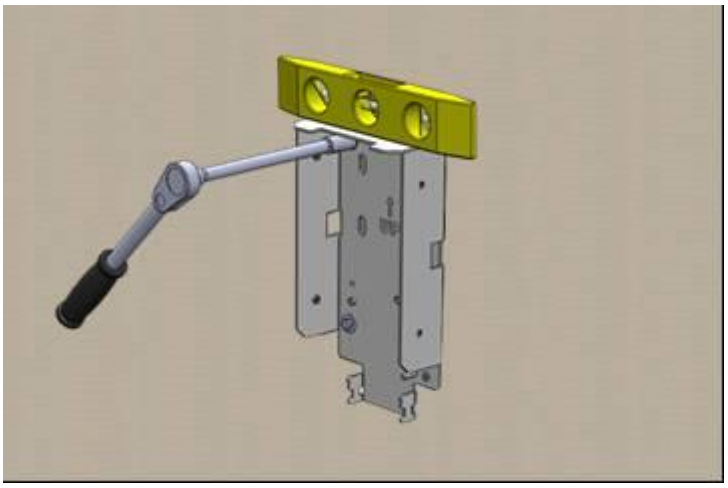


Figure 93: Mount and Level the Wall Bracket

Figure 94: Mount the Threaded Rods

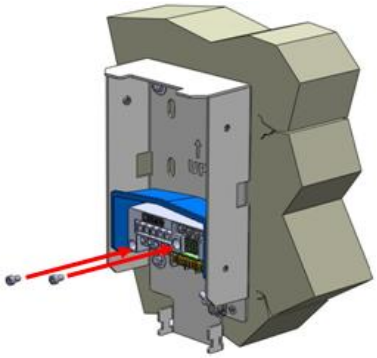


Figure 95: Attach the Fast Connector

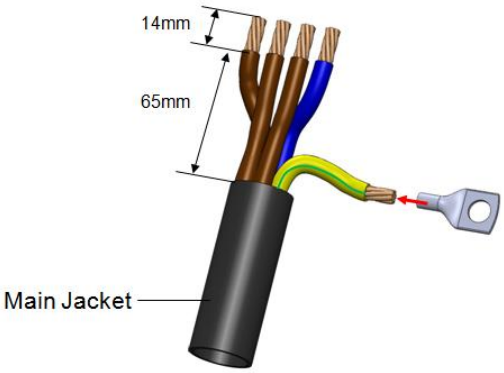


Figure 96: Power Cable Schematic

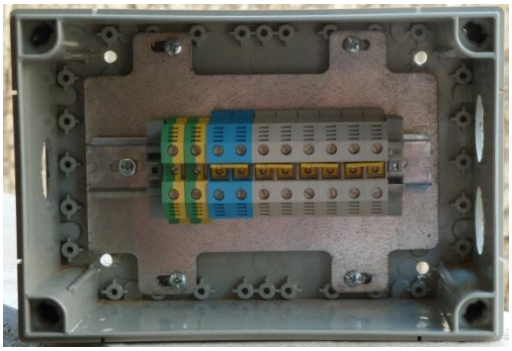


Figure 97: Junction Box

Figure 98: Install the Junction Box and Power Raceway

Figure 99: Install the Conduit and Bracket

Figure 100: Connect the Power and Ground Cables to the Fast Connector

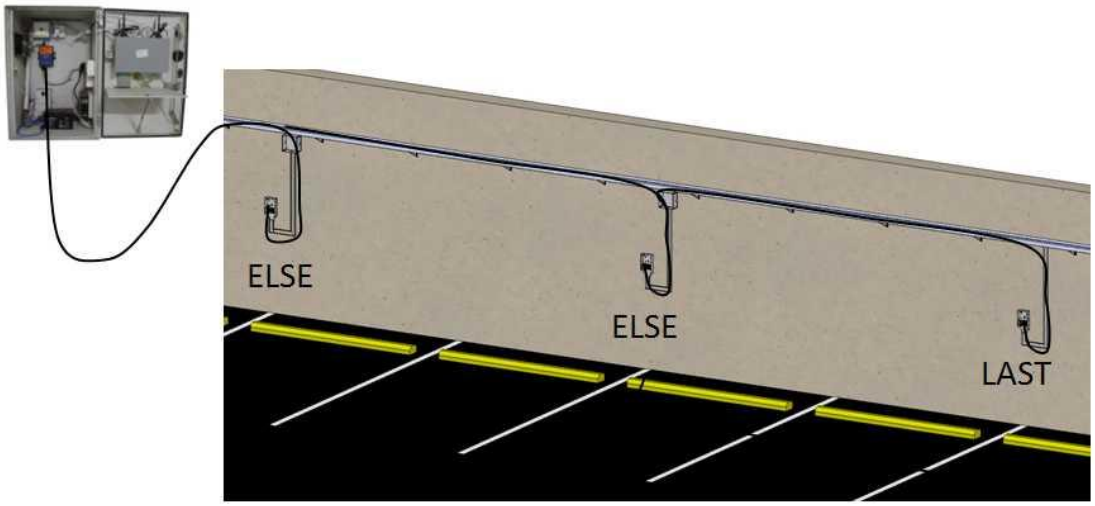


Figure 101: Communication Circuit Configuration

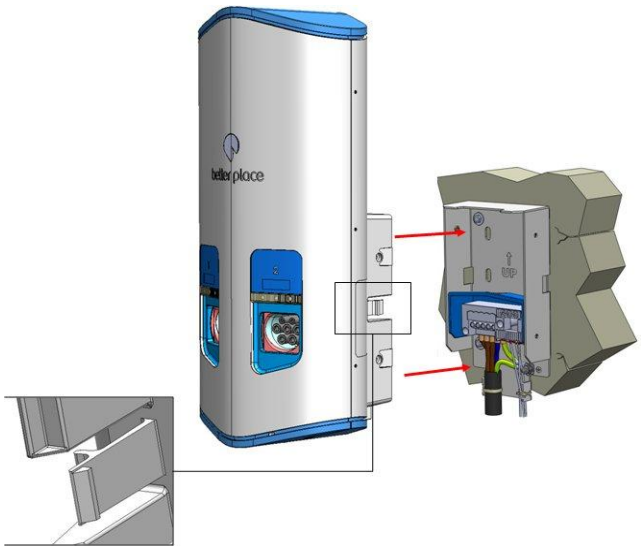


Figure 102: Snap the Wall CS into Place

Figure 103: Attach the ID Labels to the Wall CS

Figure 104: Wall CSs Installed

C.2 SINGLE SOCKET WALL CS INSTALLATION ON A WALL SAMPLE DEPLOYMENT

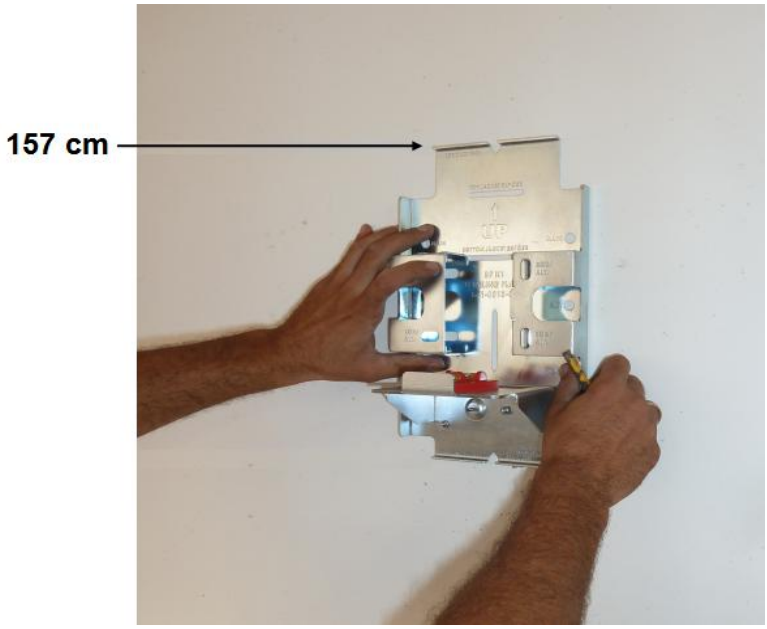


Figure 105: Level Plate Top Edge 157 cm from the Floor

Figure -106: Level the Infrastructure Adapter

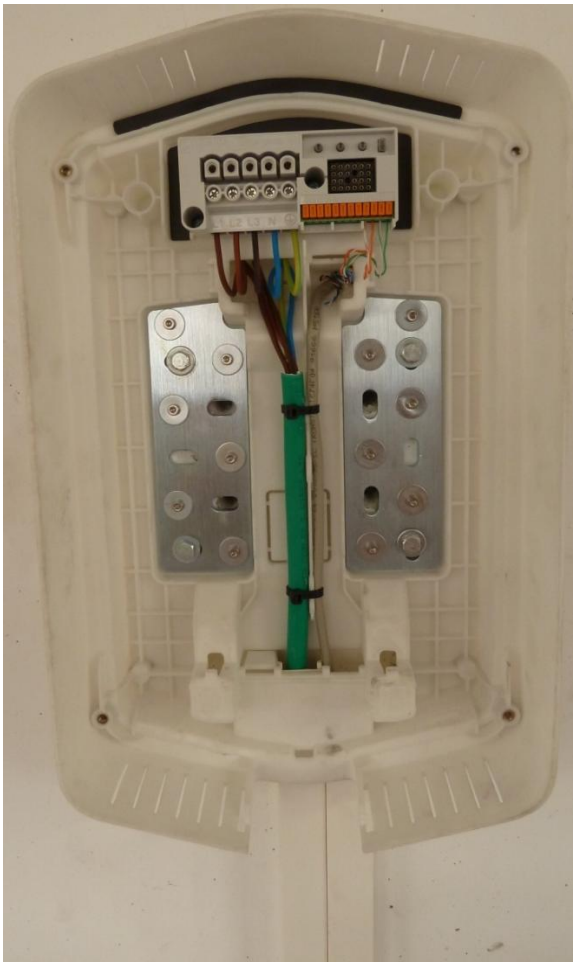


Figure 107: Connect the Power and Communication Cables to the Fast Connector

Figure 108: Attach the Wall CS to the Infrastructure Adapter

Figure 109: Installed Single Socket Wall CS

C.3 SINGLE SOCKET WALL CS INSTALLATION ON A POLE SAMPLE DEPLOYMENT

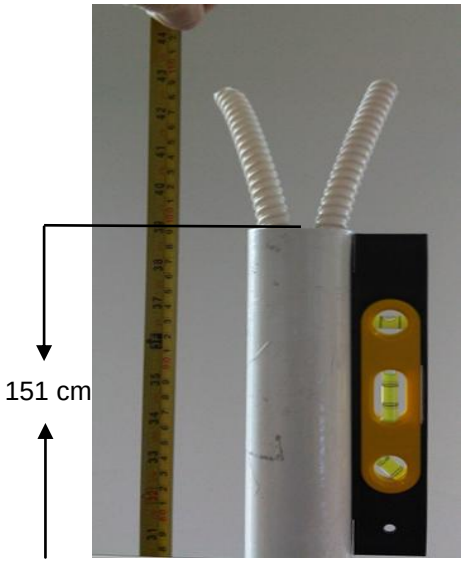


Figure 110: Level the Pole

Figure 111: Level the Infrastructure Adapter

Figure 112: Connect the Ground Cable

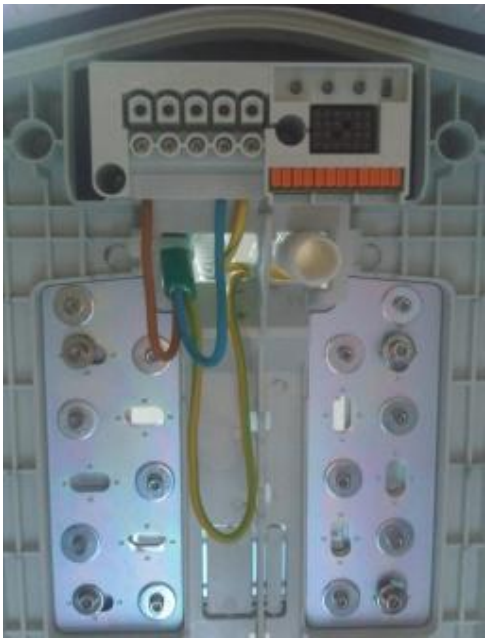


Figure 113: Wire the Fast Connector

Figure 114: Slide the Top Assembly Infrastructure Adapter on Pole

Figure 115: Installed Single Socket Wall CS on a Pole

APPENDIX D INSTALLING A SINGLE SOCKET WALL CHARGE SPOT ON A POLE

This appendix provides instructions for installing a single socket Wall CS on a pole.

D.1 PRE INSTALLATION

The following provides pre-installation information.

D.1.1 Verifying Required Parts Supplied by Better Place

Table 17: Single Socket Wall CS (Pole Mounted) Parts Supplied by Better Place

#	Item Number	Description	Picture	Quantity
1	200371	OPN, PM, HOME H1, infrastructure adaptor		1
1.1	TOPASSY, WM, HOME H1, infrastructure adaptor			1
1.2	Top Assembly Infrastructure adapter		 	1

#	Item Number	Description	Picture	Quantity
1.3	Pole Bracket Adapter (including GND cable and drilling screw)			1

D.1.2 Inspecting the Single Socket Wall CS (Pole Mounted) Parts

Verify the following components (supplied in a nylon bag):

- Four (4) Allen screw are attached to the back of the pole adapter.
- One (1) GND cable is attached on top of the pole adapter.
- One (1) drilling screw in a nylon bag is attached on top of the pole adapter.

Verify the following components (located on the bracket ground studs):

- One (1) nut and one (1) washer are located on each of the three (3) bracket ground studs.

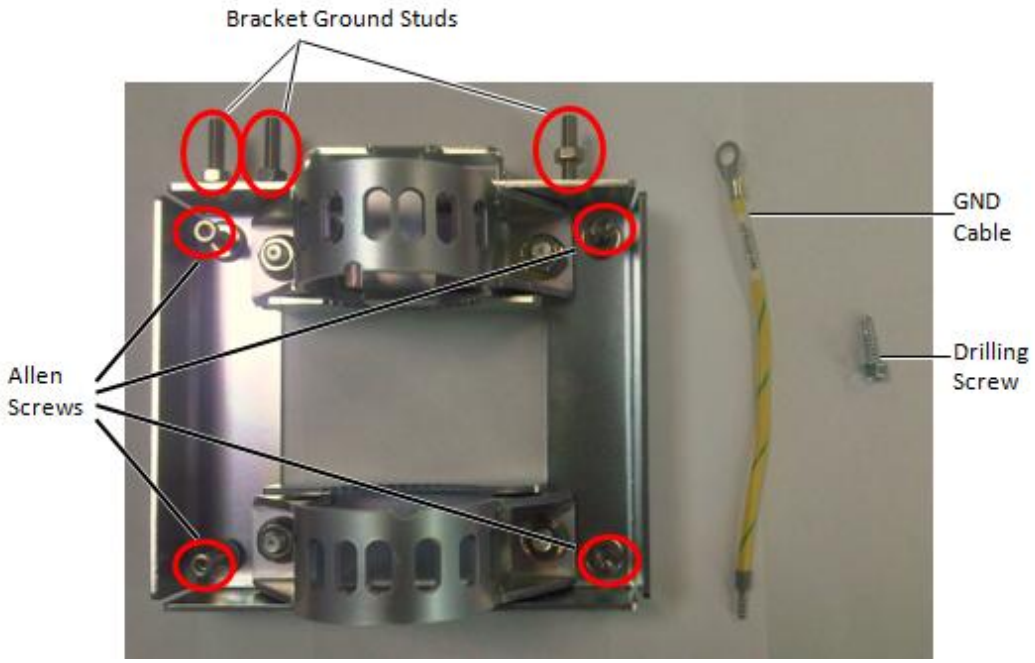


Figure 116: Single Socket Wall CS (Pole Mounted) Parts

D.1.3 Verifying Required Parts Supplied by Installer

The installer should provide a pole infrastructure to support:

- Manhole installation.
- Low wall\fence divider installation.

The pole bracket adapter should only be installed on a 2“/60.3mm pole. (The numbers refer to the external diameter.)

Note: *The bracket design allows for an external diameter tolerance in the range of 60mm-60.8mm in the assembly of the pole. Do not use diameters outside this range since the grip of the brackets on pole will be weakened and the parts will be damaged.*

D.2 INSTALLATION

The following provides installation instructions.

D.2.1 Inspecting the Pole

1. Verify that the pole is leveled.
2. Verify that the pole is at a height of 151 cm from the end of the pole to the ground.
3. Route a conduit for the power cable.
4. Optionally, route a conduit for the communication cable.

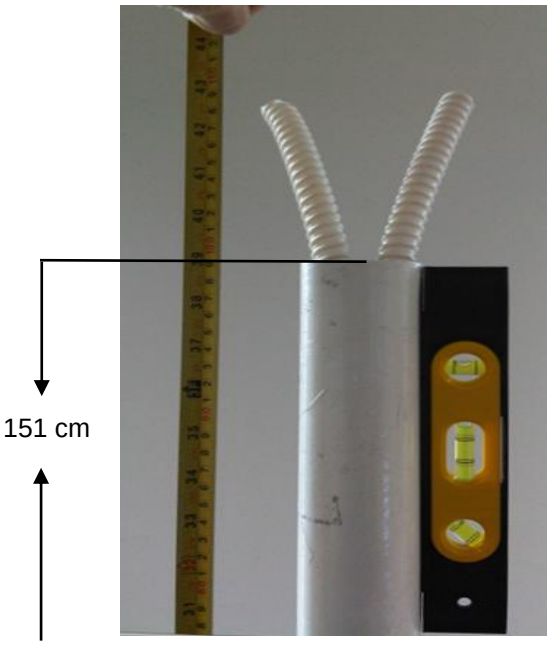


Figure 117: Level the Pole

D.2.2 Installing the Pole Bracket Adapter on a Pole

To install the pole bracket adapter on pole:

1. Remove the four (4) M4 nuts from the two (2) omega pole holders.

Figure 118: Remove the Four (4) M4 Nuts

Figure 119: The Omega Pole Holders Removed

2. Place the pole bracket adapter on top of the pole using the holder.

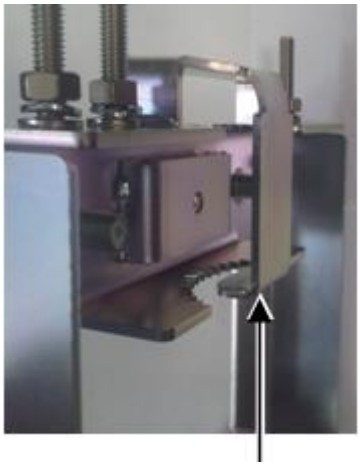


Figure 120: Bracket Adapter Holder

Figure 121: Bracket Adapter Holder on the Pole

3. Attach two (2) omega pole holders on top of the bracket omega studs.
4. Screw (but do not tighten) four (4) M4 nuts on the two (2) omega pole studs.
5. Adjust the bracket orientation according to the site plan.
6. Tighten the four (4) M4 nuts.

Figure 122: Attach the Omega Pole Holders

7. Optionally, drill the supplied drilling screw through the bracket and wall to ensure that the bracket cannot rotate.

Note: *The adaptor holder ensures that the drilling screw cannot damage the cable.*

Figure 123: Drilling Screw

Note: *Use only the supplied drilling screw.*

D.2.3 Placing and Leveling the Pole Bracket Adapter

To place and level the pole bracket adapter:

1. Position the infrastructure adapter on the pole mount bracket. Make sure it is leveled with the four (4) main holes.
2. Screw (but do not tighten) the four (4) M4 Allen screws and washers.

Figure 124: Infrastructure Adapter on the Pole Mount Bracket

3. Level the infrastructure adapter.

Figure 125: Level the Infrastructure Adapter

4. Tighten the four (4) M4 Allen screws.

D.2.4 Routing the Cable

To route the cable:

1. Route the cable through the top entry in the infrastructure adapter.
2. Ensure that there is enough spare cable to route the GND cable back to the pole bracket.
3. Expose 20 cm from the jacket's power cable.

Note: *The total length of 20 cm is for the ground cable. The phase and neutral cables should be shorter (~12 cm).*

4. Zip tie the power cable jacket to the infrastructure adapter as shown in Figure 126.

Note: *Ensure that you zip tied the power cable jacket and not the wires.*

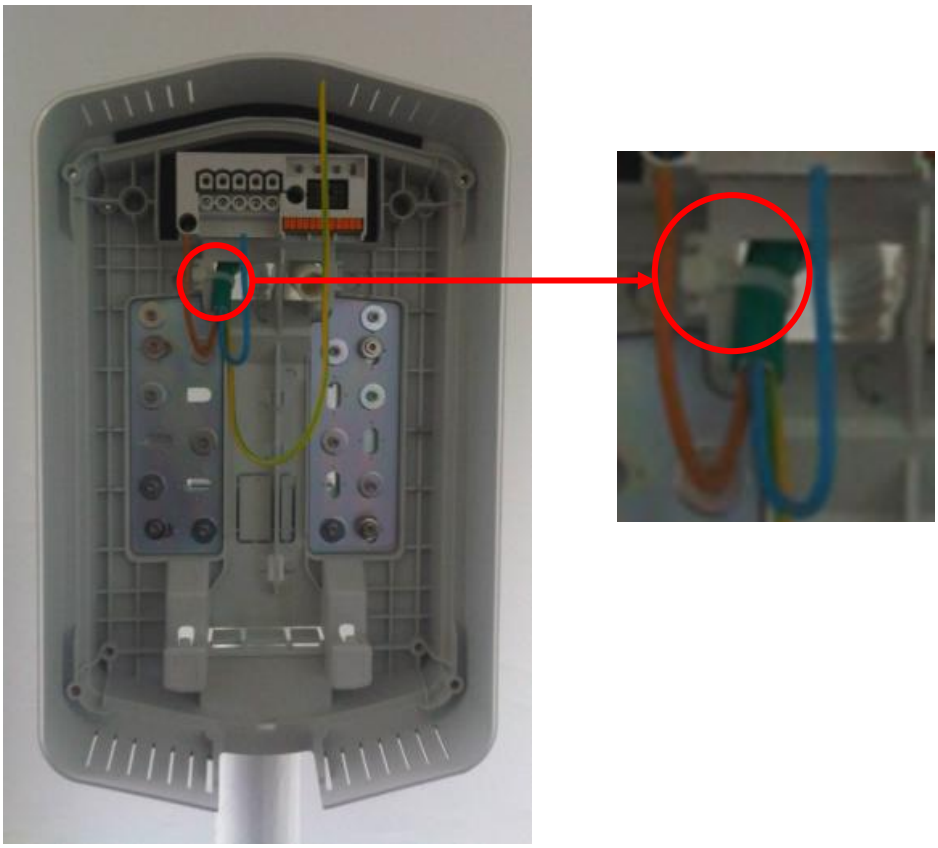


Figure 126: Zip Tie the Power Cable Jacket

D.2.5 Wiring the Ground

There are three ground studs in the bracket ground bus. The ground studs are connected as follows (Figure 127):

- Ground stud #1 – Connects the ground power cable
- Ground stud #2 or #3:
  - Connects the supplied ground cable that goes through bracket to the fast connector
  - Connects the pole clamp ground

Figure 127: Bracket Ground Bus Studs

D.2.5.1 Wiring the Ground Cable Side

To wire the ground cable side:

1. Route the ground wire (power cable) through the back of the infrastructure adapter to the bracket.
2. Connect the ground wire (power cable) to the bracket where you see the GND sign ⏚ and fasten it using a nut, washer, and spring washer.
3. Connect the supplied ground cable to the rightmost or leftmost bracket ground stud (cable nut side) and fasten it using a nut, washer, and spring washer.

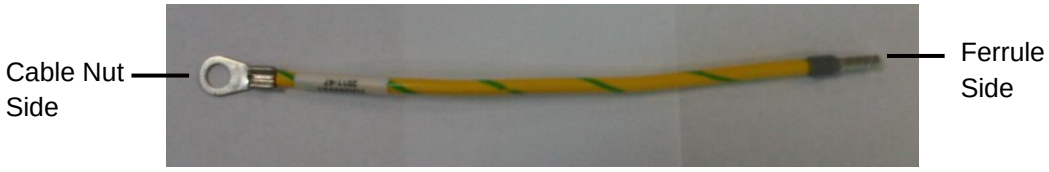


Figure 128: Supplied Ground Cable

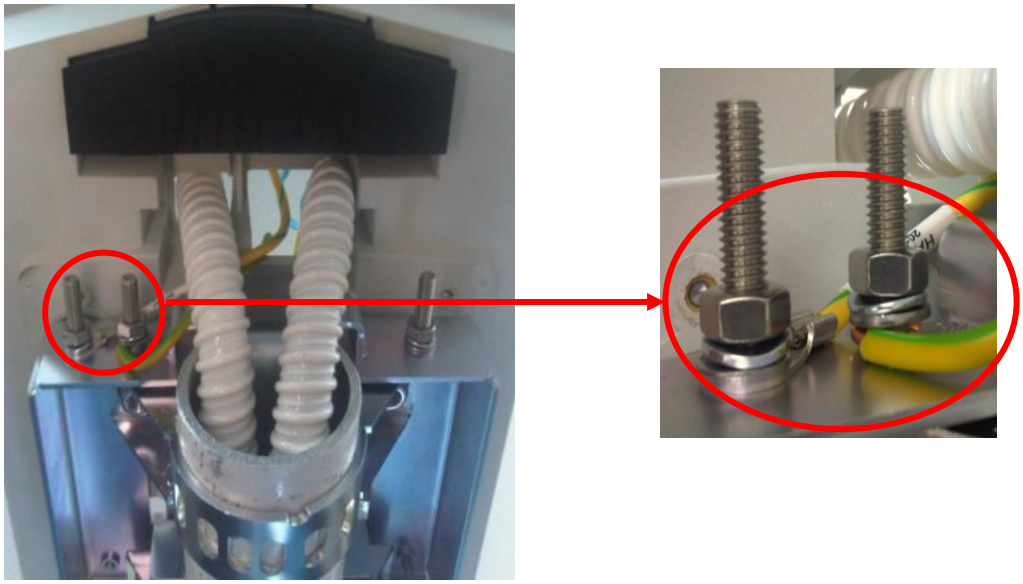


Figure 129: Connect the Ground Cable

D.2.5.2 Grounding the Pole

To ground the pole:

1. Connect the clamp to the pole.

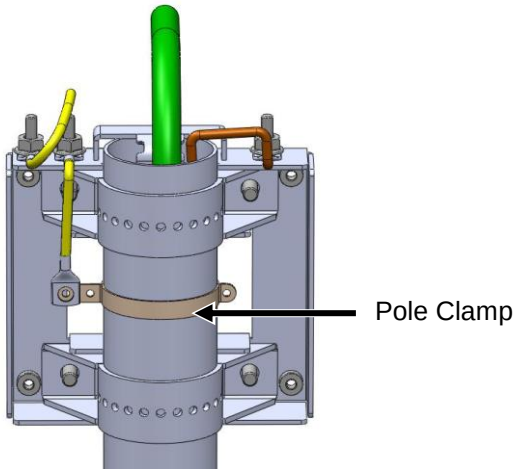


Figure 130: Connecting the Clamp to the Pole

2. Connect the ground pole clamp cable to the rightmost or leftmost bracket ground stud.

Note: *Figure 130 shows the ground pole clamp cable connected to the rightmost stud.*

D.2.6 Wiring the Fast Connector

To wire the fast connector:

1. Connect the supplied ground cable (ferrule side) to the GND slot on the fast connector.
2. Connect the phase wire L1 (power cable) to L1 on the fast connector.
3. Connect the neutral wire (power cable) to neutral on the fast connector.

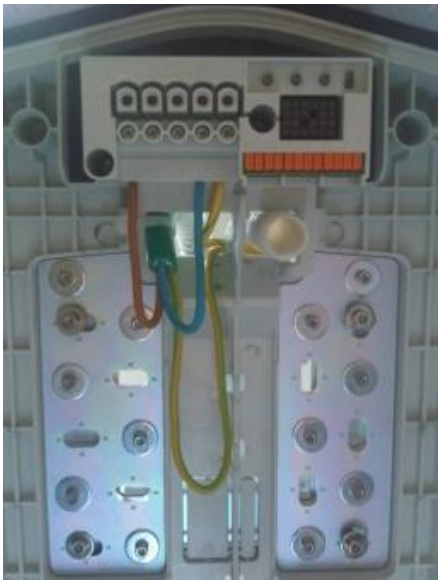


Figure 131: Wire the Fast Connector

D.2.7 Attaching the Top Assembly Infrastructure Adapter

To attach the top assembly infrastructure adapter:

1. Unscrew the two (2) 3 mm Allen screws at the bottom of the top assembly infrastructure adapter.

Figure 132: Bottom of the Top Assembly Infrastructure Adapter

2. Spread the two (2) foam pads at the bottom of the top assembly infrastructure adapter.

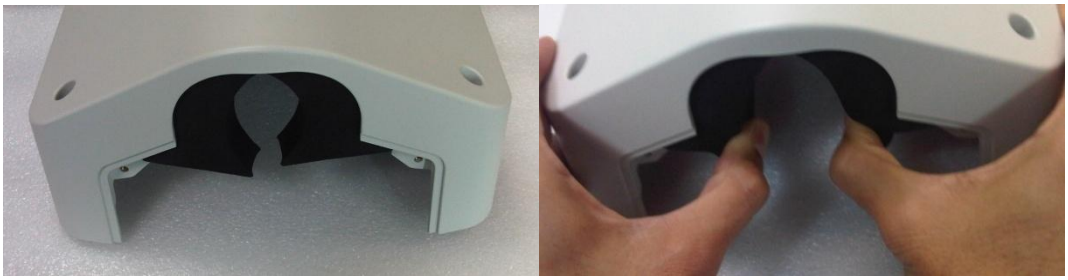


Figure 133: Spread the Foam

3. Slide the top assembly infrastructure adapter on top of the pole.

Figure 134: Slide the Top Assembly Infrastructure Adapter on Pole

Note: *It is difficult to slide the top assembly infrastructure adapter on top of the pole because of the foam pad's resistance.*

4. Position the top assembly infrastructure adapter so that it fits the infrastructure adapter.
5. Fasten the four (4) Allen screws on the back of the top assembly infrastructure adapter.

Note: *When tightening the screws, press the corresponding corner of the top assembly infrastructure adapter to the infrastructure adapter.*

Figure 135: Fasten the Screws on the Back of the Top Assembly Infrastructure Adapter

6. Fasten the two (2) 3 mm Allen screws on the bottom of the top assembly infrastructure adapter.

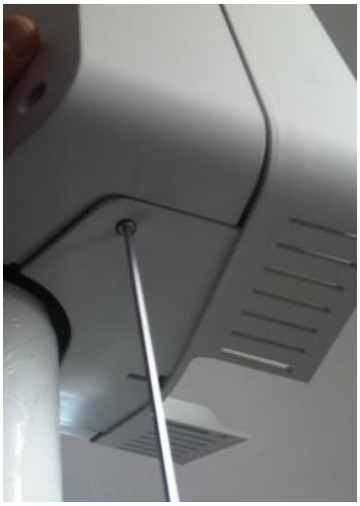


Figure 136: Fasten Screws on Bottom of Top Assembly Infrastructure Adapter

Figure 137: Single Socket Wall CS on a Pole

The infrastructure adapter is ready to be used to install the Single Socket Wall CS (see *Assembling the Wall* CS on page 62).

D.3 PHYSICAL DIMENSIONS

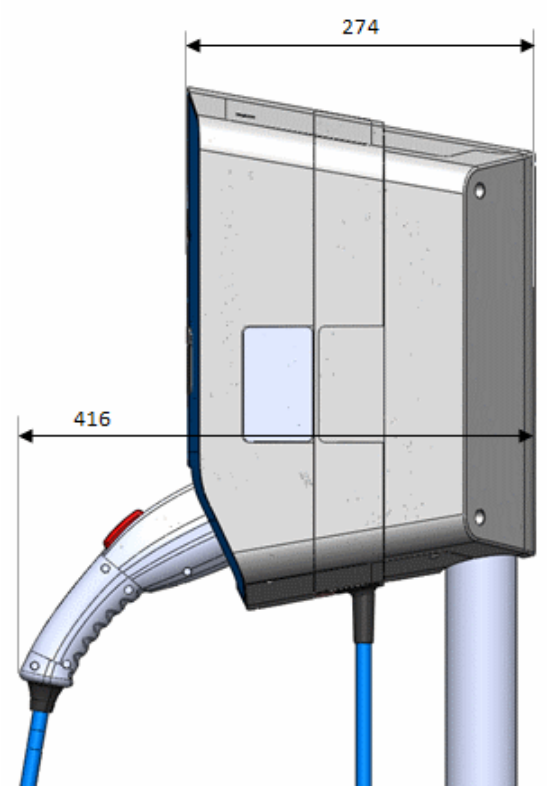


Figure 138: Physical Dimensions

APPENDIX E CONFIGURING P-TOUCH PRINTER

The P-Touch configuration is for Wall single and double socket CS installation. Configure the P-Touch accordingly. See Table 10 for the approved P-Touch printer.

To configure the P-Touch printer:

1. Press On/Off to turn on the device.
2. Define the label type:
   a. Press **Label Type**.
   b. Press **Home** or **End** until “NORMAL” is displayed.
   c. Press **New Block**.
3. Define the text size:
   a. Press **Format**.
   b. Press  until “GLB SIZE” is displayed.
   c. Press **Home** or **End** until the character size is 3mm.
   d. Press **New Block**.
4. Define the text width:
   a. Press **Format**.
   b.  until “GLB WIDE” is displayed.
   c. V1 CS ONLY - Press **Home** or **End** until the width is “NARROW”.
   d. H1 CS ONLY- Press **Home** or **End** until the width is “NORMAL”.
   e. Press **New Block**.
5. Define the NORMAL style for text:
   a. Press **Format**.
   b. Press  until “GLB STYL” is displayed.
   c. V1 CS ONLY - Press **Home** or **End** until the style is “NORMAL”.
   d. H1 CS ONLY- Press **Home** or **End** until the width is “BOLD”.
   e. Press **New Block**.
6. Define the LENGTH of the label:
   a. Press **Code**.
   b. Press **Length**.
   c. Press  until “LENGTH” is displayed.
   d. V1 CS ONLY - Press **Home** or **End** until the length is 36 mm.
   e. H1 CS ONLY - Press **Home** or **End** until the length is 48 mm.
   f. Press **New Block**.
7. Define the margin parameter:
   a. Press **Code**.
   b. Press **Length**.
   c. Press  until “MARGIN” is displayed.
   d. Press **Home** or **End** until the size is 2 mm.
   e. Press **New Block**.
8. Define the text alignment:
   a. Press **Format**.
   b. Press  until “ALIGN” is displayed.

c. Press **Home** or **End** until “CENTER” is displayed.
d. Press **New Block**.

9. Save the configuration to memory:

a. Press **Memory**.
b. Press **Home** or **End** until “STORE” is displayed.
c. Press **New Block**.
d. Press **Home** or **End** until the file number in which you want to store the format is displayed.
e. Press **New Block**.

10. Retrieve the configuration from memory:

a. Press **Memory**.
b. Press **Home** or **End** until “RECALL” is displayed.
c. Press **New Block**.
d. Press **Home** or **End** until the file number in which the format is stored is displayed.
e. Press **New Block**.

11. Print the GID label:

a. Retrieve the required configuration (step 10).
b. (V1 CS only) Press **New Block**. The display moves to the second line.
c. Enter the GID.
d. Press **Print** and follow the on-screen instructions.

The following is the label format (example): x.xxx.xxx.x.x.xx.x

APPENDIX F REPLACING SINGLE SOCKET WALL CS CABLES

This appendix provides instructions for replacing a single socket Wall CS cable.

F.1 PRE INSTALLATION

The following provides pre-installation information.

F.1.1 Verifying Required Parts Supplied by Better Place

Table 18: Single Socket Wall CS Cable Supplied by Better Place

#	Item Number	Description	Picture	Quantity
1	200401	OPN,POWER CABLE,2.5M,HOME,CS H1		1
2	200402	OPN,POWER CABLE,4.5M,HOME,CS H1		1

F.1.2 Inspecting the Cable Components

Inspect the package components cable accessories:

- Verify that the car end (FCI) connector is covered with bubble packing.
- Verify a cable anchor is installed.

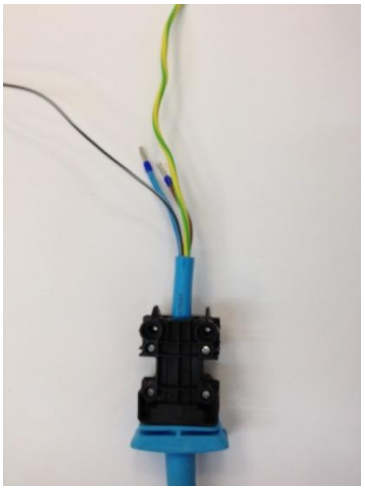


Figure 139: Physical Dimensions

Note: *You must install a cable anchor when installing a cable.*

F.1.3 Verifying Required Tools Supplied by Installer

Table 19 lists the tools supplied by the Installer.

Table 19: Tools Supplied by the Installer

Name	Image
Allen head screwdrivers (3 mm, 4 mm)	
Small flat head screwdriver	
Mid-size Phillips head screwdriver	

F.2 REPLACING AND TESTING THE CABLE

The following provides instructions for replacing a single socket Wall CS cable.

Warning: *Replace the cable just after turning off the CS's power.*

Warning: *Work according to local electrical and safety regulations.*

F.2.1 Cable Replacement

To prepare the CS:

1. Close the screws on the bottom of the Wall CS cover and remove the cover.

Figure 140: Close the Screws and Remove the Cover

2. Unscrew the four (4) M4 Allen CS screws (the protruding Allen screws).

Figure 141: Unscrew Backbone Screws

3. Remove the CS from the infrastructure adapter.
4. Unscrew the seven (7) M3 Allen CS screws to remove the front shell.

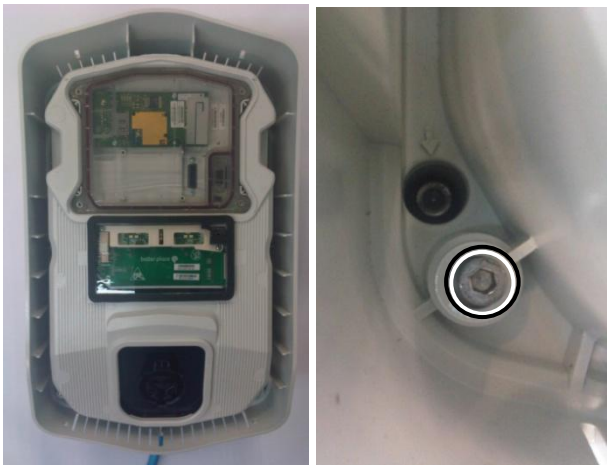


Figure 142: Unscrew Front Shell Screws

5. Remove the front shell.

Figure 143: Remove the Front Shell

6. Unscrew the four M3 Allen holster screws.

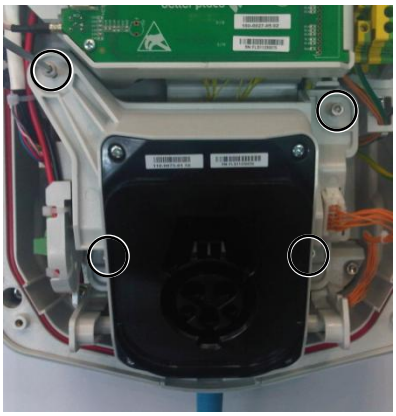


Figure 144: Unscrew Holster Screws

7. Open the holster housing.

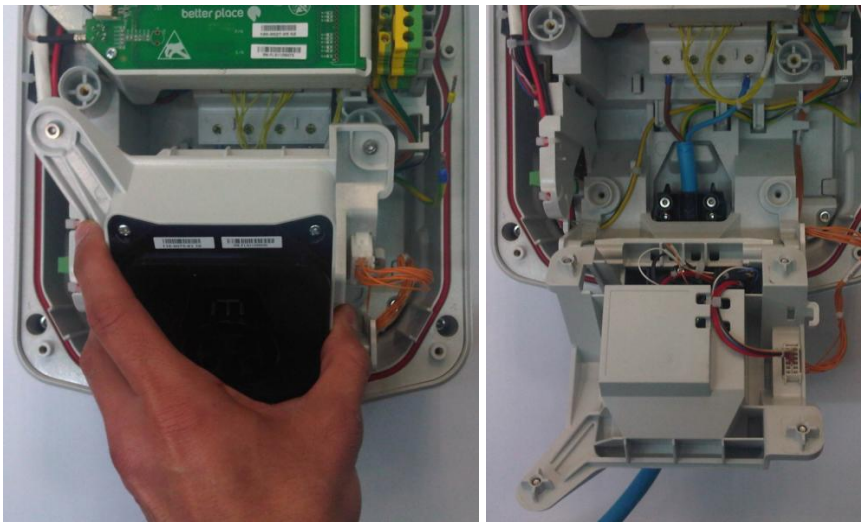


Figure 145: Open the Holster Housing

8. Unscrew the power cable wire screws as follows:
   - #1 phase wire
   - #2 neutral wire
   - #3 ground (GND) wire – Lower screw
   - #4 Control Pilot (CP) wire – Lower screw

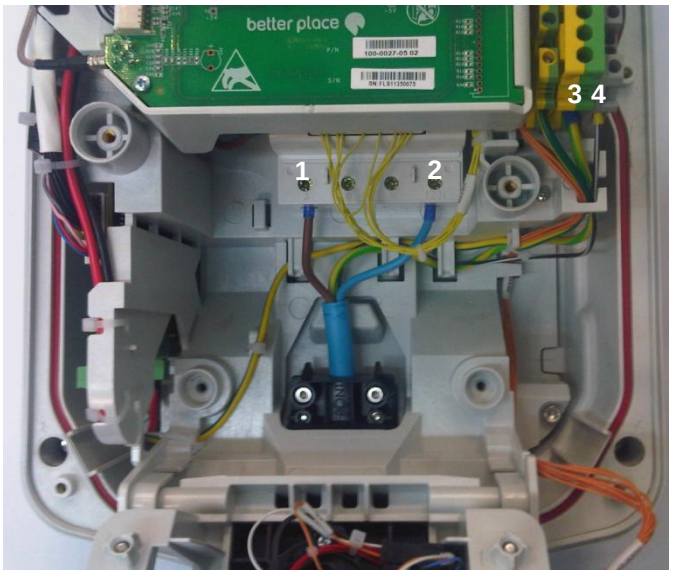


Figure 146: Unscrew Power Cable Wire Screws

Note: *Notice that the cables are routed behind the plastics borders.*

9. Release the power cable wires from the terminals.
10. Unscrew the two Allen cable anchor screws.

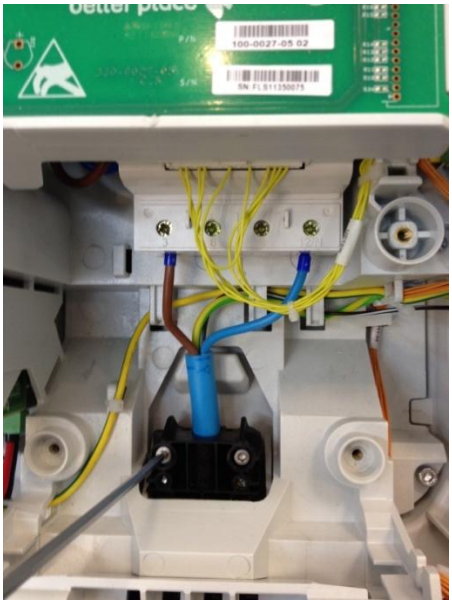


Figure 147: Unscrew Cable Anchor Screws

11. Pull the power cable from the backbone.

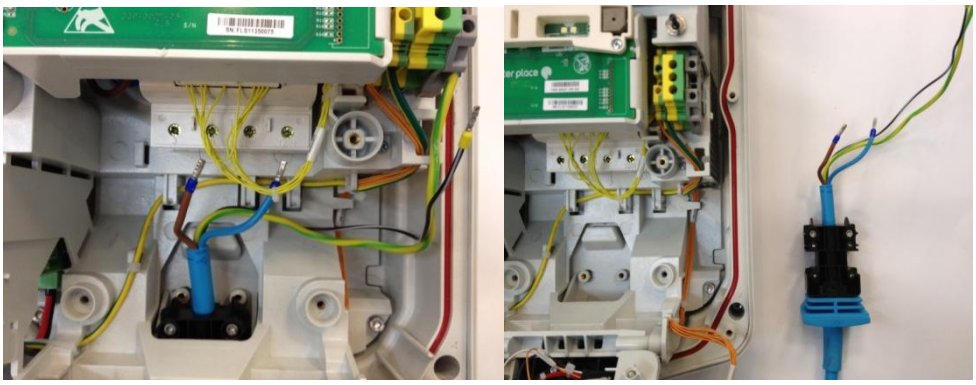


Figure 148: Pull Power Cable from Backbone

12. Insert the new cable.

Note: *Use one of the 2.5 m or 4.5 m Better Place cable kits (see Table 18). Do not replace a, cable without a cable anchor.*

13. Insert the power cable with the cable anchor into the backbone.

Note: *Notice the label FRONT on top of the cable anchor.*

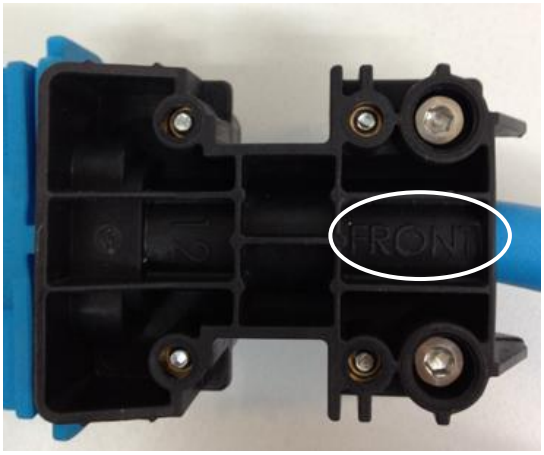


Figure 149: Cable Anchor – Label FRONT

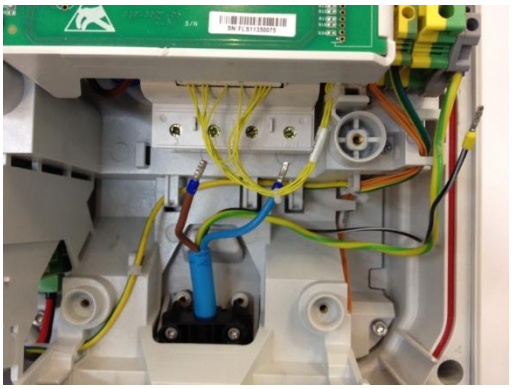


Figure 150: Insert Power Cable into Backbone

14. Fasten the two Allen cable anchor screws.
15. Route the GND and CP wire through the plastic borders.

Figure 151: Route Wires through Plastic Boarders

16. Insert the power cable wires to the terminals according to Figure 152.

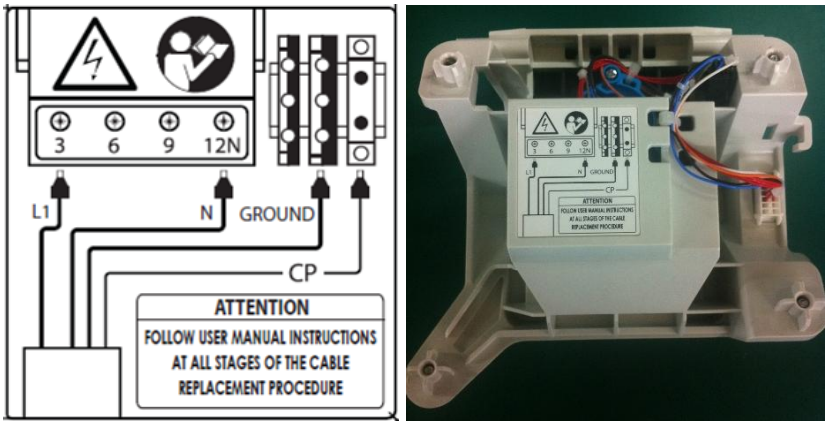


Figure 152: Power Cable Wiring Diagram

17. Fasten the power cable wires screws as follows:
    - #1 phase wire
    - #2 neutral wire
    - #3 GND wire – Lower screw
    - #4 CP wire – Lower screw

Note: *Verify that the wires are securely connected by trying to pull the wires from the meter connectors*

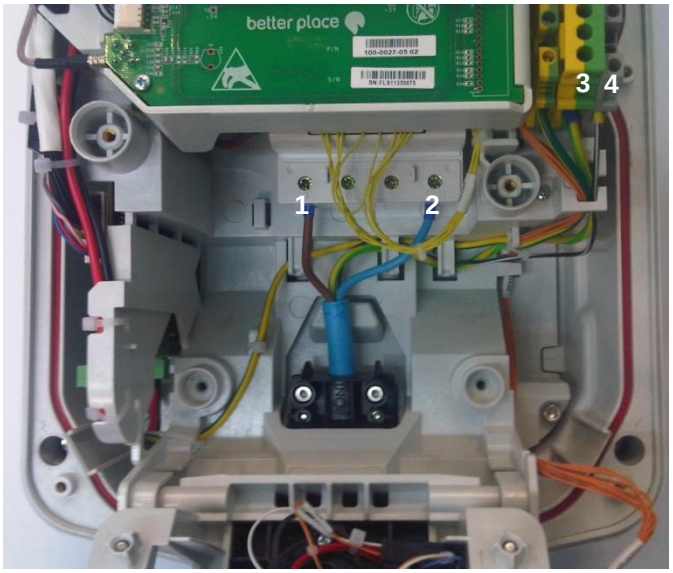


Figure 153: Fasten the Power Screws

18. Close the holster housing.
19. Insert and tighten the four M3 Allen holster screws.
20. Replace the front shell.
21. Tighten the four M3 Allen backbone screws (the protruding Allen screws).
22. Replace the Wall CS cover.
23. Open the Wall CS cover screws. The cable is replaced.

Figure 154: Open Wall CS Cover Screws

F.2.2 Cable Testing

To test the cable:

1. After replacing the cable, connect the cable to the hanging car simulator.
2. Tap Better Place Card.
3. Verify the charge using the Charge Simulator (dongle) (see the *Using a Charge Simulator* manual).