# DataHub
## Installation Manual

Version April 2023

-chargepoin+

# Index

# 1. Introduction

The ChargePoint DataHub is used to read data from vehicles, charging stations, or any other technical device by using different input sources. These input sources can be CAN bus, RS485, GPS input, Digital inputs, or Analog Inputs.

The data gets processed in the unit and sent to a cloud server via the cellular network, Ethernet connection, or Wireless LAN (Wi-Fi) connection.

Depending on the application, messages can be sent back from the cloud server to the ChargePoint DataHub. This can be communicated back to the connected asset; in most cases a vehicle or charger. This can be done via CAN bus, RS485, digital outputs or analog outputs, all located on the DataHub.
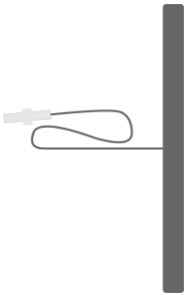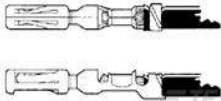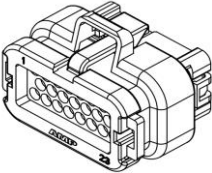
# 2. Packaging content

The ChargePoint DataHub gets shipped in two versions: standard or with optional content. The standard content is always included, the optional content is only shipped when ordered. If the OEM has not provided a telemetry harness and connector for the ChargePoint unit, please specify the optional content in your order.

## 2.1 Standard content



ChargePoint DataHub

(including mounting brackets)
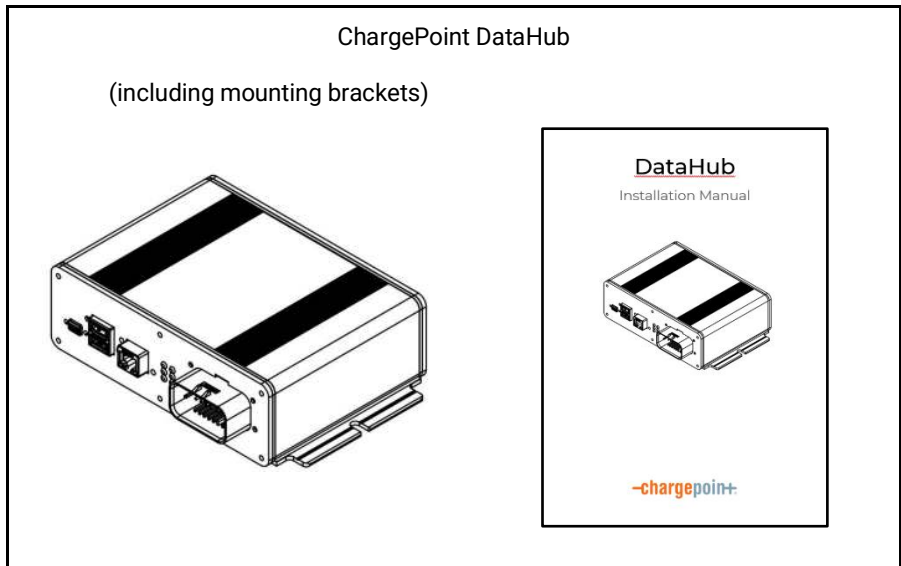
## 2.2.1 Aftermarket Antenna Installation Kit

| Cellular Antenna | GPS Antenna |
|---|---|
|  |  |
| Contact sockets: TE CONNECTIVITY, AMPSEAL: MPN: 770854-1<br>*Source: TE Connectivity*<br> | Main connector: TE CONNECTIVITY, AMPSEAL 23 PINS: MPN: 770680-1<br>*Source: TE Connectivity*<br> |

## 2.2.2 OEM Antenna

OEM Antenna, 5m or 7m (Cellular, Wi-Fi, GPS)
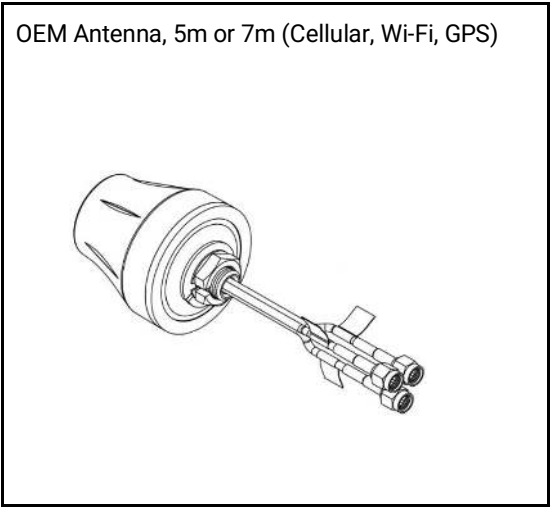


## 2.3 ChargePoint part numbers

| Part | SKU |
|---|---|
| ChargePoint DataHub - NA | 99-007401-01 |
| ChargePoint DataHub - EU | 99-007501-01 |
| Aftermarket Installation Kit | 99-007605-01 |

| 3 in 1 Antenna - 5m | 99-007606-01 |
|---|---|
| 3 in 1 Antenna - 7m | 99-007607-01 |

# 3. Installation preparation

Do not connect the ChargePoint DataHub directly on any operation sensitive CAN line, e.g. a CAN line connected to the BMS or drivetrain. Instead, *use a **gateway** between the vital CAN line and the ChargePoint DataHub, to exclude any risk of disturbance causing vehicle part breakdown.*

ChargePoint Group is not responsible for any damage to or malfunction of the hardware and/or connected machinery when the customer decides to do so. Please verify with your vehicle schematic before selecting a connection location.

# 3.1 Checklist

## Needed

| | |
|---|---|
| ChargePoint DataHub | ✓ |
| TE Connectivity 770680-1 Main connector | |
| TE Connectivity 770854-1 Connector contacts | |
| 58529-1 TE Connectivity crimper | |
| Wire stripper | |
| 2x M6 Screws | |
| Multimeter | |
| Antennas (GSM & GPS) | |

## Optional

| | |
|---|---|
| **Termination resistor**[1] for CAN bus | |
| CAN Wiring splitters and Jumpers | |
| Wiring butt splices | |
| Tie wraps | |
| Extra CAN wire | |
| Extra contacts and screws | |

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[1] The DataHub does not have built-in terminating resistors. Therefore it might be necessary to add extra resistance to make sure that the messages from the CAN lines are received correctly.

## 3.2 Required Information

Make sure that you are aware where the CAN lines are located. Inquire with your vehicle manufacturer where the CAN lines are located in your vehicle.

## 3.3 Installation safety warning

ChargePoint Group cannot anticipate every possible situation that might cause a potential hazard. Therefore it has to be noted that these safety messages are not all inclusive. If a tool, procedure, work method, or operating technique that is not recommended by ChargePoint Group is used, one needs to make sure that safety for oneself and others is guaranteed. It needs to be ensured that the product will not be damaged or made unsafe by the operation and repair procedures that are chosen.

- Make sure that the vehicle is in neutral, the parking brake is set, and the wheels are blocked before doing any work or diagnostic procedures on the ChargePoint DataHub.
- Switch off ignition (when ChargePoint DataHub is configured to ignition) or switch off power supply to the ChargePoint DataHub (when ChargePoint DataHub isn't configured to ignition).
- Make sure the working area is ventilated and well lit.

# 4. Installation guideline

## 4.1 Introduction

### 4.1.1 Behind a gateway

Do not connect the ChargePoint DataHub directly on any operation sensitive CAN line, e.g. a CAN line connected to the BMS or drivetrain. Instead, use a **gateway** between the vital CAN line and the ChargePoint DataHub, to exclude any risk of disturbance causing vehicle part breakdown.

ChargePoint Group is not responsible for any damage to or malfunction of the hardware and/or connected machinery when the customer decides to do so.

### 4.1.2 Constant Power source

We recommend to install that DataHub in such a way that the device is always on, or to unswitched power. This way you can log your charging data and trigger incidents in cases of a low state of charge (SOC). For non-electric vehicles we recommend to wire the DataHub to ignition.

### 4.1.3 Resistor needed?

While the vehicle powers off, carefully verify with Multimeter the resistance between CAN High Line and CAN Low Line from the vehicle if the value is 60 Ω. If the value is 120 Ω, add one more 120 Ω resistor closely to CAN interface of the DataHub between CAN High and CAN Low. If the value is less than 60 Ω, there might be a fault.

## 4.1.4 Minimum installation contacts

**Contact 1** CAN bus 1 high

**Contact 7** Ignition signal

**Contact 8** Main power input

**Contact 9** CAN bus 1 low

**Contact 23** Ground - Power

## 4.1.5 Installing 2 CAN lines

Installing both sets of CAN lines is advised to acquire as much data as possible. Next to that, using shielded twisted pair for wiring CAN is always recommended. The CAN shield is terminated at contact locations 16 or 17, depending on the number of CAN channels being used.

# 4.2 Checklist

| | |
|---|---|
| Contact ChargePoint to activate the sim card in the DataHub[2] | ✓ |
| Locate the CAN lines in the vehicle | |
| Prepare the cables[3] | |
| Measure DC resistance on CAN_H and CAN_L.  60 Ω (Ohm) on each end with the Multimeter | |
| Install the contacts in the main connector.<br>Minimum: contact 1,7,8,9 & 23 | |
| Check if the contacts are visible on the inside of the main connector | |
| Test with a multimeter whether there is an input voltage between contact 8 & 23 | |
| Connect  the main connector to the DataHub | |
| Attach the GPS and GSM antennas (or the 3-1 Antenna) | |
| Place the GPS and GSM antennas in the vehicle, where nothing can block the signal | |
| Check the LED lights (System, GPS, Modem, Ignition and CAN) with the vehicle turned on. All lights green? | |
| Contact ChargePoint to confirm CAN trace/ verify correct CAN network | |
| Contact ChargePoint for adjustments in default settings such as: Wake On Ignition, Listen Only, etc. | |

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[2] T: +31 (0) 20 210 36 78 (EU), T: +1 (662) 667-6325 (USA, East Coast),
T: +1 (662) 667-6325 (USA, West Coast); E: Support.fleet@chargepoint.com
[3] We recommend to provide the DataHub to a constant power source for EV buses. Just wiring the power to ignition will prevent us from providing, for example, charging data.

# 4.3 Detailed installation information

## 4.3.1 Contact Layout

Below you find the position on the DataHub where the main connector is plugged in. The contact layout, seen from the black side of the main connector, with its corresponding numbers and signals is shown on the next page.
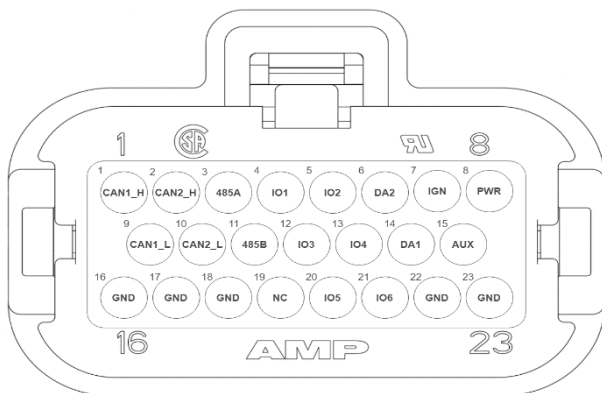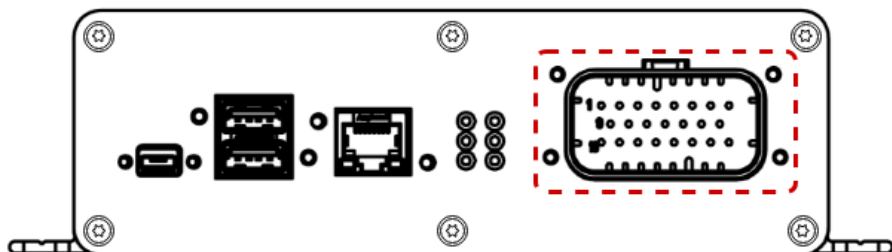




*Source: TE Connectivity*

| Contact | Signal | Explanation |
|---|---|---|
| 1 | CAN1_H | CAN bus 1 high |
| 2 | CAN2_H | CAN bus 2 high |
| 3 | 485A | RS485 A |
| 4 | IO1 | Either analog input, digital input or digital output |
| 5 | IO2 | Either analog input, digital input or digital output |
| 6 | DA2 | Either analog output (0-10V), analog input or digital input |
| 7 | IGN | Ignition signal |
| 8 | PWR | Main power input |
| 9 | CAN1_L | CAN bus 1 low |
| 10 | CAN2_L | CAN bus 2 low |
| 11 | 485B | RS485 B |
| 12 | IO3 | Either analog input, digital input or digital output |
| 13 | IO4 | Either analog input, digital input or digital output |
| 14 | DA1 | Either analog output (0-10V), analog input or digital input |
| 15 | AUX | Auxiliary power input |
| 16 | GND | Ground - CAN 1 shield |
| 17 | GND | Ground - CAN 2 shield |
| 18 | GND | Ground - RS485 shield |
| 19 | NC | Not connected |
| 20 | IO5 | Either analog input, digital input or digital output |
| 21 | IO6 | Either analog input or digital input |
| 22 | GND | Ground |
| 23 | GND | Ground - Power |

## 4.3.2 Connect wire to contact

1. Use a wire stripper to remove the wire insulation from the CAN line.
2. Place the exposed metal into the contact 770854-1 and use the recommended crimper to pinch the contact onto wire.

Wire Strand Ends Must Be Visible in this Area →

Wire Barrel Shall be Closed at Seam with No Strands Protruding or Showing

Wire Strands and Insulation Shall Both be Visible →

Ends of Insulation Barrel Must be Wrapped Around Wire Insulation Leaving No Sharp Points to Damage Rubber Wire Seal

0.25 Max to 0.13 Min Front Bellmouth

0.13-0.75 Rear Bellmouth

0.25 Max Cutoff Tab
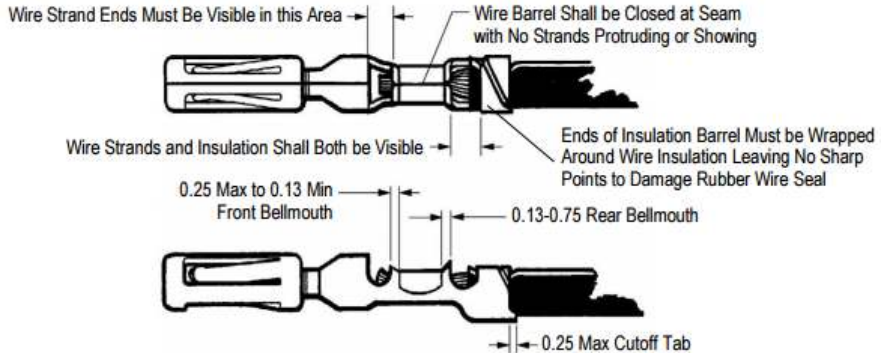
*Source: TE Connectivity*

## 4.3.3 Connect contact to connector

1. Make sure the wedge lock of the plug connector is in the open position.
2. Place the CAN lines with the contact as far as it will go in the appropriate circuit cavity of the connector.
3. Gently pull back on the contact wire to be sure the retention fingers are holding the contact.

(a)

(b)

Retention Fingers Holding Contact

(c)

Pull Back on Wire ←
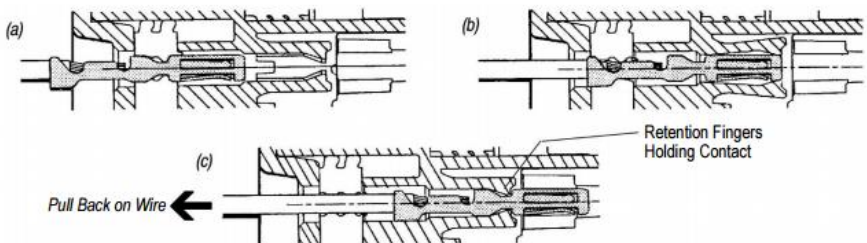
*Source:TE Connectivity*

## 4.3.4. Connect the main connector to ChargePoint DataHub

You should see the contacts from the front face of the connector when fully seated. After all required contacts have been placed into the right cavities, the wedge lock must be closed to its locked position.
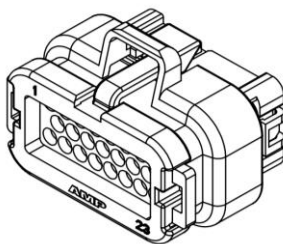


## 4.3.5 Connect antennas

### 4.3.5.1 Aftermarket antennas for separate Cellular, GPS and Wi-Fi connections

In order to have optimal performance of the receivers, the positioning of the antenna is crucial. All antennas should be attached securely. The following needs to be taken into account:

| | |
|---|---|
| Cellular | - Antenna should be placed inside the vehicle, away from high voltage or current carrying wires. Make sure that the antenna is not shielded to the outside by metal plating |
| GPS | - Antenna should be parallel to geographic horizon<br>- Antenna must have the best view to the sky. Metal parts will reduce GPS signal, but will not fully block it. *Attaching the GPS receiver to a metal harness will NOT amplify the signal*<br>- Place the antenna as far away as possible from radiating or jamming signals |
| Wi-Fi | - Antenna should be placed in an upright position |
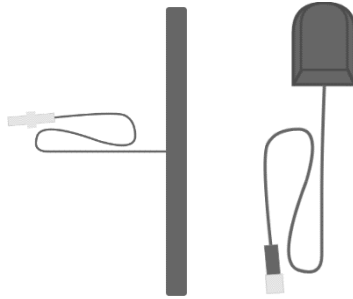
## 4.3.5.2 OEM antenna for combined Cellular, GPS and Wi-Fi connections

In order to have optimal performance of the receivers, the positioning of the OEM combination antenna is crucial. The best location for the antenna is on the roof of the vehicle. This location prevents any obstruction with the GPS signals. The second best location is just underneath the roof on a horizontal plane to optimize the reception of the GPS signals.
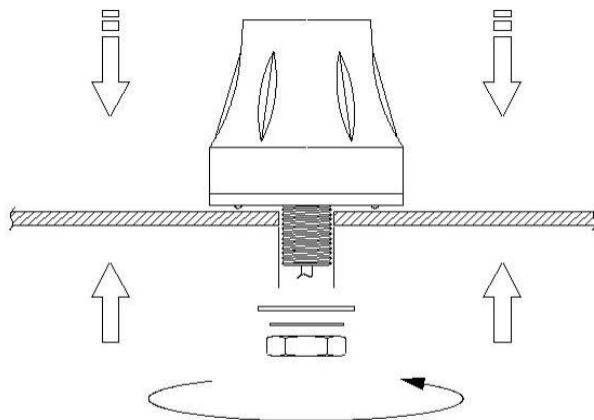


Recommended torque for mounting is 2.94N·m

Maximum torque for mounting is 3.92N·m

Create an *M12* size clearance hole and tighten the nut torqued to 2.94 N-m. Keep in mind that, when mounting the antenna, it has a diameter of *50mm* and a height (when mounted on the flat surface) of *48mm*.

## Additional information

| Frequency range | 700-960MHz & 1710-2655MHz |
|---|---|
| Standard cable length | 5 meters (between 3m - 5m is optional) |
| IP67 rated (excl. cable outlet) | Top of ground plane is watertight when mounted |
| Details connectors | 4G: FME-Female; Wi-Fi: SMA-Male; GPS: SMA-Male |



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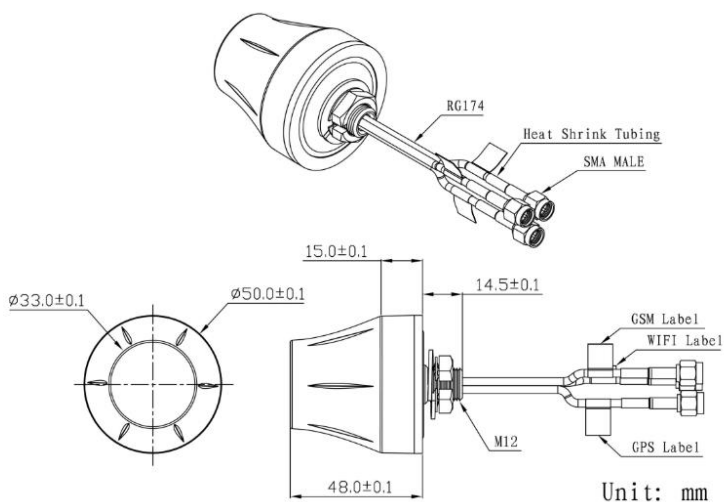
**DISCLAIMER for using the OEM antenna in combination with the DataHub**:

Further testing with the OEM antenna is needed to ensure conformance with EMC.

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### 4.3.5.3 Connect antennas to ChargePoint DataHub



GPS

The ChargePoint DataHub has one SMA female connector specifically for GPS. Connect the GPS antenna to this connector.

Wi-Fi

The ChargePoint DataHub has one SMA female connector specifically for Wi-Fi. Connect the Wi-Fi antenna to this connector.

Cellular (3G/4G)

The ChargePoint DataHub has a FME male connector for Cellular. Connect the cellular antenna to this connector.

### 4.3.5.4 Connecting via router

It is optional to connect the DataHub to your own router network. This can be done by connecting an ethernet cable to the ethernet input as visualized below. The modem light, which tells us whether the sim card inside the modem has an active internet connection, will be colorless if the internet connection is established via a router. Please contact support.fleet@chargepoint.com if your connection is not immediately established.[4]
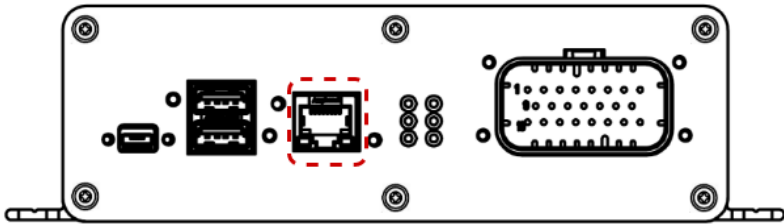


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## 4.3.6 Mounting of the ChargePoint DataHub

The ChargePoint DataHub should be firmly mounted at a dry and cool location inside the vehicle. The **screws** should be a **M6 size**. It is important that the ChargePoint DataHub is mounted in such a way that it will not move while the vehicle is driving.
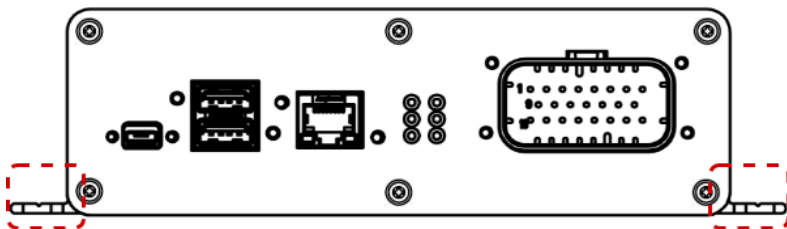
# 5. Activation

## 5.1 Powering the ChargePoint DataHub

We have arrived at the stage where we want to power up the DataHub. In order to switch on the ChargePoint DataHub, the main connector needs to be connected to the ChargePoint DataHub.
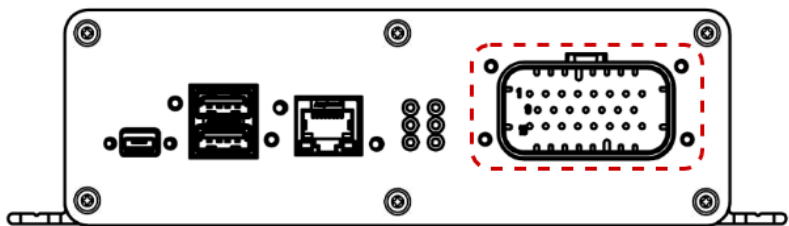


The DataHub is by default configured to be always on. However there are other configuration possible. Please contact ChargePoint support to change your default configuration.

The options are described in the table below:

| Powering Mode | Description |
| --- | --- |
| Always On | The ChargePoint DataHub will be powered-up as long as the battery power is within operating limits.<br>This way you can log your charging data and trigger incidents in cases of a low state of charge (SOC).<br>For non-electric vehicles we recommend to wire the DataHub to ignition |
| Power on Ignition | Switch the ignition on to power the ChargePoint DataHub. All LEDs of connected components should turn green<br>For non-electric vehicles we recommend to wire the DataHub to ignition[5] |

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[5] Verify at support.fleet@chargepoint.com if the software settings are set to wake on ignition

# 5.2 Check LED status

The ChargePoint DataHub is provided with 6 LEDs that display the status of the following components:

- System
- Ignition
- Modem
- GPS
- CAN1
- CAN2
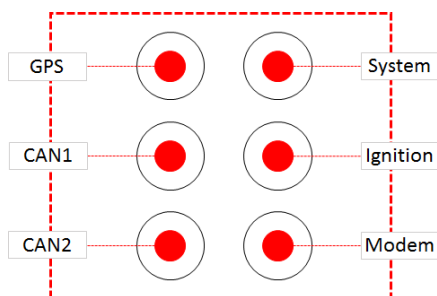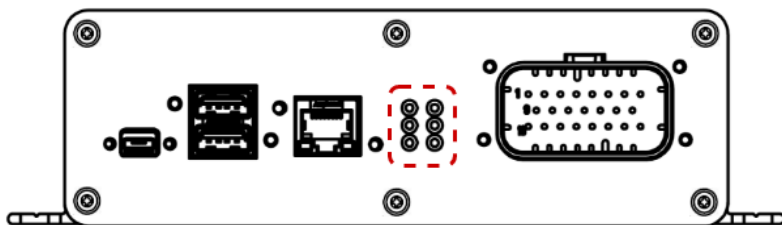
# 5.3 Led lights explained

## 5.3.1 System LED

| Color | Corresponding status | Action list |
|---|---|---|
| Blinking red | 12/24 V Battery - **Voltage is too low (<lower threshold) to switch on the unit.** (Voltage range is software configurable) | - DataHub needs more power input or ChargePoint needs to adjust the software configuration<br>- Replace or charge 12/24V battery |
| Blinking yellow | 12/24 V Battery – When the ChargePoint DataHub is not switched on and the voltage is between lowerand upper threshold. (Software configurable) | - DataHub needs more power input to boot<br>- 12/24 V Battery voltage is running low. Do a voltage measurement to make sure the voltage isn't running too low. If so, replace or charge 12/24V battery<br>- Another option is that ChargePoint needs to adjust the software configuration |
| Yellow | 12/24 Battery – When the ChargePoint DataHub is switched on and the voltage is between lower and upper threshold (Software configurable) | - DataHub needs more power input to stay on<br>-12/24 V Battery voltage is running low. Do a voltage measurement to make sure the voltage isn't running too low. If so, replace or charge 12/24V battery<br>-Another option is that ChargePoint needs to adjust the software configuration |
| White | Not enough supply current | - Increasing the power supply voltage to 24V fixes this issue |
| Pink | Firmware needs reset | - Reboot your DataHub<br>- Reach out to support.fleet@chargepoint.com |
| Blue | Unsuccessful firmware update | - Reboot your DataHub<br>- Reach out to support.fleet@chargepoint.com |

| Blinking green | Voltage is aboveeupper threshold, but the ChargePoint DataHub is waiting for another signal (CAN or Ignition depending on current configuration) to switch on | - Contact ChargePoint to see how the DataHub is configured[6] |
|---|---|---|
| Green | The ChargePoint DataHub is on. The ChargePoint DataHub can be in boot process or is already online | - No action needed. Wait 15 minutes. The DataHub is downloading its software |

## 5.3.2 Ignition LED

| Color | Corresponding status | Action list |
|---|---|---|
| Red | Voltage for ignition is too low | - Check the voltage level of the cable to identify whether it's a connector problem. If the voltage of the cable is too low, try to identify the issue upstream |
| Green | Ignition is on | |

## 5.3.3 Modem LED

| Color | Corresponding status | Action list |
|---|---|---|
| None | Modem is not detected (This can take up to 60 seconds after power-up) | - In case the unit is delivered with modem and the LED stays switched off, the modem is broken and needs to be replaced contact ChargePoint support. - No action needed if you are using an ethernet cable |
| Red | Modem is detected, but there is no GSM connection | - Contact ChargePoint Support to activate the sim card - Check whether the cable is properly connected |
| Green | Modem has a GSM internet connection | |

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[6] ChargePoint Support: T:+31 (0) 20 210 36 78 (EU), T:+1 (662) 667-6325 (USA, East Coast) ,
T:+1 (662) 667-6325 (USA, West Coast), E: Support.fleet@chargepoint.com

## 5.3.4 GPS LED

| Color | Corresponding status | Action list |
|-------|----------------------|-------------|
| Red | No GPS satellites in view | 1. Relocate the GPS antenna<br>2. Replace antenna<br>3. Contact ChargePoint<br>There is a GPS signal, but it does not receive location and time. If the LED stays red after checking the cable, there is no GPS reception. Make sure the antenna is placed properly.. |
| Yellow | GPS satellites in view, but not enough for a location fix (there is a poor reception) | 1. Relocate the GPS antenna<br>2. Replace antenna<br>3. Contact ChargePoint[7] |
| Green | GPS time and location fix | |

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[7] ChargePoint Support: T: +31 (0) 20 210 36 78 (EU), T: +1 (662) 667-6325 (USA, East Coast) , T: +1 (662) 667-6325 (USA, West Coast), E: Support.fleet@chargepoint.com

## 5.3.5 CAN1 / CAN2 LED

| Color | Corresponding status | Action list |
|---|---|---|
| None | Not configured, CAN is not being read | -No CAN bus is connected. Verify whether the contacts are correctly installed. |
| Red | Configured but no activity | 1. Verify whether the bus data is forwarded to the gateway<br>2. Is there a firewall on the vehicle blocking the CAN message?<br>3. Inform ChargePoint the correct Bitrate (kbs)<br>4. Is ChargePoint the only device listening on the CAN line? Inform ChargePoint Support.[8]<br>5. Verify whether CAN Hi and Lo are connected to the right terminals in the connector. |
| Blinkering between red and green | There is a minimum amount of messages sent across the CAN line. | -Contact ChargePoint to adjust the bitrate.<br>-Confirm vehicle ignition is On |
| Green | Configured and active | |

# 5.4 Inform ChargePoint

Please provide us feedback after your installation. We will do our final checks to verify whether everything is correctly installed.  We need the following information directed to support.fleet@chargepoint.com:

**- Company name**
**- DataHub serial number**
**- Vehicle license plate or internal vehicle number**
**- VIN number**
**- Mac address if available**

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[8] ChargePoint Support: T:+31 (0) 20 210 36 78 (EU), T:+1 (662) 667-6325 (USA, East Coast) ,
T:+1 (662) 667-6325 (USA, West Coast), E: Support.fleet@chargepoint.com

# 6. Product specification

## 6.1 Dimensions

Dimensions of the product are the following and displayed below.

| | |
|---|---|
| Width (excluding mounting brackets) | 167,80 mm |
| Width (including mounting brackets) | 193,80 mm |
| Height | 53,50 mm |
| Depth (including input & output ports) | 147,48 mm |
| Depth (including space for connectors) | 220,00 mm |



Top View:

| Front side view: | Back side view: |
|---|---|
|  |  |
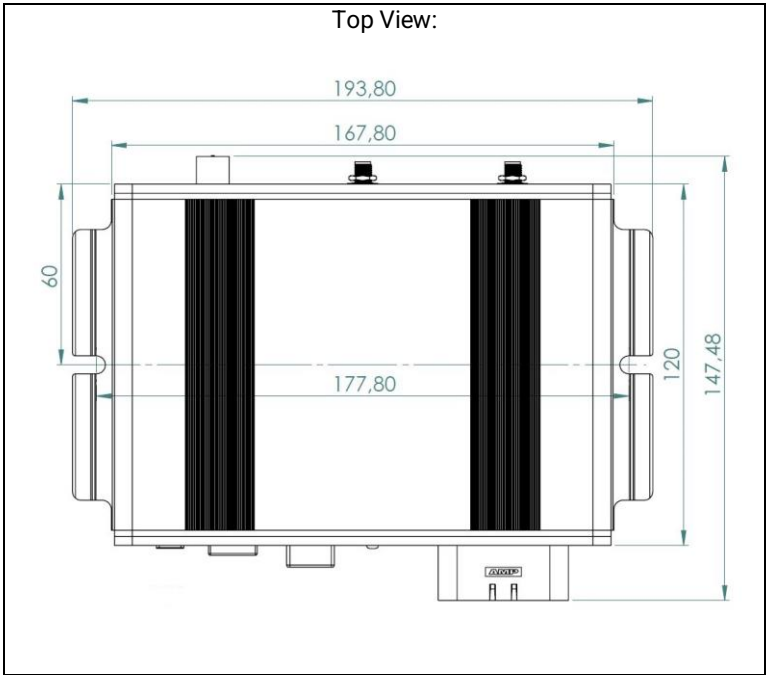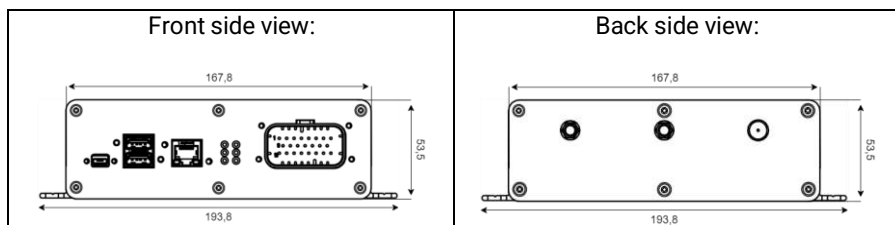
## 6.2 Input and output ports



Back side view

| Debug | 2x USB | Ethernet | Main connector |

*USB micro-B* is used for debugging
*USB* can be used for external data sources
*Ethernet* will be chosen over other internet connections
*Main connector* provides power and the CAN connection

Front side view:

GPS | Wi-Fi | 3G

SMA connector for GPS
SMA connector for Wi-Fi
FME connector for 2G, 3G, 4G
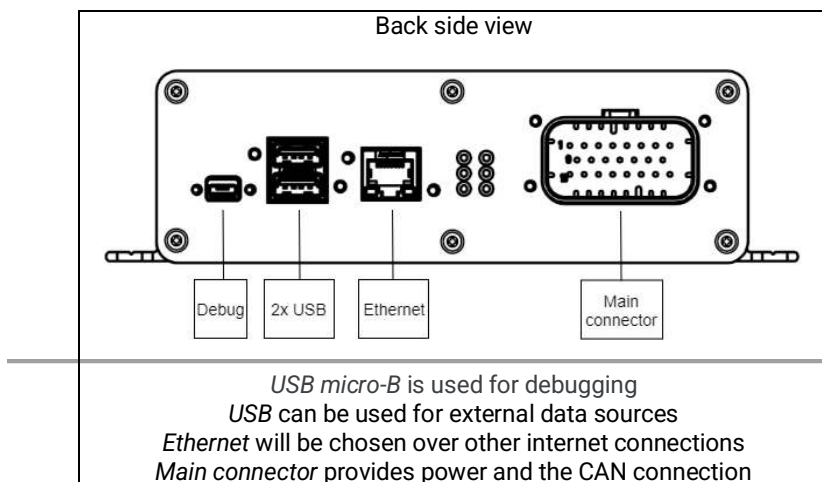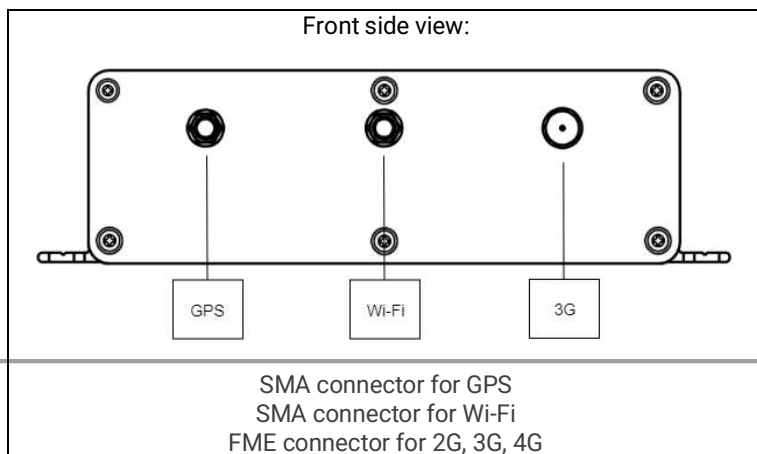
# 6.3 Technical specifications

## 6.3.1. Hardware specification

| Power management | Wake on CAN or any other I/O<br>Ignition (12/24V input)<br>Input range: 9 - 32 V |
|---|---|
| Inputs/Outputs | 1 x RS485<br>6 x Analog Inputs (0-32V)<br>2 x Analog Outputs (0-10V)<br>5 x Digital Outputs<br>2 x CAN<br>2 x USB<br>1 x Ethernet |
| Sensors | 3 Axis Accelerometer<br>Gyro sensor<br>Barometric sensor<br>GNSS sensor (GPS/GLONASS/Galileo/QZSS) |
| Communication | Wireless LAN (WLAN)<br>GSM/3G3LTE (cellular)[9] |

| Hardware | 800 MHz 2 core ARM processor (i.MX6)<br>1GB DDR RAM<br>On board memory: 4GB-64GB (eMMC)<br>SD Card size: 8 - 128 GB<br>LTE modem (European / North American bands supported) with 2G/3G fallback |
|---|---|
| Power consumption | Full load: ~6 W<br>Stand-by: ~4 W<br>Power down <0.1 W |

## 6.3.2. Software specification

| Software | Embedded Linux<br>Crash resilient / automatic recovery |
|---|---|
| Distribution network | Updates over the air<br>Remote configuration management<br>Security updates |

# 7. FAQ

## 7.1 Installation

**Why install 2 sets of CAN lines?**

A vehicle can have several CAN lines among which it devices its messages. Therefore you can read out more messages if you connect both CAN lines.

**What happens if CAN High and CAN Low are switched?**

The CAN LED light will be red and you cannot receive any data.

**Which cables from the vehicle do I need to use?**

Contact your OEM and verify against your vehicle schematics. Typically the right connection is located in the electronics cabinet behind or above the driver, near the OBDII port if present.

**Is there a checklist?**

Yes, see paragraph 3.1 of this installation manual.

**What is happening when a CAN light is green and blinking?**

This means that there is a slow message flow.

**What are the next steps when the modem light is off?**

Contact ChargePoint Support:

T: +31 (0) 20 210 36 78 (EU), T: +1 (662) 667-6325 (USA, East Coast) ,

T: +1 (662) 667-6325  (USA, West Coast), E: Support.fleet@chargepoint.com

**Do I need to connect the DataHub directly to the main high voltage batteries?**

No, please connect the DataHub to the 12V or 24V battery.

**How do you know whether the contact sockets are inserted correctly in the main connector?**

You can see the contacts inside the main connector and will not be able to remove them from the connector by pulling on the wires.

**How do you find the CAN line in the vehicle?**

Please inquire with your bus manufacturer and check your vehicle schematics. You can look for the terminating resistors to help locate possible connection points.

**What is RS485?**

A different system that is similar to a Controlled Area Network (CAN).

**Is RS485 used for reprogramming and troubleshooting the unit?**

No, free to be used for customer.

**Is Pin 22 the sensor ground?**

No, it is the same as PIN 23: all grounds are system grounds

**If we break out the RS485 contacts (3, 11, 18?) to its own 9-contact D-Sub connector do we follow the conventional null modem layout (contact 5 = GND, contact2 = RX, contact = TX)?**

Yes.

# 7.2 Operation

**Is the DataHub always on?**

The DataHub is always on if it is wired to a consistent power supply. We recommend this configuration to monitor charging messages and state of charge when the vehicle is not driving.

**Do I want my DataHub to be on 24 hours per day?**

If you want to monitor your battery 24 hours a day, yes. Example: You might want to see whether the vehicle charged overnight and / or received a notification if it is not charging.

**Is my data still collected when the DataHub is disconnected from the internet?**

Yes. This data will be uploaded once the DataHub reconnects to the ChargePoint backend.

**How long can the DataHub collect data offline?**

This is dependent on the amount of raw CAN values the bus sends out. Our maximum estimate is 1 day. On average the bus sends 2-4 kb per second.

**What do the LEDs mean?**

They are located next to the main connector of the DataHub. These LEDs should be your first check when troubleshooting an installation.
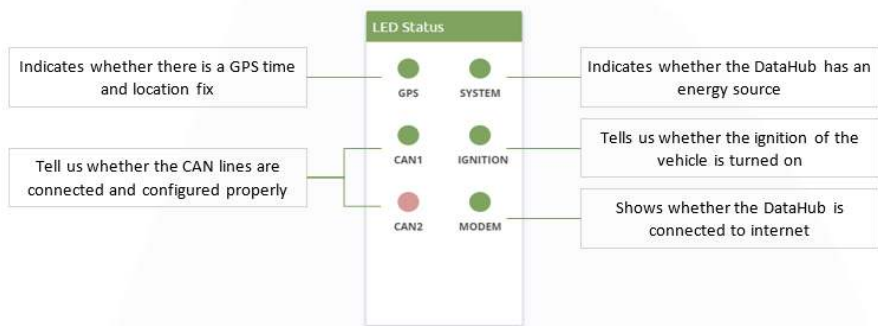
**How do I know whether the DataHub works?**

Step 1. Check that the LEDs are green when the vehicle is powered on.

Step 2. Log in to portal.ChargePoint.com

Step 3. Add the asset to a fleet

Step 4. Go to the dashboard monitoring page and search for the vehicle.

**At what frequency is data collected? Is it the same for all parameters?**

The data is collected by the DataHub at whatever speed it's put onto the CAN-bus. For most signals, this happens at the millisecond level. We use this data to do some calculations. For example, we use the voltage and current to calculate real time power usage. We then integrate this power signal over time to estimate energy. To get the most accurate answer of energy, it's necessary to do this calculation at the millisecond level.

After our calculations are performed, we control at what frequency the data is transmitted back to our servers. This frequency is different for every channel. The more important channels (i.e. voltage, current, SoC, speed) are usually transmitted several times per second whereas other channels (i.e. odometer) are transmitted less frequently.

When exporting data for custom analysis, it's possible to down sample the data even further. For example, you can export a week's worth of SoC data for a specific vehicle on a minute or hourly basis.

**Is there a hard limit on the number of parameters we can collect?**

No, there is no limitation. However, most of our implementations only have a few dozen channels (at most) because most transit agencies can't use more data than this.

**The spec sheet says the DataHub has a 8 – 128 GB SD card.  Is this SD card an upgradeable option? Given everything is transferred to the cloud in real time, why do customers use the SD card?**

This is used to store more applications on the DataHub.  No customers are using this today, so it will be removed in a future hardware revision.

**Is there a hard limit on the number of parameters we can collect?**

No, there is no hardware limitation. We can collect all the data that is available on the CAN line that we are listening to. The number of parameters available in our portal is only limited if no CAN Matrix is provided.

**Contact ChargePoint**

In case you were not able to resolve an issue by following these troubleshooting instructions, please contact ChargePoint support:

Email:     support.fleet@chargepoint.com

Phone: +31 (0) 20 210 36 78 (Netherlands)

          +1 (662) 667-6325 (USA, East Coast)

          +1 (662) 667-6325  (USA, West Coast)

# 8. About this documentation

## 8.1 Target group

This installation manual is intended for the party responsible for installing and

fitting the ChargePoint DataHub.

## 8.2 Manufacturer

ChargePoint.

## 8.3 Symbols used

| | |
|---|---|
| 📖 | Only install and use this product after reading the manual thoroughly. |
| ⚠️ | This symbol indicates a warning; this section needs extra attention while reading this manual. |
| $C\epsilon$ | This product adheres to all the EU requirements for product safety. |
| UKCA | This product adheres to all the UK requirements for product safety. |
| FC | This product adheres to all the FCC requirements. |
| (E4) | This product adheres to the requirements of an electronic sub-assembly with regard to Regulation number 10 |
| ♻️ | This is an electronic product. Do not dispose with household waste and recycle appropriately. |

# 8.4 Product safety warnings

- Install only by a certified electrician.
- Completely follow the instructions.
- Use this device with purposes it is designed for, as described in this manual.
- Failure to follow the above warnings can lead to an incorrect installation. This can lead to communication problems between different ECUs and thus to break-downs of connected devices.

## 8.5 Abbreviations

| Abbreviation | Explanation |
|---|---|
| CAN | Controller Area Network |
| GPS | Global Positioning System |
| IGN | Ignition |
| GND | Ground |
| IO | Input Output |
| RS485 | Serial communication via RS485 |
| PWR | Power |
| AUX | Auxiliary power input |
| LED | Light Emitting Diode |
| ECU | Electronic Control Unit |
| LAN | Local Area Network |

# 9. Compliance

## 9.1 FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, you will be required to correct the interference at your own expense.

Important: Changes or modifications to this product not authorized by ChargePoint, Inc., could affect the EMC compliance and revoke your authority to operate this product.

Exposure to Radio Frequency Energy: The radiated power output of the 802.11 b/g/n radio and cellular modem (optional) in this device is below the FCC radio frequency exposure limits for uncontrolled equipment. The antenna of this product, used under normal conditions, is at least 20 cm away from the body of the user. This device must not be co-located or operated with any other antenna or transmitter by the manufacturer, subject to the conditions of the FCC Grant.

## 9.2 ISED (Formerly Industry Canada)

This device complies with the license-exempt RSS standard(s) of Innovation, Science and Economic Development Canada (ISED). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux flux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada (ISDE). L'exploitation est autorisée aux

deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter.

Radiation Exposure Statement: This equipment complies with the IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Énoncé d'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements ioniques RSS- 102 Pour un environnement incontrôlé. Cet équipement doit être installé et utilisé avec un Distance minimale de 20 cm entre le radiateur et votre corps.

# 9.3 FCC/IC Compliance Labels

To access the FCC/IC compliance labels, please visit FCC/IC Label | ChargePoint.

# 9.4 ChargePoint Declaration of Conformity (DoC)

To access the ChargePoint Declaration of Conformity (DoC), please visit Guides - Choose your Country | ChargePoint.

# ChargePoint

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