# Installation Guide for VeeaHub™ Pro Outdoor

Version 0.3

## Introduction

The VeeaHub Pro Outdoor (VHH10) is a ruggedized version of the popular VeeaHub Pro intelligent wireless hub. The VHH10 has an IP-65 rating and is designed to be installed in outdoor environments. This document will be your guide to the proper installation of the VHH10.

## VHH10 Installation Kit

The VHH10 installation kit is packed in a separate box from the VHH10 unit itself. The installation kit contains:

- 1 x Wall Mounting Bracket (2 pieces)
- M8 screws to attach mounting bracket to VHH10
- M8 screw to attach grounding cable
- 2 x M12 male connectors with pigtail cables for ethernet
- 1 x M12 female connector with pigtail cable for power
- 1 x Self-locking tweezers (for SD card insertion)

## Understanding the VHH10

As you read through this document, please refer to the following diagrams to help you locate the various connections, buttons and Indicators:

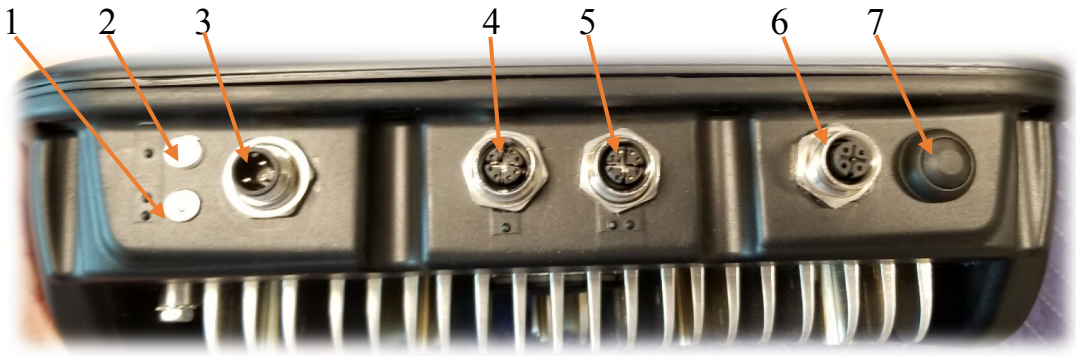



*Figure 1*

1. Lower LED
2. Upper LED
3. Power Connector (M12 male)
4. Ethernet Connector (M12 female) – this connection supports PoE
5. Ethernet Connector (M12 female)

6. RS232/422/485 (M12 female) – for serial IoT connection
7. Reset button

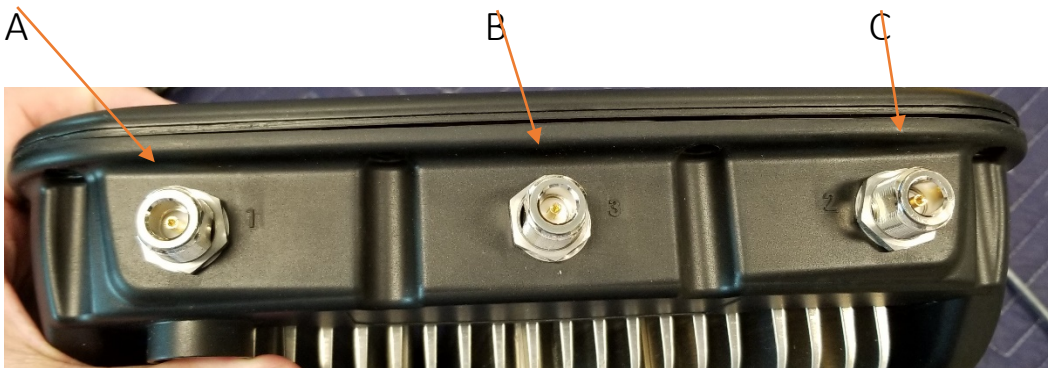



*Figure 2*

A. LTE Primary Antenna
B. Bluetooth Antenna
C. LTE Diversity Antenna

## Understanding the Lights

The lights (refer to Figure 1) are named as follows:

1. Lower – This light is the lower of the pair of lights on the side of the unit.
2. Upper – This light is the upper of the pair of lights on the side of the unit.

Each of these lights are either off, on or flashing read, green or blue. The resulting pattern provides information about the state of the unit. The following table is a partial listing of the status patterns of the device indicator lights.

| State | Lower | Upper |
|---|---|---|
| Normal Operation | On Green | On Green |
| No Power | Off | Off |
| Bootloader Starting | On Green | Off |
| Linux Starting | Off | On Green |
| Reset | Flashing Red | Off |
| Recovery | Flashing Red | Flashing Red |

*Table 1*

In general, when a light is flashing red, some error condition exists. In that case, the specific pattern on the indicator lights will tell more details about the specific error. For a complete listing of all the error conditions and their associated light patterns please refer to the VHH10 User Guide document.

## Ethernet Ports

The VHH10 unit has two ethernet ports. The port labeled #4 in Figure 1 above, accepts 802.3bt power and should be used as the primary gateway connection. The other ethernet port is an optional auxiliary

ethernet connection. Use the connectors provided in the installation kit to install the ethernet connection(s), as needed. Refer to Table 3 for the pinout information and cabling recommendations for each connection attaching to the lower edge of the VHH10 unit.

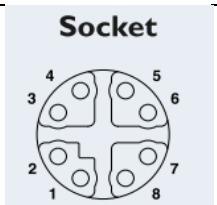
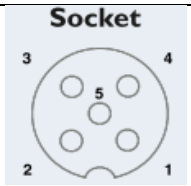
| Connector | Pin Diagram | Assignment | AWG | Twisted Pairs |
|---|---|---|---|---|
| Power | | Pin1, V+, Red<br>Pin3, V-, Black<br>Pin4, GND, Green/Yellow | 24# | Pin 1&3 |
| Ethernet/PoE |  | P1, DA+, White/Orange<br>P2, DA-, Orange<br>P3, DB+, White/Green<br>P4, DB-, Green<br>P5, DD+, White/Brown<br>P6, DD-, Brown<br>P7, DC-, White/Blue<br>P8, DC+, Blue | 24#<br>CAT5e | Pin 1&2<br>Pin 3&4<br>Pin 5&6<br>Pin 7&8 |
| RS232/422/485 Serial |  | Pin1, RTS, White/Orange<br>Pin2, CTS, White/Green<br>Pin3, TXD, Orange<br>Pin4, RXD, Green<br>Pin5, GND, Brown | 24#<br>CAT5e | Pin 1&3<br>Pin 2&4 |

*Table 2*

For reference, Table 4 shows the pin assignments for the far end of the cables coming from the VHH10 unit.

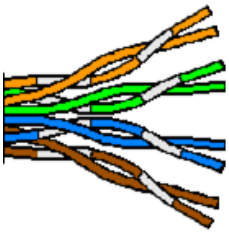
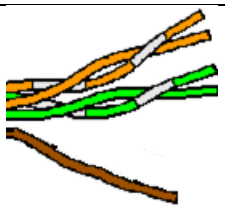
| Connector | Twisted Pairs | Pin Assignments |
|---|---|---|
| Ethernet/PoE<br>RJ-45 |  | Pin1, DA+, White/Orange<br>Pin2, DA-, Orange<br>Pin3, DB+, White/Green<br>Pin4, DB-, Blue<br>Pin5, DD+, White/Blue<br>Pin6, DD-, Green<br>Pin7, DC-, White/Brown<br>Pin8, DC+, Brown |
| Serial DB-9M |  | Pin1, N/C<br>Pin2, RXD, Green<br>Pin3, TXD, Orange<br>Pin4, N/C<br>Pin5, GND, Brown<br>Pin6, N/C<br>Pin7, RTS, White/Orange<br>Pin8, CTS, White/Green<br>Pin9, N/C |

*Table 3*

## Mounting the VHH10

The unit may be mounted either on a flat surface (such as a wall) or on a pole (refer to Fig. 3). The wall mount bracket is included in the installation kit. Note that this bracket consists of two pieces: one piece attaches to the VHH10 unit and the other piece gets mounted to the surface of the wall.
**IMPORTANT**: You must ensure that the unit is mounted so that the edge with the antenna connections facing UP, as shown in Fig. 3. Also make sure to orient the wall mounting bracket correctly, as shown in the diagram.

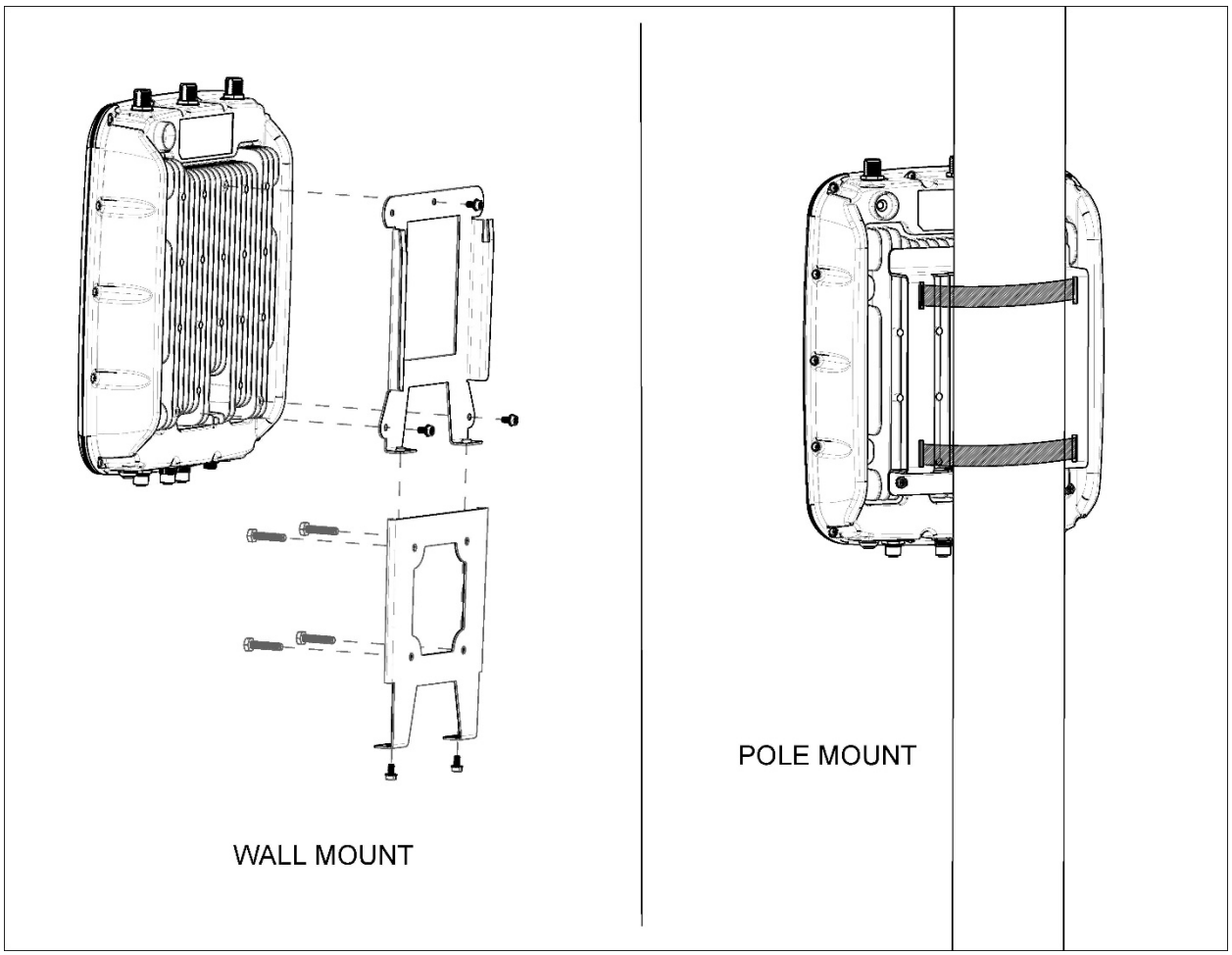



*Figure 3*

## Grounding Connection

The VHH10 unit must be properly grounded to ensure reliable operation. The grounding connection (see Fig 4) must be securely and effectively connected to an actual earth ground. A grounding stake, grounded pole or similar grounded metal structure may be used. Figure 4, shows the back of the VHH10 unit with the unit piece of the wall mounting bracket attached. The location of the grounding connection is shown in that Figure by the large green arrow. Because it may be difficult to reach this connection after the unit is hung on the wall, it is advisable to connect the grounding lug to the VHH10 unit before hanging the unit on the wall mount.

*Figure 4*

## Wall Mounting Procedure

1. Attach the unit piece of the wall mounting bracket to the back of the VHH10 unit with three M8 bolts, as shown in Figure 4. Please notice that a single bolt attaches in the middle at the top of the bracket and two bolts attach the bottom of the bracket. The holes in the top corner of the bracket are unused.
2. Attach the wall piece of the wall mounting bracket to the wall surface so that it is oriented as shown in Figure 5. The side rails must be away from the wall so that the unit lays flat on the wall. The locking flanges must be on the bottom as shown in this figure.
3. Attach the grounding cable to the grounding connection on the unit assembly, as described above.
4. Hang the unit assembly on the wall piece of the bracket by matching up the bracket side flanges and sliding the unit assembly down onto the mounted wall piece until it rests on the locking flanges.

5. Insert 2 M8 screws into the locking flanges at the bottom to fasten the two pieces of the mounting bracket together (see Figure 3).

*Figure 5*

## Power Connections

### If Using PoE to Power the Unit

A PoE switch or a cable injector may be used to power this unit. Refer to Tables 3 & 4 for connection information.

### If Using a Separate DC Power Cable

Refer to Table 3 for power cable connections. When using a separate DC power cable, a minimum 14# conductor cable should be used. Maximum length is 50 feet.

## Sim Card Installation

The SIM card normally comes pre-installed in the unit if it was manufactured with the LTE option. The SIM card port is sealed with a weatherproof seal. Do NOT unnecessarily open this port to avoid impairing the weather resistance. If it becomes necessary to open the port, take care to ensure that the port sealing ring and closure cap remains clean and undamaged and that the cap is closed securely.

## Reset Button Use

The reset button is located on the bottom surface of the unit (see Fig x). Pressing this button will switch through a set of reset modes depending on how long the button is pressed. As you enter each mode, the Upper and Lower indicator lights will change their patterns to show the new mode. When you release the reset button, the current mode is executed. The Logo light is nor affected by the reset button. The following table describes the reset modes:

| Mode | Upper Light | Lower Light | Notes |
|---|---|---|---|
| Reboot | Off | Red Flashing | Short Press <5 secs |
| Container Reset | Red On | Red Flashing | Med Press 5-10 secs |
| Recovery | Red Flashing | Red Flashing | Long Press 10-15 secs |

If the reset button is held for longer than 15 seconds, the unit is returned to the state it was in before the reset button was pressed. This effectively cancels the reset.

Professional installation instruction:
1.Installation personal
This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.
2.Installation location
The product shall be installed at a location where the radiating antenna can be kept 29cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.
3.External antenna
Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.
4.Installation procedure
Please refer to user's manual for the detail.
5.Warning
Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty