

Finapp S.P.A.

User manual Installation

Electronic Boards

The Data Logger shown in Figure 1 is a compact electronic board that provides power management, LTE connection, GPS localization and common interfaces (UART, SDI-12) to connect the probe to external dataloggers. This board contributes to less than 2% to the total power consumption. The SIM card installed by default is from INCE provider. Alternative options are available accordingly to customer's region and requirements. In case a different provider is needed, please contact Finapp.

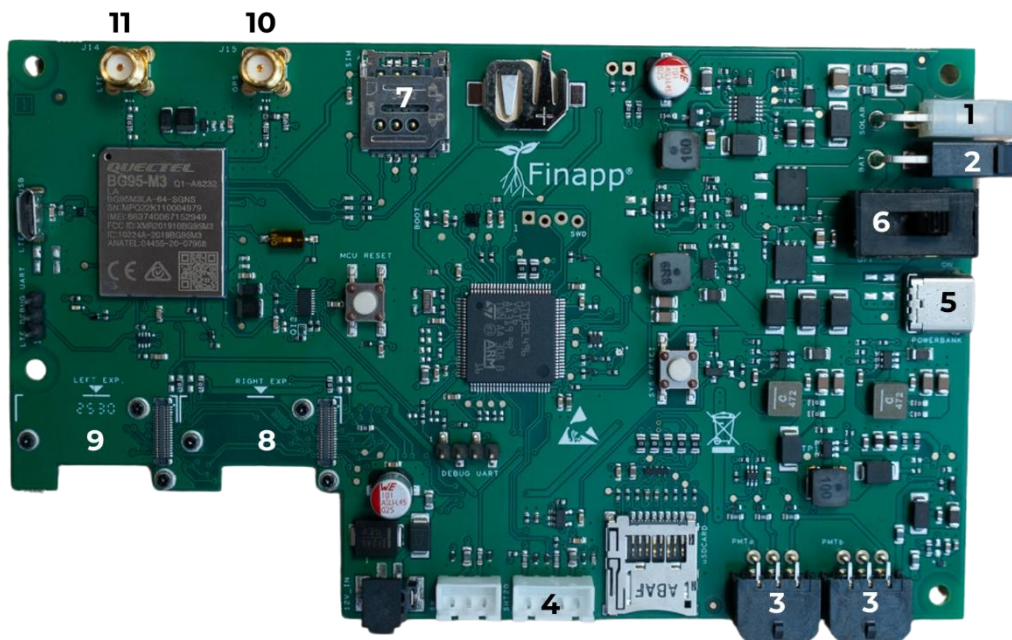


Figure 1 Details of the Data Logger. 1 - MOLEX of solar panel, 2 - MOLEX of the battery, 3 - PMT connectors, 4 - SHT20, red square – LED for debug, 5 - USB-C for indoor use, 6 – Switch, 7 – SIM card slot, 8 – Expansion slot 1 for RAK external modules, 9 – Expansion slot 2 for RAK external modules, 10 GPS unit connector, 11 Antenna cellular connector

1. Soil Moisture Configuration Installation Guide

The Finapp probe is a preconfigured plug-and-play system. The customer needs only to mount the system on a pole with the metal ware provided and connect battery and solar panel. Normally the probe is installed 1.8 meters above ground to cover an area of radius of about 125m at sea level. Height above the ground is defined as relative to the center of the box. By default, the system is equipped with collar for a 48mm pole mounting, on request it is possible to equip the system for mounting on a diameter between 30 and 90 mm.

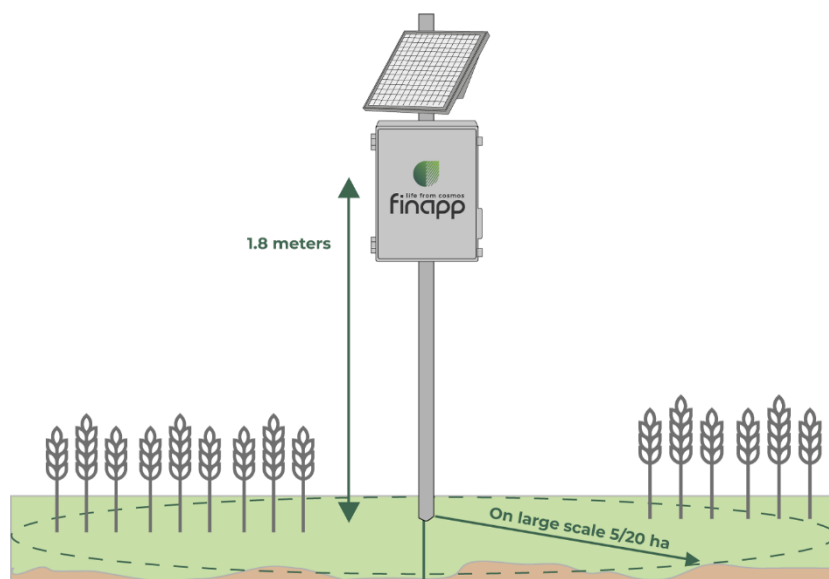


Figure 2 Default height of installation

If no structure is available at the installation site, mount the system on a 2.5 m long, 48 mm diameter galvanized iron pole, embedded 0.5 m into the ground for stability. An 80 cm screw foundation may also be used.

1.2 Pole's installation

To install the screw, construct a T-shaped lever Figure 3 using two tubes smaller in diameter than the foundation screw, joined at 90° with a clamp. This lever allows twisting and applying downward force to drive the foundation into the soil. Leave 10–15 cm of the foundation above ground to insert and secure the 2.5 m pole, ensuring a stable installation.



Figure 3 installation of the screw foundation

The IP67/68 enclosure containing the detector, master, acquisition board, and battery is equipped with aluminium bars on the rear for pole mounting. Attach the top and bottom collars using two M6 screws per collar. The collars and screws are included with the hardware. Mount the probe on the pole and tighten the collars securely to prevent any movement.



Figure 4 Mounting bars for Finapp box

The standard probe is equipped with:

- 20W solar panel with cables and the bracket for pole mounting

1.4 Mount the solar panel

- Solar panel dimensions: 35.5 × 43.5 cm; weight: 2.2 kg (including mounting bracket)



Figure 5 Solar panel (left) and the bracket for pole mounting (right)

- 2 x brackets, 4 x M6x16 screws, 4 x M6x16 flange nuts

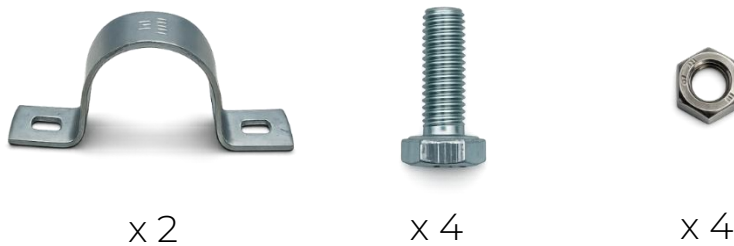


Figure 6 From left to right, brackets, M6x16 screw, M6 flange nut

The solar panel structure can be assembled by attaching the U-shaped bracket (1) to the horizontal bars of the solar panel as shown Figure 7. Attach the collar to the U-shaped bracket and secure the completed solar panel structure using the provided screws.

The inclination of the solar panel is adjustable. Using the vertical axis as a reference, select one of the following angles based on installation location:

- 30° – recommended for snowy regions or high-latitude installations
- 45° – recommended for mid-latitudes
- 60° – recommended for tropical zones

The solar panel must face south (or north in the Southern Hemisphere) to ensure maximum charging of the backup battery during daylight. Firmly tighten the collar, especially in windy areas, to prevent the solar panel from changing direction.



Figure 7 Mounting brackets for solar panel

1.4.1 Insert pre-wired cables

Pre-drilled holes are located at the bottom of the box to insert the pre-wired cables with the cable gland. Follow the steps shown in Figure 8 to insert each cable into the bottom of the Finapp box. Firmly tighten the cable gland to prevent moisture from entering the enclosure.

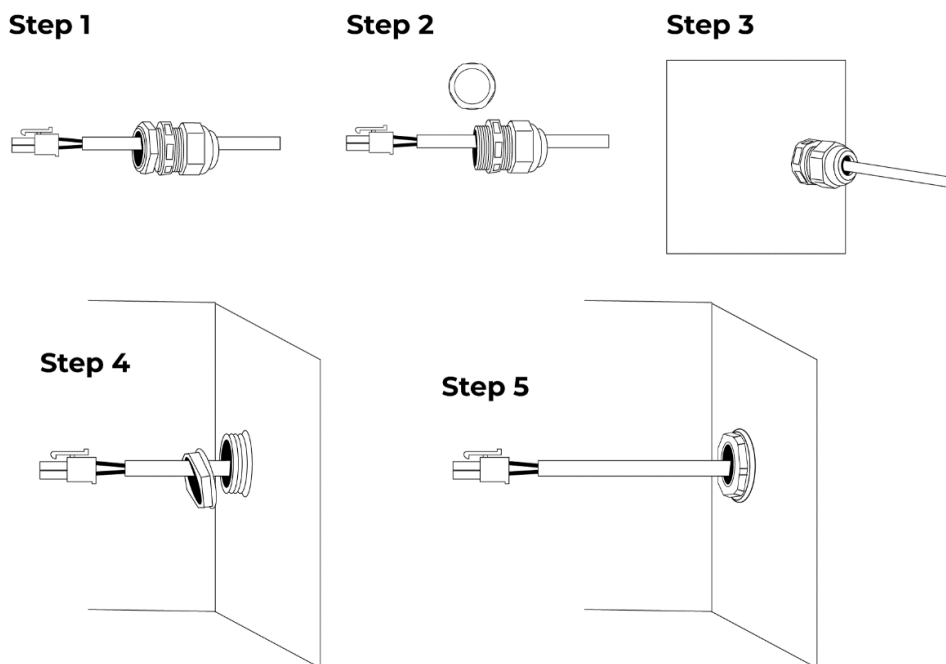


Figure 8 Steps for inserting pre-wired cable into Finapp box

The battery should be placed at the bottom of the box and connected to the battery cable provided by Finapp, as shown in Figure 9.

1.5 Battery Installation If space constraints prevent installation in the standard upright position, the battery may also be mounted horizontally or vertically, as it is hermetically sealed.

NOTE: If the system is powered via an external data logger, **do not use the battery.**



Figure 9 Finapp with 9Ah battery (left) and Finapp Plus with 18Ah battery (right)

The solar panel and battery cables are pre-wired. Connect the black male MOLEX from the battery to the black female MOLEX on the board (Connector 2, Figure 1). Repeat the procedure for the white connector from the solar panel (Connector 1, Figure 1).

1.6 Battery and Solar Panel Connection

The system is now ready to be powered on. Use the switch on the board (Switch 6, Figure 1) to turn on the system. The central LED (red square, Figure 1) will turn green and remain on for a few seconds until the board completes its initialization.

1.7 Switch ON the system

For indoor operation, you can use the USB-C female connector (Connector 6, Figure 1). The power requirement is 5 V, 1.5 A.

When the board is powered on, the LED (red square, Figure 1) lights up. The LED changes color depending on the board's status. If the probe is operating correctly, the LED will display the following colors:

Blink Red --> 10s Green --> LED off --> Long Blue --> LED off

After initialization, the LED turns blue when the board is successfully connected to the Finapp server.

