

Gateway Pro

Instruction Manual



Quick installation guide and system operationImportant safety, compliance and warranty information

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MOVE SOLUTIONS CUSTOMER ASSISTANCE SERVICE

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Gateway Pro

Instruction Manual

English

Read manual before product use

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PUBBLICATION

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NOTICE OF PUBLICATION

The information contained in this manual may be subject to change without notification. For further instructions, more detailed information, product specifications and to download up-to-date manuals, visit our website at www.movesolutions.it.

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Warnings

For the correct and safe operation of the product, it is recommended to read and follow the instructions in this manual

Great attention should be paid to the following warnings. Move Solutions shall not be held responsible for inconveniences, damage or malfunctions due to lack of compliance to the prescriptions and suggested use in this manual.

- The declared IP rating is to be intended with both the cable gland tightened around a cable and the lid of the product correctly screwed in place. Do not expose the product to humidity or dust in any other condition.
- Before use, make sure that the product conforms to the description in this manual and that no damage is present.
- Do not use batteries other than those specified by Move Solutions without express approval from a Move Solutions representative.
- Before any operation on the product, disconnect the batteries.
- The product is not intended for use in applications where safety is extremely critical, such as medical-related applications or life-security systems.
- On top of the prescriptions in this manual, the user should operate in compliance with local standards for security and health, and according to the best engineering practices for a safe installation.
- The product must be kept clear of children, animals, and any unauthorized personnel.
- Do not disassemble the product except when explicitly instructed in this manual, as this could cause malfunctions and damage the product.
- Do not attempt to repair or modify the product.
- If the product releases smoke or heat during operation, immediately disconnect the batteries.
- Do not expose the product to high temperatures outside the specified range or heat sources.
- Do not expose the product to liquids of any kind and do not operate on it with wet hands. The product can only be exposed to water when the conditions to guarantee the IP rating are satisfied.

- Do not operate on the product in extreme weather conditions that may damage the device or the user, such as thunderstorms or snowstorms.
- Do not disperse the product or part of it in the environment.
- Correct functioning of the product in environments with high radio activity is not guaranteed.
- The product is compliant to all regulations concerning the fair use of ISM radio bands. However, given the free nature of these bands, occasional conflict with nearby devices operating on the same bands cannot be fully prevented.



This product contains electronic components and batteries that must be disposed of separately from common household waste, according to local regulations. To ensure correct disposal of the product at the end of its lifecycle, please refer to your local authority. Failure to comply to the regulations could lead to penalties.

NOTE

 In case of deterioration or loss of this manual, a compliant copy may be requested by the customer from the manufacturer. For increased security, we suggest that you keep a copy of this manual in a place where it cannot be damaged or lost.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- · This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

ISED Compliance

This device complies with Industry Canada licence-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, e
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with Industry Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme à l'exposition aux rayonnements Industry Canada limites établies pour un environnement non contrôlé.

Symbols and provisions used in the documentation

The following symbols and conventions are used throughout the documentation. Please follow all warnings and instructions marked on the product.



WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.



Fire Danger icons warn of the possibility of fire.



Electrical Danger icons warn of the risk of electric shock.



IMPORTANT

IMPORTANT indicates a potentially hazardous situation which, if not avoided, can result in property damage or loss of product functionality.



Prohibition icons indicate actions that must not be performed.

NOTE

NOTE specifies the operating environment, installation conditions, or special conditions of use.

Rold

Bold text highlights an important point or keywords for understanding the context.

Italic

Text in italics is used for specific names for sensors, options of the Move Cloud Platform, or chapters of this manual. The Gateway Pro is a data receiving and sending control unit with which, thanks to the LoRaWAN wide-range communication protocol, it is possible to manage and communicate with dozens of devices and sensors at the same time.

The device is Outdoor IP67 and is powered via PoE, offering different power options such as solar panels or external batteries. It has multi backhaul with Ethernet, Wi-Fi and cellular connectivity. The Gateway Pro can also be equipped with 1 or 2 external LoRa high gain antennas and therefore is capable of supporting up to 8 or 16 channels. All other LTE, Wi-Fi and GPS antennas are internal to the case to allow for easier installation. The device implements a Wi-Fi hotspot to access the configuration panel and has an integrated GPS for very precise synchronization and product geolocation. Finally, it is very easy to configure thanks to the possibility of inserting the SIM externally and the automatic detection of the APN.



NOTE

 The Gateway Pro device is available in two models: 8ch (one antenna, 8 channels) and 16ch (two antennas, 16 channels). You can follow this section of the manual for both devices, every difference will be specified.

Technical data

General data		
Computing	MT7628, DDR2RAM 128 MB	
Wi-Fi feature	 Frequency: 2.4 GHz (802.11 b/g/b/) RX Sensitivity: -95 dBm (Min) TX Power: 20 dBm (Max) Operation Channels: 2.4GHz: 1-13 	
LoRa feature	 Card: SX1303 Mini PCle Card (connects maximum of two) Channels: 8 Channels (Optional: 16 channels) RX Sensitivity: -139 dBm (Min) TX Power: 27 dBm (Max) Frequency: EU433, CN470, EU868, US915, AS923, AU915, KR920, IN865 	
Cellular feature	 Supports Quectel EG95-E / EG95-NA (IoT/M2M-optimized LTE Cat 4 Module) EG95 -E for EMEA Region: LTE FDD: B1/B3/B7/B8/B20/B28A WCDMA: B1/B8 GSM/EDGE: B3/B8 EG95 -NA for North America Region: TE FDD: B2/B4/B5/B12/B13 WCDMA: B2/B4/B5 	
Power supply	PoE (IEEE 802.3 af), 37~57 VDC; 12V connector for external supply.	
Power consumption	3 W (typical)	
ETH	RJ45 (10/100Mbps)	

General data		
Antenna	1 (2 for 16 ch. version) N-Type Connectors	
Ingress protection	IP67	
Enclosure material	Aluminum and plastic	
Weight	3.15kg	
Dimensions	240 mm x 240 mm x 80 mm	
Operating temperature	from -30°C to +55°C	
Operating humidity	from 0% to 95% (non-condensing)	
Installation method	pole or wall mount	
Certification	CE, UKCA, FCC, KC, RCM, RoHS	

Wi-Fi		
Wireless standard	IEEE 802.11b/g/n	
Operation channels	2.4 GHz: 1-13	
Transmit Power per chain*1	802.11b 1 Mbps: 19 dBm 11 Mbps: 19 dBm 802.11g 6 Mbps: 18 dBm 54 Mbps: 16 dBm 802.11n (2.4G) MCS0 (HT20): 18 dBm MCS7 (HT20): 16 dBm MCS7 (HT40): 17 dBm MCS7 (HT40): 15 dBm	

^{*1}The max. power may be different depending on local regulations

What's in the box



All devices distributed by Move Solutions™ are tested and fine-tuned by the manufacturer before shipping and delivery to the customer.

Inside the package you should find:

Number of pieces	Components
1 pc.	Gateway Pro
1 pc. (8ch model) 2 pcs. (16ch model)	LoRa Antenna
1 pc.	PoE adapter
1 pc.	2m Ethernet cable
1 pc.	Ethernet cable gland
1 pc.	Installation kit
1 pc.	Female connector 4 poles (12v)

The supplied Ethernet cable is 2 meters long and can be used both for the connection between the PoE adapter and the Pro Gateway (in Cellular LTE or LAN operation) and for the connection between the PoE adapter and Router (in LAN operation). In the event that the length of the supplied Ethernet cable is not sufficient, it will be necessary to purchase cables of the appropriate length. This Ethernet cable must be:

- Category CAT6.
- Maximum length 100m (only if used for the connection between the PoE adapter and Gateway Pro).

Check for any damage to the device. Check that the various parts of the device do not show any damage due to impacts or abrasions. Check in particular that there are no marks or dents, indicative of impacts occurred during transport and that the inputs and outputs are not damaged.

Gateway Pro configuration

5.1 Access to the network

Before proceeding with the installation on the Gateway Pro structure, it is necessary to choose the method for connecting to the Internet. Based on this methodology, different setup and powering procedures are required. These possible operations for accessing the network can be:

- · Cellular LTE operation with Nano SIM Card
- · LAN operation with Ethernet



5.2 Cellular LTE operation

STEP 1

With this type of operation, in order to access the network via Cellular LTE communication, the Gateway Pro device needs:

Nano SIM Card (Standard SIM or Micro SIM are not supported).

To guarantee a continuation of network communication, based on the data consumption standards of the communication, it is required:

 A monthly pay-as-you-go telephone rate plan with a minimum of 5 Giga-bytes of internet browsing.

STEP 2

Before you can insert the Nano Sim Card into the Gateway Pro you need to:

- Insert the Nano SIM Card into a mobile device.
- Access the general settings of the mobile phone.
- Deactivate the access activation PIN code.

STEP 3

After configuring the SIM Card, you can insert it into the Gateway Pro device, then:

- Unscrew the special SIM cap located at the bottom of the device, as shown in the previous figure.
- Insert the SIM with the chip facing down.
- Close the SIM cap.

STEP 4

For the detection of the APN there are two different cases and different procedures to follow according to the telephone company used for internet browsing, therefore:

- Public SIM Card: automatic APN detection, no particular configuration procedure is required to follow.
- Private SIM Card: manual APN configuration, follow the procedure described in "5.3 Manual APN configuration with Private SIM".

To understand whether the type of SIM used requires manual configuration of the APN or not, it is recommended:

- Power up and then turn on the Gateway Pro device, see chapter "6. Gateway Pro Installation".
- Verify through the LED interface on the device if the Gateway is correctly powered and connected (refer to page 26 of this manual for the status LED indication).
- Log in to the Move Cloud Platform™ with the login information provided.
- Check through the "System Status" panel if the Gateway Pro device is correctly
 Online. In the event that the device fails to automatically connect to the network
 resulting therefore Offline, a manual configuration of the SIM Card APN is
 required, see "5.3 Manual APN configuration with private SIM".

5.3 Manual APN configuration with private SIM

If the Nano SIM Card used to access the network is a Private SIM, it is required to follow a specific manual procedure for configuring the APN, therefore:

- 1. Connect all antennas to the Gateway Pro (LTE, GPS, Wi-Fi, LoRa).
- 2. Turn on the Gateway Pro device by connecting the ETH (PoE) port of the Gateway Pro to the PoE port of the PoE adapter using an Ethernet cable.
- 3. Connect the PoE adapter to the power supply.
- 4. Wait for the Gateway Pro to generate a WiFi network, connect to it with your PC with the following login information:
 - WiFiNAME: MG xxxx [last four digits of the device code].
 - WiFiPWD: see the label on the PoE adapter box.
- Access the internet with a search engine and type the following IP address in the URL bar:
 - 192.168.230.1
- **6.** Access the configuration interface with the following access data:
 - User name: root
 - RootPWD: see the label on the PoE adapter box.
- 7. Click on "Cellular interface" under the "Network" section of the side menu.
- **8.** Complete the configuration procedure of the new APN profile by filling in all the required fields and click on "Save & Apply".
- Click on "Preview" under the "Status" section of the side menu and check that the data of the telephone operator used are correctly shown in the "Cellular" section.

In the event that the device fails to connect to the network and is still Offline, we recommend repeating the APN configuration procedure, making sure to:

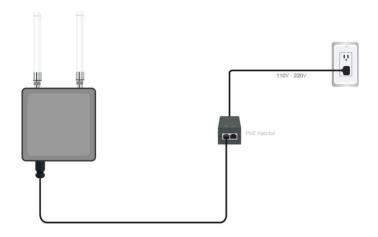
- You have removed the PIN from the SIM Card.
- You have entered the correct APN during the configuration procedure.

If the problem exists, contact technical assistance by contacting Customer Service directly at support@movesolutions.it.

After successfully completing this configuration procedure for network access, the Gateway Pro device is ready to be installed on the reference structure.

5.4 Automatic APN detection with public SIM

As previously described, using a Public Nano SIM Card no APN configuration procedure is required. Since this procedure is therefore completely automatic, the Gateway Pro device is ready to be installed on the reference structure, see chapter "6. Gateway Pro Installation".



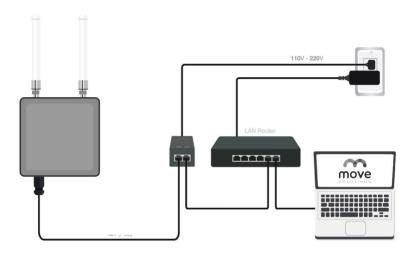
5.5 LAN operation

If you want to transfer data through a LAN connection, instead of using a SIM Card, you need to:

- 1. Connect all antennas to the Gateway Pro (LTE, GPS, Wi-Fi, LoRa).
- 2. Connect the ETH (PoE) port of the Gateway Pro to the PoE port of the PoE adapter using an Ethernet cable.
- **3.** Connect the LAN port of the PoE adapter to the Router with an Ethernet cable.
- **4.** Connect the PoE adapter to the power supply.
- **5.** Log in to the Move Cloud Platform[™] with the login information provided.
- 6. Check through the "System Status" panel that the Gateway Pro device is correctly Online. It may take a few minutes before the Gateway Pro can be properly viewed Online.

If the Gateway Pro fails to connect to the network and is still Offline, we recommend repeating the procedure described above. If the problem exists, contact technical assistance by contacting Customer Service directly at support@movesolutions.it.

After successfully completing this network access procedure, the Gateway Pro appliance is ready to be installed on the reference structure.





IMPORTANT

• Turn on the Gateway Pro device only when the two antennas are correctly connected.

5.6 Static IP address configuration

If you want to transfer data via a LAN connection, instead of using a SIM Card, you may need to configure a static IP address on the device, to do this you need to:

- 1. Wait for the SHM Gateway to generate a WiFi network, connect to it with your PC with the following login information:
 - WiFiNAME: MG xxxx [last four digits of the device code].
 - WiFiPWD: see the label on the PoE adapter box.
- Access the internet with a search engine and type the following IP address in the URL bar:
 - o 192.168.230.1
- **3.** Access the configuration interface with the following access data:
 - User name: root
 - RootPWD: see the label on the PoE adapter box.
- **4.** Click on "WAN Interface" under the "Network" section of the side menu.
- Select "Static Address" in the drop-down menu of the "Protocol" item, and click on the "Change protocol" button.
- **6.** Complete the Static Address configuration procedure by filling in all the required fields and click on "Save & Apply".
- Restart the Gateway Pro device, then disconnect and reconnect the power supply to make the changes effective.

5.7 Temporary network disservice

The Gateway Pro device is able to store the data detected and transmitted by the sensors even in the event of a network outage and forward them to the Move Cloud Platform™ as soon as it is available again.

Gateway Pro installation

6.1 Device location

It is good to keep some aspects in mind before proceeding with the handling, installation and subsequent use of the device. In particular, it is necessary to verify that the following requirements are met:

- The installation site of the Gateway Pro must be as high as possible with respect to the sensor system installed.
- It is recommended to position the Gateway Pro so that it is in line of sight with each specific sensor to maximize radio coverage.
- Correctly screw the antennas following the arrangement given by the special labels placed on the device. All the antennas of the Gateway Pro must be oriented upwards.

6.2 Power supply

The Gateway Pro device can be powered through two different options:

- Using the PoE adapter and the supplied Ethernet cable.
- Through a solar panel (available on request).

To power the Gateway Pro by connecting it directly to the power supply:

- 1. Connect the LoRa antennas to the Gateway Pro.
- 2. Turn on the Gateway Pro device by connecting the ETH (PoE) port of the Gateway Pro to the PoE port of the PoE adapter using an Ethernet cable.
- 3. Connect the PoE adapter to the power supply.



IMPORTANT

 The PoE adapter has no degree of protection against the intrusion of solid particles and the access of liquids. It is therefore recommended to protect the product from dust, sand and in general any small solid body, as well as from humidity and rain.

The supplied Ethernet cable is 2 meters long and can be used both for the connection between the PoE adapter and the Gateway (in Cellular LTE or LAN operation) and for the connection between the PoE adapter and Router (in LAN operation). In the event that the length of the supplied Ethernet cable is not sufficient, it will be necessary to purchase cables of the appropriate length. This Ethernet cable must be:

- Category CAT6.
- Maximum length 100m (only if used for the connection between the PoE adapter and Gateway Pro).

6.3 Installation on the structure

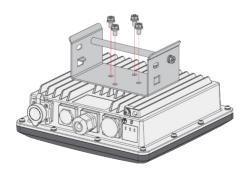
For proper operation, the Gateway Pro device must be securely installed on a wall or pole using the appropriate installation kit supplied.

Agree with the supplier company on the correct positioning of the Gateway Pro device with respect to the monitoring area. For technical assistance, please contact Customer Service directly at support@movesolutions.it.

6.4 Mounting (pole & wall fixing)

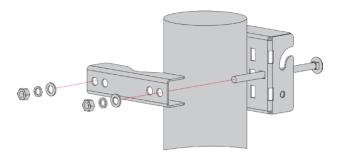
STEP 1

Fix the bracket included in the mounting kit on the bottom of the enclosure with four M6*12 screws following the direction shown in the figure below.



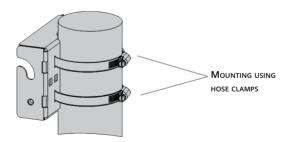
STEP 2

For installation on a pole, place the two clamp elements around the pole and tighten them with the included M6 * 110 bolts, washers and nuts. Otherwise, install the fixing plate supplied directly on a wall using M6 screws and plugs.



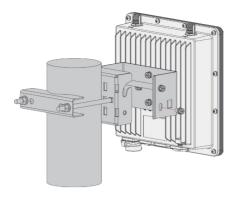
NOTE

- The diameter of the pole that is supported by the brackets is 50-100 mm. If the
 pole diameter is more than this value, hose clamps can be used. The standard
 mounting kit does not include hose clamps. If needed, they should be purchased
 separately.
- The clamp's back also has openings for hose clamps that are not included in the mounting kit.



STEP 3

Hang up the enclosure and fasten it with two M6*12 screws.



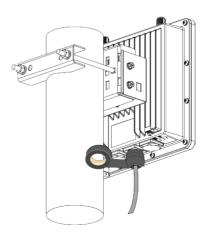
6.5 Protection from weather conditions

To better protect the Ethernet cable gland and the antenna connector from the weather, you need to cover them with PVC tape.

STEP 1

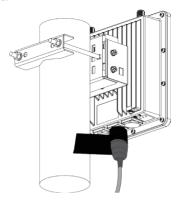
Clean the surface area of the connector that will be wrapped. Wrap a layer of PVC tape with a 50% overlap according to the rotation direction of the connector.

Continue wrapping the PVC tape to about 10 mm below the end of the connector.



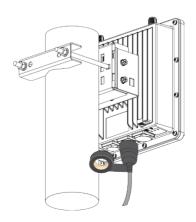
STEP 2

Cut off about 50 cm waterproof tape. Stretch it to double the length. Wrap three layers around the connector with a 50% overlap. Hold the tape in place with your hand for a few seconds.



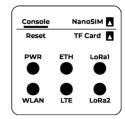
STEP 3

Wrap three additional layers with PVC tape with natural uncoiling force and a 50% overlap. Make sure to cover the head and the tail of the connector.



6.6 Status LED indication

After powering up and then starting the Gateway Pro, it will be possible to view the connection status and correct operation of the device through the LED interface located in the lower area of the device.



LED	Status indicator
LED 1 (PWR)	Power Indicator: The LED is on when the device is powered on
LED 2 (ETH)	ON - ConnectionOFF - LinkdownFlicker - Transmission and reception
LED 3 (LoRa 1)	 ON - LoRa 1 works OFF - LoRa 1 does not work Flicker - Indicates the receipt and sending of the LoRa 1 packet
LED 4 (WLAN)	AP mode: ON - The AP is active Flicker - Receiving and sending data STA mode: Slow flicker (1Hz) - Disconnected ON - Connected Flicker - Receiving and sending data
LED 5 (LTE)	 Slow flicker (1800ms high / 200ms low) - Search the network Slow Flicker (200ms High / 1800ms Low) - Inactive Fast flicker (125ms high / 125ms low) - Data transfer in progress ON - The voice works
LED 6 (LoRa 2) only on 16ch version	 ON - LoRa 2 works OFF - LoRa 2 does not work Flicker - Indicates the reception and sending of the LoRa 2 packet

6.7 Gateway pro electrical grounding

The Gateway Pro may experience power surges or be exposed to lightning in extreme weather conditions. These events can produce dangerously high electricity which can completely damage these electrical devices. By grounding the electrical system, all excess electricity will be discharged to the ground instead of severely damaging the appliances connected to the system. The appliances will be safe and protected from large electrical surges.

Electrical grounding is very important to increase the levels of electrical safety in the arrangement and to ensure that all electrical installations are safe and life protected throughout their useful arrangement.

Grounding the Gateway Pro is not technically essential. If necessary, therefore, it is possible to perform a negative grounding through the appropriate connectors located on the back of the case. In any case, comply with the national regulations in force in the individual countries.

It is therefore recommended to use a 10 AWG or larger ground wire to connect the screw terminal on the lower right side of the Gateway Pro enclosure to the ground rail (bar).



IMPORTANT

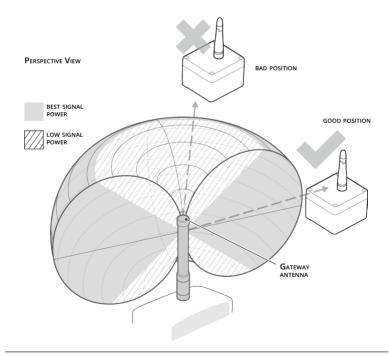


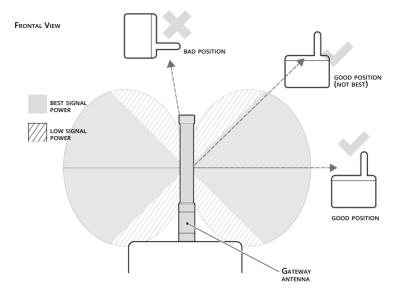
- In case of non-compliance with the recommendations contained in this document, Move Solutions assumes no responsibility for any damage suffered by the equipment due to lightning.
- DO NOT install the device near large metal structures that may cause interference or generate magnetic fields. They could interfere with the operation of the product, causing problems with the quality of the detections, interrupting or modifying the radio communication signal.
- DO NOT place the product near sources of radio waves, as this may cause interference with the operation of the electronic components of the product.
- DO NOT place the product in a high traffic area. If you need to place the
 product in a busy area, make sure it is in a safe place and away from
 accidental falls that can cause harm to people and seriously damage
 the product.
- DO NOT use power supplies other than the one supplied.
- If the installation, configuration, use and / or maintenance of the device are not carried out according to the manual, anomalies may occur during use.

When installing the Gateway Pro and the Sensors, it is important to follow some basic prescriptions to ensure the correct operation of the product.

For optimal radio performance, the antenna should be oriented the same way as the gateway antenna, and the gateway should be on the side of the device.

Avoid, if possible, to locate the sensors vertically above or under the gateway pro. If this cannot be avoided, it is best to keep the two antennas perpendicular to one another. Keep the gateway and the sensors in line of sight as much as possible, as obstacles along the path of the signal could have a negative impact on the radio link.





Try to keep the antenna as far as possible from metallic materials that could alter its radiative performance. Similarly, keep as clear as possible of high voltage power cables, radio and tv antennas and any other source of unwanted electromagnetic disturbance.



WARNING

Remember to install the Gateway Pro away from busy areas where
it could be damaged by or cause damage to animals or people. For
example, don't install the Gateway Pro on the floor unless it's in a completely secluded area.

Overall dimensions

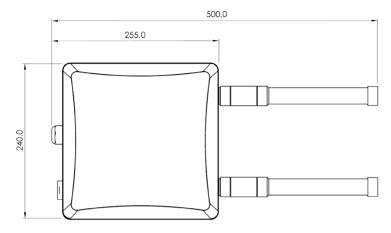


Please note that the drawings provided in this manual are not drawn to scale.

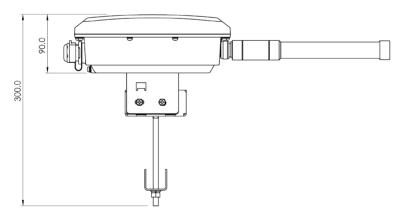
The purpose of these illustrations is to assist you in understanding the various components and their relative positions. Therefore, it is essential to rely on the numerical measurements provided alongside the drawings for accurate dimensions.

The following measurements are expressed in millimeters (\mathbf{mm}).

Upper view



Right view



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