

# Elevate Wireless

## Installation and Operation Manual



Elevate Wireless



Elevate Ethernet switch

English

Pages

1 – 21

Original version

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## 1. About this manual

- 2 This installation and operation manual in English, with metric measurements is the **original version**.
- 2 The version number is printed at the bottom of each page.
- 2 To make sure you have the latest version, please visit our product page at [www.cedes.com/en/products-for/elevators-escalators/](http://www.cedes.com/en/products-for/elevators-escalators/).

### 1.1 Measurements

- 3 Measurements are, if not stated otherwise, given in mm (non-bracketed numbers) and imperial dimensions (numbers in brackets).

### 1.2 CEDES headquarters

- 4 CEDES AG
- 6 Science Park
- 6 CH-7302 Landquart
- 9 Switzerland

## 2. Safety information

### IMPORTANT READ BEFORE INSTALLATION!

The Elevate Wireless system was developed for the acquisition and transmission of non-safety-related IoT data in elevator environments. The system does not replace a safety-related elevator control system, door monitoring device, emergency stop function or protective device. The planner, installer and operator remain responsible for the safe integration of the complete elevator application.

#### To ensure safe conditions:

- ▶ Read all enclosed instructions and information.
- ▶ Follow the instructions given in this manual carefully.
- ▶ Observe all warnings included in the documentation and attached to the sensor.
- ▶ Do not use the sensor(s), controller or cables if any of these items has been damaged.
- ▶ Keep the instruction manual on site.

Elevate Wireless should only be installed by authorized and fully trained personnel! The installer or system integrator is fully responsible for the safe integration of the system. It is the sole responsibility of the planner and/or installer and/or buyer to ensure that this product is used according to all applicable standards, laws, and regulations to ensure safe operation of the whole application.

Any alterations to the device(s) by the buyer, installer or user may result in unsafe operating conditions. CEDES is not responsible for any liability or warranty claim that results from such manipulation.

2.1 Intended use

- Monitoring temperature and humidity in the machine room.
- Detection of conductive liquid in the pit area.
- Data transmission via LoRaWAN® to the gateway.
- Forwarding data via Ethernet in connection with the Elevate system.
- Support of new elevator installations and modernization projects.

2.2 Non-intended use

The Elevate Wireless **must not** be used for:

- Use as a safety-related protective device or as part of an elevator safety chain.
- Use for direct control of elevator movement.
- Use in explosive atmospheres or radioactive environments.
- Use outside the specified environmental conditions.
- Modification of hardware, antennas, housings, printed circuit boards, firmware or approval labels without release.



Use only specific and approved safety devices for such applications, otherwise serious injury or death or damage to property may occur!

**WARNING**

The system provides additional IoT data. It must not be used as the only basis for safety-critical elevator functions.

3.1 Safety messages categories

Warning of serious health risks

**WARNING**  
**Serious health risks**

Highlights critical information for the safe use of the sensor. Disregarding these warnings can result in serious injury or death.

- ▶ Follow the measures highlighted by the triangle-shaped arrows
- ▶ Consult the safety information in Chapter 2 of this manual

Caution of possible health risk

**CAUTION**  
**Possible health risks**

Highlights critical information for the safe use of the sensor. Disregarding these warnings can result in injury.

- ▶ Follow the measures highlighted by the triangle-shaped arrows
- ▶ Consult the safety information in Chapter 2 of this manual

Notice of damage risk

**NOTICE**  
**Risk of damage**

Disregarding these notices can lead to damage to the sensor, the door controller and/or other devices.

- ▶ Follow the measures highlighted by the triangle-shaped arrows

3. Symbols, safety messages

| Symbol    | Meaning                                                            |
|-----------|--------------------------------------------------------------------|
| ▶         | Single instruction or measures in no particular order              |
| 1.        | Sequenced instructions                                             |
| 2.        |                                                                    |
| 3.        |                                                                    |
| •         | List, in no order of importance                                    |
| →         | Reference to a chapter, illustration or table within this document |
| Important | Important information for the correct use of the sensor            |

## 4. Introduction

CEDES Elevate Wireless is a wireless sensor solution designed for use in elevator environments. It enables monitoring specific environmental conditions, such as machine room temperature/humidity, and water presence in the pit, to support condition monitoring and service decision-making within the CEDES Elevate platform.

CEDES has partnered with a leading manufacturer of wireless technology to implement a reliable sensor network based on a LoRaWAN® gateway architecture. The sensors transmit their data wirelessly to the gateway, which is connected via the Elevate Ethernet switch kit to the cegard/Smart controller.

This manual describes the installation, electrical connection, configuration, and operation of the Elevate Wireless system, including the LoRaWAN® gateway and the associated Ethernet switch. For complementary information regarding the cegard/Smart controller, refer to the corresponding Installation and Operation Manual.

### 4.1 Features

- Integrated into CEDES Elevate Software Platform (IoT) for use in elevator applications
  - To provide temperature information,
    - when temperature is too high for working safely in machine rooms.
    - when water is present in the elevator pit and it is not safe for the elevator to operate.
- Reduces potential for elevator submersion into water located in the pit
- Reduces potential heat exposure for technicians servicing elevator equipment in the machine room
- Conforms with cybersecurity requirements in elevator applications

## 5. Installation

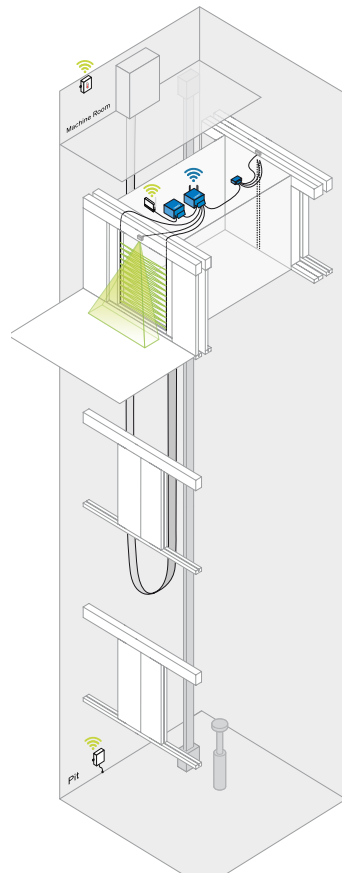
The CEDES Elevate Wireless LoRaWAN® Gateway is delivered pre-configured for operation with the cegard/Smart controller and does not require additional configuration. To integrate the system into operation, follow the procedure described in this manual to onboard the cegard/Smart controller (if not already completed) or to add individual remote wireless sensors (e.g., temperature and humidity sensors or water detection in the pit).

### 5.1 Mechanical installation of system components in the elevator

#### PLEASE NOTE | INSTALLATION SEQUENCE

- Before physical installation of the LoRaWAN® Gateway and associated sensors, refer to the information shown in Chapter 6 required for onboarding.
- Install the Elevate Ethernet switch first, connect the Gateway and perform onboarding, then onboard the wireless sensors, and only then mechanically install the Gateway and sensors.

This section describes the recommended installation of the LoRaWAN® system components in typical elevator environments, focusing on mounting locations and environmental conditions.

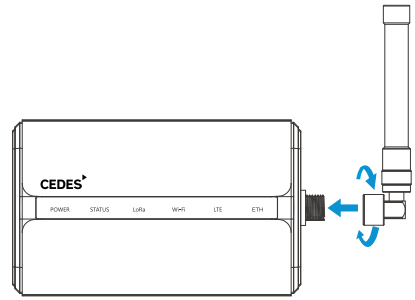


### 5.1.1 Elevate Ethernet switch kit and cegard/Smart controller

The Elevate Ethernet switch should be mounted on the car top with the mounting oriented horizontally. Ensure that the mounting location provides a stable and robust installation. For the installation of the cegard/Smart controller types, the instructions provided in the Installation and Operating Manual for the controllers are to be followed.

### 5.1.2 LoRaWAN® Gateway on the elevator car

- ▶ After completing the electrical wiring, screw the protective cover back to the device.
- ▶ Install the mounting bracket on the elevator car (car roof) using the provided mounting bracket. To ensure the best possible signal strength between the wireless sensors and the LoRaWAN® Gateway, the LoRaWAN® Gateway should be mounted on the edge of the elevator car and with the clearest possible line of sight into the hoistway. This ensures optimal wireless communication with the LoRaWAN® sensors.
- ▶ Insert the bracket mounting screws into the back of the device, then hang the device on the mounting bracket in the elevator car.

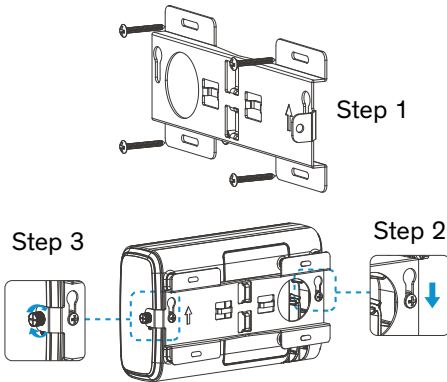


### 5.1.3 Machine room temperature sensor

- ▶ Before mounting the LoRaWAN® wireless sensor, ensure that is turned on (Chapter 5.2.5).
- ▶ Install the LoRaWAN® machine room temperature sensor:
  - on a wall inside the machine room.
  - at a height of approximately 1.5 to 2 m above the floor.
- ▶ Close the sensor again with the 4 screws.
- ▶ Attach sensor to the wall. Cover the mounting screw with the accompanying caps.

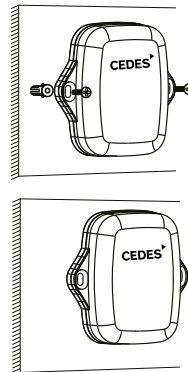
#### Mounting requirements:

- ▶ Do not install directly next to heat sources (e.g., motor, drive, control cabinet).
- ▶ Avoid installation in direct airflow (e.g., near ventilation openings or fans).
- ▶ Ensure sufficient air circulation for representative temperature measurements.
- ▶ Fix the sensor using the provided wall mounting kit.
- ▶ After installation:
  - Ensure the sensor is switched on.
  - Ensure the enclosure is properly closed.



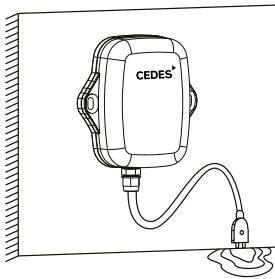
#### Important considerations:

- ▶ Ensure the antenna is properly mounted and aligned vertically.
- ▶ Avoid shielding by metallic covers or structures.



### 5.1.4 Water-in-the-pit sensor

Install the LoRaWAN® water-in-the-pit sensor according to the following guidelines:



#### Sensor housing:

- ▶ Mount the sensor housing on the hoistway wall above the expected water level.
- ▶ Protect it from direct exposure to water and mechanical damage.

#### Detection probe:

- ▶ Positioning the detection probe at the lowest point of the elevator pit.
- ▶ Ensure direct contact with potential water accumulation.
- ▶ Secure the probe using screws or adhesive tape (3M tape as provided).
- ▶ The installation must ensure reliable detection even for small amounts of water.

### 5.1.5 General notes on wireless coverage

The LoRaWAN® system is designed for typical elevator installations.

However, the following aspects must be considered:

- ▶ Metallic structures can attenuate the radio signal.
- ▶ Install the gateway in a position with good visibility to all sensors.
- ▶ Perform a functional test after final installation.

## 5.2 Electrical installation

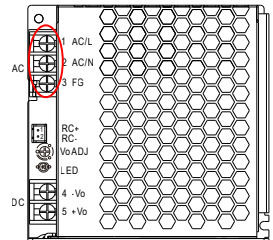
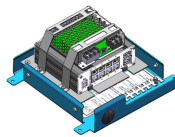
### 5.2.1 Ethernet switch / power supply

- ▶ Connect the AC power cable to the power supply unit (AC/L, AC/N, FG).



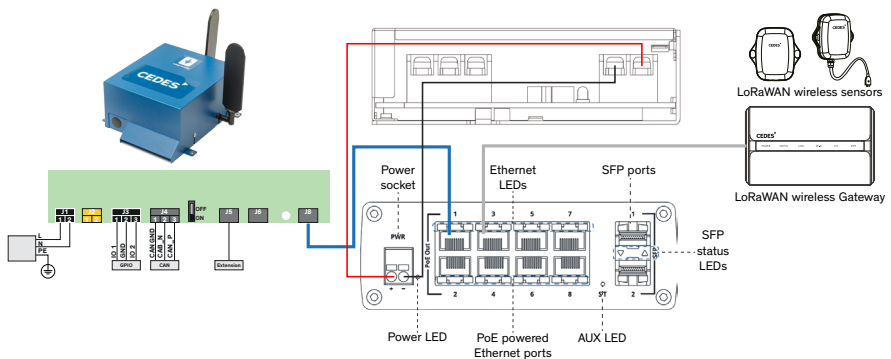
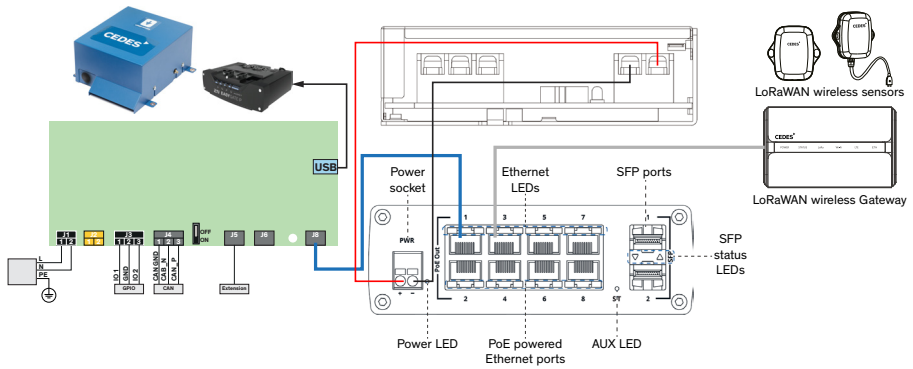
#### WARNING

- ▶ Risk of electrical shock and energy hazard. All failure should be examined by a qualified technician. Please do not remove the case of the power supply by yourself!
- ▶ Risk of electric arcs and electric shock (danger to life). Connecting both the primary and the secondary sides together is not allowed.
- ▶ The ground (FG) must be connected to earth ground.
- ▶ Use copper connectors and stranded wire only.



### 5.2.2 cegard/Smart controller (CGSM-B and -C)

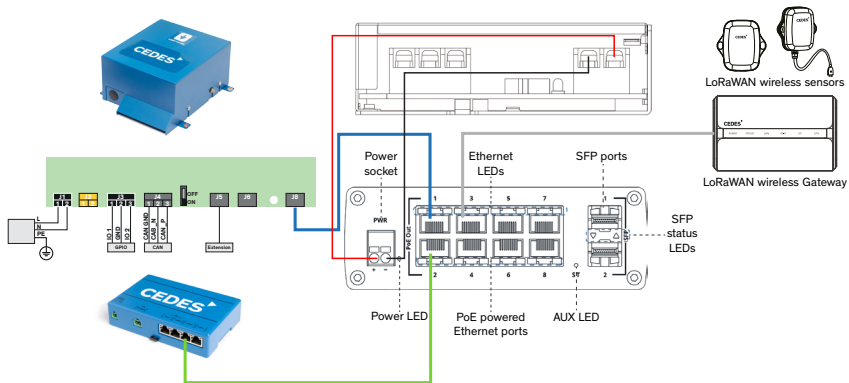
- Connect the Ethernet cable (blue) to the cegard/Smart controller (RJ45 "J8") and to the Ethernet switch (PoE Out1).



- Follow the instructions in the Installation and Operation Manual for cegard/Smart controller.

5.2.3 cegard/Smart controller (CGSM-E)

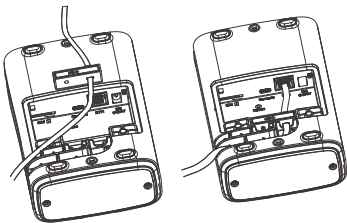
- ▶ Connect the Ethernet cable (blue) to the cegard/Smart controller (RJ45 "J8") and to the Ethernet switch (PoE Out1).
- ▶ Connect the Ethernet cable (green) to the EComgard cabin switch (Port 3) and to the Ethernet switch (PoE Out2).



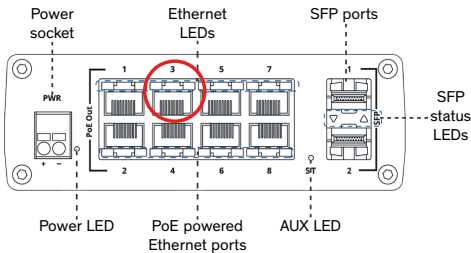
- ▶ Follow the instructions in the Installation and Operation Manual for the cegard/Smart controller.

5.2.4 LoRaWAN® Gateway

- ▶ Remove back cover and then connect the Ethernet cable (gray) to the RJ45 receptacle inside the gateway housing. Route the cable through the waterproof silicone using the grooves near the base of the Gateway.



- ▶ Connect the other end of the Ethernet cable (gray) to the Ethernet switch (PoE Out3).



- ▶ After completing the installation and electrical connection of the LoRaWAN® Gateway, verify correct device operation by checking the LED indicators on the LoRaWAN® Gateway.

The following LEDs shall be inspected:

- POWER: Indicates that the gateway is supplied with power → LED must be ON
- STATUS: Indicates system operation status → LED must be ON
- LoRa: Indicates LoRaWAN® communication → LED should be ON
- ETH: Indicates Ethernet connection and activity → LED must be ON

If one or more LEDs are not active:

- ▶ Check the power supply and PoE connection
- ▶ Check the Ethernet connection to the switch
- ▶ Verify correct installation and wiring

**Note:**

The system must not be commissioned unless all LEDs indicate proper operation.

5.2.5 LoRaWAN® sensors

- ▶ Open the sensor by unscrewing the 4 screws on the back.
- ▶ Activate the sensor (press and hold the button inside the sensor for more than 3 s).

| Function              | Action                                         | LED                                                  |
|-----------------------|------------------------------------------------|------------------------------------------------------|
| Turn ON               | ▶ Press and hold the button for more than 3 s. | OFF → ON                                             |
| Turn OFF              | ▶ Press and hold the button for more than 3 s. | ON → OFF                                             |
| Check ON / OFF status | ▶ Press the power button promptly.             | Light ON: Device is ON.<br>Light OFF: Device is OFF. |

6. Onboarding

6.1 cegard/Smart controller

To begin the onboarding process, scan the QR Code below (<https://elevate-m.cedes-connect.com/>) and then follow the steps shown in Chapter 6.2. During onboarding you will be prompted for the MAC ID number 2D code (which is unique to each cegard/Smart device). This 2D code can be found on the controller itself, as well as on the controller packaging.



NOTICE

The QR code left directs the user to the login screen via the default web browser. The user must have an assigned username and password to access onboarding of the cegard/Smart and LoRaWAN® Gateway and associated sensors.

PLEASE NOTE | INSTALLATION SEQUENCE

- ▶ Install the Elevate Ethernet switch first, connect the Gateway and perform onboarding, then onboard the wireless sensors, and only then mechanically install the Gateway and sensors.

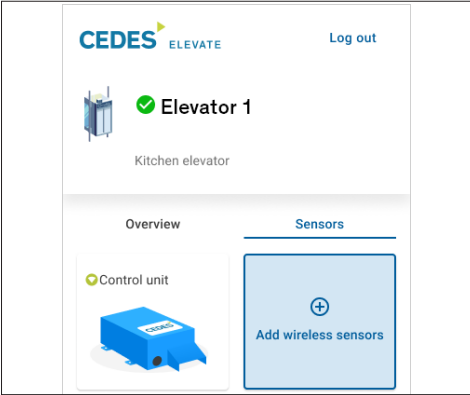
6.2 Step-by-Step onboarding of the LoRaWAN® Gateway and sensors

NOTICE

The QR code used for onboarding the Gateway is inside under the cover. The QR code used for onboarding the remote wireless sensors are inside the back cover.

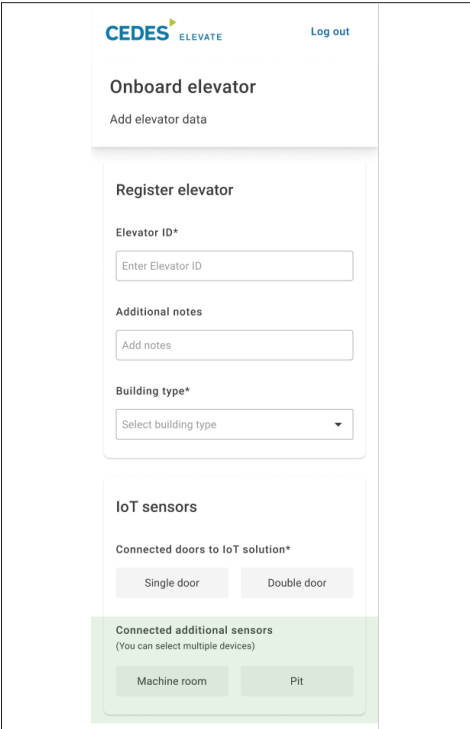
Step 1 "Existing IoT applications"

Select elevator that needs wireless sensor, in sensors tab and click on "Add wireless sensors" button:



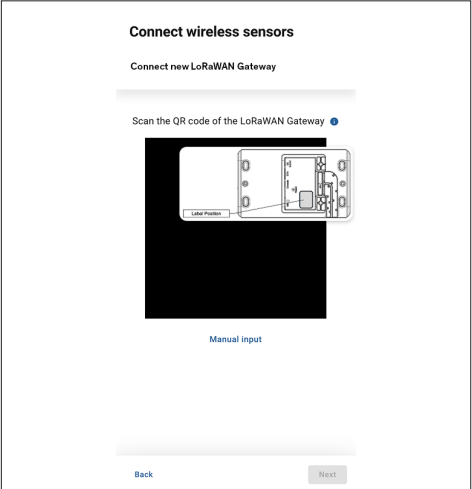
Step 1 "New IoT applications"

During onboarding specify which additional sensors you want to add to this device.



Step 2

Scan QR code from the LoRaWAN® Gateway.



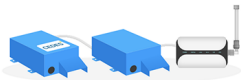
Step 3

Connect all devices together on top of the car and apply power. Refer to the diagrams shown in Chapter 5.2.2 and Chapter 5.2.3 for the cegard/Smart controller associated with the application.

1. Connect the PoE Ethernet port on the LoRaWAN® Wireless Gateway to Port 3 on the Ethernet switch using an Ethernet cable.
2. Connect the Port J8 on the cegard/Smart controller to Port 1 on the Ethernet switch using an Ethernet cable.
3. If the cegard/Smart controller is a CGSM-E variant, connect Port 1 on the EComgard switch to Port 2 on the Ethernet switch using an Ethernet cable (Chapter 5.2.3).
4. Power on both devices.
5. Verify that the Ethernet indicator lights are on.

Connect wireless sensors

Connect new LoRaWAN Gateway



Connect LoRaWAN Gateway to cegard/Smart controller

1. Plug the LoRaWAN Gateway into the Switch (Port 3)
2. Plug the cegard/Smart controller into the Switch (Port 1) using an Ethernet cable
3. Power all devices and verify that the Ethernet indicator lights are on.

Back

Next

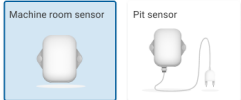
Step 4

Connect sensors one by one - select the sensor you wish to start with.

CEDES ELEVATE Log out

Connect wireless sensors

Add sensor



Back

Next

Step 5

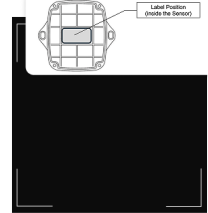
Scan the QR located inside the back cover of the sensor (sensor needs to be opened).

CEDES ELEVATE Log out

Connect wireless sensors

Machine room sensor

Scan the QR code of the sensor



Manual input

Back

Next

Step 6:

Power-up the sensor:

1. Press and hold the power button for 3 ... 5 s – until LED turns ON.
2. Release power button.

CEDES ELEVATE Log out

Connect wireless sensors

Add sensor

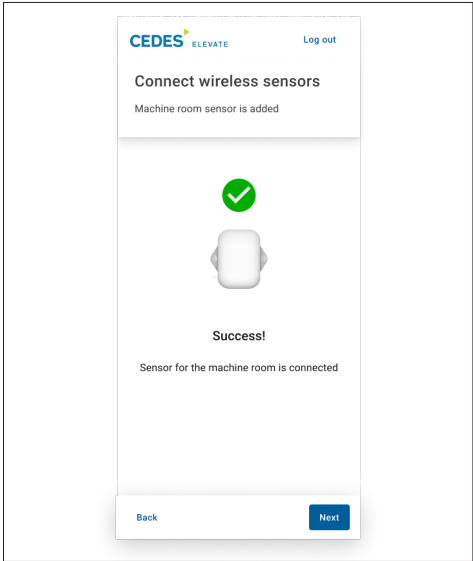


Power up sensor

1. Inside the sensor
2. Press and hold the Power button for 3-5 seconds – until LED turns ON
3. Release Power button

Back

Next



- For the second sensor repeat steps 4 to 6.

## 7. Troubleshooting

### 7.1 Hardware issues and Gateway LEDs

| Problem                      | Possible cause                                              | Check                                  | Action                                                                 |
|------------------------------|-------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------|
| Gateway not reachable        | No network connection                                       | ▶ Check cabling and switch             | ▶ Restart system                                                       |
| Sensor cannot be switched on | Batteries empty, inserted incorrectly or wrong battery type | ▶ Check battery type and polarity      | ▶ Install 2 × ER18505 Li-SOCl <sub>2</sub> correctly; switch sensor on |
| Gateway POWER LED OFF        | No power / no PoE                                           | ▶ Check switch, PoE port, power supply | ▶ Restore power, correct wiring                                        |
| Gateway ETH LED OFF          | No Ethernet connection                                      | ▶ Check cable and port                 | ▶ Reconnect or replace cable                                           |

### 7.2 Gateway Onboarding – “Gateway not found”

| Problem                     | Possible cause                 | Action                                      | Note                                      |
|-----------------------------|--------------------------------|---------------------------------------------|-------------------------------------------|
| Gateway not found           | Ethernet switch not connected  | ▶ Verify wiring according to wiring diagram | ▶ Use correct ports                       |
| Gateway not found           | Switch has no power            | ▶ Switch on / check power supply            | ▶ Switch Power LED must be permanently ON |
| Gateway not found           | Switch malfunction             | ▶ Restart or replace switch                 | ▶ Replace if issue persists               |
| Gateway not found           | Incorrect Ethernet/PoE wiring  | ▶ Correct wiring                            | ▶ Follow wiring diagram                   |
| Gateway not found           | Gateway not connected          | ▶ Check cable connections                   | ▶ Ensure correct port                     |
| Gateway not found           | Gateway not powered            | ▶ Check switch and supply                   | ▶ Gateway POWER LED must be ON            |
| Gateway not found           | Gateway faulty                 | ▶ Replace gateway                           | ▶ Critical issue                          |
| Gateway not found           | Network / infrastructure issue | ▶ Restart system                            | ▶ Check installation                      |
| Gateway not found           | Incorrect gateway data entered | ▶ Re-enter data                             | ▶ Use QR code                             |
| Gateway not found           | Wrong FSP / installation       | ▶ Select correct system                     | ▶ Verify using QR code                    |
| Onboarding fails repeatedly | Multiple system issues         | ▶ Verify full installation                  | ▶ Restart complete system                 |
| Hardware incompatible       | Wrong frequency (EU/US)        | ▶ Replace hardware                          | ▶ Usually detected                        |

### 7.3 Sensor Onboarding – “Sensor not detected”

| Problem               | Possible cause          | Check                      | Action                             |
|-----------------------|-------------------------|----------------------------|------------------------------------|
| Sensor not detected   | Sensor switched off     | ▶ Switch on sensor         | ▶ Check LED                        |
| Sensor not found      | Incorrect sensor data   | ▶ Re-enter data            | ▶ Use QR code only                 |
| Sensor not detected   | Battery empty / wrong   | ▶ Insert correct batteries | ▶ 2 × ER18505 Li-SOCl <sub>2</sub> |
| Sensor not detected   | Sensor defective        | ▶ Replace sensor           | ▶ After retries                    |
| Sensor not detected   | Sensor not active       | ▶ Restart onboarding       | ▶ Normal behavior                  |
| Sensor not detected   | Poor radio signal       | ▶ Optimize position        | ▶ Avoid metal                      |
| Hardware incompatible | Wrong frequency (EU/US) | ▶ Replace hardware         | ▶ Usually detected                 |

7.4 Sensor and measurement issues

| Problem                           | Possible cause               | Check                               | Action                        |
|-----------------------------------|------------------------------|-------------------------------------|-------------------------------|
| Sensor cannot be switched on      | Battery missing / wrong      | ▶ Check battery type and polarity   | ▶ Insert correct batteries    |
| Sensor sends no data              | Sensor OFF / no connection   | ▶ Check sensor status and placement | ▶ Switch on / adjust position |
| Temperature implausible           | Bad mounting position        | ▶ Check installation location       | ▶ Mount at 1.5 ... 2 m height |
| Water sensor does not detect      | Probe positioned incorrectly | ▶ Check probe location              | ▶ Place at lowest point       |
| Water sensor always detects water | Probe wet or shorted         | ▶ Inspect probe and cable           | ▶ Clean or replace probe      |

7.5 Normal behavior (not a fault)

| Observation               | Explanation              | Action |
|---------------------------|--------------------------|--------|
| Delayed sensor connection | Wireless retry mechanism | ▶ Wait |

Contact our technical support if:

- ▶ Gateway cannot be found despite correct wiring.
- ▶ Gateway replacement does not resolve issue.
- ▶ Sensor does not join after multiple attempts.
- ▶ System repeatedly shows errors or timeouts.
- ▶ Behavior is unclear or not described above.

8. Maintenance and battery replacement

8.1 Maintenance

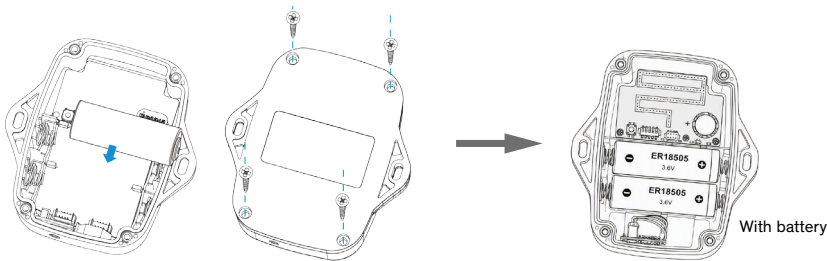
The Elevate Wireless system does not require regular adjustment. A periodic visual and functional inspection is recommended, especially after work on the elevator system, after component replacement or after changes to the installation environment.

- ▶ Check mounting and mechanical fixation.
- ▶ Check cable routing and connectors.
- ▶ Check gateway LED states.
- ▶ Check sensor values in the system for plausibility.
- ▶ Check the position and fixation of the water-in-the-pit probe.
- ▶ Check housings for damage or water ingress.

8.2 Battery replacement

When the batteries have run out of power, remove the back cover to replace the old batteries.

- ▶ Install 2 batteries. Otherwise, it will cause inaccurate power calculations.
- ▶ Sensors must be powered using ER18505 Li-SoCl<sub>2</sub> batteries. Alkaline batteries are not allowed.



9. Disposal

Disposal should be made using the most up-to-date recycling technology according to local regulations and laws. Batteries must be collected separately and disposed of according to local legal requirements.

Waste Electrical and Electronic Equipment (WEEE):  
At the end of life, this equipment should be collected separately from any unsorted municipal waste.

10. Product label

10.1 Elevate WL-GW1-xxxxx

CEDES

Elevate WL-GW1-US915

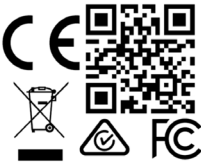
Part No: 1213348 / HW: 1.3

Power Input: 9-24V~1A

Temp: -40°C to + 70°C

FCC ID: 2AYHY-UG65D5S

Xiamen Milesight IoT Co., Ltd.



EUI:24E124FFFEF80A80  
Model:UG65-915M-EA  
SN: 6221D3210210

10.2 Elevate WL-TH1-xxxxx | Elevate WL-WIP1-xxxxx

CEDES

Elevate WL-WIP1-AS923-1

Part No:1214535 / HW: 3.1

SN: 6136E46000722203

Temp: -30°C to + 70°C

FCC ID: 2AYHY-EM300

Xiamen Milesight IoT Co., Ltd.



EUI: 24E124136E460007  
Model: EM300-SLD-915M

10.3 Elevate Ethernet switch kit

Elevate Ethernet Switch Kit

ON: 1214559

PN: 1214559

HW: 1.00

Lot 260709/S001378/0011

Supply Voltage:100-240 VAC 50/60Hz

Power Consumption:75 W max



CEDES

CEDES AG  
Science Park  
CH-7302 Landquart



|                             |                                                                                                                                                                                                                                                                              |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ON 1xx xxx                  | Part number used for ordering                                                                                                                                                                                                                                                |
| PN 1yy yyy f                | Internal CEDES component part number                                                                                                                                                                                                                                         |
| Elevate Ethernet switch kit | Part name                                                                                                                                                                                                                                                                    |
| Lot number                  | Manufacturing date (yymmdd), manufacturing job number (mmmmmm), and incremented serialization (cccc)                                                                                                                                                                         |
| HW: a.bc                    | Increasing digits with the following meaning:<br>a.__: Major changes, e.g. additional functionality<br>_.b_: Changed configuration (e.g. timing), error correction, bug fix, new compilation, no additional functionality<br>__c: 'Cosmetic' update, no functional influence |

# 11. Delivery package and ordering Information

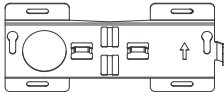
## Elevate Wireless kits

The Elevate WL kits shown below include the Elevate LoRaWAN® Gateway, Elevate Ethernet switch kit with power supply, three (3) Ethernet cables, Elevate Wireless temperature / humidity sensor and Elevate water-in-the-pit sensor.

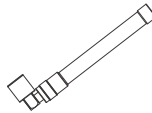
### 11.1 LoRaWAN® Gateway



Gateway



Mounting bracket

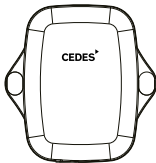


LoRaWAN antenna

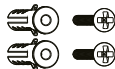


Bracket  
fixing screws

### 11.2 LoRaWAN® sensor (machine room temperature)



Sensor

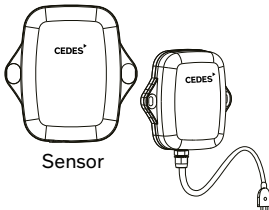


Wall mounting kits



Screw caps

### 11.3 LoRaWAN® sensor (water-in-the-pit)



Sensor



Wall mounting kits



Screw caps

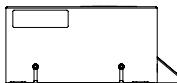


Mounting screws



3M tape

### 11.4 Elevate Ethernet switch kit



Elevate Ethernet  
switch kit



Ethernet cable (blue)



Ethernet cable (gray)



Ethernet cable (green)

Ordering information for North American kits (915 MHz):

| Part No.                    | Model designation           | Description                      |
|-----------------------------|-----------------------------|----------------------------------|
| 1214435                     | Elevate WL-Kit-US915        | North American variant (915 MHz) |
| Elevate Wireless Components |                             |                                  |
| 1213344                     | Elevate WL-TH1-US915        | Temperature / humidity sensor    |
| 1213346                     | Elevate WL-WIP1-US915       | Water-in-the-pit sensor          |
| 1213348                     | Elevate WL-GW1-US915        | Gateway                          |
| 1214559                     | Elevate Ethernet Switch Kit |                                  |

Ordering information for European kits (868 MHz):

| Part No.                    | Model designation           | Description                   |
|-----------------------------|-----------------------------|-------------------------------|
| 1214437                     | Elevate WL-Kit-EU868        | European variant (868 MHz)    |
| Elevate Wireless Components |                             |                               |
| 1213345                     | Elevate WL-TH1-EU868        | Temperature / humidity sensor |
| 1213347                     | Elevate WL-WIP1-EU868       | Water-in-the-pit sensor       |
| 1213349                     | Elevate WL-GW1-EU868        | Gateway                       |
| 1214559                     | Elevate Ethernet Switch Kit |                               |

NOTICE

Additional Elevate Wireless kits and components that utilize other frequencies are also possible based on volume and market needs. Please contact a local CEDES representative to discuss potential expansion of the Elevate Wireless product offering.

12. Technical data

LoRaWAN® Gateway

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Antenna                   | 1 × 50 Ω N-female external connector                                    |
| Channel                   | 8 (half- / full-duplex)                                                 |
| Frequency bands           |                                                                         |
| - Initial release         | EU868 / US915                                                           |
| - Future                  | AU915 / KR920 / AS923-1&2&3&4 / CN470 / IN865 / RU864                   |
| Sensitivity               |                                                                         |
| - Gateway                 | -140 dBm Sensitivity at 292 bps                                         |
| - Temp. / Humidity sensor | -147 dBm at 300 bps                                                     |
| - Water-in-pit sensor     | -137 dBm at 300 bps                                                     |
| Transmitting power        |                                                                         |
| - Gateway                 | Max. 27 dBm                                                             |
| - Sensor(s)               | 16 dBm (868 MHz) /<br>20 dBm (915 MHz) /<br>19 dBm (470 MHz)            |
| Gateway protocol          | V1.0 Class A / Class B / Class C and V1.0.2 Class A / Class B / Class C |

**LoRaWAN® Gateway ethernet interface**

|                    |                                      |
|--------------------|--------------------------------------|
| Port               | 1 × RJ45 WAN Port (PoE PD supported) |
| Physical layer     | 10 / 100 / 1,000 Base-T (IEEE 802.3) |
| Data rate          | 10 / 100 / 1,000 Mbps (auto-sensing) |
| Interface          | Auto MDI / MDIX                      |
| Mode               | Full- or half-duplex (auto-sensing)  |
| Ethernet isolation | 1.5 kV RMS                           |

**LoRaWAN® components - electrical**

|                        |                                                   |
|------------------------|---------------------------------------------------|
| Input / output voltage |                                                   |
| - Gateway              | IEEE 802.3af PoE (power over Ethernet)            |
| - Sensor(s)            | 2 × 4000 mAh ER18505 Li-SOCL <sub>2</sub> Battery |
| Power consumption      |                                                   |
| - Gateway              | Typical 2.9 W, max. 4.2 W                         |
| - Sensor(s)            | Typical Battery Life: 8 years or more             |

**LoRaWAN® components - mechanical**

|                          |                                              |
|--------------------------|----------------------------------------------|
| Dimensions (w × h × l)   |                                              |
| - Gateway                | 180 × 110 × 55.5 mm (7.09 × 4.33 × 2.19 in)  |
| - Temperature / humidity | 88.5 × 85.3 × 27 mm (3.48 × 3.36 × 1.06 in)  |
| - Water-in-pit           | 105.6 × 85.3 × 27 mm (4.16 × 3.36 × 1.06 in) |
| Housing material         |                                              |
| - Gateway                | PC + ABS (UL94 V0)                           |
| - Sensor(s)              | ABS + PC (flame retardant)                   |
| Housing color            |                                              |
| - Gateway                | White + Black                                |
| - Sensor(s)              | White                                        |
| Weight - Gateway         | 548 g                                        |
| Enclosure rating         | Gateway IP65   Sensor IP67                   |
| Temperature range        |                                              |
| - Operation Gateway      | -40°C to +70°C (-40°F to +158°F)             |
| - Operation Sensor(s)    | -30°C to +70°C (-22°F to +158°F)             |
| - Storage Gateway        | -40°C to +85°C (-40°F to +185°F)             |
| Relative Humidity        |                                              |
| - Gateway                | 0% to 95% (non-condensing) at 25°C / 77°F    |
| - Sensor(s)              | 0% to 100% (non-condensing)                  |

**LoRaWAN® sensor characteristics (temperature / humidity / water in pit)**

|                             |                                                        |
|-----------------------------|--------------------------------------------------------|
| Temperature                 |                                                        |
| - Range                     | -30°C ... +70°C                                        |
| - Accuracy                  | 0°C ... +70°C (±0.3°C), -30°C ... 0°C (±0.6°C)         |
| - Resolution                | 0.1°C                                                  |
| Humidity                    |                                                        |
| - Range                     | 0% ... 100% RH                                         |
| - Accuracy                  | 10% ... 90% RH (±3%), below 10% and above 90% RH (±5%) |
| - Resolution                | 0.5% RH                                                |
| Water-in-pit sensor         |                                                        |
| Liquid type                 | Conducting liquid                                      |
| Trigger condition           | When liquid level reaches 5 mm                         |
| Cable length (probe)        | 1.5 m                                                  |
| LED indicator               | 1 × LED indicator (internal)                           |
| Button                      | 1 × power / reset button (internal)                    |
| Mounting                    |                                                        |
| - Receiver                  | Wall screw, 3M tape, or cable-tie mounting             |
| - Water-in-pit sensor probe | Wall screw or 3M tape mounting                         |

**LoRaWAN® general components compliance**

|         |                                  |
|---------|----------------------------------|
| Gateway | CE, FCC, IC, Telec, JATE, RCM    |
| Sensor  | CE, FCC, ISED, RCM, Telec, ICASA |
| RoHS    | Yes                              |
| REACH   | Yes                              |

**ETHERNET SWITCH KIT**

|                             |                                                                                                                                                                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ETH                         | Multi-layer managed 8 x ETH ports, 10/100/1000 Mbps                                                                                                                                                                              |
| IEEE 802.3 series standards | 802.3i, 802.3u, 802.3ab, 802.3x, 802.3az, 802.3z, 802.3ad                                                                                                                                                                        |
| PoE standards               | IEEE 802.3af (PoE, Type 1) and IEEE 802.3at (PoE+, Type 2), Alternative A (Batch 15 and all batches from Batch 17 onward) IEEE 802.3af (PoE, Type 1) and IEEE 802.3 at (PoE+, Type 2), Alternative B (Batches 1–14 and Batch 16) |
| PoE Power per Port          | Max. 30 W (at PSE)                                                                                                                                                                                                               |
| Total PoE Power Budget      | 75 W (at PSE)                                                                                                                                                                                                                    |
| Max. Ethernet cable length  | 100 m                                                                                                                                                                                                                            |
| PoE protection              | Short-circuit and overload protection                                                                                                                                                                                            |

**ELECTRICAL**

|                               |                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------|
| Input / output voltage        |                                                                                   |
| - Elevate Ethernet switch kit | 100 ... 240 VAC, 47 ... 63 Hz input voltage, 48 VDC output voltage rated to 1.6 A |
| - Ethernet switch             | 7 ... 57 VDC input voltage, 44 ... 57 VDC PoE-Out input voltage range             |
| Power consumption             |                                                                                   |
| Ethernet switch      Idle     | < 3 W / Max: 8 W                                                                  |

**MECHANICAL ETHERNET SWITCH KIT**

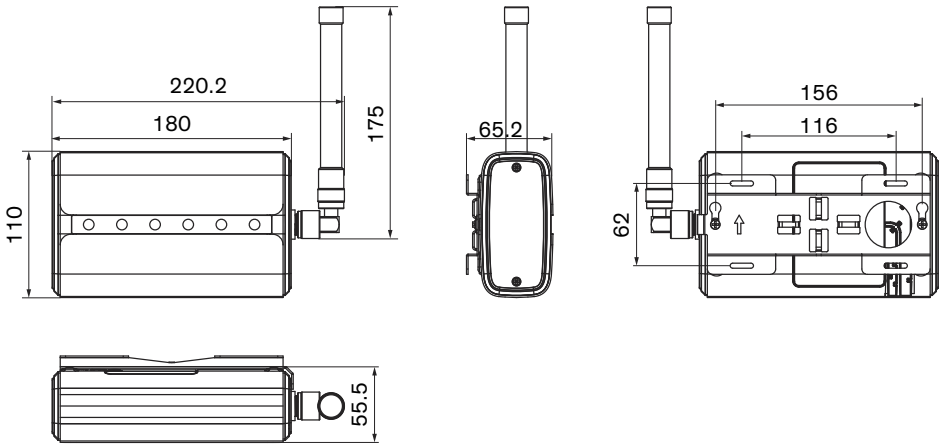
|                        |                             |
|------------------------|-----------------------------|
| Dimensions (w × h × l) | 250 × 191 × 110 mm          |
| Housing material       | Metal                       |
| Housing color          | Blue                        |
| Weight                 | 3.2 kg                      |
| Enclosure rating       | IP23                        |
| Operating temperature  | -30°C to +65°C              |
| Humidity               | 20% to 90% (non-condensing) |

**COMPLIANCE ETHERNET SWITCH KIT**

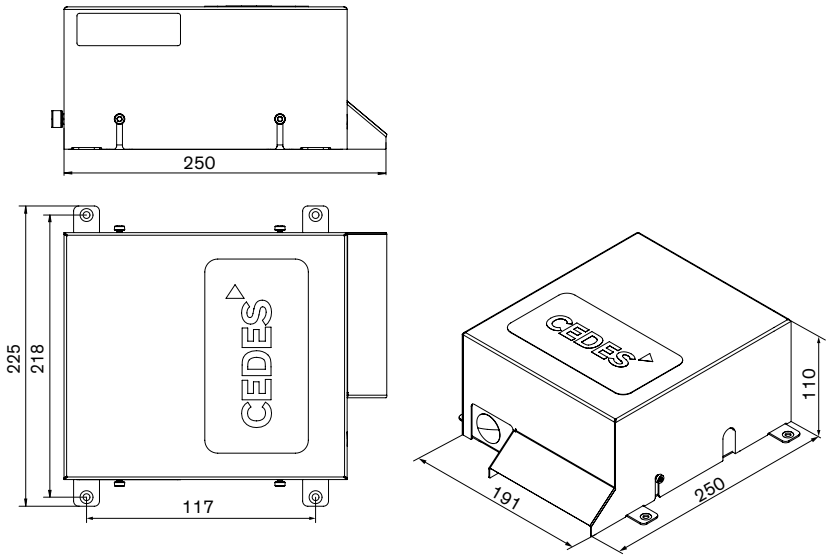
|                         |                                                                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Ethernet switch | CE, UKCA, RCM, ANRT, FCC, IC, CB, NBTC, PROFINET, CITC, RoHS, REACH, WEEE, SDPPI (POSTEL), JATE, Kenya, ICASA, Giteki <sup>1</sup> , UL Safety, MTCTE |
| General power supply    | CE, cURus, cULus, CCC, ICC, PFC, SEMI F47, CB, DEKRA, EAC, UKCA, RCM                                                                                  |
| RoHS                    | Yes                                                                                                                                                   |
| REACH                   | Yes                                                                                                                                                   |

13. Dimensions

13.1 LoRaWAN® Gateway



13.2 Ethernet switch



13.3 LoRaWAN® sensors

