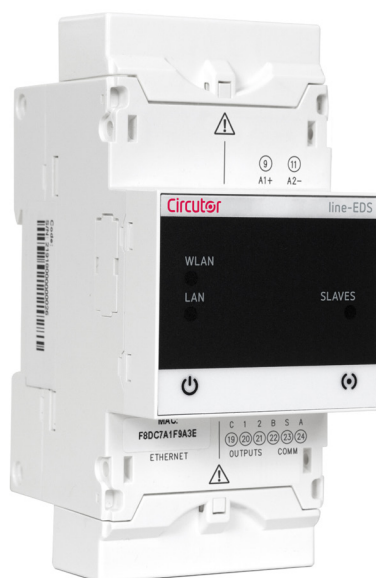


Circutor

Access point

line-EDS-Cloud



INSTRUCTION MANUAL

(M231B01-03-20A)



SAFETY PRECAUTIONS

Follow the warnings described in this manual with the symbols shown below.

	DANGER Warns of a risk, which could result in personal injury or material damage.
---	---

	ATTENTION Indicates that special attention should be paid to a specific point.
---	--

If you must handle the unit for its installation, start-up or maintenance, the following should be taken into consideration:

	Incorrect handling or installation of the unit may result in injury to personnel as well as damage to the unit. In particular, handling with voltages applied may result in electric shock, which may cause death or serious injury to personnel. Defective installation or maintenance may also lead to the risk of fire. Read the manual carefully prior to connecting the unit. Follow all installation and maintenance instructions throughout the unit's working life. Pay special attention to the installation standards of the National Electrical Code.
---	--

	Refer to the instruction manual before using the unit In this manual, if the instructions marked with this symbol are not respected or carried out correctly, it can result in injury or damage to the unit and / or installations.
---	--

CIRCUTOR, SA reserves the right to modify features or the product manual without prior notification.

DISCLAIMER

CIRCUTOR, SA reserves the right to make modifications to the device or the unit specifications set out in this instruction manual without prior notice.

CIRCUTOR, SA on its web site, supplies its customers with the latest versions of the device specifications and the most updated manuals.

www.circutor.com



	CIRCUTOR , recommends using the original cables and accessories that are supplied with the device.
---	---

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REVISION LOG

Table 1: Revision log.

Date	Revision	Description
05/20	M231B01-03-19A	First Version
11/20	M231B01-03-20A	Changes in the following sections: 6. - 7. - Annex A.

SYMBOLS

Table 2: Symbols.

Symbol	Description
	In accordance with the relevant European directive.
	In accordance with the CMiM directive.
	Device covered by European Directive 2012/19/EC. At the end of its useful life, do not leave the device in a household refuse bin. Follow local regulations on electronic equipment recycling.
	Direct current.
	Alternating current.

Note: The images on the devices are for illustrative use only and may differ from the original device.

1.- VERIFICATION UPON RECEPTION

Upon reception of the device check the following points:

- a) The device meets the specifications described in your order.
- b) The device has not suffered any damage during transport.
- c) Perform an external visual inspection of the device prior to switching it on.
- d) Check that it has been delivered with the following:

- An installation guide

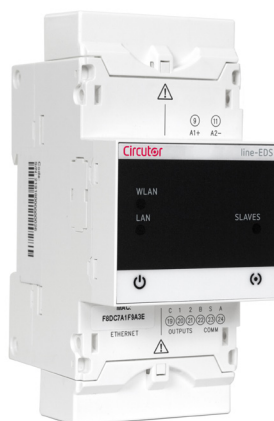


If any problem is noticed upon reception, immediately contact the transport company and/or **CIRCUTOR**'s after-sales service.

2.- PRODUCT DESCRIPTION

line-EDS-Cloud is a device that works as connector between field devices with Modbus RTU or Modbus TCP communications and data collection systems in the cloud (Big Data).

The **line-EDS-Cloud** includes a Web page to configure the Modbus devices' memory profiles or maps and select which variables are to be transferred to the Cloud systems.



The device features:

- 5 indication LEDs
- 2 digital outputs.
- RS-485 and Ethernet communications.
- Wi-Fi connection.

3.- INSTALLATION OF THE DEVICE

3.1.- PRELIMINARY RECOMMENDATIONS



In order to use the device safely, personnel operating it must follow the safety measures that comply with the standards of the country where it is to be installed; operators must wear the required personal protective equipment (rubber gloves, approved facial protection and flame-resistant clothing) to prevent injuries from electric shock or arcs caused by exposure to current-carrying conductors, and they must heed the various warnings indicated in this instruction manual.

The **line-EDS-Cloud** device must be installed by authorised, qualified personnel.

The power supply plug must be disconnected before handling, altering the connections or replacing the device. It is dangerous to handle the device while it is powered.

Cables must always be kept in perfect condition to avoid accidents or injury to personnel or installations.

The manufacturer of the device is not responsible for any damage resulting from failure by the user or installer to heed the warnings and/or recommendations set out in this manual, nor for damage resulting from the use of non-original products or accessories or those made by other manufacturers.

Do not use the device to perform any operation if you detect any anomaly or malfunction.



Before carrying out maintenance, repair or handling of any of the device's connections, the device must be disconnected from all power sources, both from the device's own power supply and the measurement's.
Contact the after-sales service if you detect that the device is not working properly.

3.2.- INSTALLATION

The device must be installed on an electric panel or enclosure, attached to a DIN rail (IEC 60715).



When the device is on, its terminals, opening covers or removing elements may expose the user to parts that are hazardous to touch. Do not use the device until it is fully installed.

The device must be connected to a power supply circuit protected by gI type (IEC 269) or M type fuses, between 0.5 and 2A. It must be fitted with a circuit-breaker or equivalent device to disconnect the device from the mains supply.

The power supply circuit must be connected with a 1mm² minimum cross-section cable.

3.3.- 72 x 72 mm PANEL ADAPTER

Note: The 72 x 72 mm panel adapter is a separately sold accessory.

CIRCUTOR has a panel adapter for the **line-EDS-Cloud** devices for their installation in 72 x 72 mm panels.

Figure 1 illustrates how the panel adapter connects to a **line-EDS-Cloud**.



Before installing the adapter, the device must be disconnected from all power and measurement supplies.

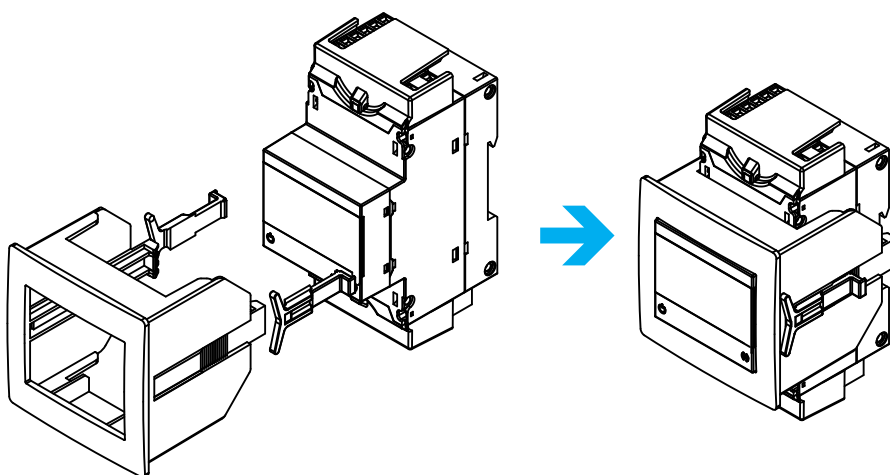


Figure 1: Installation of the panel adapter.

Table 3: Technical characteristics of the Panel Adapter.

Technical Specifications	
Protection degree	IP40
Casing	Self-extinguishing V0 plastic

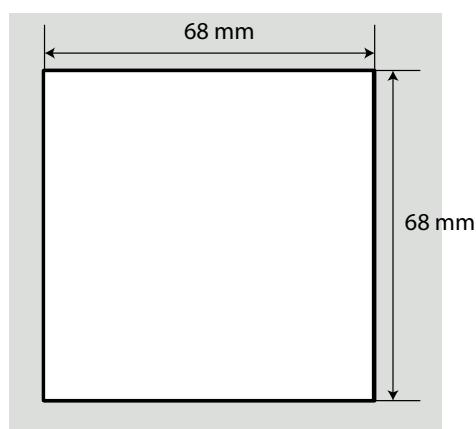


Figure 2: Cut in the panel.

3.4.- DEVICE TERMINALS

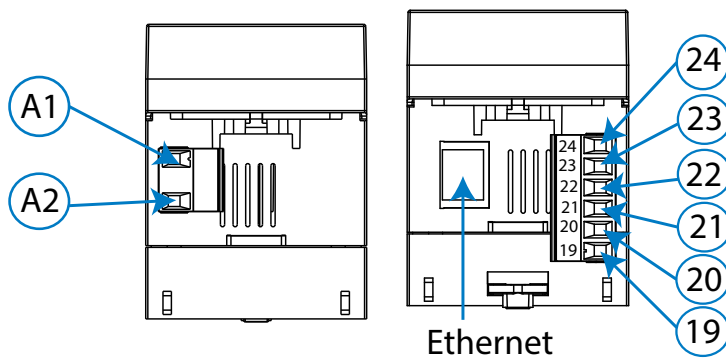


Figure 3: Device terminals: Upper - Lower.

Table 4: List of terminals.

Device terminals	
A1: Power supply	21: 1, Digital output 1
A2: Power supply	20: 2, Digital output 2
24: A+, RS-485	19: C, Common of digital outputs
23: S, GND for RS-485	Ethernet, Ethernet connection
22: B-, RS-485	

3.5.- EXPANSION WITH OTHER DEVICES

The **line-EDS-Cloud** devices can be expanded with other devices in the line range, the **line-CVM** and **line-M** expansion modules.

The **line-EDS-Cloud** and **line-CVM** devices enable up to 2 expansion modules to be directly connected to their right-hand side⁽¹⁾.

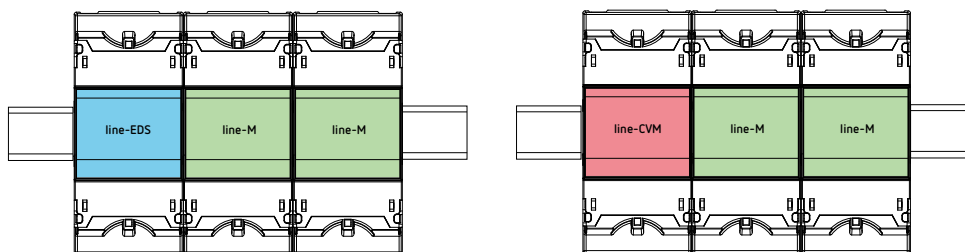


Figure 4: line-EDS-Cloud and line CVM expansion module connection.

⁽¹⁾ Expansion module types: **line-M-4IO-R**, **line-M-4IO-T**, **line-M-4IO-RV** and **line-M-4IO-A**.

In installations with **line-EDS-Cloud** devices, a total of up to seven devices may be connected to their right-hand side.

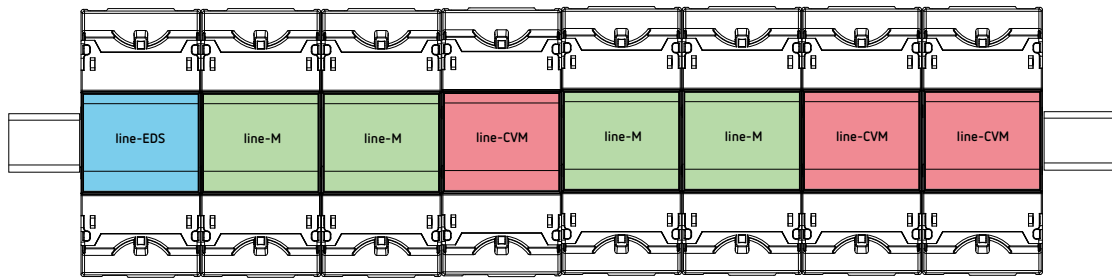


Figure 5: Typical installation of a line-EDS-Cloud with 7 devices.

Note: An installation may only be fitted with one **line-EDS-Cloud** device.

Note: In installations without **line-EDS-Cloud** devices, only one **line-CVM** device may be installed.

Note: All **line-EDS-Cloud** and **line-CVM** devices must be connected to the auxiliary power supply.

3.5.1.- Line-M-EXT-PS POWER ADAPTER

Line-M-EXT-PS is a power adapter belonging to the line family of devices. The module connects to the left-hand side of the devices to be fed. It can supply up to 10 VA, allowing it to power a limited number of devices.

The maximum set it can supply is: 1 **line-EDS-Cloud** + 1 **line-CVM** + 1 **line-M** (Figure 6).

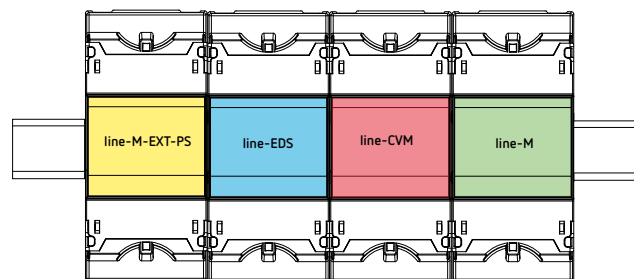


Figure 6: Maximum set a line-M-EXT-PS can supply.

Multiple **line-M-EXT-PS** devices can be connected to supply sets with power above 10VA. Each **line-M-EXT-PS** will power the devices connected to its right-hand side (Figure 7).

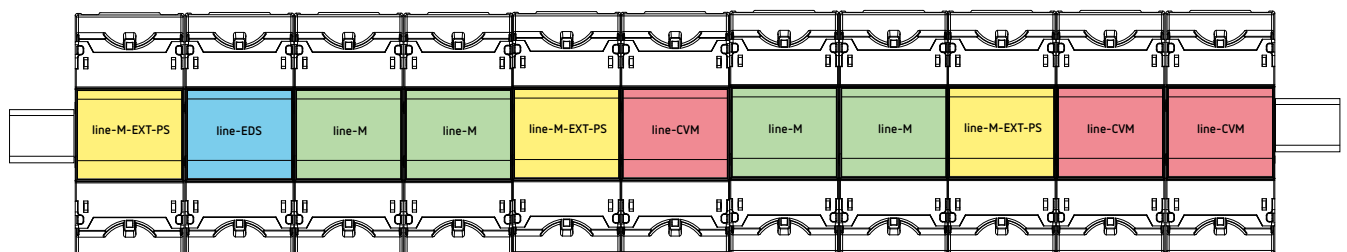


Figure 7: Multiple line-M-EXT-PS connection.

Note: None of the **line-EDS-Cloud** or **line-CVM** devices should be connected to the auxiliary power supply.

3.5.2.- INSTALLATION



Before installing a new device, it must be disconnected from all power supplies.

The correct steps to connect the devices are:

1.- Using a flat head screwdriver, remove the expansion connector's protective covers located on the side of the devices, (**Figure 8**).

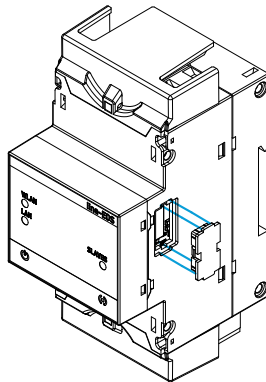


Figure 8: Installation step 1.

2.- Insert the expansion connector and fastening clips into one of the devices (**Figure 9**).

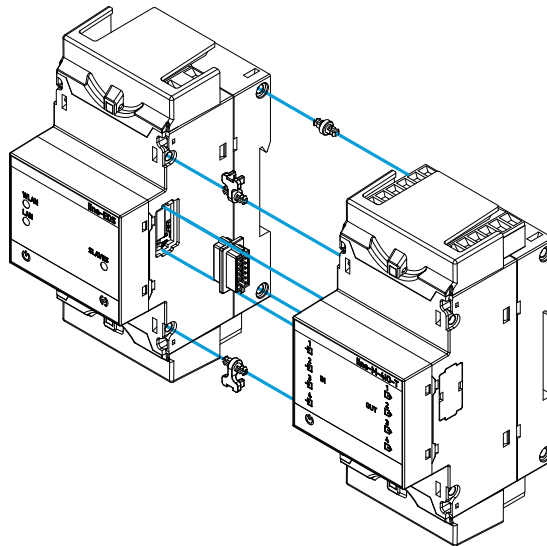


Figure 9: Installation step 2.

3.- Connect both devices and fasten them by pushing the front clips down (**Figure 10**).

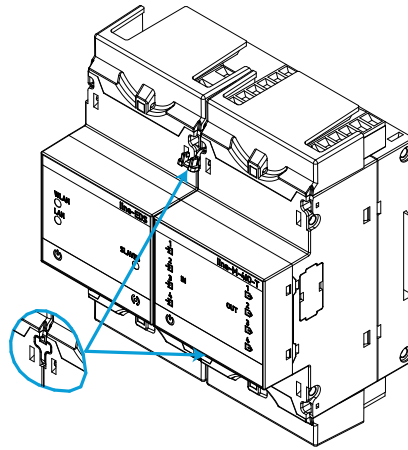


Figure 10: Installation step 3.



For correct installation of all devices, please refer to the instruction manual for the different models:

M237B01-01-xxx: Instruction Manual for **line-CVM** devices.

M239B01-03-xxx: Instruction Manual for **line-M** expansion modules.

3.6.- CONNECTION DIAGRAMS

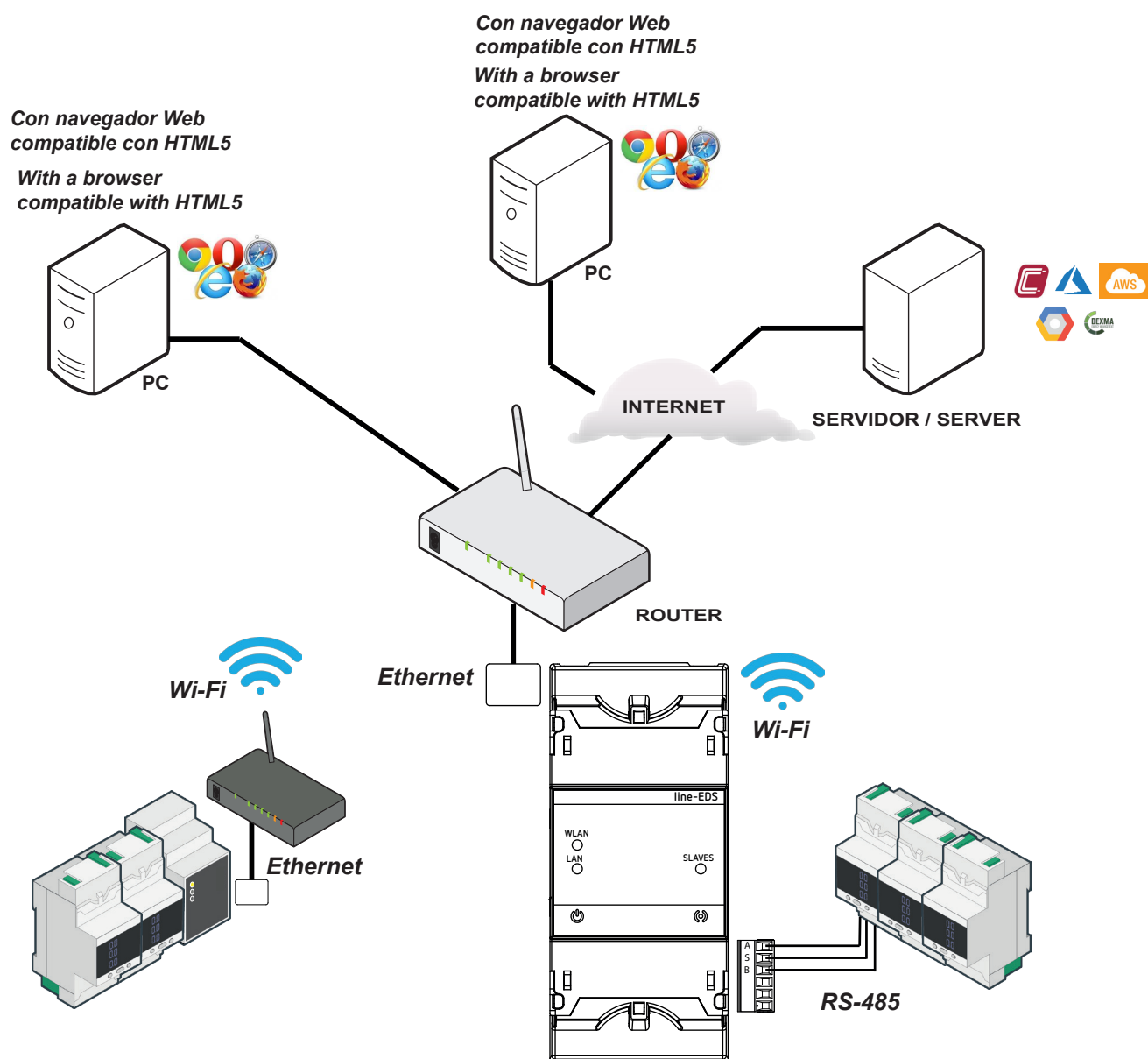


Figure 11: line-EDS-Cloud connection diagrams.

4.- OPERATION

4.1.- OPERATING PRINCIPLE

Line-EDS-Cloud is a device that works as connector between field devices with Modbus RTU or Modbus TCP communications and data collection systems in the Cloud.

Line-EDS-Cloud connects field devices with Modbus via RS-485, Wi-Fi or via a Modbus TCP Ethernet connection and sends data to Cloud platforms. The parameters that you want to upload to the Cloud platform can be selected on the device's configuration website.

The device currently works with the following Cloud platforms: **MyCircutor, Amazon, Azure, DEXMA y Google.**

4.2.- LED INDICATORS

The devices have 5 indicating LEDs:

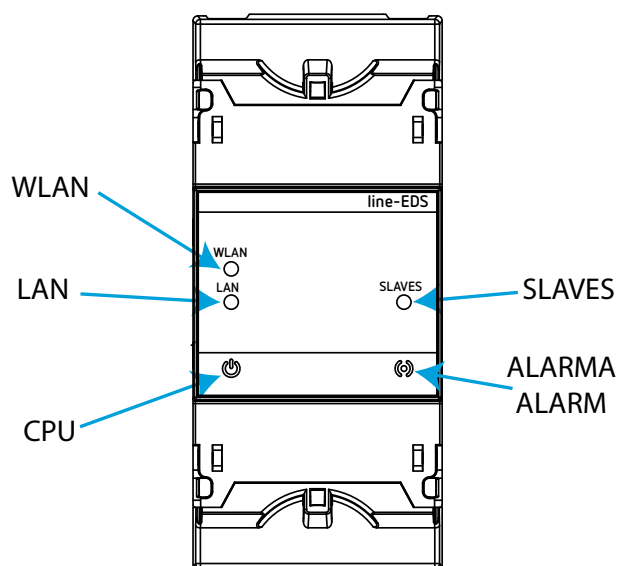


Figure 12: LED indicators.

✓ CPU, Device status:

Table 5: CPU LED.

LED	Description
CPU	Flashing (white color)
	Device powered

✓ LAN, Ethernet connection

Table 6: LAN LED.

LED	Description
LAN	On (green color)
	Connection to a local network
	Flashing (green color)
	Activity in the network

✓ WLAN, Wi-Fi connection:

Table 7: WLAN LED.

LED	Description
WLAN	On (blue color)
	Connection to a Wi-Fi network
	Flashing (blue color)
	Activity in the Wi-Fi network

✓ ALARM:

Table 8: ALARM LED.

LED	Description
CPU	On (red color)
	Alarm activated

✓ SLAVES, Connection with slave device:

Table 9: SLAVES LED.

LED	Description
SLAVES	On (red color)
	The slave device doesn't communicate

4.3- DIGITAL OUTPUTS

The device has 2 digital outputs, optoisolator NPN transistors (terminals 19, 20 and 21 in **Figure 3**).

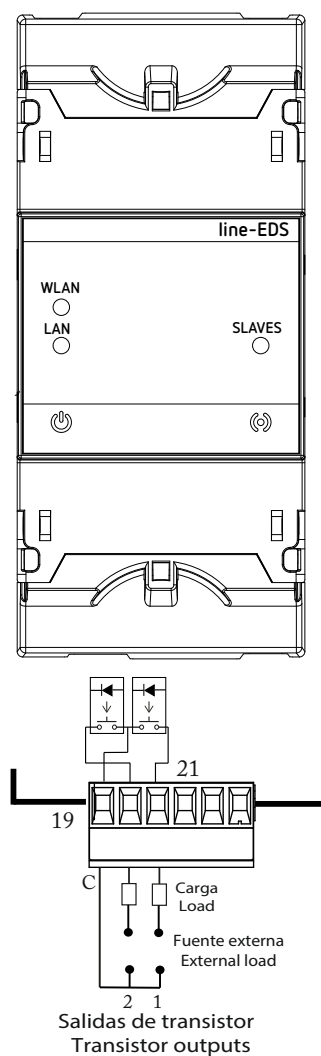


Figure 13: Digital outputs.

5.- COMMUNICATIONS

5.1- RS-485 COMMUNICATIONS

line-EDS-Cloud devices have an RS-485 communications port.

5.1.1.- CONNECTIONS

The RS-485 cable must be wired using twisted pair cable with mesh shield (minimum 3 wires), with a maximum distance of **1200 meters** between the **line-EDS-Cloud** and the slave devices.

In this bus we can connect a maximum of 32 slave devices.

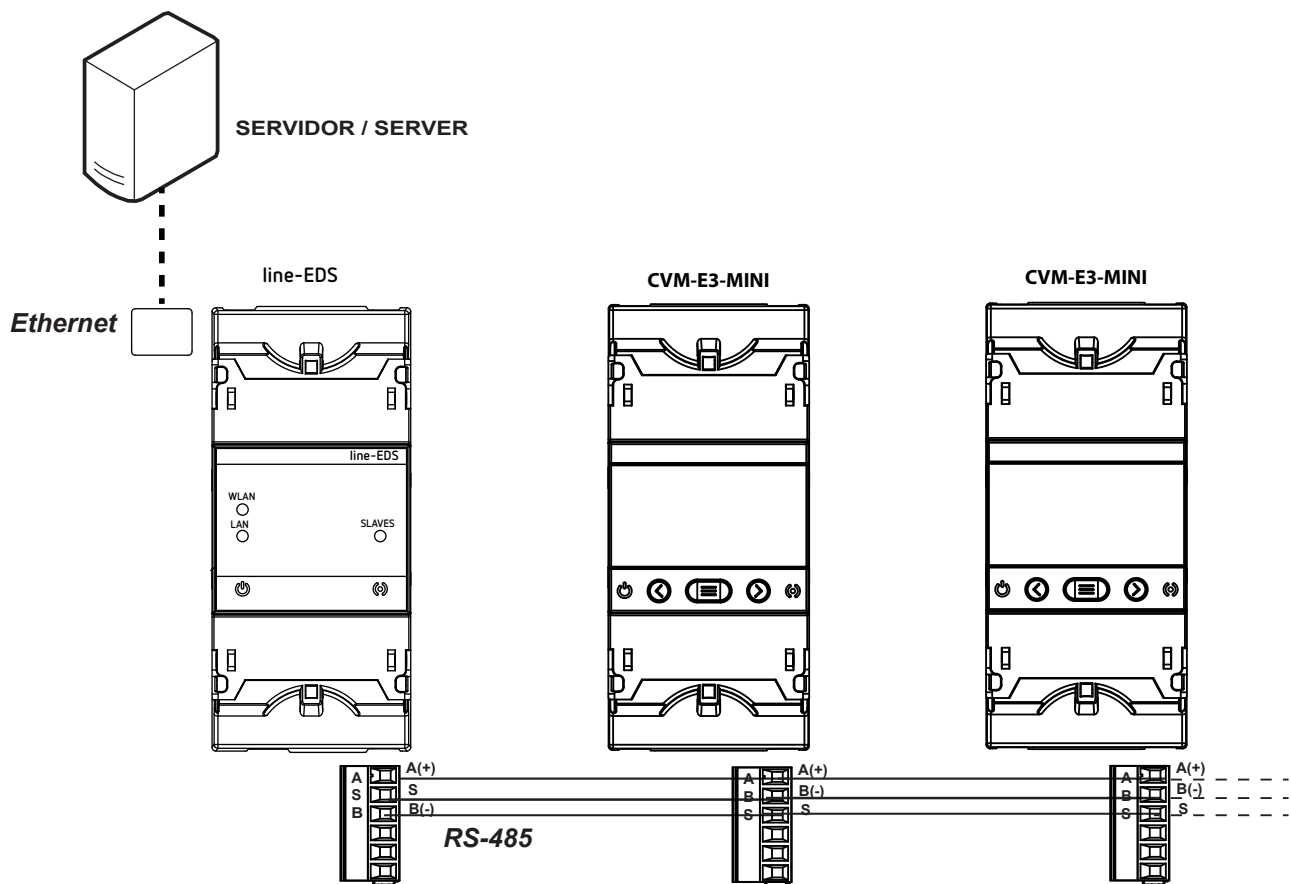


Figure 14: RS-485 connection diagram.

5.2- Wi-Fi COMMUNICATIONS

5.2.1.- USAGE ENVIRONMENT AND HEALTH

Wireless communications emit radio frequency electromagnetic energy, like other radio devices.

Because wireless communications operate under the guidelines found in radio frequency standards and recommendations, they are safe for users to use.

In some settings and situations the use of wireless communications may be restricted by the building's owner or representatives of the organisation.

These may include:

- ✓ Use of wireless connections on board aircraft, in hospitals or near service stations, blasting areas, medical implants or electronic medical devices implanted in the human body (pacemakers, etc.).
- ✓ In any other setting where the risk of interference with other devices or services is a hazard.

If you are not sure of the applicable usage policy for wireless devices in a specific organisation (airport, hospital, etc.) we recommend requesting permission to use wireless communications.

5.2.2.- Wi-Fi COMMUNICATIONS

Wi-Fi is one of the most widely-used wireless technologies today, used to connect electronic devices and exchange information between them without a physical connection.

The **line-EDS-Cloud** has Wi-Fi communications over the 2.4 GHz band, in accordance with the IEEE 802.11 ac / a / b / g / n standards.

Table 10: Security features of Wi-Fi communications.

Security features of Wi-Fi communications	
Security protocol	WPA2

6.- CONFIGURATION WEBSITE

The configuration website for the device is accessed via the IP address. The default configuration for **line-EDS-Cloud** is in DHCP mode; the device can be identified by its MAC address using software such as the *Advanced IP Scanner*.

- Note:** There are two options for finding the **line-EDS-Cloud** device on a local network:
- ✓ Using the **Avahi / bonjour** discovery protocol.
 - ✓ Access via crossover cable to the local IP of the device: **100.0.0.1** with a subnet mask **255.255.255.0**

To access the configuration website, open the screen shown in **Figure 15**, where you enter the User and Password. The default values are shown in **Table 11**.

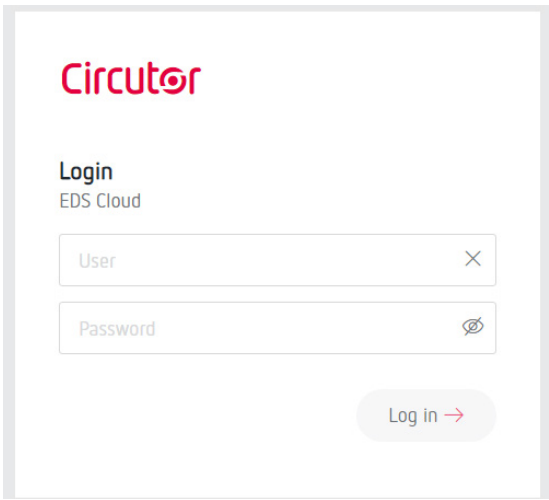


Figure 15: Accessing the configuration website.

Table 11: Accessing the configuration website.

Accessing the configuration website.	
Use	admin
Password	circutor

Note: For security reasons, you need to change the login password. When you first log into the website and enter the default password, a screen opens for you to change the password.

Once validated, the main screen can be accessed, **Figure 16**.

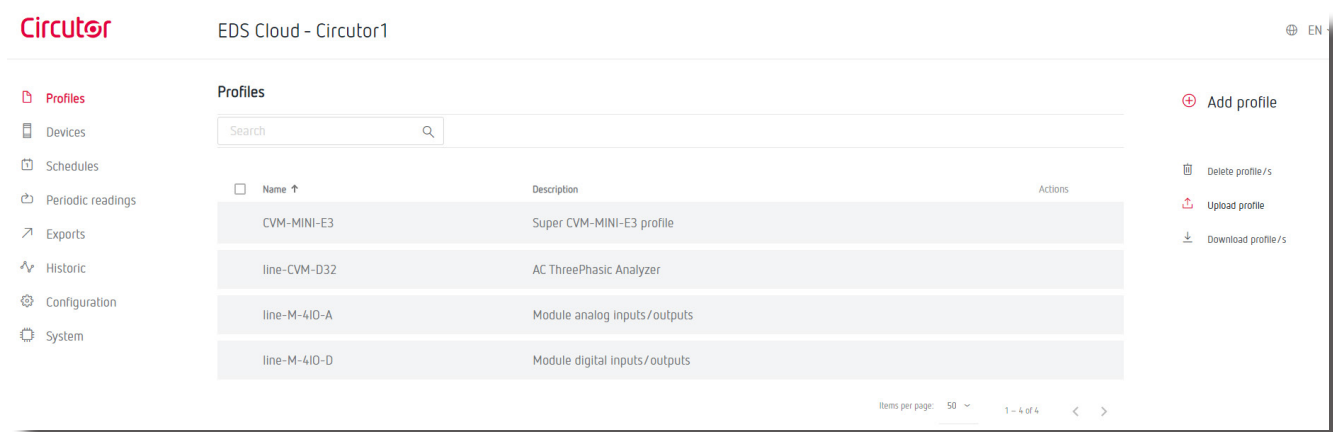


Figure 16: Main screen.

From this screen you can access the menu of the configuration website, **Figure 17**.

-  **Profiles** → Configuration of the data upload system
-  **Devices** → Configuration of connected device
-  **Schedules** → Scheduling regular actions
-  **Periodic readings** → Planning data upload
-  **Exports** → Cloud platform configuration
-  **Historic** → Graphical display of the values of the different devices connected
-  **Configuration** → Configuration of the line-EDS-Cloud device
-  **System** → Status of the system line-EDS-Cloud

Figure 17: Menu of configuration website.

On the configuration website, you can perform 3 main actions:

- ✓ Configure the **line-EDS-Cloud** device.
- ✓ Configure the system for uploading data to the Cloud platforms.
- ✓ Check the status of the system.

6.1- CONFIGURATION OF THE line-EDS-Cloud DEVICE

The  **Configuration**, screen allows the configuration of the DNS/NTP parameters, the communications and the Security parameters, **Figure 18**.

Configuration

Communication

Security

DNS / NTP SETTINGS

Primary DNS	8.8.8.8
Secondary DNS	
Primary NTP	0.pool.ntp.org
Secondary NTP	

Save

ETHERNET 0

DHCP

IP address	10.0.120.204
IP mask	255.255.255.0
Gateway	10.0.120.254
MAC address	F8:DC:7A:2A:E0:A2

Figure 18: Configuration: Ethernet.

6.1.1.- COMMUNICATION: DNS/NTP SETTINGS

This section is used to set up the DNS servers and the NTP protocol.

- ✓ **Primary DNS:** Address of the primary DNS server.
- ✓ **Secondary DNS:** Address of the secondary DNS server.
- ✓ **Primary NTP:** Watch synchronisation protocol address, Network Time Provider.
- ✓ **Secondary NTP:** Network Time Provider's secondary address, in case Primary NTP fails.

Press  **Save** to save the configuration and send it to the device.

6.1.2.- COMMUNICATION: ETHERNET

In this section, the Ethernet communications of the **line-EDS-Cloud** are configured.

- ✓ **DHCP:** If DHCP is enabled, the IP address is dynamically assigned by a central server and no further parameters need to be configured.
If this option is disabled, the IP address is fixed and the following parameters need to be configured:

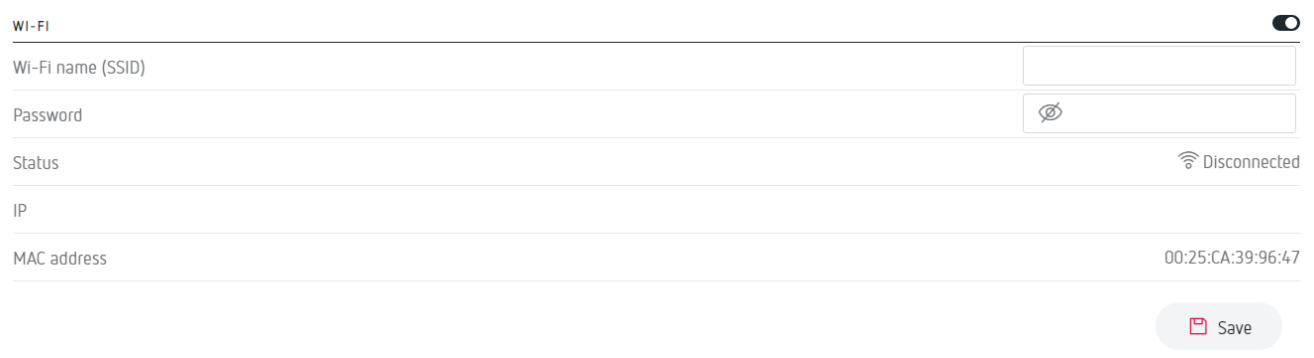
- **IP address:** IP address.
- **IP mask:** IP mask.
- **Gateway:** Gateway.

- ✓ **MAC address:** MAC address of the device, non-configurable parameter.

Press  **Save** to save the configuration and send it to the device.

6.1.3.- COMMUNICATION: Wi-Fi

In this section, Wi-Fi communications are enabled on the device, **Figure 19**.



The image shows a Wi-Fi configuration interface. At the top right, there is a toggle switch for Wi-Fi, which is currently turned off. Below the toggle, there are several input fields: 'Wi-Fi name (SSID)', 'Password' (with an eye icon for visibility), 'Status' (showing 'Disconnected' with a Wi-Fi icon), 'IP', and 'MAC address' (showing '00:25:CA:39:96:47'). At the bottom right, there is a 'Save' button with a floppy disk icon.

Figure 19: Configuration: Wi-Fi.

 Select whether to enable Wi-Fi communications or not.

- ✓ **Wi-Fi name (SSID):** Name of Wi-Fi network.

✓**Password:** Password of the selected Wi-Fi network.

✓**Status:** Wi-Fi status.

✓**IP:** Network IP address.

✓**MAC address:** MAC address of the device, non-configurable parameter.

Press  **Save** to save the configuration and send it to the device.

6.1.4.- SECURITY

In this section, you can change the password used to log into the website, **Figure 20**.

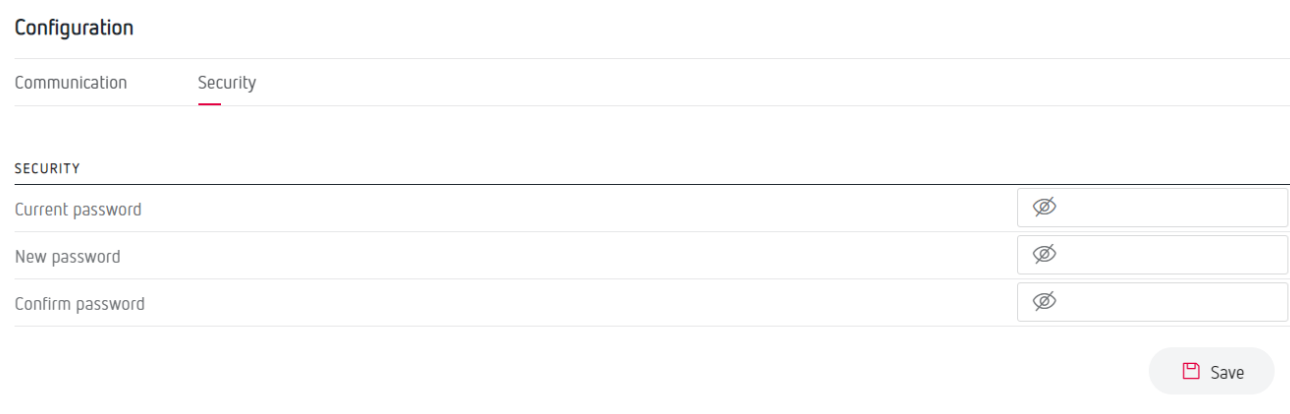


Figure 20: Configuration: Security.

✓**Current password:** current password of the website.

✓**New password:** new password for the website.

✓**Confirm password:** repeat the new password.

Press  **Save** to save the configuration and send it to the device.

6.2- CONFIGURATION OF THE DATA UPLOAD SYSTEM

This section describes the steps for configuring the system used to upload data to the Cloud platforms.

STEP 1: CREATE A PROFILE OF THE DATA YOU WANT TO UPLOAD TO THE CLOUD PLATFORM

On the  **Profiles** screen, you can create the profile and memory map of the data you want to upload to the Cloud platform, **Figure 21**.

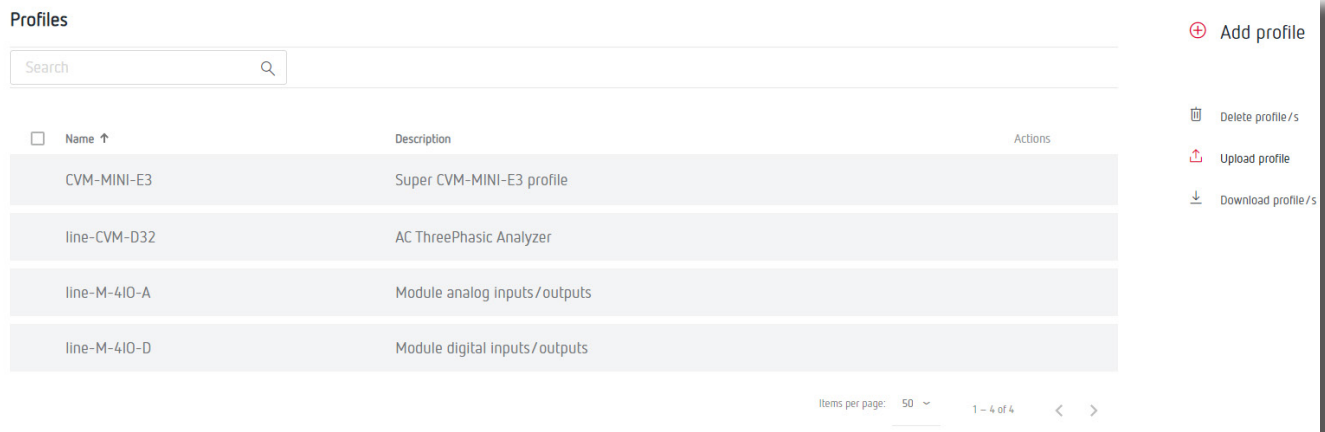


Figure 21: Profile screen.

On this screen you can:

- ✓ Create a new profile
- ✓ Load an existing profile onto the device,
- ✓ Download a device profile to the website,
- ✓ Delete a profile,
- ✓ Edit an existing profile,

STEP 1.1.- Creating a new profile

Press  to create a new profile, the screen shown in Figure 22 will appear.

Profiles

Add profile

Name

Manufacturer

Model

Description

Save

Figure 22: Profile: Create profile.

- ✓ **Name:** Name of the profile to be created.
- ✓ **Manufacturer:** Manufacturer's name.
- ✓ **Model:** Device model of the new profile: CVM, CEM, EDMk ...
- ✓ **Description:** Brief description of the profile.

When you press  Save, the new profile is saved and a new section is displayed to create the profile variables, , Figure 23.

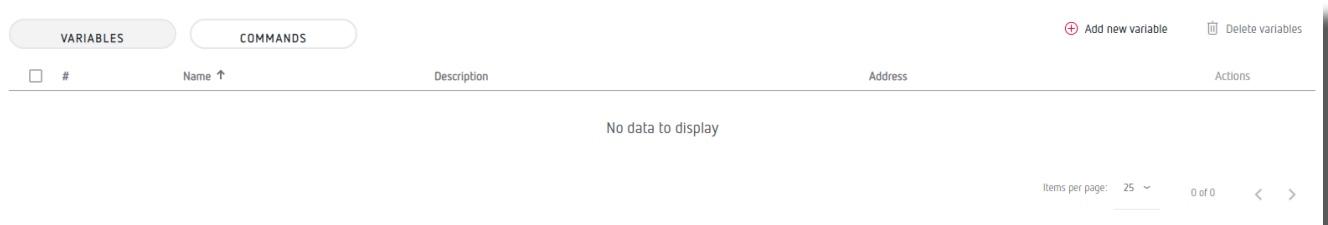


Figure 23: Profiles: Variables.

✓ **VARIABLES** tab: In this tab, the memory locations (variables in a Modbus map) can be created that will be part of the profile.

When you press the **+ Add new variable**, button, the screen in **Figure 24** is shown.

Figure 24: Add new variable.

✓ **Name:** Variable name.

✓ **Description:** Brief description of the variable.

✓ **Attributes:** Select the data type of the variable: *HoldingRegister*, *InputRegister*, *DiscreteInput* or *Coil*.

✓ **Address:** Modbus address of the variable; its memory location on the device.

✓ **Type:** Variable type, the different types are shown on **Table 12**.

Note: Variable visible when selecting types in **Attributes**: *HoldingRegister*, *InputRegister*.

Table 12: Type: Variable type

Type: Variable type	
STRING	Variable type string (character string)
UINT8	Variable type unsigned integer of 1 byte
UINT16	Variable type unsigned integer of 2 byte
UINT32	Variable type unsigned integer of 4 byte

Table 12 (Continuation): Variable type

Type: Variable type	
UINT64	Variable type unsigned integer of 8 byte
INT8	Variable type integer of 1 byte
INT16	Variable type integer of 2 byte
INT32	Variable type integer of 4 byte
INT64	Variable type integer of 8 byte
FLOAT32	Variable type float of 4 byte
FLOAT64	Variable type float of 8 byte
ARRAY	Variable type array
BOOL	Variable type bool (logical)

✓ **Scale factor:** Multiplication factor.

Note: Variable visible when selecting types in **Type:** UINT8, UINT16, UINT32, UINT64, INT8, INT16, INT32 and INT64 .

✓ **Precision:** Select the number of decimal places to be shown.

Note: Variable visible when selecting types in **Type:** FLOAT32 and FLOAT64.

✓ **Length:** Variable length, only visible when selecting the variables *String* and *Array*.

Note: Variable visible when selecting types in **Attributes:** HoldingRegister and InputRegister.

✓ **Access:** Select whether the variable is only for *Read-only*, *Write-only* or *Read-write*.

Note: Variable visible when selecting types in **Attributes:** HoldingRegister and InputRegister.

✓ **Units:** Select the units of the variable.

Note: Variable visible when selecting types in **Attributes:** HoldingRegister and InputRegister.

Press **Save changes** to save the variable.

✓ **COMMANDS** tab: This tab is used to create groupings of variables that you want to upload to the Cloud platform.

When you press the **+** **Add new command**, button, the screen in **Figure 25** is shown.

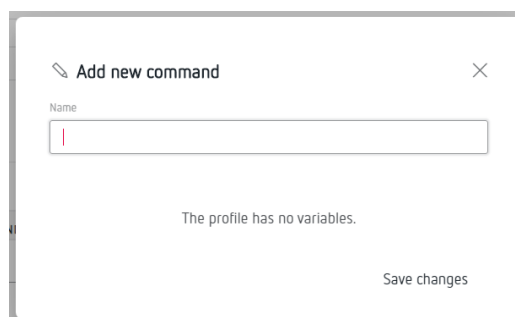


Figure 25: Add new command.

✓ **Name:** Name of the location groupings.

With the ☐ option, Select the variables that will be part of the grouping.

Press **Save changes** to save the grouping created.

STEP 2: ENTERING INTO THE SYSTEM THE DEVICES THAT HAVE THE DATA PROFILE YOU WANT TO UPLOAD TO THE CLOUD PLATFORM

The devices with the data profiles that you want to upload to the Cloud platform can be entered on the



Devices screen, Figure 26.

Devices

Search

⊕ Add device

🗑 Delete device/s

☐ Name ↑	Enabled	Profile	Last communication	Status	Actions
CVM-MINI-E3_TCP	☒	CVM-MINI-E3	2020-11-09 10:17	●	
line-CVM-D32_ER	☒	line-CVM-D32	2020-11-06 15:21	●	
line-M-4IO-R_006	☒	line-M-4IO-D	2020-11-09 10:18	●	

Items per page: 50 1 - 3 of 3

Figure 26: Device screen.

On this screen you can:

- ✓ Add a new device to the system,
- ✓ Delete a device,
- ✓ Enable or disable a device in the system,
- ✓ Check the status and date and time of the last communication,
- ✓ Edit the characteristics of the device,
- ✓ Test communication with a device, . Pressing the button makes the screen in Figure 27, appear, where you can select and send a request for a device memory location to test the communication.

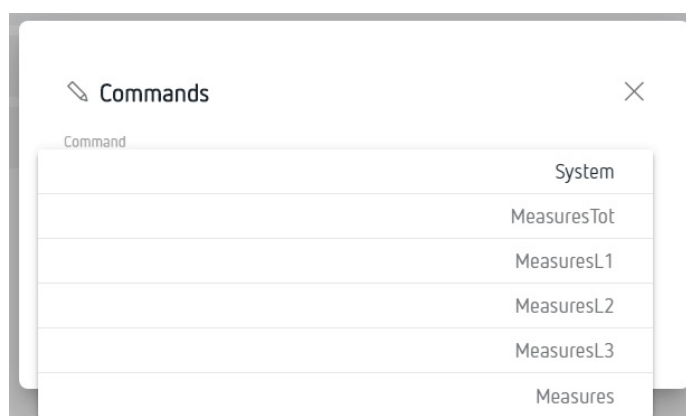


Figure 27: Device screen: Commands.

STEP 2.1.- Entering a new device

Press ⊕ **Add device**, to add a new device, the screen in Figure 28 will be shown.

Figure 28: Device screen: Add Device.

✓ **Name:** Device name.

✓ **Description:** Brief description of the device.

✓ **Profile:** Select the device's data profile, configured in the section *"STEP 1.1.- Creating a new profile"*.

✓ **Protocol:** Select the type of communication: *ModbusRTU* or *ModbusTCP*.

When selecting the *ModbusRTU* communication type, the following parameters have to be configured:

- **Baudrate:** Select the communications baud rate: *9600, 19200, 38400, 57600, 115200*.
- **Stop bits:** Select the bits stop number: *1 or 2*.
- **Parity:** Select the parity type: *None, Even, Odd*.
- **Slave ID:** Indicate the slave ID or Modbus peripheral.
- **Timeout:** Indicate the communications wait time in seconds.

When selecting the *ModbusTCP* communication type, the following parameters have to be configured:

- **IP address:** IP address of the device.
- **Port:** Communication port.
- **Timeout:** Indicate the communications wait time in seconds.
- **Slave ID:** Indicate the slave ID or Modbus peripheral.

Press **Save changes** to save the new device.

STEP 3: DEFINE THE DATA TO BE UPLOADED TO THE CLOUD PLATFORM AND HOW OFTEN

On screen  **Scheduler** the data to be uploaded from each device can be programmed, as well as the frequency of uploads to the Cloud platform, **Figure 29**.

Schedules

☐	Name	Frequency	Device	Command	Actions
	Status	Every 30 minute(s)	line-EDS	Status	
	Prova_adv_off	Advanced mode	line-M-410-R_006	Output2	
	Prova_adv_on	Advanced mode	line-M-410-R_006	Output2	

Items per page: 50 1 – 3 of 3 < >

Figure 29: Schedule screen.

On this screen you can:

- ✓ Add a new schedule,
- ✓ Delete a schedule,
- ✓ Edit a schedule,

STEP 3.1.- Add a new schedule

Press  **Add shedule**, to add a new schedule, the screen shown in **Figure 30** will appear.

 Add schedule
 ✕

Name

Frequency

Minutes

Every 1 minute(s)

Minute(s)

1

Device

line-EDS

Command

Save changes

Figure 30: Schedule screen: Add Schedule.

✓ **Name:** Name of the new schedule.

✓ **Frequency:** Select how often to upload data to the Cloud platform: *Minutes, Hourly, Daily, Weekly, Monthly or Advanced mode*.

Once the frequency is selected, you have to select *Minutes, Hours....* based on the option selected.

✓ **Device:** Select the device from which the data will be uploaded.

✓ **Command:** Select the data set to upload.

Press **Save changes** to save the new schedule.

STEP 4: SPECIFY THE CLOUD PLATFORM TO WHICH THE DATA WILL BE UPLOADED

The Cloud platform to which the data will be uploaded is specified on screen  **Exports**, Figure 31.

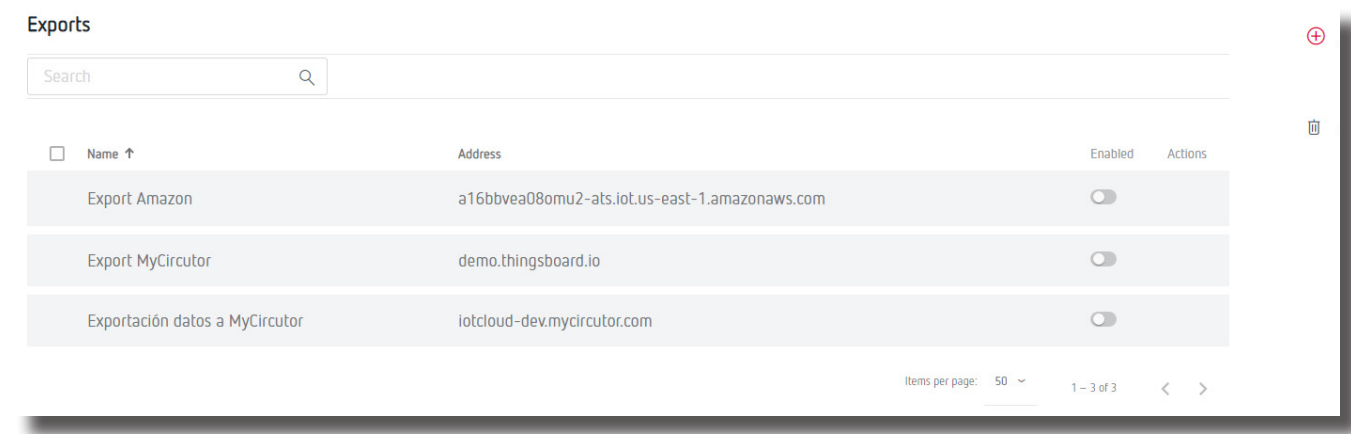


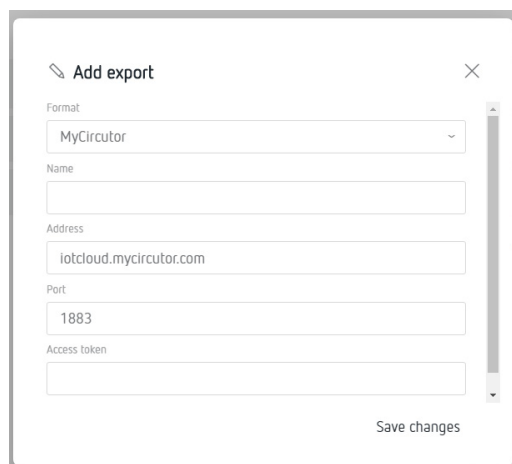
Figure 31: Exports screen.

On this screen you can:

- ✓ Specify the Cloud platform,
- ✓ Delete the configuration of a platform
- ✓ Edit the Cloud platform,

STEP 4.1.- Specify the Cloud platform

Press  **Add export**, to select and configure the Cloud platform, the screen shown in Figure 32 will appear.



The 'Add export' form contains the following fields:

- Format:** A dropdown menu with 'MyCircutor' selected.
- Name:** An empty text input field.
- Address:** A text input field containing 'iotcloud.mycircutor.com'.
- Port:** A text input field containing '1883'.
- Access token:** An empty text input field.
- Save changes:** A button at the bottom right.

Figure 32:Export screen: Add Export.

✓ **Format:** Select the Cloud platform. The **line-EDS-Cloud** can connect to the following platforms: *MyCircutor, Amazon Web Services (AWS), Azure IoT Hub, DEXMA and Google Cloud IoT Core*. Depending on the platform selected, the configuration parameters may vary.

When selecting the *MyCircuit* platform, you have to configure:

- **Name:** Name of the data upload.
- **Address:** Platform address.

- **Port:** Port.
- **Access token:** Platform access token.

When selecting the *Amazon Web Services (AWS)* platform, you have to configure:

- **Name:** Name of the data upload.
- **Address:** Platform address.
- **Object:** Object created from the *Amazon Web Services (AWS)* platform.
- **Certificate:** Upload certificate file.
- **Key:** Upload file with the private key.

When selecting the *Azure IoT Hub* platform, you have to configure:

- **Name:** Name of the data upload.
- **Address:** Platform address.
- **Port:** Port.
- **SAS token:** Platform access token.
- **Device ID:** Device ID on the platform.

When selecting the *DEXMA* platform, you have to configure:

- **Name:** Name of the data upload.
- **Address:** Platform address.
- **Port:** Port.
- **Key:** Platform access token.
- **Token:** Platform access token.

When selecting the *Google Cloud IoT Core* platform, you have to configure:

- **Name:** Name of the data upload.
- **Project identifier:** Project identifier on the platform.
- **Location:** Location of the platform server.
- **Registry identifier:** Registry identifier on the platform.

- **Device identifier:** Device identifier on the platform.
- **Certificate:** Upload certificate file.
- **Key:** Upload file with the private key.

Press **Save changes** to save the platform configuration.

Note: “*ANNEX A: CONFIGURATION OF CLOUD PLATFORMS*”, summarises the basic steps for configuring the relationship between the **line-EDS-Cloud** device and the platform in the Cloud where you want to export the data you have obtained.

Once the configuration steps for the upload system have been completed, the device automatically begins uploading the data to the specified Cloud platform.

6.3- PERIODIC READINGS

The  **Periodic readings**, screen lets you schedule periodic readings of the devices connected to the **line-EDS-Cloud**,, Figure 33.

Periodic readings

Search

+ Add periodic reading
🗑 Delete periodic reading/s

☐ Device	Command	Frequency	Instantaneous	Minimum	Average	Maximum	Actions
CVM-MINI-E3_TCP	Voltage	Every 60s second(s)	☒	☒	☒	☒	

Items per page: 50 1 – 1 of 1 < >

Figure 33: Periodic readings.

On this screen you can:

- ✓ Add a new periodic reading,
- ✓ Delete a periodic reading,
- ✓ Edit a periodic reading,

Press + **Add periodic reading**, to enter a new reading. The screen shown in Figure 34 will appear.

 Add periodic reading ×

Device
line-EDS

Command
Frequency (in seconds)
60

Values
☒ Instantaneous
☐ Average
☐ Minimum
☐ Maximum

Save changes

Figure 34: Periodic readings: Add periodic reading.

✓**Device:** Select the device to be read.

✓**Command:** Command to read.

✓**Frequency:** Read frequency in seconds.

✓**Values:** Select the values to read: *Instantaneous, Average, Minimum or Maximum*.

Click **Save changes** to save the new schedule.

6.4- HISTORIC

The  **Historic**, screen can be used to graphically display the values of the different devices connected to the **line-EDS-Cloud**, **Figure 35**.

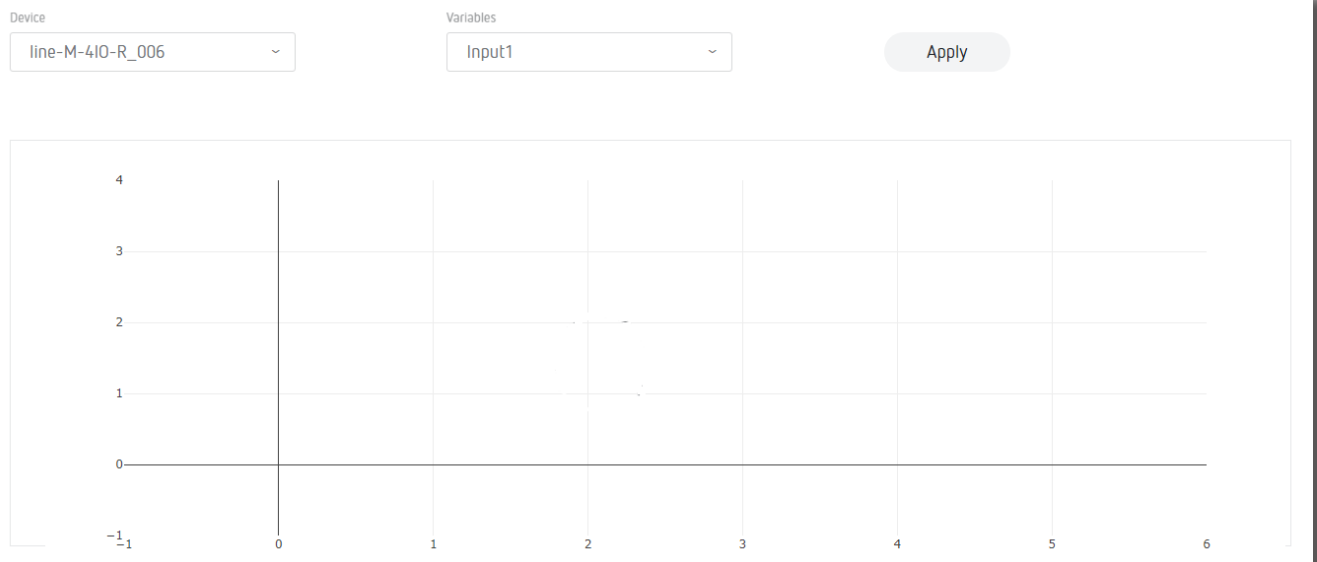
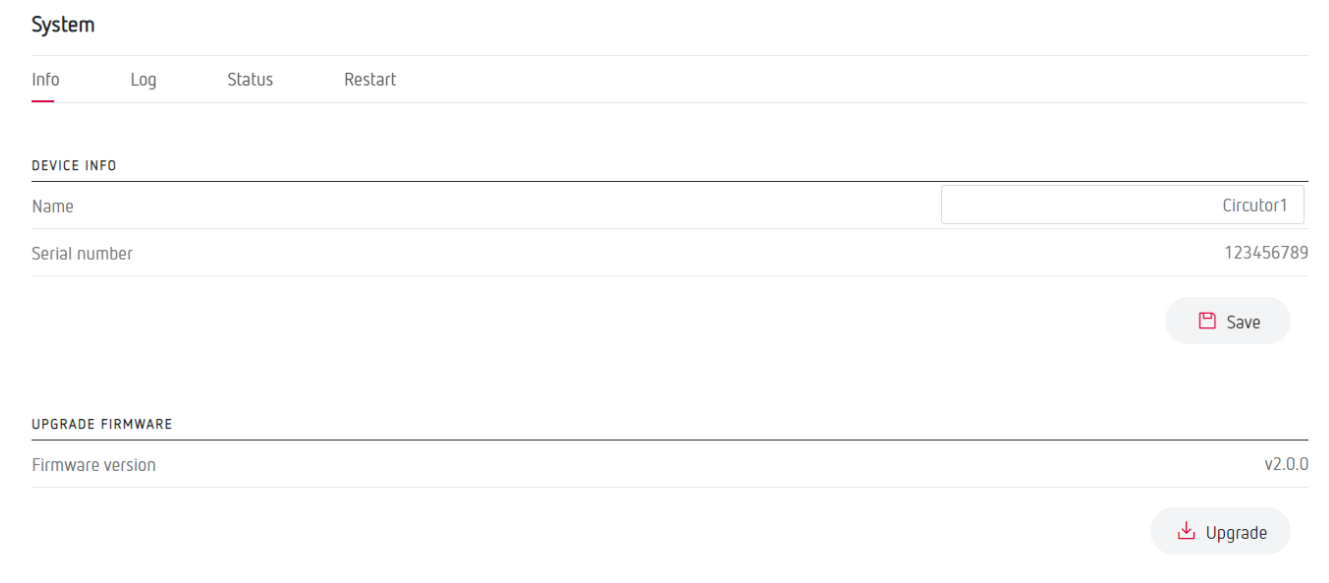


Figure 35: Historic.

6.5- CHECKING THE STATUS OF THE SYSTEM

The  **System**, screen allows you to check the status of the system, update the device, change the password, etc **Figure 36**.



System

Info Log Status Restart

DEVICE INFO

Name Circutor1

Serial number 123456789

Save

UPGRADE FIRMWARE

Firmware version v2.0.0

Upgrade

Figure 36: System: Info.

6.5.1.- INFO

In this section you can find the **line-EDS-Cloud** serial number and firmware version, **Figure 36**.

If a name is entered in the **Name** parameter, all the information on the device can be saved by clicking

 Save

You can also to update the device firmware:

- 1.- Download the update file from **CIRCUTOR** website.
- 2.- Select the update file by pressing  Upgrade . Updating the device takes about 1 minute.

6.5.2.- LOG

In this section, **Figure 37**, all the operations performed by the data upload system are recorded.

System

Info	Log	Status	Restart
Copy log <pre>[9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"8c37ab0d-e81b-4c35-8be1-b49b34c17ed4","id":"1604914643052-df780446-f6c4-f [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"04b01ad4-eb36-4ae8-937c-18421e65bb18","id":"1604914643188-5641ea31-58e8 [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"406513d0-1631-4fd7-b767-d2ea079bb856","id":"1604914643325-ee1e0236-b728 [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"a428cd43-4011-4c77-806d-7bbd4c3d013b","id":"1604914643417-4e9edc9a-ecbd- [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"821b6b52-39be-485e-bd78-e67b9276ceed","id":"1604914643514-b1590e04-5e71 [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false; [9/11/2020 10:37:23] [INFO] [edgex-export-distro] Event received: {"correlation-id":"29be555b-6a0b-4b11-ad97-b6f526ec56bb","id":"1604914643686-d900e8aa-3f8f-f [9/11/2020 10:37:23] [INFO] [device-modbus] Push event for device line-M-4IO-R_006: Output1 = false;</pre>			

Figure 37: System: Log.

Click  **Copy log** to save the event log in a file.

6.5.3.- STATUS

This section, **Figure 38**, shows the device status.

System			
Info	Log	Status	Restart
DEVICE STATUS			
CPU			98%
RAM			64%
Storage			35%
Chipset temperature			62°C
Uptime			1d 20h 15min

Figure 38: System: Status.

6.5.4.- RESTART

In this section, **Figure 39**, the **line-EDS-Cloud** device can be reset by clicking the button Restart

System

Info

Log

Status

Restart

RESTART DEVICE

Restart

Figure 39: System: Restart.

7.- TECHNICAL FEATURES

AC Power supply	
Rated voltage	120 ... 264 V ~
Frequency	50 ... 60 Hz
Consumption	11 ... 28 VA
Installation category	CAT III 300 V
DC Power supply	
Rated voltage	190 ... 300 V ===
Consumption	2.5 ... 7 W
Installation category	CAT III 300 V
Digital outputs	
Quantity	2
Type	Optocoupler (Open-collector)
Maximum voltage	48V ===
Maximum current	120 mA
Maximum frequency	500 Hz
Pulse width	1 ms
RS-485 communication	
Bus	RS-485
Protocol	Modbus RTU
Baud rate	9600 - 19200 - 38400 - 57600 - 115200 bps
Data bits	8
Stop bits	1 - 2
Parity	without - even - odd
Ethernet communication	
Type	Ethernet 10BaseT - 100BaseTX self-detectable
Connector	RJ45
Protocol	Web server - MQTT - REST
Connection mode to Network	DHCP ON/OFF (ON by default)
Secondary service IP address	100.0.0.1
Wi-Fi communication	
Band	2.4 GHz
Standard	IEEE 802.11 ac / a / b / g / n.
Output power	8.9 dBm
Effective radiated power (ERP)	11.25 dBm
Effective isotropic radiated power (EIRP)	13.4 dBm
User interface	
LED	5 LEDs
Environmental features	
Operating temperature	-10 °C... +50 °C
Storage temperature	-20 °C ... +80 °C
Relative humidity (non-condensing)	5 ... 95 %

(Continuation) Environmental features	
Maximum altitude	2000 m
Protection degree	IP30, Front: IP40
Mechanical features	
Dimensions (mm)	52.5 x 118 x 70 mm
Weight	180 g
Enclosure	Self-extinguishing V0 plastic
Attachment	DIN rail
Standards	
Safety requirements for electrical equipment for measurement, control and laboratory use -- Part 1: General requirements	EN 61010-1
Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments	EN 61000-6-2
Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments	EN 61000-6-4
Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements	UL 61010-1

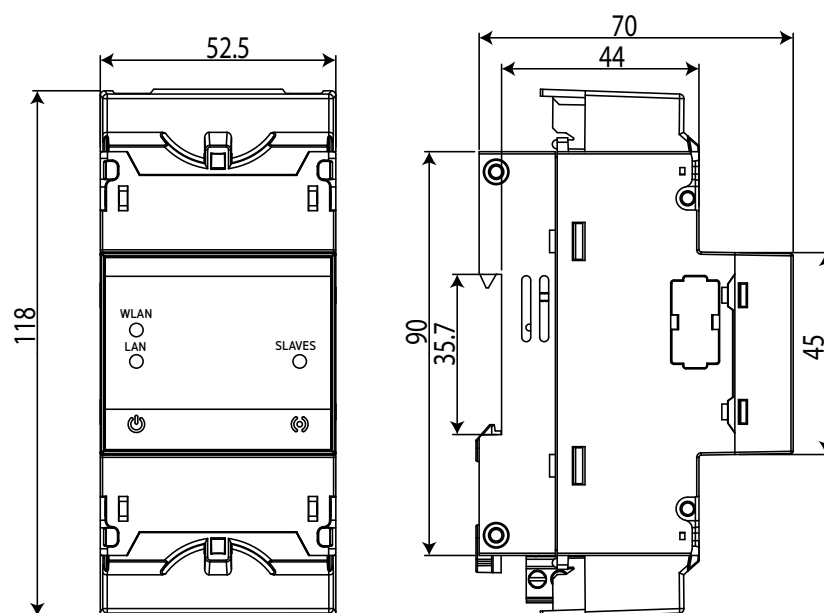


Figure 40: line-EDS-Cloud dimensions.

8.- MAINTENANCE AND TECHNICAL SERVICE

In the case of any query in relation to device operation or malfunction, please contact the **CIRCUTOR SA** Technical Support Service.

Technical Assistance Service

Vial Sant Jordi, s/n, 08232 - Viladecavalls (Barcelona)

Tel: 902 449 459 (España) / +34 937 452 919 (outside of Spain)

email: sat@circutor.com

9.- GUARANTEE

CIRCUTOR guarantees its products against any manufacturing defect for two years after the delivery of the units.

CIRCUTOR will repair or replace any defective factory product returned during the guarantee period.



- No returns will be accepted and no unit will be repaired or replaced if it is not accompanied by a report indicating the defect detected or the reason for the return.
- The guarantee will be void if the units has been improperly used or the storage, installation and maintenance instructions listed in this manual have not been followed. "Improper usage" is defined as any operating or storage condition contrary to the national electrical code or that surpasses the limits indicated in the technical and environmental features of this manual.
- **CIRCUTOR** accepts no liability due to the possible damage to the unit or other parts of the installation, nor will it cover any possible sanctions derived from a possible failure, improper installation or "improper usage" of the unit. Consequently, this guarantee does not apply to failures occurring in the following cases:
 - Overvoltages and/or electrical disturbances in the supply;
 - Water, if the product does not have the appropriate IP classification;
 - Poor ventilation and/or excessive temperatures;
 - Improper installation and/or lack of maintenance;
 - Buyer repairs or modifications without the manufacturer's authorisation.

10.- CE CERTIFICATE

Circutor

CIRCUTOR, SA – Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
(+34) 937 452 900 – info@circutor.com



DECLARACIÓN UE DE CONFORMIDAD

La presente declaración de conformidad se expide bajo la exclusiva responsabilidad de CIRCUTOR con dirección en Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) España

Producto:

Energy Data Server

Serie:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

Marca:

CIRCUTOR

EL objeto de la declaración es conforme con la legislación de armonización pertinente en la UE, siempre que sea instalado, mantenido y usado en la aplicación para la que ha sido fabricado, de acuerdo con las normas de instalación aplicables y las instrucciones del fabricante

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive 2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

Está en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativos(s):

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0 IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0 IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1 ETSI EN 301 489-17 Ver. 3.2.1

Año de marcado "CE":

2020



EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of CIRCUTOR with registered address at Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Spain

Product:

Energy Data Server

Series:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

Brand:

CIRCUTOR

The object of the declaration is in conformity with the relevant EU harmonisation legislation, provided that it is installed, maintained and used for the application for which it was manufactured, in accordance with the applicable installation standards and the manufacturer's instructions

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive 2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

It is in conformity with the following standard(s) or other regulatory document(s):

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0 IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0 IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1 ETSI EN 301 489-17 Ver. 3.2.1

Year of CE mark:

2020



DECLARACIÓN UE DE CONFORMIDAD

La presente declaración de conformidad es délivrée sous la responsabilité exclusive de CIRCUTOR dont l'adresse postale est Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelone) Espagne

Produit:

Energy Data Server

Série:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

Marque:

CIRCUTOR

L'objet de la déclaration est conforme à la législation d'harmonisation pertinente dans l'UE, à condition d'avoir été installé, entretenu et utilisé dans l'application pour laquelle il a été fabriqué, conformément aux normes d'installation applicables et aux instructions du fabricant

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive 2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

Il est en conformité avec la(les) suivante(s) norme(s) ou autre(s) document(s) réglementaire(s):

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0 IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0 IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1 ETSI EN 301 489-17 Ver. 3.2.1

Année de marquage « CE »:

2020

Viladecavalls (Spain), 11/3/2020
General Manager: Ferran Gil Torné



CIRCUTOR, SA – Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
(+34) 937 452 900 – info@circuitor.com



KONFORMITÄTSERKLÄRUNG UE

Vorliegende Konformitätserklärung wird unter alleiniger Verantwortung von CIRCUTOR mit der Anschrift, Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Spanien, ausgestellt

Produkt:

Energy Data Server

Série:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

Marke:

CIRCUTOR

Der Gegenstand der Konformitätserklärung ist konform mit der geltenden Gesetzgebung zur Harmonisierung der EU, sofern die Installation, Wartung und Verwendung der Anwendung seinem Verwendungszweck entsprechend gemäß den geltenden Installationsstandards und der Vorgaben des Herstellers erfolgt.

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive
2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

Es besteht Konformität mit der/den folgenden/folgenden Norm/Normen oder sonstigem/sonstiger Regelwerk/Regelwerken

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0
IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0
IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1
ETSI EN 301 489-17 Ver. 3.2.1

Jahr der CE-Kennzeichnung: 2020



DECLARAÇÃO DA UE DE CONFORMIDADE

A presente declaração de conformidade é expedida sob a exclusiva responsabilidade da CIRCUTOR com morada em Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Espanha

Produto:

Energy Data Server

Série:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

Marca:

CIRCUTOR

O objeto da declaração está conforme a legislação de harmonização pertinente na UE, sempre que seja instalado, mantido e utilizado na aplicação para a qual foi fabricado, de acordo com as normas de instalação aplicáveis e as instruções do fabricante.

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive
2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

Está em conformidade com a(s) seguinte(s) norma(s) ou outro(s) documento(s) normativo(s):

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0
IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0
IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1
ETSI EN 301 489-17 Ver. 3.2.1

Ano de marcação "CE": 2020



DICHIARAZIONE DI CONFORMITÀ UE

La presente dichiarazione di conformità viene rilasciata sotto la responsabilità esclusiva di CIRCUTOR, con sede in Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Spagna prodotto:

Energy Data Server

Serie:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A, line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

MARCHIO:

CIRCUTOR

L'oggetto della dichiarazione è conforme alla pertinente normativa di armonizzazione dell'Unione Europea, a condizione che venga installato, mantenuto e utilizzato nell'ambito dell'applicazione per cui è stato prodotto, secondo le norme di installazione applicabili e le istruzioni del produttore.

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive
2014/53/UE: RED Directive 2011/65/UE + 2015/863/UE: RoHS Directive

È conforme alle seguenti normative o altri documenti normativi:

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0
IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0
IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1
ETSI EN 301 489-17 Ver. 3.2.1

Anno di marcatura "CE": 2020

Viladecavalls (Spain), 11/3/2020
General Manager: Ferran Gil Torné



CIRCUTOR, SA – Vial Sant Jordi, s/n
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Circutor



DEKLARACJA ZGODNOŚCI UE

Niniejsza deklaracja zgodności zostaje wydana na wyłączną odpowiedzialność firmy CIRCUTOR z siedzibą pod adresem: Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Hiszpania

produkt:

Energy Data Server

Seria:

Equipo/Device: line-EDS, line-CVM-D32

Módulo/Module: line-M-410-T, line-M-410-R, line-M-410-A,
line-M-EXT-PS, line-M-201, line-M-3G, line-TCPRS1

marka:

CIRCUTOR

Przedmiot deklaracji jest zgodny z odnośnymi wymaganiami prawodawstwa harmonizacyjnego w Unii Europejskiej pod warunkiem, że będzie instalowany, konserwowany i użytkowany zgodnie z przeznaczeniem, dla którego został wyprodukowany, zgodnie z mającymi zastosowanie normami dotyczącymi instalacji oraz instrukcjami producenta

2014/35/UE: Low Voltage Directive 2014/30/UE: EMC Directive
2014/53/UE: RED Directive 2011/65/UE: RoHS Directive

Jest zgodny z następującą(y) normą(ami) lub innym(i) dokumentem(ami) normatywnym(i):

IEC 61010-1:2010/AMD1:2016 Ed 3.0 IEC 61010-2-030:2010 Ed 1.0
IEC 61326-1:2012 Ed 2.0 IEC 61000-6-2:2016 Ed 3.0
IEC 61000-6-4:2018 Ed 3.0 ETSI EN 301 489-1 Ver. 2.1.1
ETSI EN 301 489-17 Ver. 3.2.1

Rok oznakowania "CE":

2020

Viladecavalls (Spain), 11/3/2020
General Manager: Ferran Gil Torné



ANNEX A: CONFIGURATION OF THE CLOUD PLATFORMS

This annex contains a summary of the basic steps required to configure the relationship between the **line-EDS-Cloud** device and the Cloud platform where you want to export the data.

Currently, **line-EDS-Cloud** can connect to 5 different platforms: *MyCircutor*, *Amazon Web Services (AWS)*, *Azure IoT Hub*, *DEXMA* and *Google Cloud IoT Core*.

A.1- MyCircutor

To configure the data for export to the *MyCircutor* platform, the steps are as follows:

1.- On the configuration website of the device, open the  **Exports** screen where the Cloud platform can be defined.

Press  **Add export**, to select and configure the Cloud platform, the screen shown in **Figure 41** will appear.

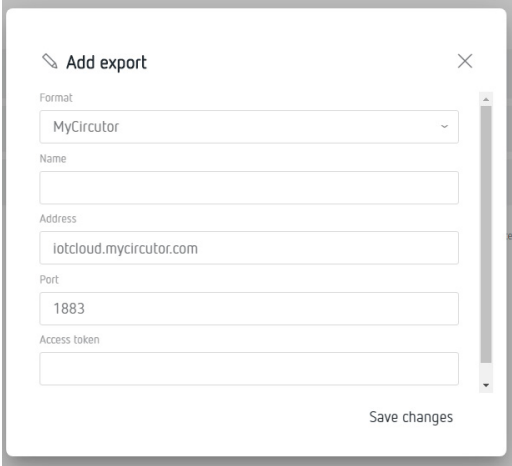


Figure 41: Export screen: Add Export.

Fill in the screen parameters with the following values:

- ✓ **Format:** Select *MyCircutor*
- ✓ **Address:** `iotcloud-dev.mycircutor.com`
- ✓ **Port:** 1883
- ✓ **Access token:** Information for this field is obtained on the *MyCircutor* platform.

2.- To fill in the **Access token** field you need to access MyCircutor platform. To do this, you have to log into <https://iotcloud-dev.mycircutor.com/login>



Figure 42: MyCircutor platform: Login screen.

3.- Once in the platform, select **Grupos de dispositivos (Groups of devices)** → **All**. And in **Agregar Dispositivo (Add Device)**, add the **line-EDS-Cloud**, enter a name, the device type and select the **Es puerta de entrada (It's an input gateway)** option.

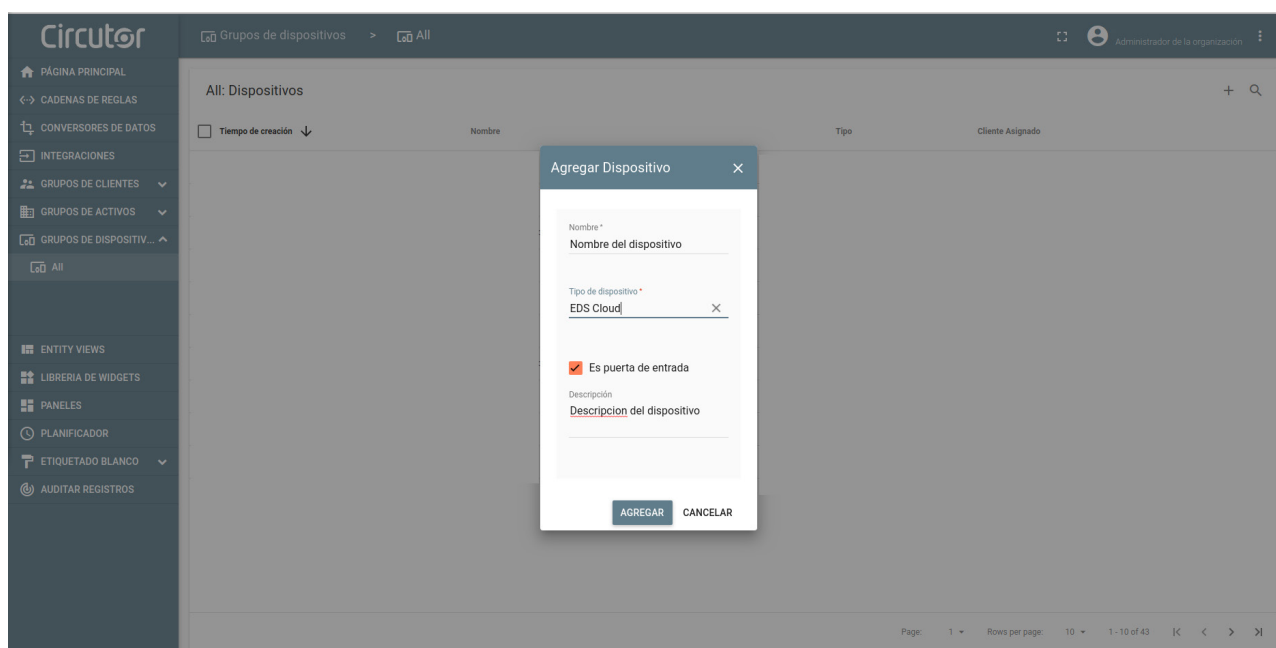
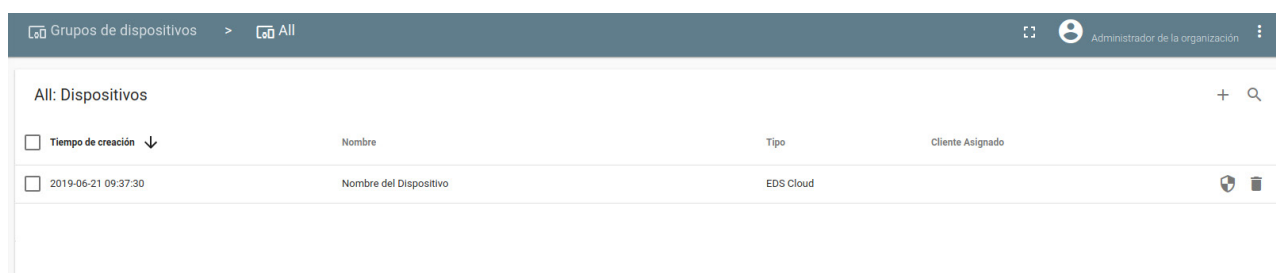


Figure 43: MyCircutor platform: Add Device.

4.- Once **line-EDS-Cloud** has been added, it is shown in the list of devices.



Tiempo de creación	Nombre	Tipo	Cliente Asignado
2019-06-21 09:37:30	Nombre del Dispositivo	EDS Cloud	

Figure 44: MyCircutor platform: List of Devices.

5.- To get the **Access token** for **line-EDS-Cloud**, click on the device name to view its features, and click on **Gestionar Credenciales (Manage Credentials)** in the **Detalles (Details)** tab. A new screen appears where you can specify the **Access token** for the device.

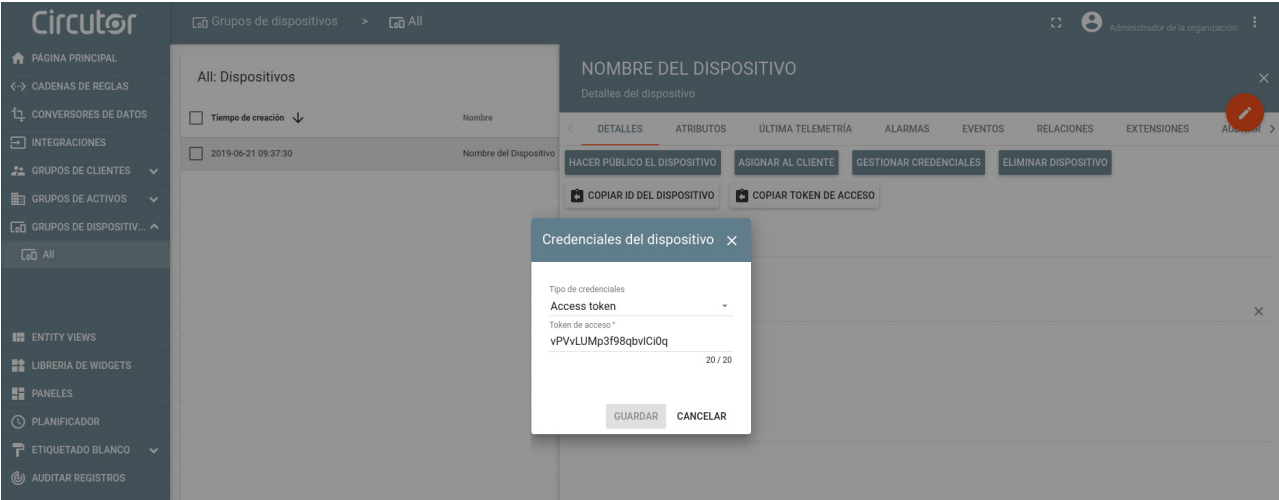


Figure 45: MyCircutor Platform: Access token.

6.- Copy the Token and enter it into the configuration website of the device, **Figure 41**.

7.- Once the data export to *MyCircutor* platform has been configured, the readings for the values from the linked **line-EDS-Cloud** devices will be shown in *MyCircutor*.

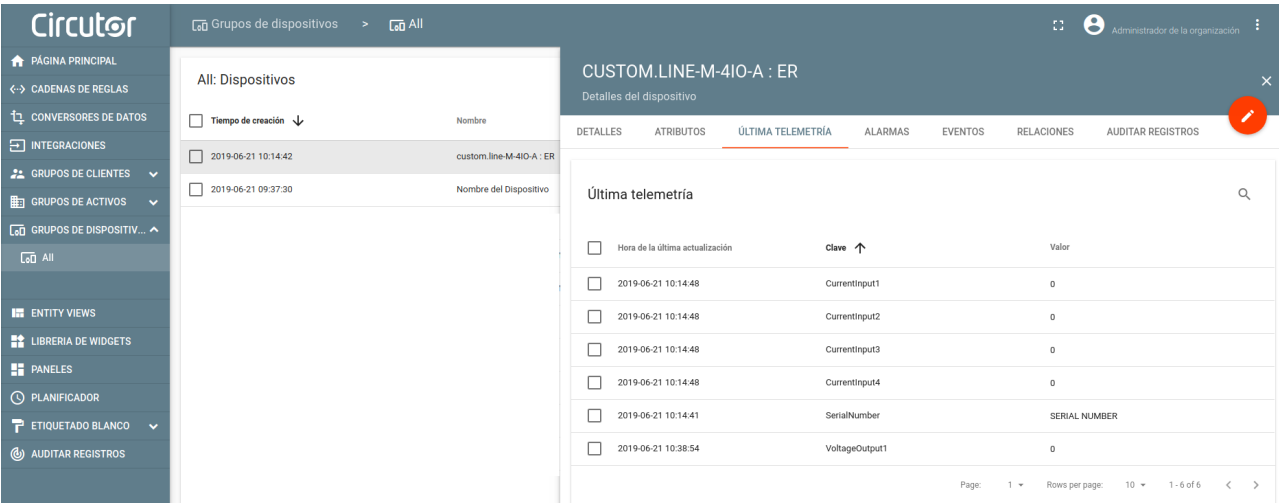


Figure 46: MyCircutor platform: Data reading.

A.2- Amazon Web Services (AWS)

To configure data export to the *AWS* platform, the steps are as follows:

1.- On the configuration website for the device, go to the  **Exports** screen, where the Cloud platform is specified.

Press  **Add export** to select and configure the Cloud platform, the screen shown in **Figure 44** will appear.

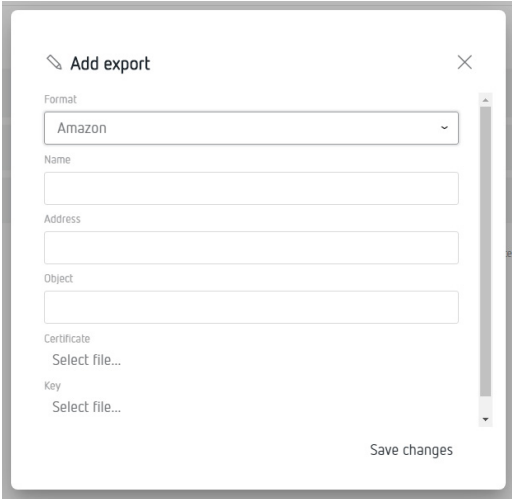


Figure 47: Export screen: Add Export.

Fill in the screen parameters with the following values:

- ✓**Format:** Select *Amazon*
- ✓**Address:** The information for this field is obtained on the *AWS* platform.
- ✓**Object:** The information for this field is obtained on the *AWS* platform.
- ✓**Certificate:** The information for this field is obtained on the *AWS* platform.
- ✓**Key:** The information for this field is obtained on the *AWS* platform.

2.- To fill in all the above fields, you have to go to the *Amazon Web Services (AWS)* platform. In the **Consola de administración de AWS (AWS administration console)**, screen, go into the **Internet de las cosas (Internet of things) → IoT Core**.



Figure 48: AWS platform: Internet of things.

3.- In the **AWS IoT** menu, go into **Administración (Administration)** → **Objetos (Objects)** and click **Crear**.

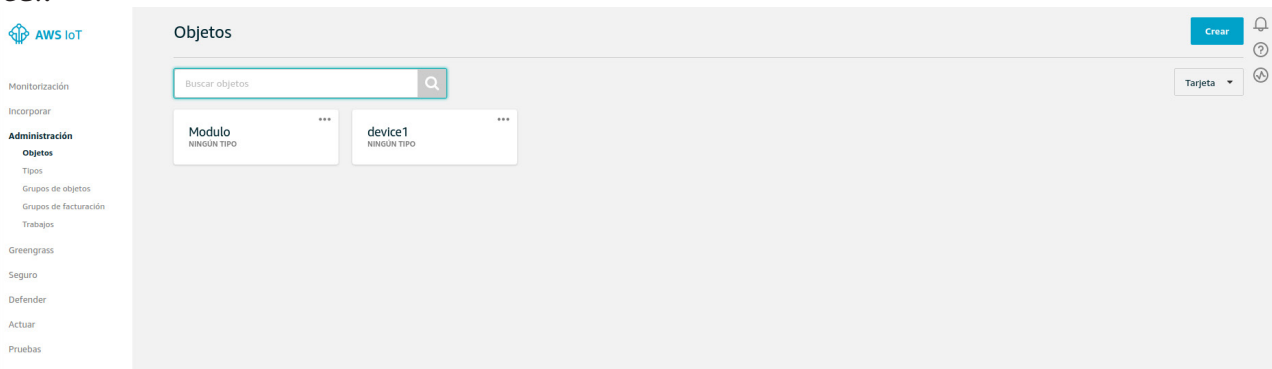


Figure 49: AWS platform: Objects.

4.- Several steps are required to create an object:

4.1.- On the screen **Creación de objetos de AWS IoT (Creation of AWS IoT objects)**, click on the option **Crear un solo objeto (Create a single object)**.



Figure 50: AWS platform: Creating AWS IoT objects.

4.2.- On the screen **Añadir su dispositivo al registro de objetos** (Add your device to the object registry), assign a **Nombre (Name)** and click Next.

The screenshot shows the 'CREAR UN OBJETO' (Create an object) screen, step 1/3. The title is 'Añadir su dispositivo al registro de objetos'. Below the title, it says 'Este paso crea una entrada en el registro de objetos y una sombra de objeto para el dispositivo.' (This step creates an entry in the object registry and an object shadow for the device). There is a text input field labeled 'Nombre' (Name) with the value 'raspberry_pi4'. Below this, it says 'Aplicar un tipo a este objeto' (Apply a type to this object). It explains that using object types simplifies device administration by providing the same registry data for objects that share a type. There is a dropdown menu for 'Tipo de objeto' (Object type) with the selected option 'No se ha seleccionado ningún tipo' (No type has been selected) and a 'Crear un tipo' (Create a type) button. Below this, it says 'Añadir este objeto a un grupo' (Add this object to a group) and explains that adding an object to a group allows for remote administration of devices. At the bottom, there are three tabs: 'Crear un objeto', 'Crear un certificado', and 'Usar mi certificado', with 'Crear un objeto' being the active tab.

Figure 51: AWS platform: Add your device to the object registry.

4.3.- On the screen **Añadir un certificado para el objeto** (Add a certificate for the object), click **Crear un certificado** (Create a certificate) to create the object and the certificates. Take note of the location in which the created certificates are downloaded to as they will be used later.

The screenshot shows the 'CREAR UN OBJETO' (Create an object) screen, step 2/3. The title is 'Añadir un certificado para el objeto'. Below the title, it says 'Los certificados se utilizan para autenticar la conexión del dispositivo con AWS IoT.' (Certificates are used to authenticate the connection of the device with AWS IoT). There are three options for creating a certificate: 1. 'Creación de un certificado con un clic (recomendado)' (Creation of a certificate with a click (recommended)) with a description 'Se generará un certificado, una clave pública y una clave privada mediante la entidad de certificación de AWS IoT.' (A certificate, a public key and a private key will be generated by the AWS IoT certification entity.) and a 'Crear un certificado' (Create a certificate) button. 2. 'Crear con CSR' (Create with CSR) with a description 'Cargue su propia solicitud de firma de certificado (CSR) basada en su propia clave privada.' (Upload your own certificate signature request (CSR) based on your own private key.) and a 'Crear con CSR' (Create with CSR) button. 3. 'Usar mi certificado' (Use my certificate) with a description 'Registre su certificado de CA y use sus propios certificados en todos los dispositivos que desee.' (Register your CA certificate and use your own certificates on all the devices you want.) and an 'Introducción' (Introduction) button.

Figure 52: AWS platform: Add a certificate for the object.

4.4.- Click on **Listo (List)**, omitting the other options.

5.- It is now necessary to create a policy in **AWS IoT**:

5.1.- In the **AWS IoT** menu, go to **Seguro (Insurance)** → **Políticas (Policies)** and click **Crear**.

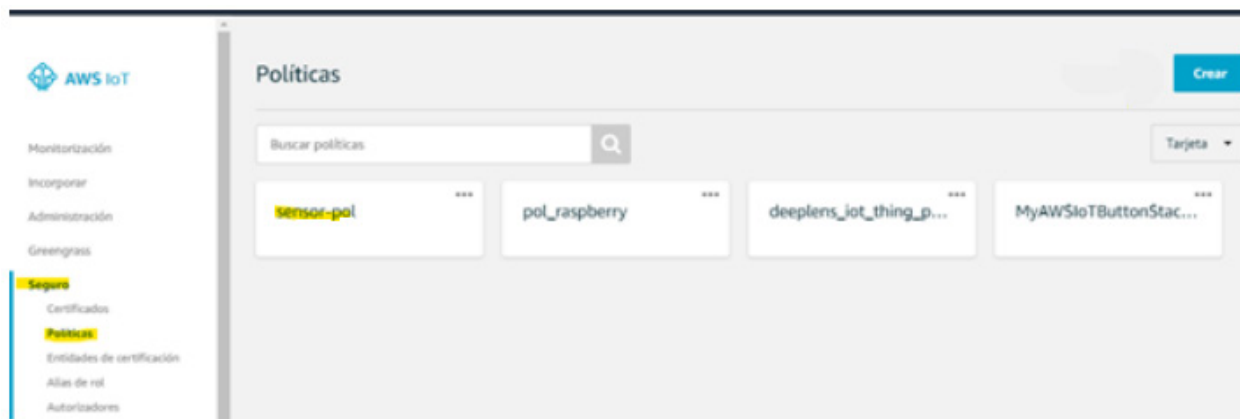


Figure 53: AWS platform: Creating a policy.

5.2.- On the screen **Crear una política (Create a policy)**, asignar un **Nombre (Name)** and in **Añadir declaraciones (Add declarations)**, if these declarations are unknown, leave an * in fields for **Acción (Action)** and **AEN de recurso (AEN Resources)**.

Select **Permitir (Allow)** in **Efecto (Effect)**, and click **Crear**.

Crear una política

Cree una política para definir un conjunto de acciones permitidas. Puede permitir acciones en uno o varios recursos (objetos, temas o filtros de temas). Para obtener más información sobre las políticas de IoT, consulte la [página de documentación de políticas de AWS IoT](#).

Nombre

PolíticaEx

Añadir declaraciones

Las declaraciones de política definen los tipos de acciones que puede realizar un recurso. **Modo avanzado**

Acción

*

ARN de recurso

*

Efecto

☒ Permitir
 ☐ Denegar

Eliminar

Añadir declaración

Crear

Figure 54: AWS platform: Create a policy.

6.- Link the policy to the object created:

6.1.- In the **AWS IoT** menu, go to **Administración (Administration)** → **Objetos (Objects)** and click on the object created previously.

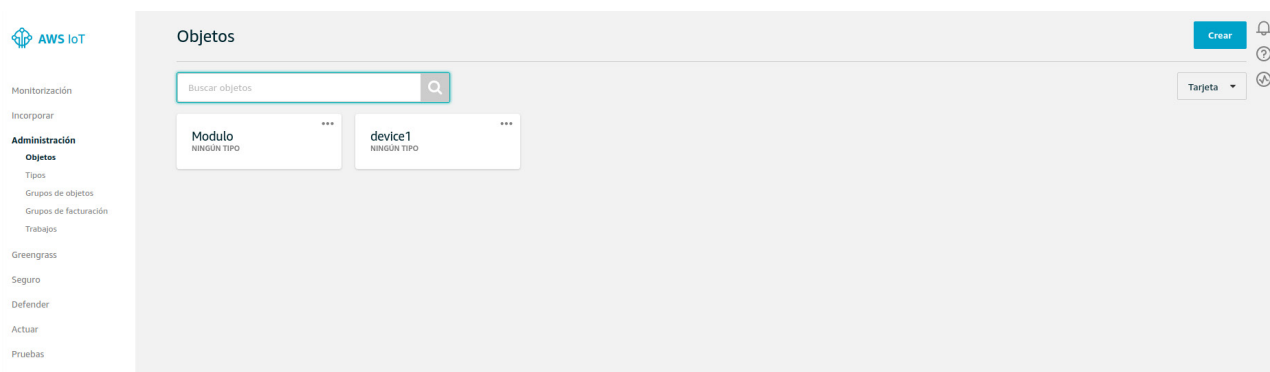


Figure 55: AWS platform: Administration - Objects.

6.2.- Select **Seguridad (Security)** and click on the certificate created.

6.3.- Click on the **Acciones (Actions)** menu and select **Asociar política (Link policy)**.

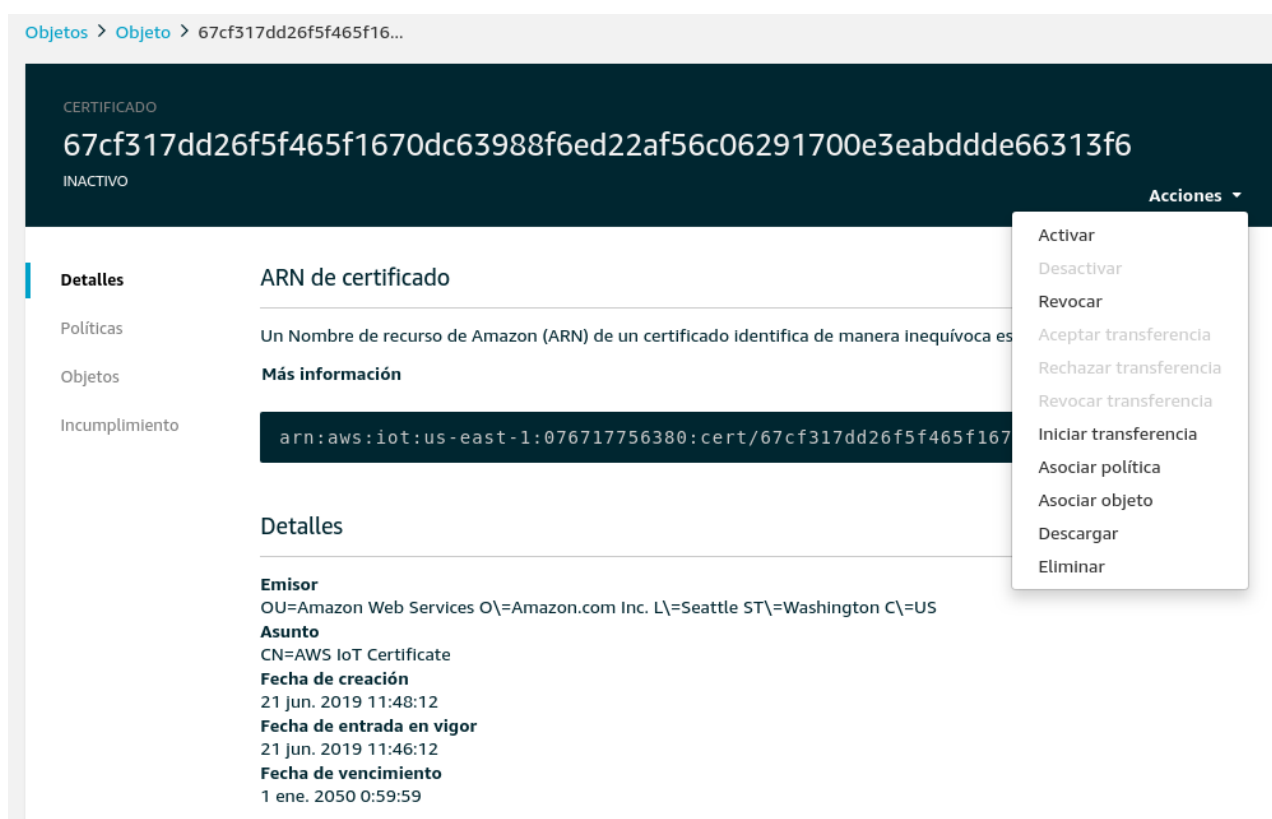


Figure 56: AWS platform: Link policy.

6.4.- Select the previously created policy from the list of possible policies and click **Asociar**.

6.5.- Finally, click **Activar**.

7.- Enter the new data on the device configuration website:

Figure 57: Export Screen: Add Export.

✓**Address:** This field is in the **Interactuar (Interact)** → **HTTPS** menu of the created object.

Figure 58: AWS Platform: Host address.

✓**Object:** Add the name of the created object in this field.

✓**Certificate:** Select the created certificate file.

✓**Key:** Select the created certificate file.

8.- Once the data export to the *Amazon Web Services (AWS)* platform has been configured, the readings of the values from the devices associated with the **line-EDS-Cloud** are shown on the platform. To do this, in the **AWS IoT** menu, go to **Administración (Administration)** → **Objetos (Objects)** and select the desired object.

Within the object, select **Sombra (Shadow)** to display the exported data.

The screenshot shows the AWS IoT console interface. At the top, there's a breadcrumb 'Objetos > Modulo'. Below this is a dark header bar with 'OBJETO' and 'Modulo' in large text, and 'NINGÚN TIPO' below it. On the right of the header is an 'Acciones' dropdown menu. A left sidebar contains a list of navigation options: Detalles, Seguridad, Grupos de objetos, Grupos de facturación, **Sombra** (highlighted with a blue bar), Interactuar, Actividad, Trabajos, Infracciones, Métricas de Defender. The main content area is titled 'ARN de sombra' and contains the text: 'El ARN de una sombra identifica de manera inequívoca la sombra de este objeto. Más información'. Below this is a dark box containing the ARN: 'arn:aws:iot:us-east-1:076717756380:thing/Modulo'. Further down is the 'Documento de sombra' section, which includes the text 'Última actualización: 20 jun. 2019 16:17:52' and 'Estado de sombra:'. The state is displayed as a JSON object in a light gray box:

```
{  "reported": {    "ActivePowerL1": 0,    "ApparentPowerL1": 0,    "CapacitivePowerL1": 0,    "CosPhiL1": 1,    "CurrentL1": 0,    "InductivePowerL1": 0,    "PowerFactorL1": 1,    "VoltageL1": 0,    "SerialNumber": "SERIAL NUMBER ",    "VoltageOutput1": 0  } }
```

Figure 59: AWS platform: Shadow.

A.3- Google Cloud IoT Core

To configure the data export to the *Google Cloud IoT Core* platform, the steps are as follows:

1.- On the device configuration website, go to the  **Exports** screen where the Cloud platform can be specified.

Press  **Add export**, to select and configure the Cloud platform, the screen shown in **Figure 60** will appear.

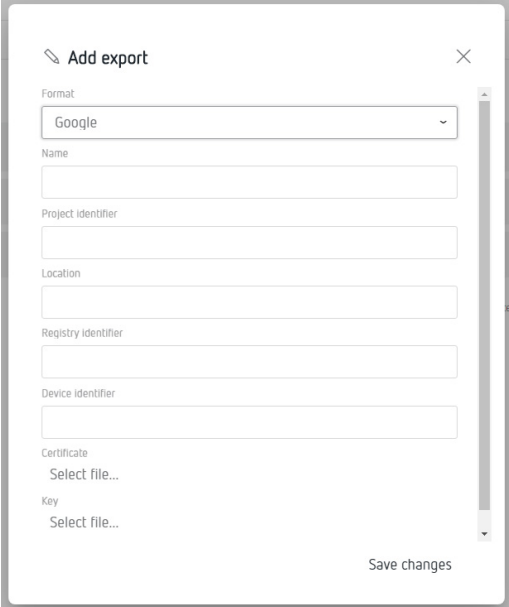


Figure 60:Export Screen: Add Export.

2.- To fill in all the above fields, you need to log into the *Google Cloud IoT Core* platform. And create a project by going into the *Google Cloud Platform (GCP)*. To do this, open the **IAM y administración (IAM and administration)** menu and go to **Administrar recursos (Manage resources)**.

In the new screen, select **Crear Proyecto (Create Project)**.

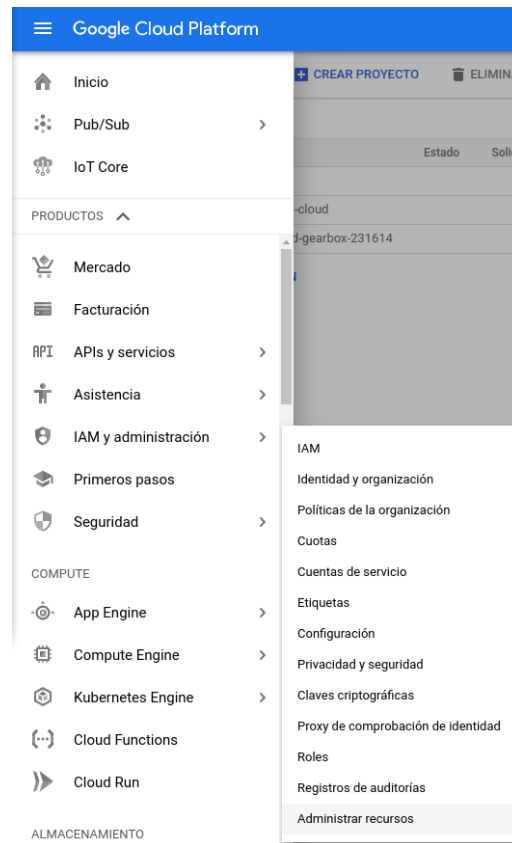


Figure 61: Google screen: Google Cloud Platform.

3.- Create a new project by assigning a name in **Nombre del proyecto (Project Name)** and an ID in **ID del proyecto (Project ID)**. Make a note of the ID, as it will be used later.

Nuevo proyecto

 Te quedan 20 projects en la cuota. Solicita un aumento o elimina proyectos. [Más información](#)

[MANAGE QUOTAS](#)

Nombre de proyecto *

Example

ID del proyecto *

exampleid

El ID del proyecto puede estar formado por letras minúsculas, dígitos o guiones, y debe empezar por una letra minúscula y terminar con una letra o un número.

Ubicación *

 Ninguna organización [EXPLORAR](#)

Carpeta u organización principal

[CREAR](#) [CANCELAR](#)

Figure 62: Google screen: New project.

4.- Configure a Pub/Sub communication. To do this, in the **Big Data** menu, go to **Pub/Sub → Temas (Subject)**. Enable the API and then create a subject.

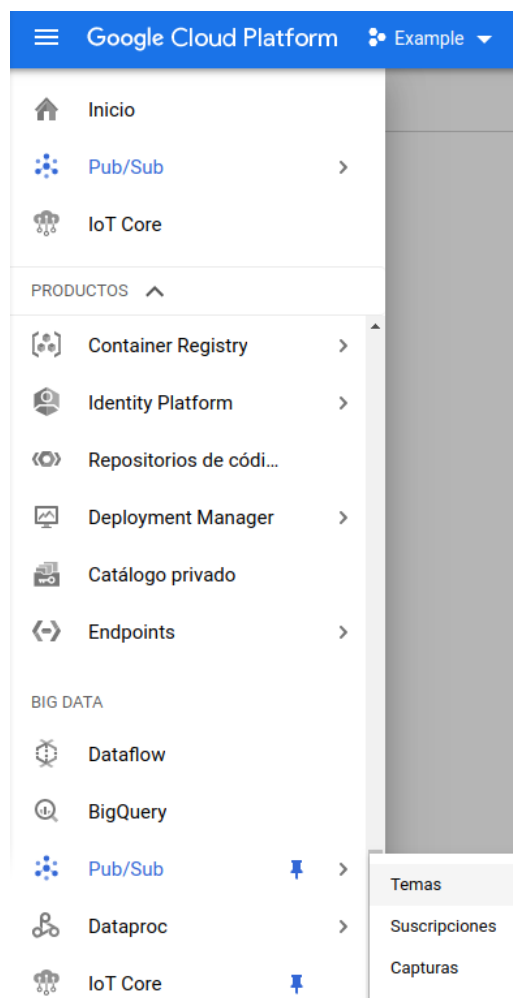


Figure 63: Google screen: New project.

5.- Add a subject name and make a note of it, as it will be used later on.

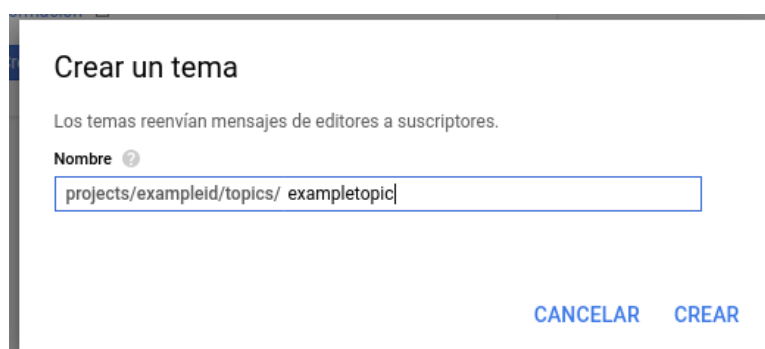


Figure 64: Google screen: Create a subject.

6.- Create certificates.

Before creating the device registry, an RS256 key has to be generated with a self-signed X.509 certificate. The X.509 certificate must be valid when creating or updating a device or an error will be generated.

By default, X.509 certificates expire 30 days after creation.

To generate a private RSA-256 key with a key size of 2048 bits and a self-signed X.509 certificate, enter the following command:

```
openssl req -x509 -nodes -newkey rsa:2048 -keyout rsa_private.pem -out rsa_cert.pem -subj "/CN=unused"
```

The files `rsa_cert.pem` and `rsa_private.pem`, are created, which will be used for the line-EDS-Cloud

configuration.

7.- Creating a device registration.

7.1.- In the menu **Big Data** go to **IoT Core**.

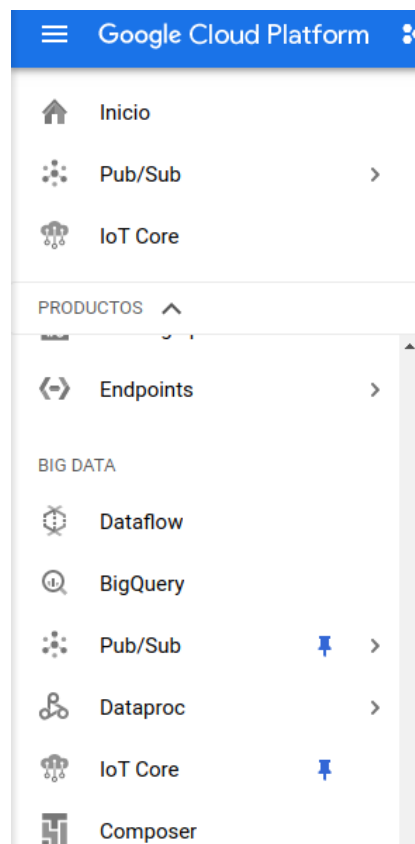


Figure 65: Google screen: Google Cloud Platform – IoT Core.

7.2.- Enable API.

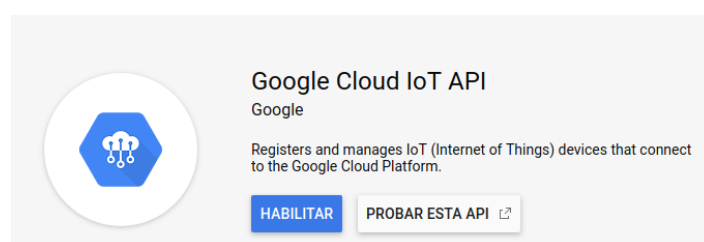


Figure 66:Google screen: Enable API.

7.3.- Press **Crear registro (reate registry)**. To create a new registry, fill in the following sections:

Google Cloud Platform Example

IoT Core ← **Crear un registro**

Define cómo enviarán datos a Cloud IoT Core los dispositivos de este registro. Cuando hayas creado tu registro, podrás empezar a añadir dispositivos. [Más información](#)

ID de registro
Introduce un ID permanente que empiece por una letra minúscula y termine en una letra o un número. También puedes incluir los siguientes caracteres: + . % - _ ~

exregistryid

Región
Determina dónde se almacenan los datos de los dispositivos del registro. La elección es permanente.

europa-west1

Protocolo
Selecciona los protocolos que usarán tus dispositivos para conectarse a Cloud IoT Core. [Más información](#)

☒ MQTT
☐ HTTP

Temas de Cloud Pub/Sub
Cloud IoT Core transfiere los mensajes de los dispositivos a Cloud Pub/Sub para su agregación. Puedes transferirlos a diferentes temas y subcarpetas de Cloud Pub/Sub, en función del tipo de datos de los mensajes. [Más información](#)

Tema de telemetría predeterminado
Los eventos de telemetría de dispositivos se publicarán en este tema de forma predeterminada. Añade más temas si quieres que estos eventos se publiquen en otros temas.

projects/exampleid/topics/exampletopic

⌵ Añadir más temas de telemetría

Tema de estado de dispositivos (Opcional)
De forma predeterminada, los eventos de estado publicados por dispositivos MQTT se almacenan en el registro. También puedes seleccionar un tema de Cloud Pub/Sub en el que se publicarán estos mensajes en la medida de lo posible. [Más información](#)

projects/exampleid/topics/exampletopic

⌵ Añadir certificado de CA

Stackdriver Logging
Configura el almacenamiento de registros predeterminado de todos los dispositivos de este registro. Puedes aplicar un ajuste diferente o depurar en cada dispositivo. [Más información](#)

☐ Ninguno ?
☐ Error ?
☐ Información ?
☒ Depurar ?

Se habilitará el almacenamiento de registros de depuración en todos los dispositivos del registro. Si quieres inhabilitarlo, selecciona "Ninguno" u otro nivel de registro.

Crear Cancelar

Figure 67: Google screen: Create a registry.

- ✓ **ID de registro:** Make a note of this, as it needs to be used in the **line-EDS-Cloud** configuration.
- ✓ **Región:** Select the nearest one.

✓ **Protocolo:** Select MQTT.

✓ **Temas de Cloud Pub/Sub:** Choose the subject created in point 5.-

✓ **Stackdriver Logging:** Select *Depurar (Debug)* o *Ninguno (None)*.

Finish creating the registry by clicking **Crear**.

8.- Creating a device.

8.1.- In the **IoT Core** screen, click on **Crear dispositivo (Create device)**.

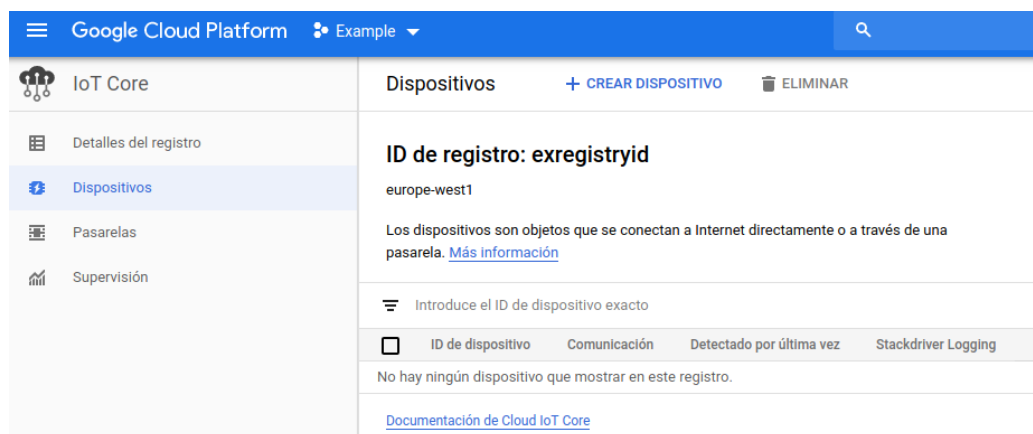


Figure 68: Google screen: Devices.

8.2.- To create a new device, fill in the following sections:

✓ **ID de Dispositivo:** Make a note of this, as it needs to be used in the **line-EDS-Cloud** configuration.

✓ **Comunicación de Dispositivo:** Select *Permitir*.

✓ **Autenticación:**

- In **Método de introducción (Introduction method)**, select *Subida*.
- In **Formato de clave pública (Public key format)**, select *RS256*.
- In **Valor de clave pública (Public key value)**, upload the file **rsa_cert.pem** generated previously.

✓ **Stackdriver Logging:** Select *Usar el ajuste predeterminado de registro (Use the default registry setting)*.

Finish creating the device by clicking **Crear**.

Google Cloud Platform Example

IoT Core Crear un dispositivo

Crea un dispositivo en el registro exregistryid.

ID de Dispositivo ?

ExampleDevice

Comunicación de Dispositivo ?

☒ Permitir

☐ Bloquear

Autenticación (Opcional) ?

Método de introducción

☐ Manual

☒ Subida

Formato de clave pública

i El registro de este dispositivo tiene un certificado de CA que requiere que la clave pública del dispositivo esté encapsulada en un certificado X.509. [Más información](#)

☐ RS256 ?

☐ ES256 ?

☒ RS256_X509 ?

☐ ES256_X509 ?

Valor de clave pública

rsa_private.pem Examinar

Fecha de caducidad de clave pública (Opcional)

☐ Fecha de caducidad:

25/6/20 11:57 CEST

Metadatos de Dispositivo (Opcional) ?

La clave solo debe contener letras, números, guiones y guiones bajos, y no puede tener más de 128 caracteres

Clave	Valor
+ Añadir atributo	

Stackdriver Logging

Elige un ajuste de registro para dispositivo. Solo se anulará el valor predeterminado del registro para este dispositivo. [Más información](#)

☒ Usar el ajuste predeterminado de registro

☐ Ninguno ?

☐ Error ?

☐ Información ?

☐ Depurar ?

Crear Cancelar

Figure 69: Google screen: Creating a device.

9.- Enter all the data obtained from the *Google Cloud IoT Core* platform into the device configuration website.

10.- Once the data export to the *Google Cloud IoT Core* platform has been configured, the readings for the values from the devices linked to the **line-EDS-Cloud** will be shown on the platform.

To do this, in the navigation menu, go to **Big data** → **IoT Core** and select the registry and the device created.

The dates of the last data sets received are displayed on the screen.

The screenshot shows the Google Cloud Platform IoT Core interface for a device named 'ExampleDevice'. The top navigation bar includes the Google Cloud Platform logo, the device name, and a search bar. Below the navigation bar, there are several action buttons: 'EDITAR DISPOSITIVO', 'ACTUALIZAR CONFIGURACIÓN', 'ENVIAR COMANDO', 'PERMITIR COMUNICACIÓN', and 'ELIMINAR'. The main content area displays the device ID, numeric ID, registry, and communication status. A table shows the most recent activity, including events like 'Latido (solo MQTT)', 'Evento de telemetría recibido', 'Evento de estado de Dispositivo recibido', 'Configuración enviada', 'Configuración confirmada (solo MQTT)', and 'Error'. The 'Error' event is highlighted with a red icon and timestamp. Below the activity table, there are sections for 'Metadatos de Dispositivo' and 'Autenticación'. The 'Autenticación' section includes a table with columns for 'Formato de clave', 'Valor de clave', and 'Fecha de caducidad'.

Formato de clave	Valor de clave	Fecha de caducidad
☐ RS256_X509	**** ... ****	—

Figure 70: Google screen: Device.

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