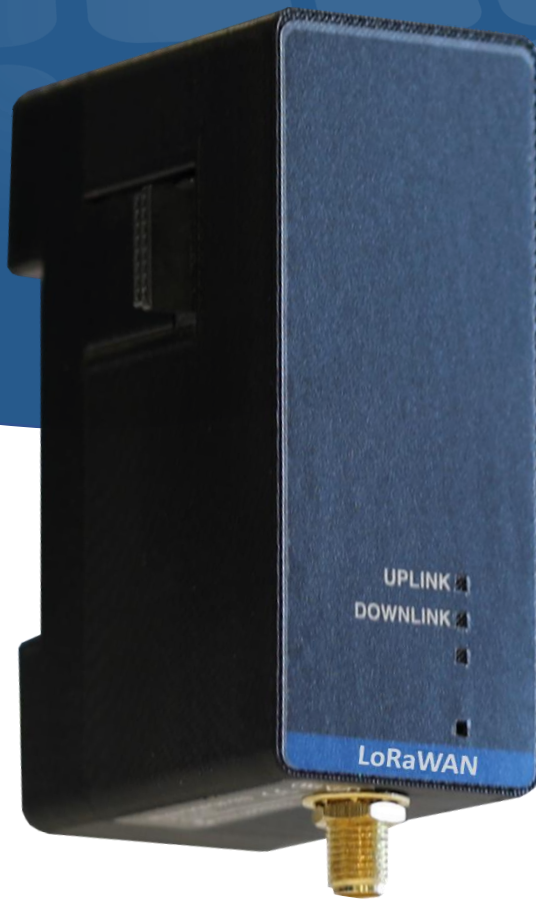




Wixia LoRaWAN



**IOT Connectivity:
LoRaWAN**

**Uplink / Downlink
Remote platform**

DIN-35 rail mounting

Wixia LoRaWAN module brings LoRaWAN connectivity to your Wixia controller.

Select the data you want to send to the Applexia cloud and visualize data remotely on Applexia visualization solution to supervise the process using uplinks.

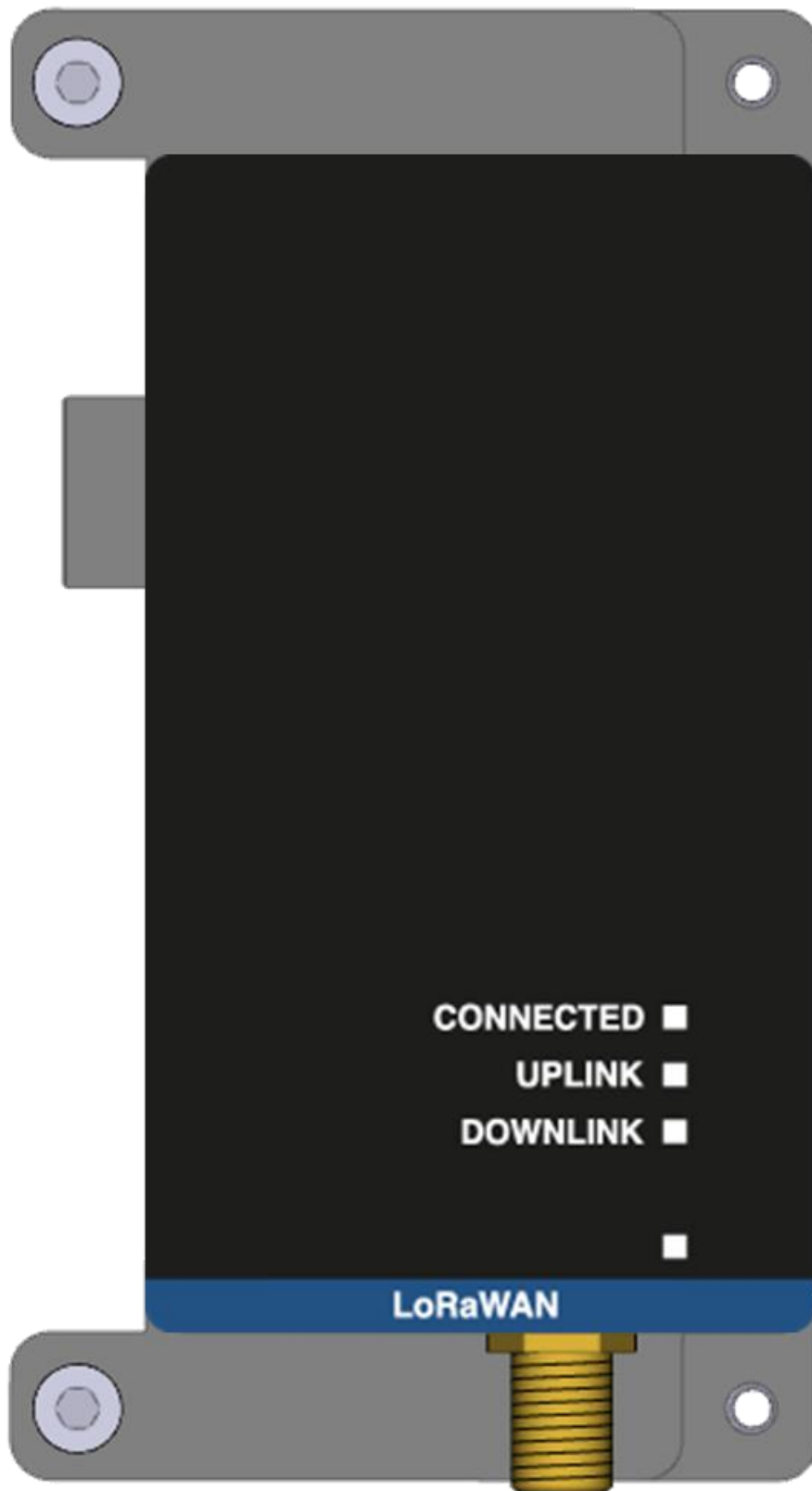
This module support downlink communication : actuators can be activated or deactivated from the Applexia platform.

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For more information
contact us or explore www.applexia.fr

PINOUT



868 MHz antenna
SMA CONNECTOR



TECHNICAL DATA

GENERAL

Compatibility	To connect to a Wixia-Controller
Power	Provided by Wixia-Controller
Type of connection	SMA connector

LoRaWAN PARAMETERS

Uplink	Up to 6 sources per uplink
Downlink	6 per day, before a fee of 0.06€ per downlink
Sample rate	100ms
Antenna	Not supplied
Carrier frequency	433MHz, 470MHz, 779MHz, 865MHz, 868MHz, 915MHz
Distance communication	Approximately 1 km with 3dBi antenna
Coverage	https://www.orange-business.com/fr/reseau-iot
Operator	Orange

OPERATING CONDITIONS

Temperature	-25 to 50°C
Humidity	10 to 80%, non-condensing

MECHANICAL CHARACTERISTICS

Dimensions (lxLxp)	5.0 x 5.1 x 9.1cm
Mounting type	DIN-35 rail
Weight	120g

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UTILITY

POWER-UP

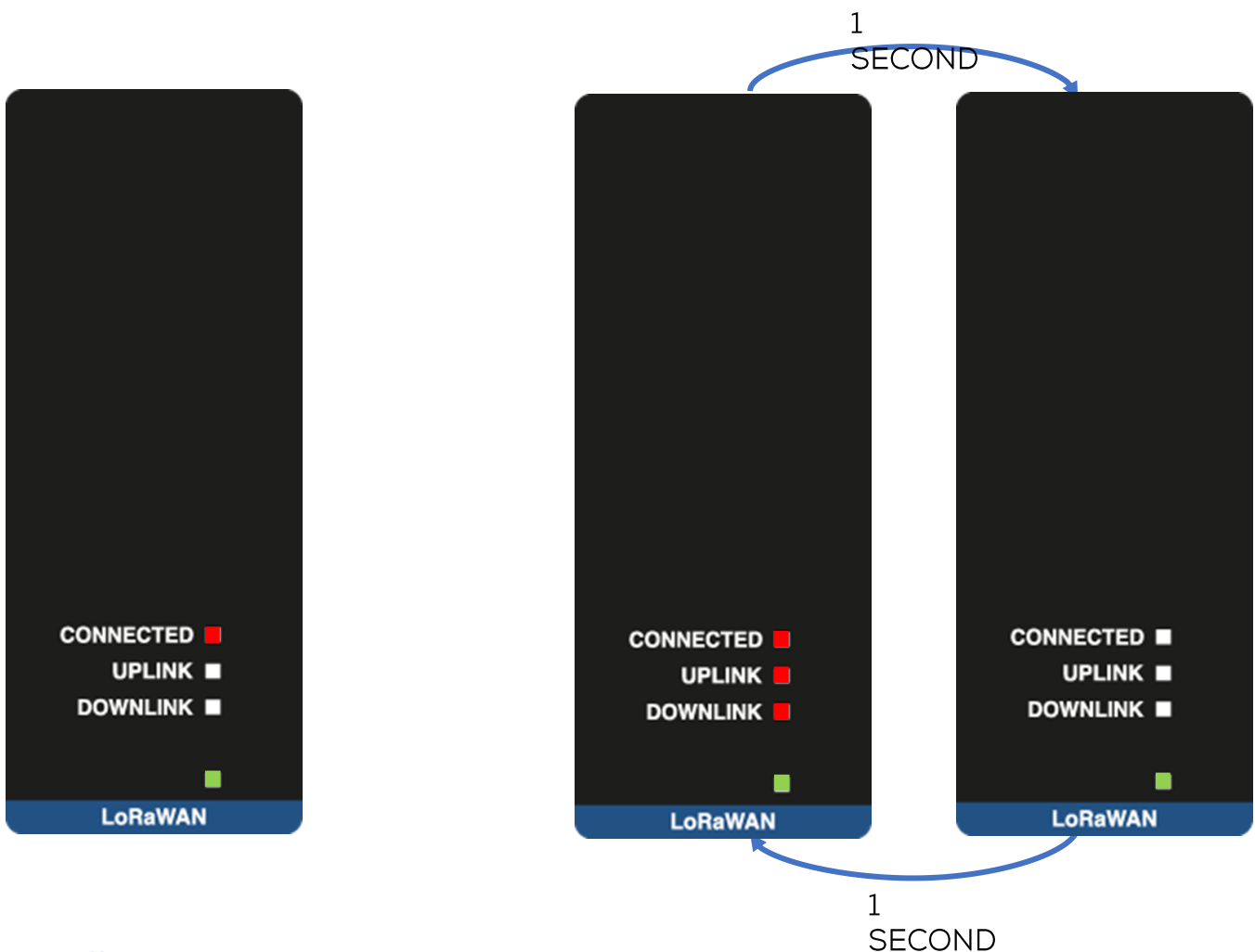
When powering on the Wixia controller, the LoRaWAN module boots up and immediately tries to connect to the LoRaWAN closest gateway. The state of the CONNECTED LED should display to the user the state of the connection. If the module is stuck with the three LEDs on, the module isn't properly set up and Applexia support should be contacted.

NETWORK CONNECTION

Once on, the module must connect itself to the closest LoRaWAN gateway, the CONNECTED LED state gives feedback on the state of the connection:

If only the CONNECTED LED is on, then the module is connected to the network and is waiting for data to send.

If the module blinks periodically all three LEDs, then there is a problem with the connection to the gateway. Check your coverage and if you are supposed to be covered, please contact Applexia support.



The LoRaWAN module has several parameters that can be modified to optimize your application. These can be changed directly from the Wixia Controller UI, from an application implemented by Applexia or in some specific cases by LoRaWAN downlink communication.

PARAMETERS, ADDRESSES, VALUES

Parameter	Address	Min	Typical	Max
Adaptive data rate (ADR)	23	0 (off)	0 (off)	1 (on)
Data rate	24	0	3	5
Time between send (s)	25	16	60	10000

DATA RATE CONFIGURATION

Enabling adaptive data rate (ADR) causes the module to automatically find the best data rate for its environment. Communication with a gateway is required. These options increase reliability but also increase the send period and involve the use of downlinks. Enabling this option disables data rate change and changes the send period value.

The value of data rate can only be set when ADR is off; otherwise, the value won't be considered. Data rate can take up to 6 value: [0;5].

The data rate (DR) frequencies according to the region of use are listed in the following table

Region	DR0	DR1	DR2	DR3	DR4	DR5
AS923	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
AU915	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
CN470	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
CN779	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
EU433	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
EU868	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
KR920	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
IN865	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps
US915	980 bps	1760 bps	3125 bps	5470 bps	12500 bps	INVALID
RU864	250 bps	440 bps	980 bps	1760 bps	3125 bps	5470 bps

SEND PERIOD

The use of free frequencies imposes respecting a maximum occupation time of the radio channel (duty-cycle). The maximum channel occupancy is 1% in Europe on the 868 MHz band. It means that there is a minimum delay to respect between any subsequent message starts.

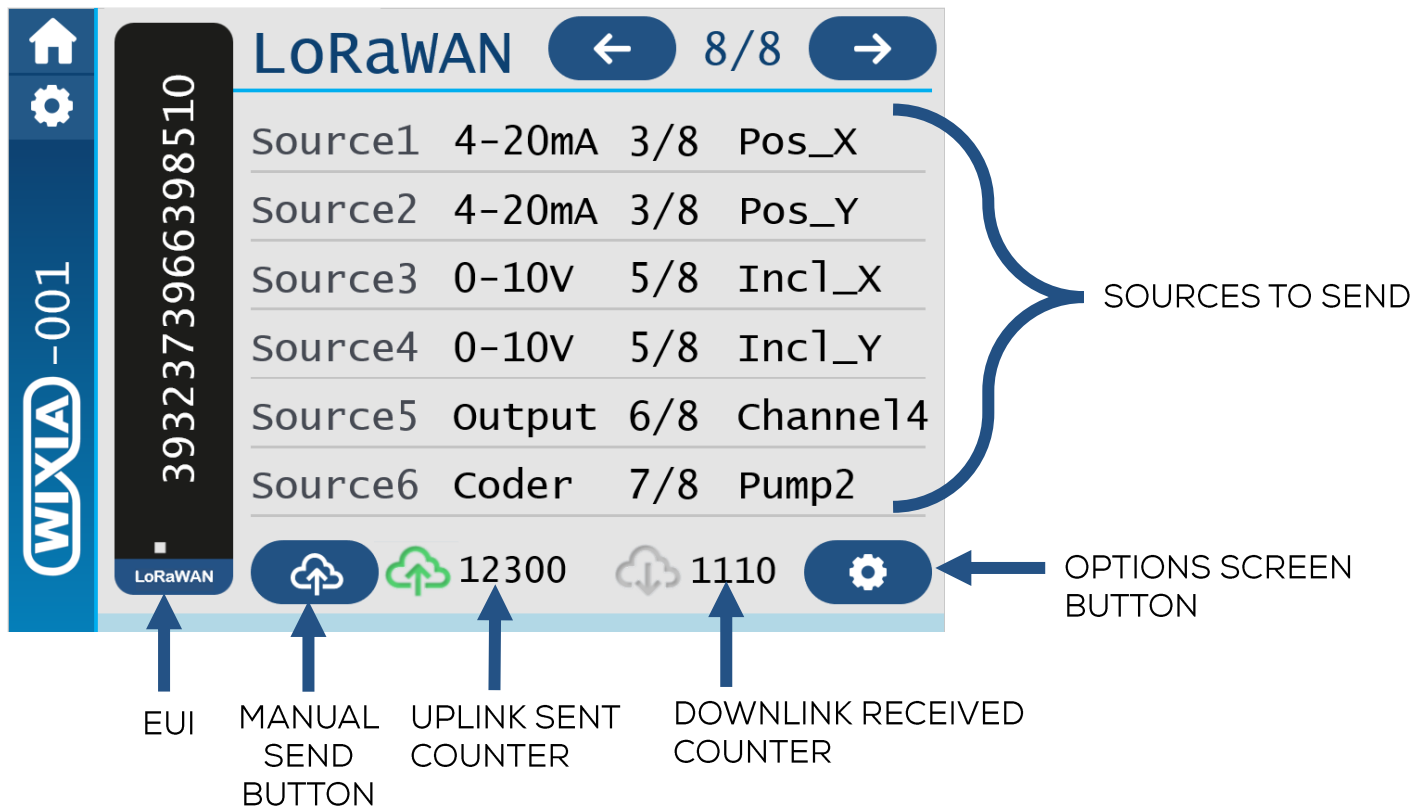
For the data rate selected, this minimum delay send is calculated by the module to respect this rule. If a value lower than the minimum is entered, the module will not consider the new value and will configure itself with the minimum delay.

The LoRaWAN module transmits 12 bytes of payload messages to which must be added the 13 bytes of overhead : 25 bytes per message.

The table below indicates the airtime durations for 25 bytes packets and therefore the minimum sending period according to the selected data rate.

Data rate	DR0	DR1	DR2	DR3	DR4	DR5
Spreading factor	SF12	SF11	SF10	SF9	SF8	SF7
Bandwidth	125kHz	125kHz	125kHz	125kHz	125kHz	125kHz
Airtime	1482.8 ms	823.3 ms	411.6 ms	205.8 ms	113.2 ms	61.7 ms
Minimum send period (1% max duty cycle)	148.3s 24 msg/h	82.3s 43 msg/h	41.2s 87 msg/h	20.6s 174 msg/h	11.3s 318 msg/h	6.2s 583 msg/h

USER SCREEN INTERFACE

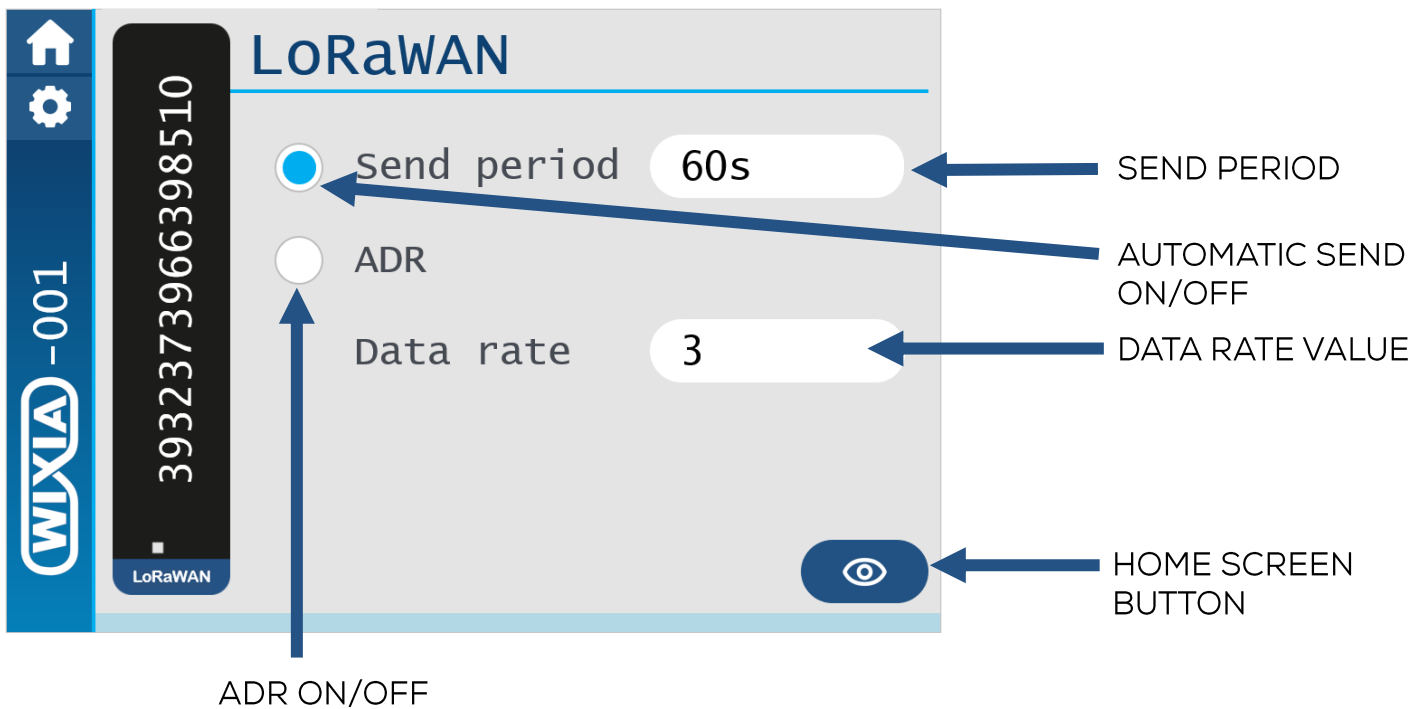


Once the module is turned on and connected to the cloud, the user must specify the data to be sent. The user can manually select the data sources to send to the cloud by clicking on one of the "Source" rows (detailed in the *How to select data sources* section).

- EUI: Unique identifier that allows the processing of messages sent by the module on the cloud.
- SOURCES TO SEND: List of data sources that the user has selected for sending to the cloud via the LoRaWAN network.
- MANUAL SEND BUTTON: Performs a manual sending of the selected data.
- UPLINK SENT COUNTER: Number of uplinks sent by the module.
- DOWNLINK RECEIVED COUNTER: Number of downlinks received and accepted as valid downlinks.
- OPTIONS SCREEN BUTTON: Displays the options screen interface of the LoRaWAN module (see section *Options Screen Interface* for details).

OPTIONS SCREEN INTERFACE

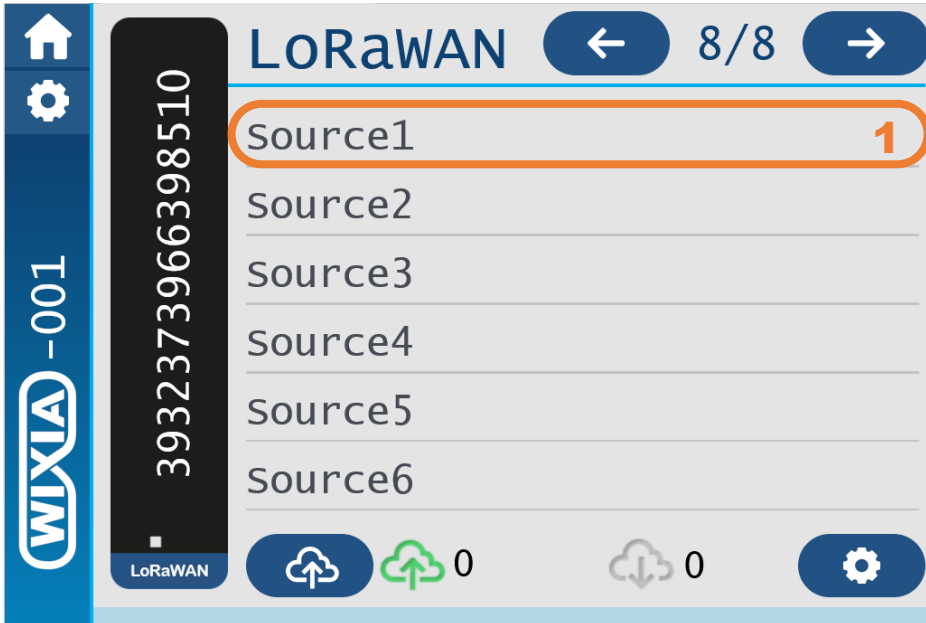
After pressing the options button, the following configuration menu is displayed. The user can change specific values in the module in order to match the desired application.



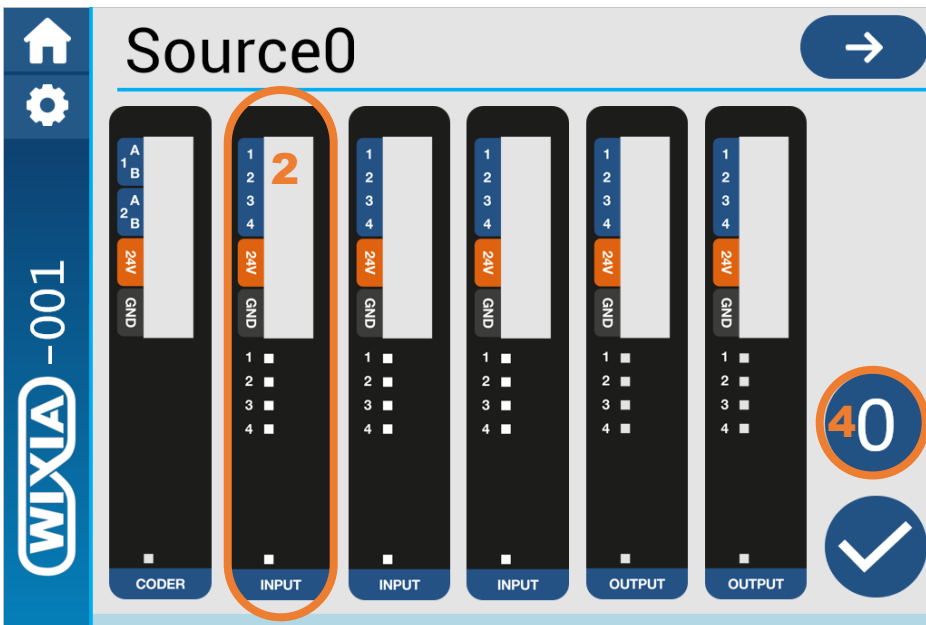
- HOME SCREEN BUTTON: Displays the home screen of the LoRaWAN module UI.
- AUTOMATIC SEND ON/OFF: Programs an automatic sending at a defined period. This can be disabled, and the module will no longer send frames automatically.
- SEND PERIOD: Defines the time in seconds between each frame sending in automatic send. Note that the value entered will be automatically adapted to respect the selected data rate or ADR and there is in fact a minimum value depending on these two parameters.
- ADR ON/OFF: Activates or deactivates Adaptive Data Rate (ADR). If ADR is activated, data rate cannot be set manually by the user. See *Data rate configuration* section for details.
- DATA RATE VALUE: Defines the actual data rate selected. Possible values are between 0 and 5. Note that changing the data rate will result in a modification of the minimum send period. For example, changing the data rate from 5 to 1 will cause the send period to change from 16s to 200s. See *Data rate configuration* section for details.

HOW TO SELECT DATA SOURCES

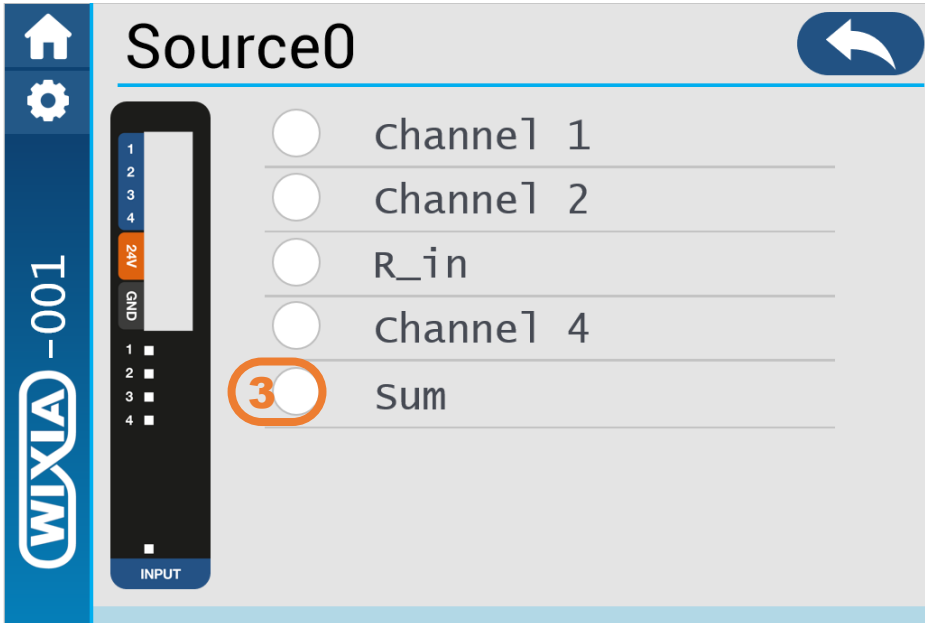
1- Click on one of the source rows.



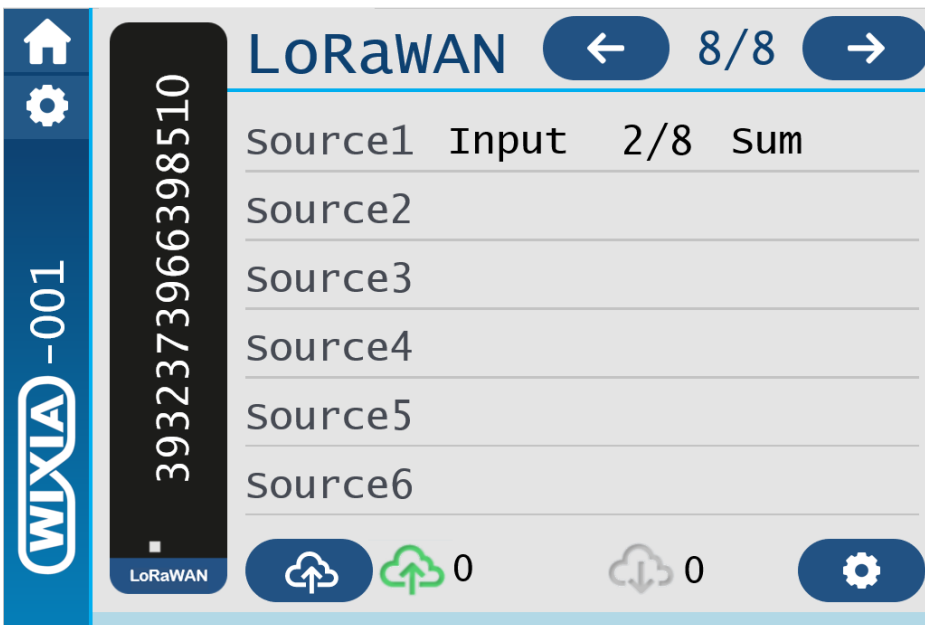
2- Select the module on which the desired data is located.



3- Select the desired data by clicking on its selection button.



4- The data source selected is now displayed on the LoRaWAN module interface.

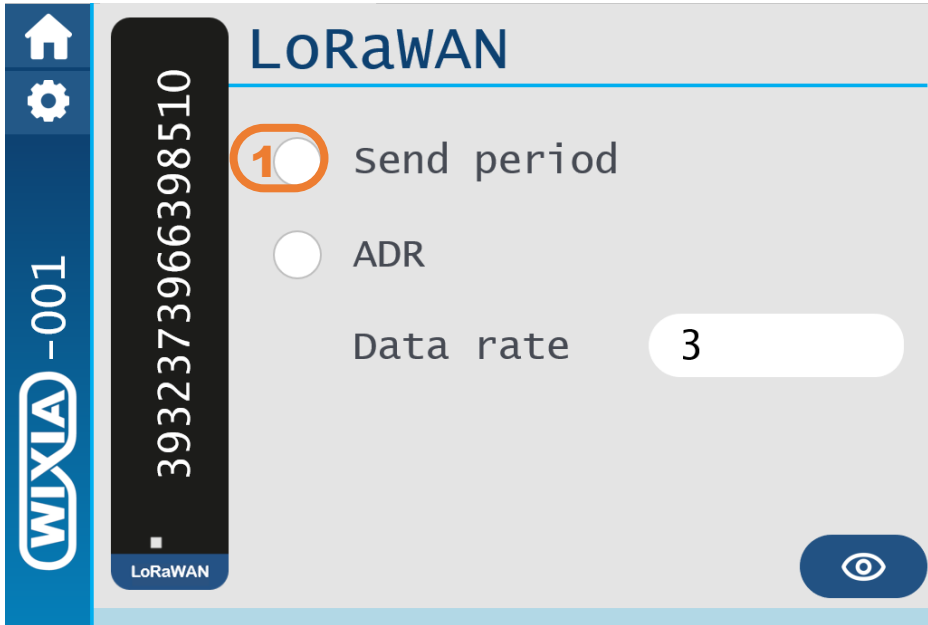


To change the previously configured data source, simply click again on the source line and select another data source.

To completely delete the data source without selecting another, click on the button indicated by (4).

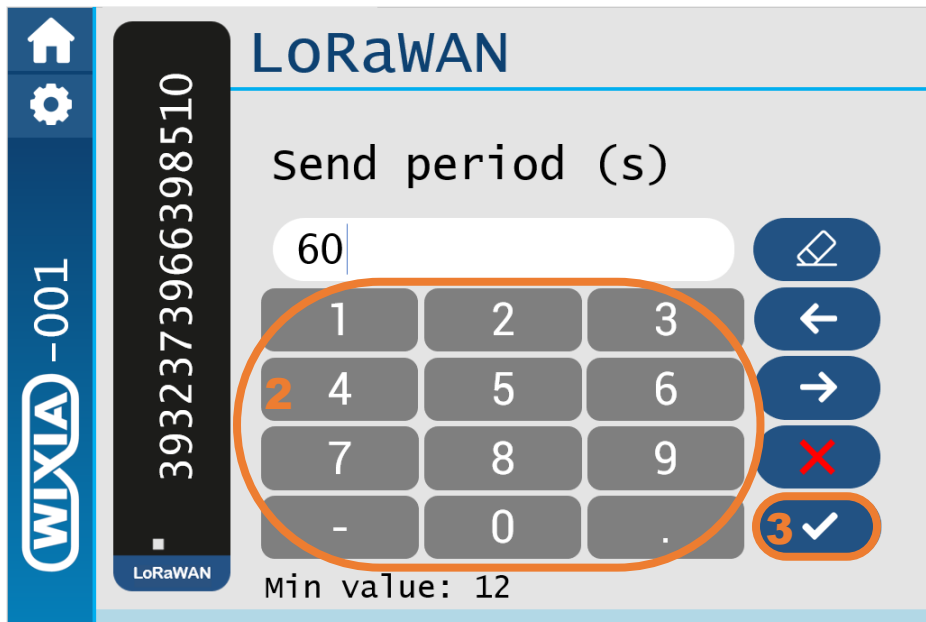
HOW TO SET SENDING PERIOD

1- Click on the automatic send button.



2- Enter the desired value with the keyboard.

3- Click on the validation button.

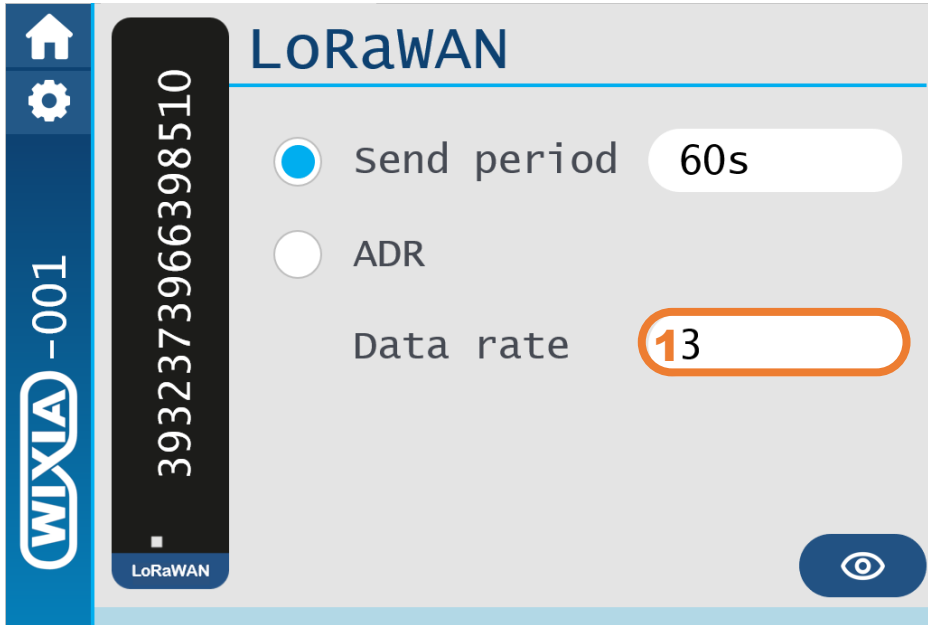


To change the previously configured sending period, simply click on the white input box that indicates the time.

To deactivate automatic sending, click again on the button (1).

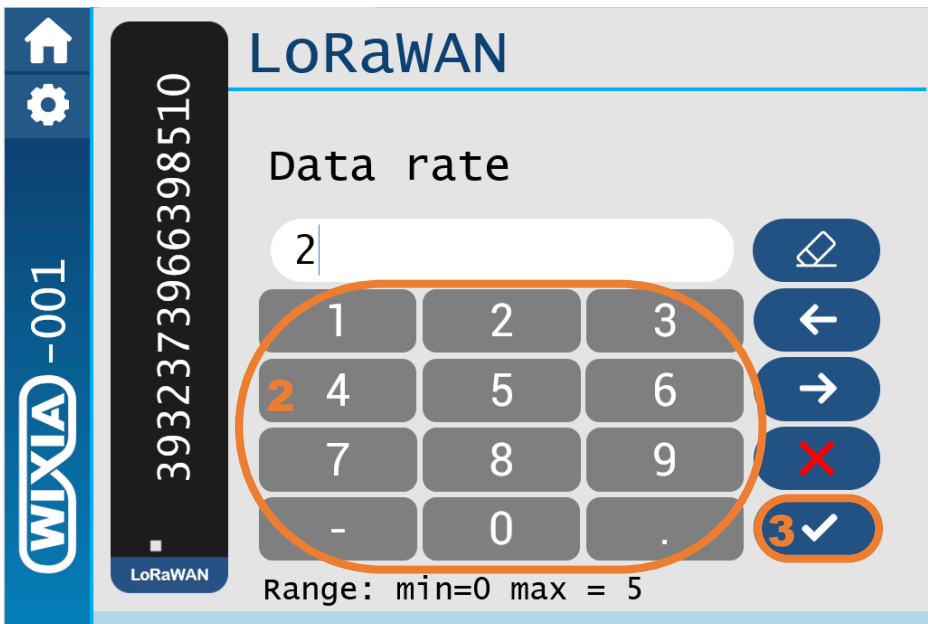
HOW TO CHANGE DATA RATE

1- Click on the white input box.



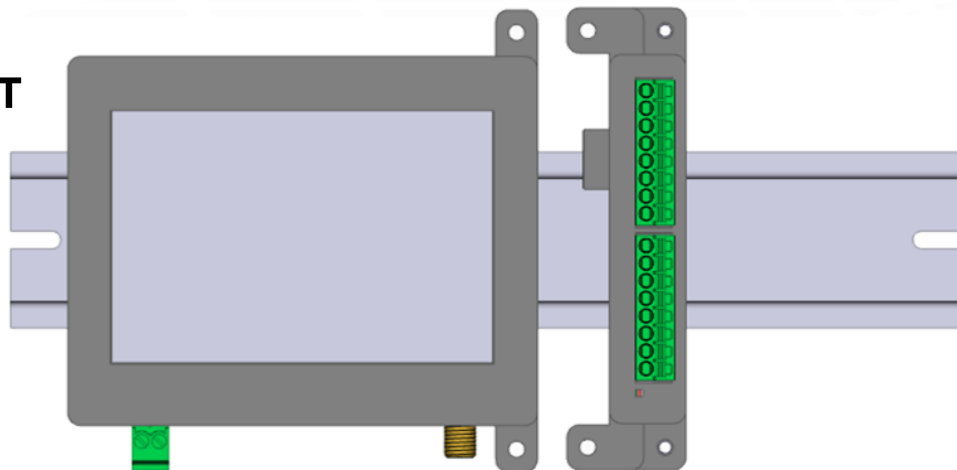
2- Enter the desired value with the keyboard.

3- Click on the validation button.

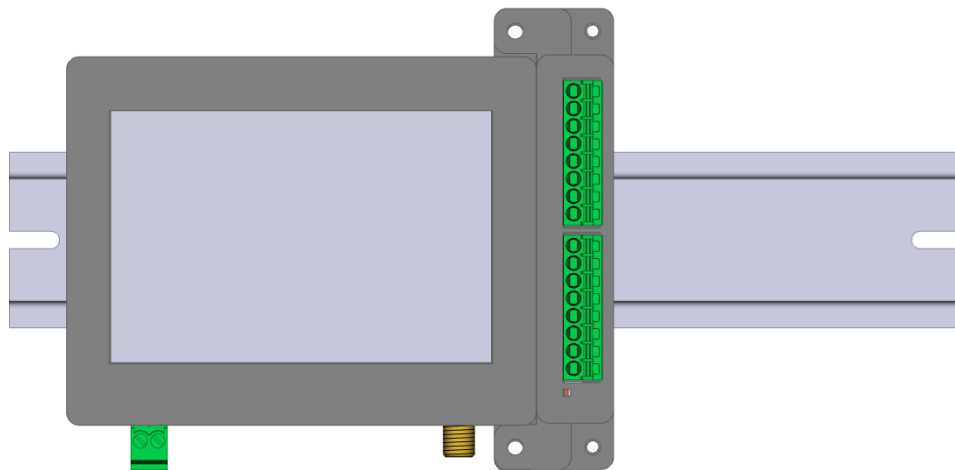


HOW TO MOUNT

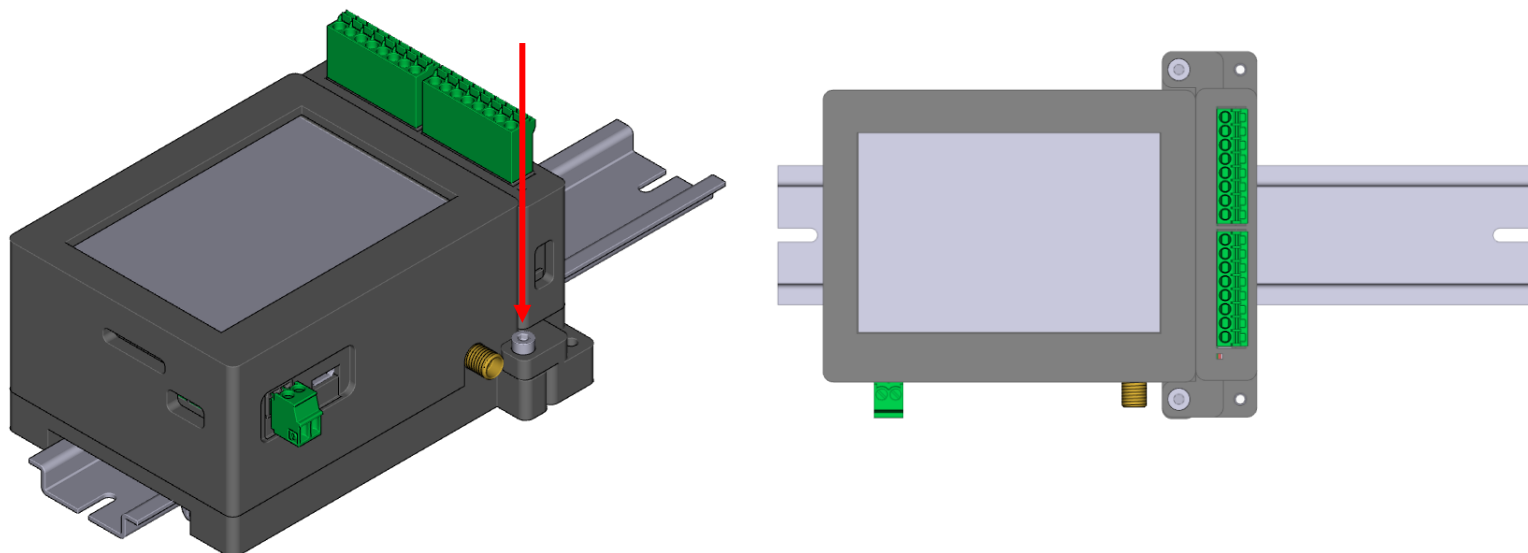
1- Simply clip the module onto the DIN-35 rail.



2- Slide the module to the left to connect it to the Wixia-Controller or to another module.

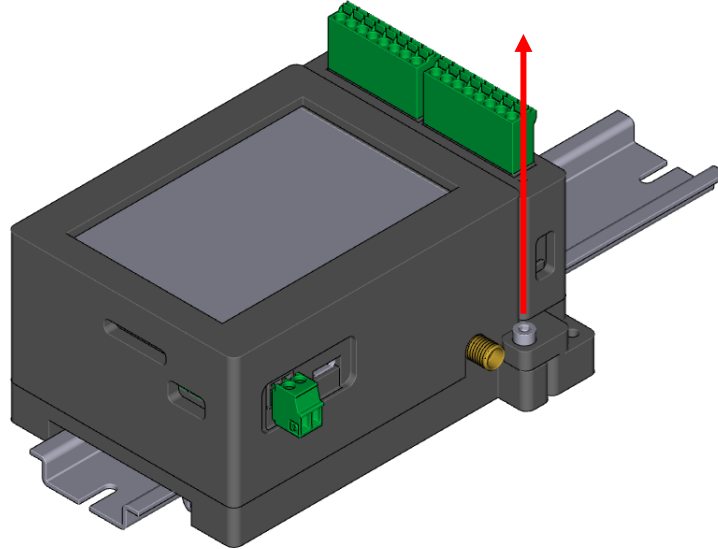


3- Fix the modules together using two M3x16 screws.

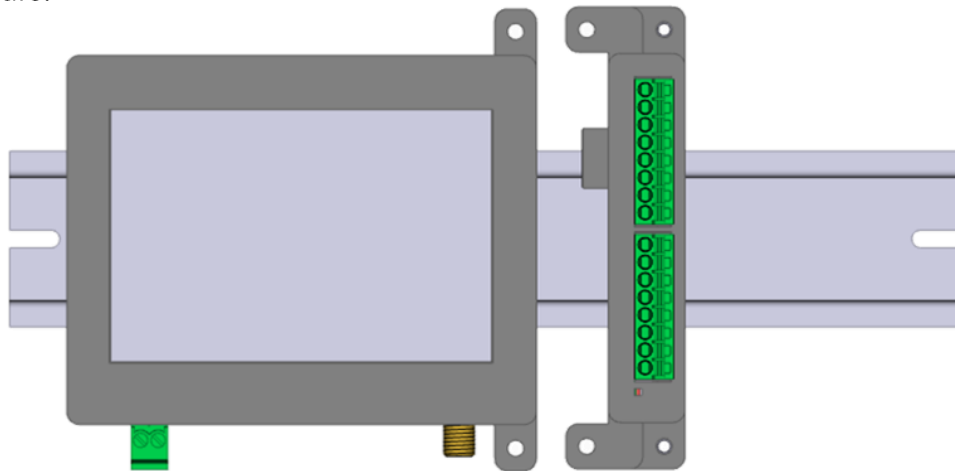


HOW TO UNMOUNT

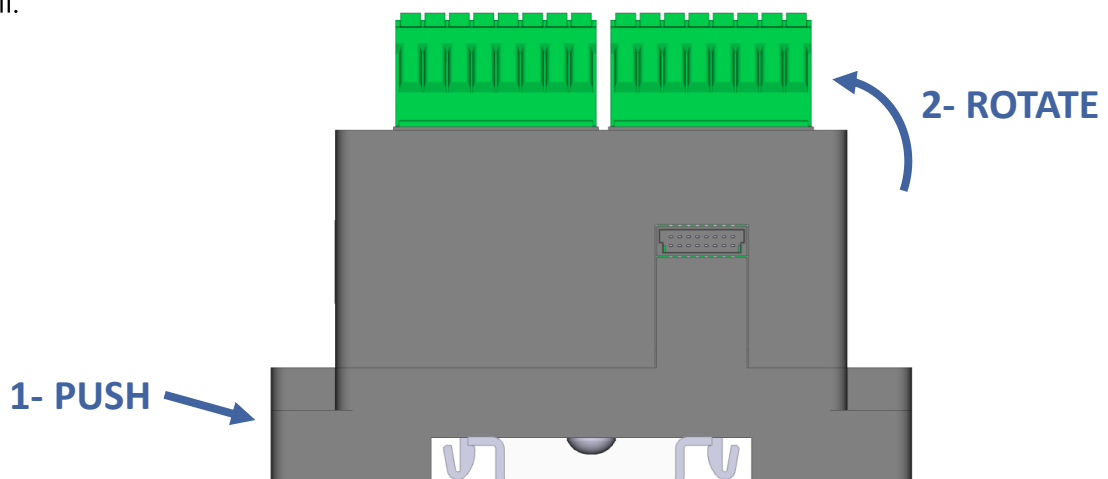
1- Remove the fixing screws that hold the module together with the other modules.



2- Slide the module to the right so that it is no longer connected to the Wixia-Controller or to another module.



3- Push the module on the bottom while rotating the opposite angle to unmount it from the DIN-35 rail.



HAZARDS AND WARNINGS

Manufacturer is not responsible for user's failure to comply with the instructions contained in this manual.

Any service performed on this product must be completed by a qualified individual. Replacement of this product must be performed by a qualified individual.

Failure to use this equipment in accordance with the specifications in this documentation could lead to a hazard.

No parts in this device should be replaced or removed.

Disconnect all power supplies before servicing the equipment.

CONTACT



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