Mauto Gateway Configuration Page Manual

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Introduction

The Mauto Gateway is capable of communicating from any industrial device with rs485 Modbus capability, and connecting through Ethernet or Wi-Fi to the internet to send data to the Mauto cloud platform through HTTP or MQTT (or any 3rd party platform through MQTT). To configure the parameters used by the device, the configuration page should be accessed.

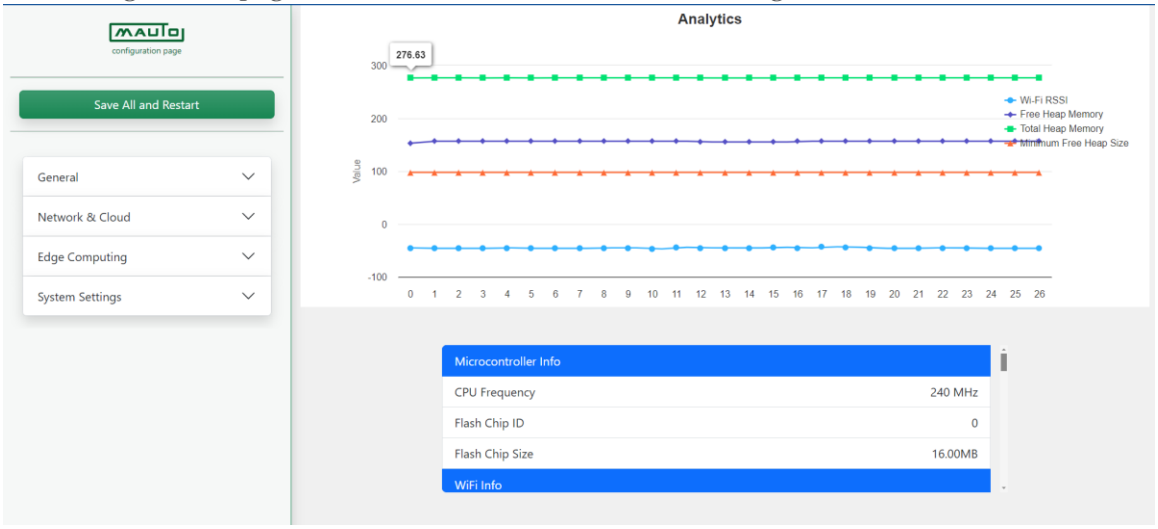
Accessing the Configuration Page

The configuration page can be accessed through one of the two following methods:

1. Pressing the restart button for more than 1s, till the power led blinks, then connecting to the Wi-Fi access point coming from the gateway, then accessing the following IP address from any browser: http://192.168.4.1, or using the hostname http://mauto.local .
2. After the gateway is connected to a local area network, the configuration page can be accessed using the IP that the gateway has received. For example, http://192.168.1.100. The hostname http://mauto.local can also be used if the device is connected to a Wi-Fi local network on devices supporting MDNS.

Layout

The configuration page that will be accessible is the following:

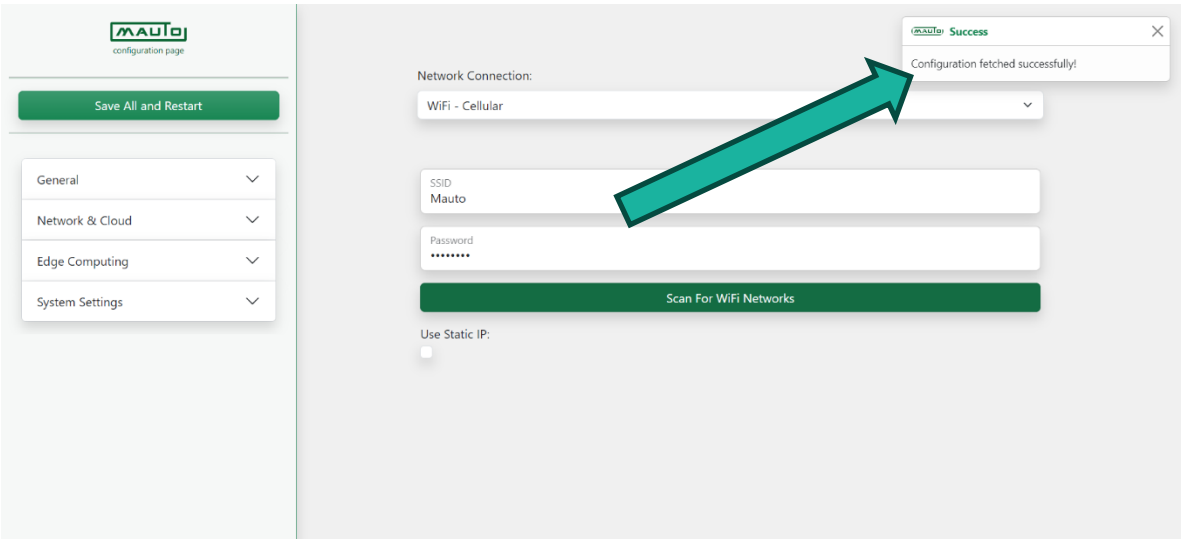


The page is divided into the following sections:

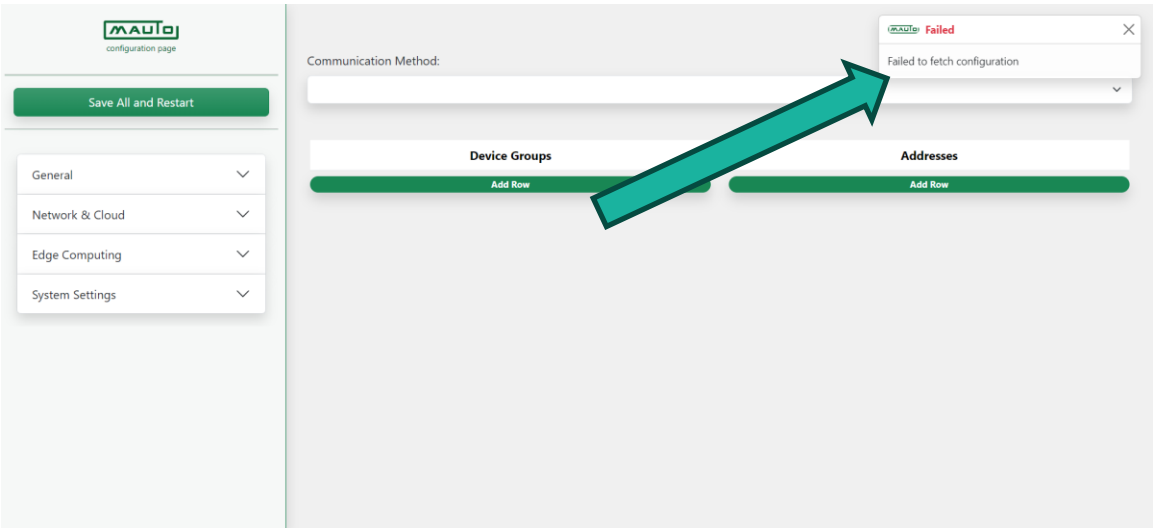
- **General:** Configure and monitor general parameters
    - **System Info:** Monitor General parameters such as free memory and connectivity.
    - **Access Point:** Configure the Wi-Fi access point SSID and Password.
- **Network & Cloud:**
    - **Connection:** Setup Wi-Fi/Ethernet Connectivity
    - **MQTT:** Configure MQTT parameters.
    - **HTTP:** Configure HTTP parameters.
- **Edge Computing:** Define how data will be collected and sent
    - **Addresses:** Set up the connected device, and sensor parameters
- **System Settings:**
    - **Debug:** Set up monitoring through MQTT
    - **Update:** Perform updates such as configuration import/export and firmware upgrade

OPENING OF CONFIG PAGE

When the configuration page is loaded, the page will fetch for the current configuration file inside the gateway. If the configuration fetch is successful, a successful notification will be displayed:



If the fetch was unsuccessful, a failed error will be displayed:



PAGES

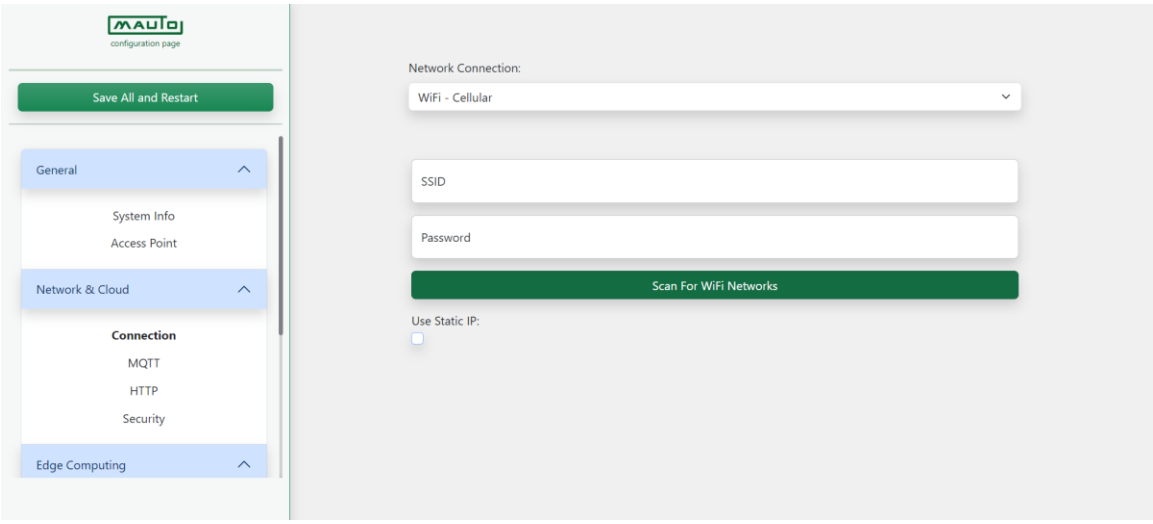
System Info

This page will contain an *analytics* graph showing the Wi-Fi connectivity and memory progression. Below it, there will be other information of the gateway.

Access Point

Configuration of the SSID and Password of the Access Point of the Gateway

Connection:

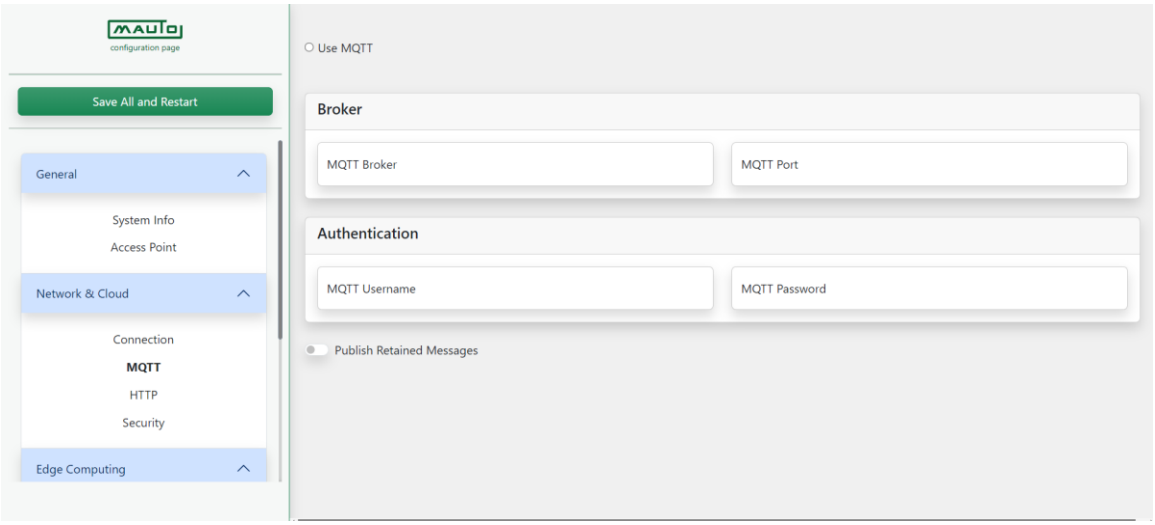


Two connection options are available:

- WiFi – Cellular: Connect to WiFi router or WiFi enabled cellular module
- Ethernet: Connect to router via ethernet

In the Wi-Fi – Cellular section, it is required to input the SSID and Password of the Wi-Fi network. Use the Scan for Wi-Fi Networks button to automatically scan for available Wi-Fi networks. If scan was successful, a success notification will appear, if the scan was unsuccessful, a failed notification will appear.

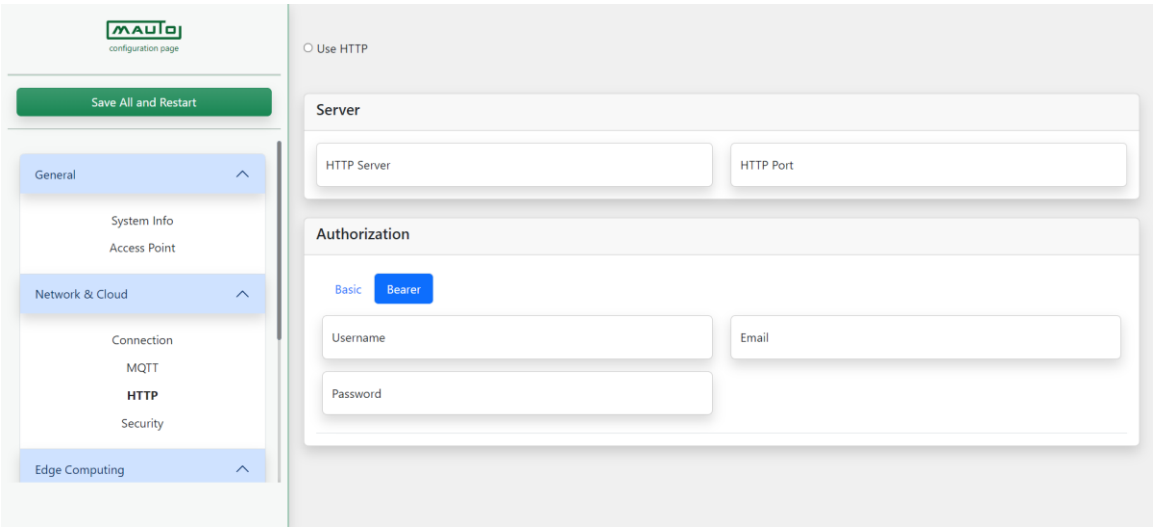
MQTT



Click on Use MQTT to use MQTT for data communication. The required parameters to input are:

- **MQTT Broker**: address of the MQTT Broker, *eg: broker.hivemq.com*
- **MQTT Port**: port of the MQTT connection, *eg: 1883 (default mqtt port)*
- **MQTT Username and MQTT Password**: for authentication, optional parameters.
- **Publish Retained Messages**: if the switch is on, all mqtt communicated sensors will be sent as retained messages.

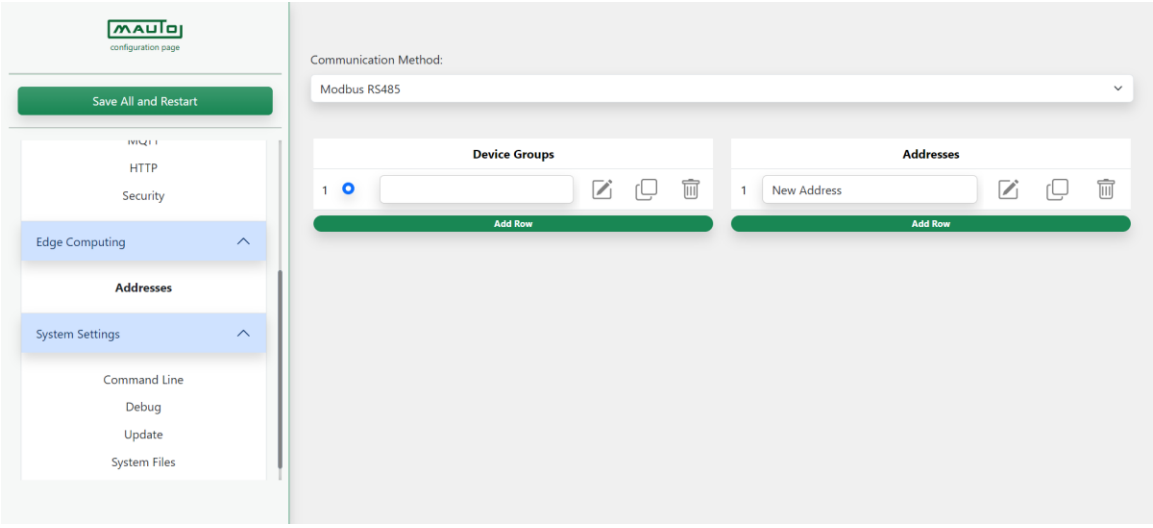
HTTP



Click on Use HTTP to use HTTP/S for data communication. The required parameters to input are:

- **HTTP Server**: address of the HTTP server. *eg: iotapi.mautoiot.com*
- **HTTP Port**: port of the MQTT connection, *eg: 80 (HTTP), 443 (HTTPS)*
- **In Authorization -> Bearer Section:** For authorization with the mauto server, input the *username, email, and password* provided by mauto.

Addresses



In this page, all the connected devices will be setup. Communication Method box will contain the available protocols to communicate with (*modbus rs485*).

Editing options

Edit Duplicate Delete

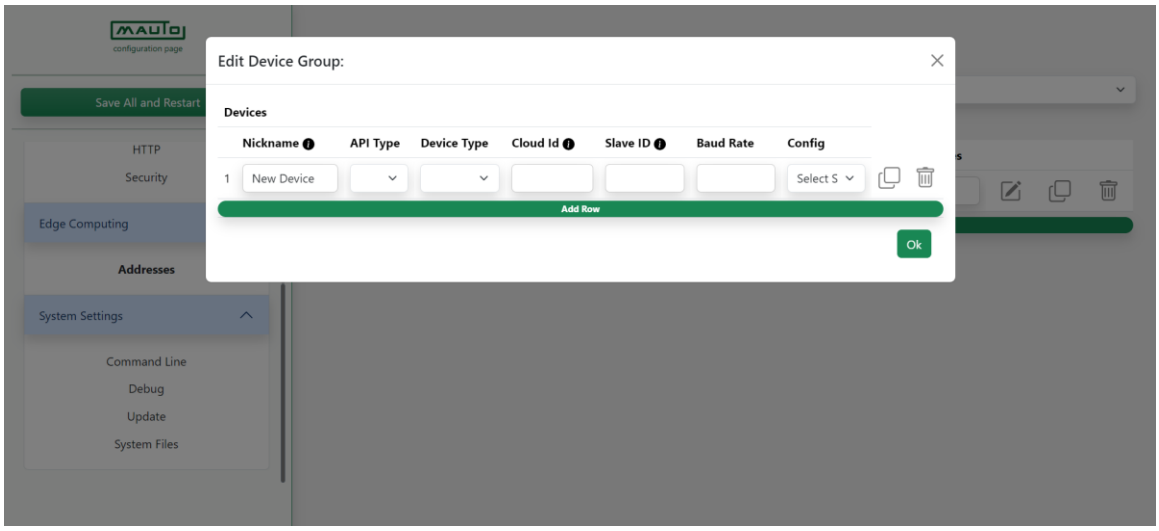
Device Groups

A *device group* will contain multiple devices each with its communication parameters. All devices within a *device group* will share the same sensor (register) table. To edit the sensor table for a device group, click on its selector . A nickname can also be assigned to each device group. By clicking on the edit button, individual device groups can be edited.

Addresses

Will contain the sensor list for the selected *device group.* A nickname can be assigned for each sensor. Clicking on the edit button will bring the parameters to edit each sensor.

Device Group Edit

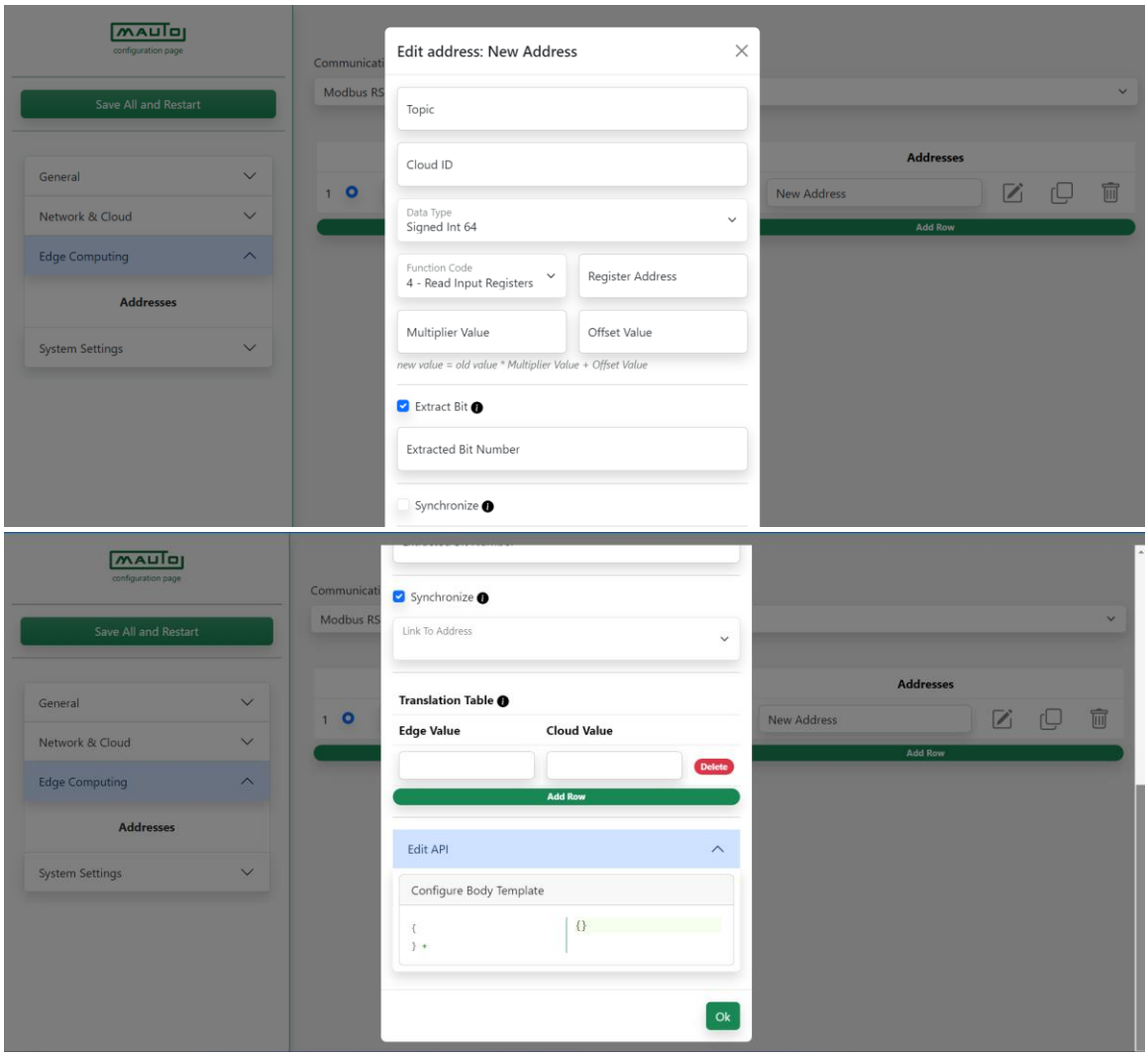


The above dialog will appear when clicking on the edit button for each device group. The following parameters are required for input:

- **Nickname:** nickname of each device
- **API Type:** options are: *meter, generator.* (use this in case HTTP is chosen or if alarms are needed for a generator).
- **Device Type:** used for generator Alarms.
- **Cloud ID:** Id for each device
- **Slave ID:** Modbus slave id of device
- **Baud Rate:** rs485 baud rate
- **Config:** define the data configuration, options are in the form ABC, where:
    - **A:** Data Bits
    - **B:** Parity, options are: *Even (E), Odd (O), None (N), Mark (M), Space (S)*
    - **C:** Stop Bits

Click on Add Row to add a new device.

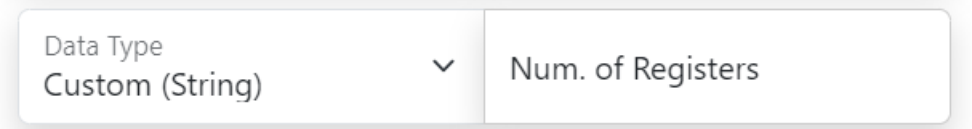
Sensor Edit



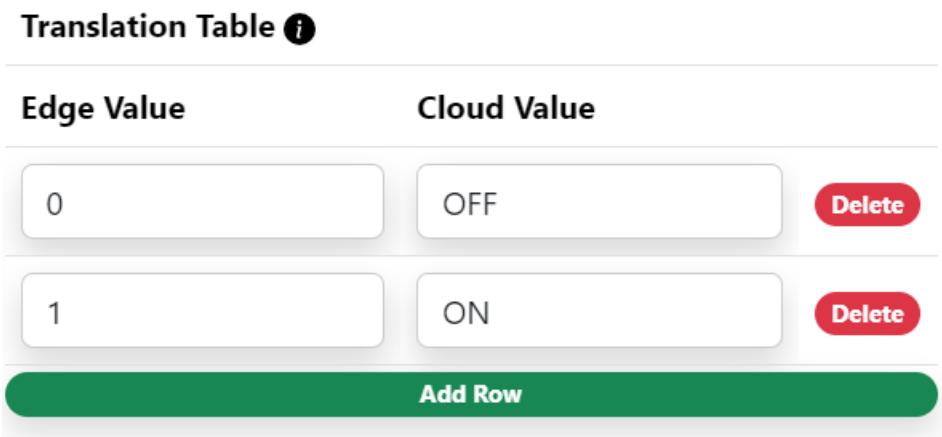
Input fields are:

- **Topic:** input this field if MQTT is chosen
- **CloudID:** ID for sensor
- **DataType:** Options are:
    - Unsigned Int 16 bit
    - Signed Int 16 bit
    - Unsigned Int 32 bit
    - Signed Int 32 bit
    - Float 32 bit
    - Unsigned Int 64 bit
    - Signed Int 64 bit

- Custom: input with it the number of registers (1 register = 16bit)



- **Function Code:** Options Are:
  - 1 - Read Coil Status
  - 2 - Read Input Status
  - 3 - Read Holding Registers
  - 4 - Read Input Registers
  - 15 - Write Multiple Coils
  - 16 - Write Multiple Registers
- **Register Address:** the modbus register address
- **Multiplier and Offset Values:** manipulate the read or written value such that:
  - If Read (FC = 1,2,3,4): $CloudValue = ModbusValue * Multiplier + Offset$
  - If Write (FC = 15,16): $ModbusValue = CloudValue * Multiplier + Offset$
- **Extract Bit:** Available only for read operations (FC = 1,2,3,4). Extract a specific bit from the register.
- **Synchronize:** If checked, the gateway will save the sent value in the RAM, then will only send the next value if it is changed. If linked to another sensor using the Link To Address box, both sensors will act as one sensor. For example, if a controller mode reading and writing sensors are saved as different sensors and linked to each other, if the reading sensor value is changed from *OFF* to *MAN*, the writing sensor will remember that the last value was *MAN*, not *OFF*.
- **Translation Table:** Convert an edge value to cloud values. For example, in the following table, if the collected value was 0, *OFF* will be sent, if collected value was 1, *ON* will be sent, if neither, the collected value will be sent as it is:



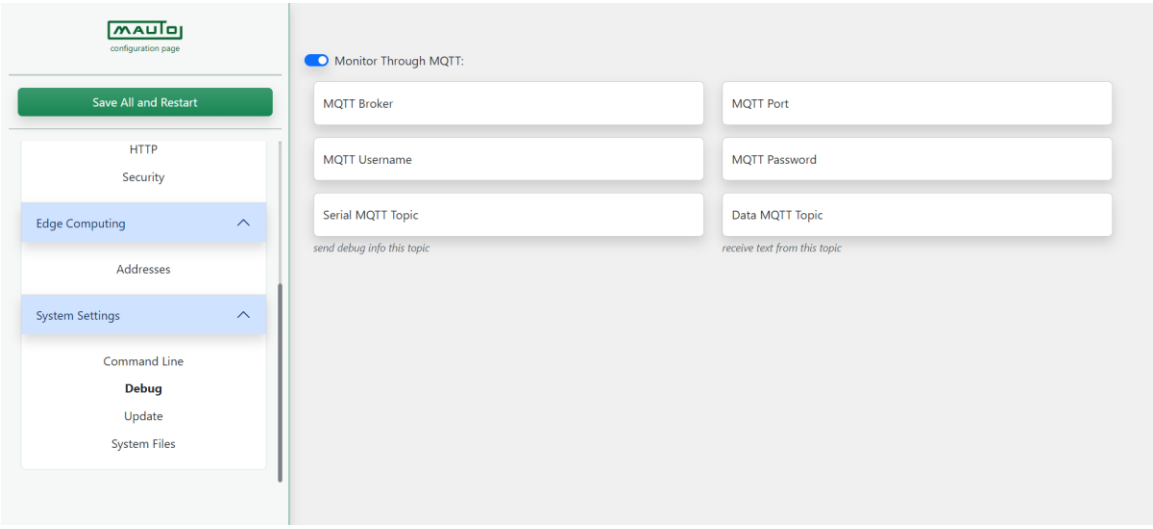
- **Edit API section – Configure Body Template (for MQTT only):**

Fill to send the body of a sensor in a certain JSON format. Click on + to add a key-value pair, ~ to erase the value of a key-value pair, and - to delete a key- value pair.

IMPORTANT NOTE: When filling the *topic* fields or the *body templates*, placeholders can be added to be replaced by the firmware when performing the data communication:

Placeholder	Replaced By
$deviceId	CloudID of associated devices.
$addressId	CloudID of sensor
$value	Collected Value From Slave Device
$timeStamp	Curent Device Time of Format: YY-MM-DDTHH:MM:SS

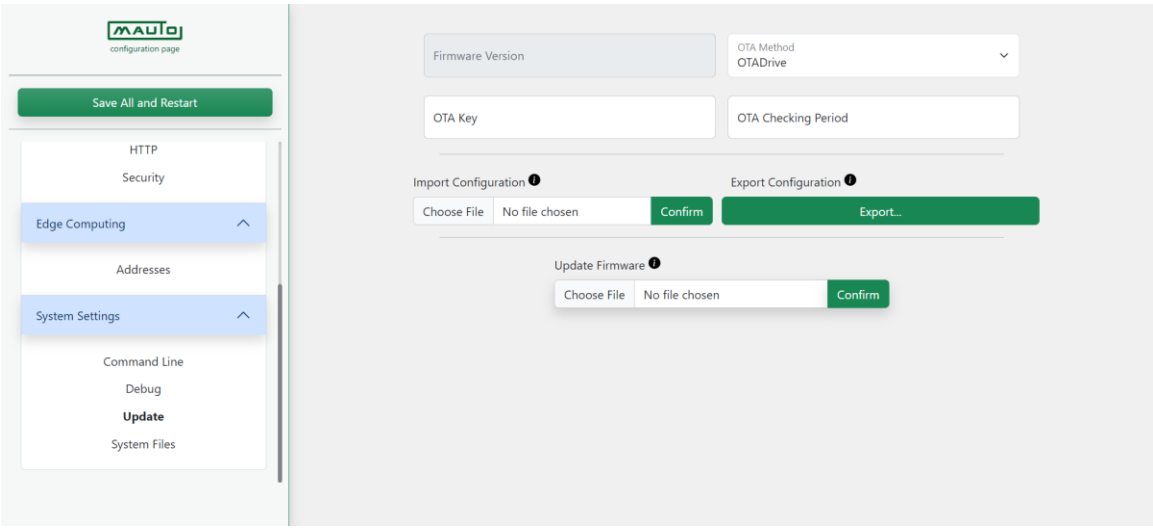
Debug



In this section, choose to send debug information through MQTT. Input the following fields:

- **MQTT Broker**
- **MQTT Port**
- **MQTT Username and Password** (optional)
- **Serial MQTT Topic:** debug information will be sent to this topic
- **Data MQTT Topic:** send commands to the gateway through this topic. Available commands are: *restart* for restarting the gateway and *params* to relay the content of the current saved configuration file to the selected Serial MQTT topic.

Update



In this section you can configure and perform updates to the device. The OTA Method box will have the options: *OTADrive, Mauto.* If *Mauto* is chosen, OTA updates are performed using the Mauto proprietary server. If *OTADrive* is chosen, the OTADrive third party service is used to do the OTA updates. The *OTADrive* option requires an OTA Key provided by the service. For both methods, the default checking period is every 1hr if no input is provided, else the checking is done in the period provided by the OTA Checking Period field (input in seconds).

In the import configuration section, import a .json file existing in the local machine, and click on Confirm to do the actual import operation.

Use the Export button to export the current .json configuration file.

In the update firmware section, choose a .bin firmware file, and click on Confirm to perform a local firmware update.

Saving The Configuration to Gateway

After filling all the needed fields press on the Save All and Restart button, then Yes to save the configuration.