webdyn

flexitron group

Webdyn EasyDot

Hardware manual

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General Notes

Product is deemed accepted by recipient and is provided without interface to recipient's products. The documentation and/or product are provided for testing, evaluation, integration, and information purposes. The documentation and/or product are provided on an "as is" basis only and may contain deficiencies or inadequacies. The documentation and/or product are provided without warranty of any kind, express or implied. To the maximum extent permitted by applicable law, Webdyn further disclaims all warranties, including without limitation any implied warranties of merchantability, completeness, fitness for a particular purpose and non-infringement of third-party rights. The entire risk arising out of the use or performance of the product and documentation remains with recipient. This product is not intended for use in life support appliances, devices, or systems where a malfunction of the product can reasonably be expected to result in personal injury. Applications incorporating the described product must be designed to be in accordance with the technical specifications provided in these guidelines. Failure to comply with any of the required procedures can result in malfunctions or serious discrepancies in results.
Furthermore, all safety instructions regarding the use of mobile technical systems, including GSM products, which also apply to cellular phones, must be followed. Webdyn or its suppliers shall, regardless of any legal theory upon which the claim is based, not be liable for any consequential, incidental, direct, indirect, punitive or other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or data, or other pecuniary loss) arising out the use of or inability to use the documentation and/or product, even if Webdyn has been advised of the possibility of such damages. The foregoing limitations of liability shall not apply in case of mandatory liability, e.g., under the Spanish Product Liability Act, in case of intent, gross negligence, injury of life, body or health, or breach of a condition which goes to the root of the contract. However, claims for damages arising from a breach of a condition, which goes to the root of the contract, shall be limited to the foreseeable damage, which is intrinsic to the contract, unless caused by intent or gross negligence or based on liability for injury of life, body or health. The above provision does not imply a change on the burden of proof to the detriment of the recipient. Subject to change without notice at any time. The interpretation of this general note shall be governed and construed according to Spanish law without reference to any other substantive law.

Important Information

This technical description contains important information for the start-up and use of the Webdyn EasyDot gateway. Read it carefully before you start working with the EasyDot gateway. The warranty will be void should damage occur due to non-compliance with these instructions for use. We cannot accept any responsibility for consequential loss.

Revision Information

REVISION	DATE	AUTHOR	CHANGES
1.0	2024/10	FJGG	First Release

Warranty

The information contained within this user guide, including but not limited to any product specification, is subject to change without notice. Webdyn provides no warranty about this user guide, or any other information contained herein and hereby expressly disclaims any implied warranties of merchantability or fitness for any particular purpose about any of the foregoing. Webdyn assumes no liability for any damages incurred directly or indirectly from any technical or typographical errors or omissions contained herein or for discrepancies between the product and the uses guide. In no event shall Webdyn be liable for any incidental, consequential, special, or exemplary damages, whether based on tort, contract or otherwise, arising out of or in connection with this user guide or any other information contained herein or the use thereof.

RoHS statement

EasyDot gateway is compliant with the 2002/95/EC (RoHS 1) and 2011/65/EC (RoHS 2) directives of the European Parliament and of the Council of 27 January 2003 (and revised on 8 June 2011) on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

CE mark

EasyDot conforms to the essential requirements of Directive 2014/53/UE (RED)

CE

Disposal of old electrical and electronic equipment

Recycling:

This symbol, applied on our products and/or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product.

The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, household waste disposal service or the retail store where you purchased this product.

1 Precautions

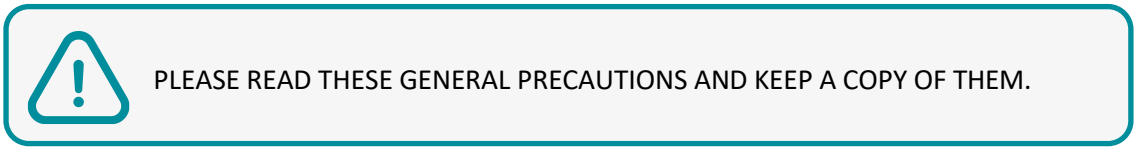
1.1 General Precautions

PLEASE READ THESE GENERAL PRECAUTIONS AND KEEP A COPY OF THEM.

- EasyDot as a standalone item is designed for indoor use only. For outdoor use it must be integrated into a weatherproof enclosure. Do not exceed the environmental and electrical limits as specified in Technical Data
- Avoid exposing the device to lighted cigarettes, naked flames or to extreme hot or cold temperatures.
- Never try to dismantle the device yourself. There are no components inside the router that can be serviced by the user. If you attempt to dismantle the device, you may invalidate the warranty.
- EasyDot terminal must neither be installed nor located in areas where the surface temperature of the metallic case could exceed 85°C.
- Check that voltage and power available at installation is within range specified for router. It can be found on this guide and labelled on the gateway.
- Do not install any gateway that is obviously damaged or suspected of having been damaged.
- To provide strain relief and to avoid transmitting excessive vibration to the device during installation, all cables connected to EasyDot must be secured or clamped immediately adjacent to the device's connectors.
- To protect the power supply cables, and to comply with the fire safety requirements, when the unit is powered from a battery or a high current supply, a fast 1.25A fuse should be connected in line with the positive supply.
- Only compatible components should be connected to EasyDot.

Note! EasyDot distributors and sales offices may refuse warranty claims where evidence of product misuse is found.

1.2 Safety requirements and protection regulations.



PLEASE READ THESE GENERAL PRECAUTIONS AND KEEP A COPY OF THEM.

- EasyDot, for any type of operation, is only accessible for instructed and skilled installers, testers and technical engineers.
- Before any type of handling of EasyDot, it must be ensured that it has been de-energized to allow for electrical work to be carried out and it cannot be inadvertently re-energized.
- Always ensure that use of EasyDot is permitted. The router may present a hazard if used in proximity to personal electronic medical devices. As a rule, the router must not be used in hospitals, airports or planes.
- This equipment is not suitable for use in locations where children are likely to be present.
- Never use the device at a gas station, refueling point, blasting area or in any other environment where explosives may be present.
- Operating the device close to other electronic devices, such as antennas, television sets, and radios may cause electromagnetic interference.
- This product is intended to be used with the antenna or other radiating element at least 20cm away from any part of the human body. In applications where this rule cannot be applied, the application designer is responsible for providing the SAR measurement test report and declaration.
- You are responsible for observing your country's safety standards, and where applicable, the relevant wiring rules.

1.3 SIM Card Precautions

Before handling the SIM card in your application, ensure that you are not charged with static electricity.
Use proper precautions to avoid electrostatic discharges.

- When the SIM card is not present, the pins of the SIM connector are exposed.
- Caution! Do not touch these connectors! If you do, you may release an electrical discharge that could damage the router or the SIM card.
- When designing your application, the SIM card's accessibility should be considered. We always recommend that you have the SIM card protected by a PIN code. This will ensure that the SIM card cannot be used by an unauthorized person.

1.4 Antenna Precautions

If the antenna is to be mounted outside the device, consider the risk of lightning. Follow the instructions provided by the antenna manufacturer. Never connect more than one router to a single antenna. The router can be damaged by radio frequency energy from the transmitter of another router.

- Like any mobile station, the antenna of the gateway emits radio frequency energy. To avoid EMI (electromagnetic interference), you must determine whether the application itself, or equipment in the application's proximity, needs further protection against radio emission and the disturbances it might cause. Protection is secured either by shielding the surrounding electronics or by moving the antenna away from the electronics and the external signal cable.
- The gateway and antenna may be damaged if either of them meets ground potentials other than the one in your application. Beware: ground potential is not always what they appear to be.

1.5 Radio Frequency (RF) Exposure and SAR

Your wireless device is a low-power radio transmitter and receiver (transceiver). When it is turned on, it emits low levels of radio frequency energy (also known as radio waves or radio frequency fields).
Governments around the world have adopted comprehensive international safety guidelines, developed by scientific organizations such as ICNIRP (International Commission on Non-Ionizing Radiation Protection) and IEEE (The Institute of Electrical and Electronics Engineers Inc.), through periodic and thorough evaluation of scientific studies. These guidelines establish permitted levels of radio wave exposure for the general population. The levels include a safety margin designed to assure the safety of all people, regardless of age and health, and to account for any variations in measurements.
Specific Absorption Rate (SAR) is the unit of measurement for radio frequency energy absorbed by the body when using a transceiver. The SAR value is determined at the highest certified power level in laboratory conditions, but the actual SAR level of the transceiver while operating can be well below this value. This is because the transceiver is designed to use the minimum power required to reach the network.
EasyDot gateway has been approved for applications where the antenna is located more than 20cm from the body of the user. In all other configurations the user is responsible for meeting the local SAR regulations. Users of the EasyDot gateway are responsible for ensuring that they meet the SAR regulatory requirements of the countries in which they intend to operate the device and that their documentation contains the relevant SAR declaration, certification information and user guidance as appropriate.

1.6 SAR Information

Wireless Modules models: EG915 is marketed without a defined antenna.
The Maximum Antenna Gain when using indoor antennas depends on the distance from the antenna to any nearby people when in normal operation. It should not exceed the values shown on the table below.
According to the limit in 47 CFR 1.1310, we get the value of the maximum antenna gain as follows:

The maximum measured power output in the 900 MHz band is 1995.26 mW (33 dBm).

The maximum permissible exposure defined by 47 CFR 1.1310 is f/1500 = 0.6 mW/cm².

The maximum measured power output in the 1800 MHz band is 1000 mW (30 dBm).

The maximum permissible exposure is defined as 47 CFR 1.1310 with 1 mW/cm².

According to the limit in 47 CFR 1.1310, we get the value of the maximum antenna gain as follows:
$S = P*G/4\pi R^2$; $G = 4\pi R^2 (S / P)$
$S = 0.6$ mW/cm² or 1 mW/cm² $P = 1995.26$ mW or 1000 mW
$R = 20$ cm or 50cm $\pi = 3.1416$
$G(dBi)=10*\log(G)$

Solving for G; the maximum antenna gain is:

BAND (MHz)	P (mW/ dBm)	S (mW/ cm²)	DISTANCE (cm)	MAX. GAIN (dBi)
900	1995.26 / 33	0.6	20	1.79
900	1995.26 / 33	0.6	50	9.75
1800	1000 / 30	1	20	4.79
1800	1000 / 30	1	50	14.97
2600	199.52 / 23	1	20	14.01
2600	199.52 / 23	1	50	21.97

1.7 Personal Medical Devices

Wireless devices may affect the operation of cardiac pacemakers, hearing aids and certain other implanted equipment. If a minimum distance of 15 cm (6 inches) is maintained between the EasyDot gateway radiating antenna and a pacemaker, the risk of interference is limited. If the user's application is likely to be situated in the vicinity of personnel, a suitable warning should be contained in the equipment manual to this effect.

1.8 SAR Requirements Specific to Portable Mobiles

Mobile phones, PDAs or other portable transmitters and receivers incorporating a GSM module must be in accordance with the guidelines for human exposure to radio frequency energy. This requires the Specific Absorption Rate (SAR) of portable EC21 based applications to be evaluated and approved for compliance with national and/or international regulations.
Since the SAR value varies significantly with the individual product design, manufacturers are advised to submit their product for approval if designed for portable use. For European markets the relevant directives are mentioned below. It is the responsibility of the manufacturer of the final product to verify whether further standard recommendations or directives are in force outside these areas.
Products intended for sale in US markets:
EN 59005/ANSI C95.1: Considerations for evaluation of human exposure to Electromagnetic Fields (EMFs) from Mobile Telecommunication Equipment (MTE) in the frequency range 30MHz – 6GHz
Products intended for sale in European markets:
EN 50360: Product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300MHz – 3GHz)
Please note that SAR requirements are specific only for portable devices and not for mobile devices as defined below:

- Portable device: A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20cm to the user's body.
- Mobile device: A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20cm is normally maintained between the transmitter's radiating structure(s) and the user's body or that of nearby people. In this context, the term "fixed location" means that the device is physically secured at one location and cannot be easily moved to another location.

1.9 RED Regulations

To comply with RED regulations, the following antenna considerations must be complied with:

- The antenna used for LTE communications must be less than 0.49 dBi Gain of an isotropic antenna.

2 Technical Description

2.1 Overview

EasyDot is an innovative industrial gateway that comprises a set of features to provide remote wireless connectivity on customer facilities. It is equipped with a rich set of interfaces and LEDs indicators to show operating status of the gateway.

Device includes the following features:

- 4G LTE Cat 1 bis module.
- Antenna connection: 1x SMA Female for LTE
- Mini SIM card push-pull socket.
- RS232 on RJ45 connector.
- RS485 on terminal block connector.
- Factory default settings reset button.
- 3.5mm pitch screwed terminal blocks for power supply input connection.
- Status LEDs to show power, coverage, WAN connection.

EasyDot has an industrial temperature range (-40/+85ºC) and is built in a metal casing that provides high impact resistance. It includes two fixing holes for wall mounting and is equipped with RS485 and RS232 interfaces and a socket for a Mini SIM card. This device can be used as a powerful and flexible unit that, due to its small size, can be integrated into a wide range of applications that require 4G technology. A full list of supplied antennas, cables, and accessories are available.

2.2 Operating Range

Electrical specifications	Min.	Typ	Max.
Power Supply			
Power Supply Voltage (VIN)	7VDC	**12VDC**	**24VDC**
Absolute Max. Power Supply Voltage			30VDC
Current consumption (12VDC – Average Value)			
4G		300 mA	1 A
2G Low RSSI (-100 dBm)		700 mA	2.5 A
2G Critical RSSI (-110 dBm)		1120 mA	3 A
RS485			
Baudrate	2400 bps		230.400 bps
D+, D- common mode	-7V		12V
Short Circuit Current			±250mA (HBM)
ESD protection			±16kV (HBM)
RS232			
Baudrate	2400 bps		230.400 bps
ESD protection			±15kV (HBM)
SIM Card Slot			
ESD protection			±15kV (Contact)
Antenna			
LTE antennas		50 ohms	

Cellular output power	Max.
GSM850/EGSM900	33 dBm
DCS1800/PCS1900	30 dBm
LTE bands	23 dBm

Mechanical and environnemental specifications.	
Enclosure fixing (1)	Panel mounting compliant
Operating temperature (2)	-35ºC to +75ºC
Extended temperature (3)	-40ºC to +85ºC
Storage temperature	-40ºC to +85ºC
Dimensions	39.3 x 60.3 x 78.3 mm
Weight	106g

(1) Optional DIN rail using Webdyn accessories.
(2) Within this range, EasyDot complies with 3GPP specification requirements
(3) The device remains the ability to establish and maintain functions such as data transmission without any unrecoverable malfunction. Radio spectrum and radio network are not influenced, while one or more specifications, such as Pout, may exceed the specified tolerances of 3GPP.

2.3 Ordering information

Model Name	Part Number
EasyDot EU	**000199811008**

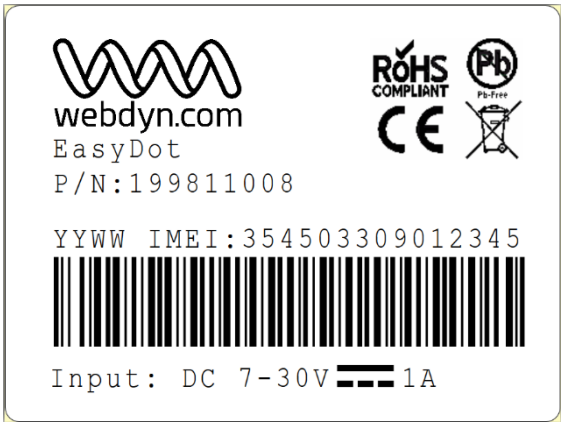
2.4 Packaging

EasyDot gateway is packaged without any additional accessories and is packaged without additional accessories and is supplied in cardboard boxes containing 15 units each. The box dimensions are 37x32x5 cm.

2.5 Product Label

The label fixed to the top of an EasyDot gateway comprises the following information:

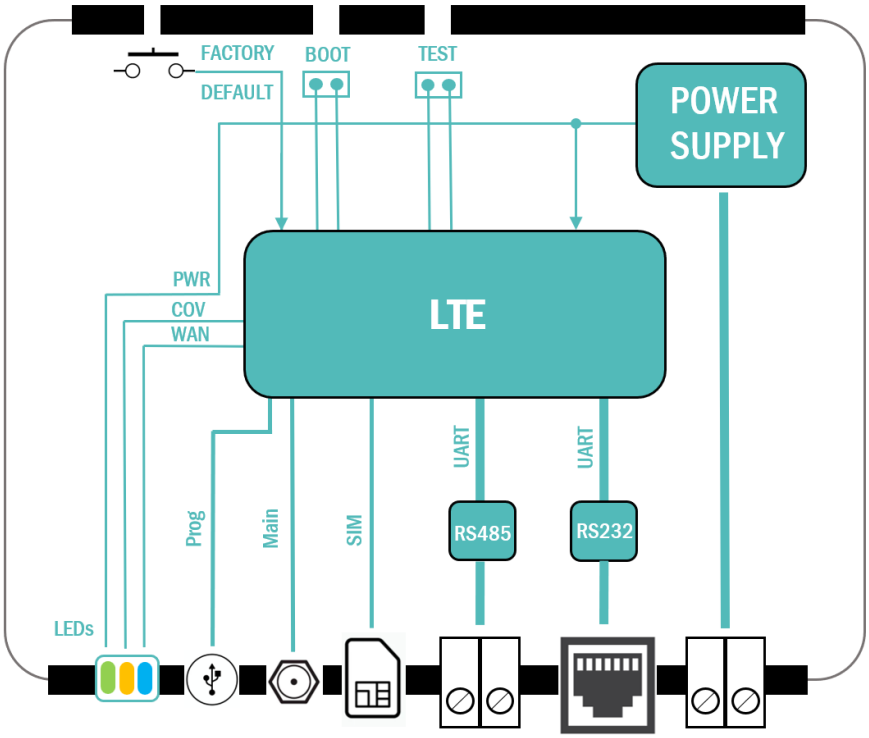
- Webdyn logo
- RoHS symbol
- Pb-Free logo
- WEEE logo
- CE logo
- Product name (model)
- Part number/ordering code (P/N)
- Manufacturing Year/week (YYMM)
- IMEI
- IMEI Bar Code
- Power supply operating specifications



2.6 System Architecture

EasyDot gateway is based on an industrial LTE module with a rich set of interfaces and a companion power management controller, all of them assembled on a main board as appear on the following diagram.

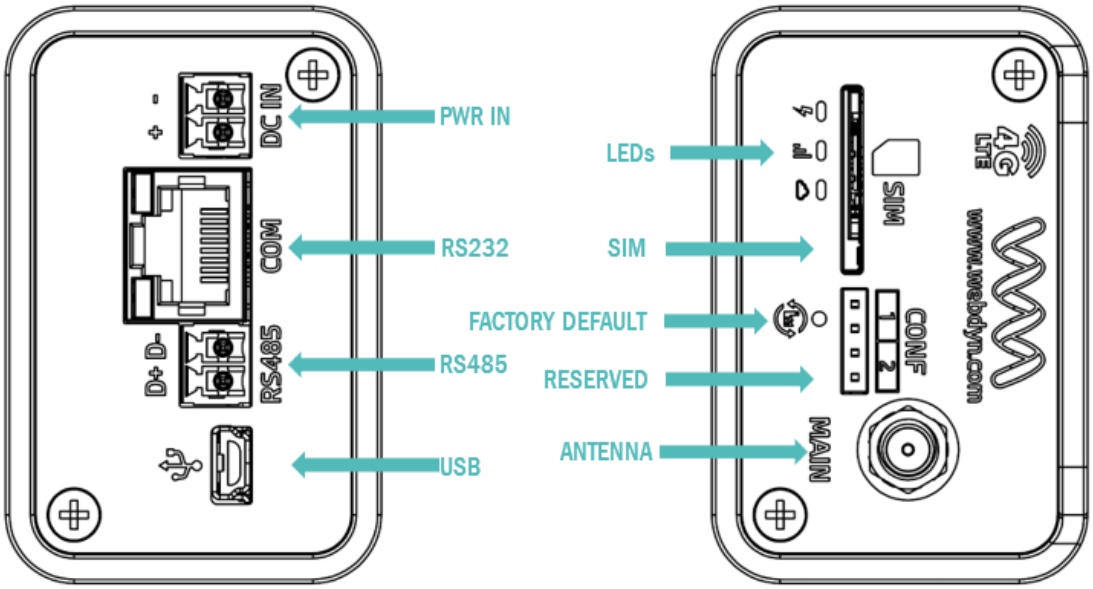
Connectors for external interfaces are grouped to be accessible at a common front and rear panel.



LTE interface covers EMEA region and is CE certified with following frequency bands table and data rates: For 000199811008 Webdyn EasyDot

NETWORK	BANDS	TECHNOLOGY	MAX DATA RATE DL	MAX DATA RATE UL
4G	B1/B3/B5/B7/B8 /B20/B28	LTE-FDD	10 Mbps	5 Mbps
2G	B2/B3/B5/B8	GPRS	85.6 kbps	85.6 kbps

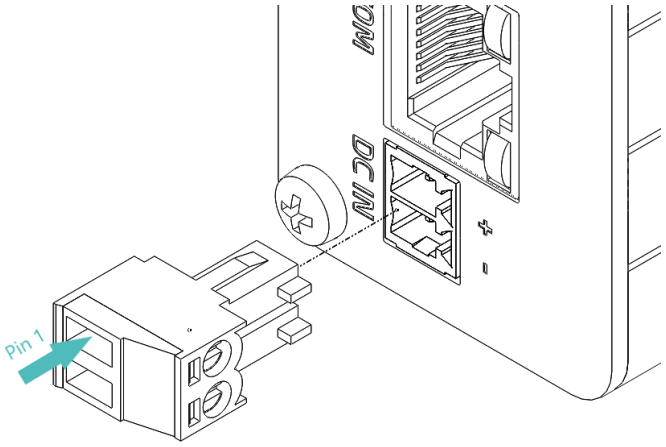
2.7 External interfaces on front and rear panel



- Antenna – SMA-F connector for 4G main antenna.
- SIM push-pull socket for Mini-SIM form factor card.
- LEDs – Three leds for operation status.
- COM – Communication Port RS232 (RJ45)
- Power supply input – 2-way plug-in 3.5mm pitch terminal block
- RS485 interface - 2-way plug-in 3.5mm pitch terminal block
- Mini USB type B configuration port
- Factory Default Settings push button

2.8 Power Connection

EasyDot gateway has a terminal block type connector for fastening to bottom panel for power supply input.



PIN	SIGNAL	TYPE	FUNCTION
1	+	PWR	Positive power supply input
2	-	PWR	Negative power supply input

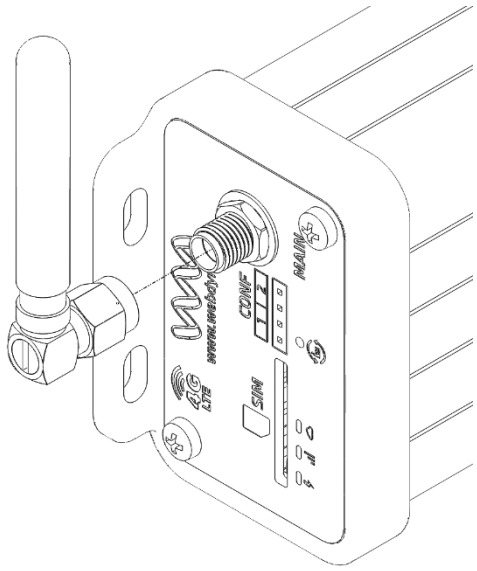
Power supply input is externally connected on terminal block, positive signal at pin 1 and negative signal at pin 2. Operating range values are specified at (Operating range).

2.9 Main Antenna Connection

EasyDot gateway provides SMA Female connector to attach external antenna. This connector allows radio frequency (RF) transmission signals between the gateway and an external customer-supplied antenna. EasyDot is fitted with a 50Ω SMA Female coaxial connector.

These external antennas must be matched properly to achieve the best performance regarding radiated power, DC-power consumption, modulation accuracy and harmonic suppression.

SSMA Interface Specifications	
Impedance	50 Ω
Type	SMA Female
ESD Protection	15 KV air / 8 KV contact



Consider the following requirements:

- The antenna must be designed for one or all the frequency bands defined on frequency bands table under the system architecture section; please ask your network operator to provide more information.
- The impedance of the antenna and antenna cable must be 50Ω.
- Antenna connector should be SMA Male type
- Antenna power should be at least 500mW as maximum power is 316.23mW.
- Maximum Output RF load mismatch ruggedness at antenna is 10:1 VSWR

The antenna should be placed away from electronic devices and other antennas. The recommended minimum distance between adjacent antennas, operating in a similar radio frequency band, is at least 50cm. If the signal strength is weak, it is useful to face a directional antenna towards the closest radio base station. This can increase the strength of the signal received by the router. The LoRa module's peak output power can reach 320mW.

RF field strength varies with antenna type and distance. At 10cm from the antenna the field strength may be up to 70V/m and at 1m it will have reduced to 7V/m. In general, CE-marked products for residential / commercial areas and the light industry can withstand a minimum of 3V/m.

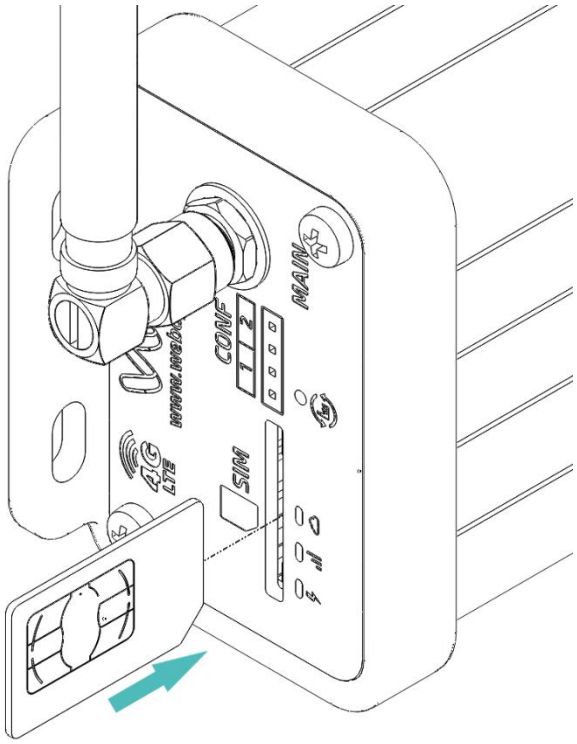
Possible communication disturbances include the following:

- Noise can be caused by electronic devices and radio transmitters.
- Path-loss occurs as the strength of the received signal steadily decreases in proportion to the distance from the transmitter.
- Shadowing is a form of environmental attenuation of radio signals caused by hills, buildings, trees or even vehicles. This can be a particular problem inside buildings, especially if the walls are thick and reinforced.
- Multi-path fading is a sudden decrease or increase in the signal strength. This is the result of interference which is caused when direct and reflected signals reach the antenna simultaneously. Surfaces such as buildings, streets, vehicles, etc., can reflect signals.
- Hand-over occurs as you move from one cell to another in the GSM network. Your mobile application call is transferred from one cell to the next. Hand-over can briefly interfere with communication and may cause a delay, or at worst, disruption.

2.10 SIM Card Reader

EasyDot gateway is equipped with a Mini SIM card reader designed for 1.8V and 3V Mini SIM cards. It is a push-pull type and can be accessed through the panel where the antenna connection is located.

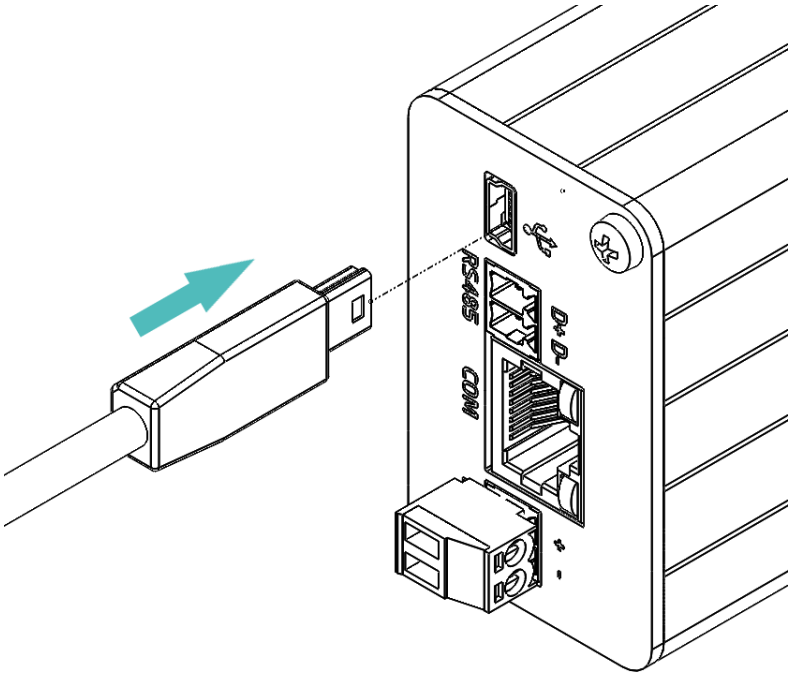
To insert Mini SIM card, look at the picture below for proper orientation.



2.11 Mini USB type B Port

By connecting EasyDot gateway through a mini-USB type B cable with our computer we will have access to µTitan Firmware.

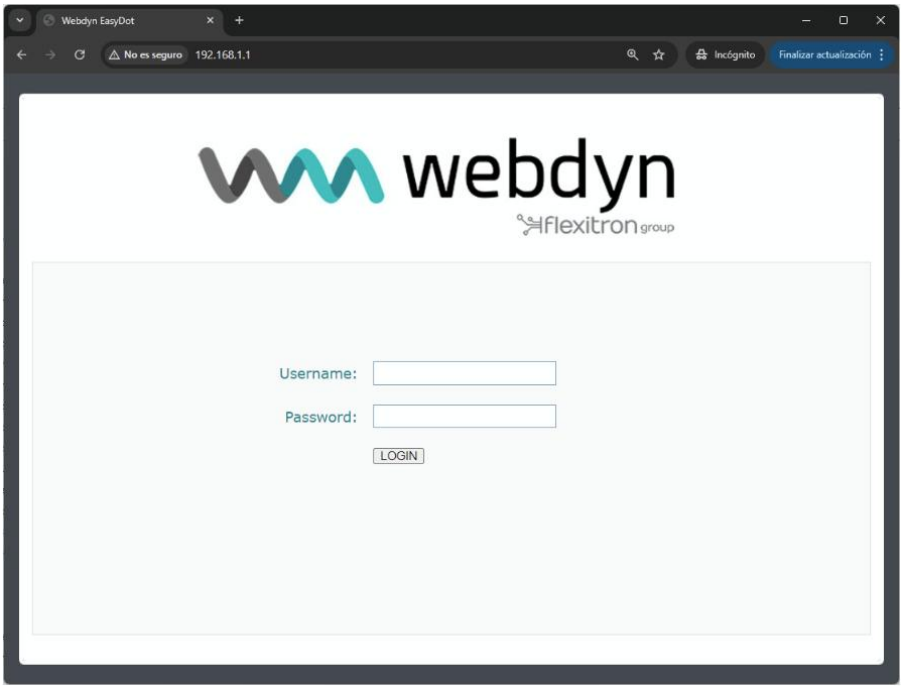
In the following image, you can see how to make the connection and where the USB connector is located on the EasyDot gateway.



Easydot gateway uses the RNDIS (Remote Network Driver Interface Specification) protocol for network connectivity over USB. Currently, this interface is only compatible with Windows operating systems and other systems that natively support the RNDIS protocol.

EasyDot has by factory default IP: 192.168.1.1 – Mask: 255.255.255.0

Open a browser, with the address “http://192.168.1.1/” a window like the following should appear:



Use the default username and password: **admin** and **admin**

Through which we can configure Titan RS232, RS485, Sim, MODBUS, etc.

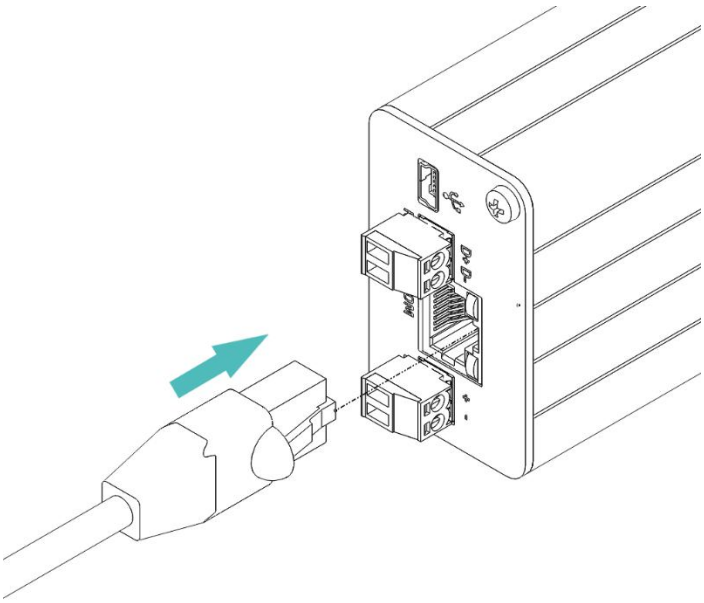
See µTitan software manual for more information.

2.12 RS232 Connection

EasyDot gateway has implemented RS232 interface in RJ45 (COM).

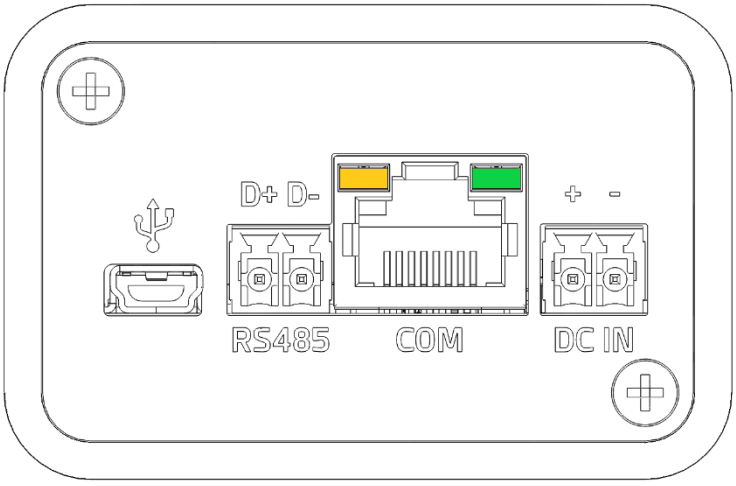
RS232 interface is implemented as a serial asynchronous transmitter and receiver conforming to ITU-T V.24 Interchange Circuits DCE. It is configured for 8 data bits, no parity and 1 stop bit and can be operated at fixed bit rates from 2400 bps to 230400 bps. The maximum recommended length is 1.5m.

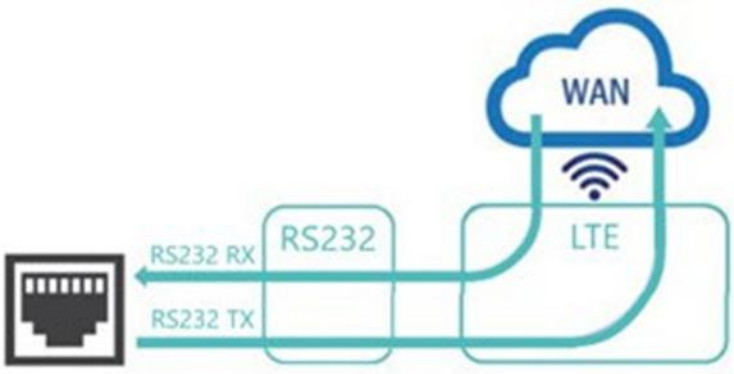
If RS232 cable required length is longer than 3m, it is recommended to use a shielded cable. No hardware related configuration action is needed to enable RS232 port communication.



Terminal	RS232 DCE	Type	Description
1	NC	NC	Not connected
2	RS232 CTS	Out	Clear to send
3	RS232 Rx	Out	WAN received data is transmitted on this output
4	NC	NC	Not connected
5	RS232 RTS	In	Ready to send
6	GND	GND	Reference common signal
7	NC	NC	Not connected
8	RS232 Tx	In	Data received on this input is transmitted to WAN

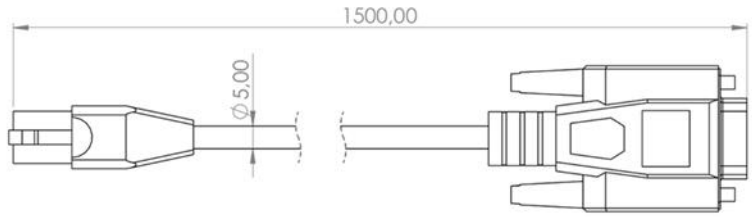
RS232 LEDS	
Green	Blink Transmitting Data
Amber	Blink Receiving Data





RS232 SPECIFICATIONS	
Baud Rate	2400 to 230400 bps
ESD Protection	15 KV air / 15 KV contact
Cable length	Max. 3 m

Recommended cable to convert the RJ45 to DB9 Male (commonly used in electricity meters). This is the pin-out of the cable:



RS485-RJ45 Plug	Signal	Pin	Direction
	NC	1	X
	CTS	2	OUT
	RxD	3	OUT
	NC	4	X
	RxD	5	IN
	GND	6	X
	NC	7	X
	TxD	8	IN
	-	-	X

Webdyn Cod. 00230001103		
Signal	Cable	DB9 MALE
1	NC	1
2	CTS	8
3	RxD	3
4	NC	4
5	RTS	7
6	GND	5
7	NC	6
8	TxD	2
-	NC	9

DB9 MALE	Signal	Pin	Direction
	NC	1	X
	TxD	2	IN
	RxD	3	OUT
	NC	4	X
	GND	5	-
	NC	6	X
	RTS	7	IN
	CTS	8	OUT
	NC	9	X

Recommended Webdyn accessory cable:

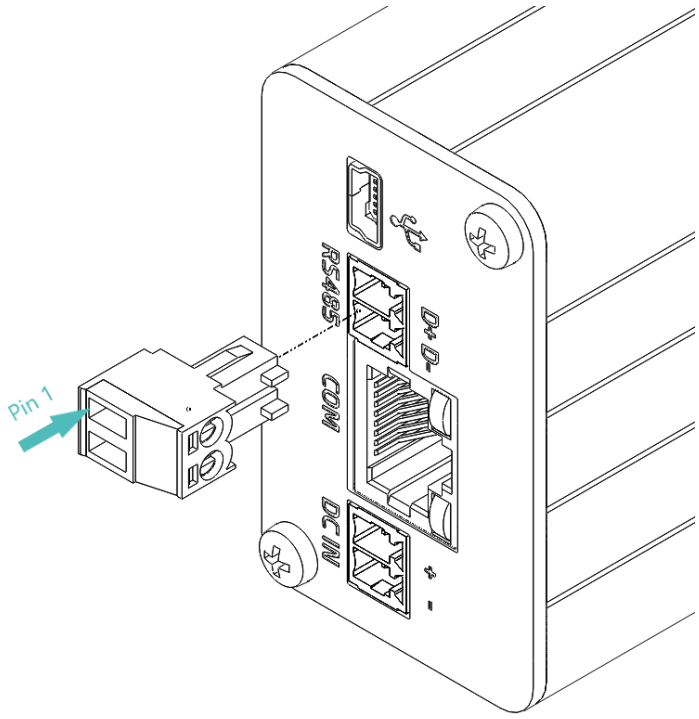
Model Name	Part Number
Cable modem (RS232/RS485/RS422) [RJ45] to [DB9M]	**000230001103**

2.13 RS485 Connection

EasyDot provides an RS485 interface on terminal block connector D+ and D-.

This communication port is intended to be connected to an external device through an additional cable ending with proper type connector and signal distribution. The maximum recommended length is 1.5m.

If RS485 cable required length is longer than 3m, it is recommended to use a shielded cable. No hardware related configuration action is needed to enable RS485 port communication.

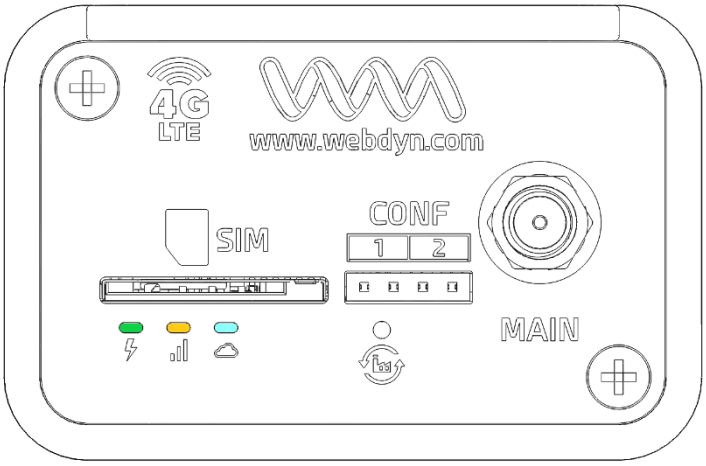


PIN	RS485	Type	Description
1	D+	IO	RS485 positive line
2	D-	IO	RS485 negative line

RS485 SPECIFICATIONS	
Baud Rate	2400 to 230.400 bps
Termination	Internal Resistors on RS485 Fail-Safe Bias
ESD Protection	16 KV air / 16 KV contact
Cable length	Max. 3 m with UTP cable Max. 20 m with SFTP cable

2.14 Status LEDs

Three LEDs on top panel are included to inform about operation status of EasyDot gateway.



Following table shows relationship between operation status and LED operation.

Fast refers to fast blinking On-Off every 1 second. Slow refers to slow blinking On-Off every 2 seconds.

If the device is set to default settings, the blue and yellow LEDs blink simultaneously

- Power LED (Green)

Operating States	State
Power Off	OFF
Power On	ON

- Coverage LED (Amber)

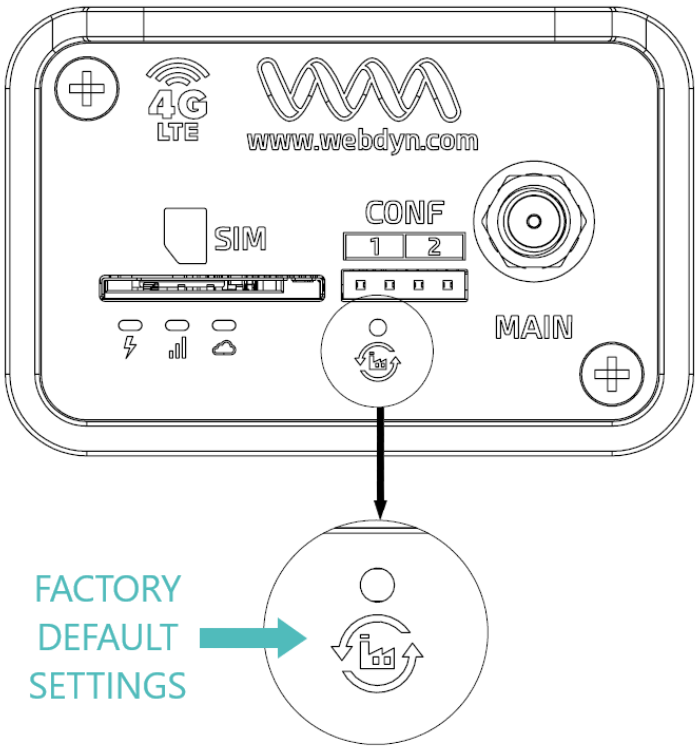
Operating States	State
Mini SIM detected and ready	Slow/ Blink /ON
Mini SIM undetected or incorrect PIN	OFF
Not enough/critical coverage	OFF
Low coverage	Blink
Good coverage	ON

- IP Status LED (Blue)

Operating States	State
IP Not Assigned	OFF
IP Assigned	ON

2.15 Factory Default Settings Reset

EasyDot parameters can be restored to factory default values with an external input push button in top panel. This input is labelled on the rear panel with this symbol:

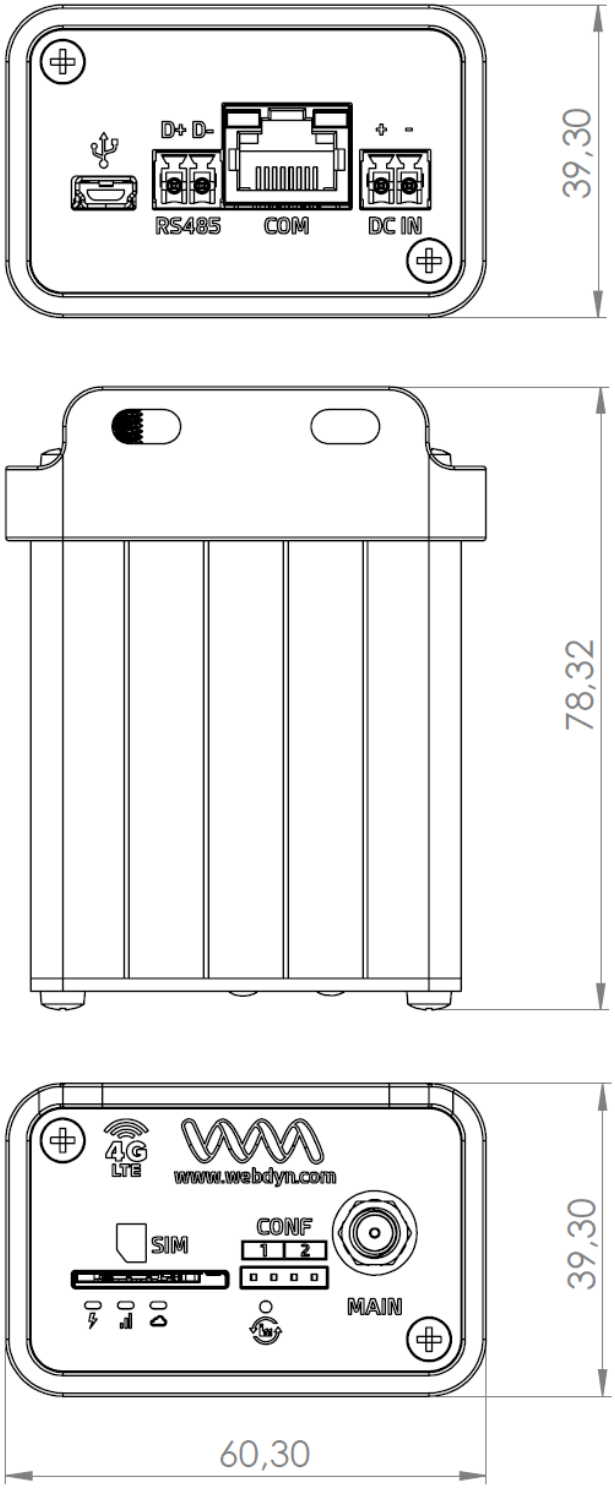


To proceed to restore parameters to factory default settings:

1. Power off the EasyDot.
2. Hold on" Factory default settings" button and power on the gateway.
3. Wait for EasyDot to restart, and for the Coverage LED (yellow LED) and IP Status LED (blue LED) to start blinking. It may require around 15 seconds.
4. Release "Factory default settings" button.
5. Power off the EasyDot gateway.
6. Power on again.

3 Mechanical Description

3.1 Dimensions



4 Device Installation

This chapter gives you advice and helpful hints on how to install the EasyDot gateway from a hardware perspective.

There are several conditions which need to be taken into consideration when designing your application as they might affect the router and its function.

Please, carefully read the complete hardware user guide as there are many details to be considered for installation.

4.1 Installation Location

EasyDot is intended to be installed indoor with environmental conditions as stated in the "Operating Range" chapter.

It must be installed in a cabinet, in order to be mechanically protected. Additionally, the plastic piece on one of its sides allows for easy installation into the cabinet.

Installation height referred to floor must be less than 2m and guarantee proper visibility of status Leds and connection of wires, SIM card insertion and Antenna attachment.

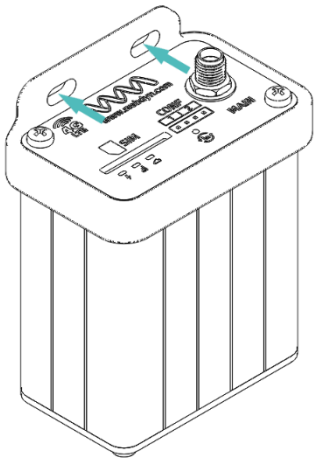
4.2 RF Signal Strength

The device must be placed in a way that ensures sufficient signal strength. To improve signal strength, the antenna can be moved to another position. Signal strength may depend on how close the gateway is to a radio base station. You must ensure that where you intend to use the router is within the network coverage area. Degradation in signal strength can be the result of disturbance from another source, i.e., an electronic device in the immediate vicinity.

Tip! Before installing the device, use an ordinary mobile telephone to check a possible location for it. In determining the location for the device and antenna, you should consider signal strength as well as cable length.

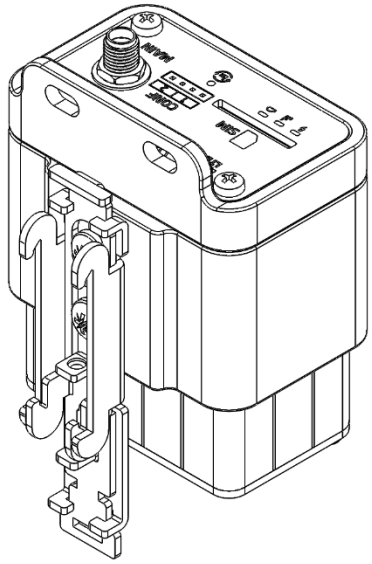
4.3 Panel mounting

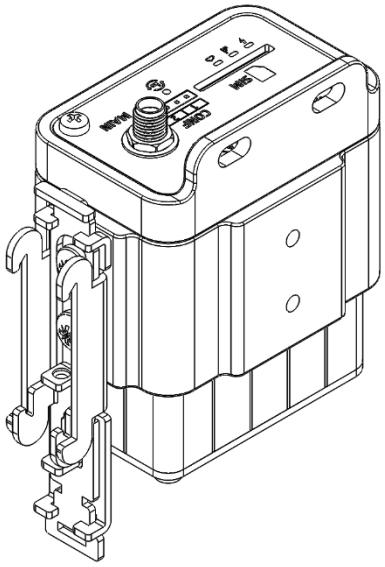
To install the device on a wall, place the EasyDot parallel to the wall as shown in the image, and use the holes provided to insert the fastening elements.



4.4 DIN Rail mounting

To install the gateway on the DIN rail, the EasyDot Din rail accessory available from Webdyn must be used. This accessory allows for mounting on the DIN rail in two positions to best adapt the EasyDot to the cabinet where it will be installed.





Model Name	Part Number
EasyDot Din rail accessory	**000199804000**

4.5 Connections of EasyDot

The user is responsible for the final integrated system. If it is not installed correctly, external components may cause radiation limits to be exceeded. For example, poorly made connections or improperly installed antennas can interfere with the network and lead to router malfunctions.

For the power supply connection, use a high-quality, low-resistance power cable. This ensures that the voltage at the connector pins remains within the permissible range, even during maximum peak current.

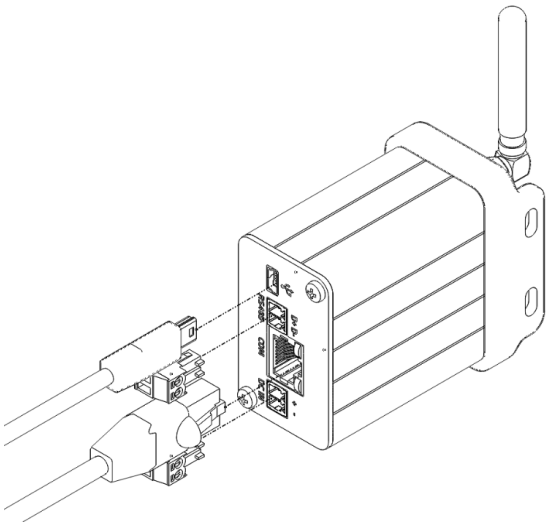
It is recommended to perform the installation with no external power connected: unplug the terminal block from the gateway, attach all required wiring, then plug the terminal block back in, securing both fastening screws. Finally, connect the external power supply to the system.

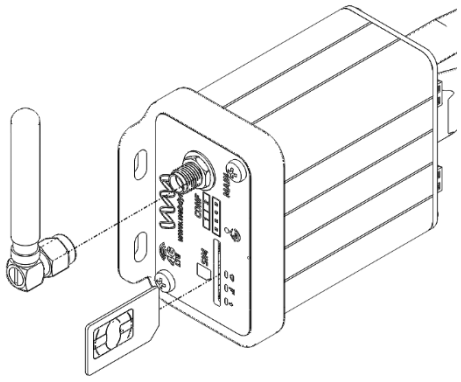
If the device is powered by a battery or a high-current supply and will operate in environments with 4G coverage, connect a fast 1.5A fuse in line with the positive supply. This protects the power cabling and gateway.

If the equipment is installed in environments where it will only operate in 2G and low-coverage areas, a standard 3.5A fuse should be used.

This protects the power cabling and gateway.

The figures below show connections for all available interfaces; however, only those required for the end application should be connected.





5 Support

In case of technical problems related to our products, contact WEBDYN support:

Webdyn SA

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78100 Saint-Germain-en-Laye

FRANCE

Tel.: +33 1 39 04 29 40

Mail: support@webdyn.com

https://www.webdyn.com

Includes the following:

- Product Type
- Product serial number.
- Production date.
- Software version of the product.
- Hub logs
- Gateway configuration

The user manual and firmware are available at this web address: https://www.webdyn.com/support/TBD

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webdyn

flexitron group

Webdyn EasyDot

Software user manual

www.webdyn.com

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General Notes

The product is deemed to have been accepted by the recipient and is provided without an interface for the recipient's products. The documentation and/or the product are provided for testing, evaluation, integration and information purposes. The documentation and/or products are provided “as is” and may include defects. The documentation and/or products are provided without a warranty of any kind, either express or implied. To the fullest extent permitted by applicable law, Webdyn further disclaims all warranties, including, but not limited to, any implied warranties of merchantability, accuracy, fitness for a particular purpose, and non-infringement of third-party rights. All risks arising out of the use or performance of the product or the documentation are borne by the recipient. This product is not intended for use in life support devices or systems where a malfunction of the product can reasonably be expected to result in personal injury. Applications incorporating the described product must be designed in accordance with the technical specifications provided in these guidelines. Failure to follow any of the required procedures may result in a malfunction or serious discrepancies in the results.

Furthermore, all safety instructions related to the use of mobile technical systems, including GSM products (which also apply to mobile phones), must be strictly followed. Regardless of the legal theory on which a claim may be based, neither Webdyn nor its suppliers shall be held liable for any consequential, incidental, direct, indirect, punitive or other damages (including, without limitation, damages for lost profits, interruption of business, loss of business data or information, or other pecuniary losses) arising from the use, or inability to use, the documentation and/or the product, even if Webdyn has been advised of the possibility of such damages occurring. The foregoing limitations of liability shall not apply in the event of mandatory liability, e.g. pursuant to the Spanish Product Liability Law, or in the event of intent, gross negligence, injury to life, body and health, or breach of a condition in relation to the contract. However, claims for damages arising from a breach of a condition going to the root of the contract shall be limited to foreseeable damages inherent to the contract, unless caused by intent or gross negligence, or based on liability for death or personal injury. The aforementioned provision does not imply a change in the burden of proof to the detriment of the recipient. Subject to change without notice. The interpretation of this general note will be governed and interpreted in accordance with Spanish law, without reference to any other substantive law.

Important Information

This technical description contains important information about starting up and using the equipment. Please read it carefully before you start working with the equipment. The warranty will be void if damage occurs due to non-compliance with these instructions. We cannot accept liability for consequential losses.

Revisions

VERSION. 1.02

1. Introduction.

The **Webdyn EasyDot** device allows you to easily create 4G/2G - RS232/485 gateways to access devices such as electric meters, execute AT commands via SMS (to check coverage, configuration changes, etc.), autonomously read Modbus RTU devices, send readings to web platforms and much more.

We provide free, fast and efficient support to all users of modems and routers when required. So, if you have any doubts after reading this manual, please do not hesitate to contact us at soporte@matrix.es The same applies if you need a feature not included in our equipment, or if you need customisation. Let us know and we will look into it.

2. FAQ. Basic concepts.

- **Does the Webdyn EasyDot device have serial gateways?**

Yes, up to 2 IP-serial gateways can be configured. These gateways can be of TCP Client or TCP Server type and can work simultaneously.

- **RS232 or RS485 serial gateways?**

The Webdyn EasyDot device has an RS232 serial port and an RS485 serial port, so it can have a 4G/2G – RS232 gateway and a 4G/2G – RS485 gateway.

- **I want a 4G/2G device but I need to be able to send AT commands directly to the device, send SMS messages, check coverage, etc. Does the Webdyn EasyDot equipment allow this?**

Yes, in several ways. It is possible to send AT commands REMOTELY from a “Telnet-like” connection, via HTTP or MQTT/MQTTs, by SMS, and even embedded commands in the IP-Serial gateways themselves.

- **Can the Webdyn EasyDot device operate autonomously by reading Modbus RTU devices and sending the readings obtained to the cloud?**

Yes. Webdyn EasyDot devices can read Modbus RTU devices, store the readings internally and send them to web platforms via a JSON object over HTTP/HTTPS or MQTT/MQTTS.

- **What if the Webdyn EasyDot device is reading Modbus RTU devices autonomously? Would that prevent me from connecting sporadically and remotely to the Modbus RTU devices from my office to make occasional readings, change firmware, etc.?**

No. You can configure the Webdyn EasyDot device to read Modbus devices autonomously and set up a sporadic direct gateway to access Modbus RTU devices from your premises.

- **Do Webdyn EasyDot devices have datalogger capability and can they store data?**

Yes. As mentioned above, data can be stored for subsequent delivery to web platforms via HTTP and/or MQTT.

- **How do I configure a Webdyn EasyDot device?**

There are several ways to configure Webdyn EasyDot devices, but generally, all device configuration can be done via web configuration, i.e. via the internal webserver using a web browser.

- **Is it possible to read/upload a complete configuration to the devices? This facilitates the production process when there are a significant number of devices to configure.**

Yes, it is possible to perform backups / full configuration restorations from the web configuration environment.

- **Can you order Webdyn EasyDot devices pre-loaded with a particular configuration from the factory?**

Yes, you can. But only for high volumes (>500 units). Please contact your sales representative for more information.

- **Do Webdyn EasyDot devices support the DynDNS service?**

Yes. They are also compatible with NO-IP. You also have the additional option of private DynDNS to send your current IP every time it changes or periodically to a private server, e.g. your company's server. As part of this additional option, in addition to sending the current IP address, other data such as coverage, technology, IMEI, cell information, etc. are included.

- **Do Webdyn EasyDot devices have a clock?**

Yes, they have a built-in clock. It is synchronised via NTP over the Internet.

- **Can Webdyn EasyDot devices be configured via SMS?**

Yes, Webdyn EasyDot devices can be configured through AT commands. And AT commands (in addition to Telnet, MQTT/S and Serial) can be sent to the device by SMS. Commands can be sent to the devices to reboot them, change their configuration, find out their IP address, check coverage, etc.

- **Do Webdyn EasyDot devices have any indicator LEDs?**

Yes, they have 3 LEDs. A green LED indicates power, a yellow LED indicates coverage (off: no coverage, flashing: low coverage, steady: good coverage) and a blue LED indicates IP status (off: the device has no IP address, on: the device has an IP address).

3. Step-by-step configuration.

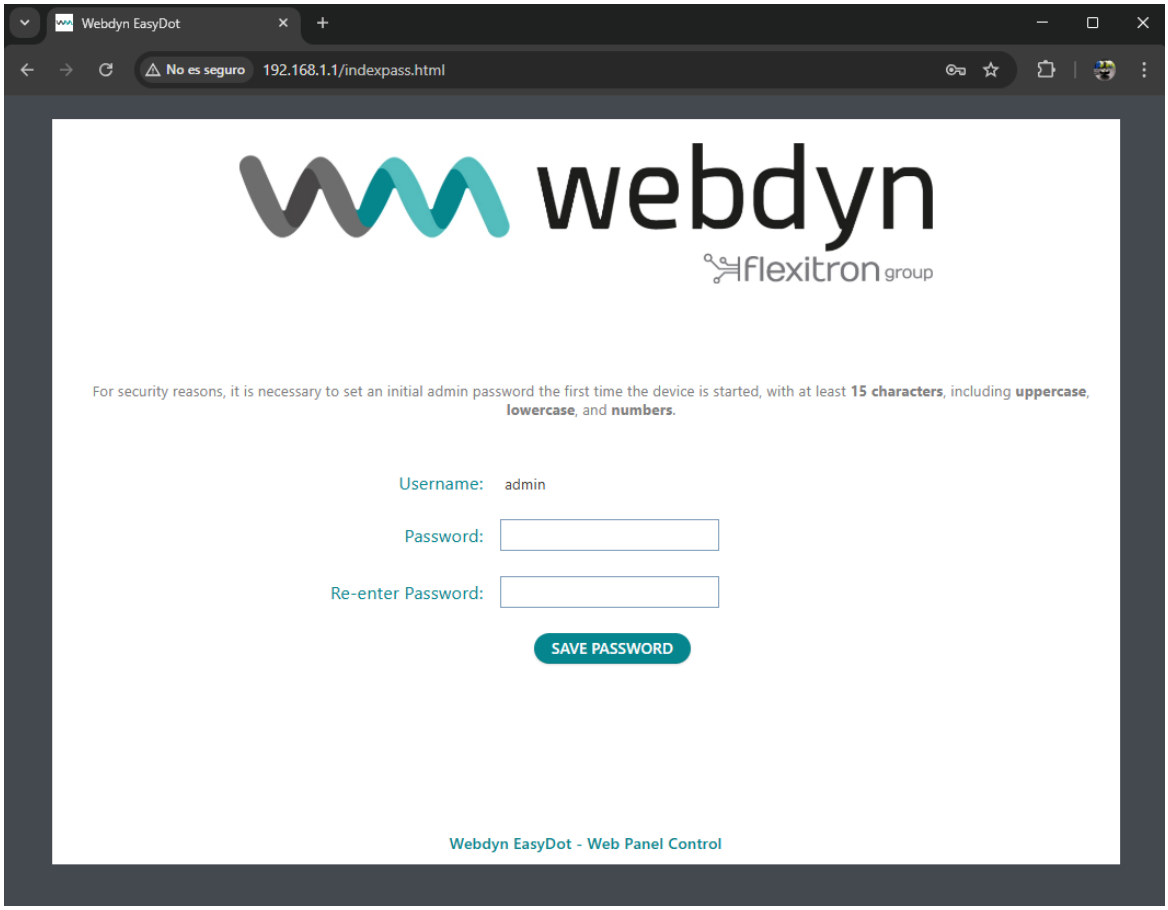
The Webdyn EasyDot device is primarily configured via its internal webserver.

What is required?

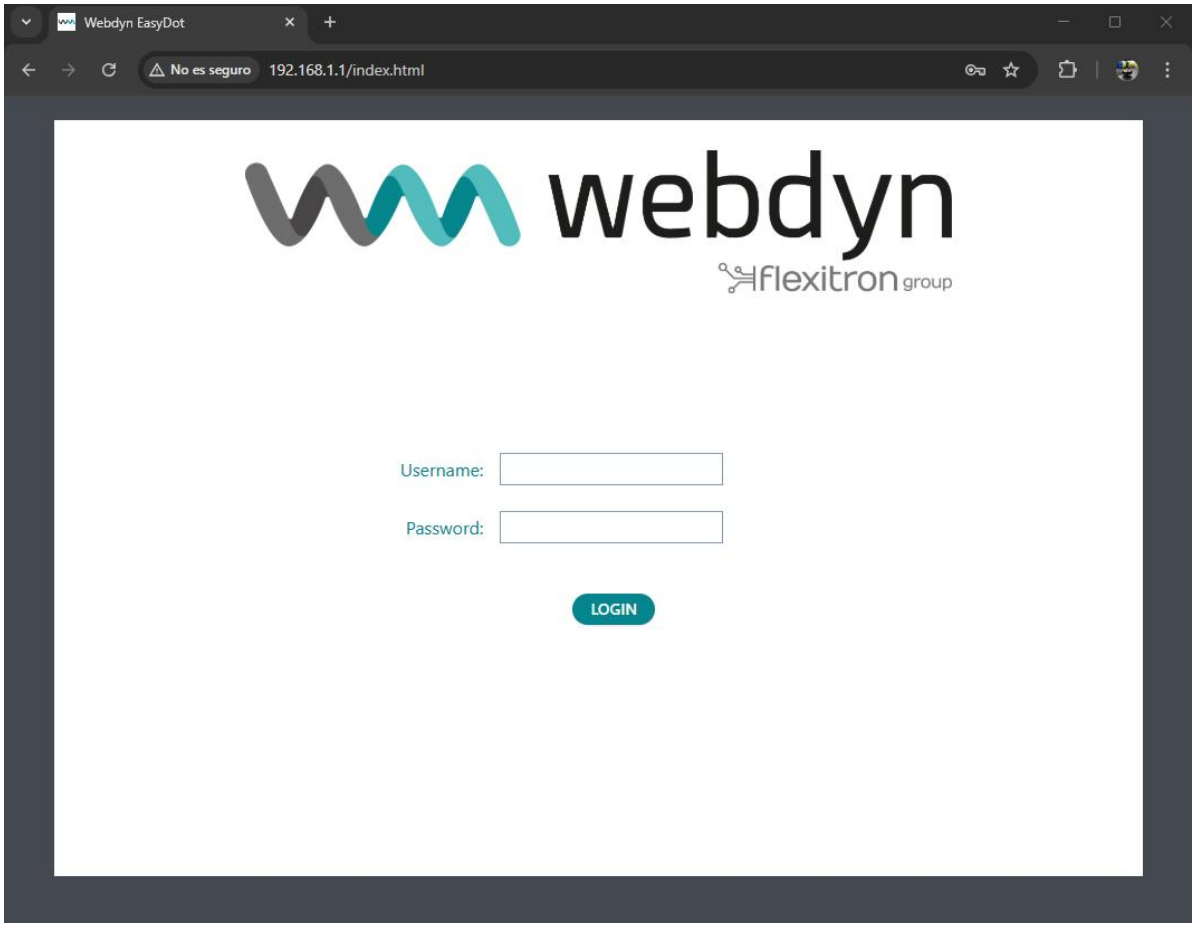
- A PC with a web browser (Chrome, Brave, Firefox, etc.) and a USB port.
- A mini-USB cable to connect the PC to the device.

Steps to access the configuration environment.

- Connect the USB cable between the PC and the device.
- Open a browser with the address http://192.168.1.1. The following window should appear the first time the modem is started.



- For security reasons, you must enter a password for the "**admin**" user. The password must be at least 15 characters long and contain upper and lower case letters and numbers.
- The next time you start the modem you will be able to log in with the username "**admin**" and the password you have set.


Webdyn EasyDot
No es seguro
192.168.1.1/index.html
webdyn
Flexitron group
Username:
Password:
LOGIN

4. Home

This screen shows the general status of the device.

- ***Firmware Version***: FW version of the device
- ***WAN Mobile IP***: WAN IP address (IP address assigned to the 4G/2G connection) if available.
- ***IMEI***: IMEI (unique identifier) of the internal modem
- ***SIM***: SIM card status
- ***Network (4G/2G)***: Indicates whether the current WAN connection is using the 2G (GPRS) or 4G network
- ***Signal Strength***: Indicates the strength of the signal. 0=none, 31=maximum
- ***Extra signal info:*** Indicates the RSRP/RSRQ for 4G connectivity

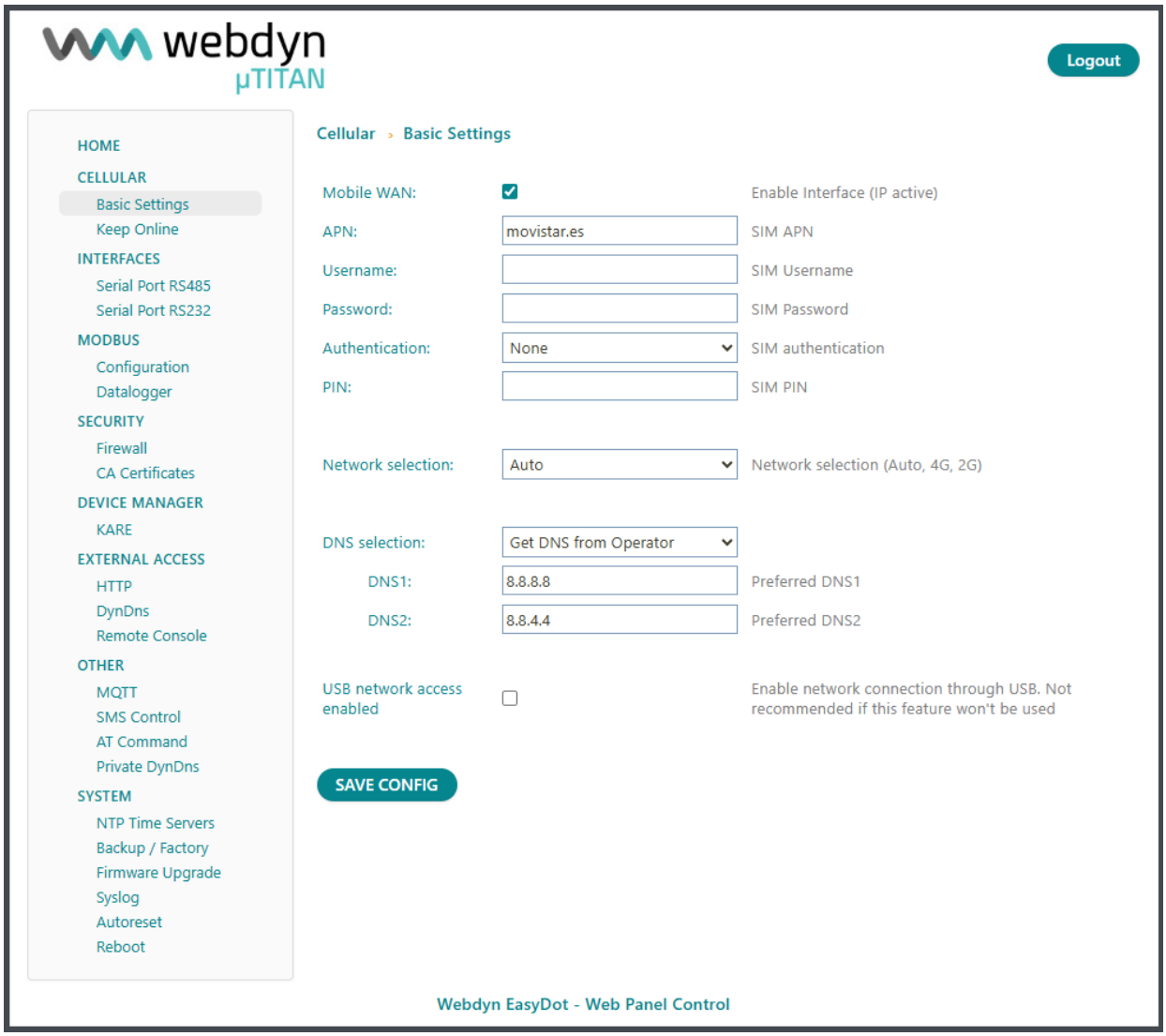
5. Cellular

The "Cellular" section covers all aspects related to the device's 4G/2G settings, including connection status, network configuration parameters and connection monitoring.

5.1. Basic Settings

This section allows you to configure the parameters of the WAN connection (4G/2G). You will need to know some details about your SIM card, such as the APN, username and password. Your provider must give them to you.

- ***Mobile WAN***: if you need IP connectivity (4G/2G) you must enable this option.
- ***APN***: APN of the SIM operator. Ask your GSM provider.
- ***Username***: SIM operator's username. Ask your GSM provider.
- ***Password***: SIM operator's password. Ask your GSM provider.
- ***PIN****:* if your SIM card has a PIN, you must enter it here.
- ***Authentication****:* authentication method “NONE”, “PAP” or “CHAP”.
- ***Network selection****:*
  - **Auto:** the device will use 4G if coverage is available, or 2G otherwise.
  - **4G**: the device will use the 4G network in all cases. If there is no 4G coverage, the device will not switch to 2G.
  - **2G**: the device will always use the 2G network. If there is no 2G coverage, the device will not switch to 4G.
- ***DNS selection****:*
  - **Get DNS from operator**: causes the device to use the DNS servers assigned by the mobile operator.
  - **Selected DNS servers**: if no DNS are received from the operator, the device will use the DNS specified in the DNS1 and DNS2 fields.
- ***DNS1 and DNS2****:* DNS servers for domain name resolution. We recommend using Google’s 8.8.8.8 and 8.8.4.4, or those indicated by your provider.
- ***USB network access enabled****:* If you enable this checkbox, the device will provide network access (Internet or network provided by the SIM) to devices connected to the Webdyn EasyDot's USB port (for example, a PC). For security reasons, it is recommended NOT to check this box unless your application requires it.



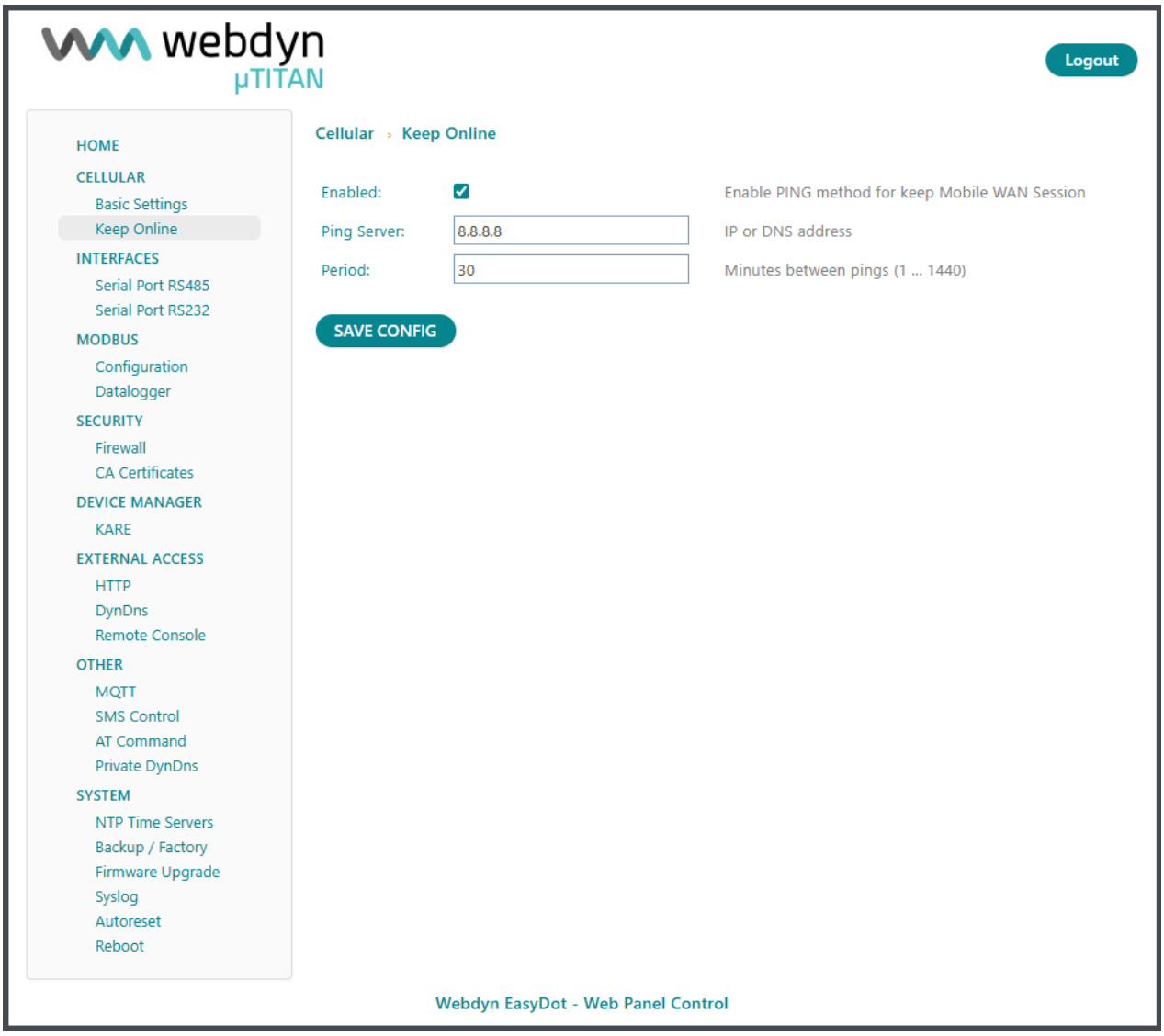
Additional Notes.

- Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

5.2. Keep Online

On this screen you can configure a PING to check the device's connectivity. If the PING fails on the configured occasions, the 4G/2G connection will be restarted.

- ***Enabled***: check the box to allow the device to send a PING periodically to check connectivity.
- ***Ping Server***: indicates the IP or DNS address of the server to PING.
- ***Period***: indicates the number of minutes between each PING



Additional Notes.

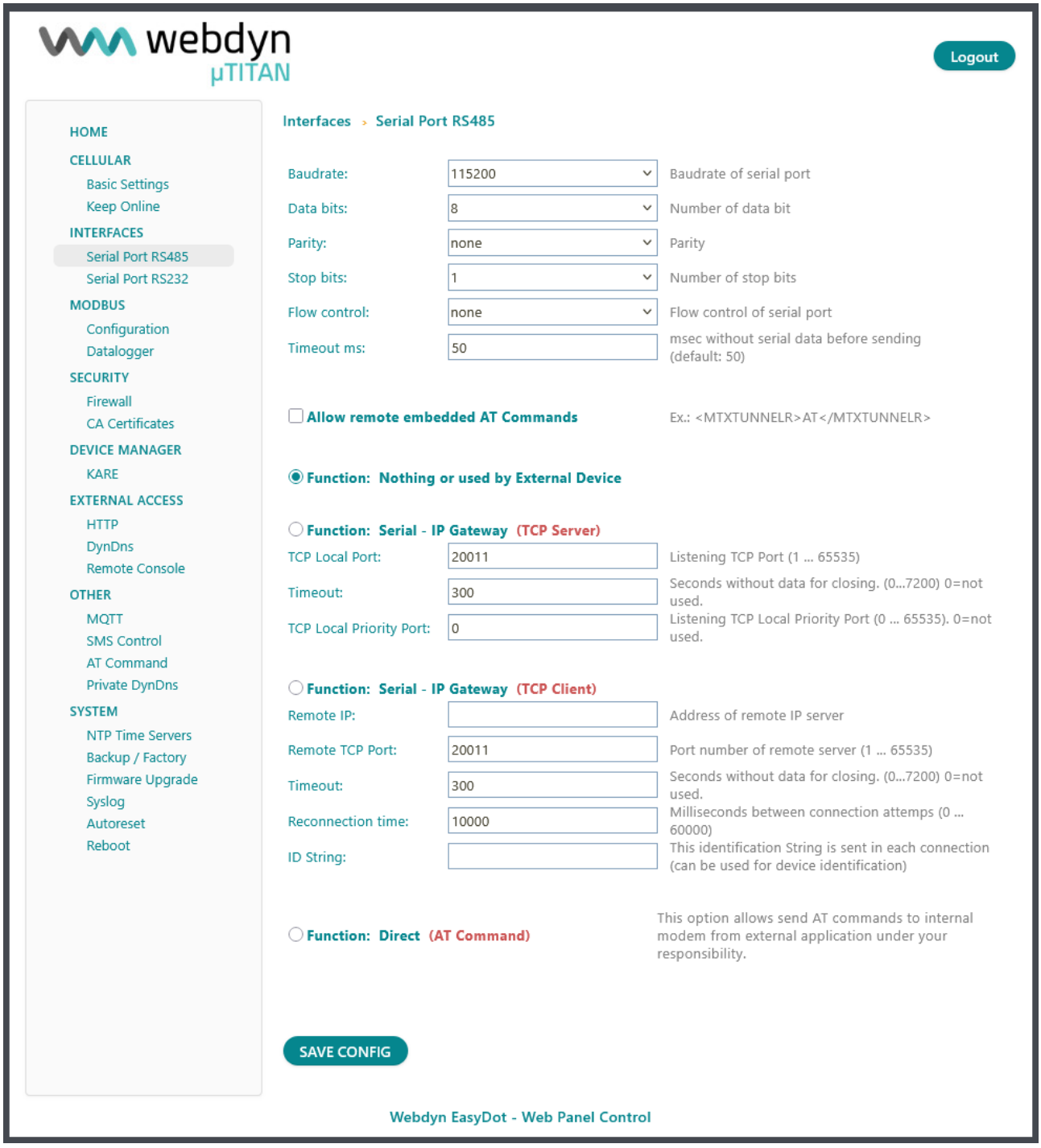
- Once the configuration process is finished, click on the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect.

6. Interfaces

From the "Interfaces" section you can configure each serial port of the device (speed, parity, …) as well as the special function assigned to each of them (IP-serial gateways, Modbus concentrator, …)

6.1. Serial Port RS485 / Serial Port RS232

Each port can be used to create 4G/2G-Serial gateways to remotely control RS232 or RS485 devices. The EasyDot device has an RS485 serial port and an RS232 serial port.



- ***Baudrate***: specifies the baud rate of the serial port (115200, …, 300)
- ***Data bits***: specifies the number of data bits (8)
- ***Parity***: specifies the parity (*none*, *even* [even], *odd* [odd])
- ***Stop bits***: number of stop bits (1)
- ***Flow Control****:* specifies flow control (*none*, *hardware*)
- ***Timeout ms****:* indicates the number of milliseconds to wait without receiving data on the serial port before sending the data over IP. If you specify a "0" (default value), the data will be sent via IP as it arrives at the serial port. For example, a value of 10 specifies that no data will be sent unless there is a pause of at least 10 ms without receiving data on the serial port. This ensures that the data arrives at the destination less fragmented.
- ***Allow remote embedded AT Commands****:* checking this box enables the sending of REMOTE AT commands embedded in a Server or Client 4G/2G-Serial gateway. AT commands must be sent over the established gateway connection, but placed between the <MTXTUNNEL**R**> and </MTXTUNNEL**R**> tags. For example, to check coverage you can send the command: <MTXTUNNEL**R**>AT+CSQ</MTXTUNNEL**R**>.
  Or, if you want to reboot a device remotely, you can send the command: <MTXTUNNEL**R**>AT^MTXTUNNEL=REBOOT </MTXTUNNEL**R**>
- ***Function****:* ***Nothing or Used by External Device***: select this operating option if you do not want to use a given serial port as an IP-serial gateway, or if you want the serial port (RS232 or RS485) to be used by an external device specified in the "External Devices" configuration section. .
- ***Function****:* ***Serial – IP Gateway (TCP Server)*****:** select this operating option if you want to create a 4G/2G TCP Server-Serial gateway, i.e. a scenario in which the Webdyn EasyDot device is listening on a certain TCP port, waiting to receive a connection to establish the IP-Serial gateway.
  - ***TCP Local Port****:* TCP listening port for the 4G/2G Serial gateway
  - ***Timeout****:* time (seconds) without data on the gateway to close the socket automatically.
  - ***TCP Local Priority Port:*** priority TCP listening port for the 4G/2G Serial gateway. If there is an active connection on this port, connections to the TCP Local Port will not be allowed. Useful for reading electric meters with IP connection priority.
- ***Function:*** ***Serial – IP Gateway (TCP Client):*** select this operating option if you want to set up a transparent Serial – 4G/2G gateway in TCP Client mode, i.e. a scenario where the device connects to a specific IP/TCP port to establish the Serial – 4G/2G gateway
  - ***Remote IP***: the IP address to which the device will connect
  - ***Remote TCP Port***: the TCP port to which the device will connect
  - ***Reconnection time***: in case of connection failure or connection problems, this indicates how many milliseconds should be left between connection attempts. 0 = immediate reconnection. Be careful with this value if you do not have a flat rate SIM card or if you have a contract with a very low monthly data volume.
  - ***ID String***: string of text that is sent just after connecting the socket to the remote IP. This text will allow you to identify the Webdyn EasyDot device making the connection. For example, if you have 100 devices in this operating mode, you will be able to determine, after receiving a connection, which of these 100 devices made the connection. It is possible to add the special tags [IMEI], [CR] and [LF] which will be substituted by the IMEI, and the characters 0x13 and 0x10 respectively.
- ***Function:*** ***Direct (AT Command):*** select this operating option if you need to be able to send AT commands directly to the modem. For example, if you want to send SMS messages by sending AT

commands through the serial port, use this option. The AT commands used must be sent with caution so as not to interfere with the proper functioning of the device. For example, using AT commands and setting the modem to airplane mode will interfere with the Webdyn's IP connectivity.

Additional Notes.

- Once the configuration process is finished, click on the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect.

7. MODBUS

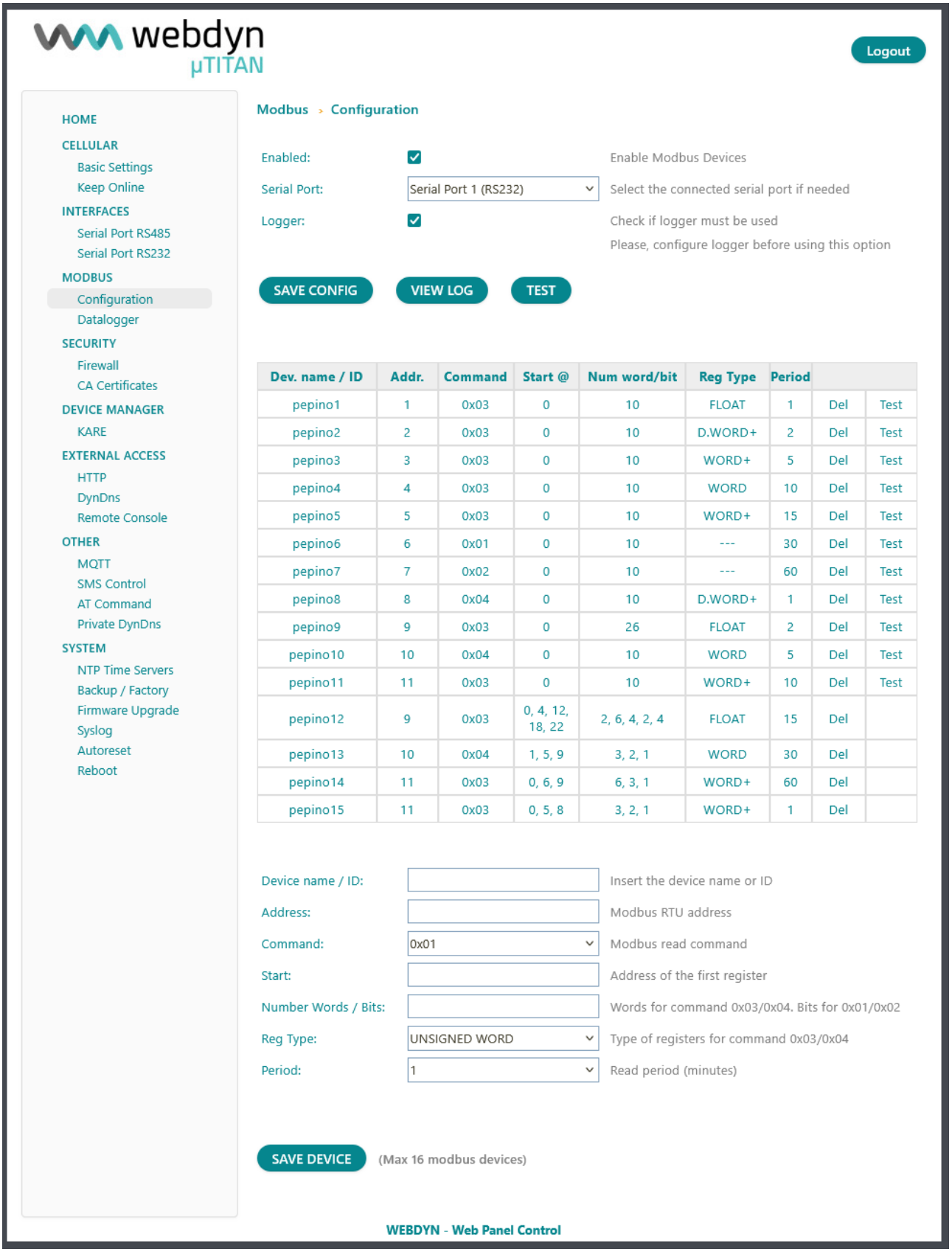
7.1. Configuration

Webdyn EasyDot devices are equipped to read, store and send registers of external Modbus RTU devices to an external server (via HTTP/HTTPS or MQTT/MQTTS). You can schedule periodic readings for up to **16** Modbus RTU devices, selecting the registers to read and then sending the readings to a server via a JSON object.

- ***Enabled***: check this box if you have one or more Modbus RTU devices connected to a serial port and you intend to read Modbus registers autonomously.
- ***Serial Port***: allows you to select the RS232 or RS485 serial port of the Webdyn EasyDot where the Modbus RTU device is connected.
- ***Logger***: if you wish to use the internal logger to store the Modbus registers read (to send to a web platform later), you must select this option.
- ***Device name / ID***: identifying name of a Modbus RTU device.
- ***Address***: Modbus RTU address of the device to be read. Range from 0 to 255.
- ***Command***: Modbus read command. Possible values:

Code	Name	Data type	Access
0x01	Read Coils	Bit (Boolean)	Read/Write
0x02	Read Discrete Inputs	Bit (Boolean)	Read-only
0x03	Read Holding Registers	Register (16 bits)	Read/Write
0x04	Read Input Registers	Register (16 bits)	Read-only

- ***Start***: initial register to read. Minimum value: 0.
- ***Num Words***: number of registers to be read. Maximum value: 65535.
- ***Reg type***: type of register to be read. Possible values:
  - ***Unsigned Word:*** 16 bits. Range from 0 to 65535
  - ***Signed Word:*** 16 bits. Range from -32768 to 32767.
  - ***Double Word:*** 32 bits. Range from 0 to 4,294,967,295.
  - ***Float:*** 32 bits. Range from $\pm 1.17549435 \times 10^{-38}$ to $\pm 3.4028235 \times 10^{38}$
- ***Period****:* reading period, i.e. after how many minutes the set of registers should be read each time. Possible values: 1, 2, 5, 10, 15, 30, 60 (minutes).


webdyn
µTITAN
Logout
HOME
CELLULAR
Basic Settings
Keep Online
INTERFACES
Serial Port RS485
Serial Port RS232
MODBUS
Configuration
Datalogger
SECURITY
Firewall
CA Certificates
DEVICE MANAGER
KARE
EXTERNAL ACCESS
HTTP
DynDns
Remote Console
OTHER
MQTT
SMS Control
AT Command
Private DynDns
SYSTEM
NTP Time Servers
Backup / Factory
Firmware Upgrade
Syslog
Autoreset
Reboot
Modbus › Configuration
Enabled:
Enable Modbus Devices
Serial Port:
Serial Port 1 (RS232)
Select the connected serial port if needed
Logger:
Check if logger must be used
Please, configure logger before using this option
SAVE CONFIG
VIEW LOG
TEST
Dev. name / ID | Addr. | Command | Start @ | Num word/bit | Reg Type | Period
pepino1 | 1 | 0x03 | 0 | 10 | FLOAT | 1 | Del | Test
pepino2 | 2 | 0x03 | 0 | 10 | D.WORD+ | 2 | Del | Test
pepino3 | 3 | 0x03 | 0 | 10 | WORD+ | 5 | Del | Test
pepino4 | 4 | 0x03 | 0 | 10 | WORD | 10 | Del | Test
pepino5 | 5 | 0x03 | 0 | 10 | WORD+ | 15 | Del | Test
pepino6 | 6 | 0x01 | 0 | 10 | --- | 30 | Del | Test
pepino7 | 7 | 0x02 | 0 | 10 | --- | 60 | Del | Test
pepino8 | 8 | 0x04 | 0 | 10 | D.WORD+ | 1 | Del | Test
pepino9 | 9 | 0x03 | 0 | 26 | FLOAT | 2 | Del | Test
pepino10 | 10 | 0x04 | 0 | 10 | WORD | 5 | Del | Test
pepino11 | 11 | 0x03 | 0 | 10 | WORD+ | 10 | Del | Test
pepino12 | 9 | 0x03 | 0, 4, 12, 18, 22 | 2, 6, 4, 2, 4 | FLOAT | 15 | Del
pepino13 | 10 | 0x04 | 1, 5, 9 | 3, 2, 1 | WORD | 30 | Del
pepino14 | 11 | 0x03 | 0, 6, 9 | 6, 3, 1 | WORD+ | 60 | Del
pepino15 | 11 | 0x03 | 0, 5, 8 | 3, 2, 1 | WORD+ | 1 | Del
Device name / ID:
Insert the device name or ID
Address:
Modbus RTU address
Command:
0x01
Modbus read command
Start:
Address of the first register
Number Words / Bits:
Words for command 0x03/0x04. Bits for 0x01/0x02
Reg Type:
UNSIGNED WORD
Type of registers for command 0x03/0x04
Period:
1
Read period (minutes)
SAVE DEVICE
(Max 16 modbus devices)
WEBDYN - Web Panel Control

Additional Notes.

- Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.
- If you wish to create a new Modbus RTU device, you must fill in the form and press the “SAVE DEVICE” button. Remember that the maximum number of devices allowed is 16.
- An example of the JSON frame format stored with the readings to be sent to a server is as follows:

{"TYPE":"MODB", "ID":"pepino5", "TS":"2024-09-05T12:20:02Z", "IMEI":"866069069150439", "P":"1234", "A":5, "ST":0, "N":10, "V":[0,1,2,3,4,5 ,6,7,8,9]}

Where:

TYPE: type of data. In this case, Modbus.

ID: Modbus device name or ID.

TS: timestamp DD:MM:YYYY HH:MM:SS.

IMEI: equipment identification number. Unique for each device.

P: Logger ID field (External Devices > Logger configuration).

A: Modbus address of the device read.

ST: initial register.

N: no. of words (0x03/0x04 commands) or bits (0x01/0x02 commands) to read.

V: array containing the registers read.

- We recommend you read the chapter on available AT commands, because you can read and change values of Modbus registers via AT commands, in the web configuration environment, from Remote Console (Telnet), SSH or SMS, etc.
- In the “Start” and “Num Words” fields it is possible to set non-consecutive registers. This means if we want to read registers:

1;10;11;12;55;56;69;70;72;73;74;75;76;77;78;79;80;100;101;102;103;104;105;106;107;108;109;120;121;122;123;124;130;131;132;133;152;153;154;160;161;162;163;164;165;166;170

We must enter the following in the Start field (the initial register of each block):

1;10;55;69;72;100;120;130;152;160;170

And, in the “Number Words” field (the number of registers to be read from each block):

1;3;2;2;9;10;5;4;3;7;1

An example of a JSON received in this case:

{"TYPE":"MODB", "ID":"1", "TS":"17/06/2017

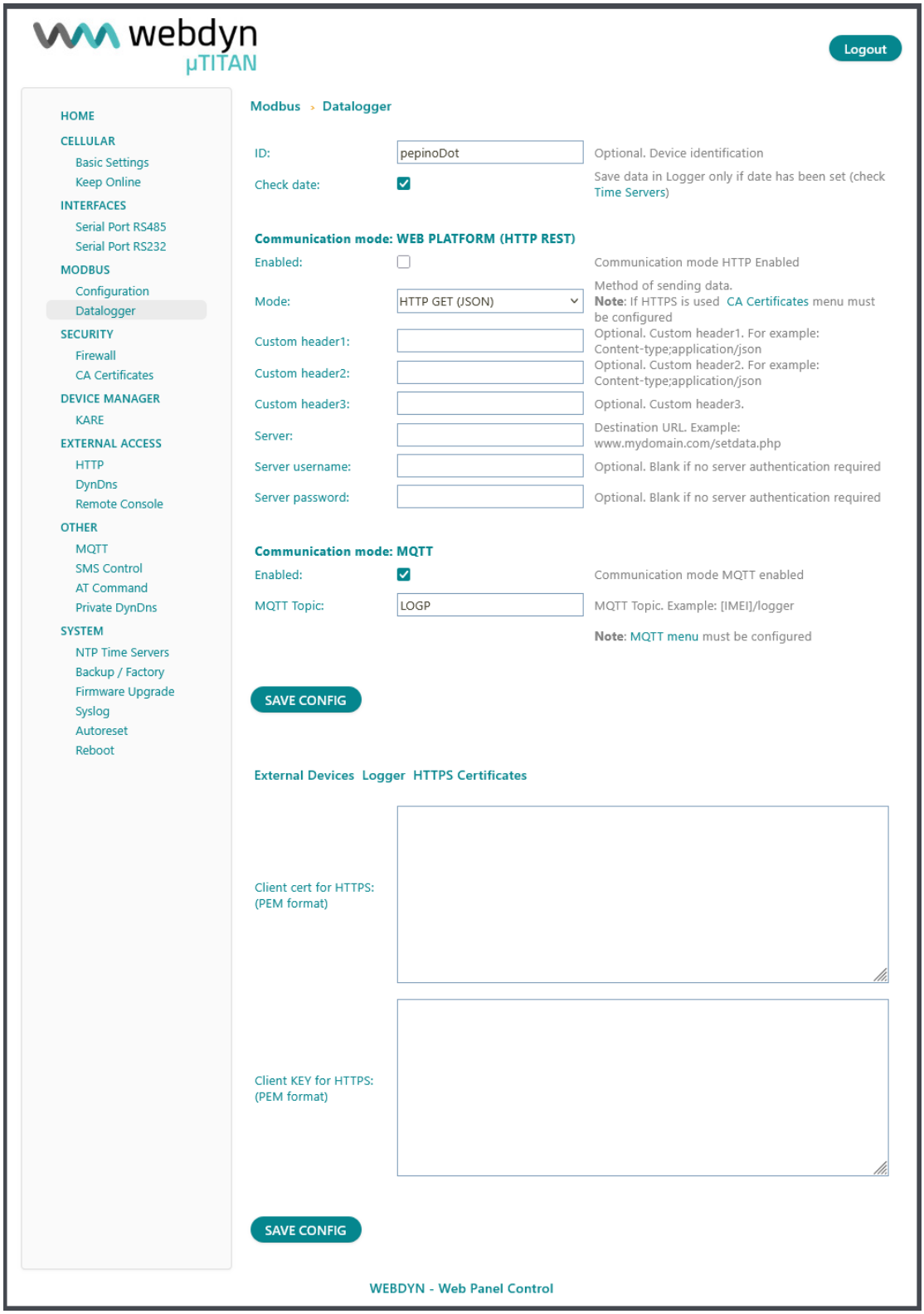
17:01:04", "IMEI":"357044060009633", "P":"12345678", "A":"1", "STX":[1, 10, 55, 69, 72, 100, 120, 130, 152, 160, 170], "NX":[1, 3, 2, 2, 9, 10, 5, 4, 3, 7, 1], "PX":[0, 1, 4, 6, 8, 17, 27, 32, 36, 39, 46],

"V":[1, 10, 11, 12, 55, 56, 69, 70, 72, 73, 74, 75, 76, 77, 78, 79, 80, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 120, 121, 122, 123, 124, 130, 131, 132, 133, 152, 153, 154, 160, 161, 162, 163, 164, 165, 166, 170]}

7.2. Datalogger

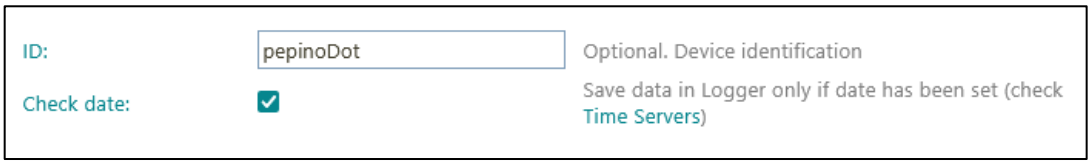
If you need the Webdyn EasyDot to collect data from external devices (Modbus devices) to send it to a server, you first need to configure the internal Logger, i.e. configure how to collect the data, and where and how to send it. That is what this section is for.

This section allows you to configure the parameters related to the internal datalogger. You can send the data to a server via HTTP/HTTPS or MQTT/MQTTS. In all cases, the data will be sent in JSON format



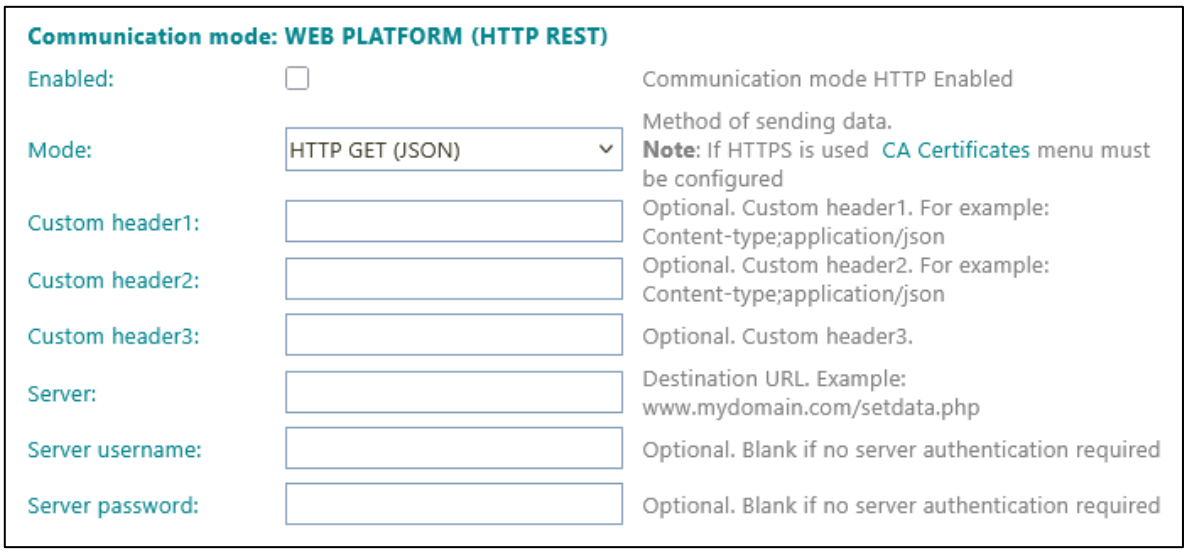
7.2.1. General parameters:

There are a couple of fields that are common regardless of the mechanism used to send the data:



- ***ID***: optional. This is a text parameter that allows you to enter an identifying string included within the JSON file.
- **Check date**: if the box is checked, data cannot be written to the datalogger memory if the device's date/time is incorrect. This means that data cannot be sent to a server with an incorrect TimeStamp.

7.2.2. HTTP/HTTPS mode



- ***Enabled***: click to enable the mode for sending data to a web platform via HTTP/HTTPS
- ***Mode***: data-sending mode. You can choose between HTTP GET (JSON), HTTPS GET (JSON), HTTP POST (JSON) and HTTPS POST (JSON)
- ***Custom header1, Custom header2 and Custom header3****:* It allows you to add headers to HTTP/HTTPS requests. Many web platforms require a header with an identifying token. You can configure it in this section. You must separate the header name from the value with a semicolon (;).
- ***Server***: Complete URL to send data collected in the datalogger. For example www.myDomain.com/json/set.php?data=
- ***Server username****: username to access the web configuration.* If your platform has restricted access, enter the username here.
- ***Server password****:* If your platform has restricted access, enter your user password here.

7.2.3. MQTT mode

- ***Enabled***: click to enable the data-sending mode on an MQTT broker (all data is sent in JSON format).
- ***MQTT Topic***: MQTT topic to which the data stored in the logger will be sent.

7.2.4. HTTPS Certificates

If you use HTTPS and want to authenticate the client (EasyDot), both boxes must be filled with the corresponding client certificate and key (in PEM format):

- ***Client cert for HTTPS***: client certificate in PEM format for HTTPS connections. Enter your digital certificate here, if required on your server.
- ***Client KEY for HTTPS***: *key* of the client certificate in PEM format for HTTPS connections. Enter the *key* of your digital certificate here if required by your server.

7.2.5. Logger operation.

When the EasyDot reads external devices (for example, register readings from Modbus RTU devices), the read data are stored in the EasyDot's internal logger. Once stored in the internal logger, they are immediately sent to a web platform via MQTT and/or HTTP. Storing the read data in the internal logger ensures that, in

case of transmission problems (coverage issues, platform outage, etc.), the read data are not lost and can be sent later.

The Logger has space for 20 registers in RAM and 128 in Flash memory (non-volatile), with a size of up to 896 bytes for each register stored. By default, the read data are stored in the RAM registers and immediately transmitted to the platform. If there are problems sending data to the platform, the data stored in RAM are immediately dumped to Flash memory. From that moment on, new data readings will be stored in Flash memory until it is emptied by the successful transmission of all records to the remote platform. From that moment on, the read data will be stored again in RAM memory.

Using registers in RAM aims to reduce wear on the Flash memory, since under normal conditions only the RAM memory will be used.

Additional Notes.

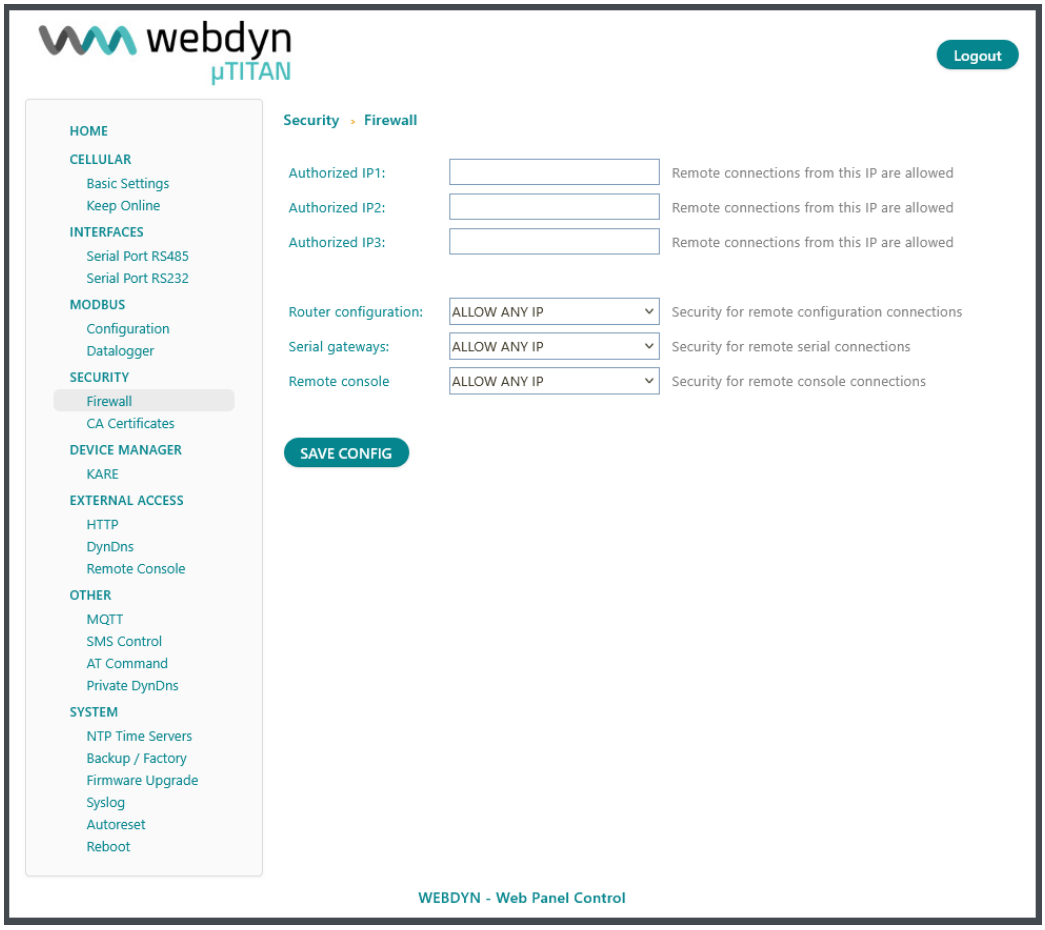
- Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.
- When using HTTP or MQTT sending mode, data are sent to your server as they are read. If there is no 4G/2G coverage or if there are problems sending data (e.g. a remote server crash), the device will store the data internally to be sent later when communications are back to normal.
- If you use MQTT mode, remember to properly configure the section within the “**OTHER → MQTT**” menu. In this section, you must enter all the configuration parameters necessary to connect the device to your MQTT broker.

8. Security

Section for configuring the device's security features.

8.1. Firewall

This screen allows you to define up to 3 IP addresses authorised to accept connections on the WAN interface for the different services provided by the device. For example, if an authorised IP address of 90.166.108.200 is specified (such as the IP of an office, for example), certain services of the device will only be accessible from that IP address.



- ***Authorized IP1/IP2/IP3***: up to 3 authorised IP addresses.
- ***Remote configuration***: Specifies whether remote connections to the web configuration environment are accepted from any IP, or only from authorised IP addresses.
- ***Serial Gateways***: Specifies whether remote connections to 4G/2G-RS232/485 gateway services are accepted from any IP, or only from authorised IP addresses.
- ***Remote console***: Specifies whether remote connections to the remote console service (Telnet) are accepted from any IP, or only from authorised IP addresses.

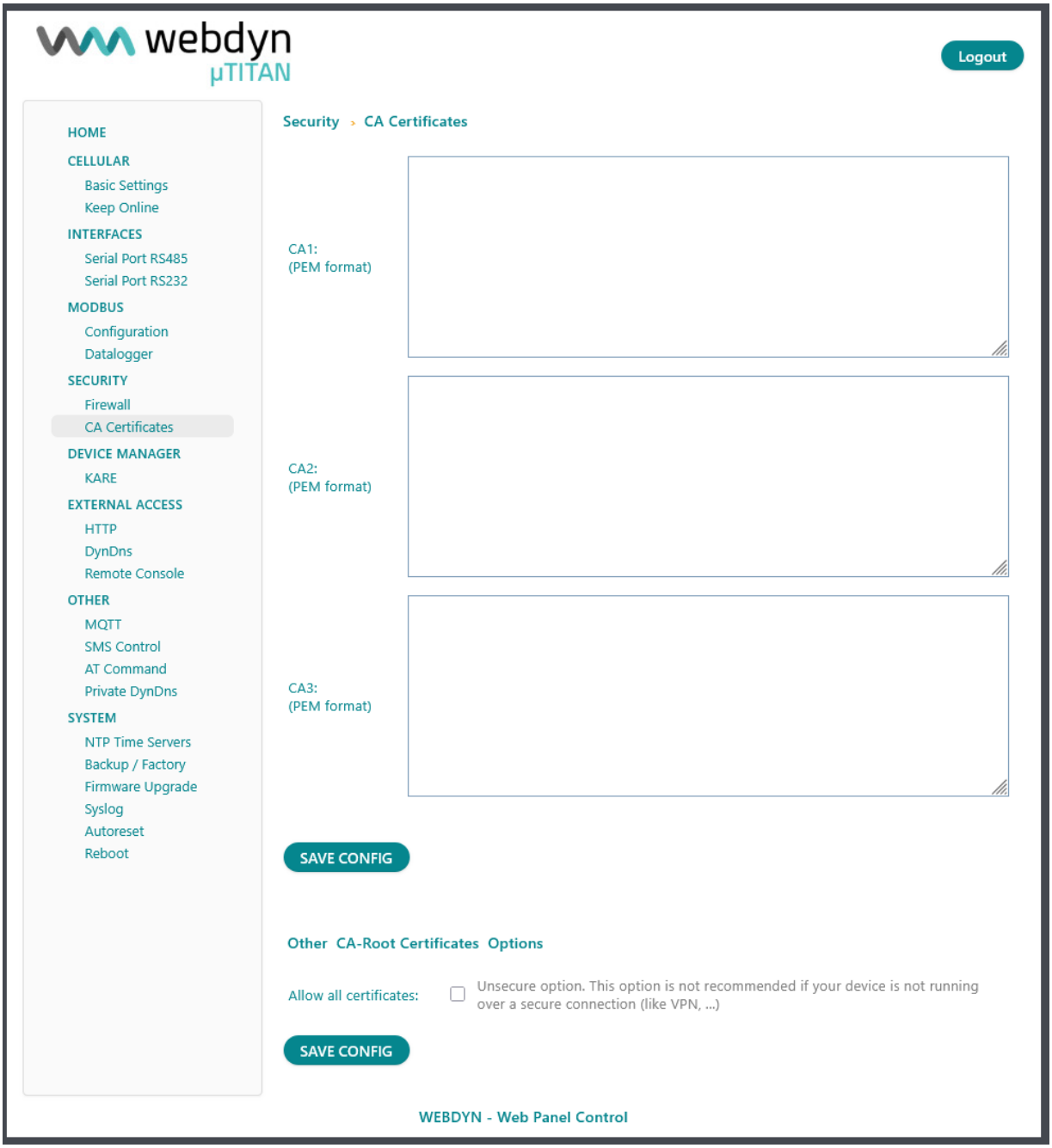
Additional Notes.

- Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

8.2. CA Certificates

All services using secure connections under SSL/TLS connected to HTTPS or MQTTS servers must have the CA Root certificate used by that server, in order to verify the server's certificate. In this section, you can enter up to 3 custom CA Root certificates (in PEM format).

It is also possible to select the “Allow all certificates” option. This is not recommended unless you have a secure connection (SIM with private APN), as the certificate of the remote server you want to connect to will not be verified.

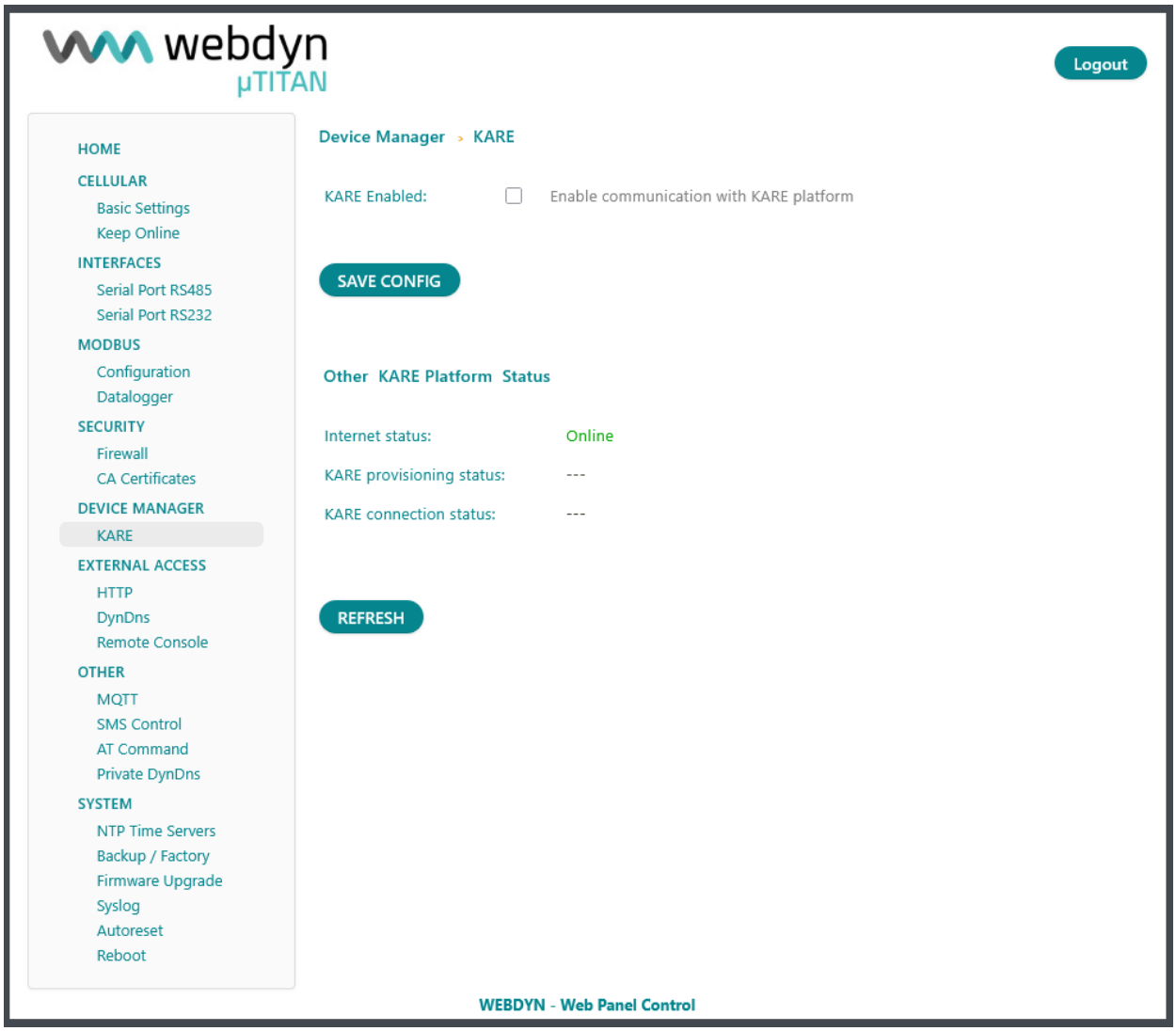


Additional Notes.

- The certificates entered must be in PEM format, including the tags “-----BEGIN CERTIFICATE-----” and “-----END CERTIFICATE-----”

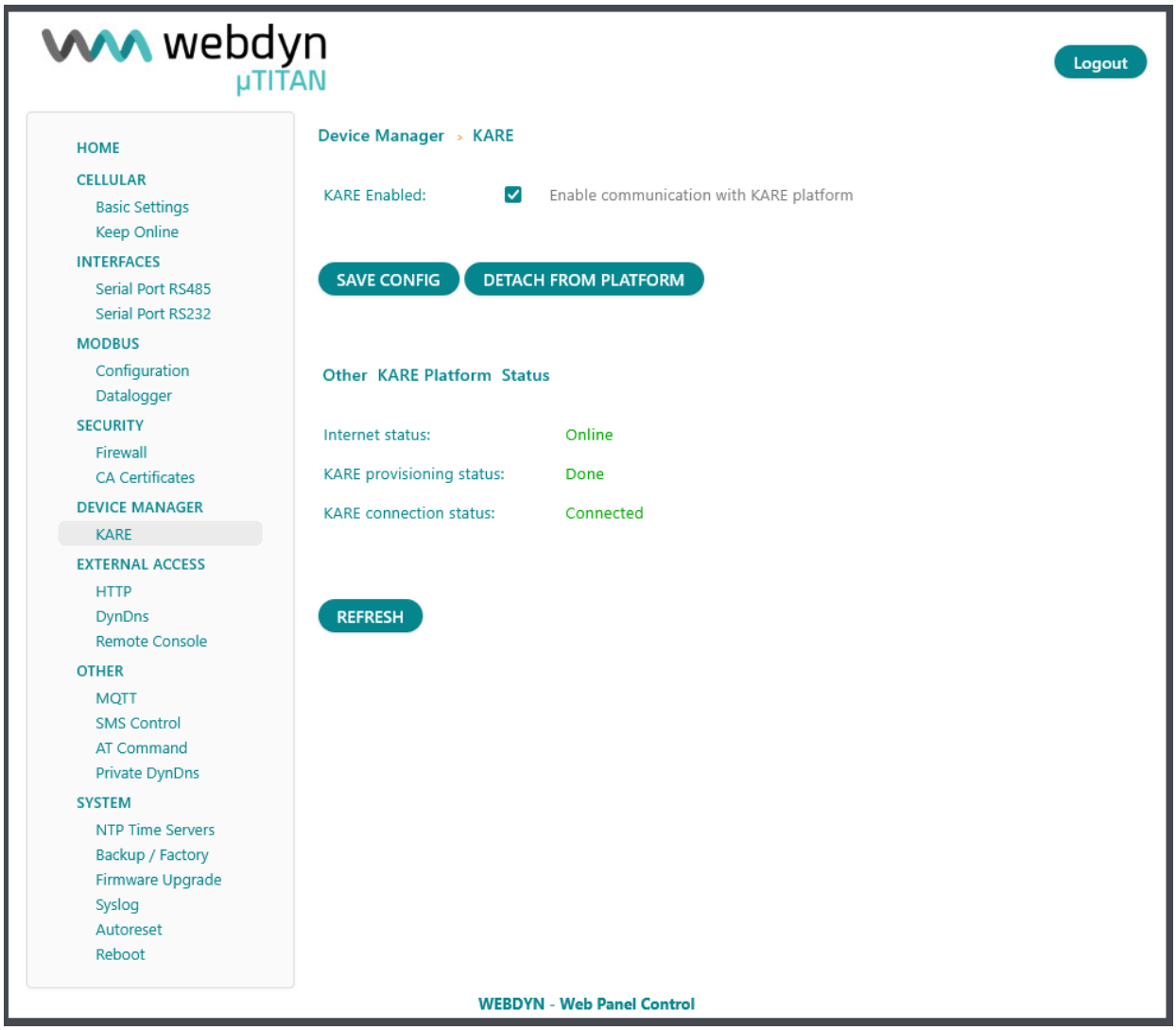
9. KARE

This section provides the option to connect to the KARE platform.



1. **KARE Enabled**: enables communication with the KARE platform.

After ticking the "*KARE Enabled*" checkbox, click "SAVE CONFIG" and reboot the unit; it will start a *provisioning* process with KARE. Once the *provisioning* has completed successfully and the unit is connected to the platform, we will see something like this:



See how, in this case, a new button called “DETACH FROM PLATFORM” appears. If you want to detach and disconnect the unit from the platform, click here and reboot the unit.

Additional Notes.

The KARE platform is a subscription service. For more information, contact our support team.

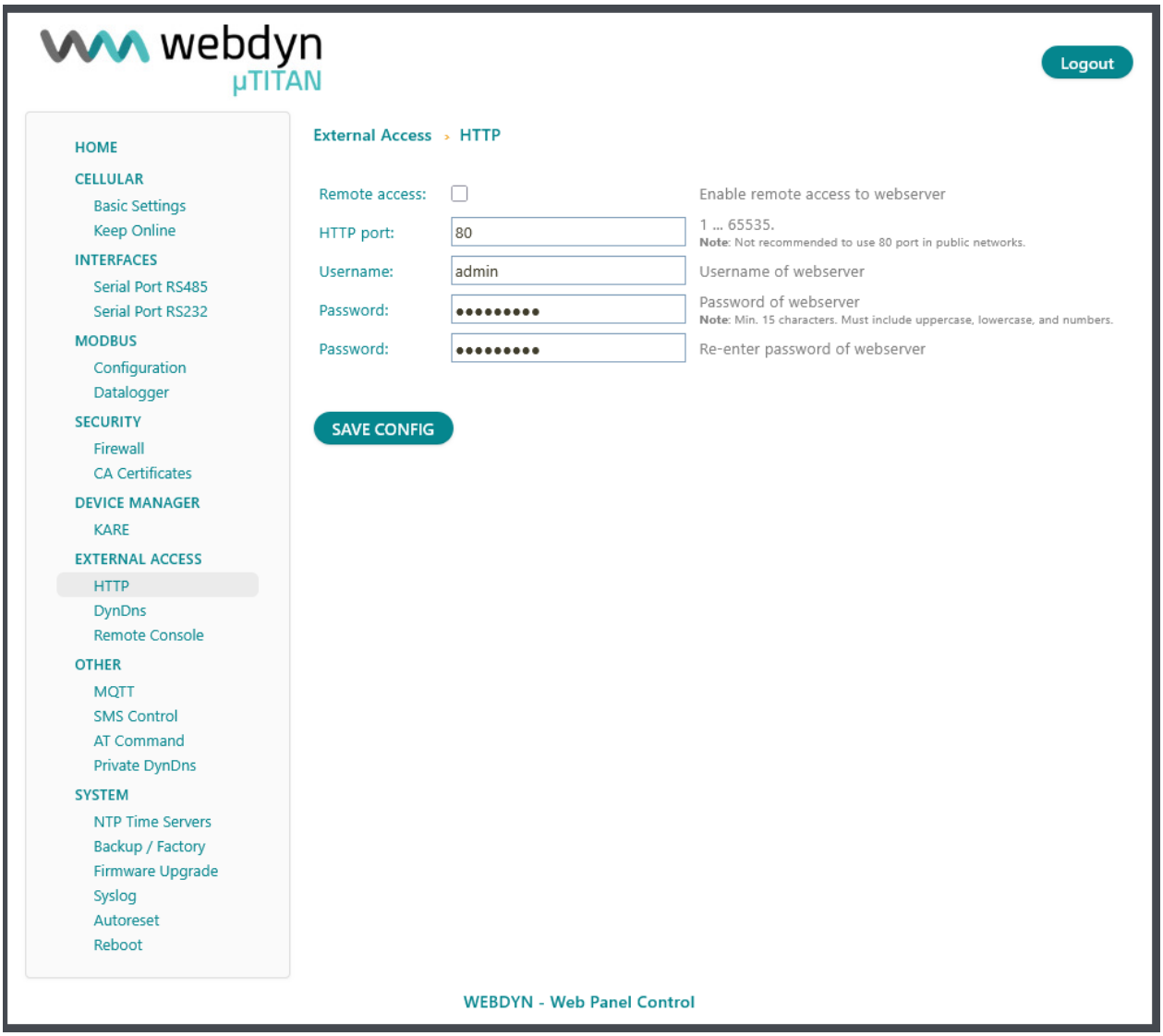
10. External Access

This section details the different methods and configurations for external access to the unit.

10.1. HTTP

HTTP configuration and HTTPS activation for the configuration environment.

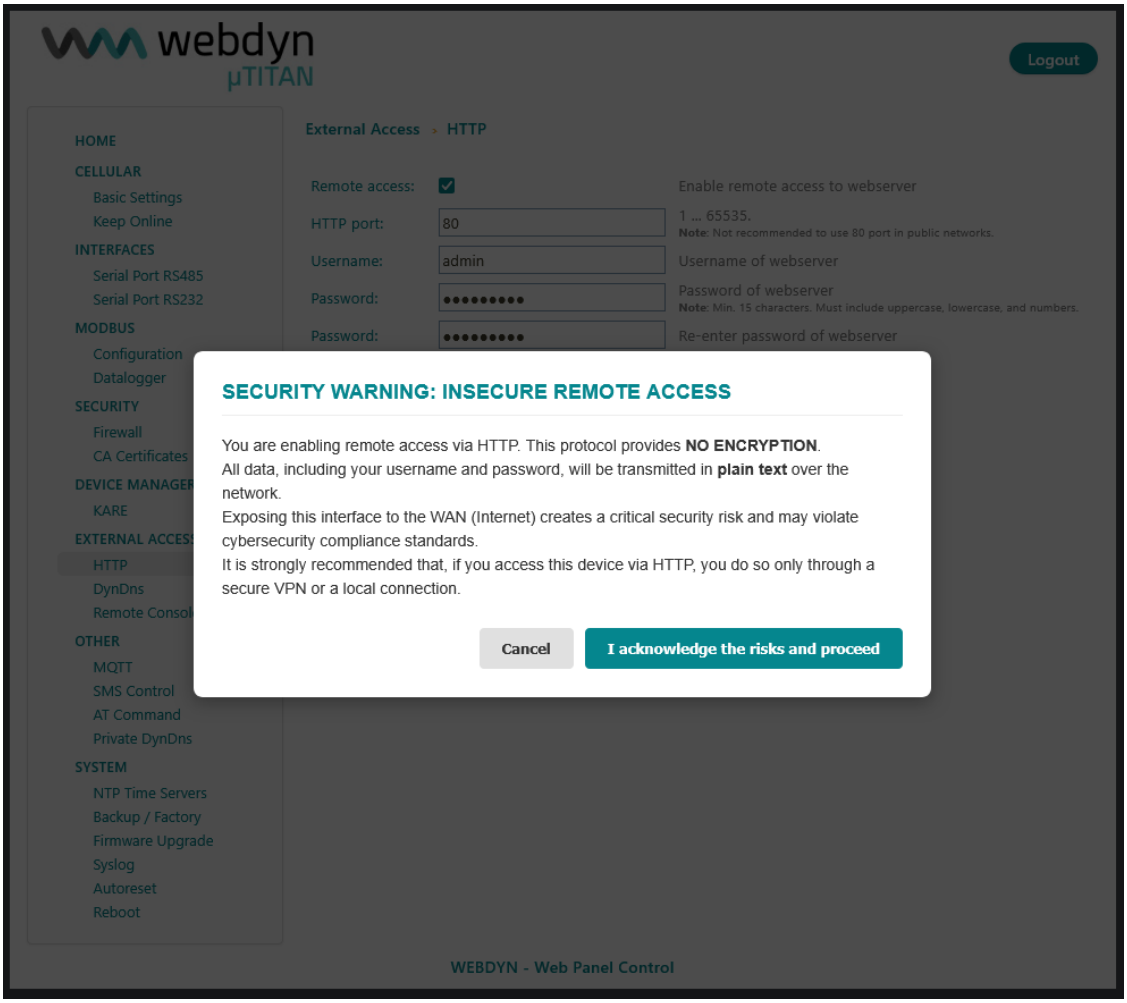
- ***Remote access**:* tick the box if you want to enable remote access to the unit's configuration interface.
- ***HTTP Port**:* indicates the TCP port for remote configuration via HTTP. For example, if you specify 8080, the configuration URL will be http://x.x.x.x:8080. By default, the standard port is 80, but it is recommended to use another port, especially if you are going to use SIM cards with public IPs.
- ***Username***: username to access the web configuration.
- ***Password***: password to access the web configuration.



Additional Notes.

Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

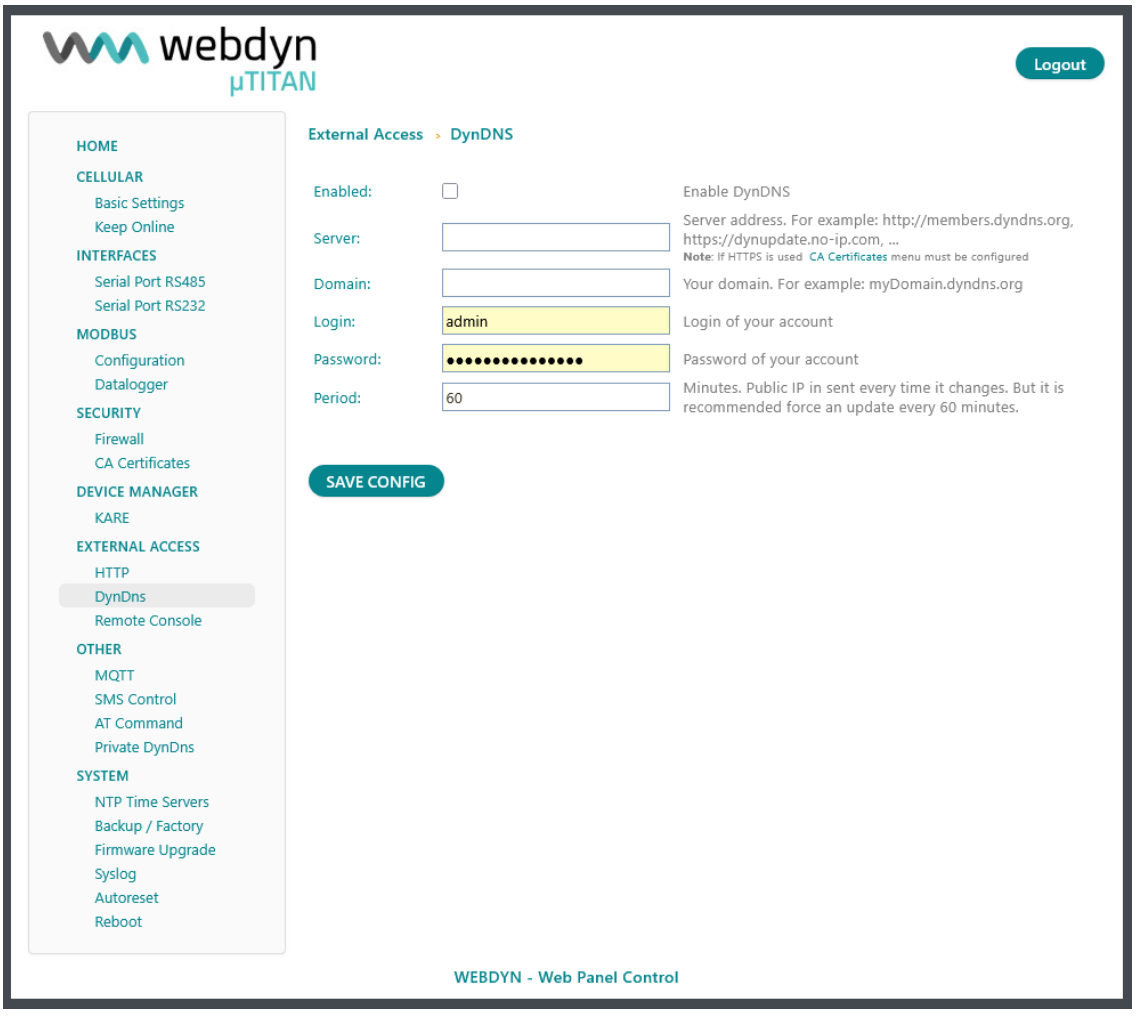
IMPORTANT: please note the risks of enabling remote access via HTTP. All data, including username and password, will be transmitted in plain text over the network. Exposure to the WAN (Internet) creates a critical security risk and may violate security compliance standards. It is strongly recommended that if EasyDot is accessed via HTTP, it be done through a secure VPN or a local connection.



10.2. DynDNS

The Webdyn EasyDot device supports the DynDNS and No-IP services. If you do not have a SIM card with a fixed IP and you are interested in using the external DynDNS or NO-IP services, you can configure them in this section.

- ***Enabled***: check this box to enable the use of DynDNS or NO-IP.
- ***Server***: specify the server for the service (members.dyndns.org or dynupdate.no-ip.com).
- ***Domain***: enter the DNS name you created (for example, mydomain.dyndns.org)
- ***Login***: login for your DynDNS or NO-IP account
- ***Password***: password for your DynDNS or NO-IP account
- ***Period***: period, in minutes, in which the current IP is refreshed on the DynDNS or NO-IP servers



Additional Notes.

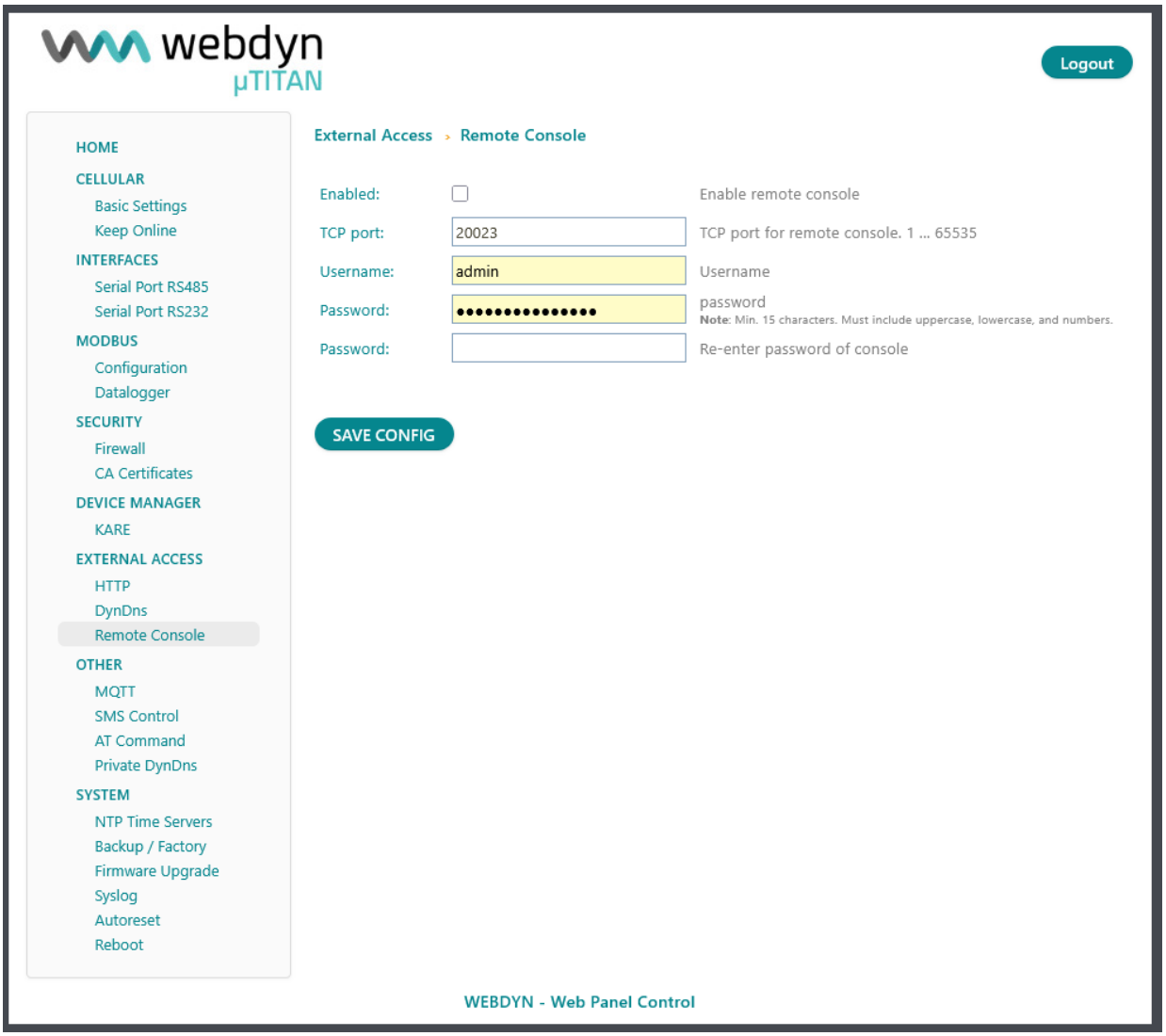
Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

The IP is updated on the DynDNS or NO-IP servers every time it changes. However, we recommend using the 'Period' configuration parameter (for example, set to 60) so that, whatever happens, the IP is sent every hour.

10.3. Remote Console

If at any time you need to perform a special operation on the device using a “Telnet” type connection, you can do so by configuring this section. This special connection makes it possible to send AT commands to the Webdyn EasyDot device. This lets you change the configuration, consult status data, etc. See section 5 of this manual for a list of available AT commands.

- ***Enabled***: check this box if you want to use this connection.
- ***TCP Port***: listening TCP port of the device where the connection must be made.
- ***Username***: username that will be requested after establishing the connection.
- ***Password***: User password (will be requested after entering the username).



Additional Notes.

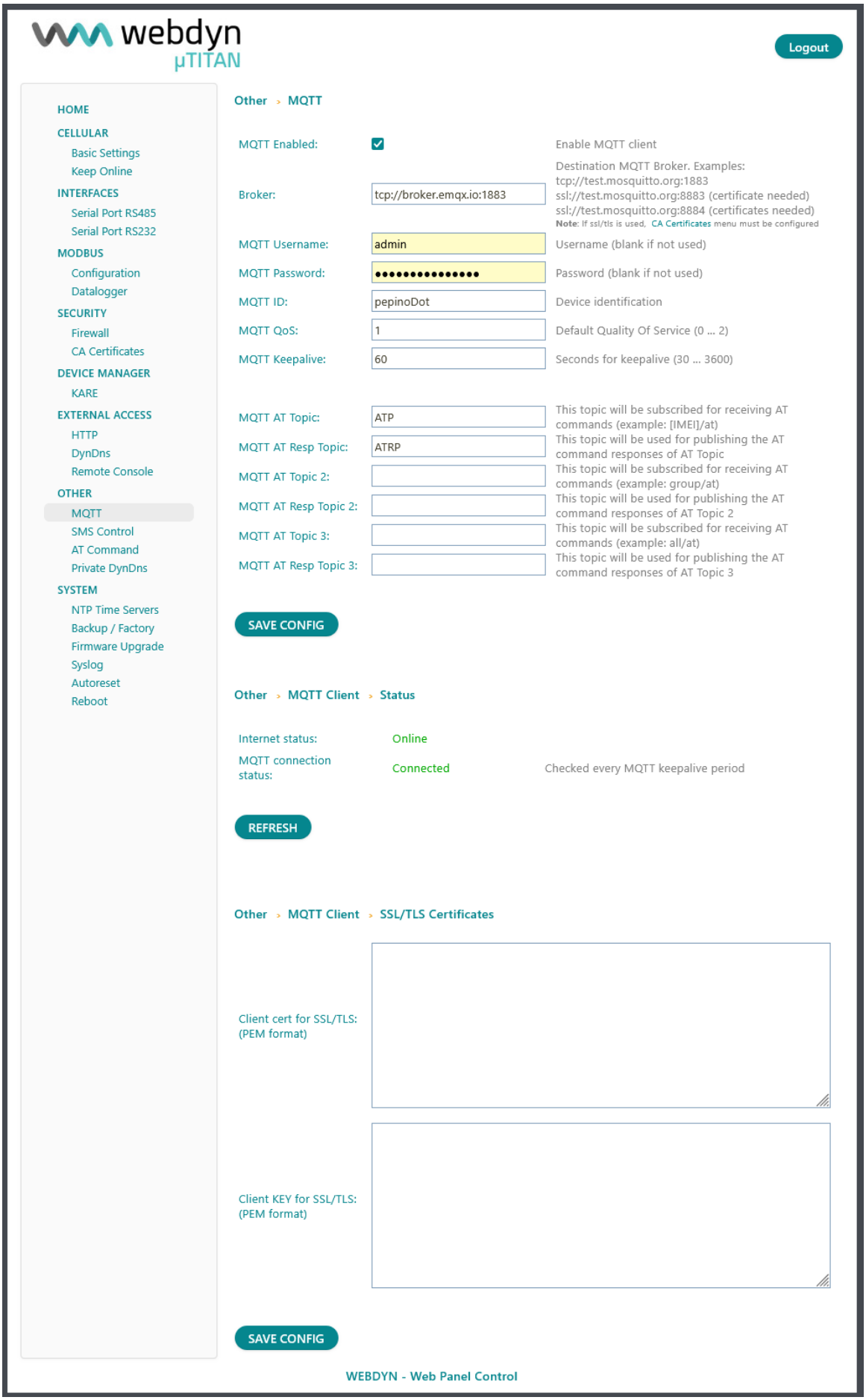
Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

11. Other

11.1. MQTT

The Webdyn EasyDot device can work as an MQTT client by connecting to a broker. A configuration as an MQTT client allows the Webdyn EasyDot to send the data collected in its internal datalogger (from reading Modbus devices) via MQTT. You must properly configure this section if you select sending by MQTT in the LOGGER section.

- ***MQTT Enabled***: select whether to enable the MQTT Client service
- ***Broker***: URL to the MQTT broker.
    - Format for connections **without** SSL/TLS (MQTT): tcp://urlbroker:port.
      Example:
      tcp://test.mosquitto.org:1883
    - Format for connections **with** SSL/TLS (MQTTS): ssl://urlbroker:port.
      Example:
      ssl://test.mosquitto.org:8883 → (CA certificate needed)
      ssl://test.mosquitto.org:8884 → (CA and client certificates needed)
- ***MQTT Username***: MQTT username. Blank if not used
- ***MQTT Password***: MQTT password. Blank if not used
- ***MQTT ID***: device identification field. You can use the [IMEI] tag if you want to use the device IMEI as the MQTT identifier
- ***MQTT QoS***: quality of service (0,1,2)
- ***MQTT KeepAlive***: seconds for *keepalive* (recommended 300)
- ***AT Topic***: first *topic* to which the Webdyn EasyDot will subscribe. The AT commands you send to this MQTT *topic* will be executed on the Webdyn EasyDot. You can use the tag [IMEI] and the tag [MQTT_ID] if you want to use their corresponding values within the “AT Topic” field.
- ***AT Resp Topic***: responses to AT commands received via MQTT by the device on “AT Topic” will be sent to this topic via MQTT.
- ***AT Topic 2***: second *topic* to which the Webdyn EasyDot will subscribe. The AT commands you send to this MQTT *topic* will be executed on the Webdyn EasyDot. You can use the tag [IMEI] and the tag [MQTT_ID] if you want to use their corresponding values within the “AT Topic 2” field.
- ***AT Resp Topic 2***: the responses to AT commands received by the device via MQTT on “AT Topic 2” will be sent to this topic via MQTT.
- ***AT Topic 3***: third *topic* to which the Webdyn EasyDot will subscribe. AT commands you send to this MQTT *topic* will be executed on the Webdyn EasyDot. You can use the tag [IMEI] and the tag [MQTT_ID] if you want to use their corresponding values within the “AT Topic 3” field.
- ***AT Resp Topic 3***: the responses to AT commands received by the device via MQTT on “AT Topic 3” will be sent to this topic via MQTT.
- ***Client Certificate***: if you use MQTTS with client authentication, you must insert the client certificate in PEM format into this field.
- ***Client KEY***: When using MQTTS with client authentication, you will need to enter the KEY of the client certificate in PEM format in this field.


webdyn
µTITAN
Logout
HOME
CELLULAR
Basic Settings
Keep Online
INTERFACES
Serial Port RS485
Serial Port RS232
MODBUS
Configuration
Datalogger
SECURITY
Firewall
CA Certificates
DEVICE MANAGER
KARE
EXTERNAL ACCESS
HTTP
DynDns
Remote Console
OTHER
MQTT
SMS Control
AT Command
Private DynDns
SYSTEM
NTP Time Servers
Backup / Factory
Firmware Upgrade
Syslog
Autoreset
Reboot
Other › MQTT
MQTT Enabled:
Enable MQTT client
Broker:
tcp://broker.emqx.io:1883
Destination MQTT Broker. Examples:
tcp://test.mosquitto.org:1883
ssl://test.mosquitto.org:8883 (certificate needed)
ssl://test.mosquitto.org:8884 (certificates needed)
Note: If ssl/tls is used, CA Certificates menu must be configured
MQTT Username:
admin
Username (blank if not used)
MQTT Password:
Password (blank if not used)
MQTT ID:
pepinoDot
Device identification
MQTT QoS:
1
Default Quality Of Service (0 ... 2)
MQTT Keepalive:
60
Seconds for keepalive (30 ... 3600)
MQTT AT Topic:
ATP
This topic will be subscribed for receiving AT commands (example: [IMEI]/at)
MQTT AT Resp Topic:
ATRP
This topic will be used for publishing the AT command responses of AT Topic
MQTT AT Topic 2:
This topic will be subscribed for receiving AT commands (example: group/at)
MQTT AT Resp Topic 2:
This topic will be used for publishing the AT command responses of AT Topic 2
MQTT AT Topic 3:
This topic will be subscribed for receiving AT commands (example: all/at)
MQTT AT Resp Topic 3:
This topic will be used for publishing the AT command responses of AT Topic 3
SAVE CONFIG
Other › MQTT Client › Status
Internet status:
Online
MQTT connection status:
Connected
Checked every MQTT keepalive period
REFRESH
Other › MQTT Client › SSL/TLS Certificates
Client cert for SSL/TLS: (PEM format)
Client KEY for SSL/TLS: (PEM format)
SAVE CONFIG
WEBDYN - Web Panel Control

Additional Notes.

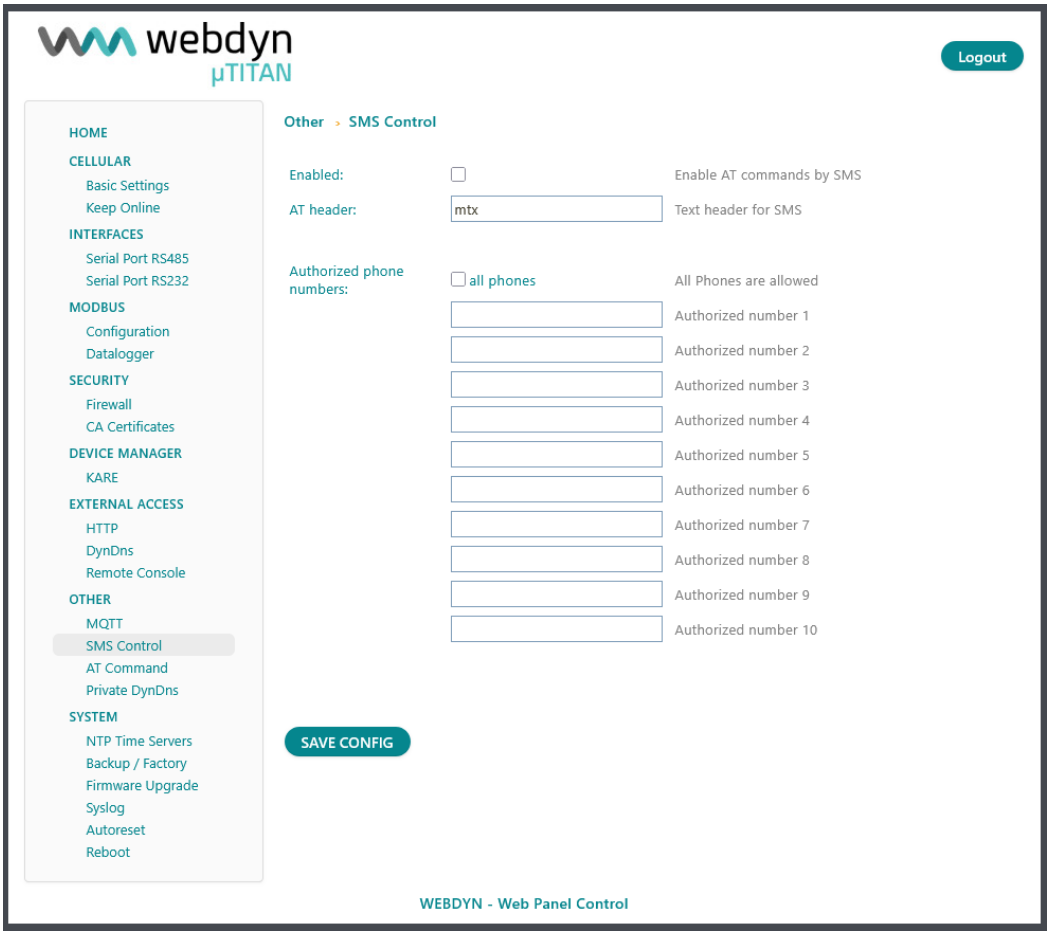
- Once the configuration process is complete, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

- Remember that if you use MQTTS you must include the CA certificate used by the MQTT broker in the “Security → CA Certificates” section.

11.2. SMS Control

This section lets you configure control of the device using SMS messages. For example, you can configure this section to restart the device by sending an SMS message, to get coverage or to get the current IP of the device, among other things. From here, you can also specify the phone numbers authorised for this purpose.

- ***AT enabled**:* check this box if you wish to send AT commands to the device via SMS, e.g. to find out the coverage remotely, to perform a re-set or to change a configuration, etc.
- ***AT header**:* here you can enter the header text for SMS command messages. For example, if you write the text “mtx” in this box, when you send an AT command by SMS to the device, say the command “AT+CSQ” to check the device's signal strength, you would need to send an SMS with the text “mtx AT+CSQ”
- ***All phones**:* check this box if you want all phone numbers to be authorised to send AT commands to the Webdyn EasyDot by SMS. Do not check this box if you want to specify a set of authorised phone numbers to enhance security (recommended).
- ***Authorized Number X**:* in these boxes you can specify up to 10 authorised telephone numbers.



Additional Notes.

Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

11.3. AT Command

In this section, you can send an AT command directly to the device's internal modem. For example, it can be useful for checking coverage, identifying nearby mobile network cells, etc.

It is also possible to configure up to 5 special AT commands through which to configure the device at start-up.

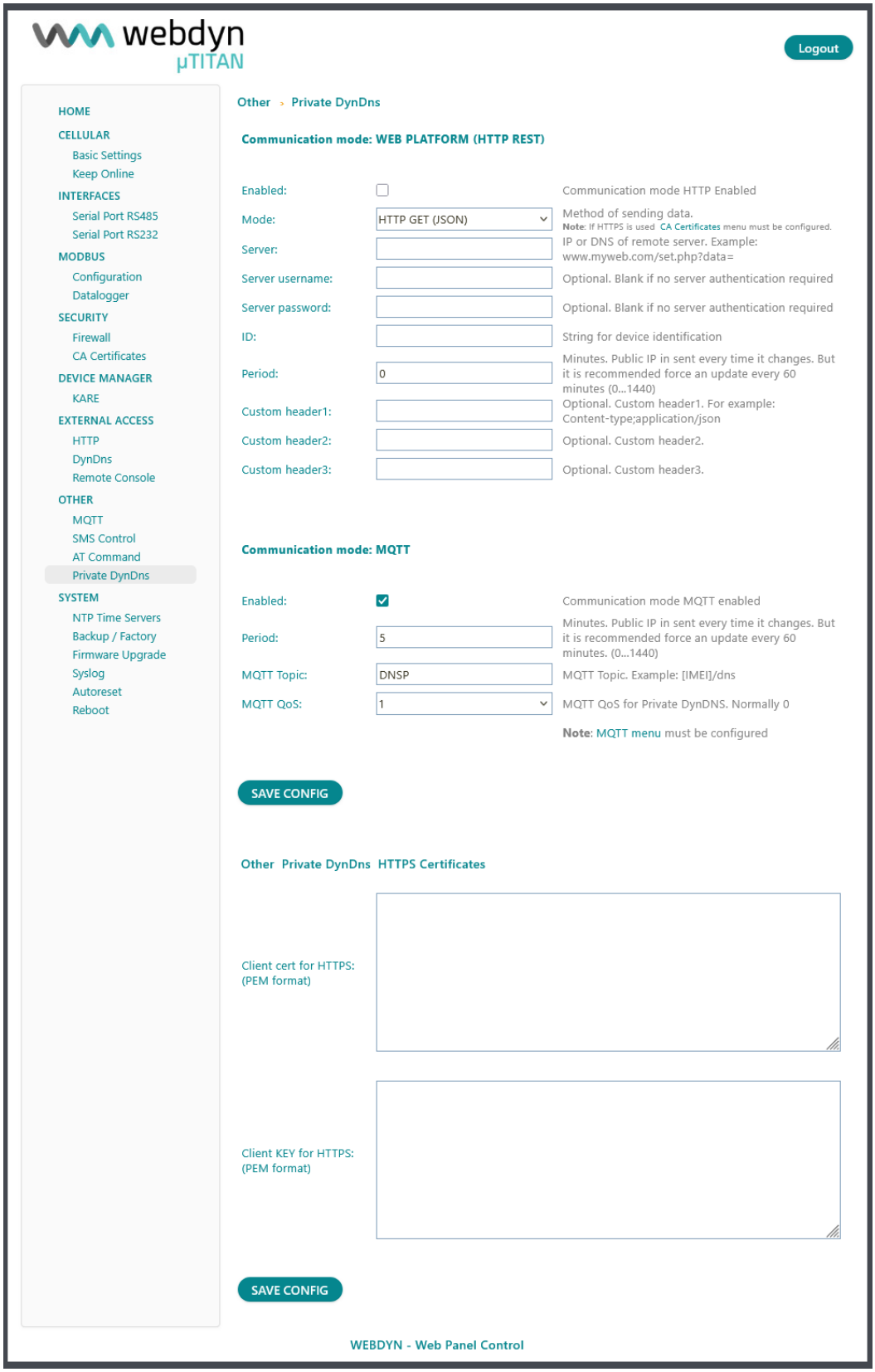
- ***AT Command***: AT command for real-time execution (e.g. AT+CSQ). Once you click on the "SEND AT COMMAND" button, the AT command will be executed.
- ***AT1, … AT5***: AT initialization commands.

Additional Notes.

Once the AT initialisation commands have been created, click on the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect.

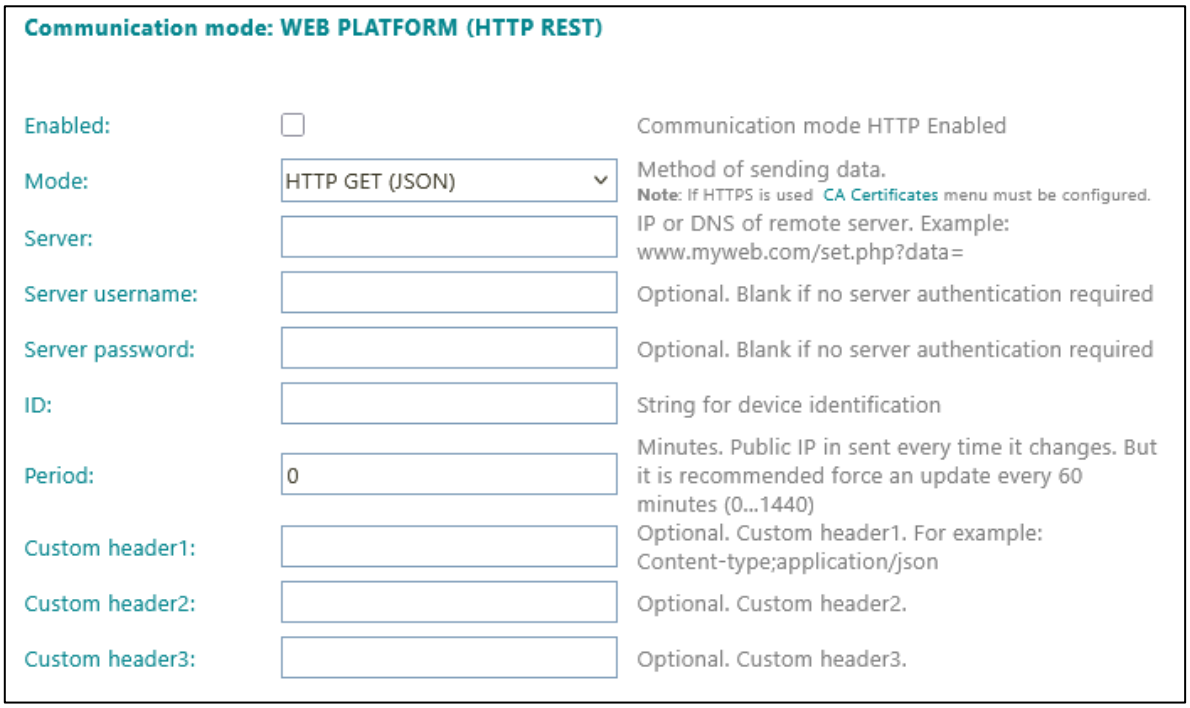
11.4. Private DynDNS

The Private DynDNS service enables the current IP address of the Webdyn EasyDot and certain status values to be sent to your own server. Data can be sent either via HTTP (HTTP/HTTPS GET, HTTP/HTTPS POST) or via MQTT/MQTTS.



11.4.1. HTTP/HTTPS method

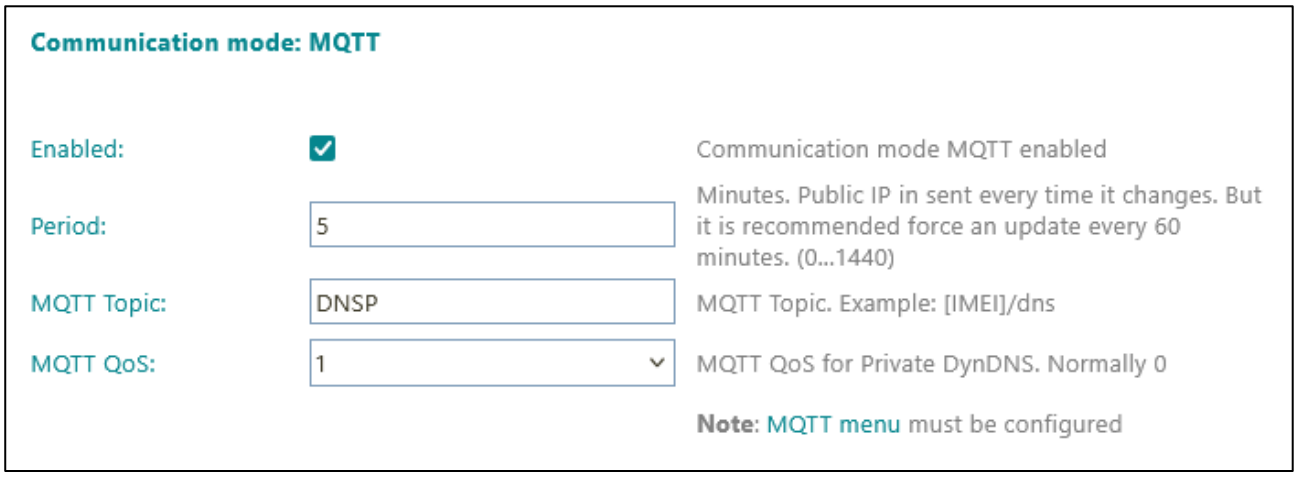
If you want to use the HTTP REST protocol:



- ***Enabled***: tick this box to enable Private DynDNS.
- ***Mode***: you can choose between HTTP/HTTPS GET and HTTP/HTTPS POST.
- ***Server***: the IP or DNS of the remote server.
- ***Server Login***: the login for your web server (if you use the "HTTP" mode).
- ***Server Password***: the password for your web server (if you use the "HTTP" mode).
- ***ID***: ID string (for "HTTP" mode).
- ***Period***: the period, in minutes, in which the current IP is refreshed on your server. Please bear in mind that, regardless of this period, as soon as the Webdyn EasyDot's IP changes, it is sent.
- ***Custom header1***: custom HTTP header 1.
- ***Custom header2***: custom HTTP header 2.
- ***Custom header3***: custom HTTP header 3.

11.4.2. MQTT Method

For MQTT:



- ***Enabled***: check this box to enable MQTT.
- ***Period***: period, in minutes, during which the current IP of the Webdyn Easydot device will be sent to your server via MQTT. Please bear in mind that, regardless of this period, as soon as the IP changes, it is sent.
- ***MQTT Topic***: MQTT *topic* to be used for sending data.
- ***MQTT QoS***: quality of service used by MQTT for sending data.

Additional notes.

Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

Example of the format of the JSON frame sent:

{"IMEI" "866069061410252", "RSRP": -78, "CID": "214;07;0x219b;0x15f2d23", "RSRQ": -15, "P": "", "MOD": "000000000", "IP": "95.125.137.178", "IMSI": "214075536243578", "CSQ": 31, "TECH": "4G", "VER": "1.0.1", "TYPE": "DNS", "TS": "2024-08-08T13:02:06Z", "RSSI": -51}

Where:

TYPE: type of frame. In this case, DNS.

IMEI: device identification number. Unique for each device

P: Logger ID field (External Devices > Logger configuration)

IP: IP of WAN interface (4G / 2G)

CSQ: 0...31 (signal strength)

MOD: Part number of the device

See: FW Version

IMSI: IMSI of the SIM card

TECH: technology used (2G, 4G)

TS: timestamp

CID: identification of telephone cell used

RSSI: signal strength level.

RSRP: 4G RSRP

RSRQ: 4G RSRQ

11.4.3. HTTPS Certificates

If you use HTTPS and want to authenticate the client (EasyDot), both boxes must be filled with the corresponding client certificate and key (in PEM format):

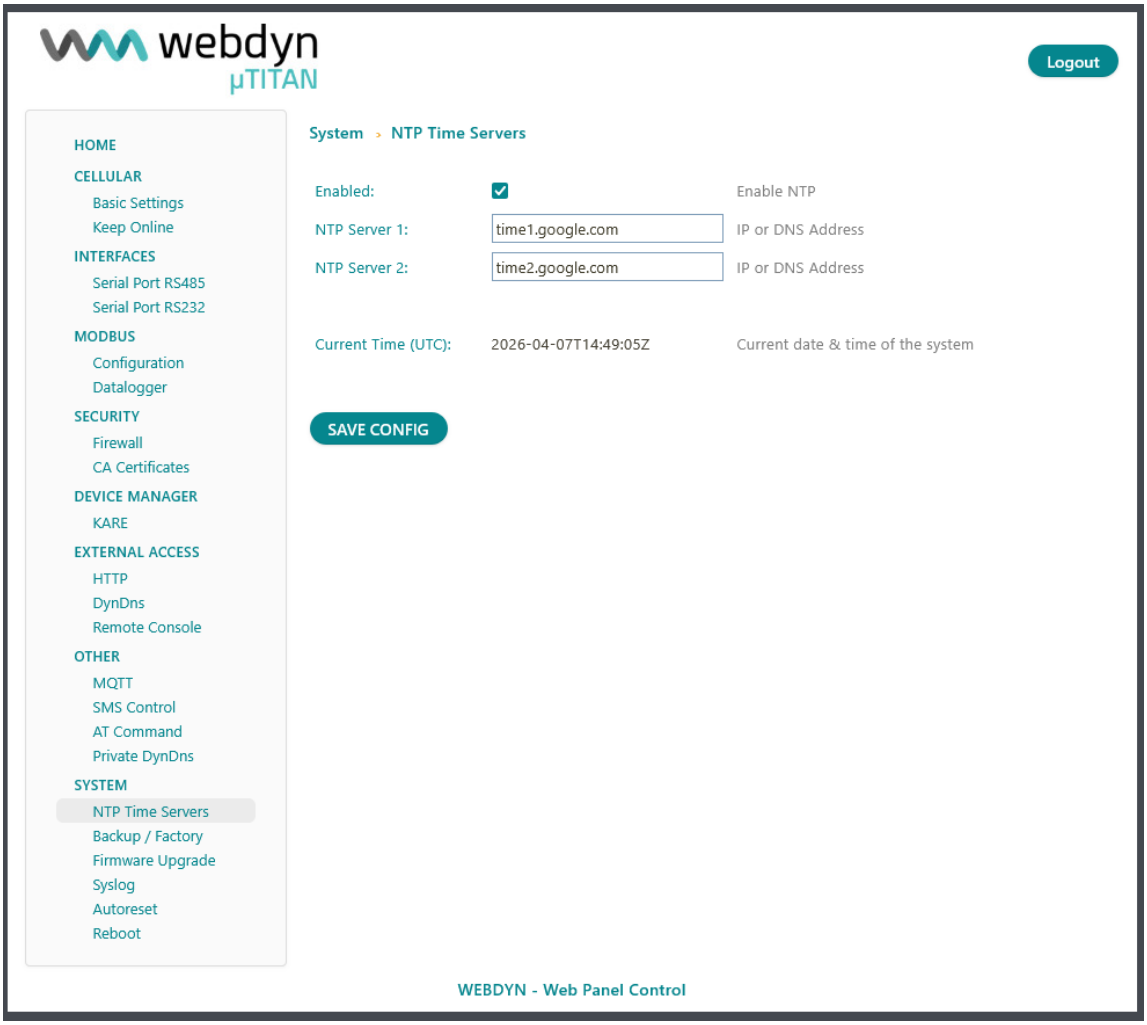
- ***Client cert for HTTPS***: client certificate in PEM format for HTTPS connections. Enter your digital certificate here if required by your server.
- ***Client KEY for HTTPS***: *key* of the client certificate in PEM format for HTTPS connections. Enter your digital certificate *key* here if required by your server.

12. System

12.1 NTP Time Servers

The modem has a built-in, real-time clock that enables it to keep the time even if power is lost for several hours. This built-in clock must be synchronised periodically with time servers via the NTP protocol.

- Enabled: check this box if you want to use NTP time servers.
- ***NTP Server 1***: IP address or DNS name of NTP Server 1.
- ***NTP Server 2***: IP address or DNS name of NTP Server 2.



Additional notes.

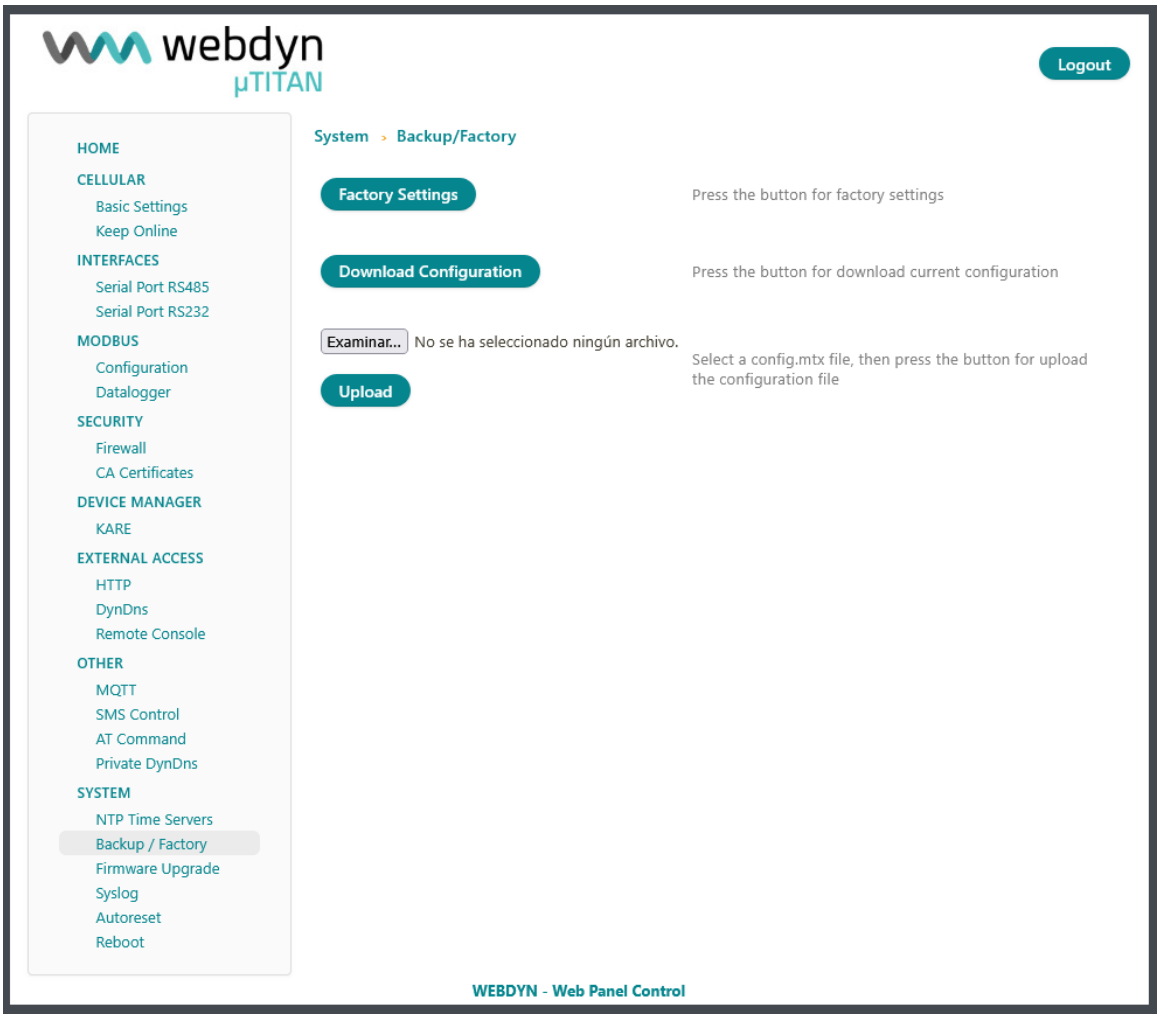
At start-up, the modem will attempt to synchronise the time with the network of the telephone operator, provided that the network offers this functionality. However, it is strongly recommended to use NTP, as it is a significantly more accurate and more secure method of ensuring that the correct time is obtained.

Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

12.1. Backup / Factory

You can make a full backup of the device configuration in this menu. You can save the configuration to a file and restore it to the device when needed (or to a different EasyDot). You can also restore the device to factory settings.

- ***Button "Factory Settings"***: press this button to restore the device to factory settings.
- ***Button 'Download Configuration'***: press the button to download the device configuration into a file named 'config.mtx'.
- ***Button 'Select file'***: to restore a saved configuration, after choosing the configuration file to use, press the '**Upload**' button to upload the file.



Additional notes.

- It is also possible to reset to factory settings by pressing a physical button. To reset to factory settings using this button:
  (1) Disconnect the device from the power supply.
  (2) Hold down the button with a paperclip.
  (3) Connect the device to the power supply.
  (4) Wait about 10 seconds (until the yellow and blue LEDs blink).
  (5) You can release the button. The device will reboot automatically and start up with factory settings.

12.3 Firmware Upgrade

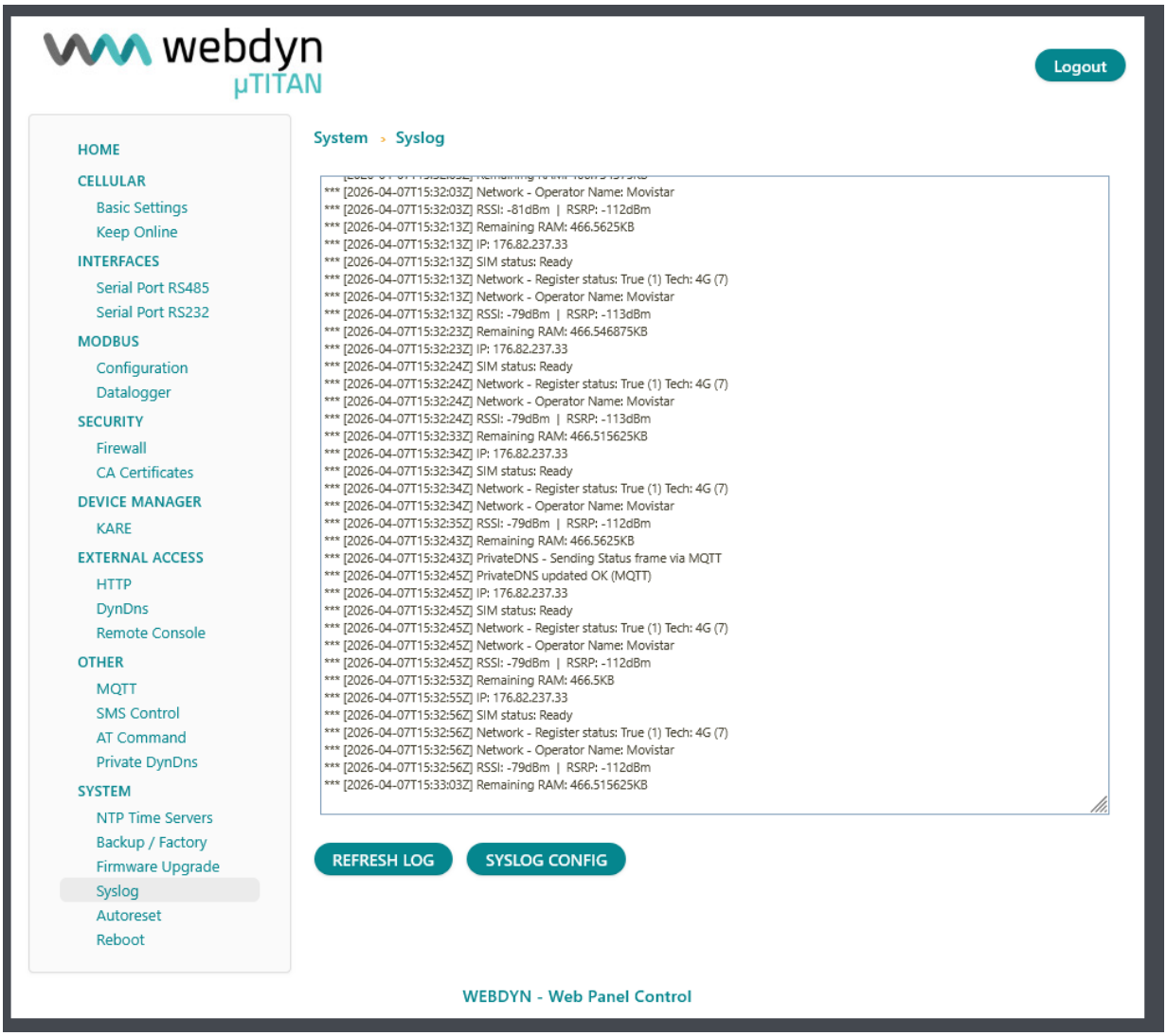
From this section you can update the device firmware via OTAP.

To use this option, the device must have a SIM with Internet access, as the firmware will be downloaded from Webdyn's servers. To carry out the OTAP process, click on the "Check for updates" button. After a few seconds, if there are firmware updates available for your device, they will appear in the drop-down list. Select the firmware version you wish to install and click on the "Download and Install" button to start the process.

Remember that any firmware change process on any device carries risks. It is highly recommended that you verify that the scenario you have configured on the Webdyn EasyDot works correctly in the lab with the firmware version you intend to install before proceeding with mass firmware upgrades of remotely located devices.

12.4 Syslog

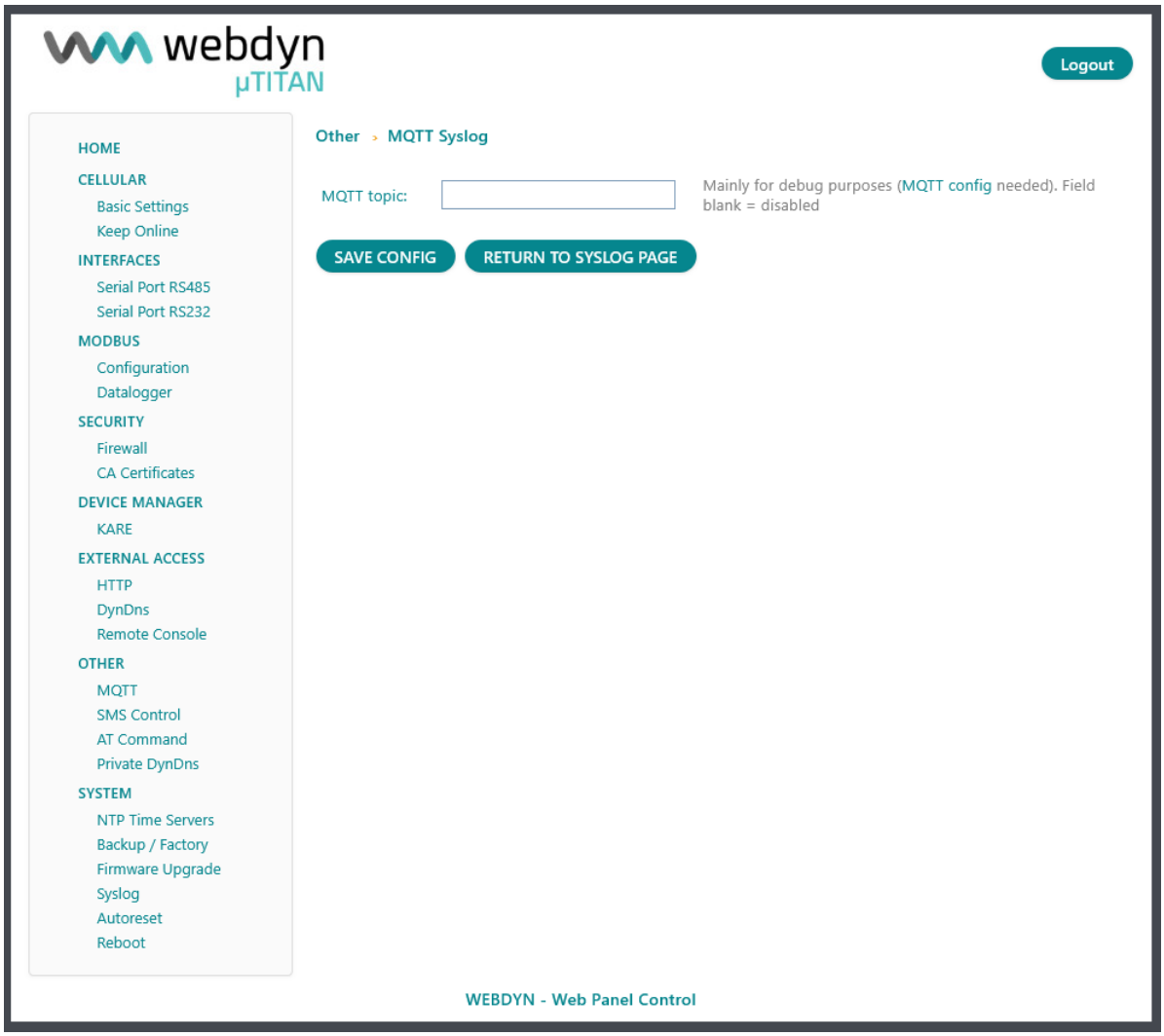
In this section, you can access an internal log of the device, where you will be able to see the status of the device itself (coverage, network registration, operator, result of sending data to servers, etc.). It also has a button to configure the syslog to send it via MQTT if necessary.



Additional notes.

- Press the “REFRESH LOG” button for the latest status of the log.

To enable sending syslog via MQTT, click the "Syslog configuration" button. A page will open where you must specify the sending TOPIC in the "MQTT topic" field. To disable it, simply leave the box blank. If you enable it, you must also enable the MQTT service from the configuration menu "Other → MQTT"


webdyn
µTITAN
Logout
HOME
CELLULAR
Basic Settings
Keep Online
INTERFACES
Serial Port RS485
Serial Port RS232
MODBUS
Configuration
Datalogger
SECURITY
Firewall
CA Certificates
DEVICE MANAGER
KARE
EXTERNAL ACCESS
HTTP
DynDns
Remote Console
OTHER
MQTT
SMS Control
AT Command
Private DynDns
SYSTEM
NTP Time Servers
Backup / Factory
Firmware Upgrade
Syslog
Autoreset
Reboot
Other › MQTT Syslog
MQTT topic:
Mainly for debug purposes (MQTT config needed). Field blank = disabled
SAVE CONFIG
RETURN TO SYSLOG PAGE
WEBDYN - Web Panel Control

12.5 Autoreset

In this section you can configure a scheduled autoreset for the Webdyn EasyDot device.

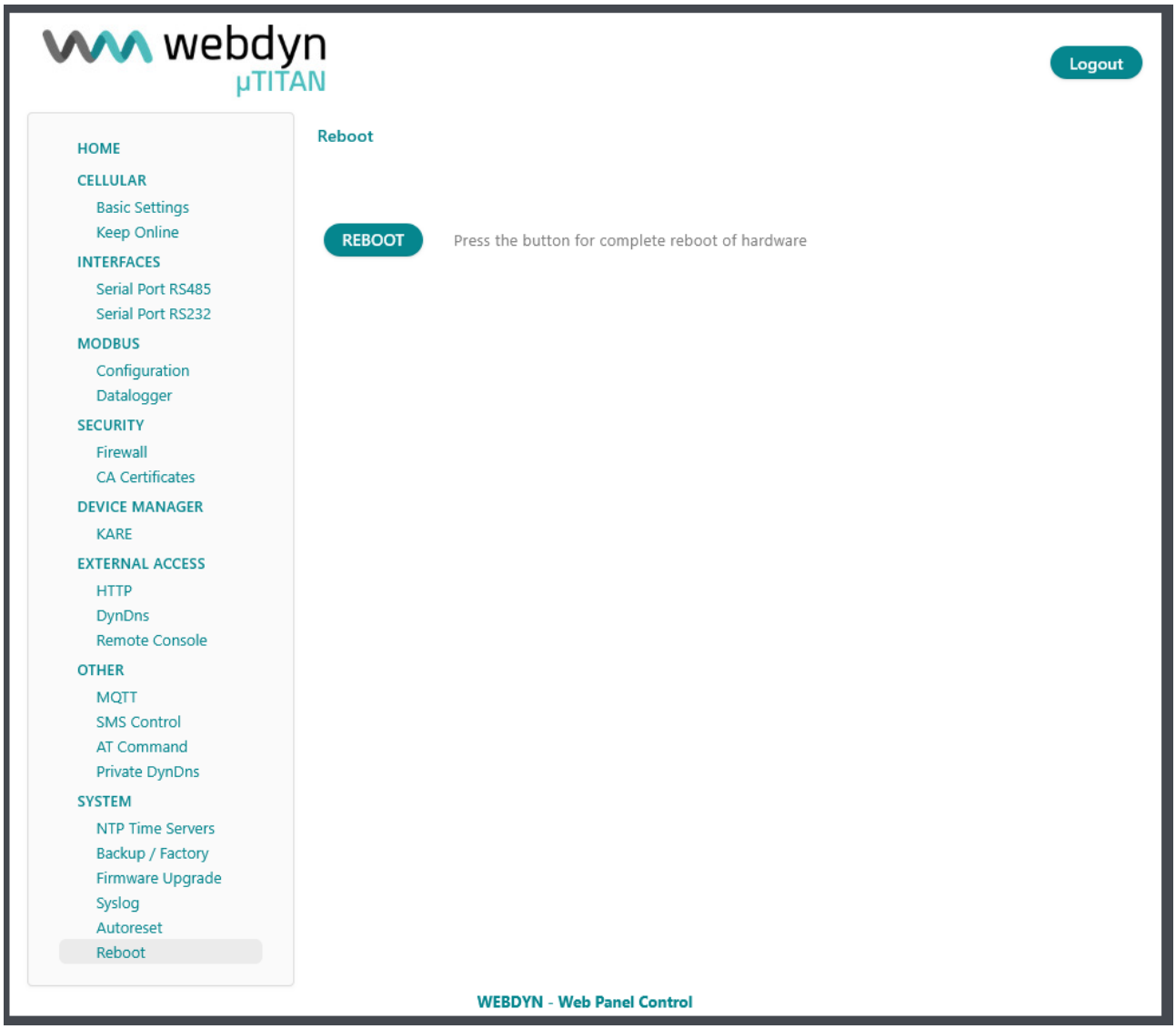
- ***Disabled***: select this option if you do not want the Webdyn EasyDot to reboot periodically.
- ***Timer autoreset***: select this option if you want the device to reboot every set number of hours.
    - ***Number of hours***: if you select autoreset every X hours (Timer autoreset enabled), you must specify in this box the number of hours after which the reset takes place. Specify 24 to generate a daily reset.
- ***Hour autoreset***: select this option if you want the device to reboot at a specific time of day.
    - ***Selected hour***: specific hour for the daily reboot.
- ***IP reset enabled***: highly recommended option for situations where context is lost. For example, it allows you to specify the number of minutes after which the device must reboot if it cannot obtain an IP address.
    - ***Time for reset***: if the "IP reset enabled" checkbox is selected, it allows you to set the number of minutes without obtaining an IP address before autoreset.

Additional notes.

- Once the configuration process is finished, click on the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect.

12.6 Reboot

In this section, you can reboot the device. For example, to apply the changes after a configuration change. To do so, simply press the “**Reboot**” button.



AT commands

Webdyn EasyDot devices allow sending AT commands directly to the internal modem via multiple interfaces:

- 1.- Via a serial port.
- 2.- Via a 4G/2G serial gateway using embedded AT commands.
- 3.- By SMS
- 4.- Via Telnet (Remote Console, via 4G/2G)
- 5.- Through Webserver (over 4G/2G or locally)

Therefore, at your own risk, you may send the following AT commands to the device.

General commands

AT^MTXTUNNEL=REBOOT	
Action	Resets the device.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL=REBOOT OK

AT^MTXTUNNEL=VERSION	
Action	Returns the device firmware version.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL=VERSION 1.6.0 OK

AT^MTXTUNNEL=GETIP	
Action	Returns the WAN IP address (2G / 4G).
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL=GETIP 88.28.221.14 OK

AT^MTXTUNNEL=GETIMEI	
Action	Returns the IMEI of the internal modem.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL=GETIMEI 869101054255506 OK

Messaging-related commands

AT^MTXTUNNEL=SMS,<telephoneNumber>,<message>	
Action	Allows you to send an SMS message to a specific phone number.
Parameters	<telephoneNumber> Phone number to send the SMS to. <message> Text message to send.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL= SMS,+34677123456,burglar alarm OK

Commands related to MODBUS

AT^MTXTUNNEL=GETMODBUS,<modbusAddress>;<addressFirstRegister>;<numWords>;<command>	
Action	Returns the value of one or more Modbus registers for a particular device. Note: parameters related to MODBUS are separated by ';' and not by ','.
Parameters	<modbusAddress> Modbus device address (1..255) or IP@address:port. <addressFirstRegister> Address of the first register to read (0..65535). <numWords> Number of Modbus registers to read (1..64). <command> Modbus read command (e.g. 3).
Result	✓ **OK:** Command executed correctly.

	✗ **ERROR:** Command executed with an error.

Example(s)	**Read 3 registers via TCP:**
	`AT^MTXTUNNEL=GETMODBUS,192.168.1.200:502;1;1;3;3`
	`20,21,22`
	`OK`

AT^MTXTUNNEL=SETMODBUS,<modbusAddress>;<addressFirstRegister>;<command>;<values>	
Action	Writes the value of one or more Modbus registers on a device. Parameters are separated by ';'.
Parameters	`<modbusAddress>` RTU address (1..255) or IP@rtu:port for TCP. `<addressFirstRegister>` Address of the first register to write to. `<command>` Modbus write command (5, 6, 15, 16). `<values>` Value(s) to write, separated by ";".
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.

Example(s)	**Write to the Modbus TCP device at IP address 192.168.1.202 using RTU address @1 and TCP port 502, starting at register 3 and using Modbus write command 16 with values 10,11,12,13,14 and 15:**
	`AT^MTXTUNNEL=SETMODBUS,192.168.1.202@1:502;3;16;10;11;12;13;14;15`
	`OK`
	
	Write to the Modbus RTU device at address 1, at register 3 and using Modbus write command 6, with value 10:
	`AT^MTXTUNNEL=SETMODBUS,1;3;6;10`
	`OK`
	
	Write to Modbus RTU device at address 1, to coil 18 using Modbus write command 5, value 1:
	`AT^MTXTUNNEL=SETMODBUS,1;18;5;1`
	`OK`
	
	Write to Modbus RTU device at address 1, starting at coil 25 and using Modbus write command 15, the coil values 1,0,1,0 and 1:
	`AT^MTXTUNNEL=SETMODBUS,1;25;15;1;0;1;0;1`
	`OK`

Commands related to system time

AT^MTXTUNNEL=GETTIME	
Action	Returns the current system time in the format YYYY-MM-DDTHH:NN:SSZ (UTC).
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL= GETTIME 2026-04-08T11:17:39Z OK

AT^MTXTUNNEL=SETTIME,<dateAndHour>	
Action	Sets the current system time.
Parameters	<dateAndHour> Date and time in UTC format: YYYY-MM-DDTHH:NN:SSZ.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL= SETTIME,2026-04-08T14:42:23Z OK

Commands related to device configuration

AT^MTXTUNNEL=GETPARAM,<paramName>	
Action	Allows you to read the value of any device configuration parameter. To find out the parameter names, contact soporte@matrix.es.
Parameters	<paramName> Name of the configuration parameter to read.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	AT^MTXTUNNEL= GETPARAM,WAN_APN movistar.es OK

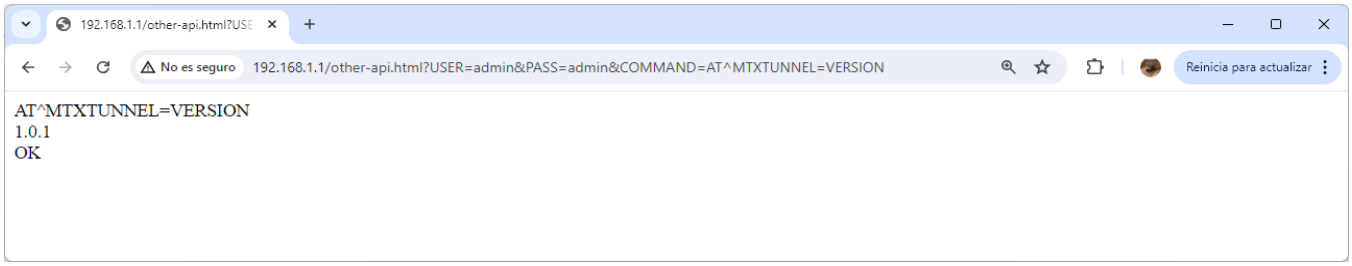
AT^MTXTUNNEL=SETPARAM,<paramName>,<paramValue>

Action	Allows you to change the value of any device configuration parameter. To find out the parameter names, contact soporte@matrix.es.
Parameters	`<paramName>` Name of the configuration parameter to modify. `<paramValue>` New value of the configuration parameter.
Result	✓ **OK:** Command executed correctly. ✗ **ERROR:** Command executed with an error.
Example(s)	`AT^MTXTUNNEL= GETPARAM,WAN_APN,movistar.es` `OK`

For the rest of the standard commands, please refer to the AT commands manual for the internal GSM module for information on the exact format and functionality of each command. If you do not have this documentation, please send an email to soporte@matrix.es

In addition to sending AT commands via SMS, Telnet, etc., it is possible to send AT commands via HTTP GET, both locally and remotely. For example, to execute a command to read the device firmware version, make a call like this:

http://192.168.1.1/other-api.html?USER=admin&PASS=admin&COMMAND=AT^MTXTUNNEL=VERSION



Firmware versions

v1.1.0	- Initial release.
v1.2.0	- MQTT: fixed a bug that caused the [IMEI] tag not to be substituted correctly within the topics of DNS frames and the logger when using MQTT.
v1.3.0	- MQTT: fixed a bug in reconnection when the device was roaming.
v1.4.0	- MQTT: the MQTT ID is now shown in the syslog when connecting to the broker. - MQTT: fixed bug with the substitution of [IMEI] in MQTT_ID. - Modbus: fixed bug with the "signed" type in the web "Test". - Modbus: new optional parameter "signed" in the AT GETMODBUS command. - Modbus: increased MAX_QUANTITY to 64. - Logger: increased LOGGER_REGISTERSIZE to 896. - Web (Backup): fixed bug that prevented displaying the error when loading an invalid configuration.
v1.5.0	- Technical interim version available only via OTAP due to the large size of the aesthetic change introduced in v1.6.0.
v1.6.0	- New uTitan look: complete redesign of the web interface (new styles, all pages updated, popup notifications centred at the top, new headers, etc.). - KARE: complete integration with the KARE platform. - New AT command: AT^MTXTUNNEL=GETPARAMS. - Cybersecurity: minimum password length set to 15 characters; added warning popup when enabling remote HTTP access. - Added general security improvements and fixes. - Cellular: SIM hot swap added. - Cellular: added general fixes and improvements when obtaining the PDP context. - Watchdog: time increased to 180 s to support heavier OTAPs.

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