webdyn

flexitron group

MTX-StarEnergy-M

Software User Manual

Index

General Notes 4

Important Information 4

Introduction 5

Software 6

1. Configuration Step by Step 6

1.1 Minimum Requirements 6

1.2 USB driver installation 6

2. Configuration 9

2.1 WAN 9

2.1.1 WAN: Status 9

2.1.2 WAN: Basic Settings 10

2.1.3 WAN: Keep Online 11

2.2 LAN 13

2.2.1 LAN: Basic Settings 13

2.3 Firewall 14

2.3.1 Firewall: Authorized IPs 14

2.4 Serial Settings: Serial portX 15

2.5 Other 17

2.5.1 Other: AT Command 17

2.5.2 Other: SMS Control 18

2.5.3 Other: Periodic Autoreset 20

2.5.4 Other: Time Server (NTP) 21

2.5.5 Other: Remote Console (TCP Server) 21

2.5.6 Other: Passwords 23

2.5.7 Other: User Permissions 24

2.5.8 Other: Backup/Factory 24

2.5.9 Other: SNMP 26

2.5.10 Other: HTTPS 28

2.5.11 Other: Tacacs+ 29

2.5.12 Other: Firmware Upgrade 30

3. AT Commands 30
ANNEX 1: Connection Quick Guide 32
1. Connectors/indicators 32
2. Start Up 33
3. Accesories 34
ANNEX 2: Configuration Examples 35
1. Example Scenario: Configuration to access an IEC60870-5-102 electric meter through IP connection and GSM data call (CSD). 35
Sales Contact 42

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 products are provided on an "as is" basis only and may contain deficiencies or inadequacies. The documentation and/or products are provided without warranty of any kind, express or implied. To the maximum extent permitted by applicable law, Matrix Electronica 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 the 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. Matrix Electronica 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 Matrix Electronica 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. It is 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 MTX-Tunnel application. Read it carefully before you start working with MTX Terminal Java enabled & MTX-TUNNEL. 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.

Introduction

The MTX-StarEnergy-M modem/router is a device belonging to the Titan router family. It has been specially designed to be used in remote reading scenarios for energy meters.

We support all users of our MTX modems and routers when they need it with free, fast-response and efficient technical support. So if after reading this manual you have any doubts, be sure to write to us at the email address iotsupport@mtxm2m.com. If you need a feature not included in our routers, or if you need a special customization, let us know and we will study it.

Software

1. Configuration Step by Step

The configuration of the MTX-StarEnergy-M is done through a web environment.

The MTX-StarEnergy-M uses its USB port to create a network connection through which it has access to said web configuration environment.

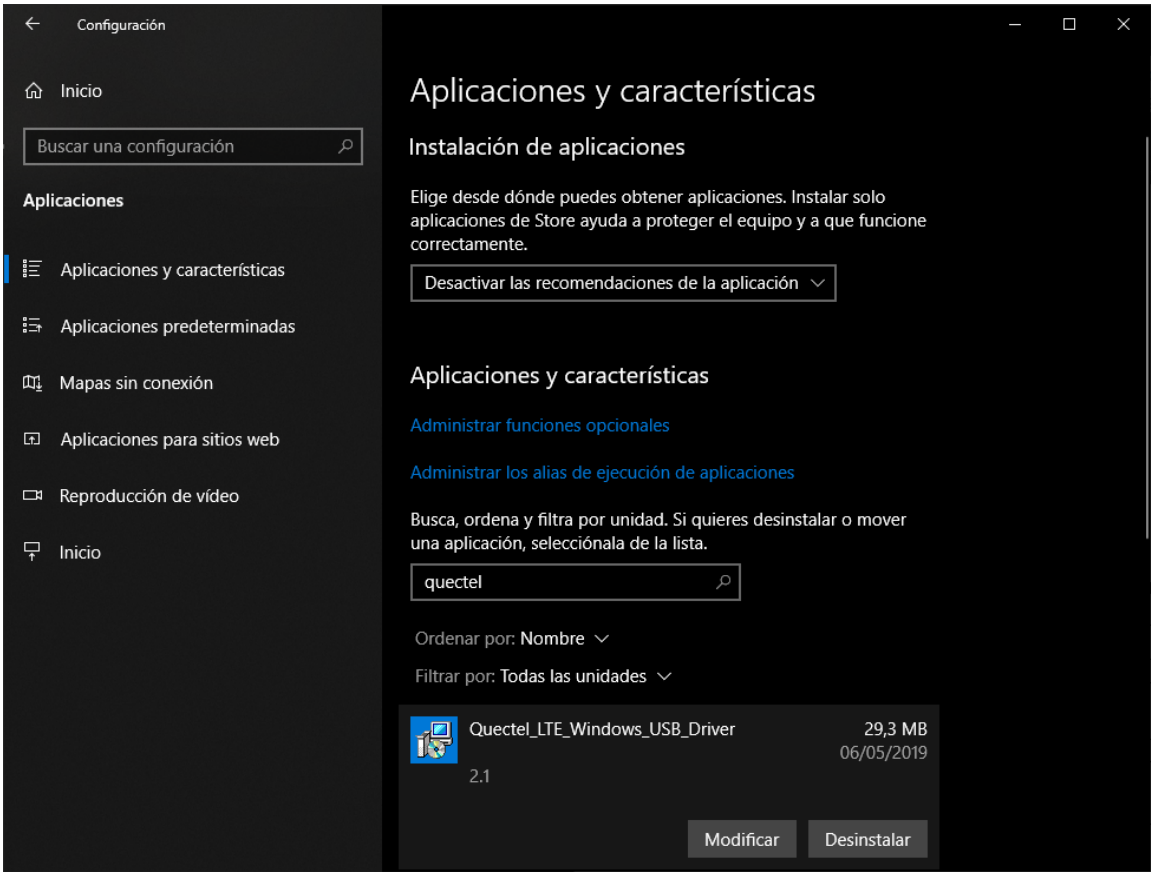
1.1 Minimum Requirements

- A PC with Windows 10 and with a web browser (Chrome, IExplorer, Firefox...) and a USB port
- A USB cable to interconnect the PC with the MTX-StarEnergy-M

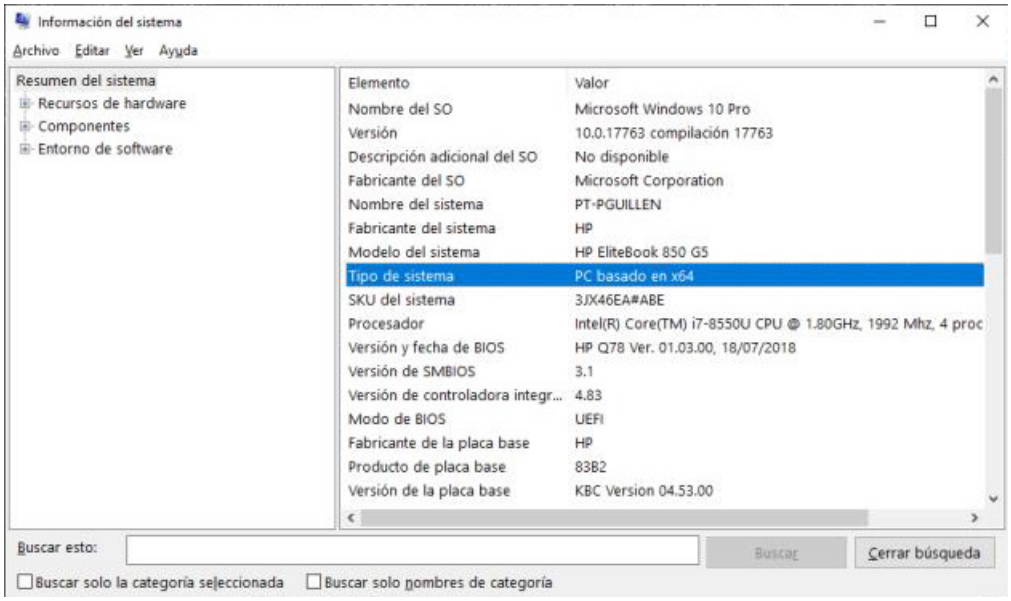
1.2 USB driver installation

If you don't have the drivers installed on your computer this is the first thing to do. The steps to install the driver are as follows:

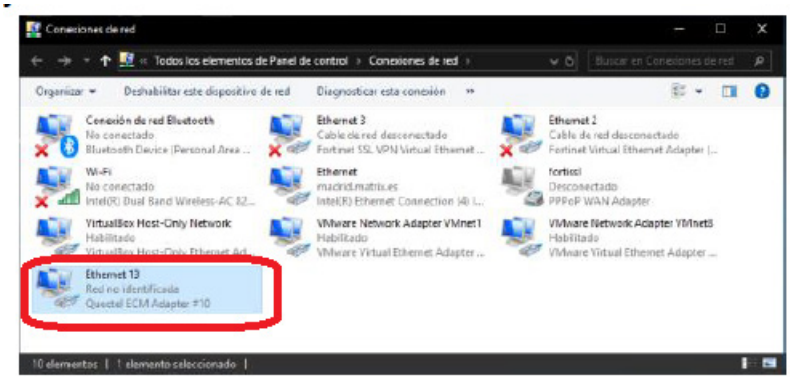
- Unzip file "1_Quectel_LTE_Windows_USB_Driver_V2.1.5.zip" and run the program "setup.exe"



- Check if you are using a 32-bit or 64-bit system. To do this, go to Windows start menu and type directly “System Information”, and a window like the following will appear



- Unzip the file “2_quectel_ecm_drivers_v1.02.0505.zip”. Run ecm_driver_setup.exe for 64 or 32 bits depending on your system and select option “1” and press “ENTER”
- Insert a SIM into the MTX-StarEnergy-M and connect the antenna. After that, power the device and then connect it to your PC through a USB cable
- Go to the “Network Connections” menu (to do this, in the Windows Start menu directly type “View network connections”) and check that a network connection named Quectel ECM has been created as shown below



- In the connection properties of said interface, configure a network address with an IP 192.168.1.X, where X is different from 2 (since 192.168.1.2 is the IP address that the MTX-StarEnergy-M has by default)

- Open a browser and access the MTX-StarEnergy-M configuration web interface at http://192.168.1.2. The default user is “admin” and the password is “admin”

In Annex II of this manual you will find a step-by-step example of how to configure the MTX-StarEnergy-M for remote access to an Energy meter through IP communications and CSD calls. We recommend reading it.

If you need it, in the following sections you will find detailed information on each of the configuration sections.

2. Configuration

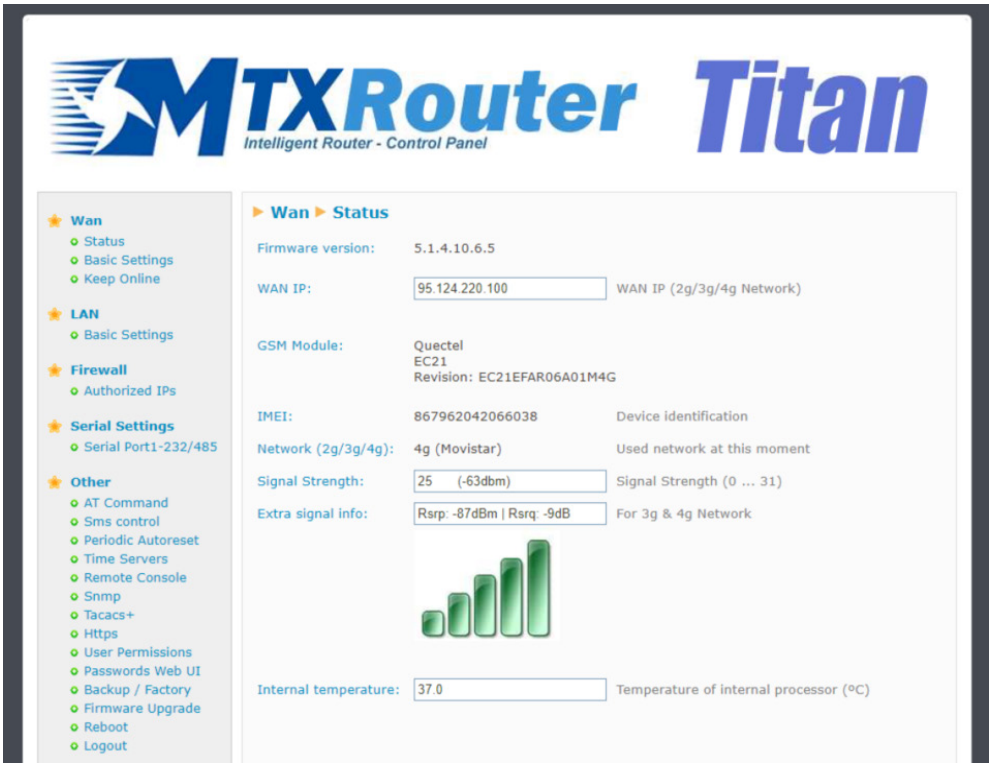
2.1 WAN

The WAN section refers to everything related to the MTX-StarEnergy-M 2G/3G/4G configurations, from the connection status, network configuration parameters and connection supervision.

2.1.1 WAN: Status

This screen shows the general status of the MTX-StarEnergy-M.

- **Firmware Version**: firmware version
- **Public IP**: WAN IP address (assigned from 2G/3G/4G connection) if it is available
- **GSM Module**: indicates the manufacturer and model of the internal GSM module of the MTX-StarEnergy-M
- **Network (2g/3g/4g)**: indicates whether the current WAN connection is using the 2G (GPRS), 3G or 4G network
- **Signal Strength**: indicates the strength of the signal. 0 = null, 31 = maximum
- **Extra signal info**: additional information when the modem is registered in 3G and 4G networks
- **Internal temperature**: shows the internal temperature of the processor (does not indicate room temperature)

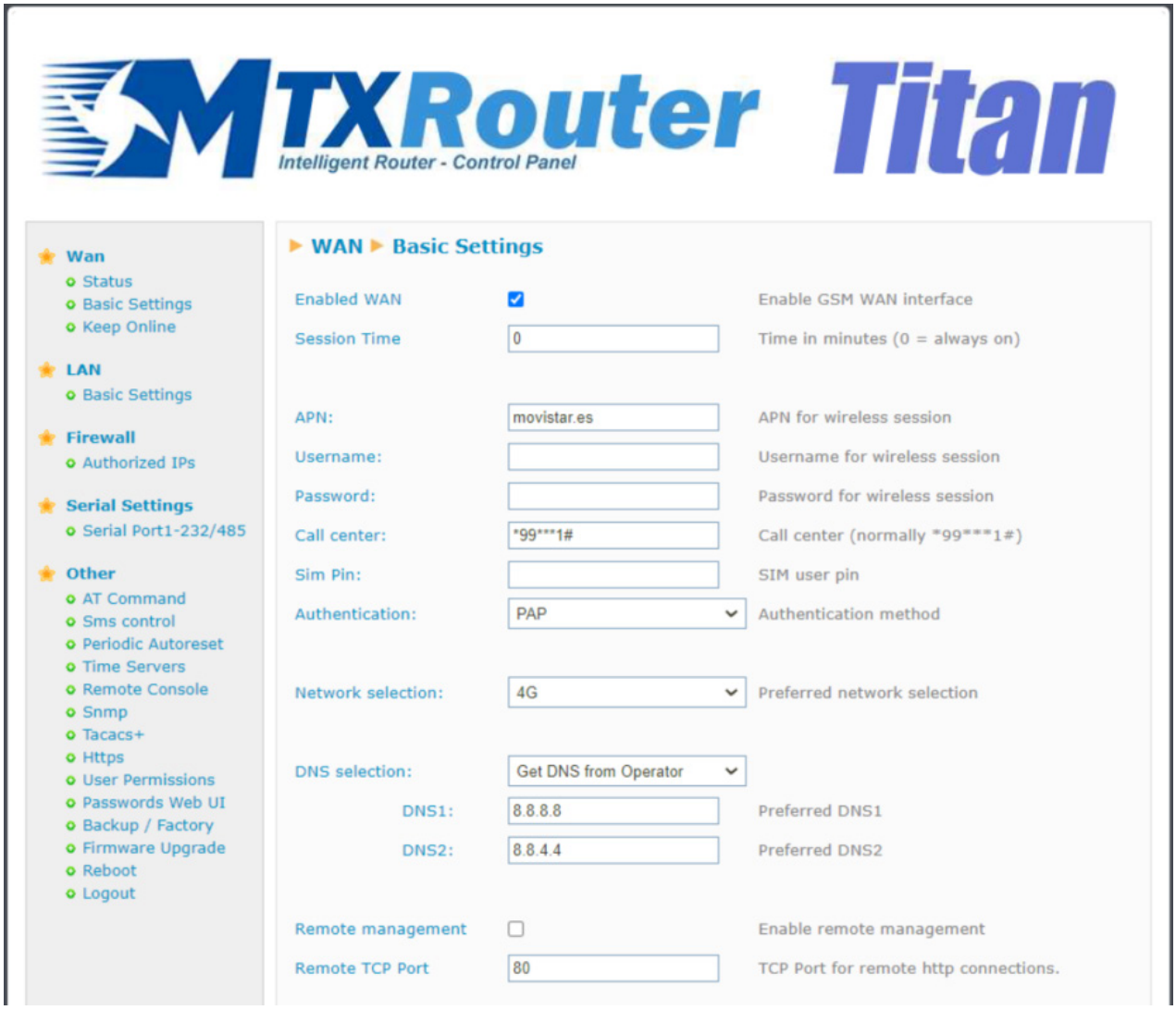


2.1.2 WAN: Basic Settings

This section is used to configure the parameters of the WAN connection (2G/3G/4G). You will need to know some information about your SIM card, such as the APN, the username and the password. Your provider must provide them to you.

- **Enabled WAN**: check the box to allow MTX-StarEnergy-M to enable 2G/3G/4G connection
- **Session time**: indicates the minutes that the 2G/3G/4G connection should remain active. If you specify "0" it means that the connection will always be active. If you specify a number greater than 0, the connection will remain active for the specified minutes after an event such as the receipt of an SMS message or a missed call. Go to the "Other> SMS Control" configuration menu to activate and configure these events if you are going to specify a number> 0. This parameter normally has a value of "0" for metering applications
- **APN**: APN of the operator. You should check with your GSM provider
- **Username**: username of the operator. You should check with your GSM provider
- **Password**: operator's password. You should check with your GSM provider
- **Call center**: call center number. Usually * 99 *** 1 #
- **Sim Pin**: if your SIM card has a PIN, you must specify it here
- **Authentication**: you must indicate the authentication method. Normally PAP
- **Network selection**:
    - auto: the MTX-StarEnergy-M will use 4G if there is coverage, or 3G and 2G otherwise
    - 4G: the MTX-StarEnergy-M will use the 4g network in all cases. If there is no 4G coverage, it will not change to 2G or 3G
    - 3G: the MTX-StarEnergy-M will use the 3G network in all cases. If there is no 3G coverage, it will not change to 2G
    - GPRS: the MTX-StarEnergy-M will use the 2G network in all cases. In this mode, incoming data calls (CSD) are also allowed
- **DNS1 y DNS2**: DNS servers for domain name resolution. It is recommended to use Google 8.8.8.8 and 8.8.4.4 or those indicated by your provider
- **Remote management**: if you check the box, you will be able to access the web configuration of the MTX-StarEnergy-M remotely, through its public IP address (the one indicated in WAN> Status)

- **Remote TCP port**: indicates the remote configuration TCP port. For example, if you specify 8080, the configuration URL will be http: //x.x.x.x: 8080



ADDITIONAL NOTES

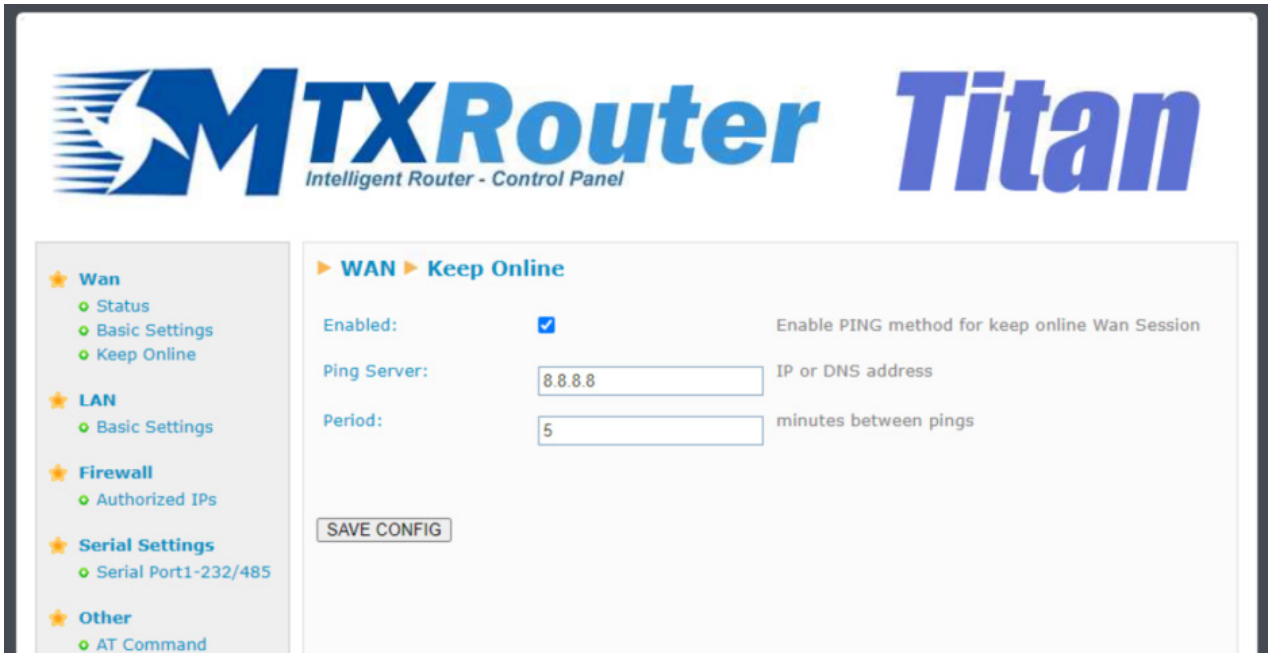
- Once the configuration is finished, press the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect

2.1.3 WAN: Keep Online

From this screen you can configure a PING to ensure the connectivity of the MTX-StarEnergy-M. In case of PING failure three consecutive times, the 2G/3G/4G connection will restart.

- **Enabled**: check the box to allow the MTX-StarEnergy-M to send a periodic PING to verify connectivity

- **Ping Server**: indicates the IP address of the server against which to PING
- **Period**: indicates how many minutes a check PING should be performed



ADDITIONAL NOTES

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

2.2 LAN

The “LAN” configuration section refers to the local network configuration part.

2.2.1 LAN: Basic Settings

This section allows you to configure the basic network parameters of the network connection (emulated via the USB port).

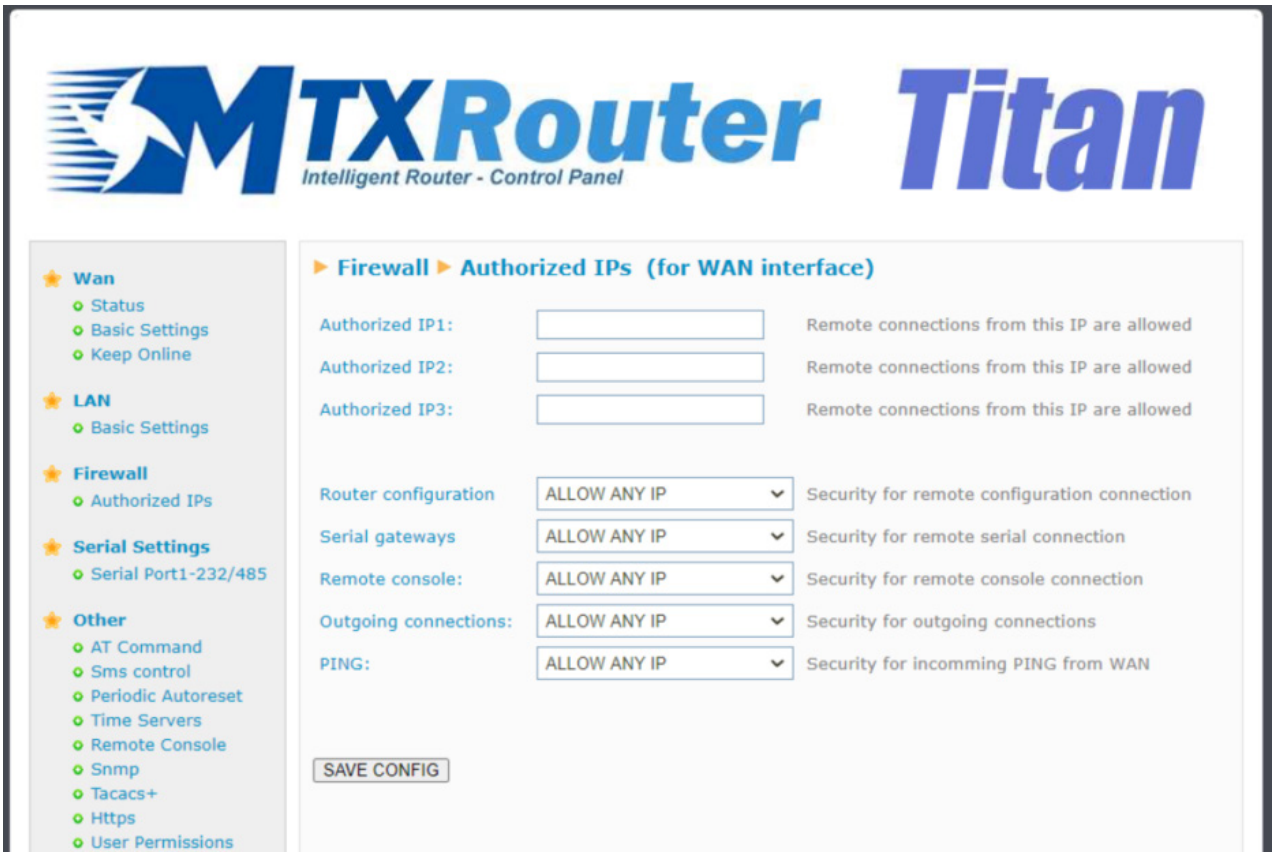
- **Static IP**: a static IP address will be assigned. Only option available on this device
- **IP Address**: local IP address of the emulated IP interface (by default 192.168.1.2)
- **IP Subnet Mask**: subnet mask
- **IP Gateway**: Gateway IP address. Leave blank if you are using 2G/3G/4G connectivity. This option is only useful if the MTX-StarEnergy-M is going to access the nternet through a PC via the USB connection, which is not the case for metering applications
- **DNS1**: primary DNS server. Not necessary for metering applications
- **DNS2**: secondary DNS server. Not necessary for metering applications

2.3 Firewall

Section to configure security aspects of the MTX-StarEnergy-M related to IP connectivity.

2.3.1 Firewall: Authorized IPs

This screen allows you to define, if you wish, up to 3 IP addresses authorized to make connections to/ from the WAN port (2G/3G/4G interface) for the different MTX-StarEnergy-M services. For example, if you specify an authorized IP address 90.166.108.200 (for example, your office), certain services will only be accessible from that IP address.



- **Authorized IP1**: authorized IP address number 1
- **Authorized IP2**: authorized IP address number 2
- **Authorized IP3**: authorized IP address number 3
- **Router configuration**: specifies whether to accept remote connections to the web configuration environment from any IP or only from authorized IP addresses
- **Serial Gateways**: specifies remote connections to 2G/3G/4G-RS232/485 gateway services can be made from any IP or only from authorized IP addresses
- **Remote console**: specifies whether to accept remote connections to the remote console service from any IP or only from authorized IP addresses
- **PING**: specifies whether to only respond to PING requests made from authorized IPs

- **Outgoing Connections**: allows you to specify if from the MTX-StarEnergy-M it is possible to give Internet access to all IP addresses or only to authorized IP addresses

ADDITIONAL NOTES

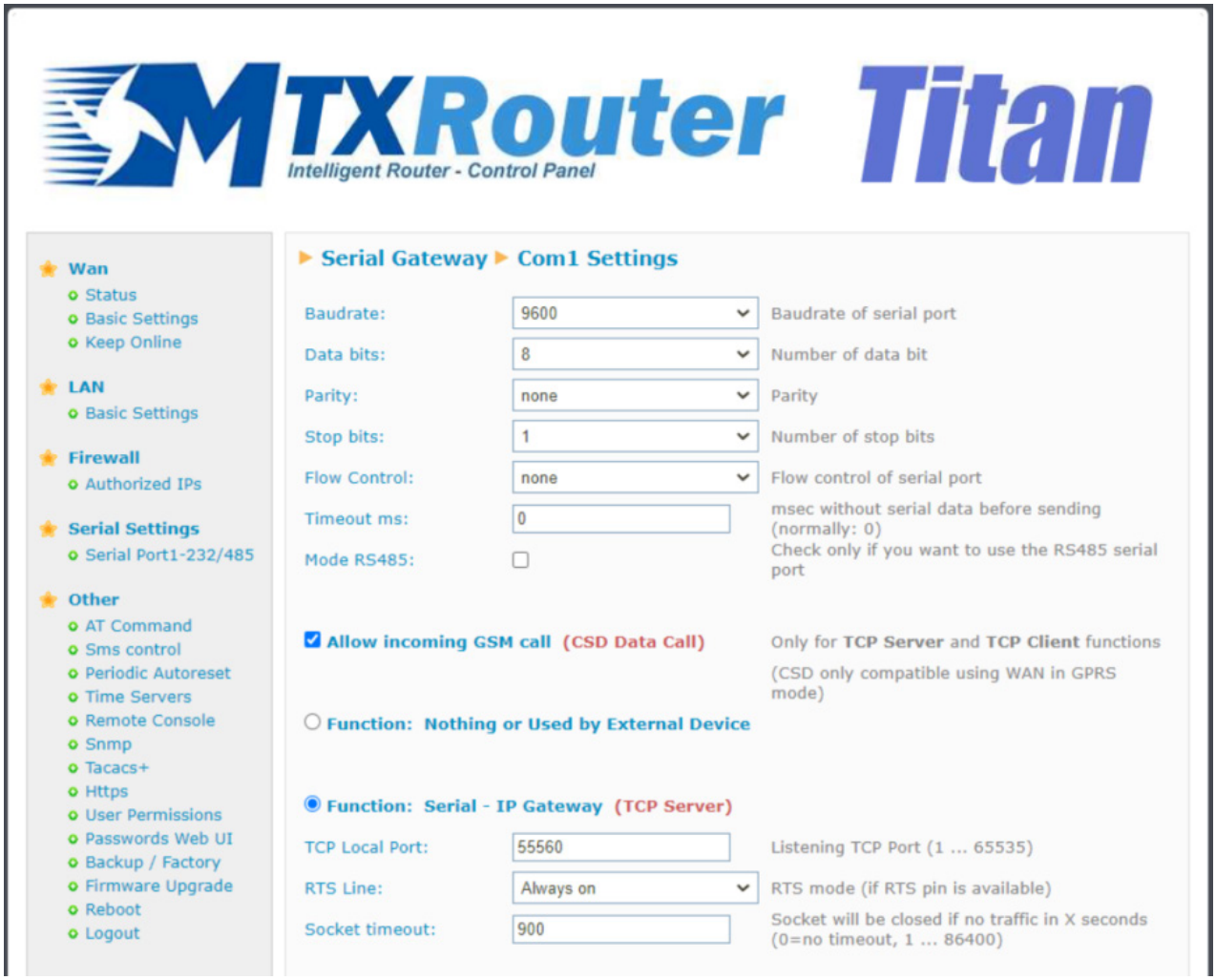
- Once the configuration is finished, press the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect
- If you use "Outgoing connections" restrictions, remember that you need to specify the IP address of the DNS server to use.
- If you need more than 3 authorized IP addresses, you can specify more than one IP address in any box, separating these by ","

2.4 Serial Settings: Serial portX

From this section it is possible to configure a CSD/2G/3G/4G-RS232/RS485 transparent gateway to remotely access serial devices, such as electricity meters.

- **Baudrate**: specifies the speed of the serial port (115200,..., 300)
- **Data bits**: specifies the number of data bits (7, 8)
- **Parity**: specifies parity (none, even [even], odd [odd])
- **Stop bits**: number of stop bits (1, 2)
- **Flow Control**: specifies flow control (none, hardware)
- **Timeout ms**: indicates the milliseconds to wait without receiving data through the serial port before sending the data through IP. If you specify a "0" (default value), the data is sent via IP as it arrives through the serial port. A number, for example 10, specifies that no data is sent if there is not a minimum period of 10ms without receiving data through the serial port. This allows data to reach the destination without the fragmentation problems common in some protocols and data management platforms
- **Allow incoming GSM call (CSD Data Call)**: selecting this box indicates that a CSD type call is accepted. Only valid to work when the MTX-StarEnergy-M is configured to work in GPRS (2G) mode. In this mode, when a CSD data call is received, it is accepted as long as a 2G-RS232/485 gateway is not currently established. If so, the CSD call is rejected. In other words, once a 2G-RS232 gateway is established, it takes precedence over the CSD call
- **Function**: Nothing or Used by External Device: select this operation option if you do not want to use a certain serial port (such as IP/serial gateway)
- **Function**: Serial – IP Gateway (TCP Server): select this operation option if you want to establish a transparent CSD/2G/3G/4G-RS232/485 gateway, that is, a scenario where the MTX-StarEnergy-M device is at the it listens on a specific TCP port waiting to receive a connection to establish the gateway. It is the usual function for metering applications
- **TCP Local Port**: TCP listening port for the Serial gateway - 2G/3G/4G
- **RTS Line**: allows you to select whether the RTS line will be active as long as a socket is connected. By default Always on. RTS line is not usually used in metering applications

- **Socket timeout**: specifies the time, in seconds, that must elapse to close an IP-RS232/485 gateway in the case of no traffic on it



ADDITIONAL NOTES

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

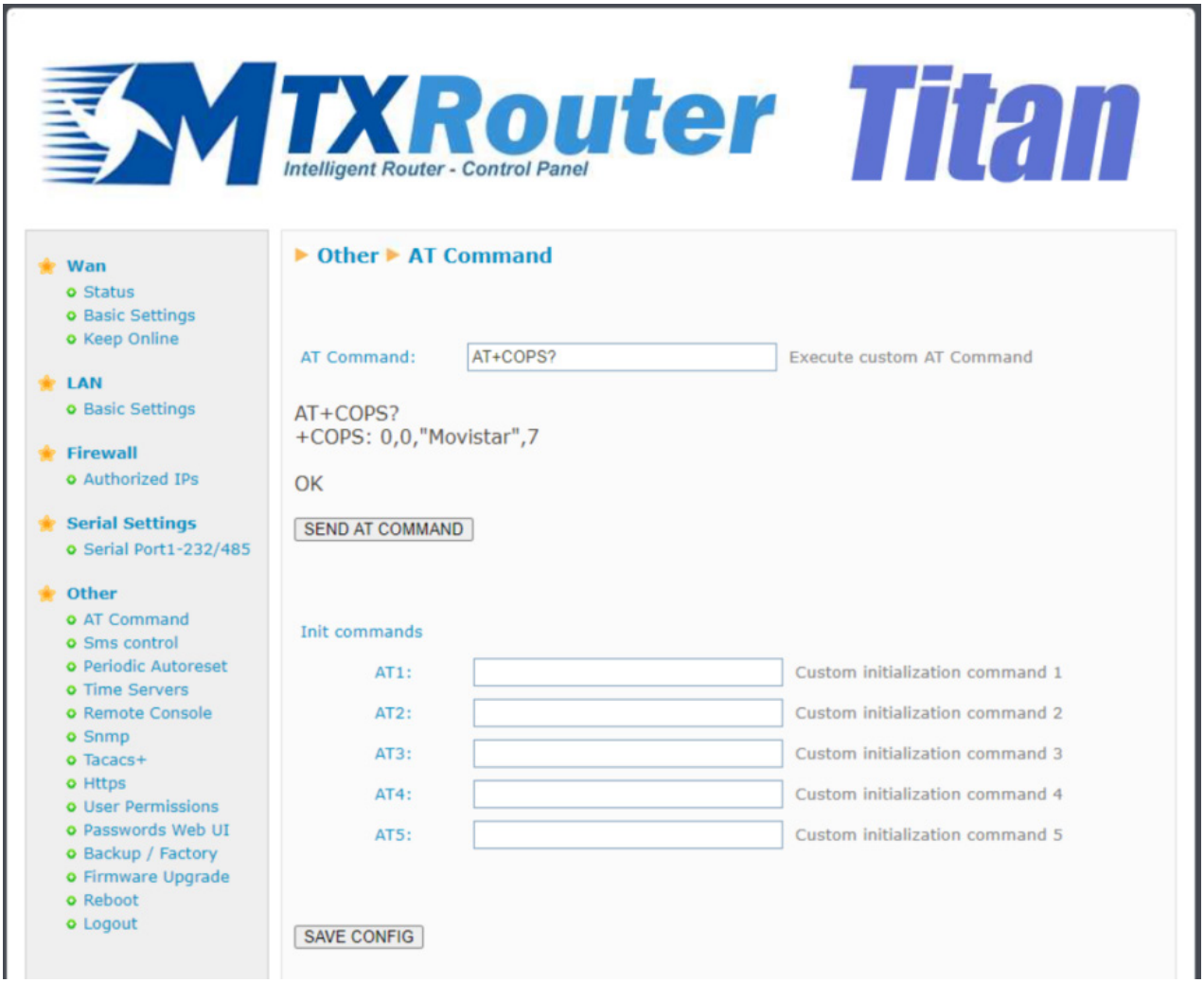
2.5 Other

2.5.1 Other: AT Command

From this section it is possible to send an AT command directly to the internal modem of the MTX-StarEnergy-M. For example, it can be interesting to check coverage, identify the surrounding telephone cells, etc.

On the other hand, it is also possible to configure up to 5 special AT commands with which to configure the MTX-StarEnergy-M at startup time (that is, they are self-executing each time the device is started).

- **AT Command**: AT command for real time execution (for example AT + COPS?). Once you press the "SEND AT COMMAND" button, the AT command will be executed and you will see the response
- **AT1, ... AT5**: initialization AT commands

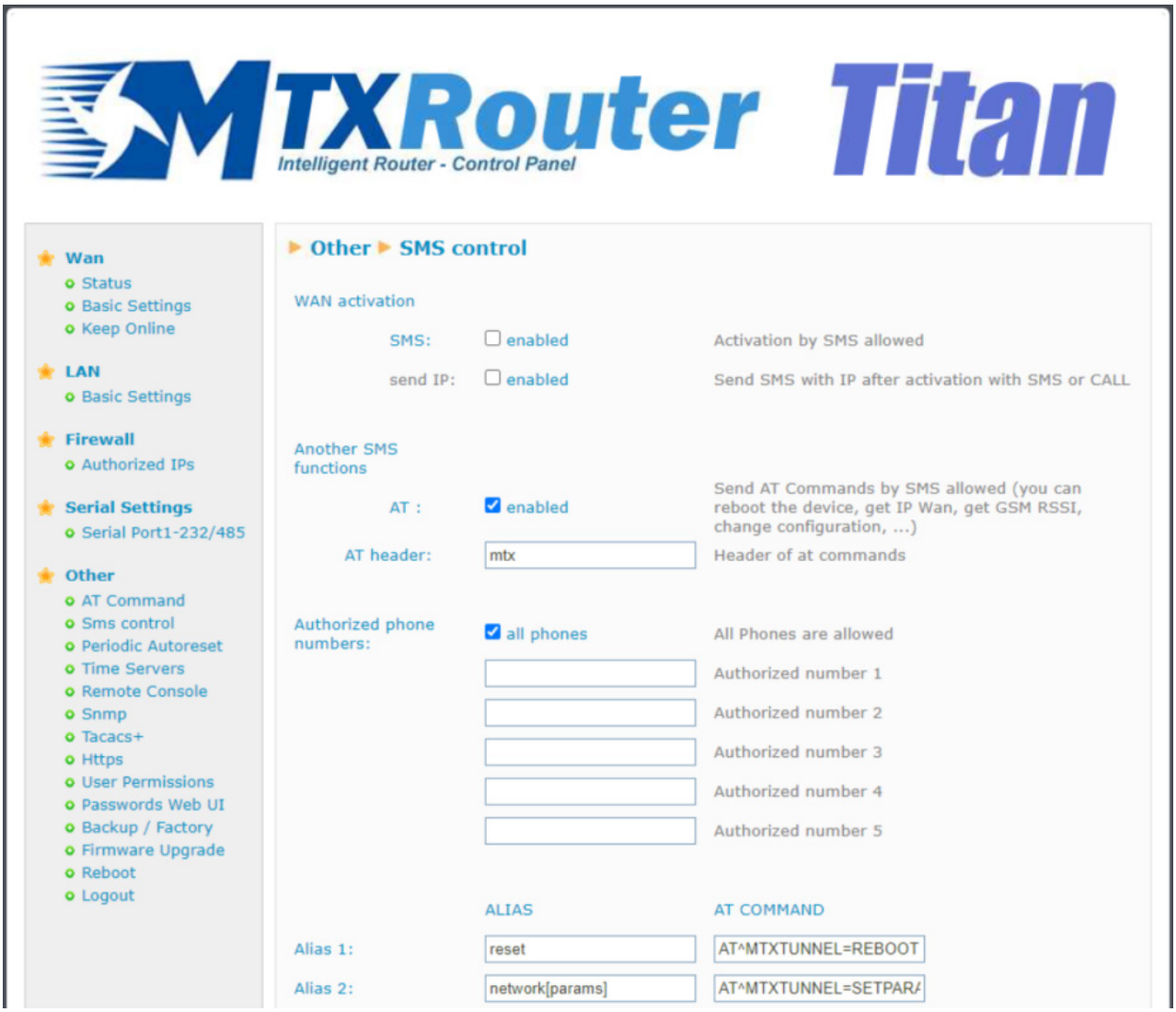


ADDITIONAL NOTES

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

2.5.2 Other: SMS Control

This section allows you to configure the control of the MTX-StarEnergy-M by SMS. For example, you can configure so that the MTX-StarEnergy-M connects to 2G/3G/4G after receiving an SMS command, or make configuration changes/readings of status by SMS command, being able to specify the authorized telephone numbers for this.



- **SMS enabled**: check the box if you want to be able to activate the MTX-StarEnergy-M’s 2G/3G/4G connection temporarily, after sending an SMS message. The SMS message that has to be sent to activate the connection is “ROUTER ON”, in capital letters. This option has no relevance (it does not need to be activated) if the MTX-StarEnergy-M is configured for a

permanent 2G/3G/4G connection, as is usual in metering applications

- **Send IP**: check the box if you want the MTX-StarEnergy-M to send you an SMS message with the acquired IP address after a connection by SMS
- **AT enabled**: check this box if you want to be able to send AT commands by SMS to the MTX-StarEnergy-M, for example to know the coverage remotely, to perform a reset, change a configuration...
- **AT header**: write the header text for command SMS messages here. For example, if you write in this box "mtx", when you send an AT command by SMS, let's imagine the command AT + CSQ to know the general level of coverage, you would need to send an SMS message with the text "mtx AT + CSQ"
- **All phones**: check this box if you want all phones to be able to send AT commands by SMS to the MTX-StarEnergy-M. Do not check this box if you want to specify authorized phone numbers. You can also activate it if your telephone operator allows you to filter SMS, that is, the filtering of phone numbers is done at the operator's network level instead of at the device level
- **Authorized Number X**: in these boxes you can specify up to 5 authorized telephone numbers in the event that the option "All phones" is not selected
- **Alias / ATCommand**: up to 10 aliases can be entered to execute SMS commands. For example, the AT command that performs a reset of the MTX-StarEnergy-M is AT ^ MTXTUNNEL = REBOOT. If, for example, you specify the alias "reset", all you have to do is send an SMS with the text "reset" to MTX-StarEnergy-M so that it restarts instead of having to send an SMS with the text "mtx AT ^ MTXTUNNEL = RESET ", longer and more complex to remember.

  Aliases also allow the passing of parameters. For example, imagine that you have configured the MTX-StarEnergy-M in "2g" mode to be able to accept IP connections and CSD calls. In the future, where you will not need CSD calls (IP only) you will want to be able to change the working mode to "auto" so that the MTX-StarEnergy-M connects to 2G/3G/4G depending on the network availability in the area.

  For this you can specify an alias such as "network [params]" together with the command "AT ^ MTXTUNNEL = SETPARAM, WAN_NETWORK, [* 1]".

  If you send the MTX-StarEnergy-M an SMS message with the text "auto network", the setting will change from "2g" to "auto". (Note: Do not forget to send a reset SMS to the equipment so that it takes the new configuration).
- **Alias Result OK**: text that will be sent as a response in the event that the execution of an ALIAS command is successful
- **Alias Result ERROR**: text that will be sent as a response in the event that the execution of an ALIAS command is wrong

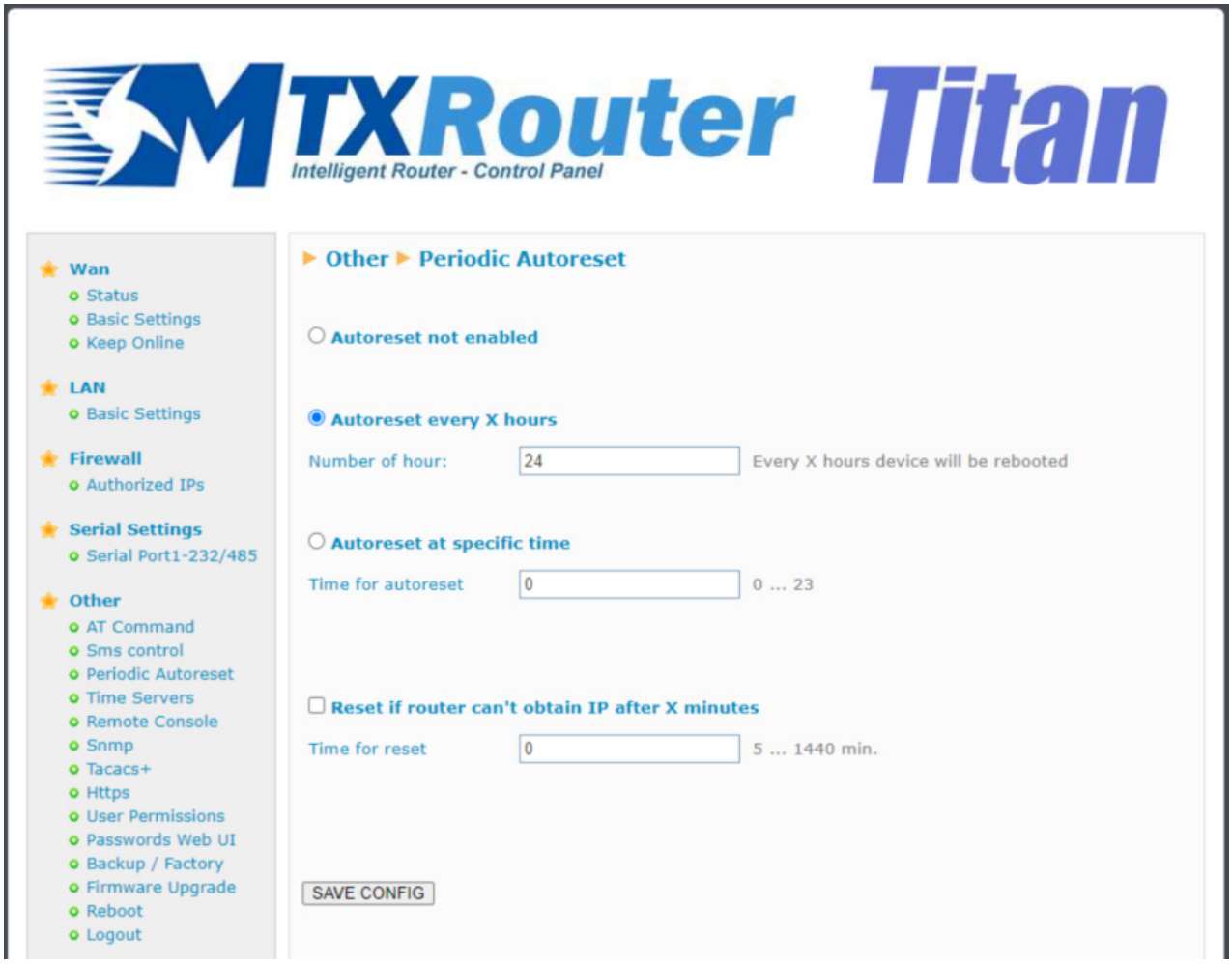
ADDITIONAL NOTES

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

2.5.3 Other: Periodic Autoreset

From this section you can configure a scheduled autoreset.

- **Autoreset not enabled**: activate the option if you do not want the device to reset automatically
- **Autoreset every X hours**: activate the option if you want the device to autoreset every certain number of hours. Usually set to 24h in metering applications
- **Auto-reset at specific time**: select this option if you want the device to self-reset at a specific time of day
- **Auto-reset if router can't obtain IP after X minutes**: allows specifying the minutes after which the device must autoset in case of not being able to obtain an IP address



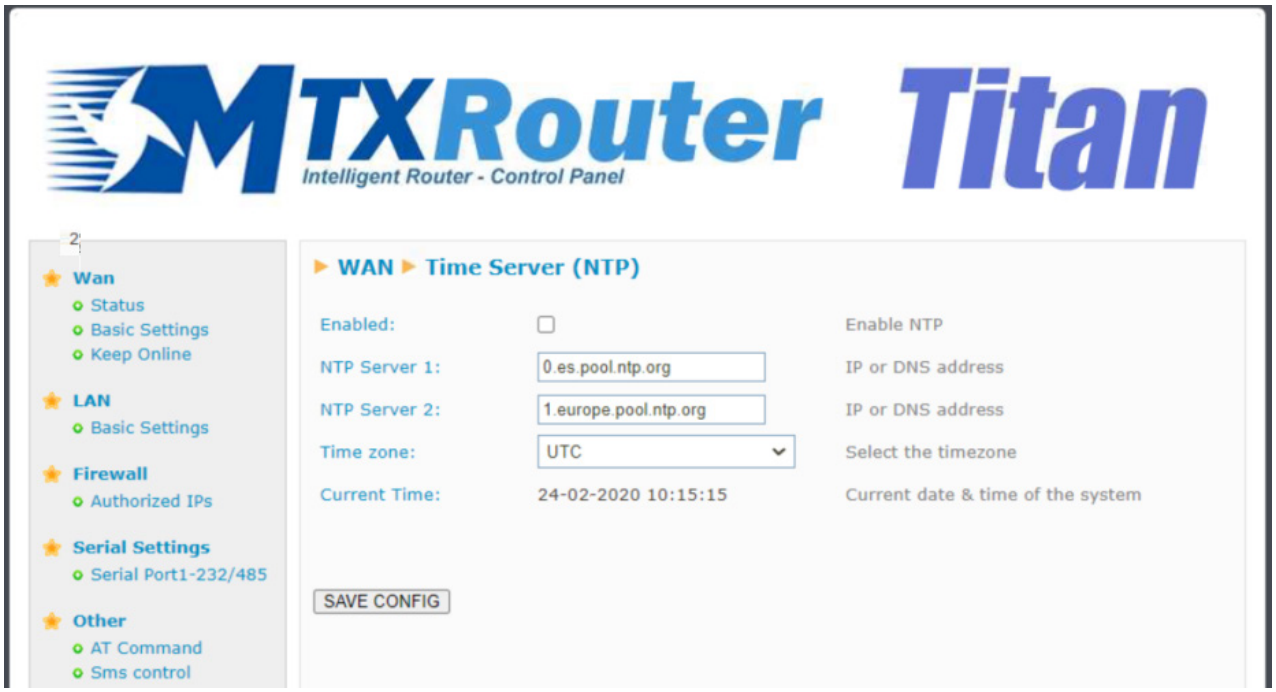
ADDITIONAL NOTES

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

2.5.4 Other: Time Server (NTP)

The MTX-StarEnergy-M has a real-time clock inside that allows it to keep the time even after power loss. Periodically, this internal clock needs to be synchronized with time servers through the NTP protocol if you want to keep the device on time.

- **Enabled**: check this box if you want to use NTP time servers
- **NTP Server 1**: IP or DNS address of time server 1
- **NTP Server 2**: IP address or DNS of time server 2
- **Time Zone**: specify the time zone



ADDITIONAL NOTES

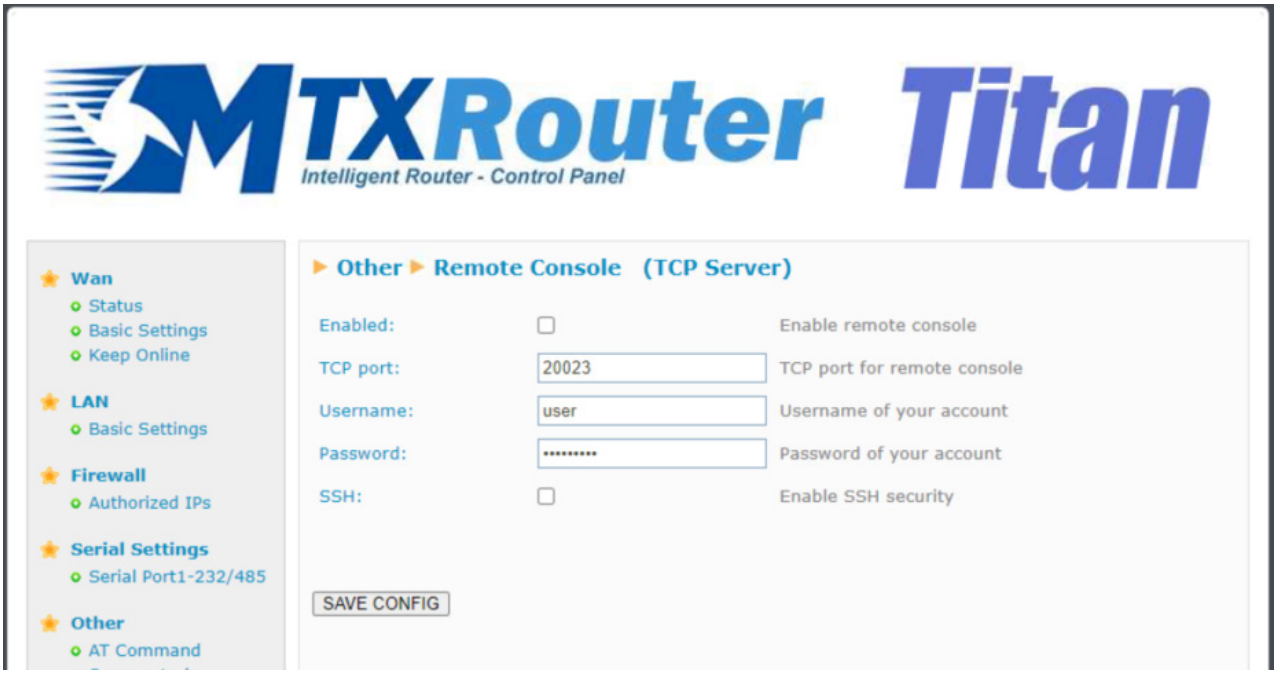
- Once the configuration is finished, press the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect

2.5.5 Other: Remote Console (TCP Server)

If at any time you need to perform a special remote operation on the MTX-StarEnergy-M, you can also do it through a "Telnet or SSH type" connection, you can do it by configuring this section. That is, with this special connection you can, by sending AT commands through a telnet-type connection, make a device configuration change, reset it, etc. In other words, the same thing that can be done by SMS messaging but by IP connection.

- **Enabled**: check this box if you want to use this special connection
- **TCP Port**: TCP listening port, where you must make the connection

- **Login**: username that will be requested after making the connection
- **Password**: user password that will be requested after entering the user name
- **SSH**: check the box if you want to use SSH instead of Telnet

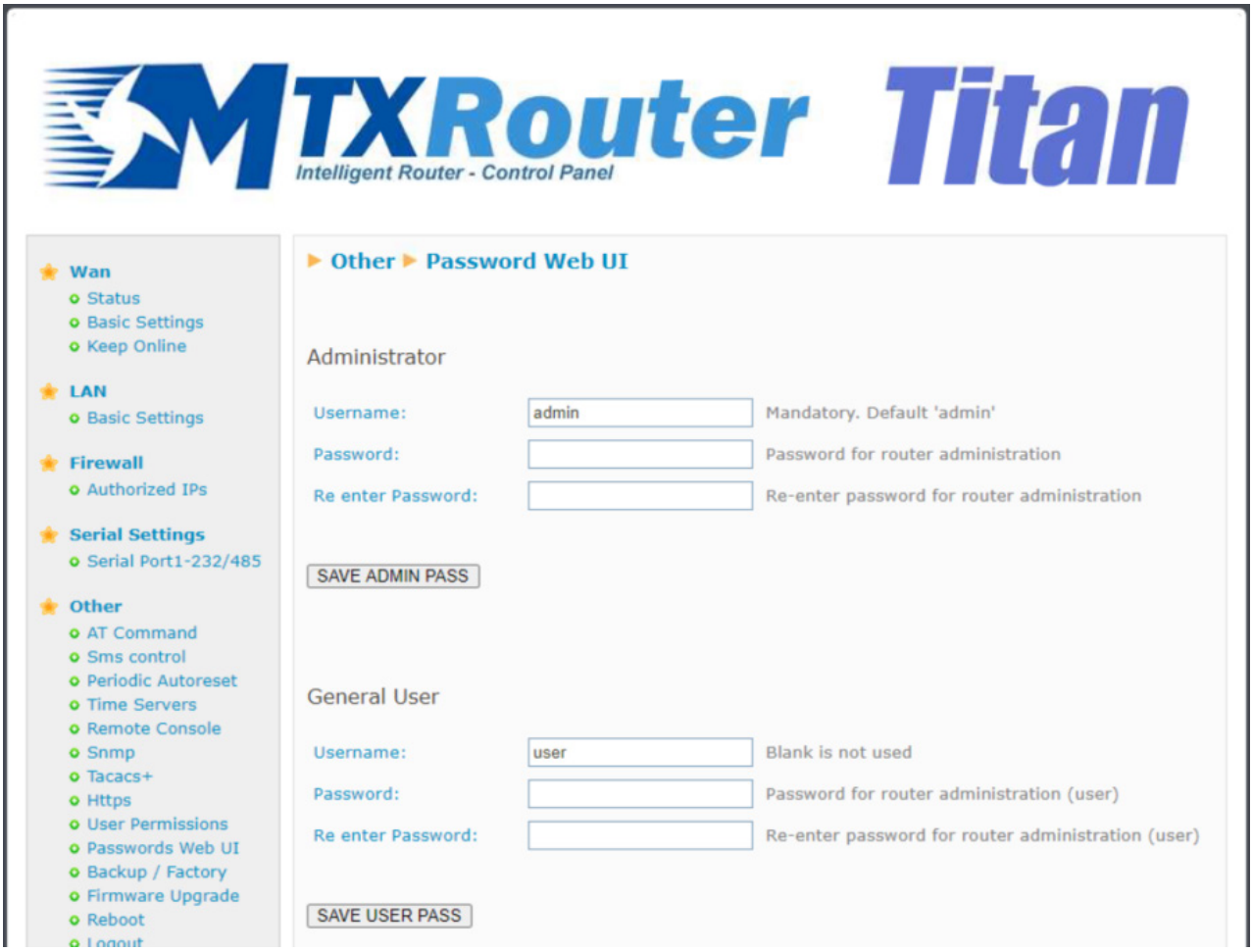


ADDITIONAL NOTES

- Once the configuration is finished, press the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect. If you check/ uncheck the SSH box, be sure to also re-enter the password

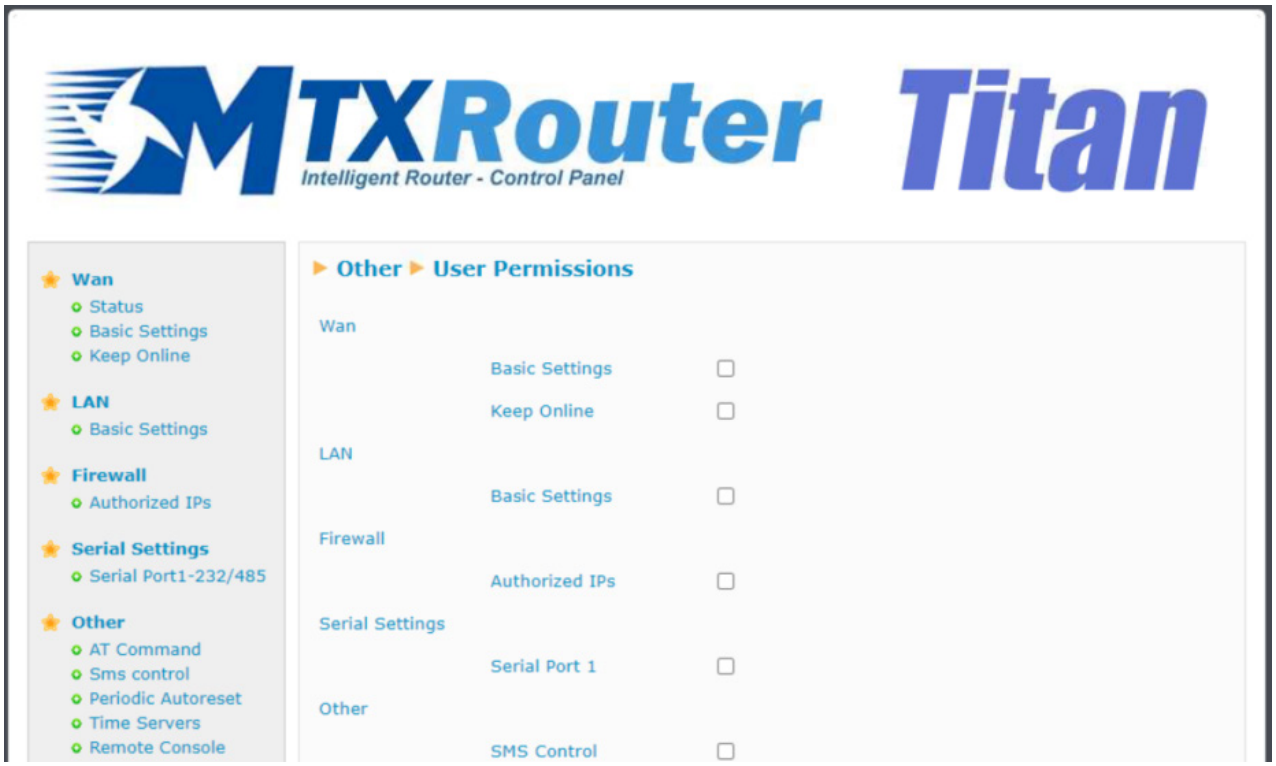
2.5.6 Other: Passwords

It is possible to set three users to access the MTX-StarEnergy-M configuration, each with a level of privileges. From the “admin” user you will have access to all the MTX-StarEnergy-M configuration, the “user” user will have access to the configurations that are selected from the admin user for this, and the “guest” user will be able to access the same configuration menus as “user” but without being able to make configuration changes.



2.5.7 Other: User Permissions

From this section the user “admin” can configure the permissions to which the user “user” and “guest” will have access. The configuration options that you do not select will not appear in the menu on the left of the configuration environment when you log into the MTX-StarEnergy-M with the username “user” or “guest”.



ADDITIONAL NOTES

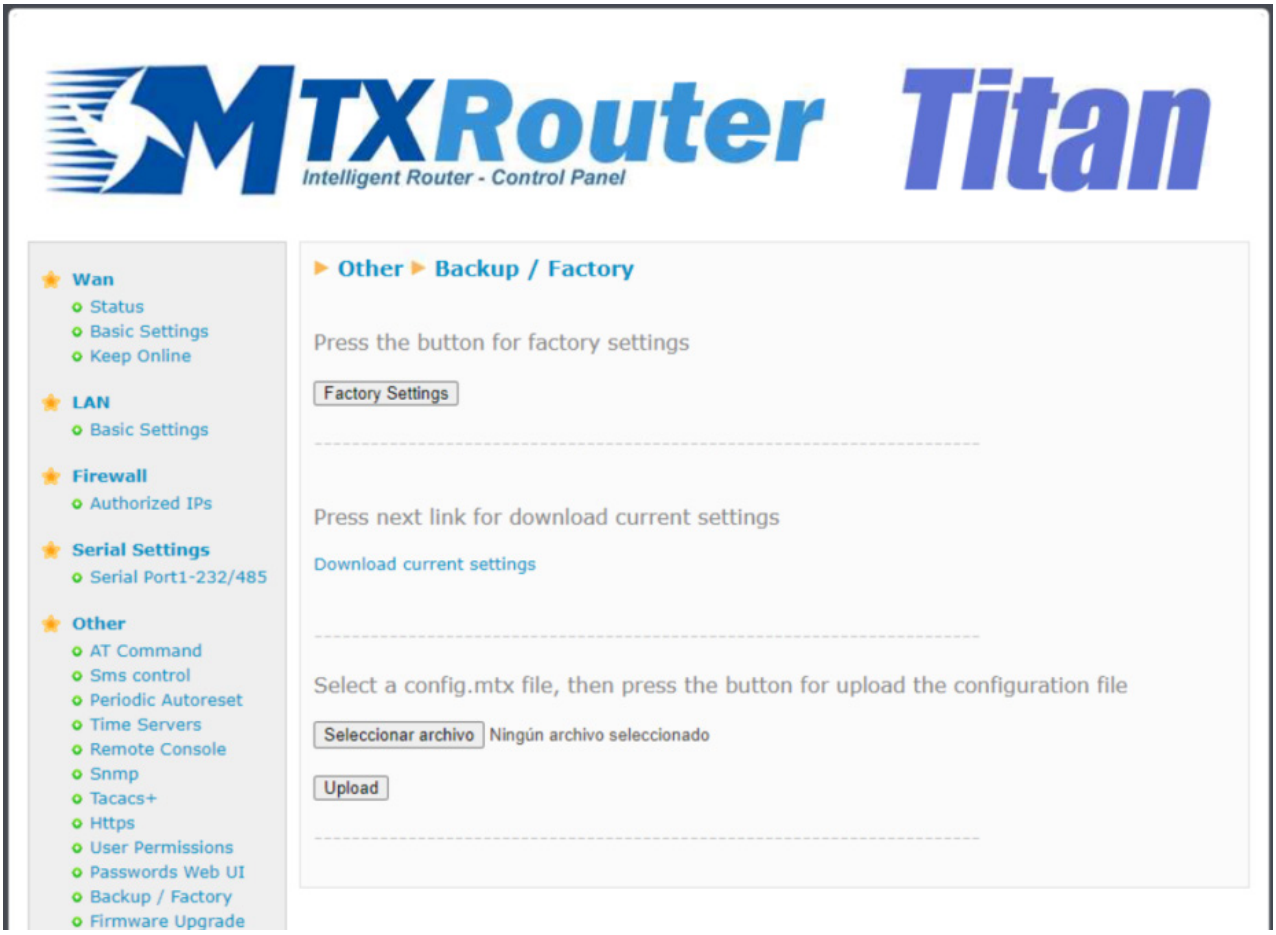
- Once the configuration is finished, press the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect

2.5.8 Other: Backup/Factory

You can perform a full backup of the MTX-StarEnergy-M configuration from this menu. You can save the configuration to a file and write it back to the device when you need it. It also allows you to configure the MTX-StarEnergy-M with the factory settings.

- **Botón “Factory Settings”**: press this button if you want to restore the equipment to factory settings
- **Link “Download settings”**: click on the link to download the configuration of the MTX-StarEnergy-M in a file named “config.mtx”

- **Botón "Seleccionar archivo"**: to restore a saved configuration, after indicating the configuration file to use, press the "Upload" button to upload the file

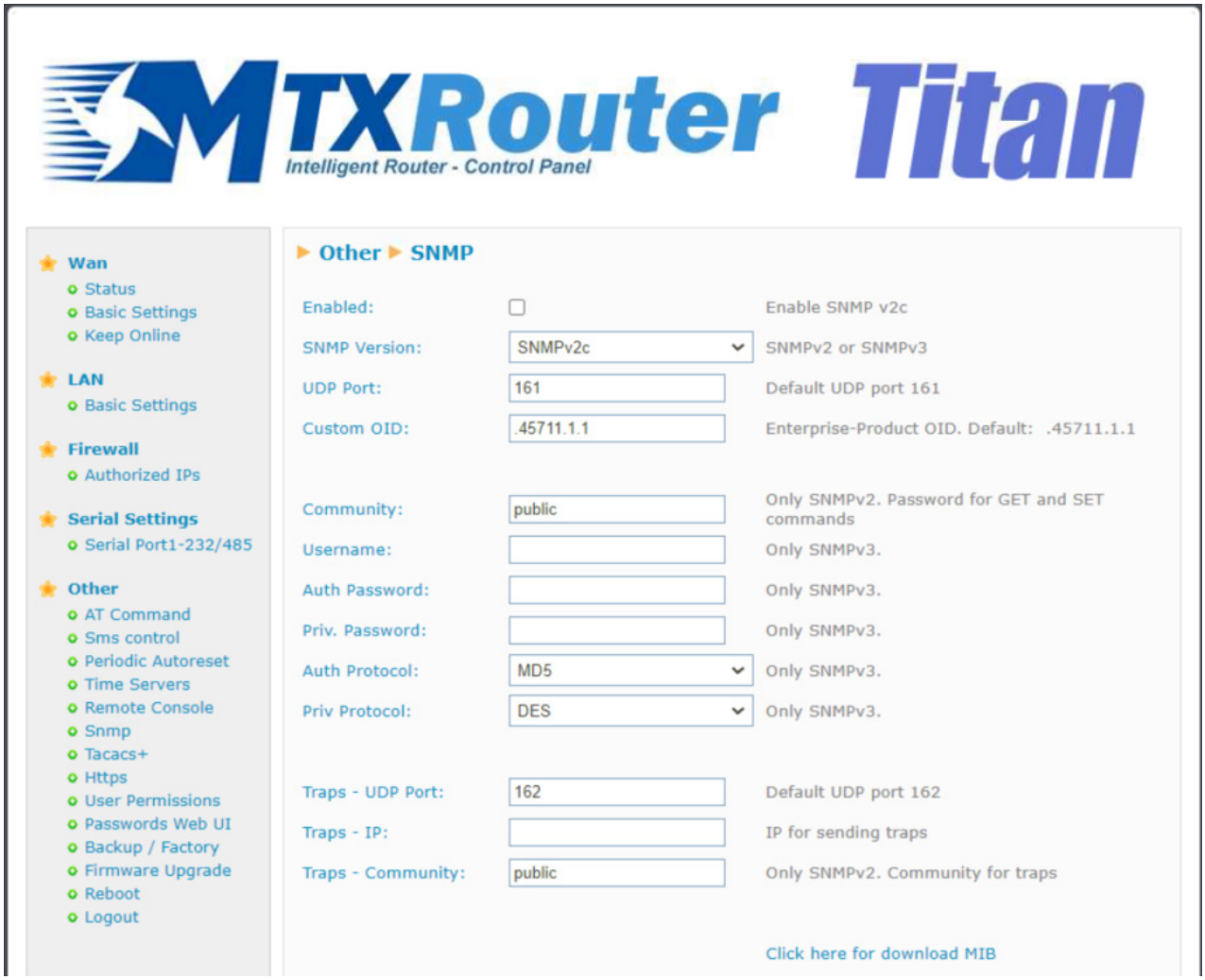


ADDITIONAL NOTES

- You can also restore the MTX-StarEnergy-M to factory settings using a jumper housed inside, next to the asim holder. To do this, you would have to turn on the MTX-StarEnergy-M with the jumper connected and wait 1 minute. After removing the jumper and turning the device back on, it will start up with the default configuration

2.5.9 Other: SNMP

The MTX-StarEnergy-M device allows to execute SET and GET operations through SNMP protocol from standard SNMP applications.



- **Enabled**: select if you want to enable the SNMP service of the MTX-StarEnergy-M
- **SNMP Version**: can be selected between SNMPv2c and SNMP v3
- **UDP port**: the standard UDP port for SNMP is 161, but you can specify the one that suits you best
- **Custom OID**: allows you to change the Enterprise-Product OID from the default value (.45711.1.1) in case you want to adjust it to your corporate values
- **Community**: the password to be able to execute SET and GET commands. Only necessary for SNMPv2
- **Username**: username in the case of using SNMPv3 (not necessary for SNMPv2)
- **Auth Password**: authentication password for SNMPv3 (not necessary for SNMPV2)

- **Priv Password**: privacy password for SNMPv3 (not necessary for SNMPv2)
- **Auth Protocol**: protocol for authentication (MD5 or SHA)
- **Priv Protocol**: encryption protocol (DES, AES128, AES192, AES256)
- **Traps – UDP Port**: allows you to specify the port for SNMP TRAPS
- **Traps – IP**: IP address for sending SNMP TRAPS
- **Community**: community field for sending TRAPS

ADDITIONAL NOTES

- Once the configuration is finished, press the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect
- In the previous screen you will see a link with the text “Click here for download MIB”. Download the file to obtain the MIB with the OIDs
- Through SNMP you can monitor the MTX-StarEnergy-M, for example by interrogating to obtain the RSSI (coverage), the date and time, the operating time, if it is working in 2G/3G/4G mode, the operator used

2.5.10 Other: HTTPS

From this section it is possible to activate HTTPS in the configuration environment, if necessary.

- **Enabled**: enables the HTTPs service (self-signed certificates are generated automatically after reboot)

ADDITIONAL NOTES

- Once the configuration is finished, press the “SAVE CONFIG” button to save the changes. Remember that you must restart the device for the new changes to take effect
- When you try to connect to MTX-StarEnergy-M via HTTPS your browser will probably show you a warning message regarding the self-signed digital certificate. It’s completely normal

2.5.11 Other: Tacacs+

If an external Tacacs+ server is required to authenticate the device's HTTP and Telnet services, it must be configured in this section.

- **Server**: IP or DNS address of the Tacacs+ server
- **Port**: listening port of the Tacacs+ server (by default 49)
- **KEY**: encryption password
- **Service http**: check the box if you want the device's web access to use the Tacacs+ authentication service
- **Service console**: check the box if you want access by telnet or ssh (Remote console) to the device to use the authentication service Tacacs+

ADDITIONAL NOTES

- Once the configuration is finished, press the "SAVE CONFIG" button to save the changes. Remember that you must restart the device for the new changes to take effect
- Keep in mind that the MTX-StarEnergy-M will allow you to use the username and password assigned to the user "admin" locally, so that if the route does not have internet connectivity (change of operator, etc.) it has an option to enter the team. Therefore keep the local password of the user "admin" safely

2.5.12 Other: Firmware Upgrade

From this section it is possible to update the FW of the MTX-StarEnergy-M whenever necessary.

Just press the “Select File” button and choose the firmware file with which to update the equipment. After that, the “Upload” button must be pressed.

The update process will take approximately 2 minutes.

3. AT Commands

The MTX-StarEnergy-M firmware allows you to send AT commands directly to the internal modem (QUECTEL) through multiple interfaces:

- By SMS
- Via Telnet/SSH (remote console)
- Using webserver
- Via SNMP

Therefore, at your own risk, you can send AT commands to the MTX-StarEnergy-M. The accepted AT commands are those indicated in the QUECTEL module AT command manual plus some additional ones listed below:

```
AT^MTXTUNNEL=REBOOT
```

Action: reset the MTX-StarEnergy-M

```
AT^MTXTUNNEL=VERSION
```

Action: returns the firmware version of the MTX-StarEnergy-M

```
AT^MTXTUNNEL=GETIP
```

Action: return the WAN IP address (2G/3G/4G)

```
AT^MTXTUNNEL=SMS,telephoneNumber,message
```

Action: send an SMS message to a specific phone number

Example: AT ^ MTXTUNNEL = SMS, + 34677123456, burglary alarm

```
AT^MTXTUNNEL=GETTIME
```

Action: returns the current time

Example: AT^MTXTUNNEL=GETTIME

AT^MTXTUNNEL=GETTIME

21/05/2016 10:56:52

OK

```
AT^MTXTUNNEL=GETPARAM,paramName
```

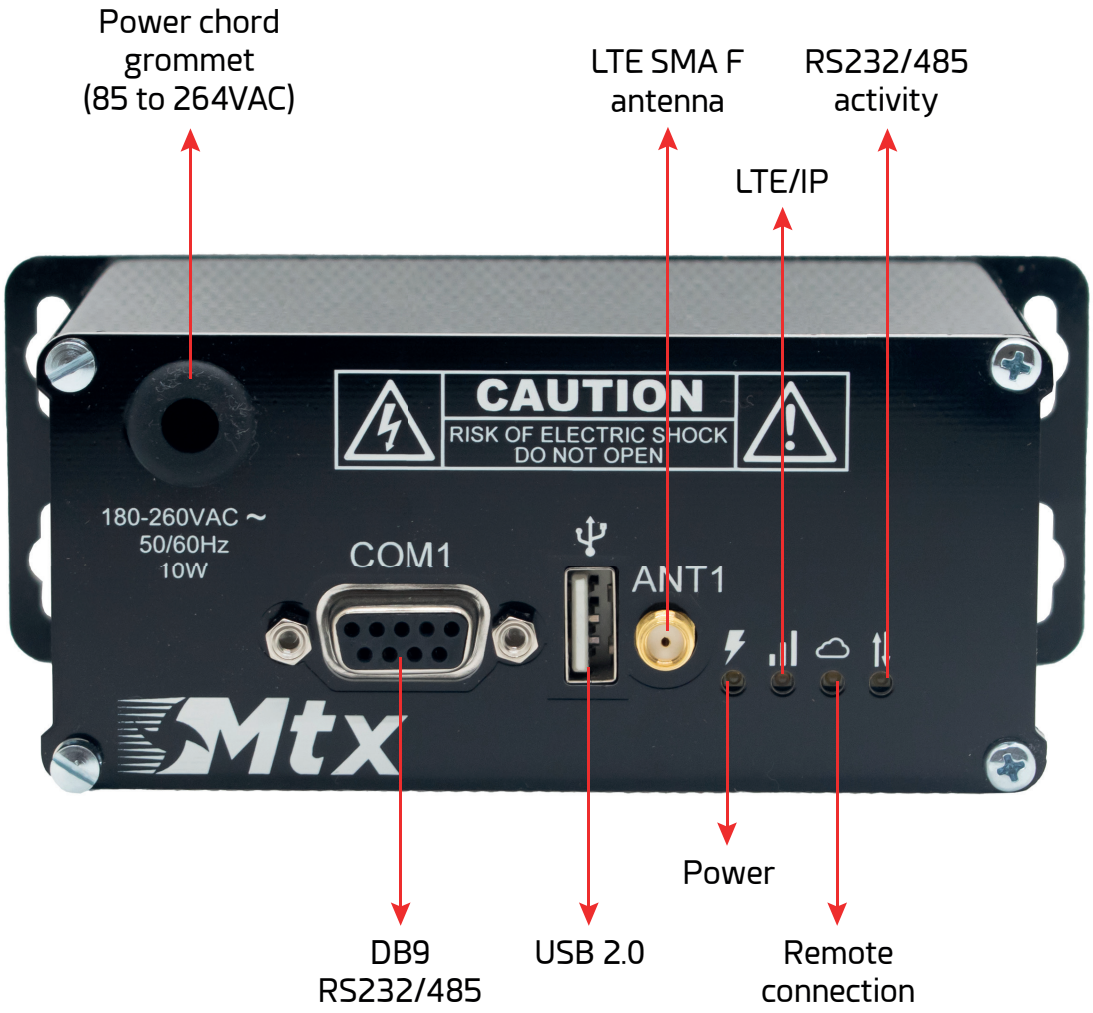
Action: allows reading the value of the MTX-StarEnergy-M configuration parameters. For example, you can check the APN field you have configured, the speed of the serial port, etc.) via AT commands. Consult with Matrix Electrónica iotsupport@mtxm2m.com in case you want to use this command for a specific configuration parameter

```
AT^MTXTUNNEL=SETPARAM,paramName,paramValue
```

Action: allows you to change the value of the MTX-StarEnergy-M configuration parameters. For example, you can change the APN field you have configured, the serial port speed, etc.) via AT commands. Consult with Matrix Electrónica iotsupport@mtxm2m.com in case you want to use this command for a specific configuration parameter

ANNEX 1: Connection Quick Guide

1. Connectors/indicators



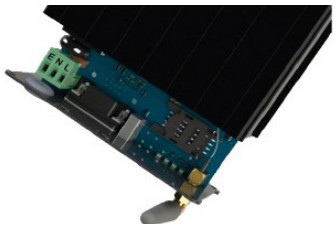
LED	Status
Power (orange)	Power LED: lights up when the equipment is properly powered.
LTE signal/IP (blue)	Network LED: it lights up when the equipment gets the IP address from the operator. Solid blue when coverage is good, flashing blue when coverage is poor.
Remote connection (orange)	Connection LED: it lights up when the Reading Platform makes an IP connection against the modem to remotely read the meter.
RS232/485 activity (orange)	Serial Port LED: it lights up when data is received on the serial port, that is, data from the meter. It allows to check the proper functioning of the serial link with the meter.

DB9	Signal	Level
1	NC	NA
2	RxD	RS232
3	TxD	RS232
4	NC	NA
5	GND	RS232
6	Rx-	RS485
7	Rx+	RS485
8	Tx-	RS485
9	Tx+	RS485

2. Start Up

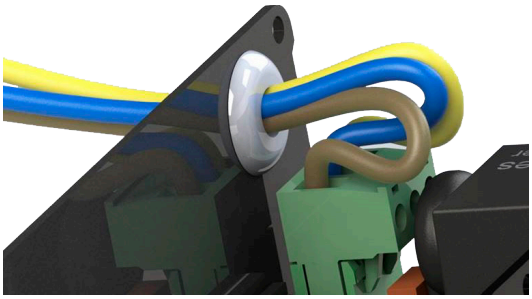
Step 1

To power the device, the front must first be removed, unscrewing the 4 corner screws. Then, pass the power cables through the grommet located in the upper left corner of the front. And connect the cables to the female terminal, supplied with the equipment. The distribution of signals in the internal terminals of the equipment is shown in the following image.



Step 2

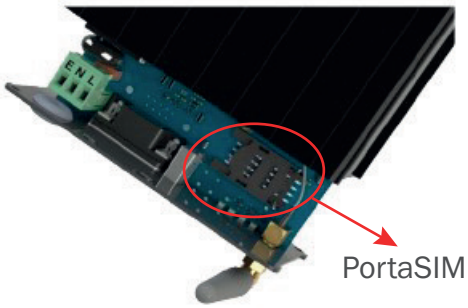
Finally, connect the female terminal, with the power cables, to the male terminal inside the equipment (as shown in the following image); close the box by screwing back the front and connect the equipment to the electrical network.



The device connects directly to the mobile phone network assigned to it by the IP indicated on the side label. Afterwards, the team waits for the Iberdrola platform to initiate communication. Confirm the correct operation of the equipment indicated by the status of the LEDs on the front (see table above).

Step 3

The device is supplied without a SIM card. The customer must insert a card in the internal SIM tray of the equipment.



3. Accesories

Accessories included with the kit:

Serial cable

Antenna stub

2 DIN rail clips

3 way terminal

ANNEX 2: Configuration Examples

1. Example Scenario: Configuration to access an IEC60870-5-102 electric meter through IP connection and GSM data call (CSD).

Details of the example scenario:

There is an electrical meter with the IEC60870-5-102 protocol which is intended to be read periodically remotely through a modem.

The meter must be accessible via a transparent TCP/IP connection but also via a GSM data call (CSD). Therefore, the modem to which the meter is connected must support both types of connectivity.

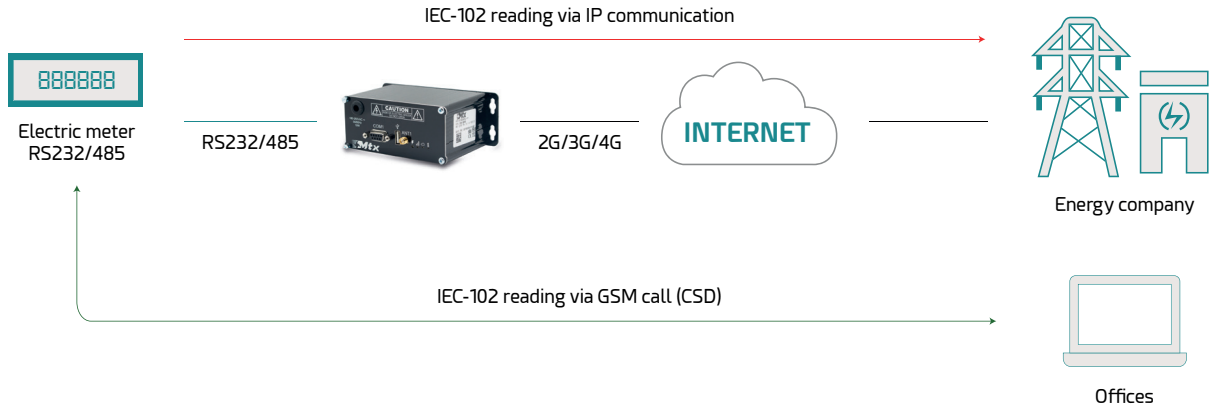
SIM phone cards with private APN with fixed IP address will be used.

For exceptional maintenance cases, the modem must be able to be configured remotely through SMS messaging, as well as being able to carry out operations to consult coverage, reset, etc. Everything from authorized telephone numbers.

The modem must be able to autoset completely every 24 hours.

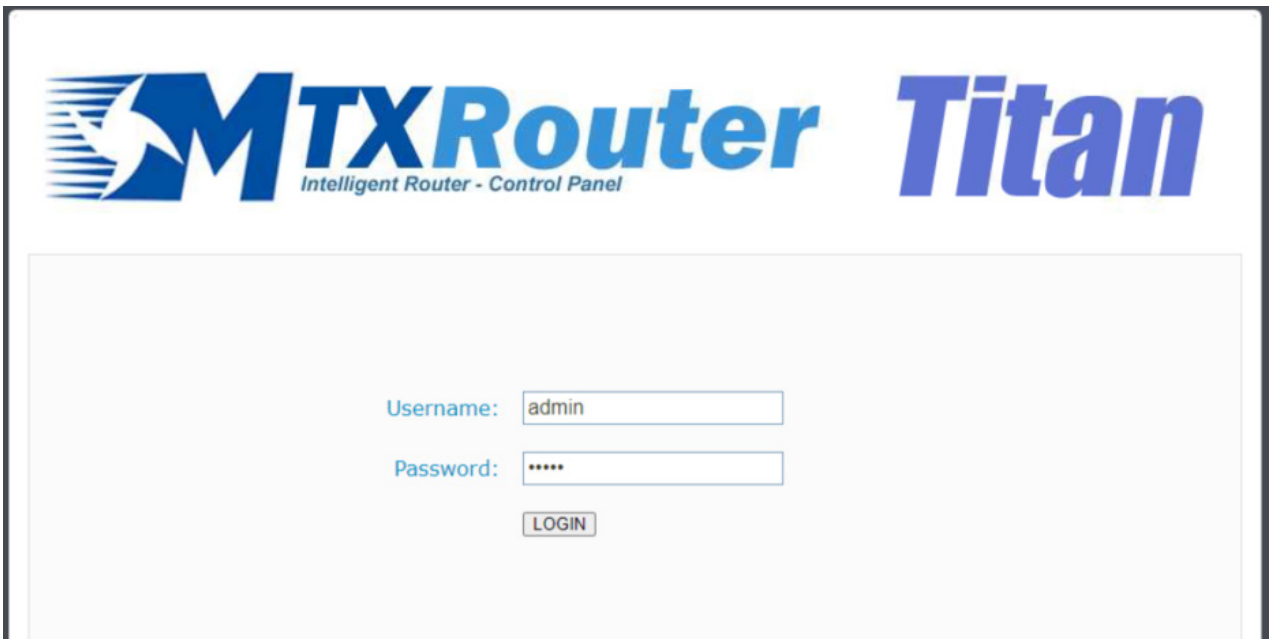
The modem must also have 4 LEDs to facilitate installation work. One that indicates that the modem is on, another that indicates if there is IP connectivity with good coverage, another that indicates if there is an IP connection from the reading platform and another that indicates if there is serial connectivity with the meter.

Solution: MTX-StarEnergy-M



Step 1. Access the configuration environment

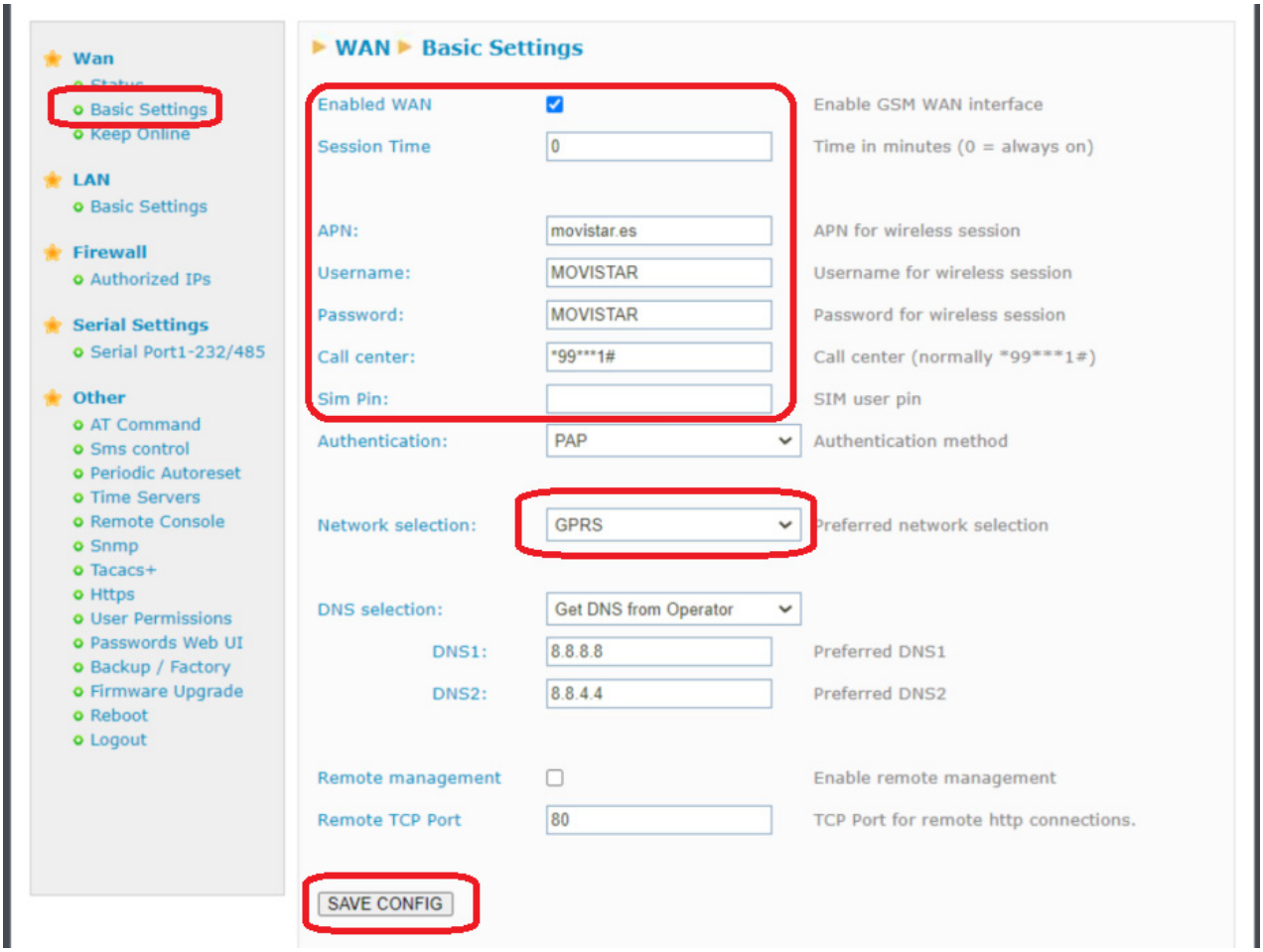
To access the MTX-StarEnergy-M configuration, you must have the corresponding USB drivers installed as detailed in the “SOFTWARE” section of this manual. Once the steps have been followed, it is possible to access the MTX-StarEnergy-M configuration through a browser, by detecting it through the url http://192.168.1.2 The default username and password is “admin”, “admin ”.



Step 2. Configuring the WAN section

The next step is the WAN configuration, adjusting it to the parameters of the SIM card to be used. To do this, go to the "WAN> Basic Settings" section of the side menu. As the following image shows, there are several main sections to fill out. Configure the equipment as shown in the image by adjusting the parameters "APN", "Username" and "Password" depending on the SIM card used (these parameters must be provided by your telephone operator). If the SIM card has a PIN, you must also enter it in the "Sim Pin" section. In the "Network Selection" section you can choose between "auto", "GPRS", "3G" and "4G". The "auto" option will make the modem choose the network based on the availability of the area. In this example "GPRS" is selected because you want the modem to be able to handle CSD calls.

Once the section has been configured, the "SAVE CONFIG" button must be pressed.



Step 3. Serial port configuration

In this section the parameters related to the serial port will be configured and that must correspond to those of the meter to which it will be connected. To do this, access the section "Serial Settings > Serial Port1-232/485"

The meter to be read has a configuration of 9600,8, N, 1 without flow control (that is, only TX, RX and GND lines) for a serial port of the RS485 type.

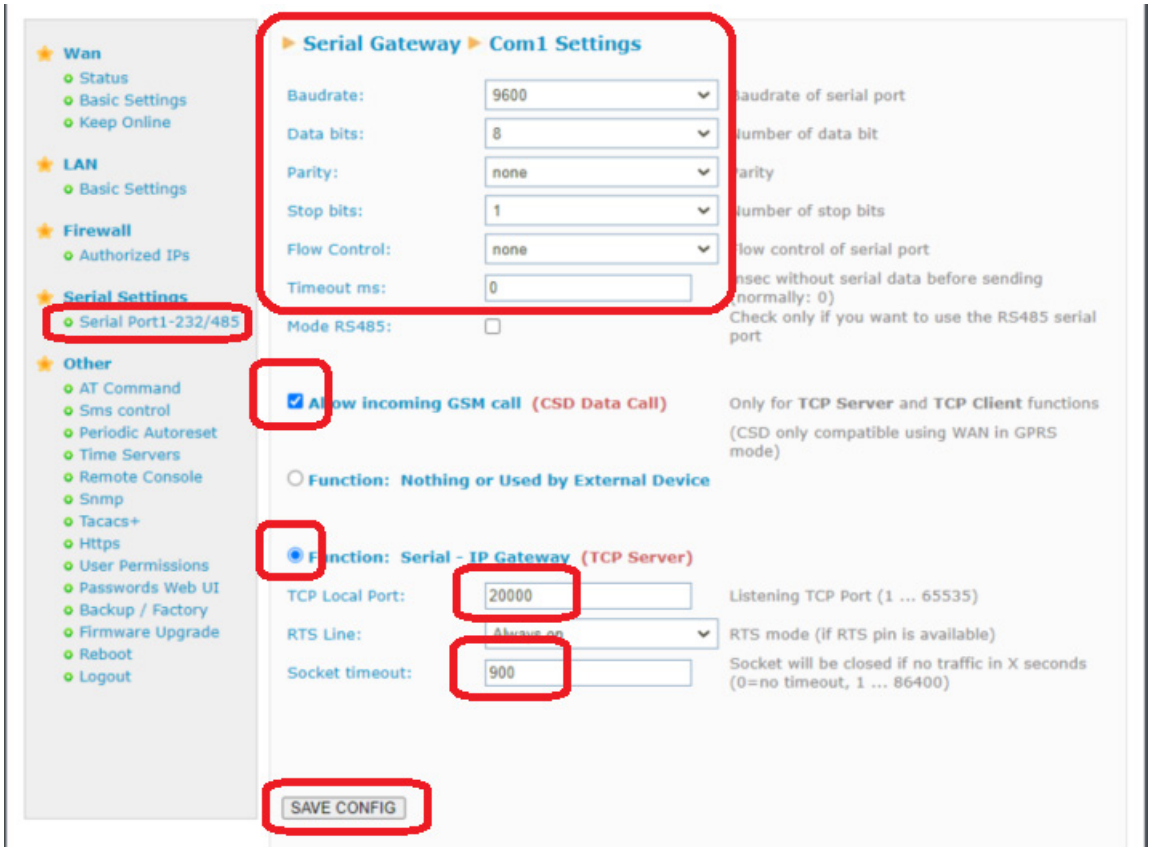
It must also be possible to access the serial gateway by means of a GSM data call (CSD), so the

corresponding box will be checked.

The TCP port on which the MTX-StarEnergy-M will be listening waiting for a connection will be TCP port 20000. For security reasons, we will establish a timeout of 900 seconds, that is, if after a TCP/IP connection with the modem, no data is received by the platform in that time, the connection socket will be closed automatically.

After configuring all the sections, press the “SAVE CONFIG” button.

The following figure shows all the settings established.



Step 4. SMS access configuration

To configure the MTX-StarEnergy-M to have access by SMS for configuration changes, remote resets, etc., go to the configuration section “OTHER > SMS control”.

In this section we activate the “AT” box that will allow the sending of AT commands by SMS. The “AT header” box specifies the SMS header, that is, the text that must precede the SMS command to be executed by the MTX-StarEnergy-M. In this example we indicate “mtx”.

In this example we will indicate that all phone numbers are valid, but up to 5 authorized phone numbers could be specified. Also, in the case of private APNs, the security of sending/receiving SMS messages can be managed at the level of the GSM operator’s own platform.

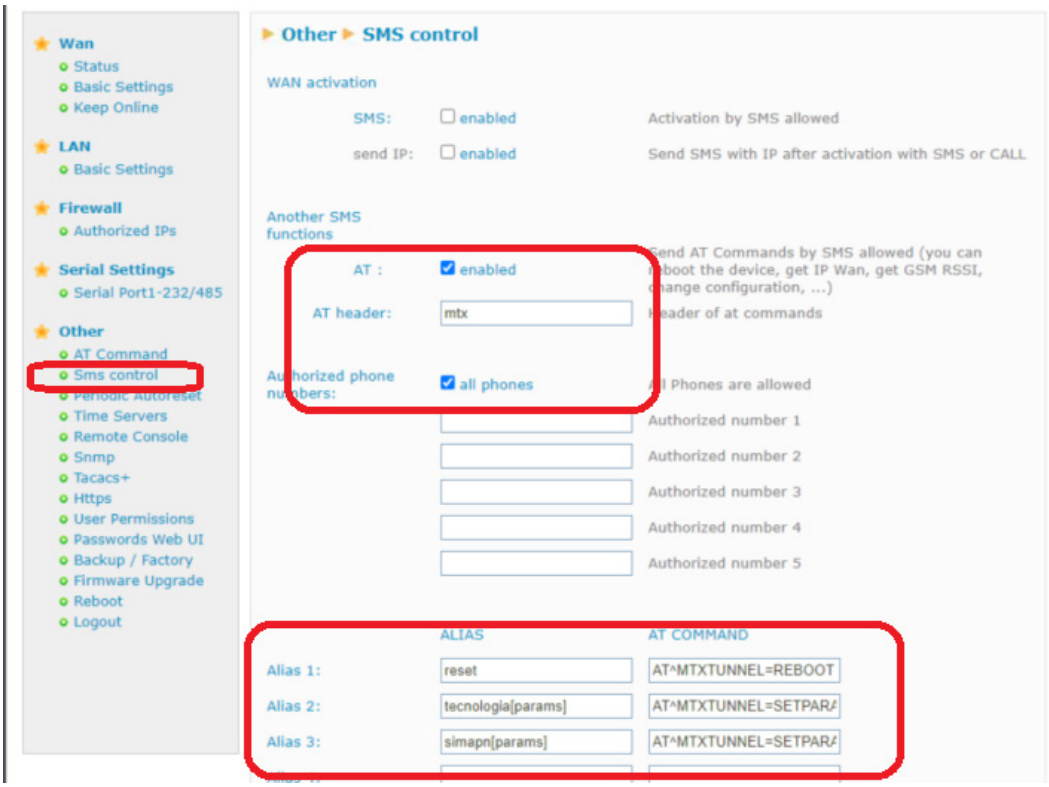
We will also add some ALIAS commands, that is, some custom commands that when received by the MTX-StarEnergy-M will execute the corresponding associated command. We will add:

reset	>	AT^MTXTUNNEL=REBOOT
red[params]	>	AT^MTXTUNNEL=SETPARAM,WAN_NETWORK,[*1]
apn[params]	>	AT^MTXTUNNEL=SETPARAM,WAN_USERNAME,[*1]

In other words, when sending a command with the text “reset”, the MTX-StarEnergy-M will self-reset. When sending an SMS command as “auto network” the modem will be configured to work in “auto” mode (4g, 3g, 2g depending on availability) and for example, if we want to change apn, it will be enough to send an SMS as “apn minuevoapn ”.

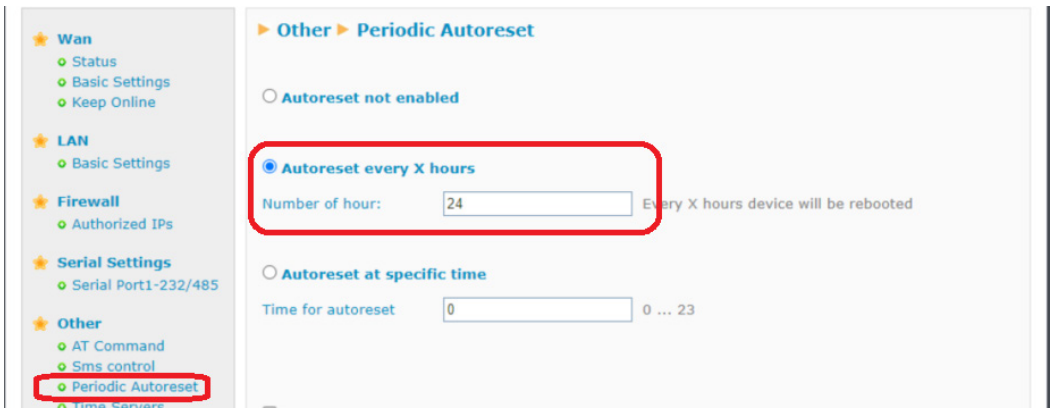
Remember that after the configuration changes, for them to be applied by the MTX-StarEnergy-M, the equipment must be restarted (manually, by SMS message, etc.).

The next screen shows the boxes to configure.



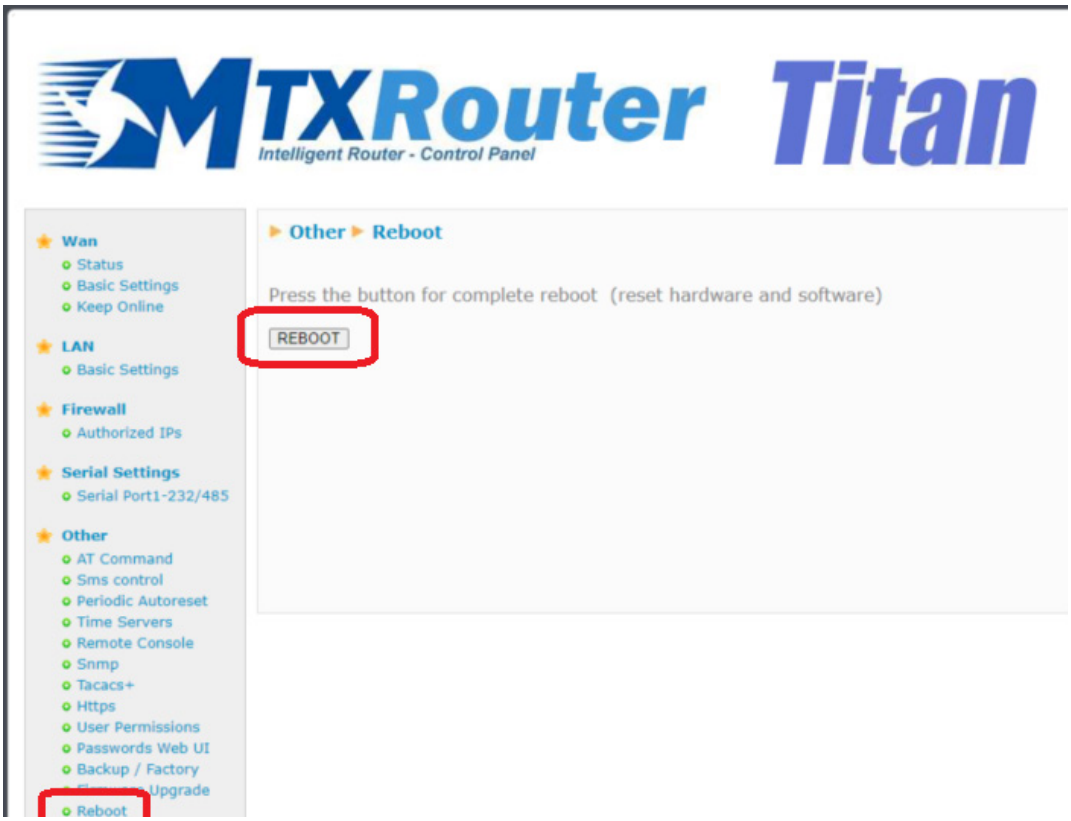
Step 5. Autoreset configuration every 24h

Although it is not necessary, it is typical for many users who use modems in telemetry scenarios, to schedule a daily reset every 24 hours to completely restart the terminal. The MTX-StarEnergy-M also has that option. To activate it, just go to the menu “Other > Periodic autoreset” and in the option “Autoreset every X hours” indicate 24.



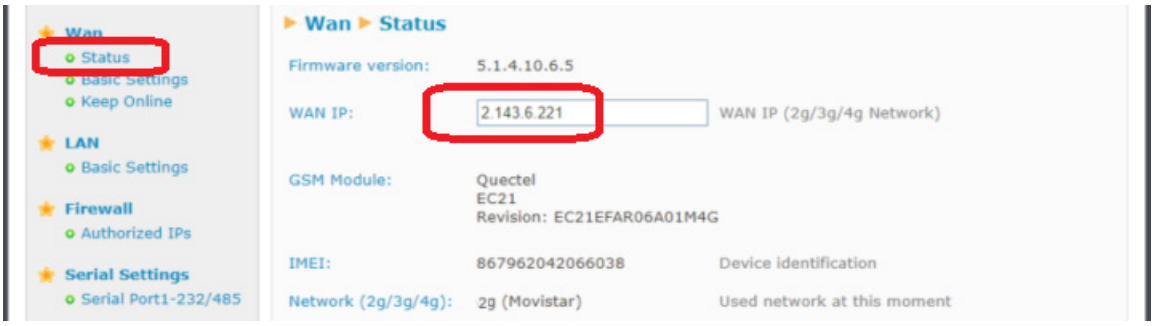
Step 6. Restarting the MTX-StarEnergy-M

Once all the necessary options have been configured, simply restart the MTX-StarEnergy-M. This can be done from the Other > Reboot menu and pressing the “REBOOT” button.



Step 7. Testing the configuration

Once rebooted, after about 30-40 seconds, it is possible to check that the device has obtained an IP from the configuration menu from the “Wan > Status” menu.



Additionally, the MTX-StarEnergy-M has a series of LEDs on the front that, in case of problems, will help you to solve it. See Annex 1 of this manual where each LED is detailed.

Sales Contact

SPAIN

C/ Alejandro Sánchez 109
28019 Madrid

Phone 1: 902.19.81.46
Phone 2: +34-91.560.27.37
Email: contact@webdyn.com

FRANCE

26 Rue des Gaudines
78100 Saint-Germain-en-Laye

Phone: +33.139042940
Email: contact@webdyn.com

INDIA

803-804 8th floor, Vishwadeep Building
District Centre, Janakpurt, 110058 New Delhi

Phone: +91.1141519011
Email: purchase-india@webdyn.com

PORTUGAL

LusoMatrix Lda.
Av. Coronel Eduardo Galhardo 7-1ºC
1170-105 Lisbon, Portugal

Phone: +351.218162625
Email: comercial@lusomatrix.pt

APAC

9F, No. 156, Sec. 3, Minsheng E. Rd.
Songshan Dist., Taipei City 10596, Taiwan

Phone: +886.965333367
Email: ahsu@matrix.es

AUE

Dubai

Phone: +34.915602737
Email: hperchin@matrix.es

USA

Chicago

Phone: +34.915602737
Email: jcabezas@matrix.es

V1.0 subject to changes | Webdyn © by Flexitron Group