



MTX-StarSensor

Local configuration manual

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MTX-StarSensor local configuration

1. Introduction

The MTX-StarSensor is a ULP (Ultra Low Power) device that periodically reads data from 4-20mA type sensors. It has an internal battery pack that powers the MTX-StarSensor device itself, as well as the 4-20mA sensor. The readings are stored in its internal non-volatile memory and can be automatically sent to a remote server/platform via FTP, MQTT (optional) via a 2G, 3G or 4G network (depending on the version). If the MTX-StarSensor device is installed in a location with no coverage, the stored data can be downloaded locally via an RS232 serial bus connected to a Windows 10 PC or Tablet, or via Bluetooth.

2. MTX-StarSensor Operating Modes

The MTX-StarSensor device has two modes of operation. The first is normal mode, in which the MTX-StarSensor device performs the tasks for which it has been configured (waking up at certain times, taking 4-20mA sensor readings, sending data through the cellular network if it is configured to do this, etc.). The second is the configuration mode. In configuration mode, the MTX-StarSensor device can be configured locally using an RS232 serial cable or via Bluetooth communication and can also be used to read the 4-20mA sensor data records stored in the internal memory, in the event that they are not being transmitted over the cellular network.

2.1 Placing the MTX-StarSensor in Configuration Mode.

Before entering configuration mode, the SIM card must be inserted correctly into the MTX-StarSensor and the antenna must be connected.

To put the MTX-StarSensor device in configuration mode, simply bring a magnet close to the indicated point on the MTX-StarSensor.

The LED on the MTX-StarSensor will then illuminate. This indicates that the MTX-StarSensor has detected the magnet, it will then wake up and enter configuration mode. After about 15 seconds the LED will flash intermittently. This indicates that the MTX-StarSensor device is in configuration mode and is ready to be configured via the RS232 serial port or a Bluetooth wireless connection.

2.2 Connections Required to Configure the MTX-StarSensor Correctly

Communication via the RS232 serial cable.

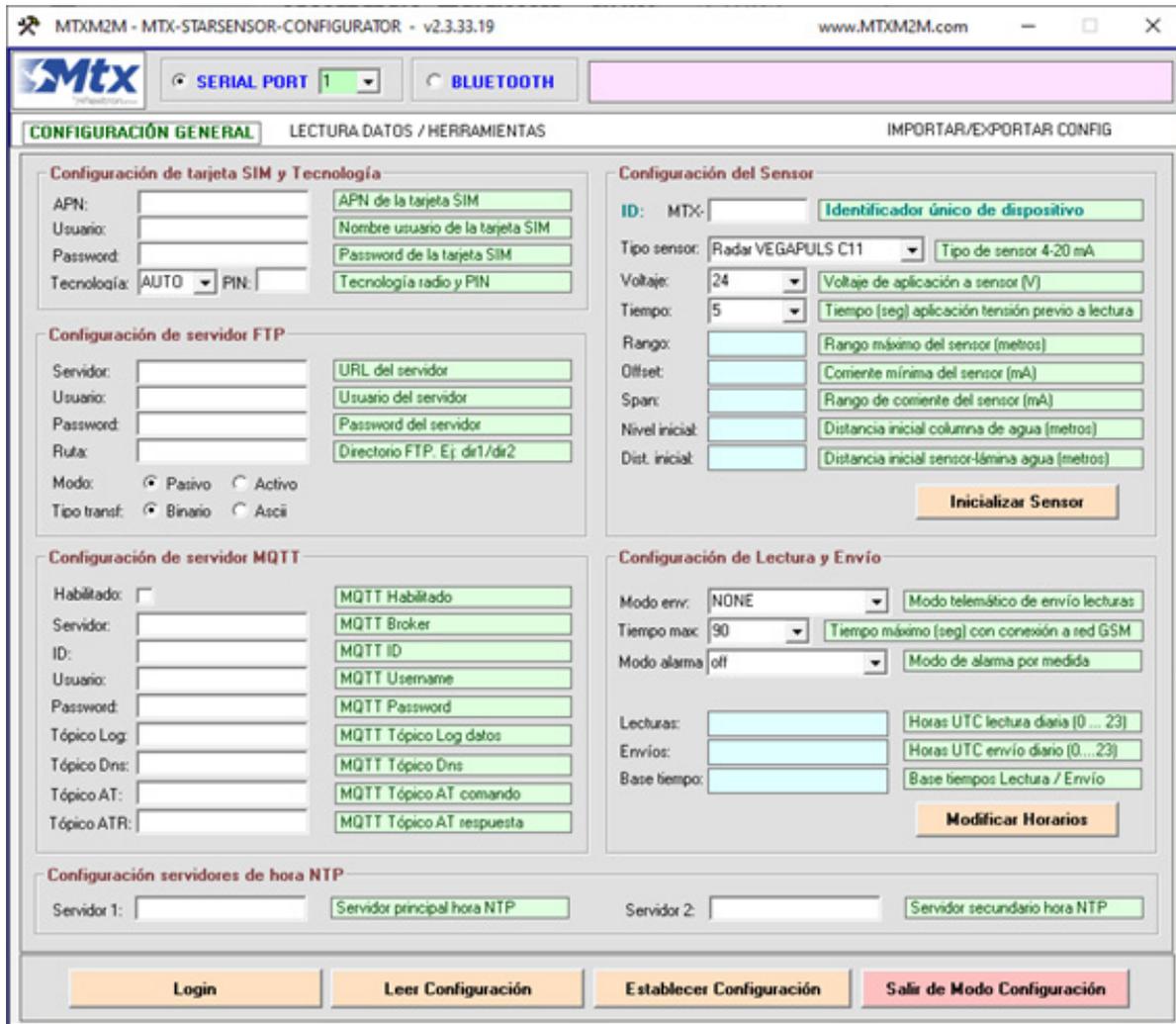
To communicate locally with the MTX-StarSensor, a Windows 10 computer or tablet and an RS232 serial port are required. If the computer or tablet does not have an RS232 serial port, a USB/RS232 converter can be used.

Communication via Bluetooth:

To communicate locally with the MTX-StarSensor, a Windows 10 computer or tablet with a compatible Intel Bluetooth module is required.

3. Configuration Software

The MTX-StarSensor configuration software has the following appearance.



First decide whether you are going to access the MTX-StarSensor via an RS232 serial cable connection or wirelessly via Bluetooth, and proceed as follows:

Configuration using the RS232 serial cable:

At the top of the screen, select the “SERIAL PORT” option and the RS232 serial port number to be used, this is the COM number of the PC or Tablet that will be used to communicate with the MTX-StarSensor device.



Once this is done, click on the “Login” button located at the bottom of the screen, after which another screen will appear, as follows.



Here you can enter the password to access the MTX-StarSensor device. The default (factory) password is “mtx”, in lower case. This can be changed later in the configuration program.

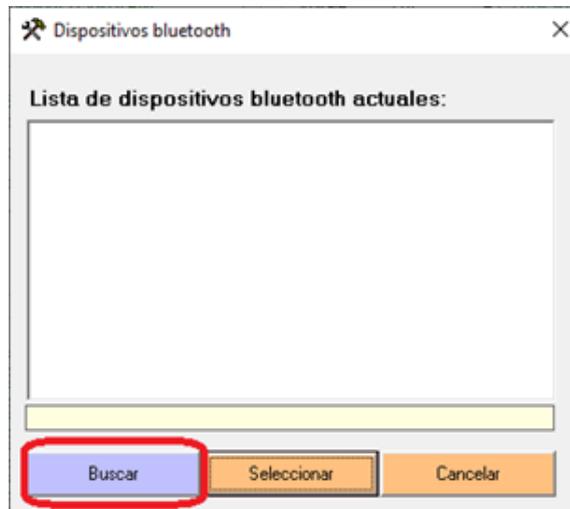
Once this is done, and if the password is correct, the current configuration of the device will be loaded automatically, as shown on the screen.

Communication via BLUETOOTH:

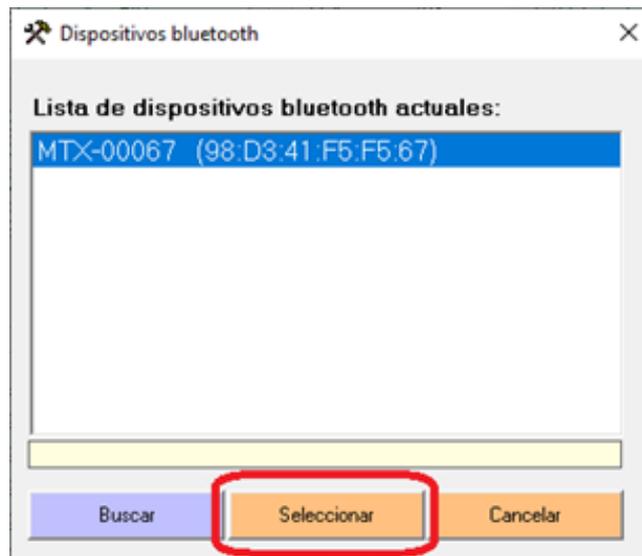
The “BLUETOOTH” option should be selected at the top of the screen.



Once the BLUETOOTH option has been selected, click on the “Login” button located at the bottom of the screen, after which another screen will appear, as follows. This shows the MTX-StarSensor devices that have been accessed within the last hour. The “Search” button must be clicked to scan for MTX-StarSensor devices. Before clicking on the “Search” button, make sure that you have Bluetooth activated on your Windows 10 PC or tablet.



After the search, the discovered devices will appear. Select the device you want to access and click on the “Select” button.



Once connected via Bluetooth, a screen will appear as follows.



On this screen you must enter the password to access the device. The default (factory) password is “mtx”, in lower case. You can change it later using the configuration software.

Once this is done, and if the password is correct, the current configuration of the device will be loaded automatically, as shown on the screen.

3.1 Sections of the Configuration Software

The configuration software has two well-differentiated sections which can be accessed from the upper tabs. The “GENERAL CONFIGURATION” menu, containing the various configuration options for the MTX-StarSensor device, and the “READ DATA / TOOLS” menu, from where it is possible to perform sensor measurement tests, 2G/3G/4G transmission tests, set local time, download stored data, etc. It also includes the “IMPORT/EXPORT CONFIG” menu. This option lets you export the configuration shown on the screen to a file and import other configurations from files.



IMPORTANT NOTE: if you import a configuration from one MTX-StarSensor to another, do not forget to configure the device ID field afterwards. Furthermore, once an imported configuration has been applied to an MTX-StarSensor, it must still be calibrated.



3.1.1 GENERAL CONFIGURATION Section

The general configuration section is divided into several other sections. Here we will describe each one.

3.1.1.1 SIM card configuration

In this section you must enter the APN, USER and PASSWORD parameters for the SIM card provided by your operator, i.e. the parameters that enable the modem to access the 2G, 3G or 4G networks (depending on the module) for the automatic sending of data and remote configuration.

MTXM2M - MTX-STARSSENSOR-CONFIGURATOR - v2.0.33.16 www.MTXM2M.com

Operación ejecutada CORRECTAMENTE

CONFIGURACIÓN GENERAL LECTURA DATOS / HERRAMIENTAS

Configuración de tarjeta SIM y Tecnología

APN:
 Usuario:
 Password:
 Tecnología: PIN:

Configuración de servidor FTP

Servidor:
 Usuario:
 Password:
 Ruta:
 Modo: Pasivo Activo
 Tipo transf: Binario Ascii

Configuración de servidor MQTT

Habilitado:
 Servidor:
 ID:
 Usuario:
 Password:
 Tópico Log:
 Tópico Dns:
 Tópico AT:
 Tópico ATR:

Configuración de servidores de hora NTP

Servidor 1:
 Servidor 2:

Configuración del Sensor

ID:
 Tipo sensor:
 Voltaje:
 Tiempo:
 Rango:
 Offset:
 Spar:
 Col. inicial:
 Dist. inicial:

Configuración de Lectura y Envío

Modo env:
 Tiempo max:
 Modo alarma:
 Umbrales:
 Lecturas:
 Envíos:
 Base tiempo:

The radio technology to be used can be configured (AUTO, 2G, 3G or 4G (depending on the model)). We recommend you use AUTO, the modem will then automatically choose the best available technology. It may be useful to specify a specific technology (to shave a few seconds off the network connection time) in locations where you clearly only have one technology available (e.g. 2G only), or if your SIM card only works with a certain technology.

3.1.1.2 FTP server configuration

One method of sending recorded data is by FTP. From the configuration box selected below you can enter the various parameters for FTP communication.

The screenshot shows the 'MTXM2M - MTX-STARSSENSOR-CONFIGURATOR - v2.0.33.16' application window. The 'CONFIGURACIÓN GENERAL' tab is active. The 'Configuración de servidor FTP' section is highlighted with a red box. It contains the following fields:

- Servidor: ftp.myserver.com (URL del servidor)
- Usuario: myuser (Usuario del servidor)
- Password: [redacted] (Password del servidor)
- Ruta: mypath1/MyPath2 (Directorio FTP. Ej: dir1/dir2)
- Modo: Pasivo Activo
- Tipo transf: Binario Ascii

Other sections visible include 'Configuración de tarjeta SIM y Tecnología', 'Configuración del Sensor', 'Configuración de servidor MQTT', 'Configuración de Lectura y Envío', and 'Configuración servidores de hora NTP'. Buttons at the bottom include 'Login', 'Leer Configuración', 'Establecer Configuración', and 'Salir de Modo Configuración'.

Description of each of the FTP service broker configuration parameters:

- Server: an IP or DNS which can be indicated with: the TCP port to be used. Example: x.x.x.x:21
- User: the FTP server user
- Password: the FTP server password
- Path: full directory path where the output files will be sent.
- Mode: you can choose “Passive” or “Active”, depending on the type of SIM card (private or public IP) and the security settings of your server.
- Transfer Type: ASCII or BINARY. Select ASCII, the data collected by the MTX-StarSensor is always of the ASCII type.

3.1.1.3 MQTT server configuration

(The MQTT option is only available on request) This section must be configured if you are going to use an MQTT platform to receive the data stored in the sensor, or if you intend to implement a device management platform. If you only need to send sensor data via FTP, do not enable this section, you will save power and therefore battery life.

The screenshot shows the 'CONFIGURACIÓN GENERAL' window of the MTXM2M configurator. The 'Configuración de servidor MQTT' section is highlighted with a red box. It includes the following fields:

- Habilitado: (MQTT Habilitado)
- Servidor: tcp://broker.mqttdashboard.com (MQTT Broker)
- ID: myID (MQTT ID)
- Usuario: myUser (MQTT Username)
- Password: ***** (MQTT Password)
- Tópico Log: /LOGGER (MQTT Tópico Log datos)
- Tópico Dns: /DNS (MQTT Tópico Dns)
- Tópico AT: /AT (MQTT Tópico AT comando)
- Tópico ATR: /ATR (MQTT Tópico AT respuesta)

Other sections visible include 'Configuración de tarjeta SIM y Tecnología', 'Configuración de servidor FTP', 'Configuración del Sensor', and 'Configuración de Lectura y Envío'.

Description of each of the MQTT service configuration parameters:

- Enabled: checkbox to enable MQTT communications
- Server: MQTT server URL in the format tcp://xxx.xxx.xxx.xxx:1883 or ssl://xxx.xxx.xxx.xxx:8883 where xxx.xxx.xxx.xxx can be an IP or DNS address
- ID: identifier of the device on the MQTT platform
- User: Username of the device on the MQTT platform
- Password: password of the device on the MQTT platform
- LOG topic: MQTT topic to which the stored sensor data will be sent

NB: The information sent by the LOGGER frame, in JSON format, will be similar to the following:

```
{“MTX-00067”:[{“data”:{“S”:0,“D”:30.94,“C”:6.958,“A”:0,“P”:10.8,“R”:19,“T”:“3g”,“N”:903},“time”：“2021-10-13T08:15:17Z”}]}
```

Where:

“S”: indicates the type of 4-20mA sensor (0=pressure, 1=radar, 2=generic)

“D”: Indicates the measurement. In the case of a pressure sensor, it indicates the distance in metres between the well-head and the surface of the water, for a radar sensor, it indicates the water level of the well, and for a generic sensor, it indicates the current in the sensor.

“C”: Sensor current in mA

“A”: Indicates if there is an alarm. 0=No alarm, 1=Low value alarm, 2=High value alarm.

“P”: Battery voltage

“R”: coverage level (0...31)

“T”: technology: 2g, 3g, 4g

“H”: module temperature in degrees centigrade

“N”: Number of transmissions made up to the time of the sensor reading

“time”: current time of the MTX unit in UTC format

- DNS Topic: MQTT topic to which the MTX-StarSensor status data will be sent each time the device has IP communication

NB: The information sent by the DNS frame, in JSON format, will be similar to the following:

```
{“data”:{“IMEI”：“357150691743852”,“TYPE”：“DNS”,“ID”：“MTX-00067”,“IP”：“176.82.197.183”,“CSQ”：“12”,“TECH”：“3g”,“VER”：“11.08.33.23”,“MOD”：“199810082”,“CID”：“214;07;0363;9CC20E5”,“VPOW”：“10767”,“time”：“2021-10-13T08:05:58Z”}}
```

Where:

“IMEI”: is the modem’s IMEI

“TYPE”: is the type of MQTT frame sent

“ID”: is the unique identifier of the MTX unit

“IP”: is the current IP address of the MTX unit

“CSQ”: is the RSSI strength (0...31)

“TECH”: is the technology used

“VER”: is the firmware version of the MTX unit

“MOD”: is the MTX model code

“CID”: GSM cell identification

“VPOW”: battery voltage

“time”: UTC time of the MTX unit

- AT topic: MQTT topic for sending AT commands to the MTX-StarSensor remotely (read status, read and change configuration, etc.).

NB: If MQTT communication is enabled, it is highly recommended that the MQTT broker sends an AT^MTXTUNNEL=NOREQUEST command to the MTX modem after the broker has received the DNS frame (i.e. the status information frame of the MTX), if no other AT commands need to be sent to the modem (i.e. to perform a remote FW update). Sending this command will prevent the MTX modem from staying connected to the broker via MQTT for longer than is necessary (waiting to receive other AT commands), so saving energy. This will improve battery life.

- ATR Topic: MQTT topic to which the MTX-StarSensor will send responses to the AT commands received in the “AT Topic”.

3.1.1.4 Configuring NTP time servers

The MTX-StarSensor has an internal clock. This clock can be synchronized in two ways. Locally and manually (for locations without 2G / 3G / 4G coverage (or for initialization of the MTX-StarSensor device) and automatically using NTP time servers.

MTX2M2M - MTX-STARSSENSOR-CONFIGURATOR - v2.0.33.16 www.MTX2M2M.com

Operación ejecutada CORRECTAMENTE

CONFIGURACIÓN GENERAL LECTURA DATOS / HERRAMIENTAS

Configuración de tarjeta SIM y Tecnología

APN: movistar.es APN de la tarjeta SIM
Usuario: MOVISTAR Nombre usuario de la tarjeta SIM
Password: MOVISTAR Password de la tarjeta SIM
Tecnología: AUTO PIN: 0000 Tecnología radio y PIN

Configuración de servidor FTP

Servidor: ftp.myserver.com URL del servidor
Usuario: myuser Usuario del servidor
Password: Password del servidor
Ruta: mypath1/MyPath2 Directorio FTP. Ej. dir1/dir2
Modo: Pasivo Activo
Tipo transf.: Binario Ascii

Configuración de servidor MQTT

Habilitado: MQTT Habilitado
Servidor: tcp://broker.mqttdashboard.com MQTT Broker
ID: myID MQTT ID
Usuario: myUser MQTT Username
Password: MQTT Password
Tópico Log: /LOGGER MQTT Tópico Log datos
Tópico Dns: /DNS MQTT Tópico Dns
Tópico AT: /AT MQTT Tópico AT comando
Tópico ATR: /ATR MQTT Tópico AT respuesta

Configuración del Sensor

ID: MTX-00067 Identificador único de dispositivo
Tipo sensor: Radar VEGAPULS C11 Tipo de sensor 4-20 mA
Voltaje: 24 Voltaje de aplicación a sensor (V)
Tiempo: 10 Tiempo (seg) aplicación tensión previo a lectura
Rango: 8 Rango máximo del sensor (metros)
Offset: 4 Corriente mínima del sensor (mA)
Span: 16 Rango de corriente del sensor (mA)
Col. inicial: 0.502 Distancia inicial columna de agua (metros)
Dist. inicial: 0.413 Distancia inicial sensor-lámina agua (metros)
Inicializar Sensor

Configuración de Lectura y Envío

Modo env.: FTP Modo telemático de envío lecturas
Tiempo max: 60 Tiempo máximo (seg) con conexión a red GSM
Modo alarma: smart Modo de alarma por medida
Umbral: 0,1 / 0,5 / 0,1 Min / Max / Histeresis (metros)
Lecturas: 0:1;2;3;4;5;6;7;8;9;10;11;1; Horas UTC lectura diaria (0...23)
Envíos: 0:6;12;18 Horas UTC envío diario (0...23)
Base tiempo: Horas Base tiempos Lectura / Envío
Modificar Horarios

Configuración servidores de hora NTP

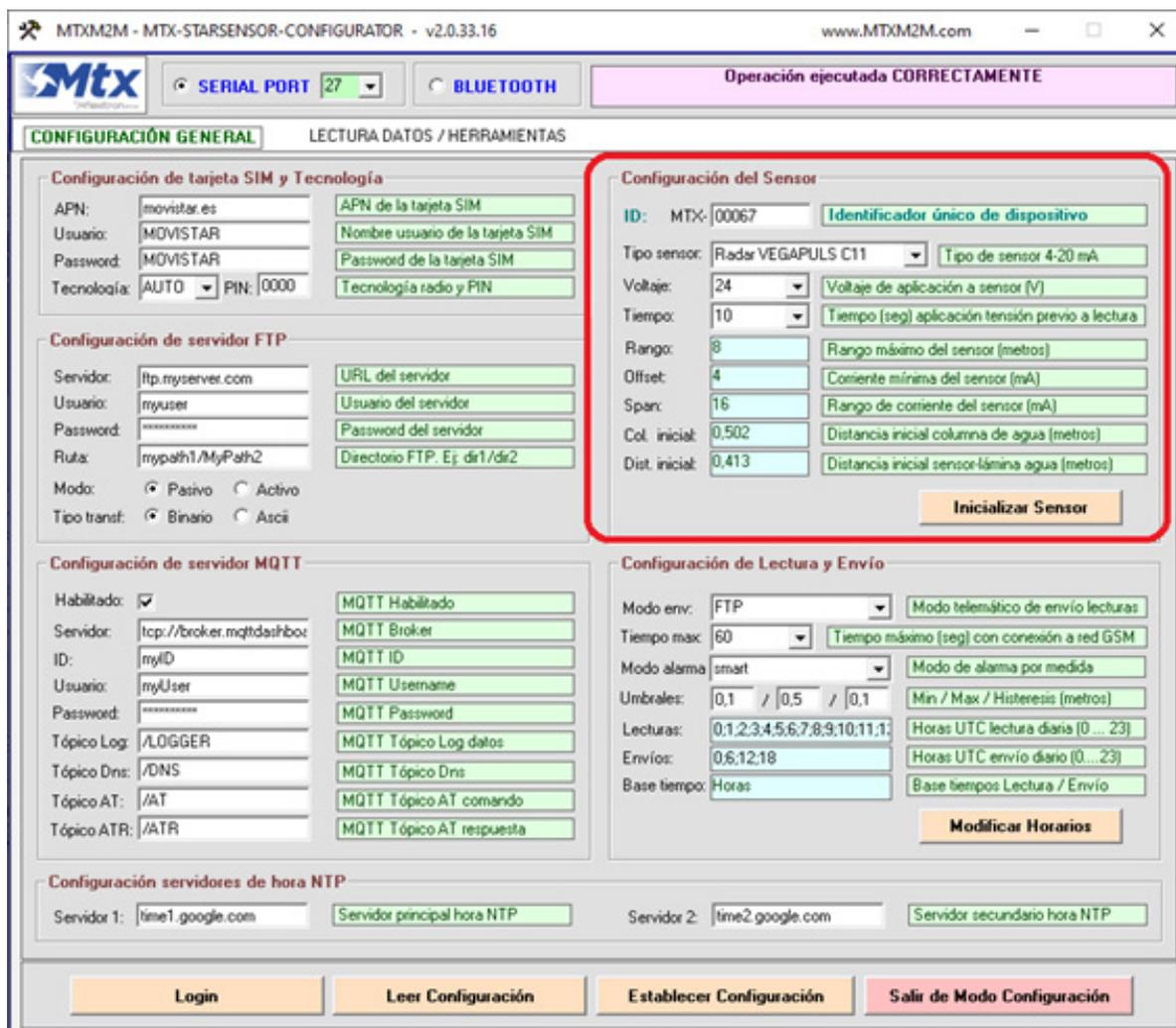
Servidor 1: time1.google.com Servidor principal hora NTP Servidor 2: time2.google.com Servidor secundario hora NTP

Login **Leer Configuración** **Establecer Configuración** **Salir de Modo Configuración**

Two NTP time servers must be entered here for automatic date/time synchronization. Automatic synchronization via NTP will only occur when the MTX-StarSensor device connects to the IP network to send data automatically. It uses this opportunity to connect to the network, therefore saving energy and increasing battery life.

3.1.1.5 Sensor configuration

This section covers configuration and initialization of the sensor.



Descriptions of the Sensor 4-20mA configuration parameters:

- ID: sensor identifier field. It must be unique in the sensor network. This field will be used to create the names of the data files sent via FTP, meaning each device on the network must have a different identifier. The identifier will always have the structure MTX-XXXXX where XXXXX are alphanumeric characters
- Sensor Type: the MTX-StarSensor currently supports three types of 4-20mA device: “Submersible Pressure Sensor”, “VEGAPULS C11 Radar” and “Generic 4-20mA”

- Voltage: lets you specify the supply voltage of the 4-20 mA sensor. Depending on the MTX-StarSensor model, it can be set at 24V or between 12V and 32V.
- Time: specifies the number of seconds during which the Voltage is applied to the Sensor before the measurement is taken, to stabilise it beforehand. For VEGAPULS C11 sensors, select 10 seconds.
- The following configuration parameters do not apply to the generic 4-20mA sensor.
- Range: maximum measurement range of the sensor in use (indicated on the sensor's datasheet). For the VEGAPULS C11 sensor, this is 8 (metres).
- Offset: minimum measurement value in mA, usually 4. For the VEGAPULS C11 sensor, enter 4.
- Span: the sensor's measurement range in mA (indicated on the sensor's datasheet). This is the maximum amplitude of the sensor in mA from the offset, typically 16. For the VEGAPULS C11 sensor, enter 16.
- Initial Col: for the "Radar VEGAPULS C11" sensor this indicates the initial water level, from the bottom to the surface. For a "Submersible water pressure" type sensor, this indicates the initial water column from the surface to the sensor.
- Initial Dist: for the "Radar VEGAPULS C11" sensor type, this indicates the initial distance from the sensor (Radar) to the object to be measured (e.g. water surface). The "Initial Dist" parameter changes to "Initial Value" when selecting the "Generic 4-20mA" sensor type. For the "Submersible water pressure" type sensor, it indicates the initial distance between the well-head and the surface of the water.
- "Initialize Sensor" button

This button starts the sensor initialization procedure.

For the "Radar VEGAPULS C11" type sensor, a screen similar to the one shown below will appear when it is clicked.

This screen is used to initialize the MTX-StarSensor to read the 4-20mA sensor. Enter the Range, Offset and Span values for the 4-20mA sensor you want to use. For the VEGAPULS C11 sensor, enter the value 8 (default value for the VEGA PULSC11 sensor, or the maximum range value configured in the VEGAPULS C11 sensor if it has been changed, with a minimum of 1m. Remember that the minimum range value of the VEGAPULSC11 sensor must always be 0m). The Offset and Span values must be set at 4 and 16 respectively.

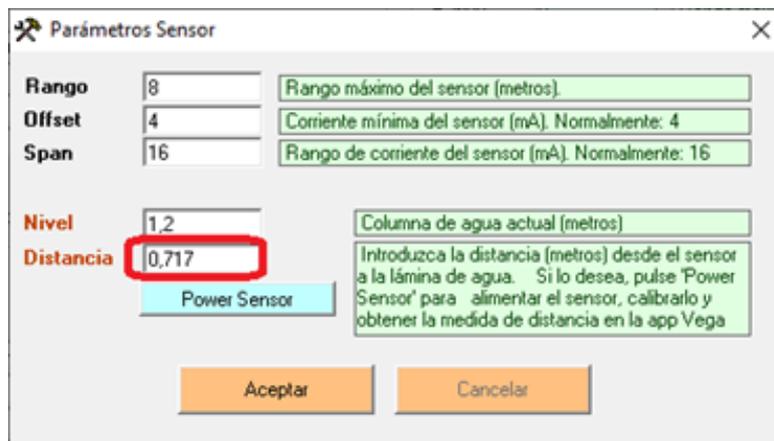
Then enter the Level and Distance data.

“Level” indicates the initial water level from the bottom to the surface (in metres). Use a millimetric tape measure, or millimetric metal rod to obtain the initial reference reading. Try to make the measurement as accurate as possible.

“Distance”. Optional. This indicates the distance (in metres) from the water surface to the VEGAPULSC11 sensor. Leave the “Distance” box blank if you want to initialize the MTX-StarSensor with the measurement obtained directly from the VEGAPULSC11 sensor. Alternatively, if you want to improve the accuracy of the MTX-StarSensor’s measurements, enter the initial distance (in metres to 3 decimal places X.XXX) from the water surface to the VEGAPULSC11 sensor in the “Distance” box.

“Power Sensor” - If you need to configure the VEGAPULS C11 sensor, for example to set the maximum reading range, you can click the button to power it on. You can then use the VegaTool app to do this.

To finish the initialization process, once you have obtained the distance between the VEGAPULS C11 sensor and the water surface, enter it in the configuration screen (“Distance” box) and click “OK” to start the MTX-StarSensor’s initialization calibration process. Below is an example screen, where the "Level" (the measurement between the bottom and the water surface is 1.2 meters) and the "Distance" (the measurement between the water surface and the VEGAPULSC11 sensor) is 0.717 metres.



NB: If you have changed the sensor Range using the Vega Tools app (e.g. a Range of 4m instead of 8m) you will need to adjust it on the previous screen before pressing “OK”. The minimum range of the sensor must be set to 0m (the factory setting).

For the “Submersible Water Pressure” type sensor, pressing the “Initialize Sensor” button will display the screen shown below.

Rango	8	Rango máximo del sensor (mWG)
Offset	4	Corriente del sensor para cero metros (mA)
Span	16	Rango de corriente del sensor (mA). Normalmente: 16
Distancia		Distancia desde el brocal a la lámina de agua (metros)

This screen is used to calibrate the MTX-StarSensor for the 4-20mA sensor reading. Enter the Range, Offset and Span values for the 4-20mA sensor you want to use. For the 4-20 “Submersible water pressure” sensor, enter the Range (the maximum distance in metres that the sensor is capable of reading), the Offset (in mA, normally 4) and the Span (in mA, normally 16).

You must then enter the Distance.

"Distance" indicates the distance between the well-head to the surface of the water. Use a millimetric tape measure, or millimetric metal rod to obtain the initial reference reading. Try to make the measurement as accurate as possible.

3.1.1.6 Read and send settings

In this section we will configure all parameters related to the mode and period for reading and sending data.

The screenshot shows the MTXM2M configuration interface. At the top, it indicates 'Operación ejecutada CORRECTAMENTE'. The main configuration area is divided into several sections:

- Configuración de tarjeta SIM y Tecnología:** Includes fields for APN (movistar.es), Usuario (MOVISTAR), Password (MOVISTAR), and Tecnología (AUTO).
- Configuración de servidor FTP:** Includes fields for Servidor (ftp.myserver.com), Usuario (myuser), Password, and Ruta.
- Configuración de servidor MQTT:** Includes fields for Habilitado (checked), Servidor (tcp://broker.mqttdashboard.com), ID (myID), Usuario (myUser), Password, and various topics.
- Configuración de servidores de hora NTP:** Includes fields for Servidor 1 (time1.google.com) and Servidor 2 (time2.google.com).
- Configuración del Sensor:** Includes fields for ID (MTX:00067), Tipo sensor (Radar VEGAPULS C11), Voltaje (24), Tiempo (10), Rango (8), Offset (4), Span (16), Col. inicial (0,502), and Dist. inicial (0,413).
- Configuración de Lectura y Envío (highlighted in red):** Includes fields for Modo env (FTP), Tiempo max (60), Modo alarma (smart), Umbral (1,1 / 2,5 / 0,1), Lecturas (0,1,2,3,4,5,6,7,8,9,10,11,1), Envíos (0,6,12,18), and Base tiempo (Horas).

Buttons at the bottom include 'Login', 'Leer Configuración', 'Establecer Configuración', and 'Salir de Modo Configuración'.

- Send Mode: mode for sending the collected data to the server. You can choose between FTP and MQTT (optional). Choose NONE if you do not want to send data by IP (e.g. if you only want to use a SERIAL cable or BLUETOOTH)
- Max time: indicates the time, in seconds, that the MTX-StarSensor device can be connected to the 2G, 3G or 4G network (depending on the model). If the MTX-StarSensor device has not been able to make a connection within that time, or has not been able to send the data, it will end the sending process in order to save battery life.

If the data are sent within the maximum time window, the connection will be closed immediately in order to save power. The MTX-StarSensor will also attempt to synchronize its time setting with the configured NTP time servers during this window. Make sure the time servers are correctly configured, as the connection time could be increased by between 7 and 14 seconds.

- Time base: indicates the time base for reading and sending data. Two values are possible: hours and minutes. Use of the “hours” time base is STRONGLY recommended. Using the “minutes” time base will drastically reduce battery life.
- Readings: indicates the hours or minutes (depending on the configured time base) at which the MTX-StarSensor will wake up to read the 4-20mA sensor
- Sends: indicates the hours or minutes (depending on the configured time base) at which the MTX-StarSensor will send the data stored in its non-volatile memory to the FTP or MQTT platform. Please note that it is only possible to select send hours or minutes that coincide with sensor reading hours or minutes, in order to save energy and prolong battery life.
- Alarm mode: one of these modes can be selected: “off”, “on” and “smart”.

The “off” option specifies that no alarms are set on the MTX-StarSensor.

The “on” option specifies that alarms are configured on the MTX-StarSensor. This implies that, if the recorded level is lower or higher than certain thresholds, the alarm will be triggered. In the “on” operating mode, if an alarm is triggered, a data send will also be activated (via FTP or MQTT depending on the configured sending mode) regardless of whether data is configured to be sent at that time. The “on” mode can significantly increase energy consumption, as, if the level measured by the MTX-StarSensor is within the alarm ranges every time a reading is taken, the data will always be sent. This will significantly reduce battery life. For example, if you have configured the MTX-StarSensor to take 1 reading every hour and to perform 2 sends per day, but the alarm state is active throughout the day, 24 data sends will be made instead of the 2 configured, which will significantly reduce battery life.

The “smart” option is similar to the “on” alarm option, but it works in an intelligent manner. When an alarm is triggered, the option to send data to the server is also triggered in order to report the situation, but automatic sending will not occur again until the alarm is reset, i.e. until the alarm is deactivated again, so preventing the MTX-StarSensor from automatically sending data whenever it is in an alarm condition, so prolonging the life of the batteries.

- Thresholds: for the VEGAPULSC11 sensor, this specifies the minimum and maximum thresholds (in metres) for the water level that must be read by the MTX-StarSensor to trigger an alarm. A hysteresis value (in metres) can also be entered to prevent continuous alarm triggers on reaching the exact level.

For generic 4-20 milliamp sensors, the threshold data (minimum, maximum and hysteresis) are indicated in metres.

Below is an example showing the difference between the “on” and “smart” alarm modes.

EXAMPLE

For a VEGAPULSC11 sensor, the alarm mode is configured for a minimum threshold of 2m and a maximum of 4m, with a hysteresis of 0.1m. It is also configured to read the sensor every hour (24 readings per day) and to perform only 2 sends per day (at 00:00 and 12:00), via FTP.

Configuración de Lectura y Envío

Modo env:	FTP	Modo telemático de envío lecturas
Tiempo max:	60	Tiempo máximo (seg) con conexión a red GSM
Modo alarma:	smart	Modo de alarma por medida
Umbrales:	2 / 4 / 0.1	Min / Max / Histeresis (metros)
Lecturas:	0;1;2;3;4;5;6;7;8;9;10;11;1;	Horas UTC lectura diaria (0 ... 23)
Envíos:	0;12	Horas UTC envío diario (0...23)
Base tiempo:	Horas	Base tiempos Lectura / Envío

If the alarm mode is set to “on”, as soon as the sensor measures a level lower than 2m or higher than 4m, the alarm will be triggered. For example, let's imagine the time is 03:00, the MTX-StarSensor wakes up and reads a distance of 1m. At that moment, as the distance value is less than 2m, the alarm will be triggered, as will the sending process, even if the data are not scheduled to be sent at 03:00. An hour later, the MTX-Starsensor wakes up again at 04:00 to take the next sensor reading, it reads 1m again. As it is still in alarm condition, the data are sent again at 04:00. At 05:00 it wakes up and takes a reading again, it reads 1.1m, so a send is performed once again. And so on until the alarm condition is not met, which, in this case, will be at 2.1m (2 metres + the hysteresis value of 0.1m). This can greatly reduce battery life due to the large number of sends performed. Next we will look at “smart” mode.

If the "smart" alarm mode is configured, as soon as the distance measured by the sensor is less than 2m or greater than 4m, the alarm will be triggered. For example, let's imagine the time is 03:00, the MTX-StarSensor wakes up and reads a distance of 1m. At that moment, since the value of the distance is less than 2m, the alarm will be triggered, and also the sending process, even if the data are not programmed to be sent at 03:00. An hour later, the MTX-Starsensor wakes up again at 04:00 to take the next sensor reading, it reads 1m again. Here, if the alarm that occurred at 03:00 was sent successfully, the data are NOT resent at 04:00. At 05:00 it wakes up again and takes a reading of 1.1m and, as it is still in alarm condition, but a correct send occurred at 03:00, a send is NOT performed again. And so on until the alarm condition is not met, which, in this case, will be at 2.1m (2 metres + the hysteresis value of 0.1m). From this moment on, if a new alarm condition were to occur, for example at a distance of 1.9m, the alarm would be activated and the data sent again.

- “Edit Schedules” button. This button can be used to configure the "time base" and the hours or minutes at which data are to be read and sent. When you click on this button, the following window will appear:



In the example shown in the previous figure, the "Hours" time base has been set, with a schedule of 1 reading per hour and a send at 00:00, 08:00 and 16:00, i.e. 3 sends per day. Remember that the times indicated are always UTC. Do not configure sending schedules if you are not going to use IP, i.e. if you are going to collect data locally using a serial cable or Bluetooth.

3.1.1.7 Read and write configuration buttons

There are 4 buttons at the bottom of the screen. They are described below.

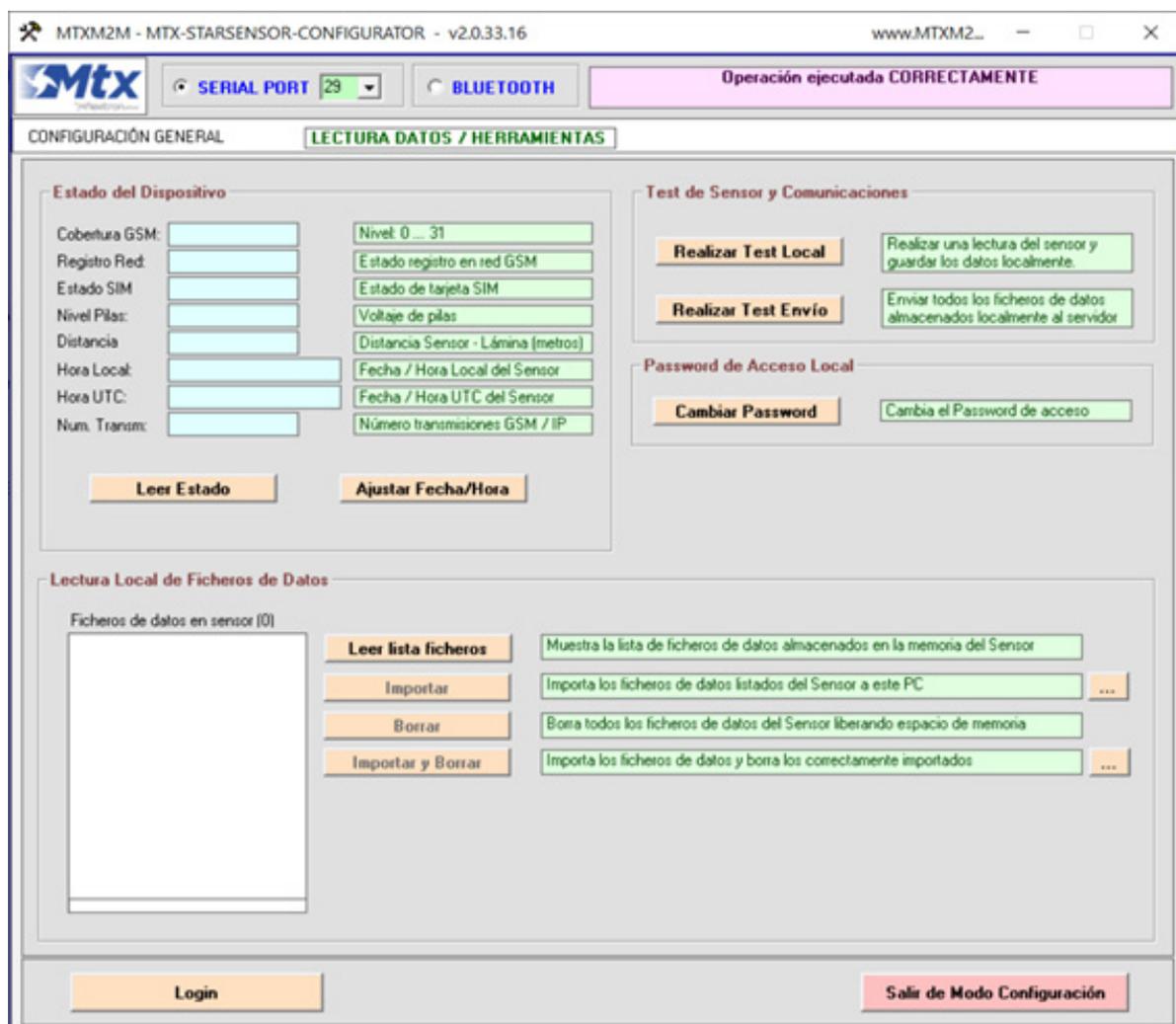


- “Login” button: used to identify yourself to the MTX-StarSensor device. Before you can perform actions on the MTX-StarSensor device locally via the RS232 port or Bluetooth, you must go through the authentication process. Once the password has been correctly entered, the configuration can be read or changed, etc.
- “Read Configuration” button: loads the current configuration of the MTX-StarSensor device. The configuration software will display the current configuration on the screen.

- “Set Configuration” button: saves the configuration created using the software in the non-volatile memory of the MTX-StarSensor device.
- “Exit Configuration Mode” button: the MTX-StarSensor device exits configuration mode and enters normal mode. If you need to return the MTX-StarSensor to configuration mode, follow the procedure indicated in point 2.1 of this manual. Remember that if no actions are performed on the MTX-StarSensor device, it will exit configuration mode after 5 minutes to save battery power.

3.1.2 READ DATA / TOOLS Section

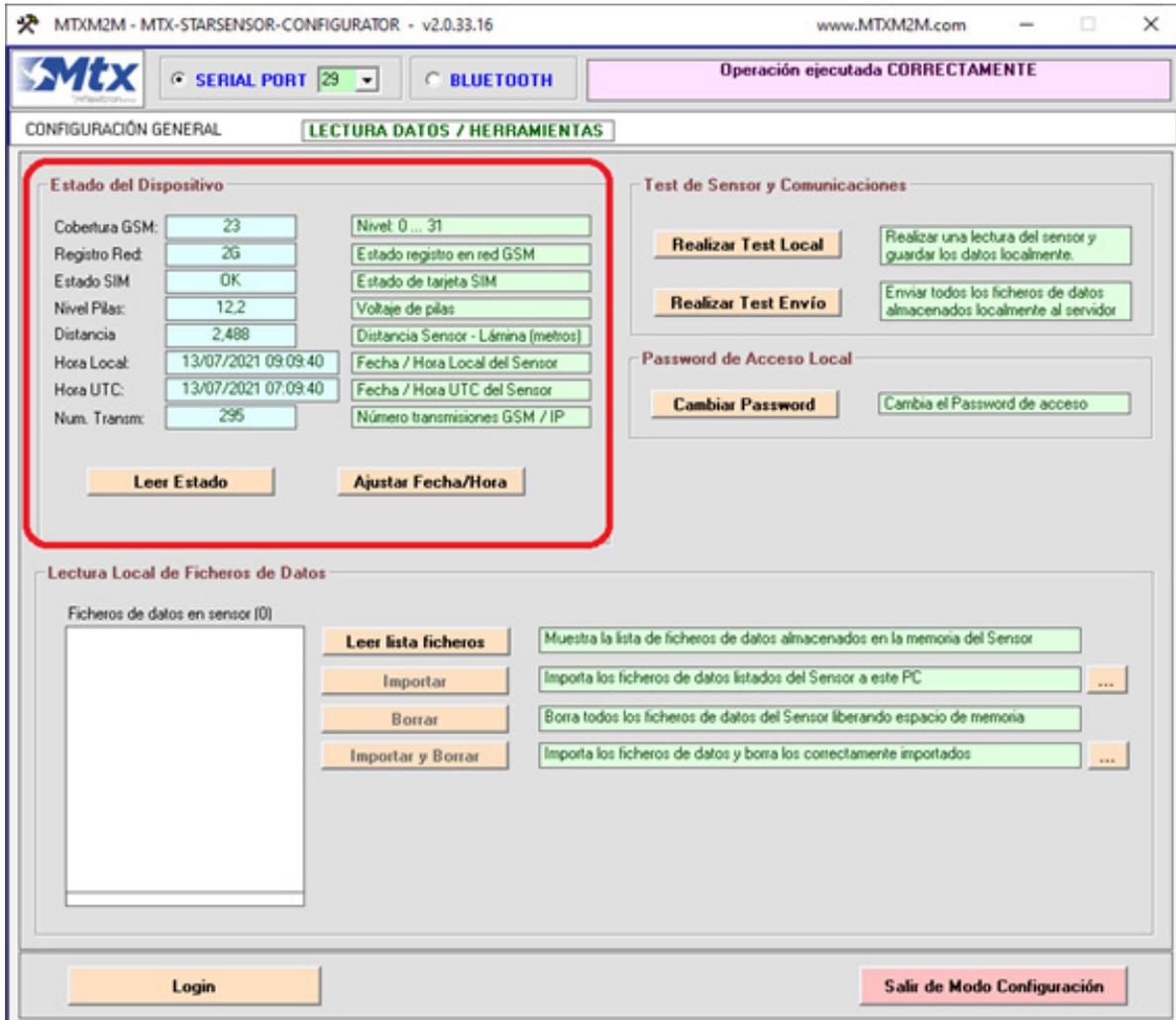
This section of the configuration software includes a series of utilities that let you read the current status of the sensor, manually update the time, perform a reading test and send data to the platform, change the local access password and extract the files of sensor data stored in the non-volatile memory of the MTX-StarSensor device. This last feature is useful for MTX-StarSensor devices which are installed in areas that do not have 2G, 3G, or 4G coverage, or when you simply want to collect readings locally using an RS232 serial cable or Bluetooth.



3.1.2.1 Device status

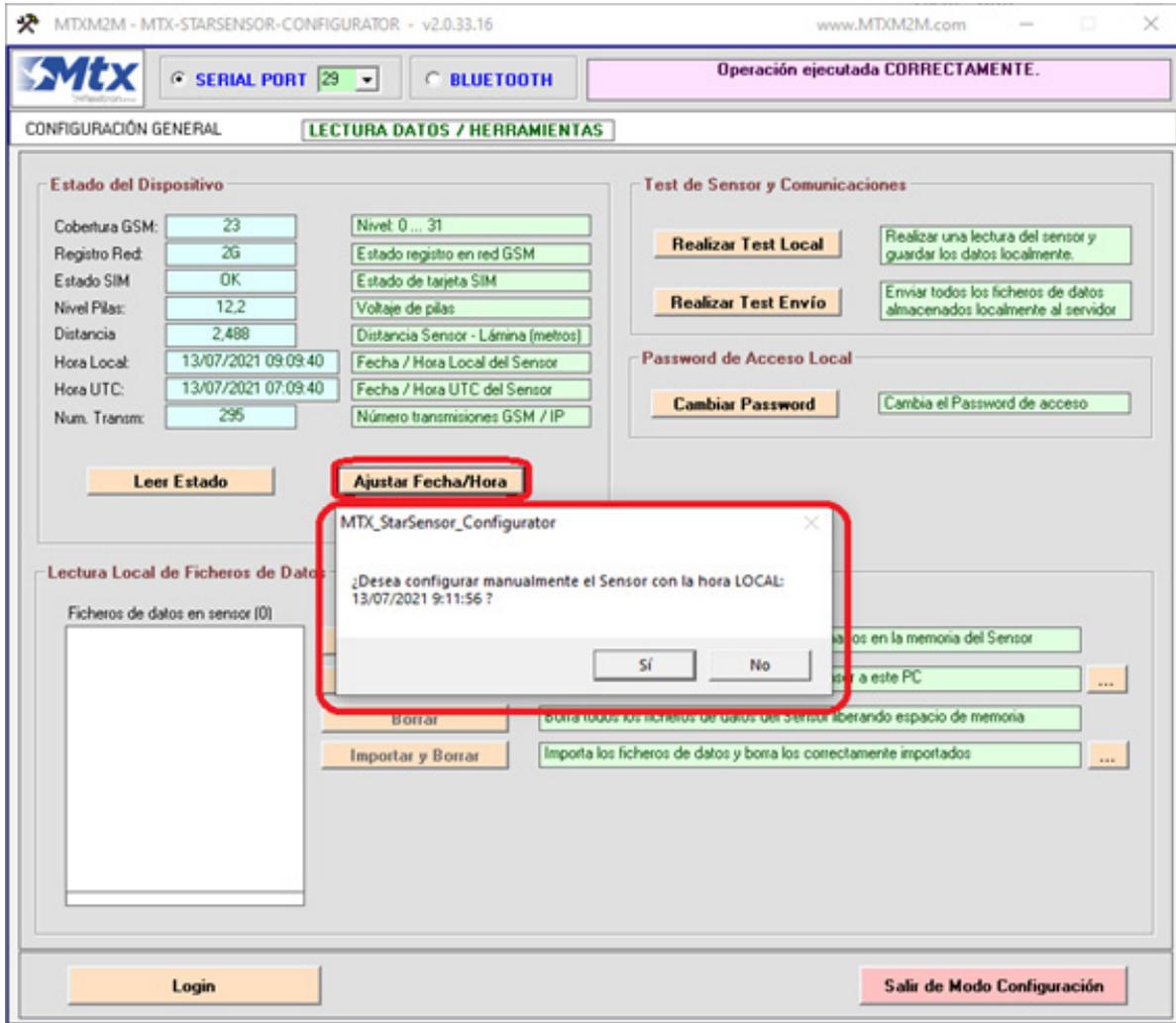
From the “Device Status” section you can read the current status of the MTX-StarSensor device.

Clicking on the “Read Status” button will give you the signal strength (0... 31), the type of network being used (2G, 3G or 4G (depending on the model)), the status of the SIM card, the battery level (in volts), the sensor value (the distance between the well-head and the water surface for a “Submersible Water Pressure” sensor, the level for a “VEGAPULS C11” sensor, or milliamps for a generic 4-20mA sensor), as well as the internal clock time and the number of sends to the communication platform performed by the MTX-Starsensor.



The internal clock of the MTX-StarSensor operates on UTC time. To facilitate reading, both UTC time and the Local time of the PC are displayed.

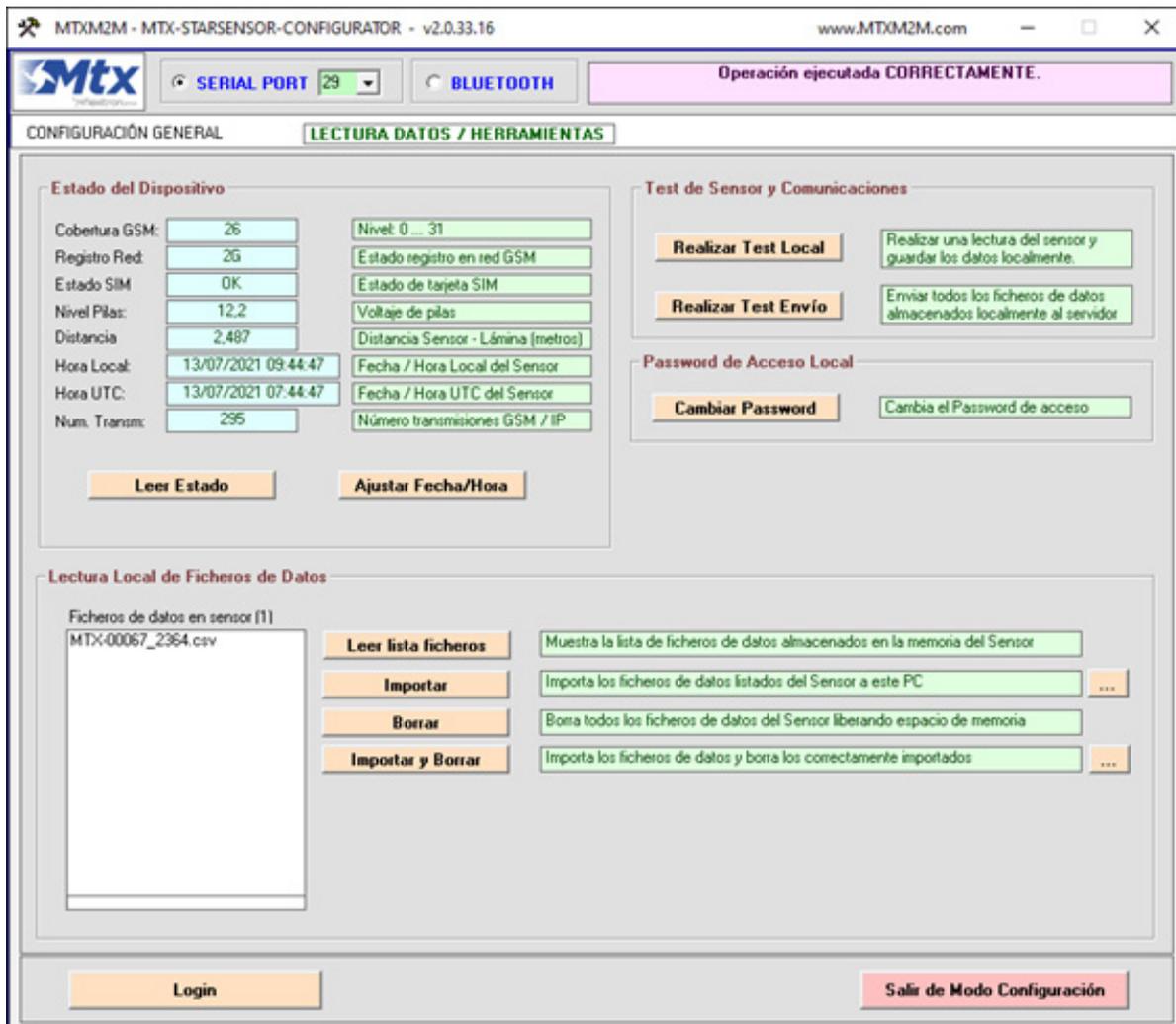
To synchronize the time with the PC time, simply click on the “Set Date/Time” button. A new window will open showing the current Date/Time of your PC and asking you if you want to perform the task. If you click “YES”, the MTX-StarSensor device’s internal clock will be updated immediately.



3.1.2.2 Sensor test and communications

This section has 2 buttons "Perform Local Test" and "Perform Send Test". These buttons enable you to perform a full simulation in which the 4-20mA sensor takes a reading and sends the data to the server (via FTP, MQTT), in the same way that the MTX-StarSensor device will perform it autonomously at the scheduled times.

By clicking on the "Perform Local Test" button, the MTX-StarSensor device will take a reading from the 4.20mA sensor. This is then stored in a file in the internal non-volatile memory. This file can be viewed in the "Sensor data files" text box, as indicated on the following screen.



In this example, the generated file has the name "MTX-00067_2364.csv". The names of the data files are broken down into 2 different parts:

Identifier_fileNum.csv

The Identifier is the name assigned to the MTX-StarSensor device, which obviously must be different for each unit installed.

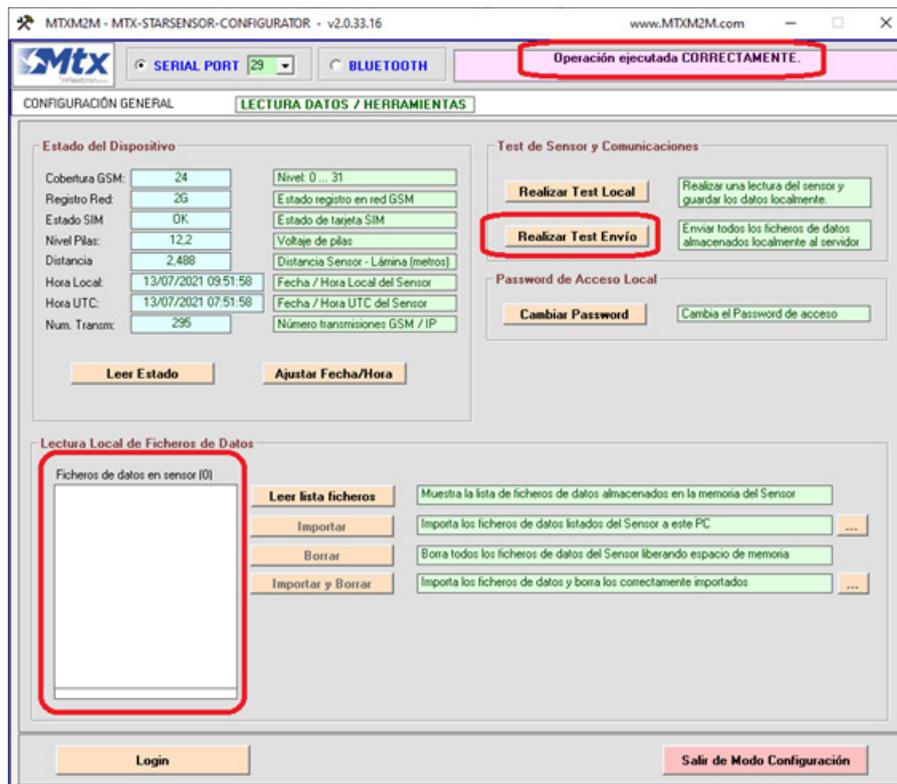


fileNum is an incremental number. Each file created increments the value of this number. This means that the same name is never used for different data files, avoiding files being overwritten when using an FTP transfer.

As an example, if the MTX-StarSensor device had a typical configuration of 1 reading every hour (24 each day), with 1 send per day, 1 file will be created each day containing the 24 readings taken. If the file is successfully sent to the server, it will then be deleted from the non-volatile memory. If it cannot be sent (lack of coverage, problems with the server...) and is therefore not deleted, it will be used to store the subsequent 24 readings.

When you click on the “Perform Send Test” button, the MTX-Sensor device sends the data file stored in the non-volatile memory to the configured data dump server (FTP, MQTT). In this example, the file named “MTX-00067_2364.csv” will be sent. If the process is successful, the data file will disappear from the list.

This option allows you to verify that the file generated and the data are correctly sent to the FTP or MQTT platform after a read test, making sure that the sending parameters are appropriately configured.

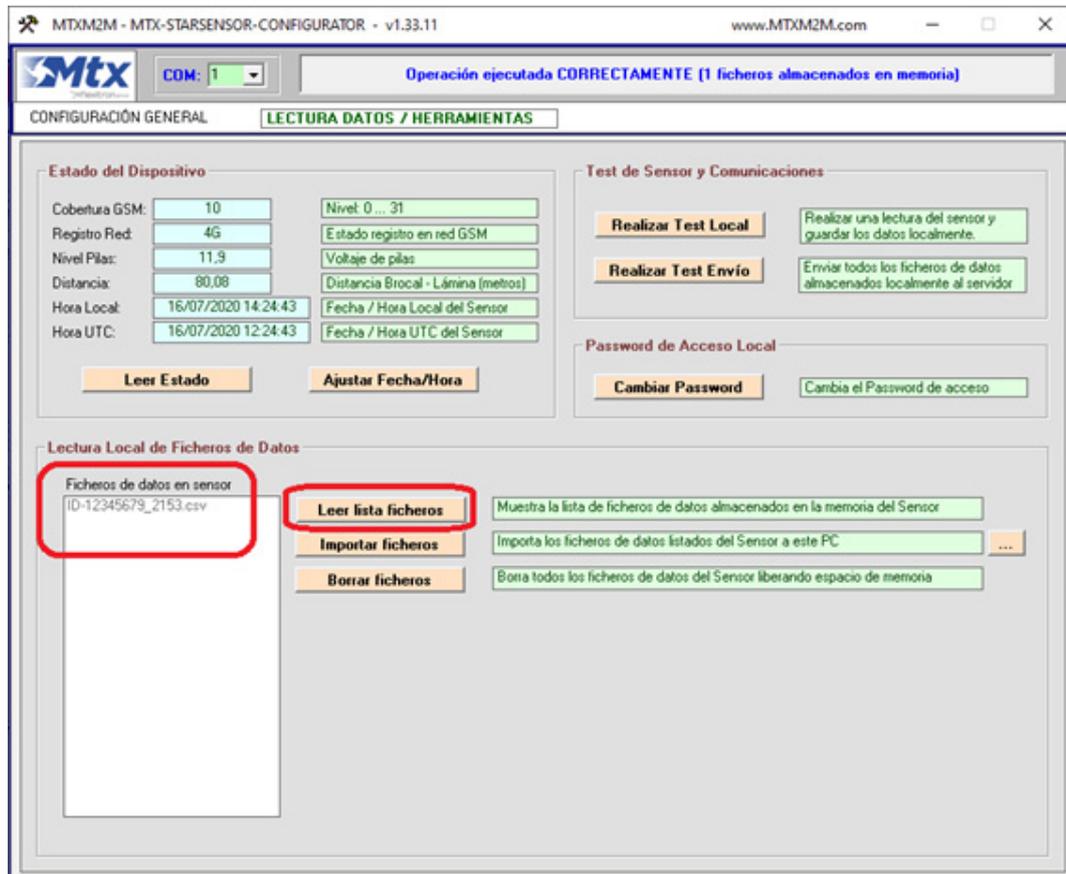


3.1.2.3 Local reading of data files

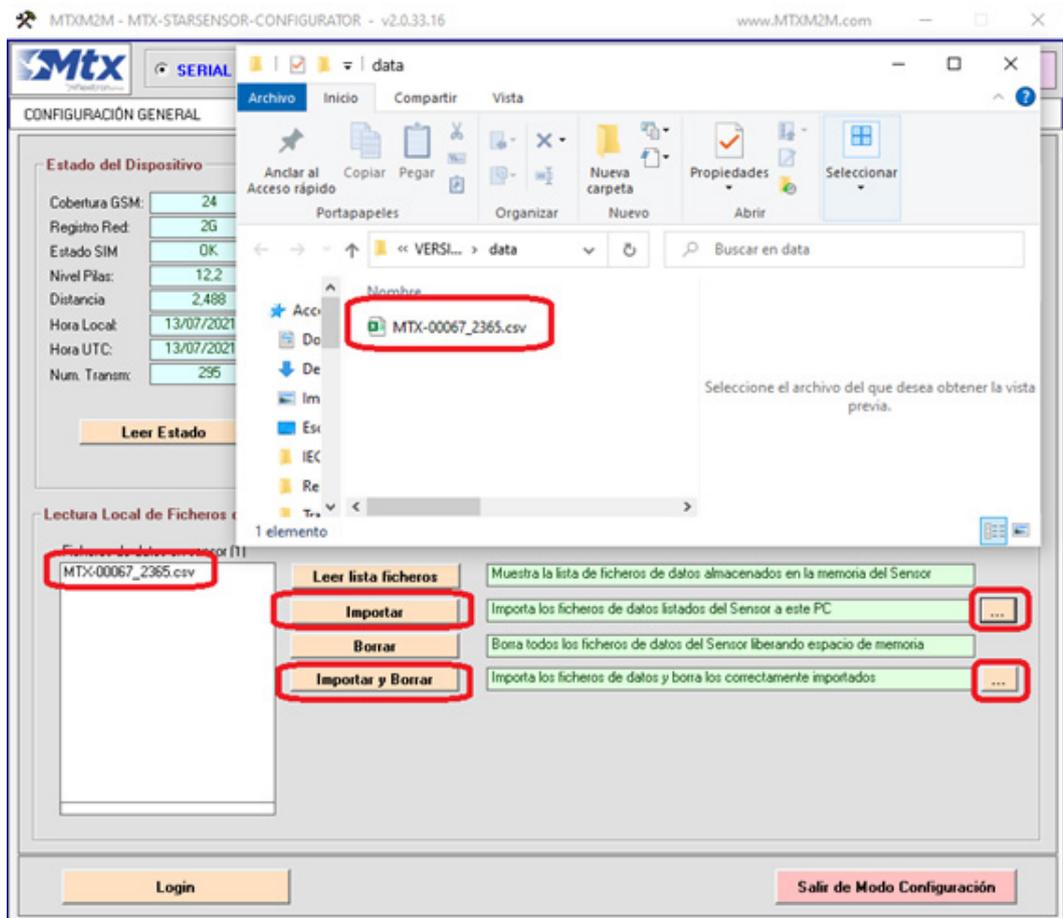
This section is useful for configurations in which the MTX-StarSensor device is not configured to send data automatically via FTP or MQTT, but rather to collect data locally via an RS232 serial cable or a Bluetooth connection.

The process for reading data files locally is as follows:

- Click the “Read file list” button. All files stored in the MTX-StarSensor device’s non-volatile memory will appear in the “Sensor data files” text box.

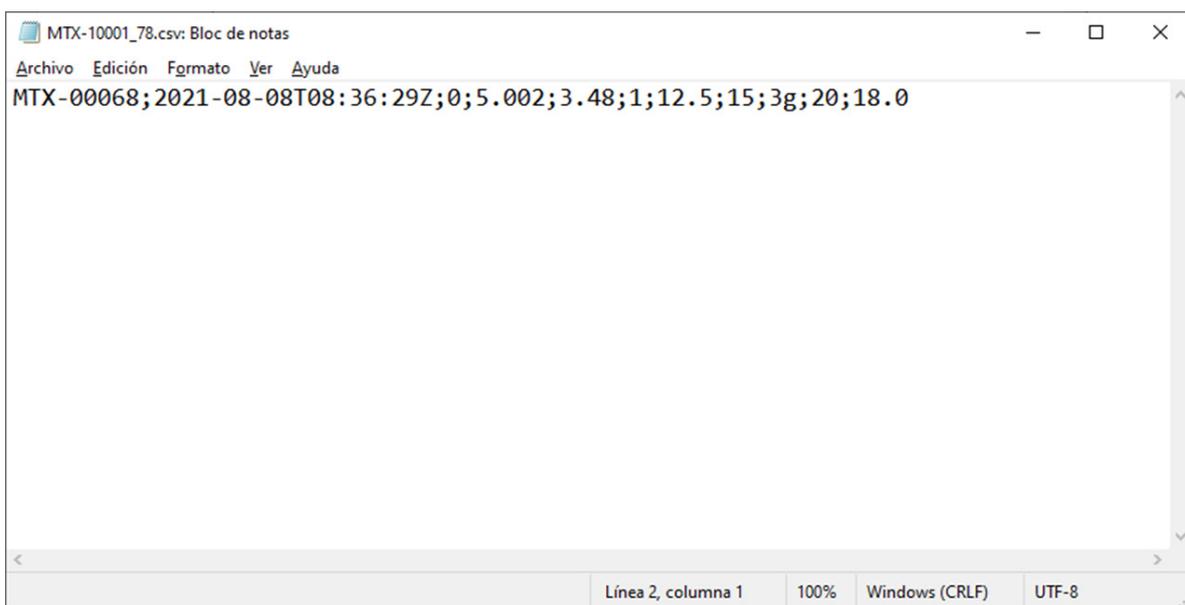


- Click on the “Import” or “Import and delete” buttons. All the files are then imported into the PC. If you wish, you can access the imported files on your PC using the “...” button. A Windows Explorer window will open automatically
- If you clicked the “Import” button, the files will still be stored on the modem after importing. Click the “delete” button to delete all files and free up memory if the import was successful. If you clicked “Import and delete”, the MTX-StarSensor will automatically delete the imported files (recommended option).



3.1.2.4 Structure of data files

The data files generated by the MTX-StarSensor device are ASCII type, specifically in CSV format. Continuing with the previous example, you can open the imported file, MTX-00067_2365.csv with MS Excel, Notepad or similar programs. The imported data include the following:



Each line of the file corresponds to one reading, and each line is broken down into:

Device ID; DateTime; SensorType; Current; Sensor Data; Alarm; Battery level; Coverage; Technology; Number of IP sends; Temperature.

Where:

- Device ID: it is the unique identifier of the MTX-StarSensor
- DateTime: Is the TimeStamp of the time the reading was taken (UTC time)
- Sensor Type: 0=Submersible Water Pressure, 1=VEGAPULS C11, 2=Generic 4-20mA
- Current: the value of the current read from the 4-20mA sensor
- Sensor Data: sensor reading. When using the VEGAPULS C11 sensor, the level in metres is returned. When using a submersible water pressure sensor, it returns the distance between the well-head and the water surface. When using a generic 4-20mA sensor, it also returns the value for the current
- Alarm: 0=no alarm, 1=minimum distance alarm (or sensor error if reading is -1000), 2=maximum distance alarm
- Battery Level: battery voltage
- Coverage: GSM signal strength, 0... 31 that the MTX-Starsensor has at the time of reading the data from the sensor.
- Technology: indicates the technology the MTX-StarSensor is using at the time of reading the data from the sensor.
- Number of IP sends: indicates the number of sends or attempts over the 2G/3G network at the time of reading the sensor's data
- Temperature: indicates the temperature of the internal GSM module

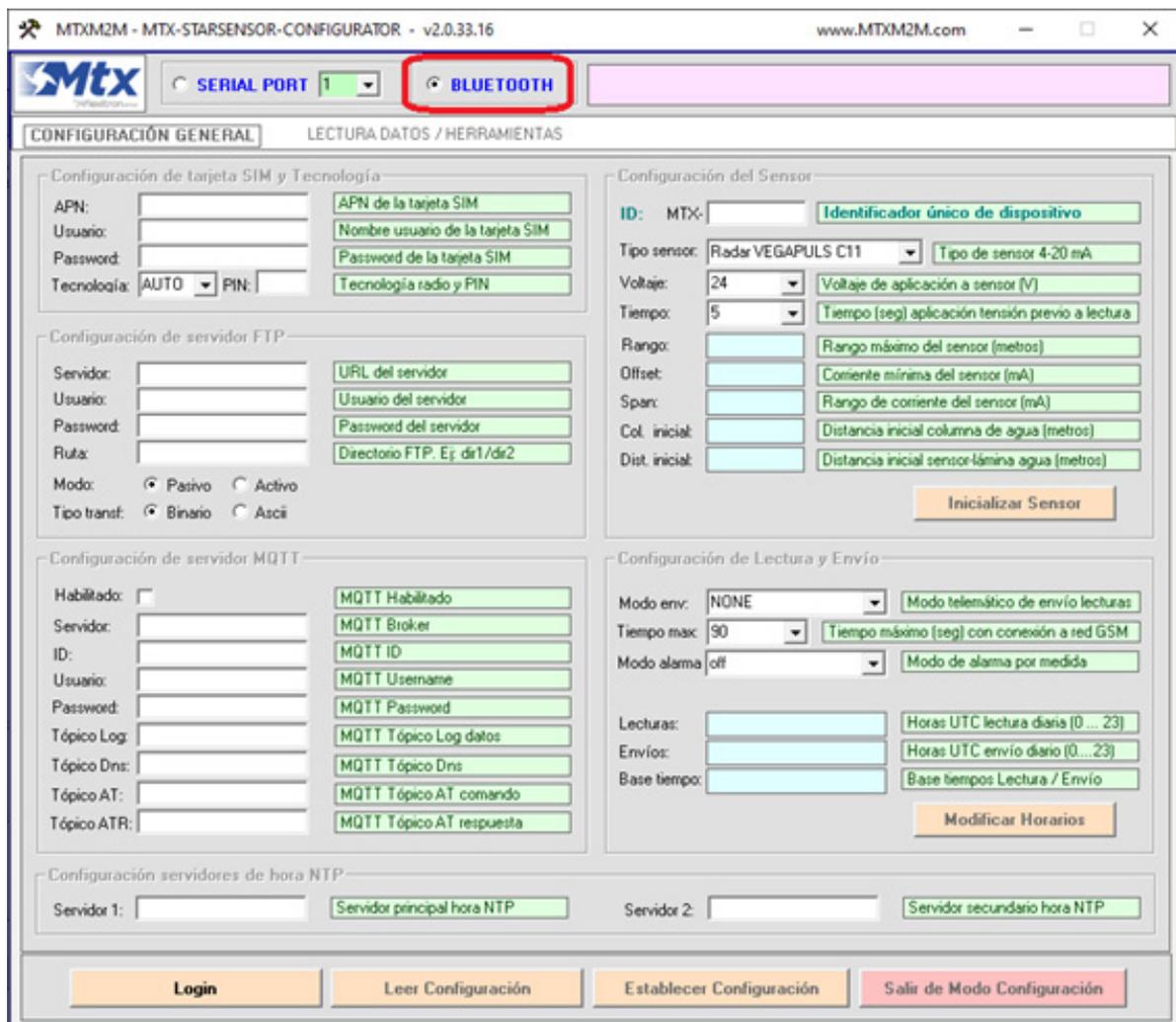
IMPORTANT NOTES:

- If an error occurs when reading the data from the 4-20mA sensor, the value in "Sensor Reading" will be "-1000". This can happen if the sensor (VEGAPULS C11) is damaged or the wiring is bad, etc. In this case you should bear in mind that, if the alarm is set in the MTX-StarSensor, it will be triggered and the data will be sent. This can be useful for detecting problems early on.
- The "Coverage" level is only read when the reading time coincides with the GSM transmission time (this is because during periods WITHOUT transmission, the MTX-StarSensor device remains in Airplane mode (with no GSM communication) in order to save battery life). In periods during which the GSM coverage value is not read, the coverage value will be "-1"
- As with "Coverage", "Technology" is only read when the time of the reading coincides with the time of GSM transmission (this is because during periods WITHOUT transmission, the MTX-StarSensor device remains in Airplane mode (with no GSM communication) in order to save battery life). During periods in which GSM coverage is not read, the "Technology" value will be "0g"

1. ANNEX: Example of Commissioning a VEGAPULS C11 Sensor

Below is an example of a MTX-StarSensor initial configuration for a distance measuring system using a radar sensor (VEGAPULS C11 model) with periodic data sends via FTP. In this example, the unit will be configured over a Bluetooth connection.

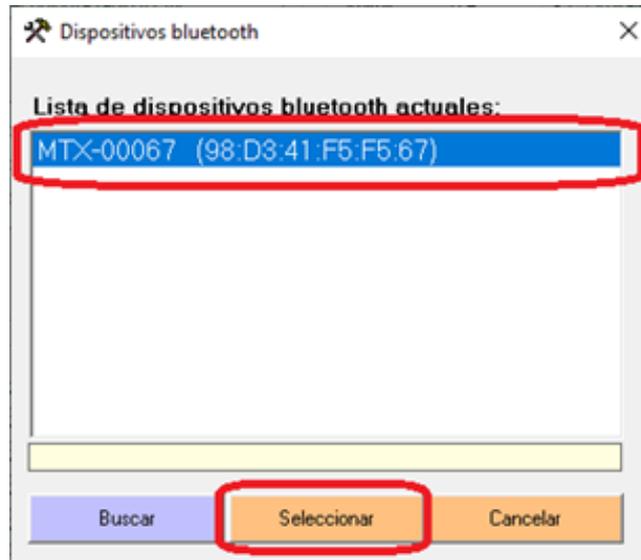
STEP 1.- Open the MTX-StarEnergy configuration software on a PC or Tablet with Windows 10 and Bluetooth activated. Select the Bluetooth option at the top of the screen.



STEP 2.- Activate the MTX-StarSensor by placing a magnet on the magnetic activation zone (just below the antenna connector of the MTX unit). When the MTX-StarSensor is activated, an LED (visual indicator) will illuminate. Wait for the LED to start flashing, indicating that the MTX-StarSensor is in configuration mode.

STEP 3.- Click on the “Login” button. A screen will then appear showing all MTX-StarSensor devices detected on Bluetooth. Click on the “Search” button to start searching for the device. If the MTX-StarSensor is not detected, check that the LED is still flashing and that you are within optimal Bluetooth range (~10m), click on the “Search” button again.

Once devices are detected, check that the device identifier (in the following example it is MTX-00067) corresponds to the identifier on the label of the MTX-StarSensor. If it is, select the device from the list and click on the "Select" button

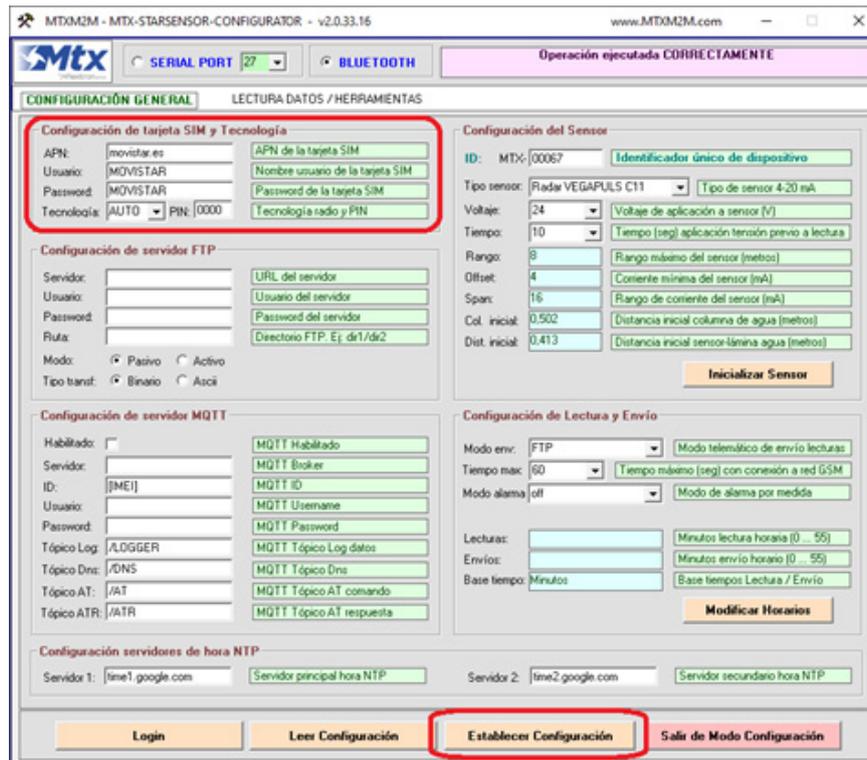


STEP 4.- If the Bluetooth connection is successfully made, the configuration PASSWORD will be requested. The default password is "mtx". Enter it and click on "OK". If the password is correct, the current configuration of the MTX-StarSensor will automatically be loaded.

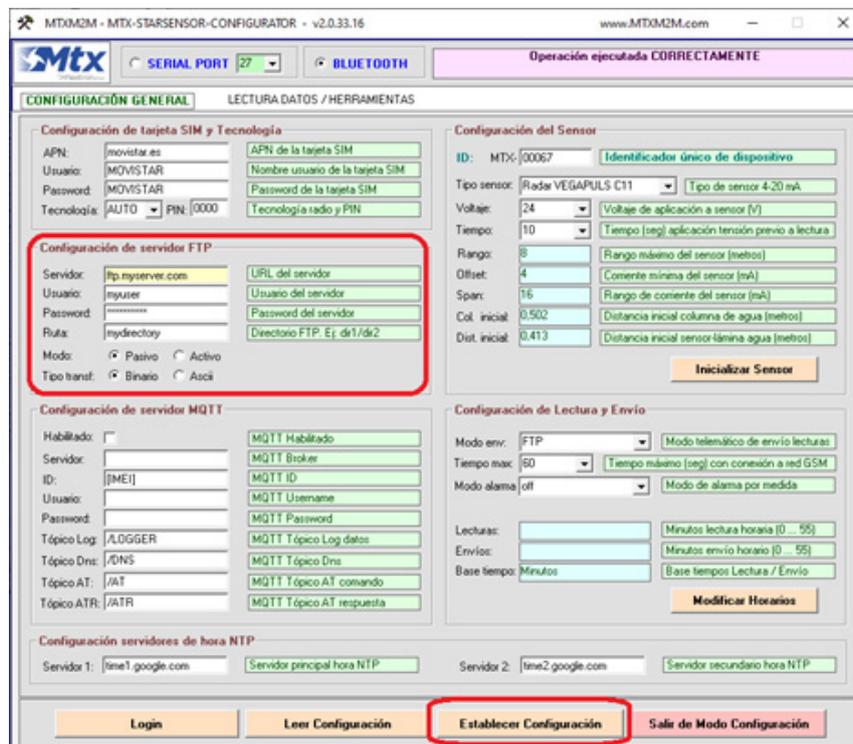


STEP 5.- Configure the SIM card and the technology section. In this example we will configure an APN called "movistar.es", with username "MOVISTAR" and password "MOVISTAR", choosing "AUTO" technology. If the SIM card does not have a PIN, enter "0000". Otherwise, enter the correct PIN.

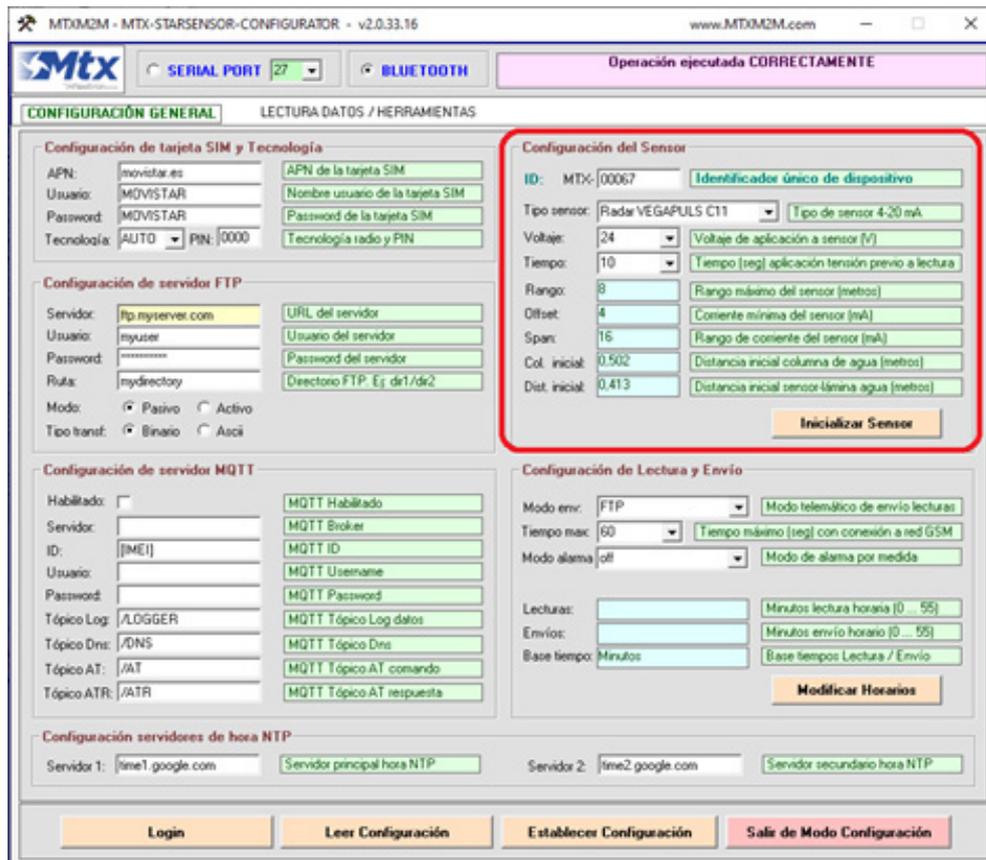
NB: Once you have configured one section, we recommend you click on "Set Configuration" to save it in the MTX-StarSensor (remember that if the MTX-StarSensor remains inactive for 5 minutes it will turn off, you will then have to log in again and reload the configuration, losing any unsaved data).



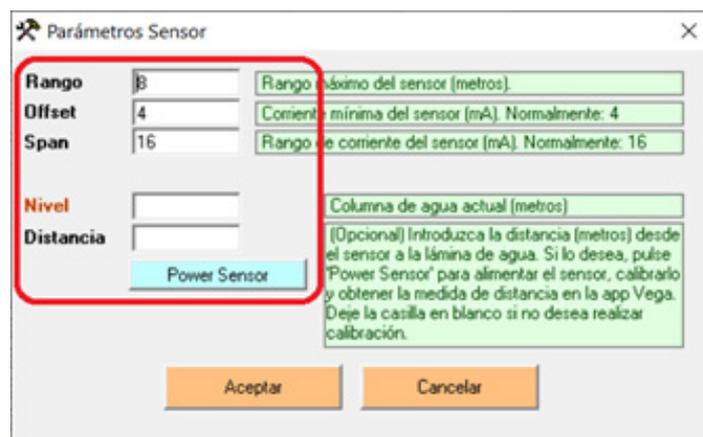
STEP 6.- Configure the FTP communications section. In this example we will enter the server “ftp.myserver.com”, with username “myuser”, password “mypassword”, and we want the data to be stored in the folder “mydirectory” on the ftp server. We will choose "Passive" sending mode (recommended in M2M applications) and "Binary" transfer type. After that, click on the "Set Configuration" button.



STEP 7.- Sensor configuration. Select “Radar VEGAPULS C11”, with a voltage of “24” volts, a stabilization time of “10” seconds and click on “Set Configuration”.



Click on “Initialize Sensor” to calibrate the MTX-StarSensor. After clicking on it, enter the data: “8” metre range, “4” mA offset and “16” mA span. In the “Level” box, enter the distance in metres from the bottom to the water surface. Try to take the measurement as accurately as possible, using a ruler or millimetric metal rod. In this example, the level is 1.25m



STEP 8.- (Optional) Click on the “Power Sensor” button to power on the VEGAPULS C11 sensor. If desired, adjust the VEGAPULS-C11 sensor using the “VEGA Tools” app, as per the manufacturer's documentation

(if you change the sensor's reading ranges, remember that the sensor's minimum range must be set to 0 metres (factory setting). If you change the reading range of the VEGAPULS-C11 sensor, make sure to set the same range on the configuration screen.

STEP 9.- (Optional) Enter the distance between the water surface and the VEGAPULS-C11 sensor.

In this example, we enter 0.717 in the “Distance” box.

Click on the “OK” button to proceed to the initial setting of the MTX-StarSensor.

Parámetros Sensor

Rango	8	Rango máximo del sensor (metros)
Offset	4	Corriente mínima del sensor (mA). Normalmente: 4
Span	16	Rango de corriente del sensor (mA). Normalmente: 16
Nivel	1.25	Columna de agua actual (metros)
Distancia	0.717	Introduzca la distancia (metros) desde el sensor a la lámina de agua. Si lo desea, pulse "Power Sensor" para alimentar el sensor, calibrarlo y obtener la medida de distancia en la app Vega

Power Sensor

Aceptar Cancelar

STEP 9.- Reading and Sending Configuration. Select “FTP” sending mode, a maximum GSM connection time of “60” seconds (recommended), and set the alarm modes to “off” (not used in this example) in order to save battery life. Click on the “Edit Schedules” button and configure (for this example) sensor readings every 4 hours and 1 send per day, click on OK.

Selección de Lectura / Envío

Base de tiempos: Horas Minutos

Hora UTC	Lectura <input checked="" type="checkbox"/>	Envío <input type="checkbox"/>
00:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:00	<input type="checkbox"/>	<input type="checkbox"/>
02:00	<input type="checkbox"/>	<input type="checkbox"/>
03:00	<input type="checkbox"/>	<input type="checkbox"/>
04:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
05:00	<input type="checkbox"/>	<input type="checkbox"/>
06:00	<input type="checkbox"/>	<input type="checkbox"/>
07:00	<input type="checkbox"/>	<input type="checkbox"/>
08:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
09:00	<input type="checkbox"/>	<input type="checkbox"/>
10:00	<input type="checkbox"/>	<input type="checkbox"/>
11:00	<input type="checkbox"/>	<input type="checkbox"/>
12:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13:00	<input type="checkbox"/>	<input type="checkbox"/>
14:00	<input type="checkbox"/>	<input type="checkbox"/>
15:00	<input type="checkbox"/>	<input type="checkbox"/>
16:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17:00	<input type="checkbox"/>	<input type="checkbox"/>
18:00	<input type="checkbox"/>	<input type="checkbox"/>
19:00	<input type="checkbox"/>	<input type="checkbox"/>
20:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21:00	<input type="checkbox"/>	<input type="checkbox"/>
22:00	<input type="checkbox"/>	<input type="checkbox"/>
23:00	<input type="checkbox"/>	<input type="checkbox"/>

Aceptar Cancelar

Click on the “Set Configuration” button to store the new configuration in the MTX-StarSensor.

Configuración de Lectura y Envío

Modo env.: FTP

Tiempo max.: 60

Modo alarma: off

Lecturas: 0,4,8,12,16,20

Envíos: 0

Base tiempo: Horas

Servidor 2: time2.google.com

STEP 10.- Configuring the time servers. Enter the appropriate time servers. In this example we will use time1.google.com and time2.google.com. Click on the “Set Configuration” button to store the new configuration in the MTX-StarSensor.

MTXM2M - MTX-STARSSENSOR-CONFIGURATOR - v2.0.33.16

www.MTXM2M.com

Operación ejecutada CORRECTAMENTE

CONFIGURACIÓN GENERAL

LECTURA DATOS / HERRAMIENTAS

Configuración de tarjeta SIM y Tecnología

Configuración de servidor FTP

Configuración de servidor MQTT

Configuración del Sensor

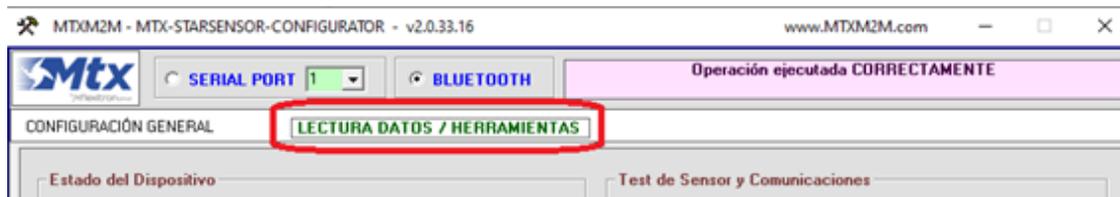
Configuración de Lectura y Envío

Configuración servidores de hora NTP

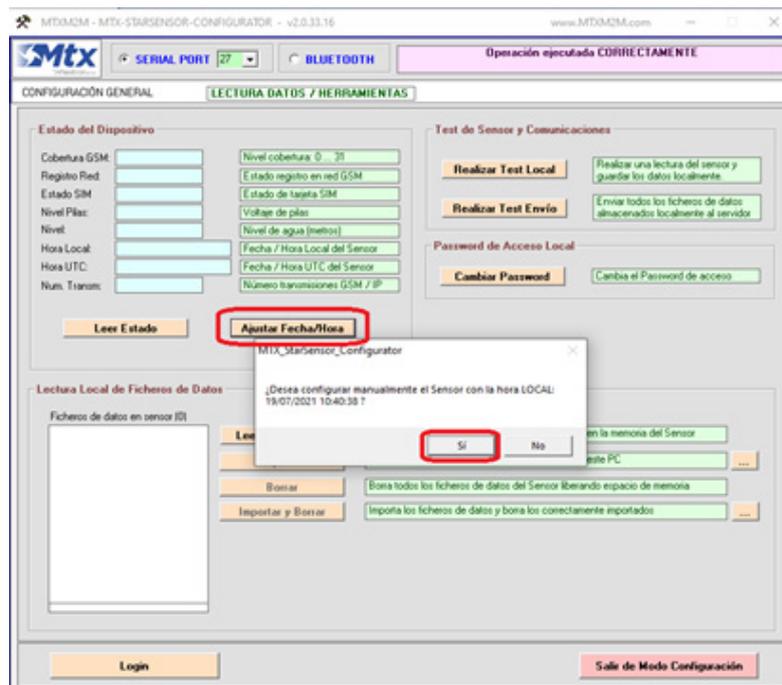
Servidor 1: time1.google.com

Servidor 2: time2.google.com

The unit is almost configured. We will access the "READ DATA AND TOOLS" section to set the time and check operation of the unit.



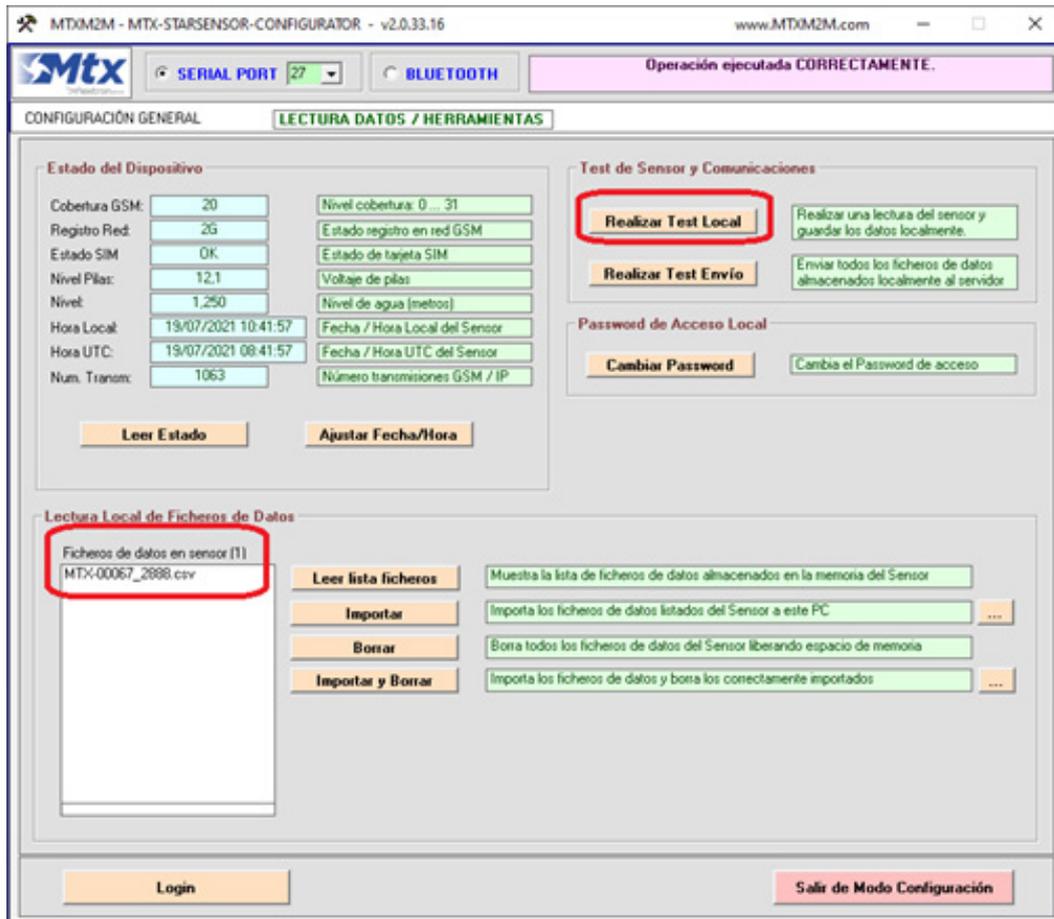
STEP 11.- Setting the time in the MTX-StarSensor. To do this, click on the “Set Date/Time” button. Make sure the date and time of your PC / Tablet is correct and click on “



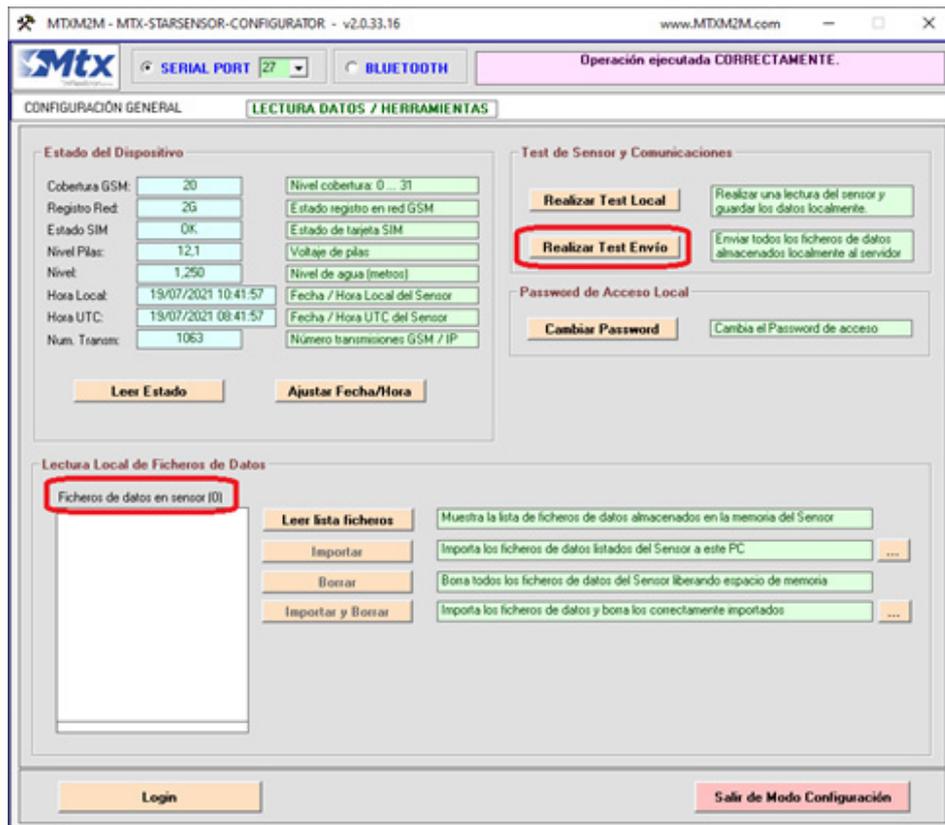
STEP 12.- Check reading of the sensor and the status of the MTX-StarSensor. Click on “Read Status” to start the process. Check that the data returned is consistent, that there are no sensor errors, and that the time is correct.



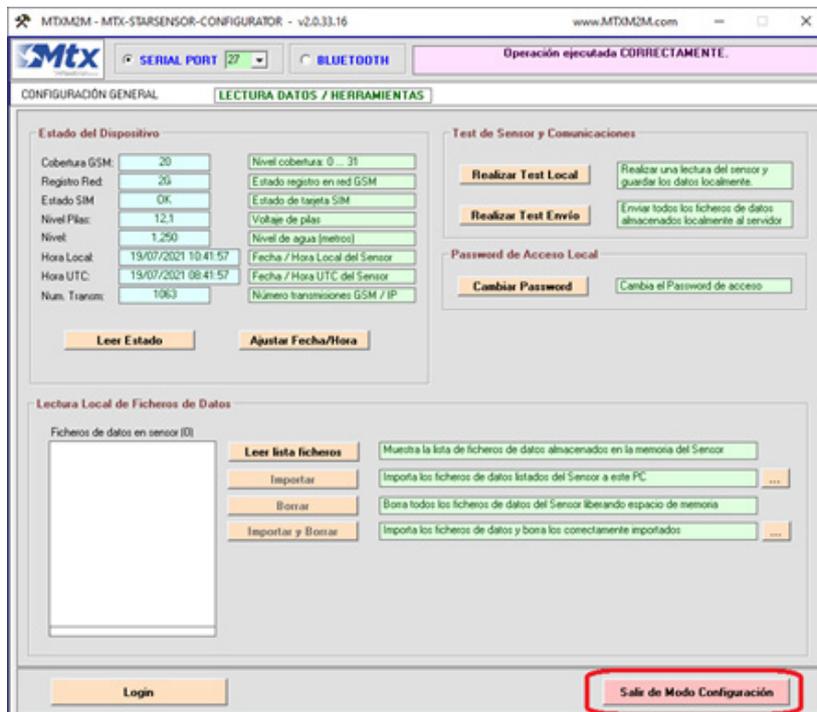
STEP 13.- Reading test. Click on "Perform Local Test" to perform a reading test. The 4-20mA sensor will be read and the value of said reading will be stored in a file in the internal memory of the MTX-StarSensor. The generated file will be listed in the lower left area of the screen.



STEP 14.- Sending test. Click on the "Perform Send Test" button to start sending the generated data file. This will demonstrate that the FTP settings are correct. After the test, the sent file should disappear from the list of stored files and it should be stored on the remote FTP server, which must be verified using the appropriate software (Filezilla, etc.).



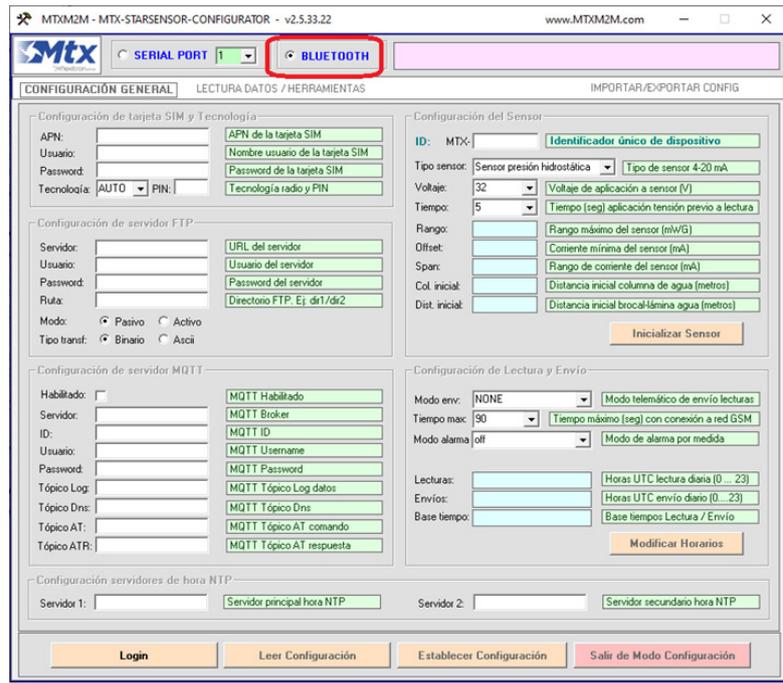
STEP 15.- Once all the steps have been completed correctly, all that remains is to click on “Exit Configuration Mode”. The MTX-StarSensor device will then turn off and start using the established configuration, waking up at the scheduled times to perform the appropriate reading and sending tasks.



2. ANNEX: Example of Initializing a Hydrostatic Pressure Sensor

Below is an example of the initial configuration for the MTX-StarSensor for a measurement system using a hydrostatic pressure sensor, which is intended to periodically read the distance between the well-head and the water surface. The data are then periodically sent using the FTP and/or OPC protocol. In this example, the unit will be configured over a Bluetooth connection.

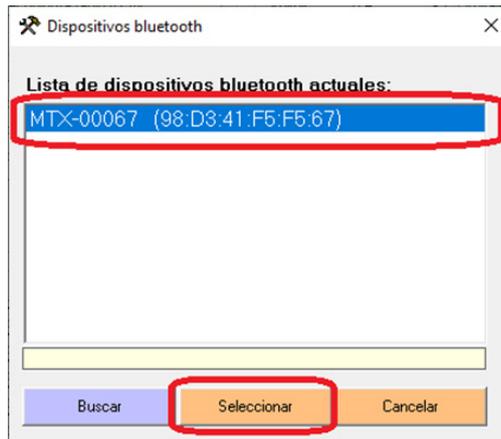
STEP 1.- Open the MTX-StarEnergy configuration software on a PC or Tablet with Windows 10 and Bluetooth activated. Select the Bluetooth option at the top of the screen.



STEP 2.- Activate the MTX-StarSensor by placing a magnet on the magnetic activation zone. When the MTX-StarSensor is activated, an LED (visual indicator) will illuminate. Wait for the LED to start flashing, indicating that the MTX-StarSensor is in configuration mode.

STEP 3.- Click on the "Login" button. A screen will then appear showing all MTX-StarSensor devices detected on Bluetooth. Click on the "Search" button to start searching for the device. If the MTX-StarSensor is not detected, check that the LED is still flashing and that you are within optimal Bluetooth range (~10m), click on the "Search" button again.

Once the device has been detected, check that the device identifier (in the following example it is MTX-00067) corresponds to the identifier on the label of the MTX-StarSensor. If it is, select the device from the list and click on the "Select" button

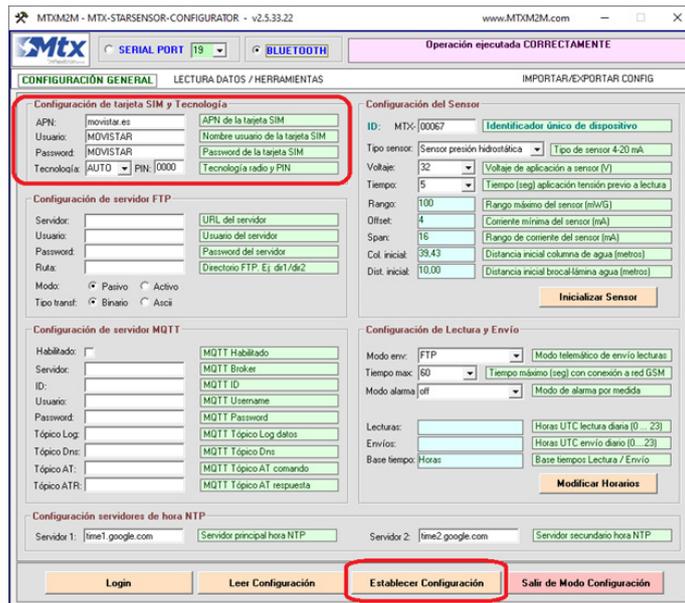


STEP 4.- If the Bluetooth connection is successfully made, the configuration PASSWORD will be requested. The default password is "mtx". Enter it and click on "OK". If the password is correct, the current configuration of the MTX-StarSensor will automatically be loaded.



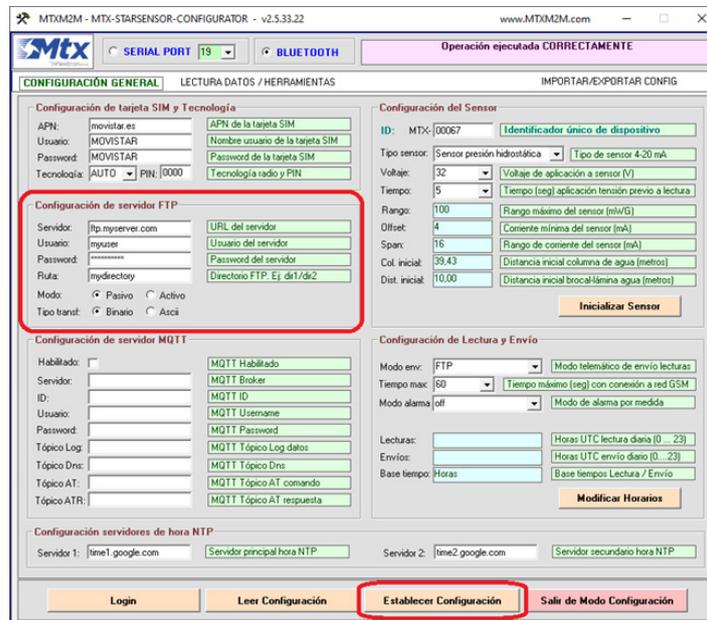
STEP 5.- Configure the SIM card and the technology section. In this example we will configure an APN called "movistar.es", with username "MOVISTAR" and password "MOVISTAR", choosing "AUTO" technology. If the SIM card does not have a PIN, enter "0000". Otherwise, enter the correct PIN. If your SIM card does not have a username and password, you can set them as "VOID", "VOID"

NB: Once you have configured one section, we recommend you click on "**Set Configuration**" to save it in the MTX-StarSensor (remember that if the MTX-StarSensor remains inactive for 5 minutes it will turn off, you will then have to log in again and reload the configuration, losing any unsaved data).

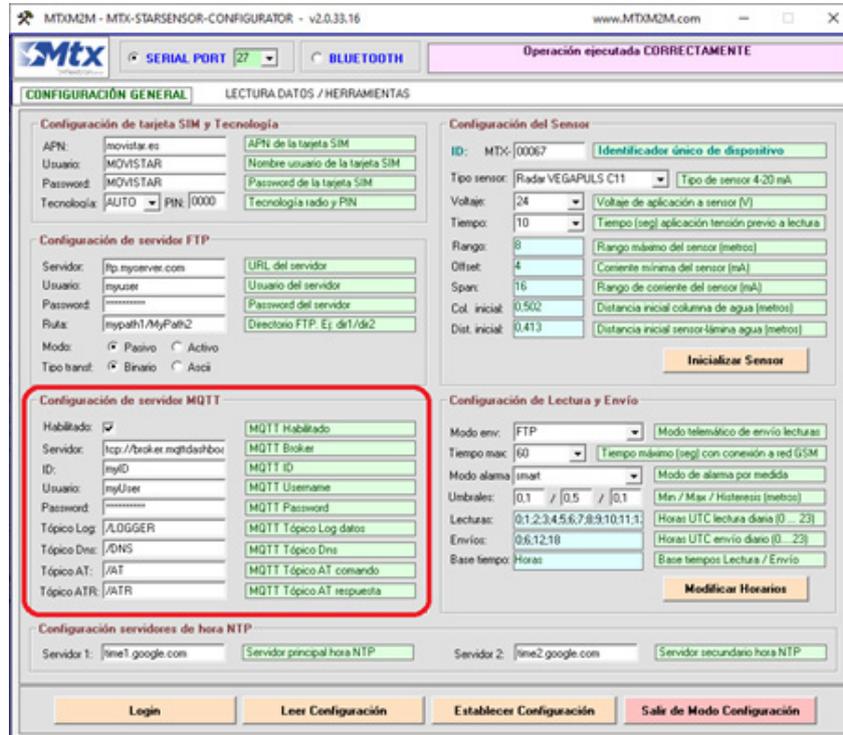


STEP 6.- Configure the FTP communications section. In this example we will enter the server “ftp.myserver.com”, with username “myuser”, password “mypassword”, and we want the data to be stored in the folder “mydirectory” on the ftp server. We will choose "Passive" sending mode (recommended in M2M applications) and "Binary" transfer type. After that, click on the "Set Configuration" button.

If the FTP server port is different than 21, it can be changed using “ftp.myserver.com:23”. When using IP, only the address would be entered, for example, "194.156.24.3".

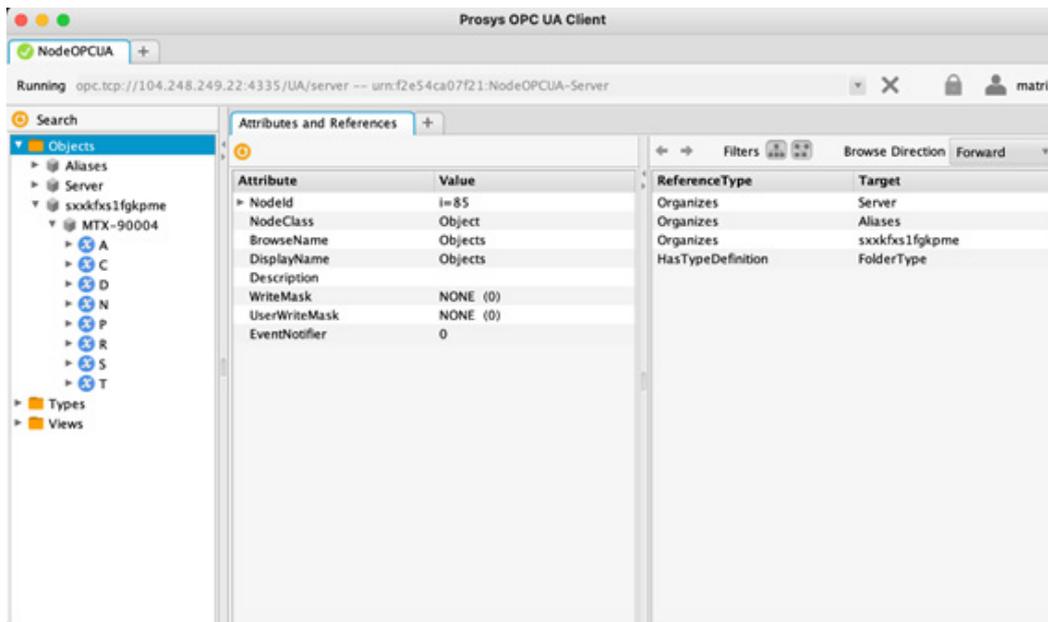


STEP 7.- To view data in an OPC client, we will have to configure the MQTT to OPC conversion Gateway. For example, we could use a cloud platform like Matrix Electronica's solution, Cervello. Enter the access details in Cervello for the OPC configuration and then click on **"Set configuration"**.

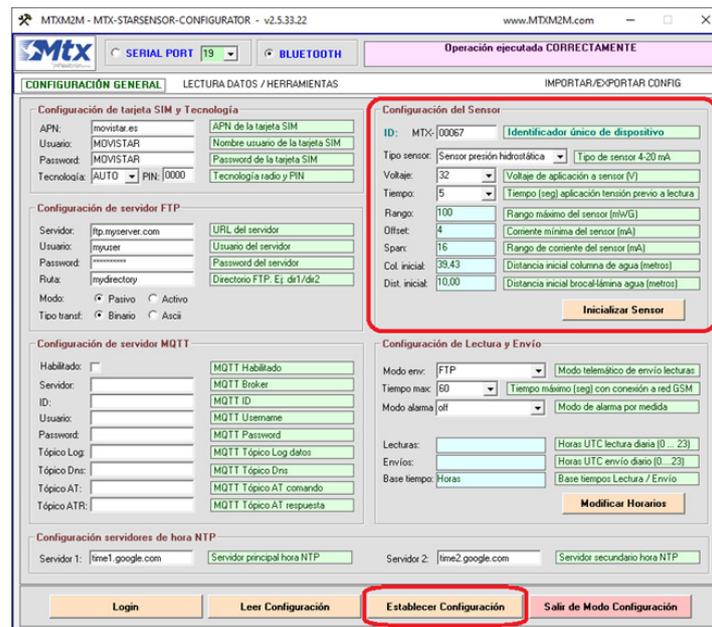


In the OPC UA client, we must enter the data for the Cervello server in order to be able to download the data in OPC format:

URL: `opc.tcp://101.238.149.12:4325/UA/server`



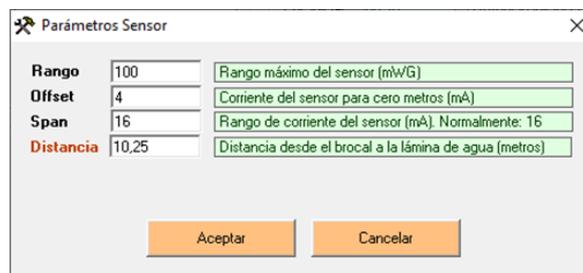
STEP 8.- Sensor configuration. Select “Hydrostatic Pressure Sensor”, a voltage of “32” volts, a stabilization time of “2” seconds and click on “Set Configuration”.



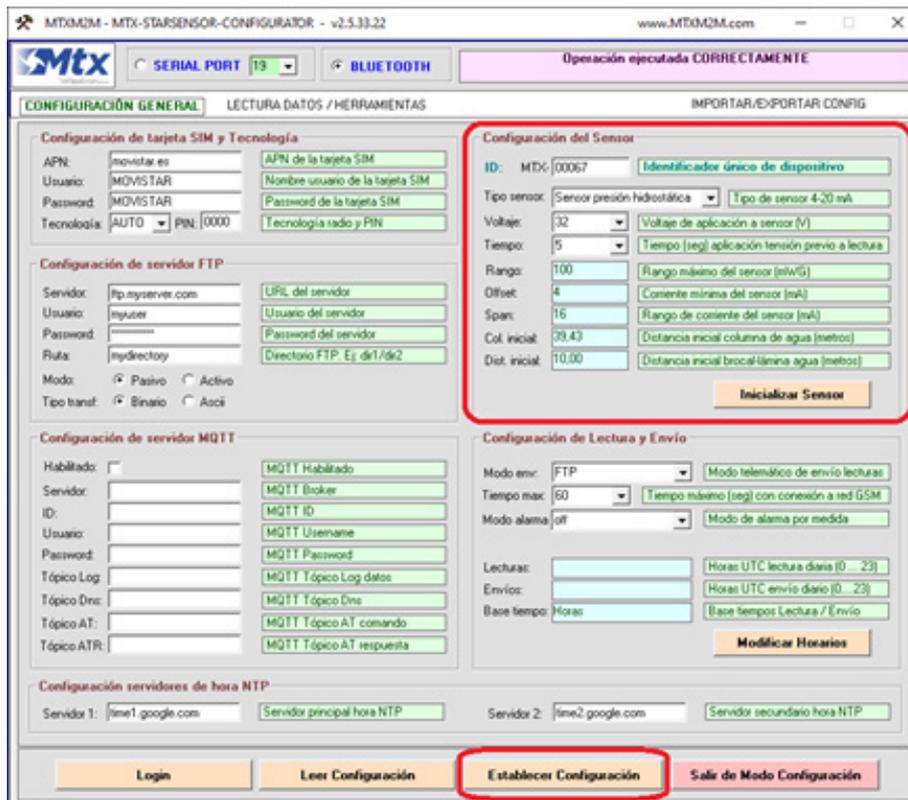
With the hydrostatic pressure sensor deployed in the well, click on “Initialize Sensor” to calibrate the MTX-StarSensor. Then enter the data:

- Range: Maximum sensor range (mWG) or maximum water column accepted by the hydrostatic pressure sensor
- Offset: Sensor current for zero metres in mA. This is normally 4mA
- Span: Sensor Current Range or Span. This is the difference between the maximum output of the sensor, in mA, and the output for 0 zero metres of water column. Normally this is 20mA – 4mA = 16mA
- Distance: Enter the distance in metres from the well-head to the water table (X.XX format). Try to make the measurement as accurate as possible. In this example, the initial level is 10.25m

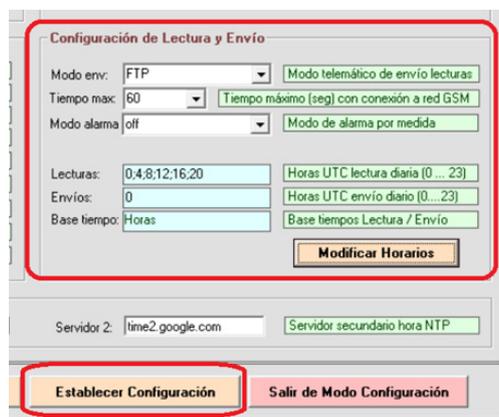
Then click on “OK” and the initialization process will start, it will last about 15 seconds.



Once the sensor initialization time has elapsed, the General Configuration / Sensor Configuration window will show the distance between the well-head and the well water surface using the hydrostatic pressure sensor. When the level of the water increases, the distance between the well-head and the water surface decreases.



STEP 9.- Reading and Sending configuration. Select “FTP” sending mode, set a maximum GSM connection time of “60” seconds (recommended), and set the alarm modes to “off” (not used in this example). If you want to send the data by OPC, you would select MQTT mode, you could also send it using both modes by selecting FTP + MQTT.



When configuring FTP sending mode, the data stored in the non-volatile memory of the device will not be deleted until it has been successfully sent to the FTP server.

If there is no mobile phone signal where the device is going to be installed, NONE should be selected as the sending mode, the device does not then send the data and only stores it in non-volatile memory. The memory capacity exceeds 50,000 readings.

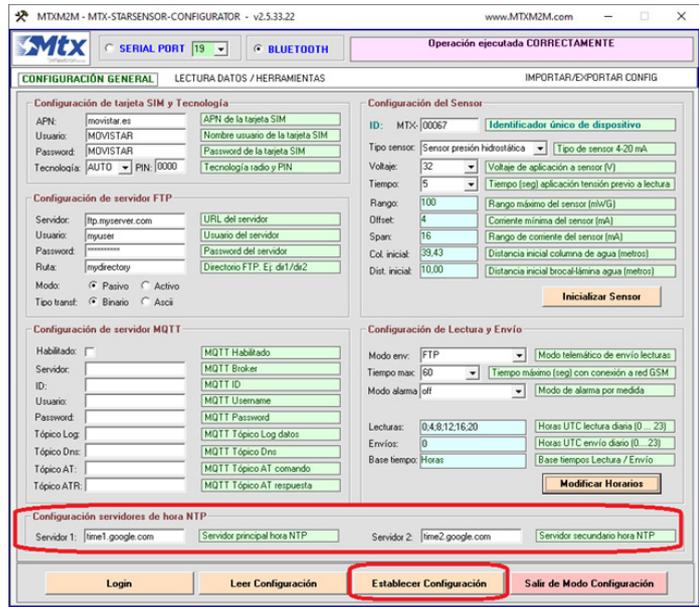
To maximize battery life. Click on the “Edit Schedules” button and configure (for this example) sensor readings every 4 hours and 1 send per day, click on OK.

The screenshot shows a dialog box titled "Selección de Lectura / Envío". At the top, there are two radio buttons under "Base de tiempos": "Horas" (selected) and "Minutos". Below this is a table with three columns: "Hora UTC", "Lectura" (with a checked checkbox), and "Envío" (with an unchecked checkbox). The "Lectura" column has checked boxes at 00:00, 04:00, 08:00, 12:00, 16:00, and 20:00. The "Envío" column has a checked box at 00:00. At the bottom, there are two buttons: "Aceptar" (highlighted with a red box) and "Cancelar".

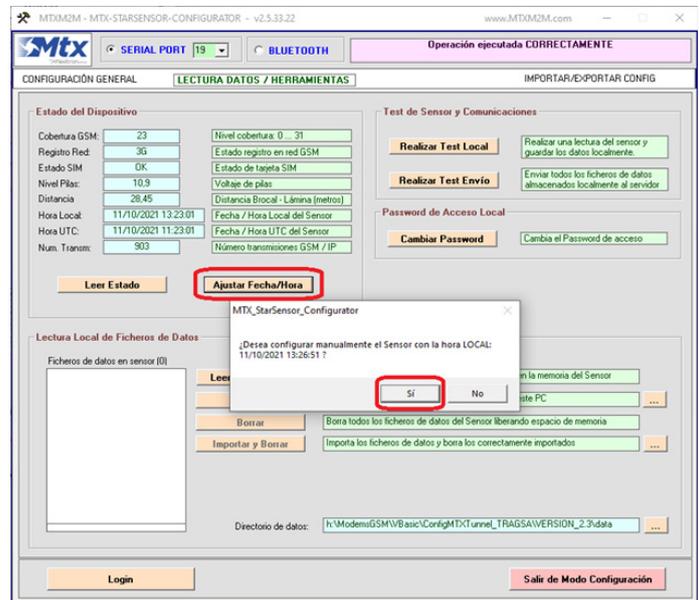
Hora UTC	Lectura <input checked="" type="checkbox"/>	Envío <input type="checkbox"/>
00:00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01:00	<input type="checkbox"/>	<input type="checkbox"/>
02:00	<input type="checkbox"/>	<input type="checkbox"/>
03:00	<input type="checkbox"/>	<input type="checkbox"/>
04:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
05:00	<input type="checkbox"/>	<input type="checkbox"/>
06:00	<input type="checkbox"/>	<input type="checkbox"/>
07:00	<input type="checkbox"/>	<input type="checkbox"/>
08:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
09:00	<input type="checkbox"/>	<input type="checkbox"/>
10:00	<input type="checkbox"/>	<input type="checkbox"/>
11:00	<input type="checkbox"/>	<input type="checkbox"/>
12:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13:00	<input type="checkbox"/>	<input type="checkbox"/>
14:00	<input type="checkbox"/>	<input type="checkbox"/>
15:00	<input type="checkbox"/>	<input type="checkbox"/>
16:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
17:00	<input type="checkbox"/>	<input type="checkbox"/>
18:00	<input type="checkbox"/>	<input type="checkbox"/>
19:00	<input type="checkbox"/>	<input type="checkbox"/>
20:00	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21:00	<input type="checkbox"/>	<input type="checkbox"/>
22:00	<input type="checkbox"/>	<input type="checkbox"/>
23:00	<input type="checkbox"/>	<input type="checkbox"/>

Click on the “Set Configuration” button to store the new configuration in the MTX-StarSensor.

STEP 10.- Configuring the time servers. The MTX-StarSensor has an RTC so that it can read and send at the scheduled times. To synchronize the RTC we can use NTP servers: enter the appropriate time servers. In this example we will use time1.google.com and time2.google.com. Click on the **“Set Configuration”** button to store the new configuration in the MTX-StarSensor.



STEP 11.- Setting the time in the MTX-StarSensor. If the MTX-StarSensor does not have Internet access for synchronizing its clock with NTP servers, the device can also synchronize the time locally, to do this, click the **“Set Date/Time”** button. Make sure the date and time of your PC / Tablet are correct and click on **“.”**. The time must also be manually updated the first time you configure the MTX-StarSensor at startup.



STEP 12.- Check reading of the sensor and the status of the MTX-StarSensor. Click on “Read Status” to start the process. Check that the data returned is consistent, that there are no sensor errors, and that the time is correct.

Estado del Dispositivo

Cobertura GSM:	23	Nivel cobertura: 0 ... 31
Registro Red:	3G	Estado registro en red GSM
Estado SIM:	OK	Estado de tarjeta SIM
Nivel Pila:	10,9	Voltaje de pilas
Distancia:	28,45	Distancia Brocal - Lámina (metros)
Hora Local:	11/10/2021 13:23:01	Fecha / Hora Local del Sensor
Hora UTC:	11/10/2021 11:23:01	Fecha / Hora UTC del Sensor
Num. Transm:	903	Número transmisiones GSM / IP

Leer Estado **Ajustar Fecha/Hora**

STEP 13.- Reading test. Click on "Perform Local Test" to perform a reading test. The hydrostatic pressure sensor will be read and the value of said reading will be stored in a file in the internal non-volatile memory of the MTX-StarSensor. The generated file will be listed in the lower left area of the screen.

MTXM2M - MTX-STARSENSOR-CONFIGURATOR - v2.5.33.22 www.MTXM2M.com

Operación ejecutada CORRECTAMENTE.

CONFIGURACIÓN GENERAL **LECTURA DATOS / HERRAMIENTAS** IMPORTAR/EXPORTAR CONFIG

Estado del Dispositivo

Cobertura GSM:	23	Nivel cobertura: 0 ... 31
Registro Red:	3G	Estado registro en red GSM
Estado SIM:	OK	Estado de tarjeta SIM
Nivel Pila:	10,9	Voltaje de pilas
Distancia:	28,45	Distancia Brocal - Lámina (metros)
Hora Local:	11/10/2021 13:23:01	Fecha / Hora Local del Sensor
Hora UTC:	11/10/2021 11:23:01	Fecha / Hora UTC del Sensor
Num. Transm:	903	Número transmisiones GSM / IP

Leer Estado **Ajustar Fecha/Hora**

Test de Sensor y Comunicaciones

Realizar Test Local Realizar una lectura del sensor y guardar los datos localmente.

Realizar Test Envío Enviar todos los ficheros de datos almacenados localmente al servidor.

Password de Acceso Local

Cambiar Password Cambia el Password de acceso.

Lectura Local de Ficheros de Datos

Ficheros de datos en sensor (1)

MTX:00067_308.csv

Leer lista ficheros Muestra la lista de ficheros de datos almacenados en la memoria del Sensor

Importar Importa los ficheros de datos listados del Sensor a este PC

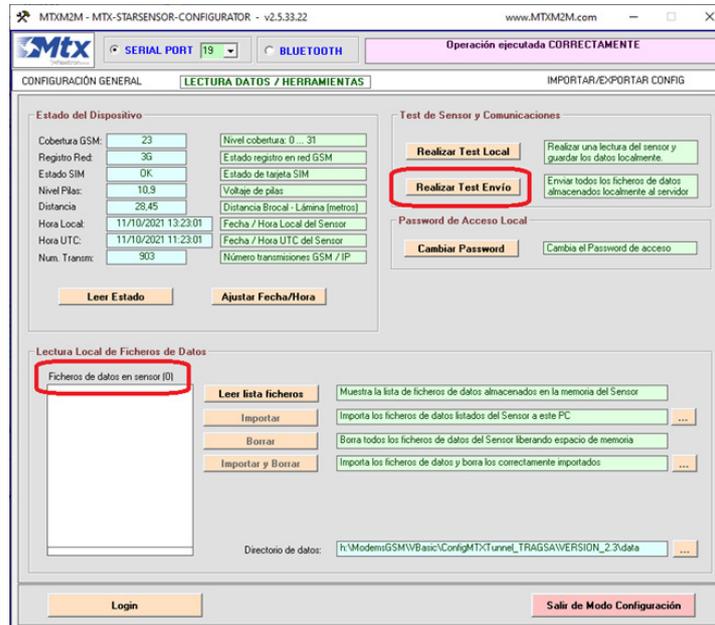
Borrar Borra todos los ficheros de datos del Sensor liberando espacio de memoria

Importar y Borrar Importa los ficheros de datos y borra los correctamente importados

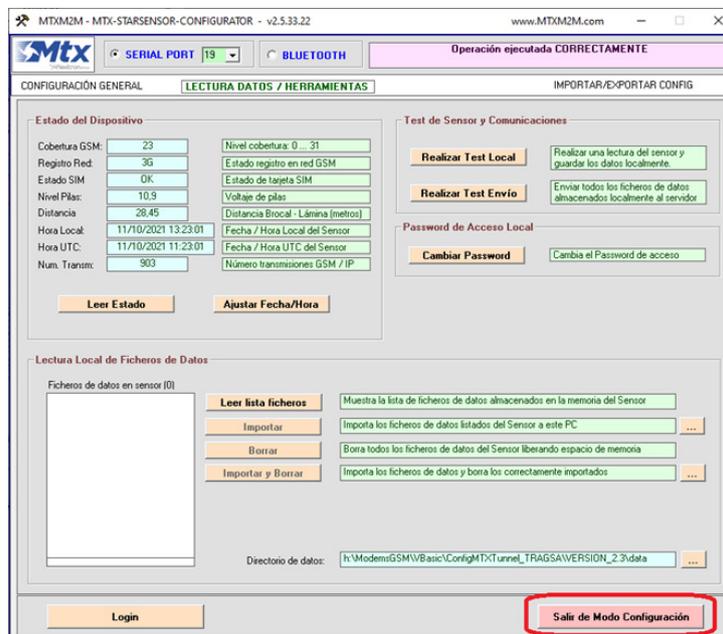
Directorio de datos: h:\ModemGSM\VBasic\Config\MTXTunnel_TRAGSAVERSION_2_3\data

Login **Salir de Modo Configuración**

STEP 14.- Sending test. Click on the "Perform Send Test" button to start sending the generated data file. This will demonstrate that the FTP settings are correct. After the test, the sent file should disappear from the list of stored files and it should be stored on the remote FTP server, which must be verified using the appropriate software (Filezilla, etc.).



STEP 15.- Once all the steps have been completed correctly, all that remains is to click on “Exit Configuration Mode”. The MTX-StarSensor device will then turn off and start using the established configuration, waking up at the scheduled times to perform the appropriate reading and sending tasks.



Contact

SPAIN

C/ Alejandro Sánchez 109
28019 Madrid

Tel 1: 902 19 81 46
Tel 2: +34 91 560 27 37
Email: contact@webdyn.com

FRANCE

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

Tel: +33 139042940
Email: contact@webdyn.com

INDIA

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

Tel: +91 1141519011
Email: purchase-india@webdyn.com

PORTUGAL

LusoMatrix Lda.
Av. Coronel Eduardo Galhardo 7-1°C
1170-105 Lisboa, Portugal

Tel: +351 218162625
Email: comercial@lusomatrix.pt

APAC

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

Tel: +886 965333367
Email: aaron.hsu@webdyn.com

UAE

Dubai

Tel: +34 915602737
Email: hector.perchin@webdyn.com

USA

Chicago

Tel: +34 915602737
Email: jose.cabezas@webdyn.com