



• CASO DE ESTUDIO •

SUBMETERING OF ELECTRIC METERS IEC870-5-102

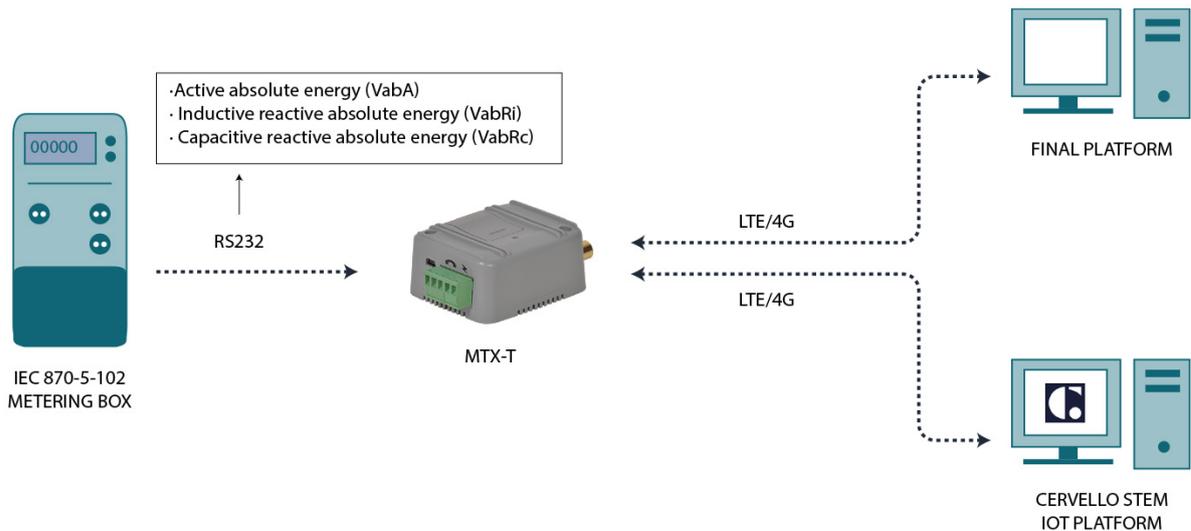


Submetering Electric Meters IEC870-5-102

We are in a context of great opportunity for energy advisers. With a vast market for company digital electricity meters deployed throughout the country and with a picture of growing energy costs, it is necessary to make intelligent use of this infrastructure to optimize consumption and make a rational use of electricity. Now it is possible to offer energy saving solutions thanks to the IEC870-5-102 protocol of the smart electricity meters deployed in Spain, together with the possibility of sending submetering information via LTE / 4G almost immediately to the energy advisers.

Device: **MTX-T, basic 4G IoT modem with MTX-Tunnel IEC870 software**

IoT Platform: **Cervello IoT Platform**



When we are faced with a scenario in which we want to carry out an energy efficiency project based on submetering, the most recommended option is to take advantage of the installation's own recording meter, an infrastructure already deployed and that is useful for our project as long as we are capable to read and understand the protocol they use, the IEC870-5-102.

In Spain, there is currently a meter park of several million units from which much more could be obtained than it is currently available. The meters are classified, according to the regulation of measurement points (RD 1110/2007), in five different types depending on the power contracted in the installation. The meters for installations with greater than 15kW contracted power have the same communications protocol: IEC 870-5-102.

These meters, already installed, supply rates of three and six periods, and constitute a great source of information since they allow obtaining electrical information retroactively. They store up to six months of the load curve (average active power value), the reactive energy of the four quadrants and the last twelve billing closings (distribution of consumption and dates of maximeters in the different pricing periods).

The needs, therefore, of the energy efficiency consulting company go through being able to monitor several of these indicators in real time (readings every 15 minutes) of the Active Absolute Energy (VabA), Inductive Reactive Absolute Energy (VabRi) data, Capacitive reactive absolute energy (VabRc) of an IEC 870-5-102 meter. In addition, in case of poor coverage, the connectivity equipment needs to store the recorded readings and send them the moment coverage returns.

For this purpose, the connectivity device that MTX proposes is the MTX-T modem (or any módem with firmware MTX-Tunnel), a basic modem at a competitive price with an RS232 interface (to connect to the meter) and 4G/LTE connectivity. Thanks to the firmware of this modem, the MTX-Tunnel, the device can be configured to take the readings of the required values, store them in the internal memory and transmit them immediately or, in case of bad coverage, at the moment in which the connectivity.

The modem configuration, having the IEC 870-5-102 protocol included in its firmware, passes only by indicating the identifier, the network address, the measured point address and the password of the meter, in addition to other generic configurations such as operation datalogger, port information or connectivity. All this configuration is done through a simple and convenient TXT file that is loaded directly into the modem.

Once the meter readings have been read and stored, the MTX-T sends the data to the final platform of the energy efficiency advisor, which will analyze the data from the submetering carried out to offer all the detailed information to the end customer.

In addition, thanks to Cervello Stem, it is possible to manage all the devices in the IoT network in a fast, comfortable and intuitive way. From this IoT device management platform you can monitor the status and connectivity of the modems, in addition to being able to configure alarms, execute configuration commands or perform remote firmware updates.

MTX-T

Basic 4G/3G Programmable IoT modem

MTX-T is an innovative and powerful all-in-one solution. Thanks to its set of interfaces (RS232, RS485, USB, digital I/O...) and the embedded MTX-Tunnel firmware that provides the MTX-T with a basic router-like functionality, this modem can be used in most of the IoT applications with no need for further hardware, shortening the time-to-market and providing a very cost-effective solution. MTX-T can be also programmed in Java2ME, for those customers who want to embed their own firmware on it.



MAIN FEATURES



4G/3G/2G



USB 2.0



RS232



RS485



Digital input



Legacy communic.



4G/3G/2G serial gateway



GPIO management



Relays management



DynDNS and No-IP



MQTT/s



Modbus & Datalogger



SMS control

● Hardware features

● MTX-Tunnel software features



CERVELLO STEM - IOT PLATFORM FREE FOR ONE YEAR WITH MTX DEVICES*



Autoprovisioning



Alarms and Alerts



Remote Control



Real time Dashboards



Rules engine



Monitoring engine



Analytics



Remote update

*Available with compatible devices that have MTX-Tunnel or MTX-Titan

- ⚡ DC input: 6.5 to 40 Vdc
- 🌡️ Temperature range: -30° to +85°C
- 📏 Dimensions: 78.1x66.8x37.2mm
- ⚖️ Weight: <190gr

Datasheet subject to changes | 2020/05
 MTX © by MATRIX ELECTRONICA S.L.U.
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 SALES: info@mtx2m.com
mtx2m.com

HARDWARE FEATURES

	MTX-T 4G	MTX-T 3G	MTX-T 2G
	LTE 5 Bands (700, 800, 900, 1800, 2100MHz), GSM/GPRS/EDGE: 2 Bands (900, 1800MHz)	HSPA+: 5 Bands (800, 850, 900, 1900, 2100MHz), GSM/GPRS/EDGE: 4 Bands (850, 900, 1800, 1900MHz)	GSM 4 Bands (850, 900, 1800, 1900MHz), release 6
	LTE Cat.1: DL 10.2Mbps, UL 5.2Mbps		
	HSPA: DL 7.2Mbps, UL 5.7Mbps UMTS PS: DL 384Mbps, UL 384 Mbps, CS: DL 64Mbps, UL 64Mbps	HSPA (3GPP release 7): DL 7.2Mbps, UL 5.7Mbps; HSDPA Cat.8/HSUPA Cat.6	
	EDGE Class 12 data rates, DL: max. 237 kbps, UL: max. 237 kbps GPRS Class 12 data rates, DL: max. 85.6 kbps, UL: max. 85.6 kbps	EDGE Class 12 data rates, DL: max. 237 kbps, UL: max. 237 kbps GPRS Class 12 data rates, DL: max. 85.6 kbps, UL: max. 85.6 kbps	EDGE Class 12 data rates, DL: max. 237 kbps, UL: max. 237 kbps GPRS Class 12 data rates, DL: max. 85.6 kbps, UL: max. 85.6 kbps
	CSD data transmission up to 9.6 kbps, V.110, non-transparent	CSD data transmission up to 9.6 kbps, V.110, non-transparent	CSD data transmission up to 9.6 kbps, V.110, non-transparent
	SMS: text and PDU mode support, point-to-point MO and MT, cell broadcast	SMS: text and PDU mode support, point-to-point MO and MT, cell broadcast	SMS: text and PDU mode support, point-to-point MO and MT, cell broadcast

Interfaces

-  4G/3G/2G connectivity
-  SIM card interface 1.8V and 3V
-  RS232
-  RS485
-  1x digital input
-  Power supply
-  Operating status LEDs

Connectors

-  2x SMA F antenna connector: 4G
-  1x SMA F antenna connector: 3G/2G
-  Mini USB B
-  DB9 female connector: RS232
-  5-way plug-in: RS485, power supply and digital input

Processor

	4G	3G	2G
Flash	31MB	10MB	10MB
RAM	18MB	10MB	10MB
CPU	ARM11	ARM11	ARM11

MTX-TUNNEL SOFTWARE FEATURES

Connectivity

-  4G/3G/2G serial gateways: TCP client, TCP server, UDP client/server, accept incoming CSD calls, up to 2 simultaneous tunnel
-  IP connectivity mode: permanent 100% time, under request (SMS, missed call), change on a digital input, analog input out of level, serial data on RS232/RS485 port, scheduled date/hour/time

TCP Services

-  Web server, Telnet, SNMP, Tacacs+, NTP
-  Datalogger: MQTT, MQTTs, HTTP, HTTPs, FTP
-  Shows the status of digital and analog inputs
-  Change digital output level and relays
-  Execute AT commands remotely: Telnet, MQTT/MQTTs, SMS, HTTP

Security

-  Authorized phone numbers
-  Firewall IP, SSL/TLS connections, encrypted config
-  Secure OTAP (remote FIU upgrade)
-  Watchdog hardware

*MTX-Tunnel features depending on modem interfaces

Alarms and Control

-  Send SMS/MQTT alarm when the level of digital or analog input change
-  SMS can be sent to up to 10 remote users
-  Execute remote AT commands
-  Change the status of digital outputs & relays
-  Customizable SMS commands

Solutions for Dynamic IP

-  IP session using a SMS or missed call
-  DynDNS and NoIP
-  Private DNS

Metering, Modbus, Sensors...

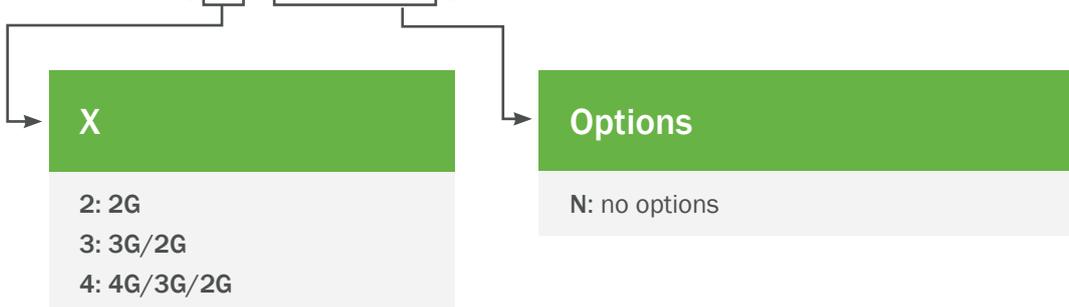
-  868 MHz remote monitoring sensors (Wavenis)
-  Master for modbus RTU devices, Modbus TCP slave, Modbus TCP to RTU gateway
-  Relays control
-  Access to serial devices using 2G/3G/4G and GSM
-  Astronomical clock

ORDERING INFORMATION

MTX-T [2 N]	199801421
MTX-T [3 N]	199801422

MTX-T [4-N] (4G/2G)	199801424
MTX-T [4 N]	199801445

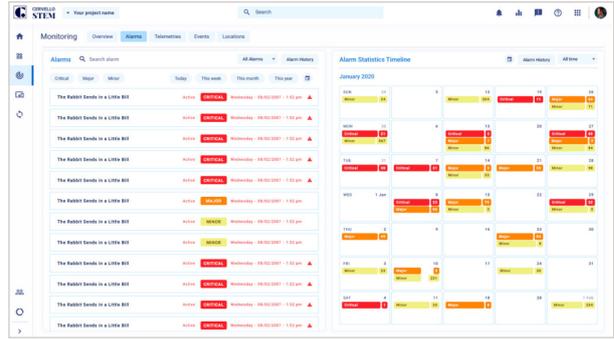
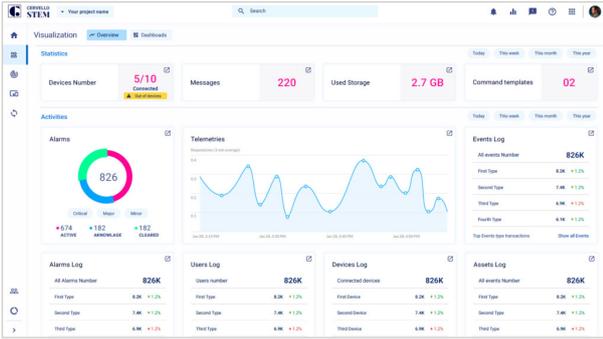
MTX - T [X - Options]





CERVELLO STEM - IOT PLATFORM

FREE FOR ONE YEAR WITH MTX DEVICES**



General Features

-  Up to unlimited devices
-  Autoprovisioning
-  Real time dashboards
-  Remote control
-  Monitoring engine
-  Alarms and alerts
-  Rules engine
-  Remote update
-  Connect engine*
-  API Keys*
-  Analytics*
-  Multi-tenant*
-  White labeling*
-  Custom admin role*

Monitor

-  Alarms, Events and Incidents
-  Tracking*

Control

-  Command template
-  OTA

Devices Inventory

-  Add single and single from template
-  Add Bulk from template and from autoprovisioning
-  Manage: Device template, Groups, Assets and Bulk actions

Connect

-  Topics*
-  Transformation*
-  Integration keys*

Visualize

-  Dashboards
-  Reports

Automate

-  Rules Engine
-  Actions
-  Triggers

Security

-  2-factor authentication
-  SSL for end user application
-  Custom admin roles*

*Upgrade required

**Available with compatible devices with MTX-Tunnel or MTX-Titan

