# TITAN

## Application Note 50

Reading IEC 60870-5-102 Electricity Meters using IP-RS232 Gateways and CSD Data Calls

# Reading IEC 60870-5-102 Electricity Meters Using IP-RS232 Gateways and CSD Data Calls

## 1. Scenario Details

TITAN-based devices have all the typical functionalities of 4G/3G/2G routers, as well as a series of added features that make them one of the most feature-packed routers on the market. One of the added features is the ability to create CSD-RS232 and IP-RS232 gateways, these are often used when reading IEC 60870-5-102 electricity meters.

## 2. Description of the Example Scenario

- We have an electricity meters (IEC 60870-5-102) with an RS232 serial port (9600,8,N,1).

- We want to configure the TITAN-based device to establish an IP-RS232 gateway and therefore be able to read the meter in real time via TCP-IP.

- Furthermore, the TITAN-based device must be able to accept a CSD call when it comes in and allow the meter to be read by the utility company via a transparent CSD-RS232 gateway. The CSD call takes precedence over IP-RS232 communications, so the latter must be suspended when the call is received, and restored when the utility company's CSD call ends.



Electric company

Electric meter RS232 — RS232 — TITAN based device

CDS call

TCP/IP

STOP

Offices
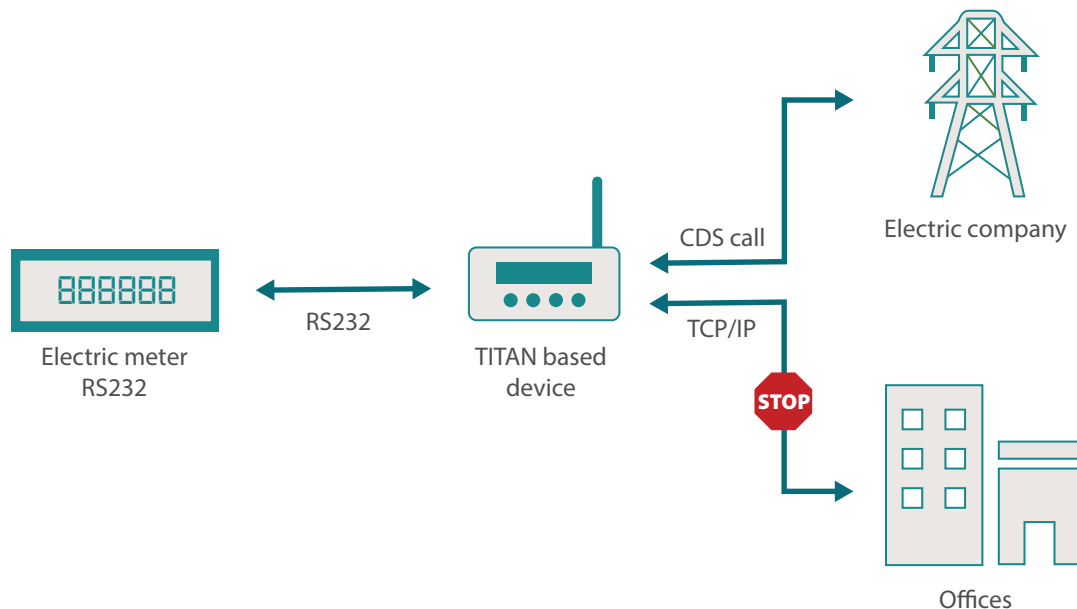
# 3. Configuring the Associated Serial Port

If we want to be able to use the TITAN-based device's RS232 serial ports to accept CSD calls, we must first configure both ports to the speed and parity, etc. These values match those in the meter's serial port configuration, which in this example is 9600,8,N,1.

As in this example we also want to read the meter over an IP connection, we must configure a TCP Server gateway. In this example the listening TCP port will be TCP port 20010.

To do this, go to the "Serial Settings > Serial Port1-232" menu and configure the screen as follows:

# 4. WAN Configuration

If the TITAN-based device needs to be configured to receive CSD calls alone, it is highly recommended (and in some locations it is essential) to configure the device to use the 2G network, avoiding 3G and 4G, even though the TITAN-based devices can use them, not all carriers allow fallback from 3G to 2G, or from 4G to 2G, to receive CSD calls when they occur.

Network configuration is done from the "Mobile > Basic Settings" menu. The figure below shows the appropriate settings. The WAN interface is enabled (so that the device obtains an IP) and the SIM card's APN, username and password are specified. Lastly, we will configure the device to work on the 2G network.

# 5. Configuration

Optionally, it can be useful to configure the TITAN-based device to use SMS messages in the event that remote commands need to be sent to it in the future (i.e. a configuration change, a remote reset, a status reading, etc.). SMS message configuration can be done from the "Other > SMS control" menu.

The following screenshot shows a configuration in which SMS messages are enabled with headers (password), with text "mtx", and all phone numbers are authorized (those from which all AT commands can be sent by SMS). If you only want authorized phones to be able to send AT commands via SMS, leave the "all phones" checkbox unchecked and enter the authorized phone numbers in full (e.g. +34666123456).

For example, if you need to remotely check the coverage, send an SMS with the text "mtx at+csq" and you will get an SMS message back with the requested information.

If your SIM card gives you a public IP address (or accessible IP) it can also be useful to have Telnet or SSH enabled to send AT commands to your device remotely to avoid unnecessary journeys. This can be done in the "Other > Remote console" menu. Try not to use the usual ports for Telnet (23) and SSH (22) if you are using a SIM card with a public IP address, in order to avoid unwanted traffic. You can also use the "Firewall > Authotized IPs" menu to authorize remote console access from authorized IP addresses only.



# 6. End of the Configuration Process

After entering the above settings, simply reboot the TITAN-based device for them to take effect. You can do this from the "Other > Titan Scripts" menu.