

# TITAN

## Application Note 7

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Implementing a Modbus TCP - Modbus RTU Gateway

# Implementing a Modbus TCP - Modbus RTU Gateway

## 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 its ability to create simultaneous IP – RS232/RS485 gateways. TITAN-based devices can implement gateways of the following types:

Ethernet <> RS232/RS485

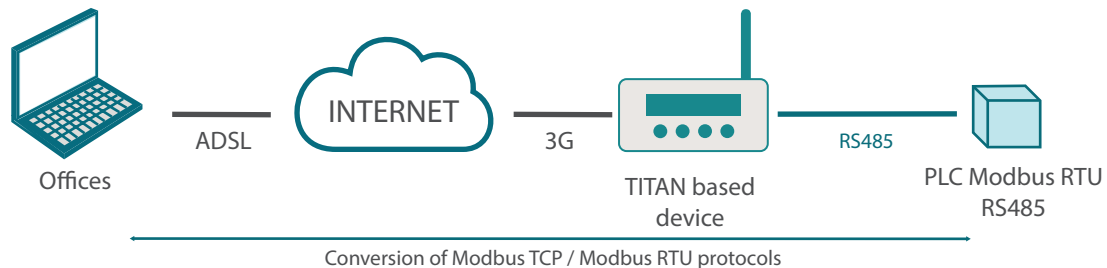
Wi-Fi <> RS232/RS485

3G/4G <> RS232/RS485

On all of these types of available gateways we can tell the TITAN-based device to use Modbus TCP – Modbus RTU protocol conversion. Below is a basic example of how to use the TITAN-based device to implement a Modbus TCP – Modbus RTU gateway.

## 2. Description of the Example

In this example we will configure a TITAN-based device to enable a 4G-RS485 gateway (with Modbus TCP – Modbus RTU protocol conversion) to access a remote PLC via an RS485 port. We will use the COM2 port and the listening TCP port will be TCP 502.



(Picture: Modbus RTU PLC device with an RS485 port; Modbus TCP/Modbus RTU protocol conversion).

### 3. Configuration of 4G/3G/2G communications

Configuring 4G/3G/2G communications is very simple. Simply configure the “Mobile > Basic Settings” section, indicating the APN, Username and Password (and the PIN if necessary).



★ Mobile

- Status
- Basic Settings
- Keep Online

★ Ethernet

- Basic Settings

★ Firewall

- Authorized IPs

★ Serial Settings

- Serial Port1-RS232
- Serial Port2-RS485
- SSL Certificates

★ External Devices

- Logger configuration
- ModBus Devices
- Generic Serial Device
- Temperature Sensor
- IEC102 Meter
- W-MBus

★ Other

- AT Command
- DynDns
- Private DynDns
- Sms control
- Periodic Autoreset
- Time Servers
- Remote Console
- Snmp
- Tacacs+
- Mqtt
- Http / Https
- User Permissions

▶ Mobile ▶ Basic Settings

Mobile WAN

Enabled (IP active)

Enable Wireless WAN interface

Sim Mode

SIM1

Sim selection

SIM1 APN:

movistar.es

APN of SIM card 1

SIM1 Username:

MOVISTAR

Username of SIM card 1

SIM1 Password:

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Password of SIM card 1

SIM1 Pin:

PIN of SIM card 1

SIM2 APN:

APN of SIM card 2

SIM2 Username:

Username of SIM card 2

SIM2 Password:

Password of SIM card 2

SIM2 Pin:

PIN of SIM card 2

Authentication:

Auto

Authentication method

Network selection:

Auto (4G/3G/2G)

Network selection

DNS selection:

Get DNS from Operator

DNS1:

8.8.8.8

Preferred DNS1

DNS2:

8.8.4.4

Preferred DNS2

Remote webserver management:

☒

Enable remote webserver management

## 4. Configuring the Associated RS485 Port

As we are going to use the COM2 port to access the RS485 device, we will need to access the following configuration screen: “Serial Settings > Serial Port2-485” and configure the screen as follows. It assumes that the PLC has a configuration of 115200,8,n,1. We select the “Serial – IP Gateway (Modbus TCP / Modbus RTU) gateway as the function, choosing Port 502 as the listening TCP port.

The screenshot shows the webdyn configuration interface. The left sidebar contains a menu with categories: Mobile (Status, Basic Settings, Keep Online), Ethernet (Basic Settings), Firewall (Authorized IPs), Serial Settings (Serial Port1-RS232, Serial Port2-RS485, SSL Certificates), and External Devices (Reboot, Logout). The main content area is titled 'Serial Gateway > Com2 Settings'. It features a table of serial port settings: Baudrate (115200), Data bits (8), Parity (none), Stop bits (1), and Timeout ms (0). Below this table are three checkboxes: 'Allow local embedded AT commands', 'Allow remote embedded AT commands', and 'Allow incoming GSM call (GPRS Data Call)'. At the bottom, the 'Function' is set to 'Serial - IP Gateway (ModBus TCP / ModBus RTU)', and the 'TCP Local Port' is set to 502. The 'SSL/TLS enabled' checkbox is unchecked.

**Serial Gateway > Com2 Settings**

Baudrate:	115200	Baudrate of serial port
Data bits:	8	Number of data bit
Parity:	none	Parity
Stop bits:	1	Number of stop bits
Timeout ms:	0	msec without serial data before sending (default: 50)

☐ Allow local embedded AT commands Ex.: <MTXTUNNEL>AT</MTXTUNNEL>

☐ Allow remote embedded AT commands Ex.: <MTXTUNNELR>AT</MTXTUNNELR>

☐ Allow incoming GSM call (GPRS Data Call) Only TCP Server and TCP Client function

**Function: Serial - IP Gateway (ModBus TCP / ModBus RTU)**

TCP Local Port: 502 Listening TCP Port (1 ... 65535). Normally 502

SSL/TLS enabled ☐ SSL/TLS Enabled (SSL Certs needed)

Once the TITAN-based device has been configured, we just need to Reboot and it will function as a Modbus TCP to Modbus RTU gateway.

## 5. Other Considerations

- In a scenario like this, in which both gateways are in server mode, either a SIM card with a fixed IP address or DynDNS must be used (also compatible with TITAN-based devices). The DynDNS settings can be configured in the menu: Other > DynDNS
- If you do not have a fixed IP SIM card, or your operator uses NAT (providing you with (private) IP addresses of the type 10.x.x.x ), and therefore you cannot use DynDNS either, you can activate the OpenVPN option (VPN > OpenVPN Client). If you use OpenVPN you will not need a fixed IP or DynDNS, although you will have to set up an OpenVPN server in your company. An application note is available on how to set up an OpenVPN with Titan routers.

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- webdyn
- powered by TITAN
- flexitron group

- In this example we used a 4G communication interface, but we could also create a gateway via Ethernet or Wi-Fi.