

TITAN

Application Note 56

4G/3G/2G – RS232/RS485 Gateway
with Embedded AT Commands

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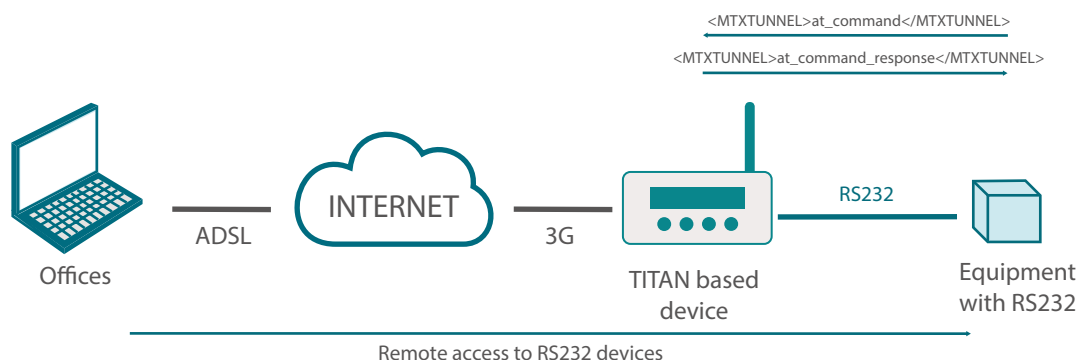
1. Scenario Details

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 IP-Serial gateways with embedded AT commands. This means that it is possible to communicate remotely with an RS232 or RS485 serial device via IP (e.g. with a PLC), this in turn can send AT commands to the TITAN-based device to execute actions (get the time, send an SMS message, etc.).

2. Description of the Example

In this example we will configure a TITAN-based device to enable a single 4G/3G/2G-RS232 gateway to access a remote PLC with an RS232 port. We will use the COM1 port and the listening TCP port will be TCP20010. The PLC also needs to be able to send AT commands to the modem in order to send SMS messages, even when the IP-RS232 gateway has been established.



3. Configuration of 4G/3G/2G Communications

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

The screenshot shows a web browser window with the address bar displaying "192.168.1.2/wan-settings.php". The page header features the "webdyn" logo, "flexitron group" branding, and "powered by TITAN". A left sidebar contains a navigation menu with categories: Mobile (Status, Basic Settings, Keep Online), Ethernet (Basic Settings), Wifi (Basic Settings, DHCP Server), Firewall (NAT, 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, GPS Receiver), and Other (AT Command, DynDns, Private DynDns). The main content area is titled "Mobile > Basic Settings" and contains the following configuration fields:

Field	Value	Description
Mobile WAN	Enabled (IP active)	Enable Wireless WAN interface
Sim Mode	SIM1 + SIM2 (backup)	Sim selection
SIM1 APN:	movistar.es	APN of SIM card 1
SIM1 Username:	MOVISTAR	Username of SIM card 1
SIM1 Password:	*****	Password of SIM card 1
SIM1 Pin:		PIN of SIM card 1
SIM2 APN:	movistar.es	APN of SIM card 2
SIM2 Username:	MOVISTAR	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

After entering the data, click on “SAVE CONFIG” to save the configuration in the device's memory.

4. Configuring of the Associated RS232 Port

The next step is to configure the TCP-Serial gateway. As we are going to use the COM1 port to access the RS232 device, we will need to access the following configuration screen: “Serial Settings > Serial Port1-232” and configure the screen as follows. It assumes that the PLC has a configuration of 115200,8,n,1. Next select the TCP Server gateway, choosing port 20010 as the listening TCP port.

The “Allow local embedded AT commands” checkbox must also be checked. This option will enable the PLC to send embedded AT commands to the TITAN based device.

The screenshot shows the webdyn Intelligent Router configuration interface. The browser address bar shows the URL 192.168.1.2/serial-settings.php?id=1. The page title is "webdyn powered by TITAN flexitron group". The left sidebar contains a navigation menu with categories: Mobile, Ethernet, Wifi, Firewall, Serial Settings, External Devices, and Other. The "Serial Settings" category is expanded, and "Serial Port1-RS232" is selected. The main content area is titled "Serial Gateway > Com1 Settings". It contains several configuration fields and checkboxes. A red box highlights the "Serial Port1-RS232" option in the sidebar. Another red box highlights the "Serial Gateway > Com1 Settings" title. A third red box highlights the "Allow local embedded AT commands" checkbox, which is checked. A fourth red box highlights the "Function: Serial - IP Gateway (TCP Server)" option, which is selected. The configuration fields include: Baudrate (115200), Data bits (8), Parity (none), Stop bits (1), Flow Control (none), Timeout ms (0), TCP Local Port (20010), Temporal client RS232 (unchecked), Temporal client Wakeup (empty), Temporal client time (60), and Temporal client Random (0). The page also includes examples for AT commands and a note about the listening TCP port.

Intelligent Router

No es seguro | 192.168.1.2/serial-settings.php?id=1

webdyn powered by TITAN flexitron group

Serial Gateway > Com1 Settings

Baudrate: 115200 Baudrate of serial port

Data bits: 8 Number of data bit

Parity: none Parity

Stop bits: 1 Number of stop bits

Flow Control: none Flow control of serial port

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 (CSD Data Call) Only TCP Server and TCP Client functions or Nothing

☐ Function: Nothing or used by External Device or Script

☒ Function: Serial - IP Gateway (TCP Server)

TCP Local Port: 20010 Listening TCP Port (1 ... 65535)

Temporal client RS232 ☐ Check if you need a temporal TCP Client when data is present at serial port.

Temporal client Wakeup DDHMM. Example: XX2200 starts a temporal client every day at 22:00

Temporal client time: 60 Seconds for temporal client

Temporal client Random Seconds. Random time for temporal client Wakeup

5. Other Considerations

Once the TITAN-based device has been restarted, we can connect remotely to TCP port 20010 of the 4G WAN IP address to establish a TCP-Serial gateway to the PLC. Likewise, the PLC will be able to send encapsulated AT commands using the <MTXTUNNELR></MTXTUNNELR> tags. For example, if the PLC wants to check the time, we just need to send the command:

```
<MTXTUNNELR>AT+CCLK?<MTXTUNNELR>
```

Or if the PLC needs to send an SMS, the following AT command should be sent:

```
<MTXTUNNELR>AT^MTXTUNNEL=SMS;+34666123456,MYMESSAGE<MTXTUNNELR>
```