webdyn

Flexitron group

TITAN

Application Note 58

Executing AT Commands Remotely

Executing Embedded AT Commands Remotely

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 remotely execute AT commands on the TITAN-based device sent from various sources such as SMS, HTTP/HTTPS, SNMP, TELNET, SSH, MODBUS or MQTT.

The remote execution of AT commands (as indicated in the User Manual, Chapter 5) enables us to find out the status of the device (Coverage, Firmware version, IP, etc.) and to execute actions (remotely activate a digital output, reset the device, change a configuration, etc.).

This Application Note will briefly explain how to execute AT commands from the various interfaces.

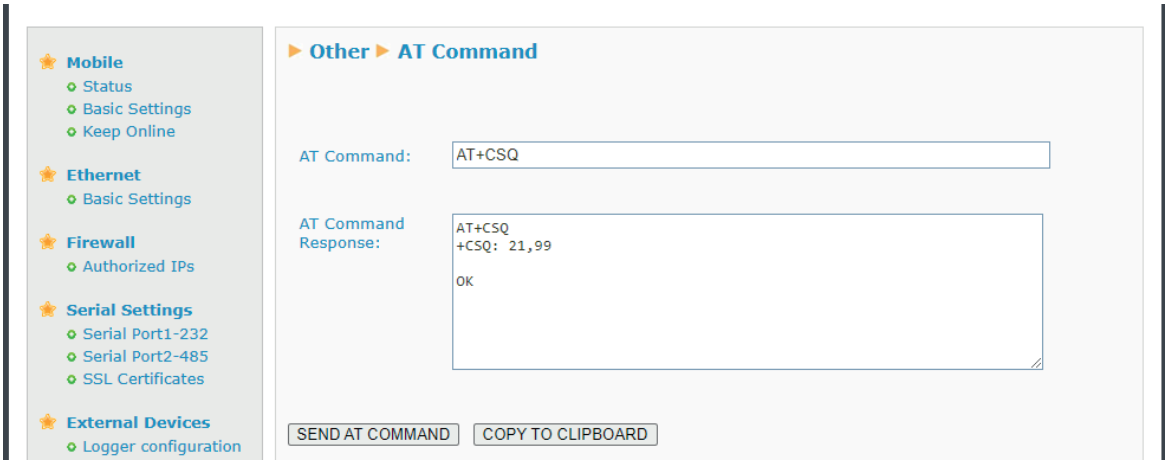
2. Sending AT commands by SMS

To be able to send AT commands by SMS you must configure the "OTHER > SMS Control" section, check the "AT Enabled" and "AT Header" boxes, and select "All phones" if we want to be able to send AT commands by SMS from any phone number, otherwise entering up to 10 authorized telephone numbers (including the prefix).

We can now send an AT command by SMS. Sending a message with the text "mtx at+csq" will enable us to find out the TITAN-based device's coverage, which will be returned by SMS.

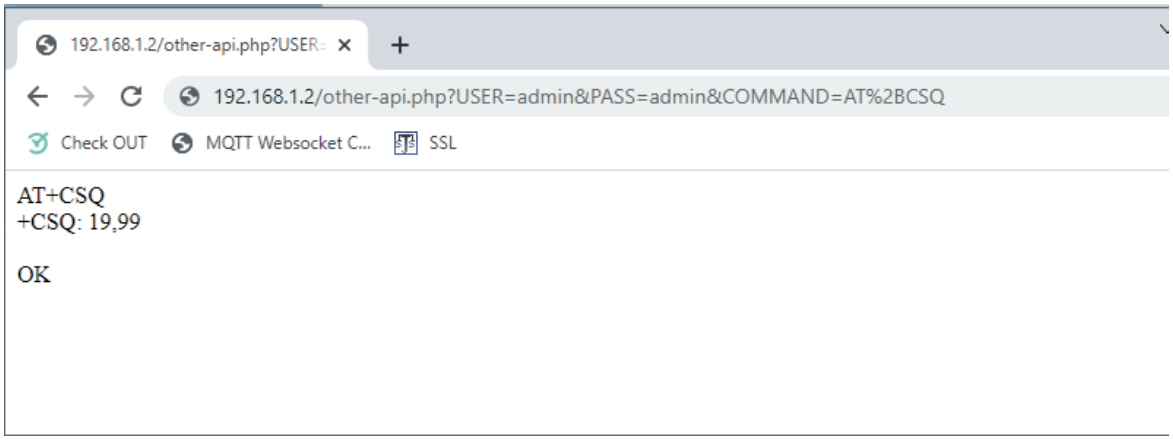
3. Sending AT Commands by HTTP/HTTPS

There are two ways to send AT commands to TITAN based devices over HTTP / HTTPS. One is using the TITAN-based device's own configuration interface. This option can be found in the “OTHER > AT Command” menu. The AT command to be executed must be entered, for example “AT+CSQ” and the “SEND AT COMMAND” button clicked on.



The other way to execute AT commands is through the link

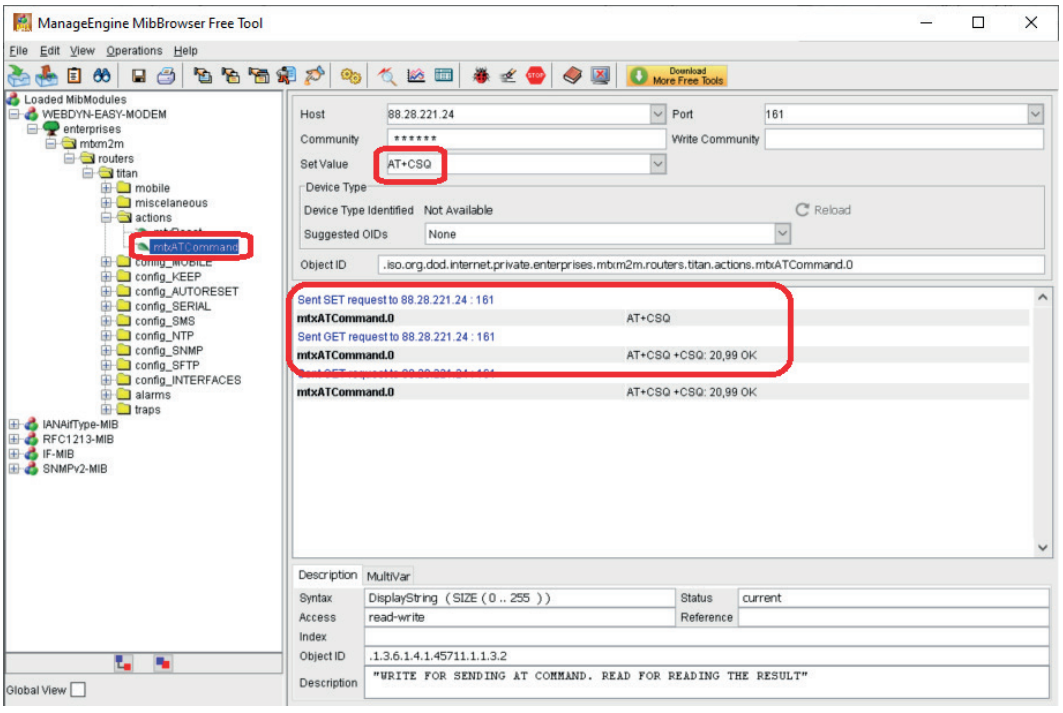
http://192.168.1.2/other-api.php?USER=admin&PASS=admin&COMMAND=AT%2BCSQ



4. Sending AT Commands by SNMP

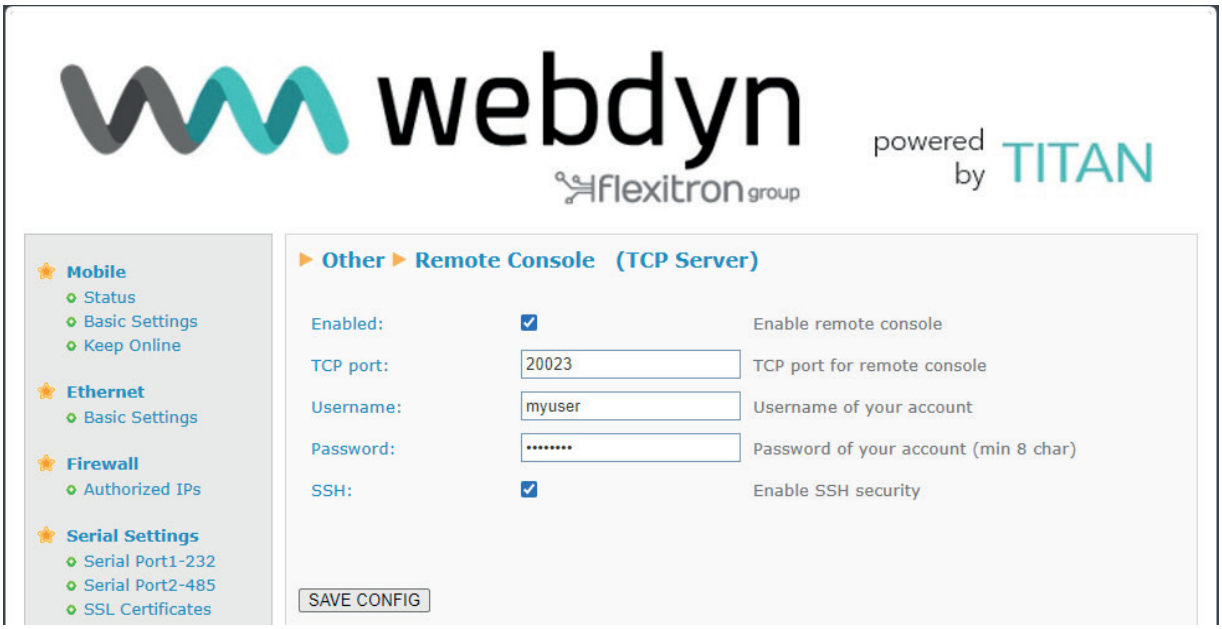
To send AT commands via SNMP, the SNMP service must be activated in the TITAN-based device. This is done in the “OTHER > SNMP” section.

Once the SNMP service is activated in the TITAN-based device, we can send AT commands by entering them in the appropriate OID, as shown in the following figure. Once the AT command is executed, we can obtain the result by reading the same OID.

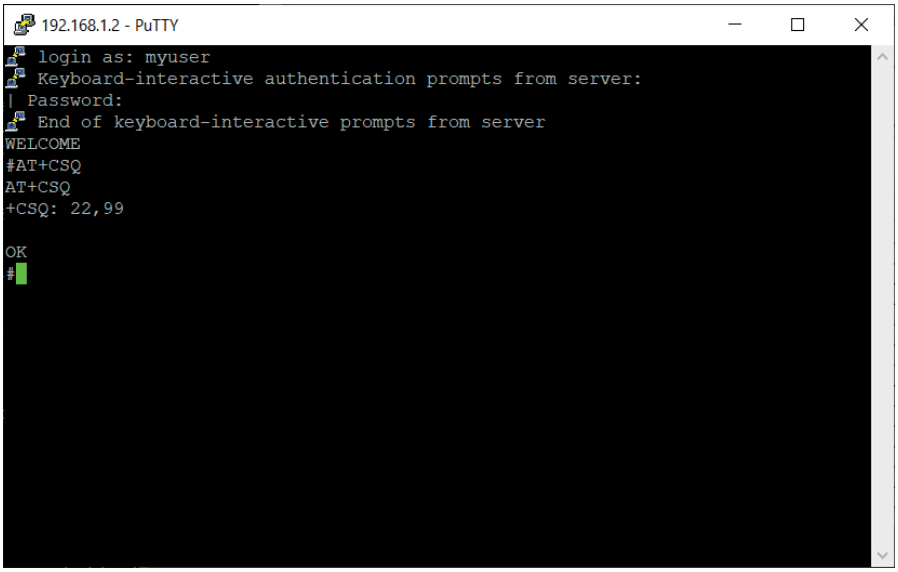


5. Sending AT Commands by TELNET / SSH

To be able to send AT commands via TELNET or SSH, you must first configure the section of the TITAN-based device “OTHER > Remote Console”.



When the TITAN-based device has been configured and restarted, we can send AT commands using the local IP address of the device, or its Public IP address (WAN) if available.



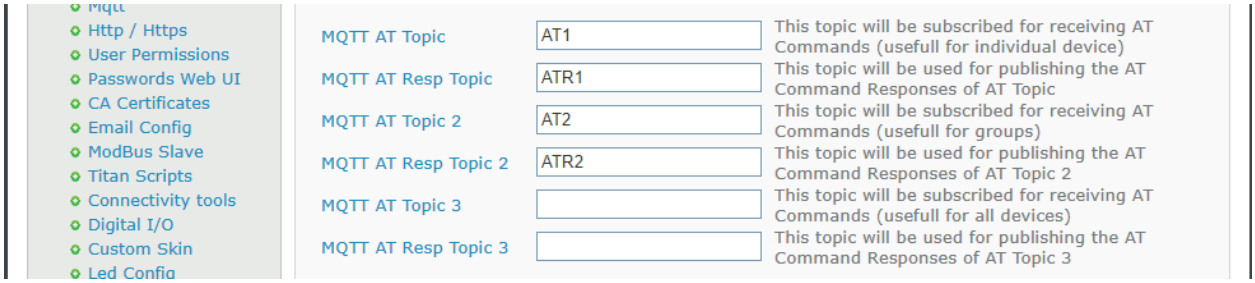
6. Sending AT Commands by MODBUS

See Application Note ANV6_10-Device-Powered by Titan-sending-SMS-Emails-Traps-with-ModbusTCP.

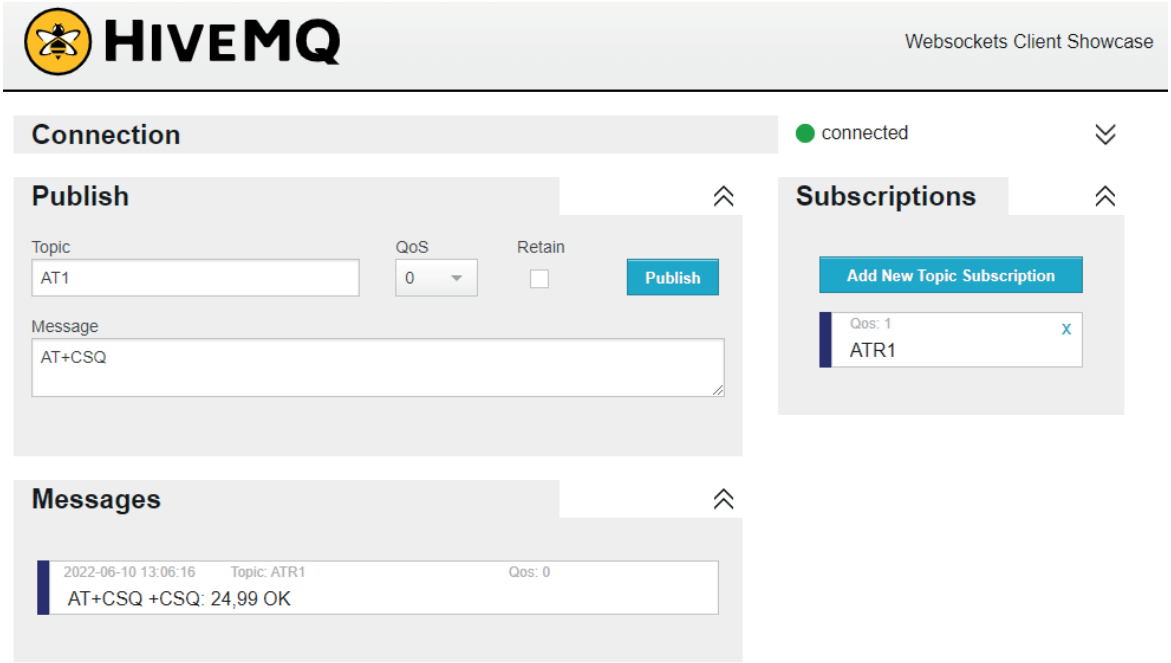
It provides a detailed explanation of how to execute an AT command in the TITAN-based device using the Modbus protocol.

7. Sending AT Commands by MQTT

To be able to remotely execute AT commands on the modem, the “OTHER > MQTT” section must be correctly configured. As well as entering the information for the MQTT broker (IP/DNS address, username, password), we must also enter the “AT Topic” and “AT Resp Topic” topics respectively. Up to 3 different ones can be entered.



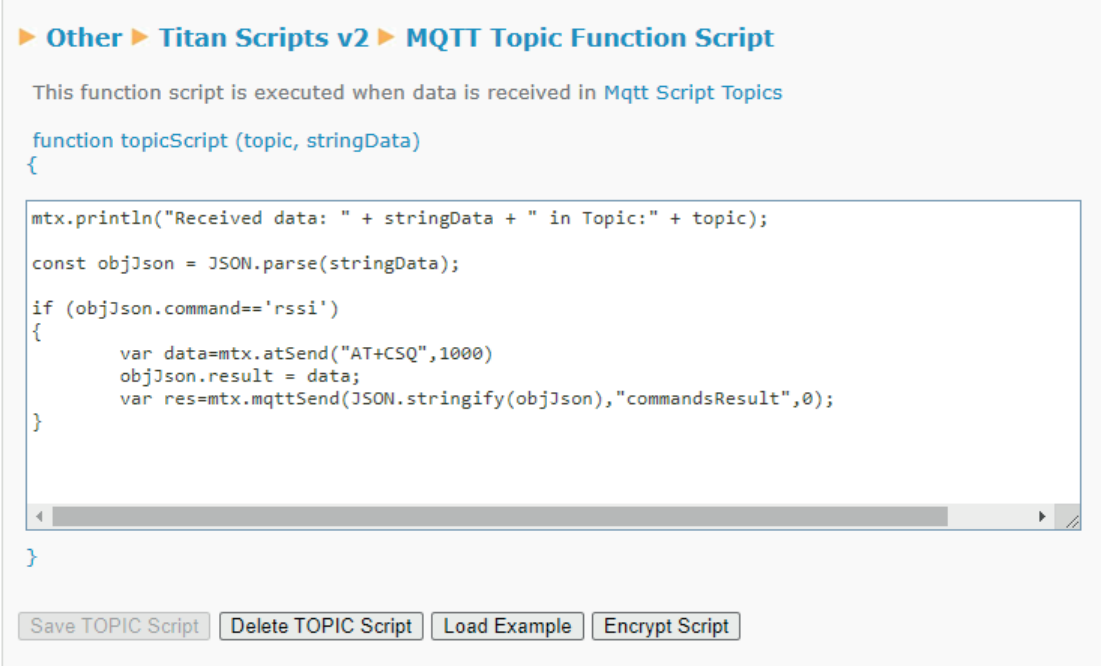
Looking at the example screen above, if the command “AT+CSQ” is sent to the “AT1” topic, the device will execute the command “AT+CSQ” and send the response to the “ATR1” topic. If, on the other hand, the “AT+CSQ” command is sent to the “AT2” topic, the TITAN-based device, on receiving the data in said topic, will execute the “AT+CSQ” command and send the response to the “ATR2” topic.



Some specific MQTT platforms may have different formats for sending data, i.e. they do not allow AT commands to be sent to a specific TOPIC, but instead use a special platform format.

To check the coverage, imagine that we need to send the command {“command”:”rssi”} to the “commands” topic, and that the modem returns the response to the “commandsResult” topic, in the format {“command”:”rssi”,”result”:25}. In this case, it would not be possible to send this data to the 3 previous topics for AT commands. Instead, the “MQTT Script Topic 1” and “MQTT Script Topic 2” topics must be used. In this example we only need the first of these, as is shown in the following figure:

When the TITAN-based device receives data (text) in one of these two topics, it will automatically execute the script found in the “OTHER > Powered by Titan Scripts” section, specifically in the “MQTT Topic Function Script” section. This function passes the reception topic as parameters, as well as the data (String type) received.



This code basically does the following:

```
//Displays the data received in the console (for debugging)
mtx.println("Received data: " + stringData + " in Topic:" + topic);

//Creates a JSON with the received String data
const objJson = JSON.parse(stringData);

//If the "command" KEY of the JSON conains the value "rssi" ...
if (objJson.command=='rssi')
{
        //Executes the AT+CSQ command to get the coverage
        var data=mtx.atSend("AT+CSQ",1000)
        //We add the "result" field with the read coverage data
        objJson.result = data;
        // We send the response to the "commandsResult" topic
        var res=mtx.mqttSend(JSON.stringify(objJson),"commandsResult",0);
}
```

The result would be the following: