webdyn

Flexitron group

TITAN

Application Note 48

Serial Frame Datalogger for Proprietary Protocols - RS232 / RS485

Serial Frame Datalogger for Proprietary Protocols - RS232 / RS485

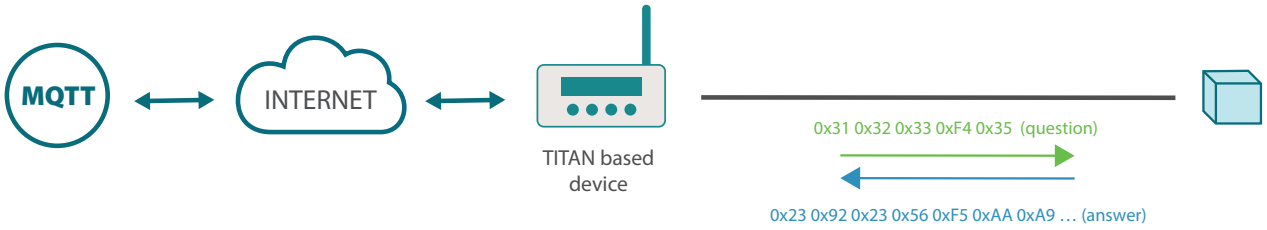
1. Scenario Details

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 store data from a serial device connected to an RS485 or RS232 port by interrogating them with custom serial frames, which can be useful for proprietary protocols.

As always, this capability will be illustrated using a simple example.

2. Description of the Example Scenario

- We have a device (PLC) with an RS232 serial port (115200,8,N,1). We must read a series of internal registers from that device every 10 minutes and send them to an MQTT platform.
- In order to be able to read the registers of the device, we must use a proprietary protocol, i.e. we must send certain frames of bytes (proprietary protocol) through the device's serial port so that it sends back the values of the internal registers we need.
- The TITAN-based device must therefore periodically send preconfigured frames of bytes to the serial device through its RS232 serial port, collect the responses and, adding the time required to collect the data, send said data to an MQTT broker encapsulated in a JSON object.
- To read the registers, two serial frames will be sent via RS232 through the serial port of the TITAN-based device every 10 minutes: 313233F435 and 41A12D42421F4343.

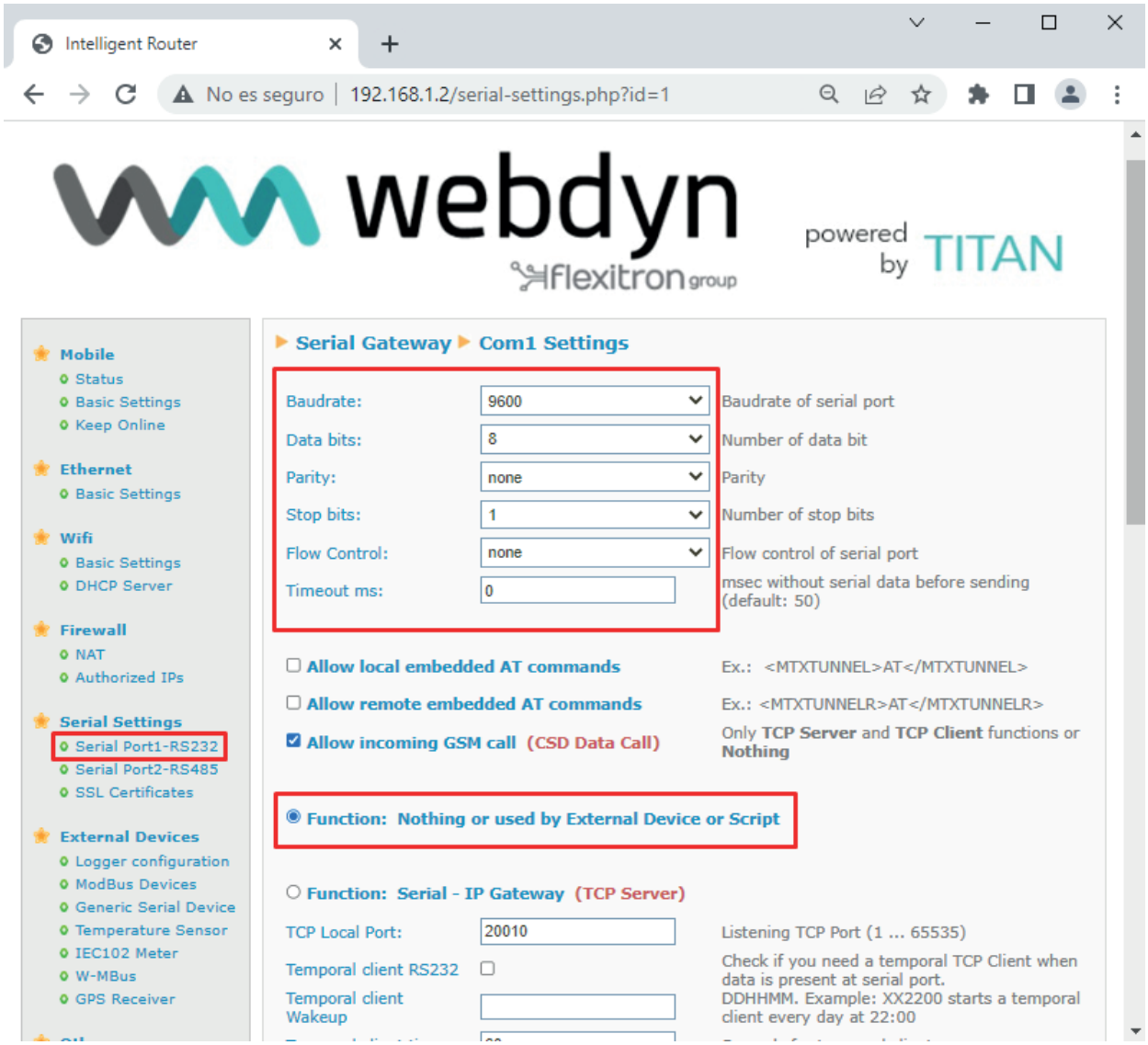


contact@webdyn.com | webdyn.com

3. Configuring the Associated Serial Port

First we must decide which of the TITAN-based device's serial ports the serial device being interrogated will be plugged into.

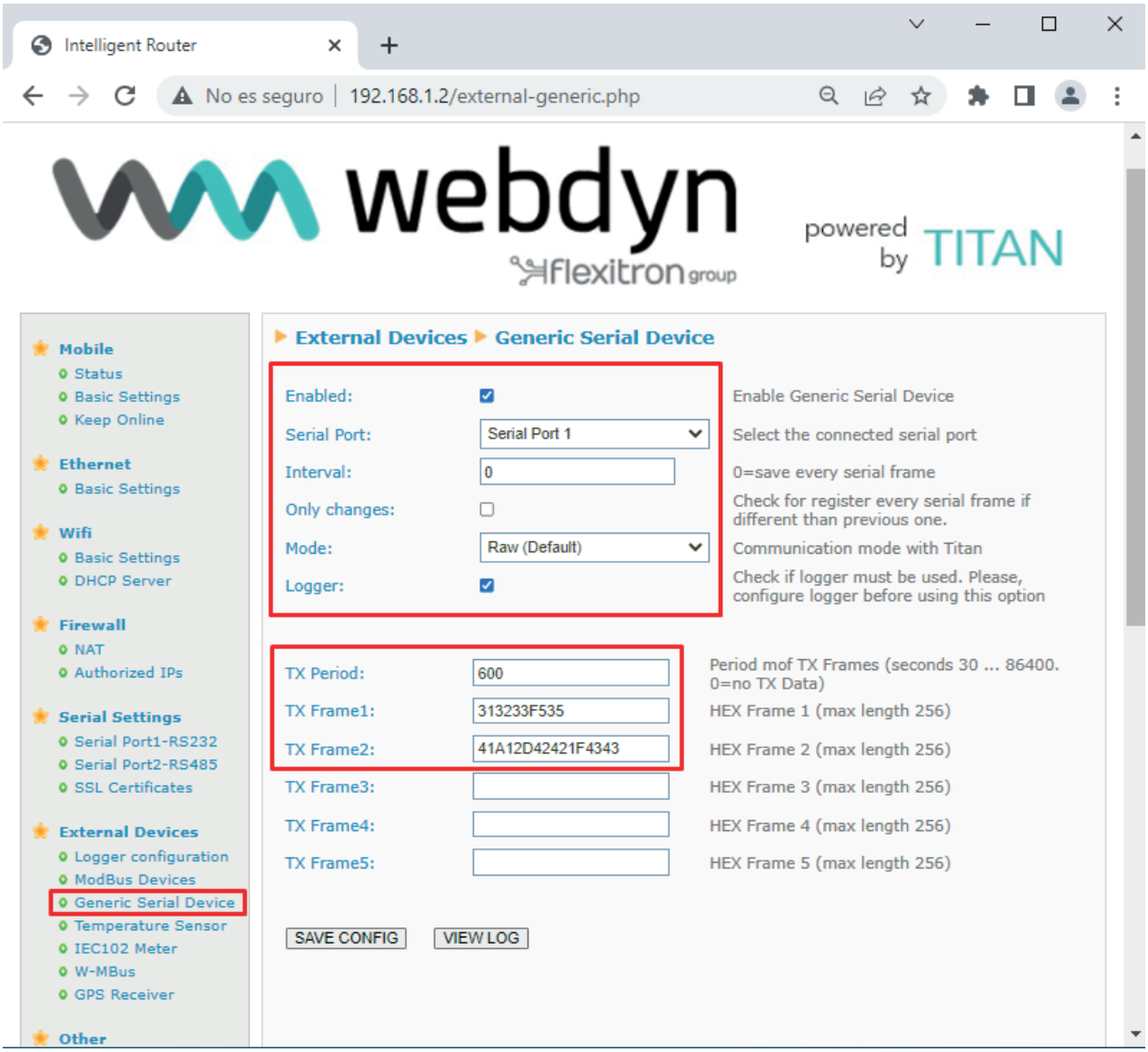
We will assume that the PLC is to be connected to the COM1 (RS232) port of the TITAN-based device. The PLC's serial port is set to 115200,8,n,1, we must therefore click in the "Serial Settings > Serial Port1-232" menu and configure the screen as follows:



4. Configuring the Serial Datalogger

The next step is to configure the serial datalogger, i.e. we must configure the TITAN-based device to select the serial port that will be used with the datalogger, as well as the frames (in hex format) that the TITAN-based device must send via its serial port to interrogate the PLC, and also the send interval.

To do this, click on the link: “External Devices > Generic Serial Device” and configure it as shown below:



Namely:

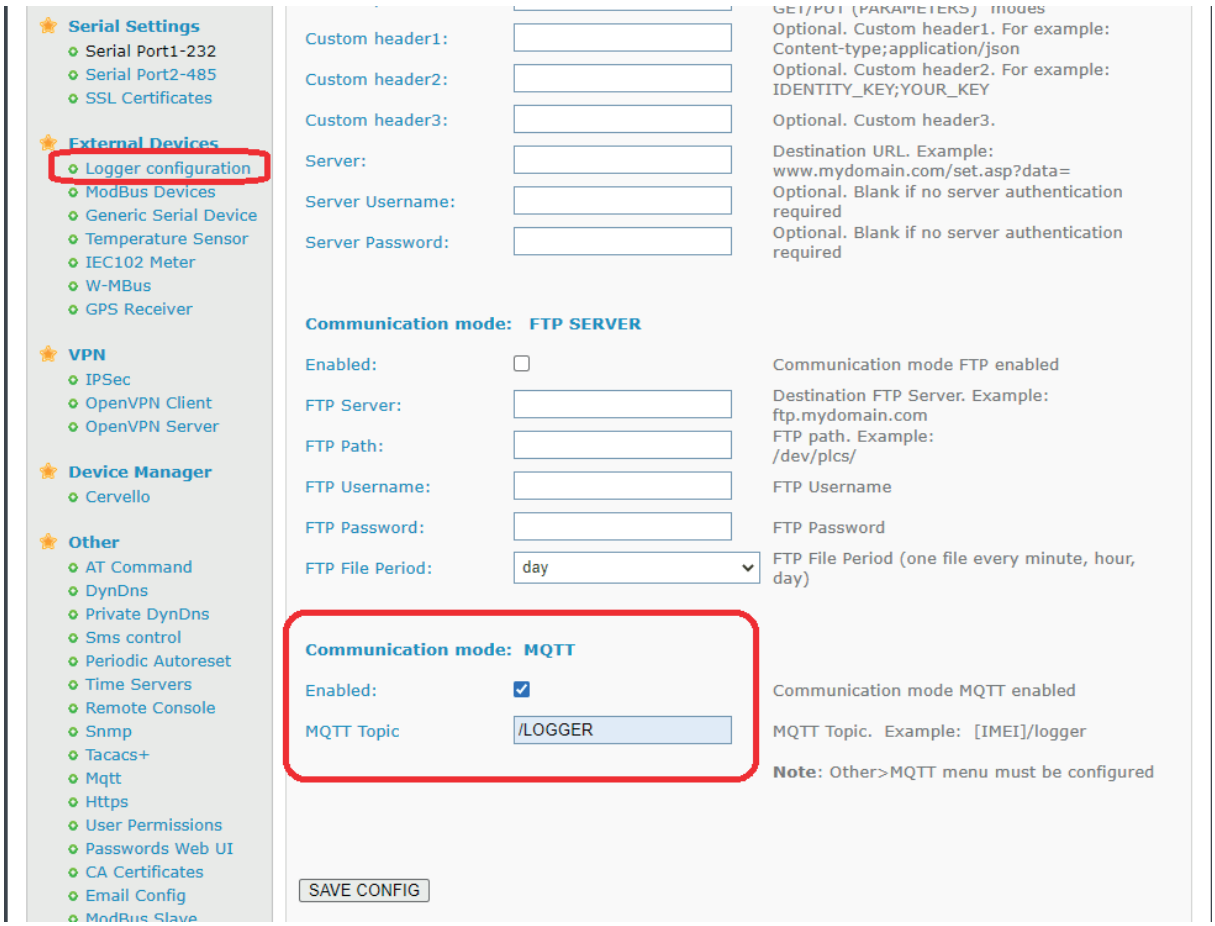
- Check the box to enable the serial datalogger (Enabled box)
- Choose the Port 1 as the serial port.
- Choose an Interval of “0”, as all response frames must be collected
- Do not select the “Only Changes” frame, as it would not make sense in the current application
- Mode: Raw

- Check the box to enable the serial frames received by the internal datalogger to be stored (Logger box)
- TX Period: indicate the interval at which frames are sent. 600 seconds implies that the serial frames are sent every 10 minutes.
- TX FrameX: indicate the serial frames to be sent each interval (in this example 600 seconds). The serial frames must be entered in hex format.
- Click on “SAVE CONFIG” at the end of the configuration process.

5. Logger Configuration (communication with the MQTT server)

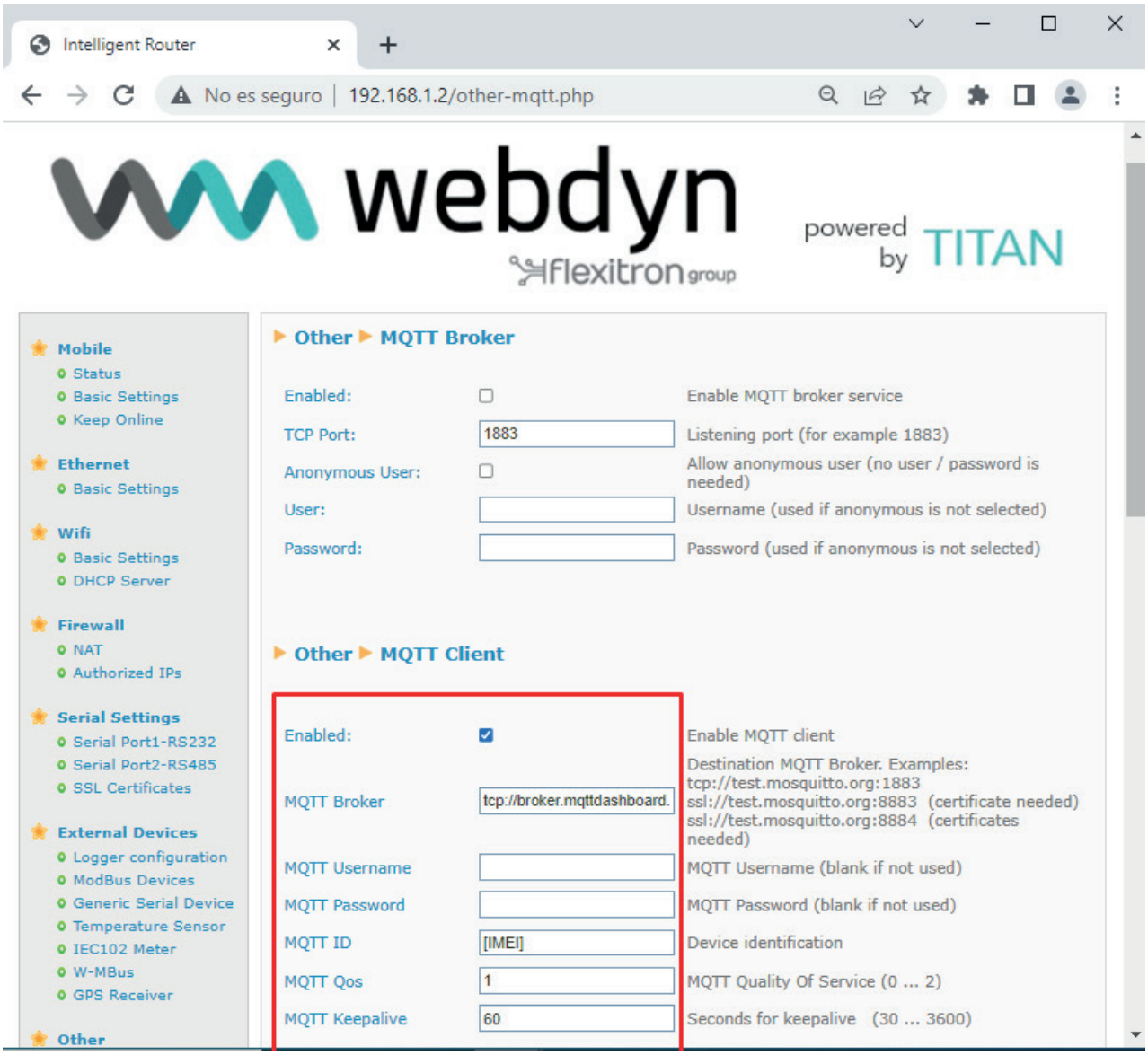
The next step is to configure the Logger. This is the data storage and transmission system used by the TITAN-based device itself. In this example it will be configured to send the serial data to an MQTT broker.

As can be seen in the following figure, we will go to the “External Devices > Logger Configuration” menu and configure the section as follows:



By doing this we are activating the mode for sending data via MQTT to the “/LOGGER” topic in the MQTT broker.

Next, the Other > MQTT section must be configured to activate the MQTT client correctly, configuring parameters such as the MQTT broker to be used and the MQTT ID, etc.



6. Other Considerations

- After configuring the TITAN-based device we will need to perform a reset to accept the new configuration.
- The JSON objects sent to the MQTT broker, containing the serial reads of the responses received from the PLC, will have content similar to:

  {“TYPE”:”SERIAL”,”TS”:”11/04/2021 17:19:44”,”IMEI”:”358709050113764”,”P”:””,”DATA”: “3c646174613e72656c6179733a372c74656d70657261747572653a33322c68756d69646974793a38302c636f756e7465723a313232353c2f646174613e0d0a”}

  where the data in hex format are stored in the DATA field in hex format.