

TITAN ROUTER

Application Note 69

Sending data to
the eSight platform

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1. Scenario Details

TITAN routers 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 datalogger, where the TITAN router can store a number of types of records in its non-volatile memory in JSON format. These records can come from MODBUS readings, SERIAL data captures via the RS232 / RS485 ports, or GPS positions, etc. These JSON-type records are stored in the TITAN router's internal non-volatile memory and can subsequently be sent to remote platforms via protocols such as HTTP, HTTPS, MQTT, MQTTS, FTP and FTPS.

As mentioned, the TITAN router stores the JSON registers in its internal memory in a proprietary format by default. This can sometimes be a problem when communicating with platforms that expect to receive information in a certain format (i.e. a format other than JSON, the one used by the TITAN router).

In this application note, we will guide you through an entire example of how send to data to the well-known MRI eSight platform (<https://www.mrisoftware.com/products/esight-energy-management-software>).

In this particular case, we will assume that 2 registers are to be read from 2 PLCs with Modbus communications connected to a Webdyn - EasyTunnel via their RS485 port.



More specifically, the aim is for the WebDynEasytunnel device to read the Modbus registers with addresses 40000 and 40001 of PLC1, and registers 40000 and 40001 of PLC2 every minute. In both PLCs, register 40000 corresponds to the measured temperature, and register 40001 to the humidity level. The readings taken must be stored in the internal non-volatile memory of the Webdyn EasyTunnel (in its datalogger), which must send the read data to the MRI eSight platform whenever possible (coverage, IP connectivity, etc.). Communication with the PLCs is carried out via an RS485 bus with a 9600,8,N,1 configuration.

2. WAN mobile configuration

The Webdyn EasyTunnel must communicate with the MRI eSight platform via 4G/3G/2G communications, so the "Mobile>Basic Settings" section must be configured correctly according to the SIM card used.

Mobile > Basic Settings

Mobile WAN: Enabled (IP active) Enable Wireless WAN Interface

SIM Mode: SIM1 SIM selection

SIM1 APN: movistar.es SIM Card 1 APN

SIM1 Username: MOVISTAR SIM Card 1 username

SIM1 Password: SIM Card 1 password

SIM1 PIN: SIM Card 1 PIN

SIM1 Auth: None SIM card 1 authentication

SIM2 APN: SIM Card 2 APN

SIM2 Username: SIM Card 2 username

SIM2 Password: SIM Card 2 password

SIM2 PIN: SIM Card 2 PIN

SIM2 Auth: Auto SIM card 2 authentication

Network selection: Auto (4G/3G/2G) Network selection

DNS selection: Get DNS from Operator DNS selection

DNS1: 8.8.8.8 Preferred DNS1

DNS2: 8.8.4.4 Preferred DNS2

3. Configuring the RS485 serial port

The two PLCs will connect to 9600,8,N,1 via the RS485 serial port, so the "Serial Settings> Port2-RS485" section must be configured by setting the parameters as shown below.

Serial Gateway > Com2 Settings

Baudrate: 9600 Baudrate of serial port

Data bits: 8 Number of data bit

Parity: none Parity

Stop bits: 1 Number of stop bits

Timeout ms: 50 Time without serial data before sending (default: 50)

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

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

☐ Allow incoming GSM call (CSQ Data Call) Only TCP Server and TCP Client functions or Nothing. 2G (CSQ) network required.

☒ Function: Nothing or used by External Device or Script

☐ Function: Serial - IP Gateway (TCP Server)

TCP Serial Port: 20011 Listening TCP Port (1 ... 65535)

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

Wakeup: DDMMYY. Example: XX3300 starts a temporal client every day at 22:00

Temporal client time: 60 Seconds for temporal client

Temporal client Random: 0 Seconds. Random time for temporal client Wakeup

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

4. Logger configuration

The next step is to configure the internal datalogger of the WebDyn EasyTunnel. Go to the "External Devices > Logger configuration" menu. The configuration should be similar to the one shown in the screenshot below:

Mobile

- Status
- Basic Settings
- Keep Online

Ethernet

- Basic Settings
- DHCP Server

Wifi

- Basic Settings
- DHCP Server

Firewall

- NAT
- Authorized IPs
- MAC Filter
- Routes

Serial Settings

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

External Devices

- Logger configuration**
- ModBus Devices
- Generic Serial Device
- Temperature Sensor

External Devices > Logger

ID:	<input type="text" value="ID000"/>	Optional. Device identification
Send mode:	<input type="text" value="FIFO"/>	Send mode (normally FIFO)
Time format:	<input type="text" value="std (dd/mm/yyyy HH:mm:ss)"/>	Time format used in timestamp logger data
Use script:	<input type="checkbox"/>	Check for customized json using 'Json Transformer Script' in Script section.
Use array:	<input type="checkbox"/>	Check if you want to send more than one JSON per transmission.
Check date:	<input checked="" type="checkbox"/>	Save data in Logger only if date has been set (check Time Servers)

Communication mode: WEB PLATFORM (HTTP REST)

Enabled:	<input checked="" type="checkbox"/>	Communication mode HTTP enabled
Mode:	<input type="text" value="HTTPS POST (JSON)"/>	Method of sending data
Custom header1:	<input type="text"/>	Optional. Custom header1. For example: Content-type:application/json
Custom header2:	<input type="text"/>	Optional. Custom header2. For example: IDENTITY_KEY;YOUR_KEY
Custom header3:	<input type="text"/>	Optional. Custom header3.
Server:	<input type="text" value="https://matrix.esightenergy"/>	Destination URL. Example: www.mydomain.com/setdata.php
Server Username:	<input type="text"/>	Optional. Blank if no server authentication required
Server Password:	<input type="password"/>	Optional. Blank if no server authentication required

The following parameters are particularly important:

- “ID” will provide the register with a unique identifier. This serves as the first part of a unique identifier (eSight import code).
- “Send mode”: select FIFO.
- “Time format”: you must select the “std” format.
- “Check date”: check the box.
- “Mode”: select HTTPS POST (JSON).
- “Server”: enter the server URL here and put your eSight webhook in the box.

5. Configuring the Modbus section

In this configuration section (“External Devices > Modbus Devices”), you will configure the Modbus readings to be performed on the 2 PLCs.

6. Configuration in eSight

The standard JSON format generated by the Webdyn EasyTunnel with the data read will take the following format:

```
{“IMEI”:”869101054286683”,”TYPE”:”MODB”,”TS”:”2022-11-11T12:17:00Z”,”ID”:”PLC1”,”A”:”1”,”ST”:
”40000”,”N”:”2”,”V”:[225,62],”P”:”ID000”},

{“IMEI”:”869101054286683”,”TYPE”:”MODB”,”TS”:”2022-11-11T12:17:01Z”,”ID”:”PLC2”,”A”:”2”,”ST”:
”40000”,”N”:”2”,”V”:[225,62],”P”:”ID000”}
```

You must therefore create a short script to adapt the format to the needs of the eSight platform. Here is a potential example code:

```
let inJSON = JSON.parse(inData);

let meter_id = inJSON.ID;
let site_name = inJSON.P;
let timestamp = inJSON.TS;
let value = inJSON.V[0];           // May need to change/remove indexing

let r = new eS.MeterReading();
r.MeterIdentifier = site_name + “_” + meter_id;
r.Timestamp = timestamp;
r.Value = value;

outData.push(r)
// Un-comment above line when device is setup
```

Any questions?

Please direct your enquiries to soporte@matrix.es