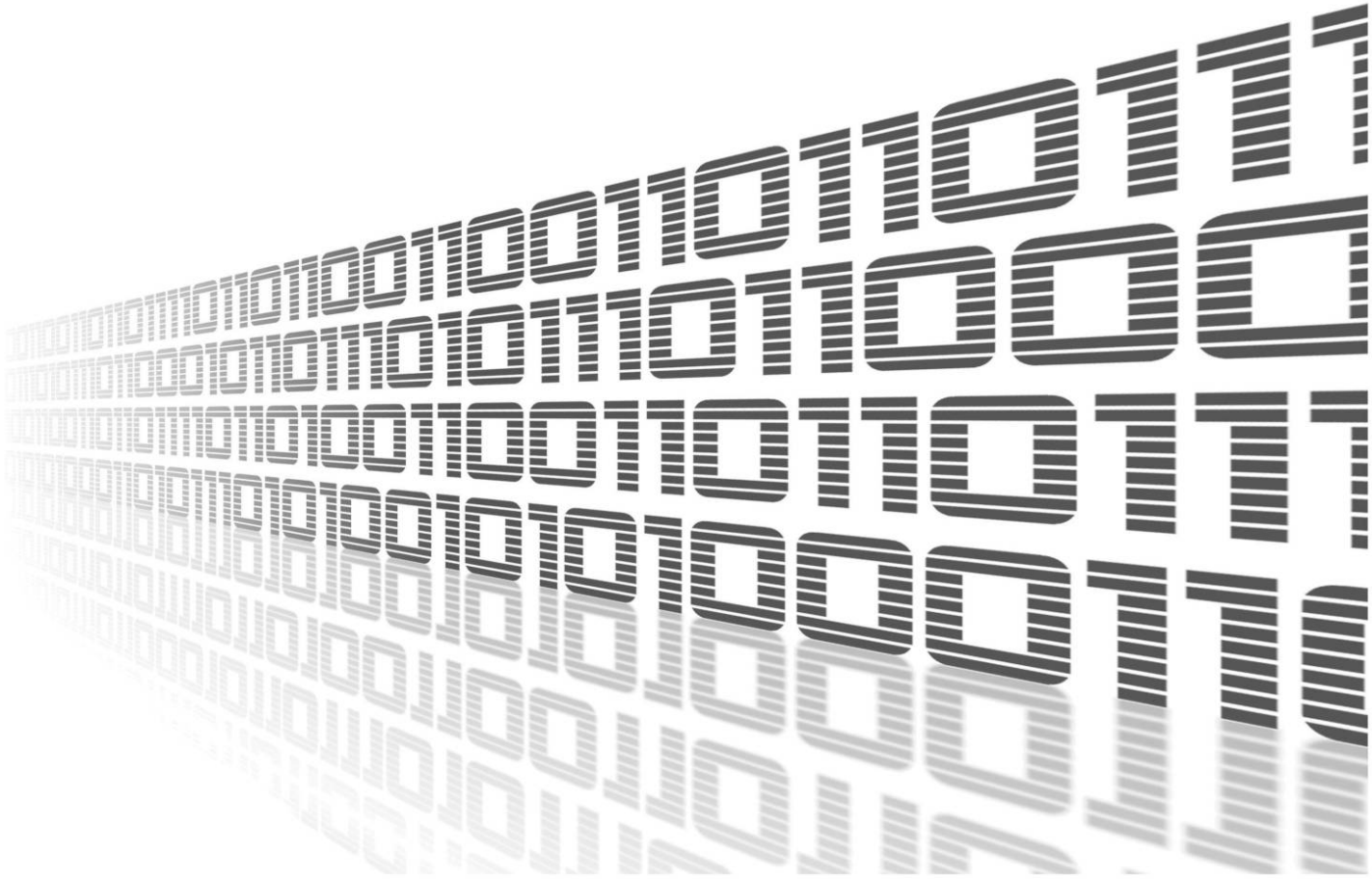
ADVANTECH

RouterApp

Modbus to LwM2M



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Used symbols

Danger – Information regarding user safety or potential damage to the router.

Attention – Problems that can arise in specific situations.

Information – Useful tips or information of special interest.

Example – Example of function, command or script.

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1. Changelog

1.1 Modbus to LwM2M Changelog

v1.0.0 (2020-08-28)

- First release.

2. Router App Modbus to LwM2M

2.1 Description

This Router app is not contained in the standard router firmware. Uploading of this router app is described in the Configuration manual (see Chapter Related Documents).

Modbus to LwM2M router app provides seamless communication between Modbus/TCP devices and LwM2M device. LwM2M works as Modbus/TCP master to communicate with Modbus/TCP devices.

2.2 Installation

The latest version of *Modbus to LwM2M* router app can be downloaded from the Engineering Portal [EP] at `https://icr.advantech.cz/products/software/user-modules`.

In the GUI of the router navigate to *Customization -> Router Apps* page. Here choose the downloaded module's installation file and click to the *Add or Update* button.

Once the installation of the module is complete, the module's GUI can be invoked by clicking the module name on the *Router Apps* page. Figure 1 shows the main menu of the module. It has the *LwM2M*, *Mapping Table* and *Log* menu items. To return back to the router's web GUI, click on the *Return to Router* item.

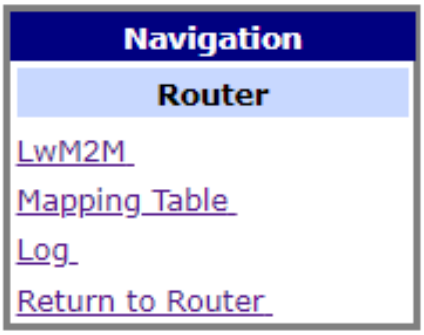


Figure 1: Main Menu

2.3 Module Configuration

Configuration of the router app can be done on the *LwM2M* page. This configuration page is shown in Figure 2. There are two sections on the page, *LwM2M Settings*, and *Modbus TCP*. The configuration items are described on the page next to the items. Do not forget to click the *Save* button below to save changes made on the page.

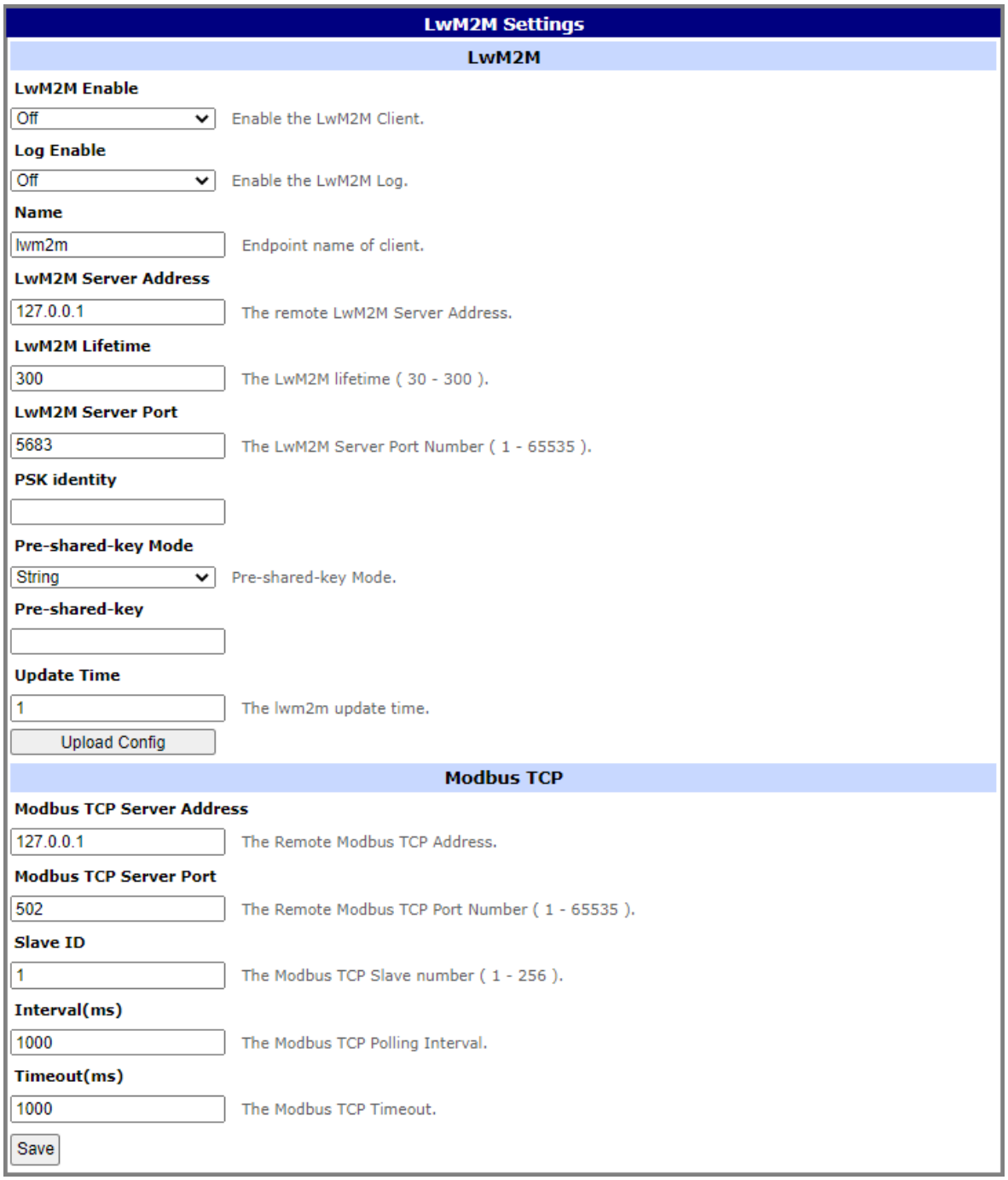


Figure 2: LwM2M and Modbus TCP Configuration Page

2.3.1 Configuration Uploading

Configuration of Modbus TCP and LwM2M devices mapping can be imported by a CVS file. Format of this file is shown in Figure 3 and the key columns are described in Table 1. Separator (delimiter) for the CSV file is a comma.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
IPSO SO	Name	#	Type	Device ID	Function Code	Address Start	Data Length	Designator	Serial	IP	Port	Trigger	Preload	Verify	Threshold	Datatype
10701	Vibration_Alarm	1	TCP	1	3	10811	1	/10701/0/101	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	7 Boolean
10702	Water_Alarm	1	TCP	1	3	10820	1	/10702/0/105	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	7 Boolean
10706	Max_Pressure	1	TCP	1	3	40054	2	/10706/0/201	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	4 IEEE, Rev
10706	Min_Pressure	1	TCP	1	3	40062	2	/10706/0/202	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	4 IEEE, Rev
10707	DC_Voltage	1	TCP	1	3	40802	2	/10707/0/302	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	4 IEEE, Rev
10707	DC_Current	1	TCP	1	3	40804	2	/10707/0/303	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	4 IEEE, Rev
10708	Temperature_Alarm	1	TCP	1	3	10808	1	/10708/0/105	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	7 Boolean
10708	Pressure_Alarm	1	TCP	1	3	10810	1	/10708/0/107	Port 1	192.168.0.12	502	none	none	0 Always	FALSE	7 Boolean

Figure 3: CSV File Example

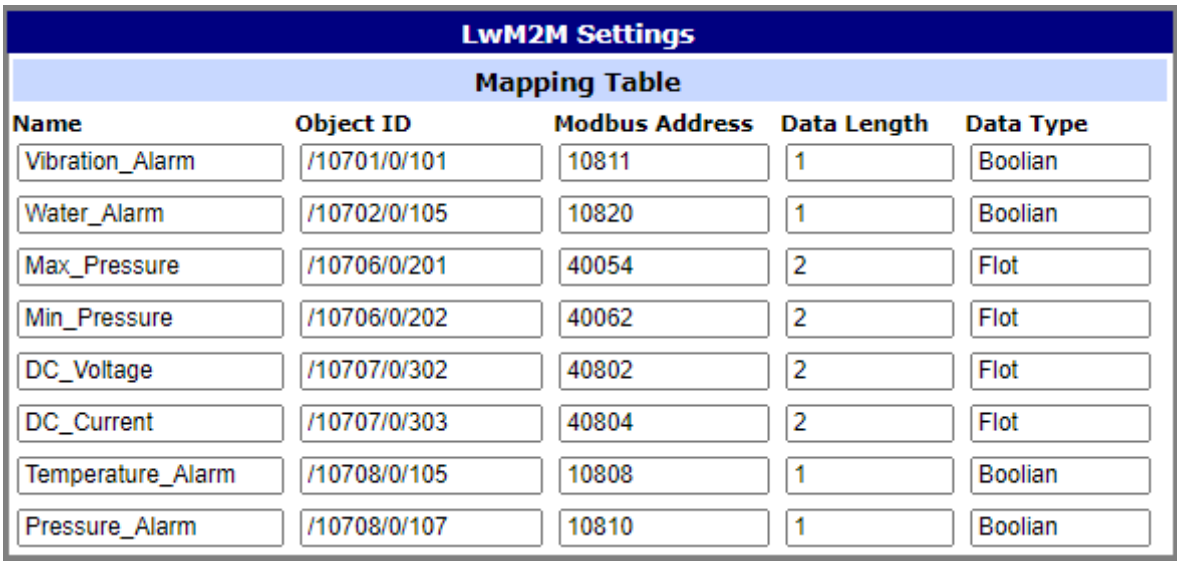
To import this file, go to *LwM2M* configuration page, click on the *Upload Config* button, choose the file, and then click the *Upload* button. If uploaded successfully, click the *Return* button and finally click on the *Save* button LwM2M on the bottom of the configuration page. The new mapping configuration will take effect immediately.

Column	Field	Description
A	IPSO SO	LwM2M Object ID
B	Name	The name to identify the mapping.
G	Address Start	Designate the Modbus to starting address for the Modbus registry.
H	Data Length	For range 1 9999 or 10000 19999, the unit is bit(s). For range 30001 39999 or 40000 49999, the unit is word(s).
I	Designator	Designate LwM2M Object. Include *Object ID*, *Short ID* and *Resource ID*. Format: `/Object_ID/Short_ID/Resource_ID`
Q	Data Type	LwM2M data type with options: • 7 Boolean • 4 IEEE, Reversed Word • 1 Double Precision

Table 1: Description of the Key Columns

2.4 Mapping Table

As shown in Figure 4, the *Mapping Table* page just displays the mapping table of Modbus TCP and LwM2M devices. This table can be imported by a CSV file, see Chapter 2.3.1.



LwM2M Settings

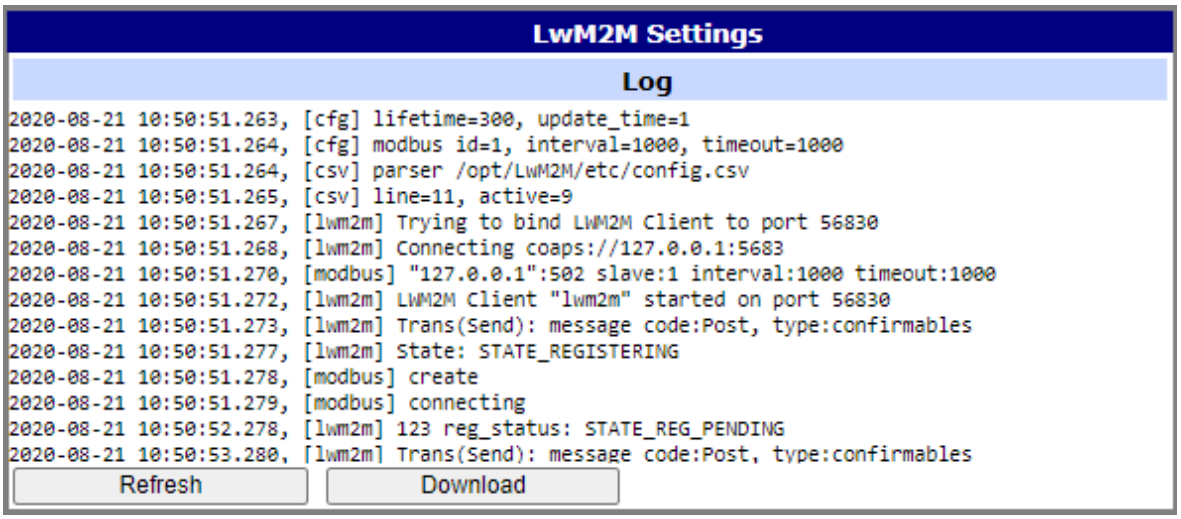
Mapping Table

Name	Object ID	Modbus Address	Data Length	Data Type
Vibration_Alarm	/10701/0/101	10811	1	Boolian
Water_Alarm	/10702/0/105	10820	1	Boolian
Max_Pressure	/10706/0/201	40054	2	Flot
Min_Pressure	/10706/0/202	40062	2	Flot
DC_Voltage	/10707/0/302	40802	2	Flot
DC_Current	/10707/0/303	40804	2	Flot
Temperature_Alarm	/10708/0/105	10808	1	Boolian
Pressure_Alarm	/10708/0/107	10810	1	Boolian

Figure 4: Example of Mapping Table

2.5 Log Messages

The *Log* page displays the log messages of the LwM2M router app. This loggin can be enabled on the LwM2M configuration page, see Chapter 2.3.



LwM2M Settings

Log

```
2020-08-21 10:50:51.263, [cfg] lifetime=300, update_time=1
2020-08-21 10:50:51.264, [cfg] modbus id=1, interval=1000, timeout=1000
2020-08-21 10:50:51.264, [csv] parser /opt/LwM2M/etc/config.csv
2020-08-21 10:50:51.265, [csv] line=11, active=9
2020-08-21 10:50:51.267, [lwm2m] Trying to bind LWM2M Client to port 56830
2020-08-21 10:50:51.268, [lwm2m] Connecting coaps://127.0.0.1:5683
2020-08-21 10:50:51.270, [modbus] "127.0.0.1":502 slave:1 interval:1000 timeout:1000
2020-08-21 10:50:51.272, [lwm2m] LWM2M Client "lwm2m" started on port 56830
2020-08-21 10:50:51.273, [lwm2m] Trans(Send): message code:Post, type:confirmables
2020-08-21 10:50:51.277, [lwm2m] State: STATE_REGISTERING
2020-08-21 10:50:51.278, [modbus] create
2020-08-21 10:50:51.279, [modbus] connecting
2020-08-21 10:50:52.278, [lwm2m] 123 reg_status: STATE_REG_PENDING
2020-08-21 10:50:53.280, [lwm2m] Trans(Send): message code:Post, type:confirmables
```

Refresh Download

Figure 5: Log Example

3. Related Documents

You can obtain product-related documents on *Engineering Portal* at *icr.advantech.cz* address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the *Router Models* page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the *Router Apps* page.

For the *Development Documents*, go to the *DevZone* page.