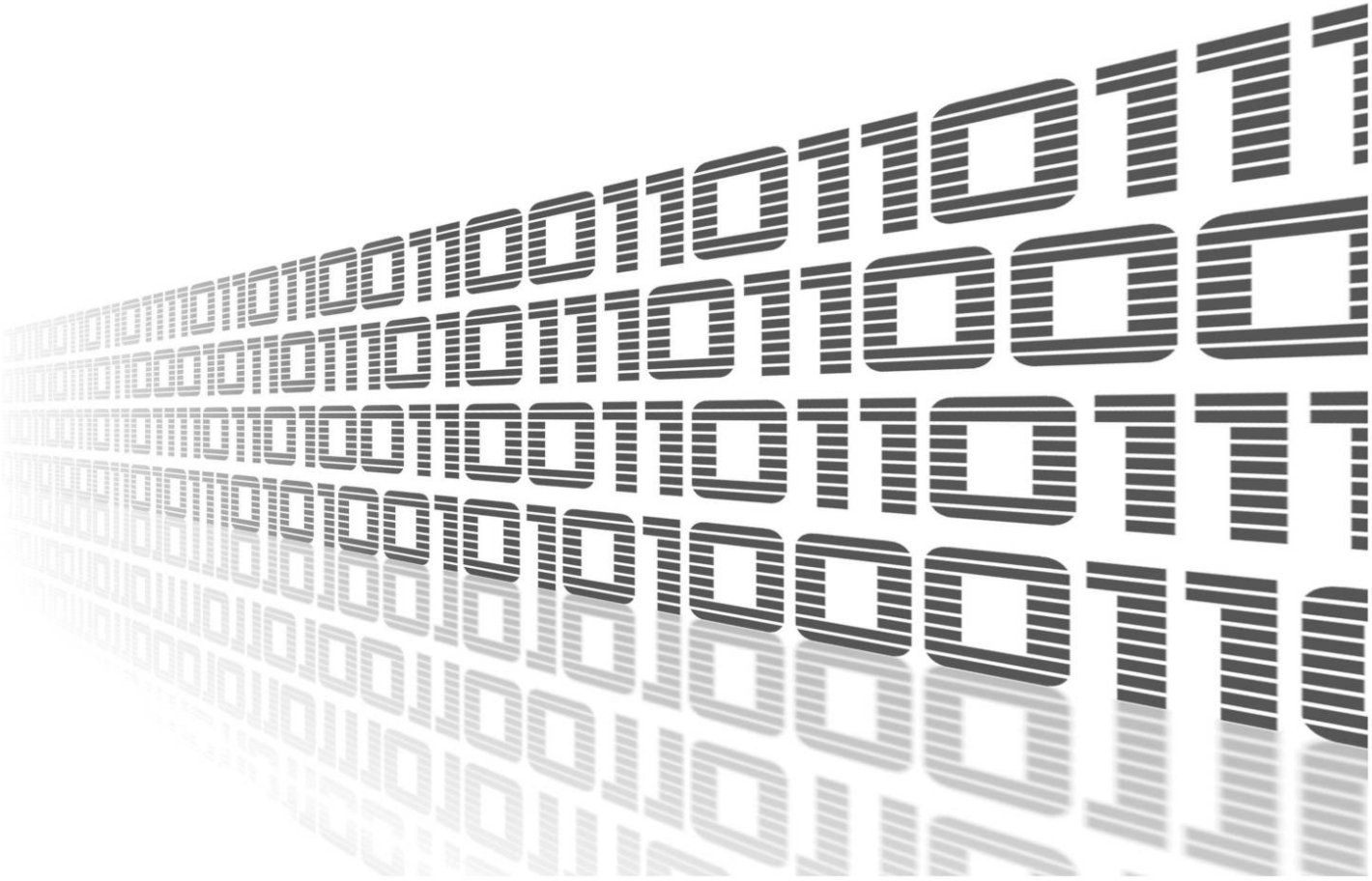
ADVANTECH

RouterApp

Modbus to LwM2M



Advantech Czech s.r.o., Sokolska 71, 562 04 Usti nad Orlici, Czech Republic
Document No. APP-0088-EN, revised on April 3, 2025.

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.

Contents

List of Figures

List of Tables

1. Router App Modbus to LwM2M

1.1 Description

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

This Router App is compatible only with firmware version 6.4.x

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.

1.2 Installation

The latest version of *Modbus to LwM2M* router app can be downloaded from the Engineering Portal at `https://icr.advantech.com/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 *Status*, *Configuration* and *Customization* menu items. To return back to the router's web GUI, click on the *Return* item.

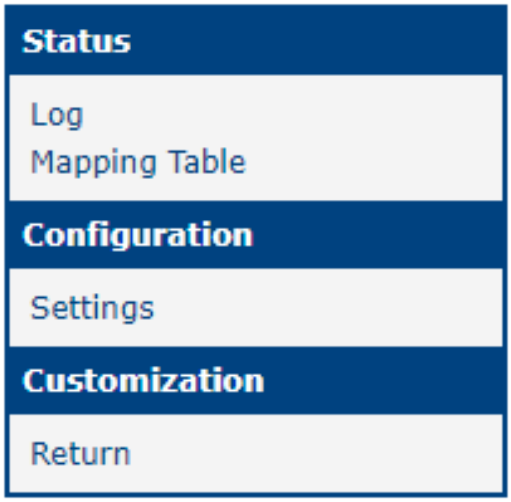


Figure 1: Main Menu

1.3 Module Configuration

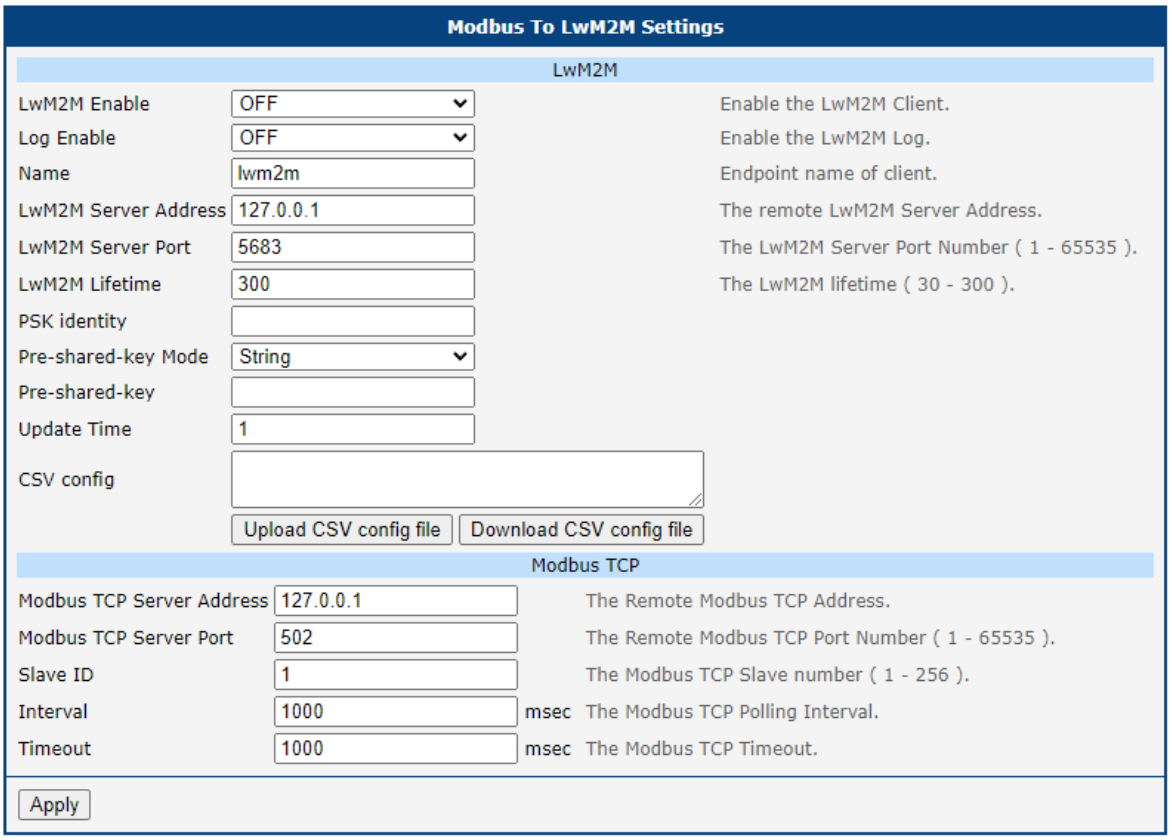


Figure 2: LwM2M and Modbus TCP Configuration Page

Item	Description
LwM2M Enable	Enable the LwM2M Client.
Log Enable	Enable the LwM2M Log.
Name	Endpoint name of client.
LwM2M Server Address	The remote LwM2M Server Address.
LwM2M Server Port	The LwM2M Server Port Number (1 - 65535).
LwM2M Lifetime	The LwM2M lifetime in seconds (30 - 300).
PSK identity	Unique identifier associated with the Pre-Shared Key.
Pre-shared-key Mode	Select wether the pre-shared key would be string or HEX string.
Pre-shared-key	Value of the pre-shared key.
Update Time	Update time in seconds.
CSV Config	CSV config. Insert config string into this field of select csv file.
Modbus TCP Server Address	The Remote Modbus TCP Address.
Modbus TCP Server Port	The Remote Modbus TCP Port Number (1 - 65535).
Slave ID	The Modbus TCP Slave number (1 - 256).
Interval	The Modbus TCP Polling Interval in miliseconds.

Continued on the next page

Continued from previous page

Item	Description
Timeout	The Modbus TCP Timeout in miliseconds.

Table 1: Configuration items description

1.3.1 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 2. 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, Re
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, Re
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, Re
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, Re
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 2: Description of the Key Columns

CSV Example

```
10701,Vibration_Alarm,1,TCP,1,3,10811,1,/10701/0/101,Port 1,192.168.0.12,502,none,
10702,Water_Alarm,1,TCP,1,3,10820,1,/10702/0/105,Port 1,192.168.0.12,502,none,none
10706,Max_Pressure,1,TCP,1,3,40054,2,/10706/0/201,Port 1,192.168.0.12,502,none,nor
10706,Min_Pressure,1,TCP,1,3,40062,2,/10706/0/202,Port 1,192.168.0.12,502,none,nor
10707,DC_Voltage,1,TCP,1,3,40802,2,/10707/0/302,Port 1,192.168.0.12,502,none,none,
10707,DC_Current,1,TCP,1,3,40804,2,/10707/0/303,Port 1,192.168.0.12,502,none,none,
10708,Temperature_Alarm,1,TCP,1,3,10808,1,/10708/0/105,Port 1,192.168.0.12,502,nor
10708,Pressure_Alarm,1,TCP,1,3,10810,1,/10708/0/107,Port 1,192.168.0.12,502,none,r
```

1.4 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 1.3.1.

Modbus To LwM2M Settings

Mapping Table

Name	Object ID	Modbus Address	Data Length	Data Type	Object Data Type	Endian	Multiplier	Mask	Shift
Vibration_Alarm	/10701/0/101	10811	1	Boolean	Boolean	Little-Endian	0.000000	N/A	N/A
Max_Pressure	/10706/0/201	40054	2	Integer	Boolean	Little-Endian	0.000000	N/A	N/A
Min_Pressure	/10706/0/202	40062	2	Integer	Boolean	Little-Endian	0.000000	N/A	N/A
DC_Voltage	/10707/0/302	40802	2	Integer	Boolean	Little-Endian	0.000000	N/A	N/A
DC_Current	/10707/0/303	40804	2	Integer	Boolean	Little-Endian	0.000000	N/A	N/A
Temperature_Alar	/10708/0/105	10808	1	Boolean	Boolean	Little-Endian	0.000000	N/A	N/A

Figure 4: Example of Mapping Table

1.5 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 1.3.

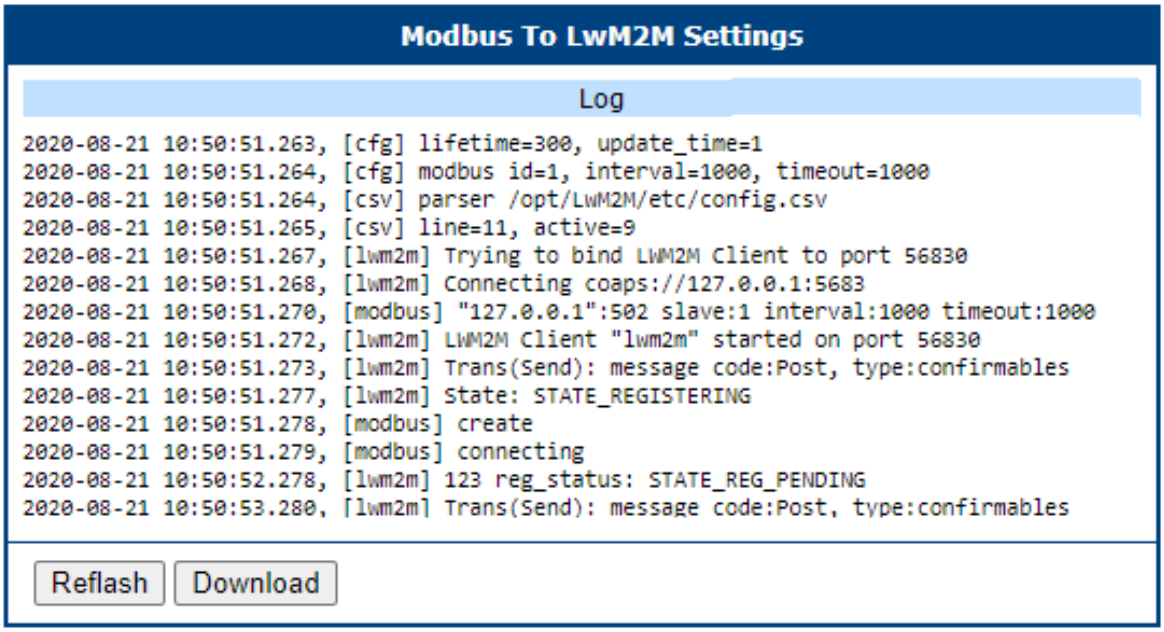


Figure 5: Log Example

2. Related Documents

You can obtain product-related documents on *Engineering Portal* at *icr.advantech.com* 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 *Development* page.