

EGW1-MB-DF1 Quick Start Guide

Modbus TCP to DF1 Gateway

1. Introduction

This document will let you start using EGW1-MB-DF1 in a matter of seconds.

EGW1-MB-DF1 is an easy-to-use Modbus TCP to DF1 Gateway. Just connect the Gateway to your DF1-enabled device and gain access to your PLC as if it had an actual Modbus TCP Ethernet port.

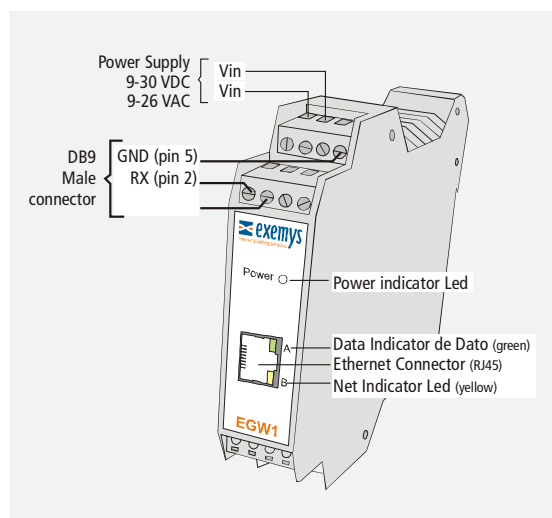
Please note that this document does not replace the EGW1-MB-DF1 User's Manual. Please refer to it for details not covered here.

2. Setting up the Gateway

POWER The power input connection is done in the Vin terminals. SGW1-MB-HL powering has no polarity and accepts an input voltage range of 9 to 30 VDC and 9 to 26 VAC.

ETHERNET Connect an Ethernet 10BaseT network cable to the RJ45 located in the frontal panel. Plug the cable to your hub or switch.

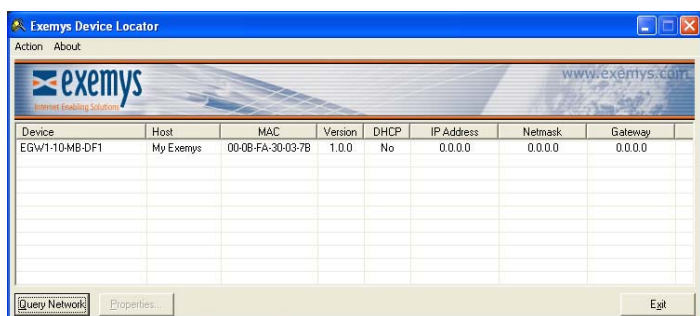
RS-232 TX, RX and GND signals that come from the PLC must be connected to the RX, TX and GND, respectively.



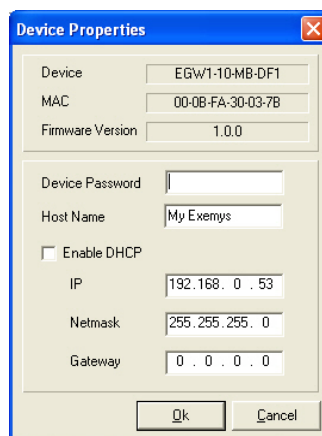
3. TCP/IP configuration

EGW1-MB-DF1 needs a valid IP configuration for your network. The IP address can be assigned either by a DHCP server or manually. Proceed as follows to configure the device:

- Connect the device as stated above and power it on.
- Run *Exemys Device Locator* in any PC located in the same LAN (broadcast domain). EDL is included in the accompanying CD. It can also be downloaded from <http://www.exemys.com/>



Select the item and click on Properties. The following window will be shown:



- Configure your network parameters as desired and then Click OK. EGW1-MB-DF1 will reset to update the changes.

- After a few seconds, if the yellow LED near the RJ45 connector blinks, being dark most of the time and lightened only for short intervals, the device is ready to work.

NOTE.

EGW1-MB-DF1 provides a password for remote configuration. Although, if this is the first time you configure the device, the password is disabled. Then, do not type any password in the Properties window. You will be able to change the password later, by following the instructions contained in the User's Manual.

4. Translation Tables configuration

EGW1-MB-DF1 performs a Modbus TCP to DF1 translation by associating command sets in one protocol into command sets in the other protocol. Such a command association is stated in the internal Translation Tables, can reconfigured as desired to adapt the device to your needs.

Understanding the tables

Run any web browser with JavaScript enabled and proxy lookup disabled. Type the device's IP in the Address (URL) field in your browser. EGW1-MB-DF1 Configuration Home Page should appear. If not, ask your network admin or please contact us.

In the left menu, click on Translation Tables. You will see the factory default tables. There are four tables, which are classified according to different features of your PLC:

- Input Output 16-bit & 1-bit variables (read/write)
- N Files 16-bit variables (read/write)
- B Files 1-bit variables (read/write)
- S File 16-bit variables (read only)

Every item in a table is composed of two sets. The first set (orange columns) is associated to the DF1 protocol, while the second set refers to Modbus TCP protocol (blue columns).

- The first table is associated to the I/O capability of the PLC. This table, labeled **Input/Output**, must be loaded with the slot number and the amount of inputs and outputs for each used slot. Both Inputs and Outputs are both mapped into Input Status, Coil Status (bit addressing) and input Registers, Holding Registers (word addressing)

▪ The **N Files** table maps those N Elements into Holding Registers, thus providing reads and writes of 16-bit words. Up to thirty two N Files can be inserted to this table. It must be filled with the File Numbers associated to the N File(s) you want to map into Modbus TCP locations

▪ The **B Files** table can map up to two B Files. EGW1-MB-DF1 associates 1-bit variables stored in B Files into Coils Status locations, making it possible to access to individual bits of these Files. This table must be filled with the File Number(s) associated to the B File(s) you want to map into Modbus TCP locations.

▪ Finally, the **S File** table, lets you monitor statistic information reported by many PLC and stored in this File. This table is not user configurable and it only allows reads (Input Register locations).

The picture below shows an empty table, as it comes from factory. Note that you will only have to insert a few data before you start using the gateway. That is, EGW1-MB-DF1 will automatically assign most of the fields for you.

DF1 side		Modbus side			
Slot Number	Inputs/Outputs	Coil Status	Input Status	Holding Register	Input Register
Input/Output					
Delete Insert	1				
4/0					
N Files					
Delete Insert	File Number	Coil Status	Input Status	Holding Register	Input Register
B Files					
Delete Insert	File Number	Coil Status	Input Status	Holding Register	Input Register
S File					
	File Number 2	Coil Status -	Input Status -	Holding Register -	Input Register 30192-30447

Study case

Henceforth, a real situation is proposed. It might differ slightly from your actual configuration, though we think of an study case as the best way to get in touch with your new gateway. There is PLC that runs a program. We want to make some data available to one Modbus TCP master by means of the EGW1-MB-DF1. The PLC has 8 slots, but only 4 are occupied by I/O boards. These boards have the following I/O capacities:

Slot Number	Input/Output Capacity
1	16 Inputs
2	16 Outputs
3	16 Inputs
4	16 Outputs

It is desired to access not only I/O data, but it is also important to count on a bunch of words, contained in two N Files (File Numbers 7 and 10) and on some read/write bit variables, contained in one B File, whose File Number is 3.

Once the above information is available to the operator (Inputs and Outputs per slot and Files to be mapped), you only have to put those things together by completing the Translation Tables page.

Going on with the example, after inserting the proper data, the page will look like it is shown in the following capture.

DF1 side			Modbus side			
Slot Number	Inputs/Outputs	Coil Status	Input Status	Holding Register	Input Register	
Input/Output						
☐	1	16/0	-	10001-10016	-	30001-30001
☐	2	0/16	00001-00016	-	40001-40001	-
☐	3	16/0	-	10017-10032	-	30002-30002
☐	4	0/16	00017-00032	-	40002-40002	-
☒	5					
Delete	Insert	4/0 v				
N Files						
☐	File Number	Coil Status	Input Status	Holding Register	Input Register	
☐	7	-	-	40192-40447	-	
☒						
Delete	Insert					
B Files						
☐	File Number	Coil Status	Input Status	Holding Register	Input Register	
☐	3	01152-05247	-	-	-	
☒						
Delete	Insert					
S File						
	File Number	Coil Status	Input Status	Holding Register	Input Register	
	2	-	-	-	30192-30447	

As stated above, when you insert a record into any table, the addresses are assigned dynamically. Then, your Modbus TCP master will have to issue requests (polls) to those addresses assigned by the EGW1-MB-DF1.

After filling the tables with appropriate information, the device is ready to accept polls from up to eight concurrent Modbus TCP masters. Run your Modbus TCP application as usual and issue Modbus TCP requests to the EGW1-MB-DF1, using the following parameters:

IP address: 192.168.0.53 (the same you assigned using EDL)

TCP port: 502 (standard Modbus TCP port)

Unit ID: 1 (it is a factory default, but it can be modified)

5. DF1 configuration

▪ In the left menu, click on [DF1](#). You will see the DF1 configuration page.

▪ Click on the Detect button. This will attempt to locate your DF1-enabled device connected to the RS-232 port. If your device cannot be detected, check the wiring. Once the Gateway detects your device, Baud Rate and Parity will be automatically configured.

▪ If you will connect the Gateway directly to your DF1 device, you do not need to configure any address, since DF1 is a point to point protocol. On the other hand, if you will use a network adapter, then you have to configure the Gateway's DF1 address by editing the Station Number field. Also, it will have to perform a Modbus TCP address to DF1 address translation. This is enabled by clicking on the Copy Modbus Addresses option.

▪ If your DF1 device is configured to use BCC as the error detection method, change the gateway's Error Checking option to BCC. If you are not sure about this option, ask your PLC vendor or please contact us.

▪ Last but not least, click on the Send button to accept the changes.

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