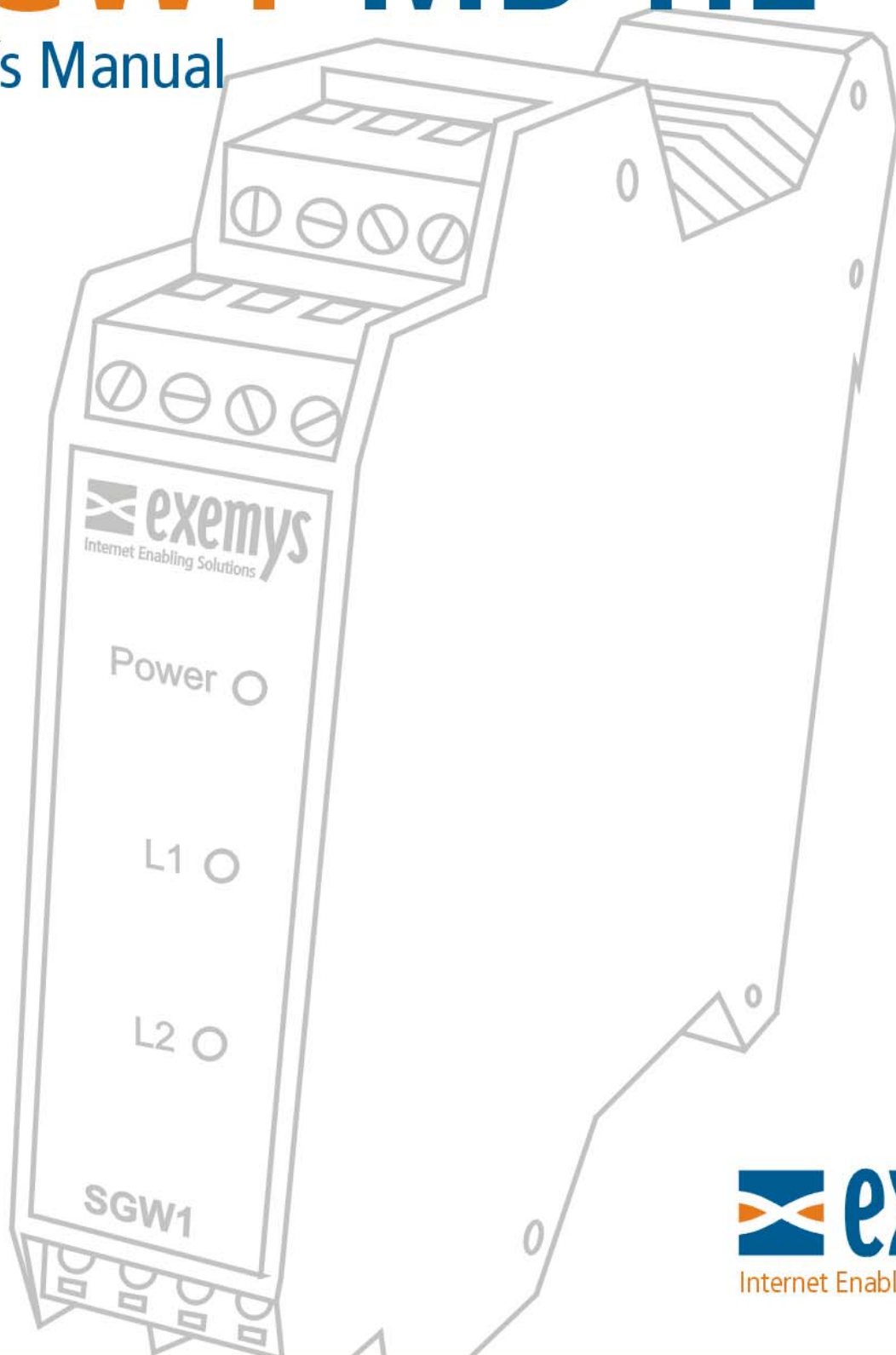


Modbus to Hostlink Converter

SGW1-MB-HL

User's Manual



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Chapter 1

Introduction

1.1 About this Manual

1.1.1 Purpose of this manual

Supported transmission

The purpose of this manual is to provide instructions for the fast and simple installation, configuration and operation of the Modbus to Hostlink Converter SGW1-MB-HL.

The manual starts with the product description and then provides instructions for proper installation of its hardware. Later on, it includes detailed information on SGW1-MB-HL configuration and operation.

1.1.2 Information on the Web

To get information about the last changes, firmware and software upgrades, and to keep documentation up to date, enter our Web Site:



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You will also find information about new Exemys products, press releases, accessories and new development tools.

There are published Application Notes and Technical Notes about DABin and other Exemys products.

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1.2 General Description

SGW1-MB-HL is a Modbus to Hostlink Converter that will allow you to connect Hostlink Slave devices into a Modbus Network acting as Modbus Slaves.

The translation is based on a map that relates Hostlink memory areas with Modbus memory zones.

The device configuration is made through one of its serial communication ports.

Usually you won't have to modify any parameter to make the device work.

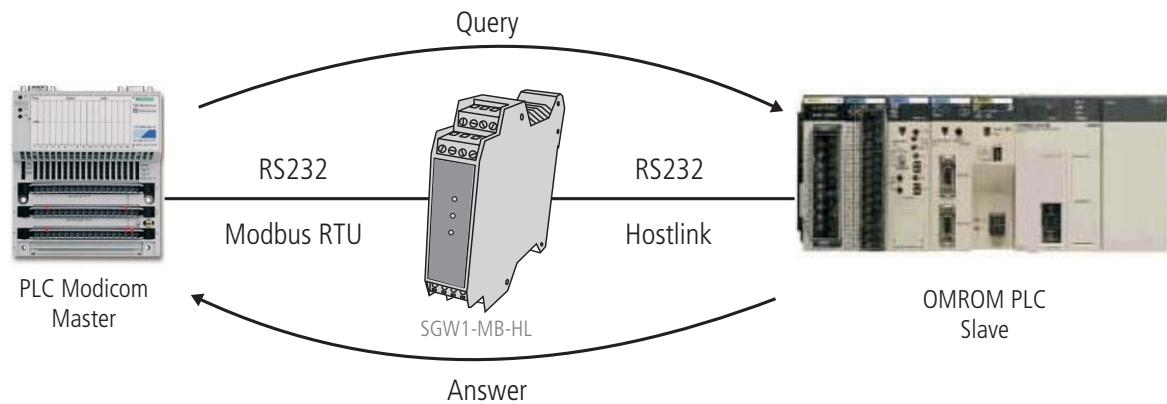


Figure 1 - Example Application

1.3 Mapping Hostlink memory areas into Modbus 4X registers

SGW1-MB-HL allows you to read this Hostlink memory areas: IR, SR, LR, HR, TC (*Present Value*), DM y AR. The user can configure which parts of each area he wants to read through Modbus 4x registers (*Holding Registers*)

SGW1-MB-HL also translates Modbus Unit ID into Hostlink Unit Numbers. It can copy that number or apply an offset.

Chapter 2

Installation

2.1 Power Connection

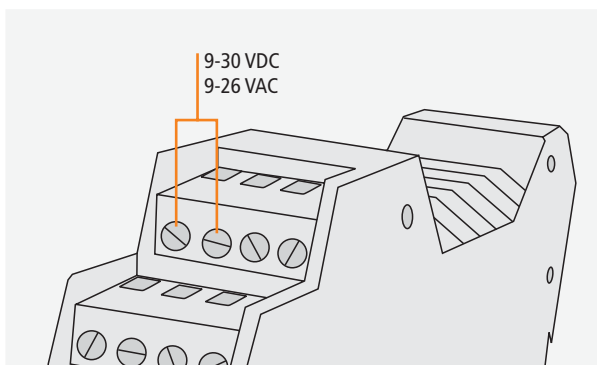


Figure 2 - Power Connection

Figure 2 shows the power input connection, which is located in the **Vin** terminals. SGW1-MB-HL powering has no polarity and accepts an input voltage range of 9 to 30 VDC.

2.2 Serial Connections

SGW1-MB-HL has 2 serial ports named COM A and COM B

COM A (RS232)

COM A port must be connected to the Modbus Master. COM A is DTE type, which means that data will flow out through TXA and will be received through RXA.

Figure 2 shows how to connect COM A to a DB9 Male connector.

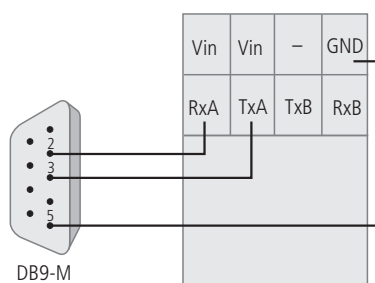


Figure 3 - Connecting COM A to a DB9 Male connector

COM B (RS232)

COM B port must be connected to the Hostlink Slave. COM B is DTE type, which means that data will flow out through TXB and will be received through RXB.

Figure 4 shows how to connect COM B to an Omron Compatible DB9 Male connector.

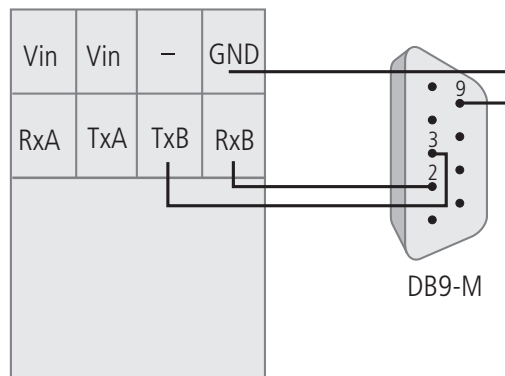


Figure 4 - Connecting COM B to a PLC

It is important to recall that for a successful communication between the SGW1-MB-HL and the PLC, the PLC must have one of these configurations in its serial port:

Data Bits	Parity	Stop Bits
7	E (even)	1
7	E (even)	2
7	O (odd)	1
7	O (odd)	2
7	N (no parity)	2

2.3 LED indicators

SGW1-MB-HL has 3 LEDs.

LED 1 is the power indicator.

LED 2 blinks each time SGW1-MB-HL sends a message to the slaves.

LED 3 blinks each time SGW1-MB-HL receives a message from one slave.

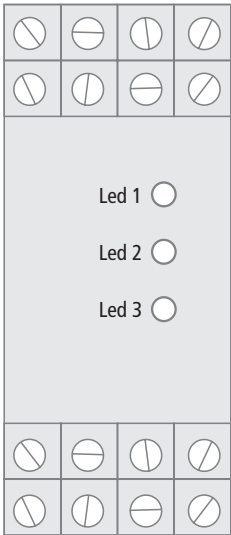


Figure 5 - LED indicators

Chapter 3

Configuration

3.1 Commands configuration console.

SGW1-MB-HL is configured through a commands console in COM A. You must connect COM A to the RS-232 in your computer and then use serial terminal program. (Hyperterminal or similar)

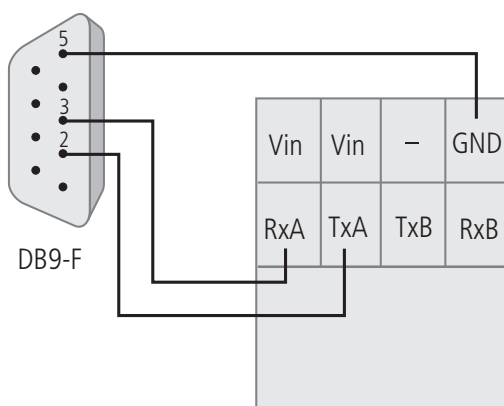


Figure 6 - SGW1-MB-HL Configuration Cable

Configure the serial terminal program like this:

Table 1 - Serial Terminal Program Configuration

Parameter	Value
Baud Rate	9600
Parity	None
Data bits	8
Flow Control	None

To set SGW1-MB-HL in configuration mode follow this steps:

- Connect SGW1-MB-HL to your computer and set the serial terminal program at 9600,N,8,1.
- Turn on SGW1-MB-HL. Type CFG and press ENTER during the first seven seconds.
- SGW1-MB-HL will display a welcome message.

Listing 1 - Commands console welcome message

SGW1-MB-DF1 - Modbus to Hostlink Protocol Converter (V1.2.0):

>



CAUTION

Once you have configured the device use the command **END** to store the configuration and switch the device into run mode.

3.2 Modbus Port Configuration

The following parameters can be configured:

- **Baud Rate:** Serial Port rate of transference by bits per second.
- **Parity:** Type of parity.
- **Protocol or Format:** You may select Modbus/ASCII or Modbus/RTU. When you select Modbus/RTU the serial transmission pattern will be of 8 bits. If you select Modbus/ASCII, data bits will be 7.
- **Packet Timeout (only for Modbus/RTU):** Modbus/RTU packets are divided by time periods. This parameter allows changing the maximum time, to be calculated after the reception of the last byte of the packet, during which SGW1-MB-HL will presume that such packet has not yet finished to arrive. After the lapse of the maximum time period, SGW1-MB-HL will presume the packet has finished its arrival. The packet timeout is calculated as units of time of a byte, being the minimum of 3 bytes.
- **Exceptions:** SGW1-MB-HL will generate a Modbus exception to a poll if its not able to answer properly. If you disable this option exceptions will not be generated.
- **Conversion Range:** Only messages with Modbus IDs in between this range will be converted. All others will be ignored (available from version 1.2.0).

Table 2 - Exceptions

Exception	Reason
1 Invalid Function	The function is not implemented or is invalid.
2 Invalid Address	The address is not available on the translation table or the Hostlink slave sent an error code because SGW1-MB-HL is trying to access an invalid address.
3 Invalid Data	Some data is not valid in the Modbus query.
11 Unreachable slave	The Hostlink slave has not answer or it answered another error code.



NOTE

Default values are marked on black

Table 3 - Modbus port configuration commands

Command	Description
BAUDA: (. . .)	Configures the COM A rate of transference by bits per second. Possible values are 1200, 2400, 4800, 9600 , 14400, 19200, 28800, 38400 o 57600.
PARITYA: (N E O)	Configures COM A parity N = NONE E = EVEN O = ODD
PROTOCOLA: (R A)	Selects between Modbus/ASCII and Modbus/RTU in COM A. R = Modbus/RTU A = Modbus/ASCII
PKTTOUTA: (3..50)	Modbus/RTU Packet Timeout (4)
EXCEPA: (E D)	Enables or disables E = Enabled D = Disabled
CRANGE: a, b	Conversion range (1... 247) (1.2.0 version or superior) a: From (1) b: To (247)

3.3 Hostlink port configuration

- **Baud Rate:** Serial Port rate of transference by bits per second.
- **Parity:** Type of parity.
- **Unit Number Offset:** If offset is **0** SGW1-MB-HL will copy the received Modbus *Unit ID* into the Hostlink *unit number*. If it's **-1** it will subtract 1 before copying it.
- **Slave message time out:** The maximum waiting period for the slave's answer. If the slave doesn't answer within this time SGW1-MB-HL will generate an exception.

Table 4 - Hostlink port configuration commands

Command	Description
BAUDB: (. . .)	Configures the COM B rate of transference by bits per second. Possible values are: 300, 600, 1200, 2400, 4800, 9600 , 14400, 19200, 28800, 33600, 38400 o 57600.
PARITYB: (N E O)	Configures COM B parity N = NONE E = EVEN O = ODD
OFFSETB: (0 -1)	Unit ID number offset 0 = No offset -1 = Minus 1 offset
SLVTOUTB: (50..3000)	Slave message time out (in miliseconds) (1000)

3.4 Conversion Map configuration

It's possible to add up to 32 conversion ranges. To add a range you must tell SGW1-MB-HL which Hostlink memory area, from which position and how many elements you want to read using Modbus.

Table 5 - Conversion Map configuration Commands

Command	Description
HLMAPADD:AREA, FIRST, QTY	Adds a new entry to the map AREA Hostlink memory area FIRST First register to map QTY Amount off registers to map
HLMAPINS:POS, AREA, FIRST, QTY	Inserts an entry range to the map POS Position where to insert AREA Hostlink memory area FIRST First register to map QTY Amount off registers to map
HLMAPDEL:POS	Deletes an entry from the map. POS Position to delete
HLMAPLST	Lists the map

Example:

Add eleven IR memory area registers from IR0000. Then add 200 DM memory area registers from DM0100.

Listing 2 - Conversion map configuration example

```
>hlmapadd:ir,0,11
Row Inserted

>hlmapadd:dm,100,200
Row Inserted

>hlmaplst
Pos Area Start Qty MBStart MBEnd
1 IR 0 11 40001 40011
2 DM 100 200 40012 40211
```

If Modbus master polls for registers 40001, 40002 and 40003 it will read IR0000, IR0001 and IR0002.

Factory defaults**Listing 3 - Factory default conversion map**

```
>hlmaplst
Pos Area Start Qty MBStart MBEnd
1 IR 0 10 40001 40010
2 IR 10 10 40011 40020
3 DM 0 128 40021 40148
4 TC 0 16 40149 40164
5 HR 0 16 40165 40180
```

3.5 Other configuration commands

You can use this command to list the configuration, ask for help and restore the factory default configuration.

Table 6 - Other configuration commands

Command	Description
HELP	List of all available commands with their syntax and a descriptive text.
LIST	Lists the device configuration.
END	Stores the configuration and switches the device into RUN mode.
FACTRESET	Restore the factory default configuration.

Chapter 4

Technical Specifications

• Serial Protocols:	Modbus RTU / ASCII - Hostlink
• Serial Ports:	2 RS232 Serial Ports in Terminal Block (DTE).
• Supported Devices:	Any device with communication Modbus RTU/ASCII Master and Hostlink Slave.
• Administration:	RS232 Serial Commands Console.
• Firmware:	Upgradeable through Programming Cable (Optional).
• Indicator Leds:	Power. Slave transmission. Reception from Slave.
• Dimensions / Weight:	4.49 x 3.94 x 0.89 inches (HxWxL). 0.31 Lbs.
• Power:	9 a 26 Volts AC 9 a 30 Volts DC 200 mA max.
• Temperature:	Operation Temperature: 23 to 149 °F Storage Temperature: -40 to 167°F
• Optional Accessories :	Programming Cable Rail DIN Mounting accesory.
• Warranty / Support:	1-Year limited warranty. Technical support included..