

# DIG-M-2

DIN-RAIL MOUNTED  
SENTERA INTERNET  
GATEWAY

Mounting and operating instructions



## Table of contents

<b>SAFETY AND PRECAUTIONS</b>	<b>3</b>
<hr/>	
<b>PRODUCT DESCRIPTION</b>	<b>4</b>
<hr/>	
<b>ARTICLE CODES</b>	<b>4</b>
<hr/>	
<b>INTENDED AREA OF USE</b>	<b>4</b>
<hr/>	
<b>TECHNICAL DATA</b>	<b>4</b>
<hr/>	
<b>STANDARDS</b>	<b>4</b>
<hr/>	
<b>WIRING AND CONNECTIONS</b>	<b>5</b>
<hr/>	
<b>MOUNTING INSTRUCTIONS IN STEPS</b>	<b>6</b>
<hr/>	
<b>VERIFICATION OF THE INSTALLATION INSTRUCTIONS</b>	<b>9</b>
<hr/>	
<b>TRANSPORT AND STORAGE</b>	<b>10</b>
<hr/>	
<b>WARRANTY AND RESTRICTIONS</b>	<b>10</b>
<hr/>	
<b>MAINTENANCE</b>	<b>10</b>
<hr/>	

## SAFETY AND PRECAUTIONS



Read all the information, the datasheet, Modbus register maps, mounting and operating instructions and study the wiring and connection diagram before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using, or maintaining this product.



For safety and licensing (CE) reasons, unauthorised conversion and /or modifications of the product are inadmissible.



The product should not be exposed to abnormal conditions, such as: extreme temperatures, direct sunlight or vibrations. Long-term exposure to chemical vapours in high concentration can affect the product performance. Make sure the work environment is as dry as possible; avoid condensation.



All installations shall comply with local health and safety regulations and local electrical standards and approved codes. This product can only be installed by an engineer or a technician who has expert knowledge of the product and safety precautions.



Avoid contacts with energised electrical parts. Always disconnect the power supply before connecting, servicing or repairing the product.



Always verify that you apply appropriate power supply to the product and use appropriate wire size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.



Recycling of equipment and packaging should be taken into consideration and these should be disposed of in accordance with local and national legislation / regulations.



In case there are any questions that are not answered, please contact our technical support or consult a professional.

## PRODUCT DESCRIPTION

DIG-M-2 Internet Gateway connects a single Sentera device or a network of devices with the Internet in order to configure or monitor them via SenteraWeb. The DIG-M-2 makes wireless or wired connection with the Internet router. The unit has two Modbus RTU channels - a Master channel to communicate with the connected Slave devices and a Slave channel to make the unit accessible for a Master controller or a BMS.

## ARTICLE CODES

Code	Supply voltage	I <sub>max</sub>
<b>DIG-M-2</b>	24 VDC (PoM)	330 mA

## INTENDED AREA OF USE

- Connect your HVAC installation to the online SenteraWeb portal
- Push application dedicated firmware and/or standard firmware updates via the SenteraWeb into the connected devices
- Update setpoints, ranges and other parameters from the connected Sentera slave devices
- Data monitoring and data logging via the SenteraWeb Service Database
- Gateway for warnings and notifications (e.g. clogged filter notification, motor failure alarm, etc.)

## TECHNICAL DATA

- 24 VDC supply voltage, Power over Modbus (PoM)
- Sentera devices can be connected via RJ45 (Modbus RTU Master channel)
- Data transmission to and from the Internet via standard Ethernet or Wi-Fi
- Internal backup memory for data logging and firmware updates
- Backup battery for real time clock, in case the power supply is interrupted
- Receive firmware update via the Internet
- LED indications: Connect, Error, RXD/TXD
- Enclosure: DIN rail mounted, plastic ABS, UL94-V0, grey RAL 7035
- Protection class: IP20
- Operating ambient conditions:
  - ▶ Temperature: -10—50 °C
  - ▶ Rel. humidity: 5—85 % rH (non-condensing)

## STANDARDS

- EMC directive 2014/30/EU: CE
  - ▶ EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
  - ▶ EN 55011:2009 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement Amendment A1:2010 to EN 55011
  - ▶ EN 55024:2010 Information technology equipment - Immunity characteristics - Limits and methods of measurement

- ▶ EN 50561-1:2013 Power line communication apparatus used in low-voltage installations – Radio disturbance characteristics – Limits and methods of measurement – Part 1: Apparatus for in-home use
- LVD directive 2014/35/EU:
  - ▶ EN 60950-1:2006 Information technology equipment - Safety - Part 1: General requirements Amendments AC:2011, A11:2009, A12:2011, A1:2010 and A2:2013 to EN 60950-1
  - ▶ EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
- Radio equipment directive 2014/53/EU:
  - ▶ EN 300 328 V2.1.1 Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
- ETSI EN 301 489-1 V2.1.1 (2017-02) Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
- ETSI EN 301 489-17 V3.1.1 (2017-02) Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
- WEEE 2012/19/EC
- RoHS Directive 2011/65/EC:
  - ▶ EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

## WIRING AND CONNECTIONS

RJ45 sockets (Power over Modbus)			
Pin 1	24 VDC		Supply voltage
Pin 2			
Pin 3	A		Modbus RTU communication, signal A
Pin 4			
Pin 5	/B		Modbus RTU communication, signal /B
Pin 6			
Pin 7	GND		Ground, supply voltage
Pin 8			



### NOTE


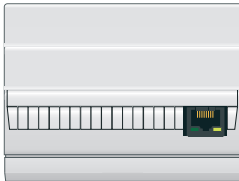
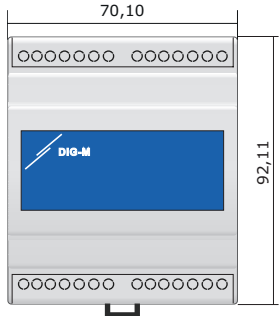
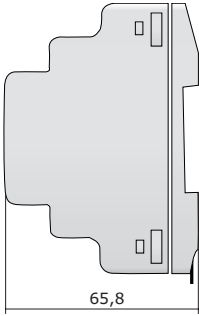
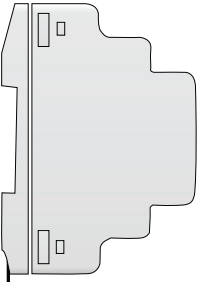
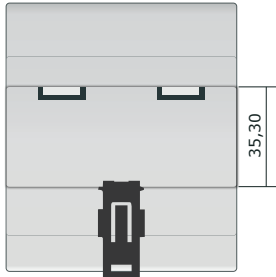
*Do not provide 24 VDC supply voltage via both RJ45 PoM sockets simultaneously!.*

## MOUNTING INSTRUCTIONS IN STEPS

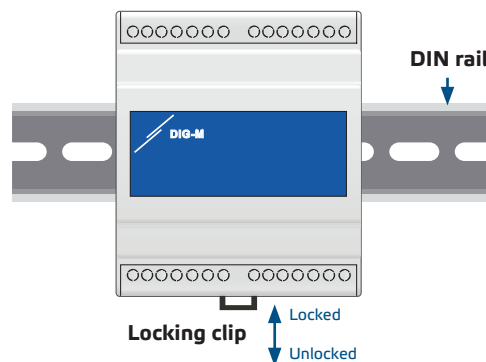
Before you start mounting the unit, read carefully **“Safety and Precautions”** and follow these steps:

1. Slide the unit along the guides of a standard 35 mm DIN rail and fix it to the rail by means of the black locking clip on the enclosure. Mind the correct position and mounting dimensions shown in **Fig. 1 Mounting dimensions** and **Fig. 2 Mounting position**.

**Fig. 1 Mounting dimensions**

Bottom view	Top view	Front view
		
Side view	Side view	Rear view
		

**Fig. 2 Mounting position**



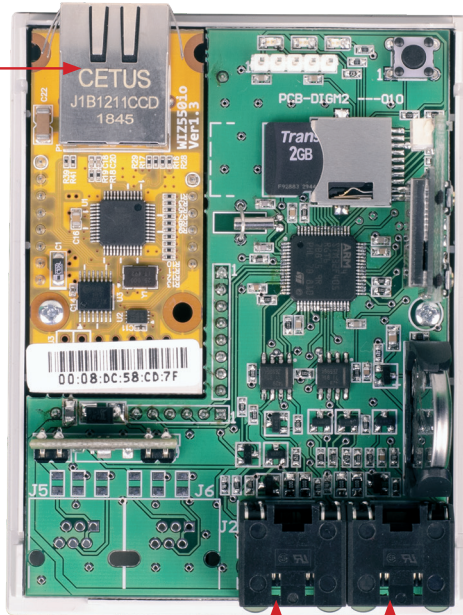
2. Connect the (Sentera) slave devices to the right RJ45 socket (see **“Wiring and connections”**).
3. If applicable, the BMS or external Modbus RTU master can be connected via the left RJ45 socket.
4. The unit needs PoM (24 VDC). So either the Slave or Master channel must be powered with 24 VDC.

## ATTENTION

Do NOT connect both circuits with PoM 24 VDC power supply simultaneously!

Fig. 3 Wiring

Ethernet



Slave channel  
to connect  
Modbus  
Master or  
BMS

Master  
channel to  
connect  
slave  
devices

### Top view - RJ45 Ethernet connection



### Bottom view - RJ45 PoM: Modbus RTU and 24 VDC power supply



- If you choose a wired connection, insert a standard ethernet cable into the Ethernet port and connect it with the router.
- Consult the User Guide, available on the Sentera website to connect the unit to the Wi-Fi network and to SenteraWeb.

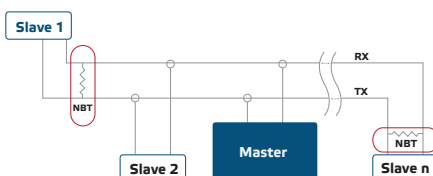
## ATTENTION

Do NOT connect a PoM cable to the Ethernet connector. This may destroy the device! This Ethernet port should be connected to the internet router only.

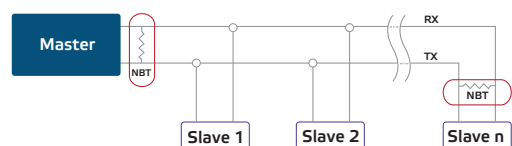
### Optional settings

If your unit starts or terminates the network (see **Example 1** and **Example 2**), enable the NBT resistor via 3SModbus. If your device is not an end device, leave the NBT disabled (default Modbus setting).

#### Example 1



#### Example 2



## NOTE

Connect the NBT terminator only in the two most distant units on the network line!



## Firmware update

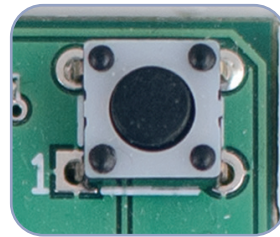
New functionalities and bug fixes are made available via a firmware update. In case your device does not have the latest firmware installed, it can be updated. SenteraWeb is the easiest way to update the firmware of the unit. In case no internet connection is available, a new firmware can also be installed via the RJ45 Slave socket. To initiate this procedure, put a jumper on pins 3 and 4 of the P1 PROG header and restart the power supply. The unit is now ready to receive a firmware update from a computer, using the 3SM Boot application (part of the 3SM Center software suite, available on the Sentera website).

## Tact switch

Press and hold the tact switch for at least 5 seconds to reset the unit to its default values:

- default Connection Type: Ethernet
- default Connection mode: DHCP
- default Modbus communication parameters: 19200 Bps, 8 bits, even parity, 1 stop bit (8,E,1)
- default gateway host page: 192.168.1.123

**Fig. 4 Tact switch**



## Reset buttons

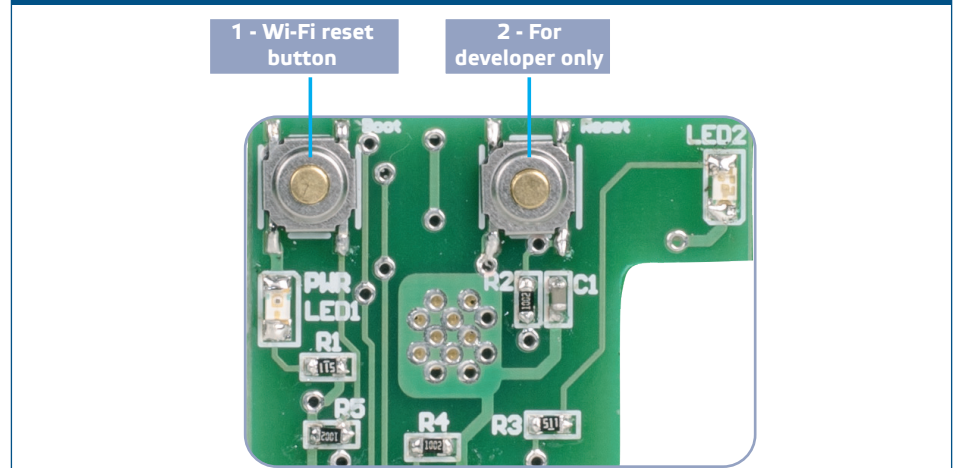
### 1. Left button - for Wi-Fi reset

In case of connection problems or in order to clean the memory of the Wi-Fi module, press and hold for 4 seconds until the blue LED (LED2) lights up (see **Fig. 5**). After this, the password inside the memory (to connect to a Wi-Fi Access point) has been erased and the default IP address 192.168.1.123 is restored. Now you can restart the installation procedure as explained in the User Guide that can be downloaded from the Sentera Website.

### 2. Right button - for developers only!

The 'Reset' button (see **Fig. 5**) is only needed to restart the microcontroller of the unit for development or debug purposes, such as to enter bootloader mode to reprogram the module. You should NOT press this button in any other cases!

**Fig. 5 Wi-Fi reset tact switch**







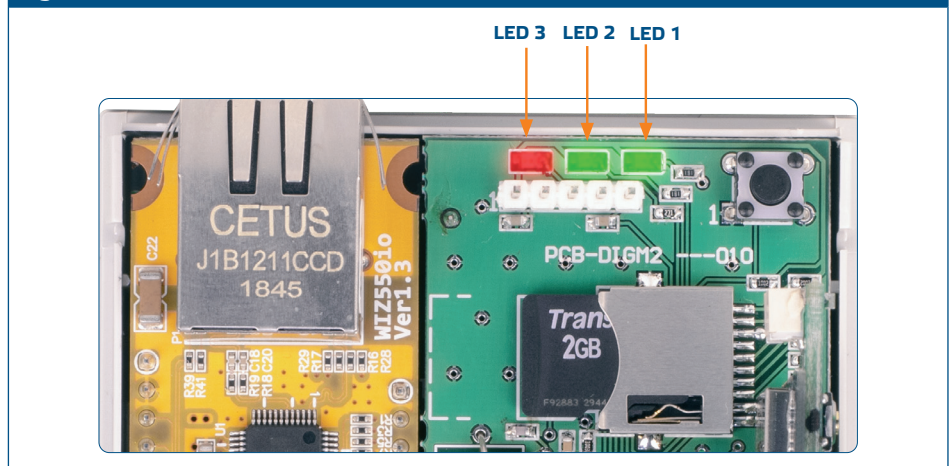
## ATTENTION

*Do NOT connect PoM cable to the Ethernet connector. This may destroy the unit!*

## VERIFICATION OF THE INSTALLATION INSTRUCTIONS

- Green LED1 indicates that the unit is supplied and that the Modbus RTU communication with slave devices is active.
- Green LED2 indicates active communication with the Internet. i.e. the unit successfully communicates with SenteraWeb sending parameters to the Cloud.
- Slowly blinking red LED3 indicates system error (connection to the Cloud has been lost).
- Fast blinking LED3 indicates that bootloader mode has been entered (see **Fig. 6**).
- Blinking LEDs on the RJ45 sockets indicate that packages are transmitted via Modbus RTU.
- If this is not the case, check the connections.

**Fig. 6 LED indications**



## ATTENTION

*The status of the LEDs can be checked only when the unit is energised. Take the relevant safety measures!*

## TRANSPORT AND STORAGE

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Avoid shocks and extreme conditions; stock in original packing.

## WARRANTY AND RESTRICTIONS

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Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.

## MAINTENANCE

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In normal conditions this product is maintenance-free. If soiled, clean with a dry or damp cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.