DRM-M-04

MODBUS I/O MODULE WITH 4 RELAY OUTPUTS

Mounting and operating instructions

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SAFETY AND PRECAUTIONS

Read all the information, the datasheet, Modbus map, 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 content before installing, using or servicing 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 contact 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 your technical support or consult a professional.

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SENTERA CONTROLS

PRODUCT DESCRIPTION

DRM-M-04 are relay output modules for Modbus networks. They feature 4 C/O relays with a normally open and normally closed contact. The status of the relays can be controlled by Modbus RTU communication.

ARTICLE CODES

Code	Number of relay outputs
DIO-M-04	4

INTENDED AREA OF USE

- Change relay status via a Modbus RTU master device or BMS
- Control external devices via the relay outputs

TECHNICAL DATA

- 4 C/O relays with a normally open and normally closed contact
- Modbus RTU communication
- DIN rail mountable
- Firmware updates can be pushed via Modbus RTU communication (integrated bootloader)
- Supply voltage: 24 VDC PoM
- Maximum current consumption: 60 mA
- Maximum switching voltage: 220 VDC / 250 VAC
- Maximum switching current: 5 A (resistive load)
- Protection class: IP30 (EN 60529)
- Enclosure: plastic ABS, UL94-V0, grey RAL 7035
- Operating ambient conditions:
  - ▸ Temperature: -20—60 ºC
  - ▸ Rel. humidity: 5—90 % rH (non-condensing)
- Storage temperature: -40—85ºC

STANDARDS

CE

- Low Voltage Directive 2014/35/EU
  - ▸ EN 50178:1997 Electronic equipment for use in power installations
  - ▸ EN 60529:1991 Degrees of protection provided by enclosures (IP Code). Amendment AC:1993 to EN 60529
- EMC directive 2014/30/EU:
  - ▸ EN 61000-6-2:2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments. Amendment AC:2005 to EN 61000-6-2
  - ▸ EN 61000-6-4:2007 Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments Amendment A1:2011 to EN61000-6-4
- RoHs Directive 2011/65/EU
  - ▸ 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

24 VDC PoM – 60 mA max.	
Pin 1	Supply voltage, 24 VDC
Pin 2	Supply voltage, 24 VDC
Pin 3	Modbus RTU communication, signal A
Pin 4	Modbus RTU communication, signal A
Pin 5	Modbus RTU communication, signal /B
Pin 6	Modbus RTU communication, signal /B
Pin 7	Ground, supply voltage
Pin 8	Ground, supply voltage

RJ45 socket

| Relay outputs	
NO1	Normally open contact 1
COM1	Common contact 1
NC1	Normally closed contact 1
NO2	Normally open contact 2
COM2	Common contact 2
NC2	Normally closed contact 2
NO3	Normally open contact 3
COM3	Common contact 3
NC3	Normally closed contact 3
NO4	Normally open contact 4
COM4	Common contact 4
NC4	Normally closed contact 4

MOUNTING INSTRUCTIONS IN STEPS

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

1. Switch off the power supply.
2. 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.*

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Fig. 1 Mounting dimensions	Fig. 2 Mounting position

35 mm
94 mm
94 mm
66 mm

DIN rail

Locking clip — Locked / Unlocked
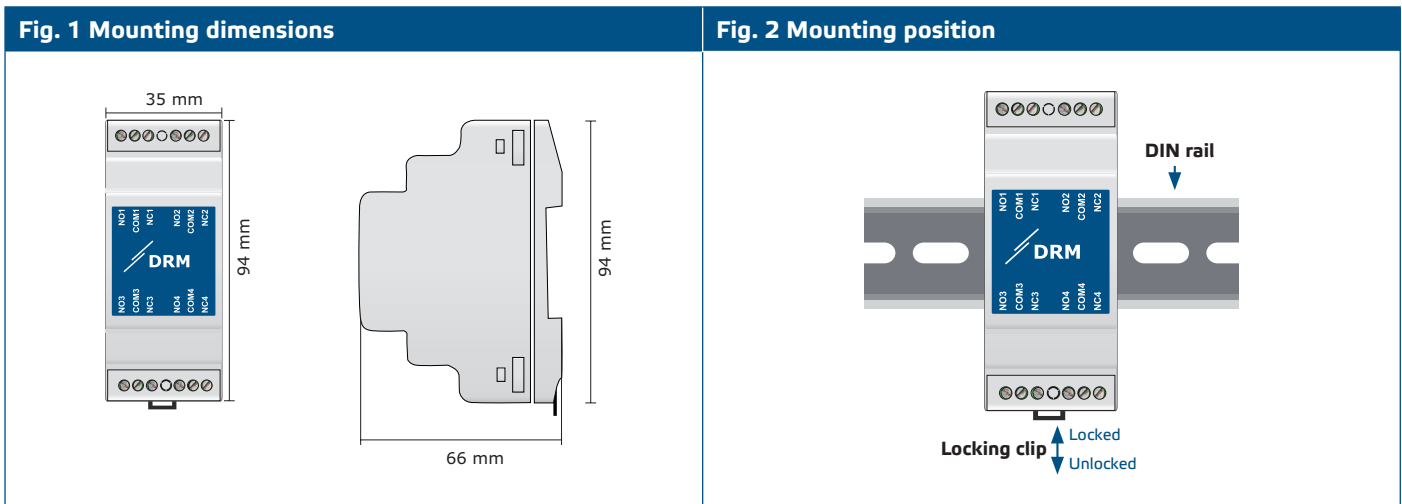
3. Connect the relay output cables to the terminal block as shown in **Fig. 3a** adhering to the information in section "**Wiring and connections**".

Fig. 3 Wiring diagram

a. Relay outputs	b. RJ45 connector

GND
/B
A
24 VDC
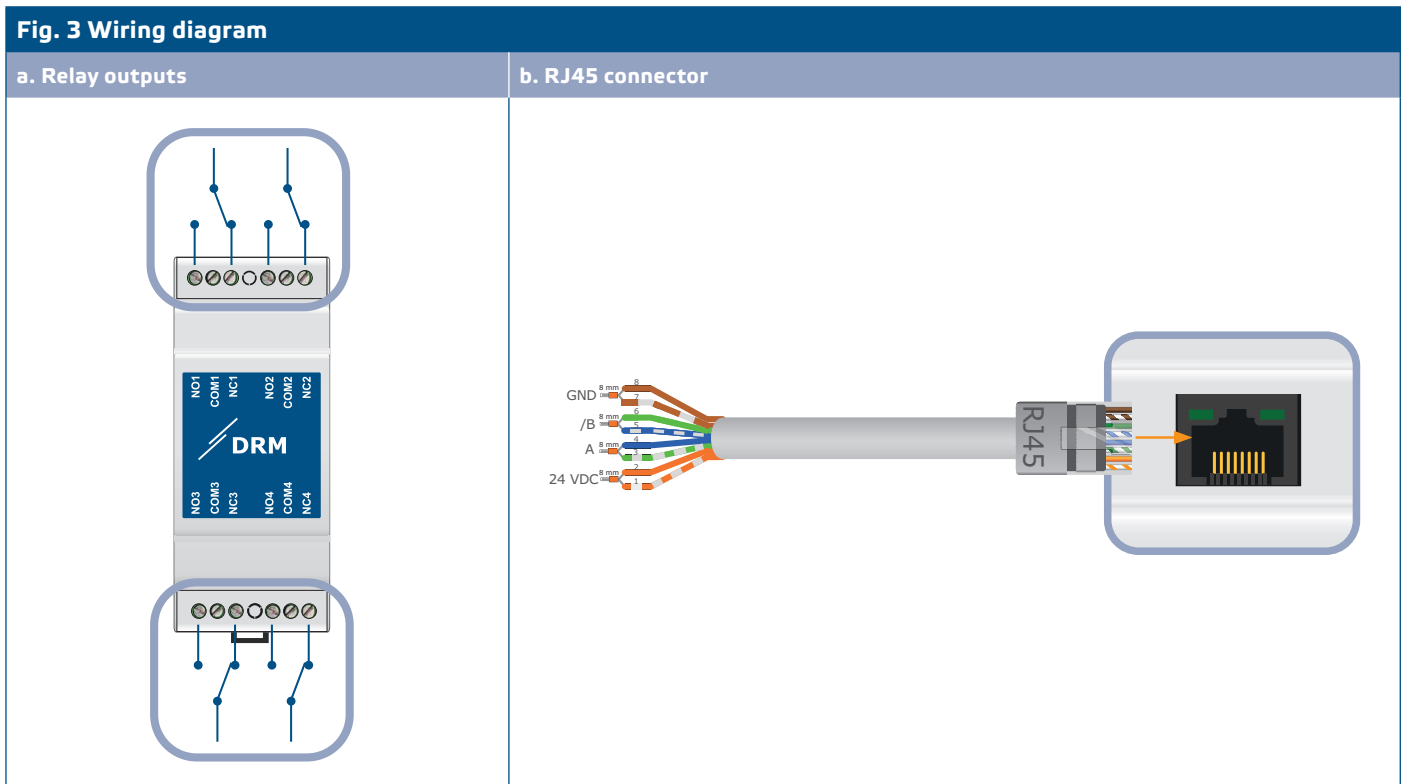
RJ45

4. Crimp the RJ45 cable (for 24 VDC power supply and Modbus RTU communication) and plug it into the socket (see **Fig. 3b**).

5. Switch on the power supply.

NOTE

For the complete Modbus register data, refer to the product Modbus Register Map, which is a separate document attached to the article code on the website and contains the registers list. Products with earlier firmware versions may not be compatible with this list.

Optional settings

To assure correct communication, the NBT needs to be activated in only two devices on the Modbus RTU network. If necessary, enable the NBT resistor via 3SModbus or Sensistant (*Holding register 9*).

| Example 1	Example 2
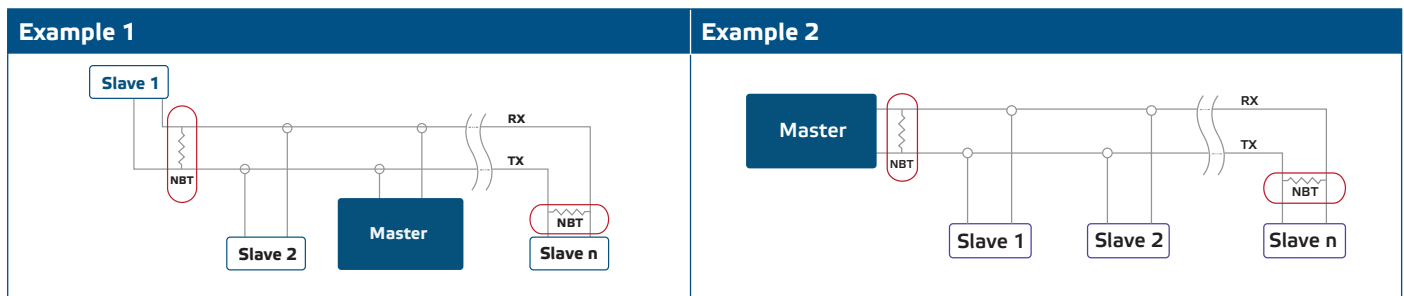
NOTE

On a Modbus RTU network, two bus terminators (NBTs) need to be activated.

VERIFICATION OF INSTALLATION

After powering the unit, the LED on the left of the RJ45 socket (**Fig. 4 - 1**) should light up to indicate that the unit is supplied.

The LED on the right of the RJ45 socket (**Fig. 4 - 2**) indicates that there is active Modbus communication.

If your unit does not function as expected, please check the connections.

Fig. 4 LED indications
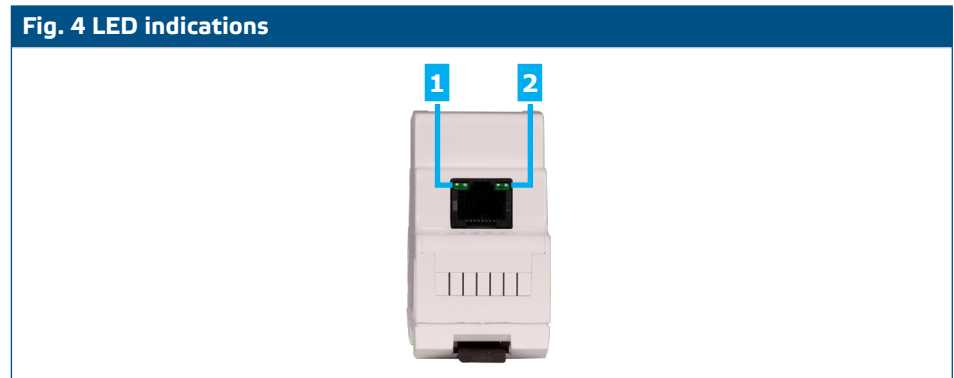
ATTENTION

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

OPERATING INSTRUCTIONS

The DRM-M-04 are entirely Modbus RTU operated. They transfer the commands given via holding registers 11, 12, 13 and 14 to change the C/O contact status.

Bootloader

Thanks to the bootloader functionality, the unit firmware can be updated via Modbus RTU communication. With 3SM boot Application (part of 3SM center software suite), 'boot mode' is automatically activated and the firmware can be updated.

NOTE

Make sure the power supply does not get interrupted during "bootload" procedure, otherwise you risk losing unsaved data.

SENTERA
C O N T R O L S

TRANSPORT AND STORAGE

Avoid shocks and extreme conditions; stock in original packing.

WARRANTY AND RESTRICTIONS

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

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.