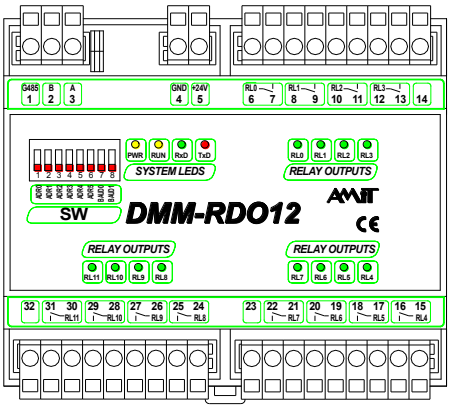
Industrial
Control Systems

# DMM-RDO12

Module of relay outputs with protocol MODBUS

- **Module of 12 relay outputs**
- **Operation through RS485 interface, protocol MODBUS RTU**




## TECHNICAL DATA

| | |
|---|---|
| **Outputs** | 12 |
| Output types | Switching relays |
| Equipment protection class *) | II |
| LW ingress protection rate in assembled state *) | IP20 |
| GI maximum operation voltage | 300 V AC/DC |
| Maximum switched output voltage | 250 V AC/DC |
| Nominal voltage<br>current (resistive load) | 230 V AC / 24 V DC<br>4 A |
| Rated power force (resistive load) | 1000 VA AC / 100 W DC |
| Time switching-on<br>switching-off | 5 ms<br>1 ms |
| Contact lifetime<br>without load/nominal load | $30 \times 10^6$ / $4 \times 10^5$ switches |
| Maximum switching frequency<br>without load/nominal load | 72000 / 360 $hr^{-1}$ |
| **Communication** | RS485 |
| Interface galvanic isolation | Yes **) |
| Overvoltage interface protection | Transil 600 W |
| Communication speeds | 9600 bps to 57600 bps |
| Number of modules on RS485 network | 63 |
| Number of modules on RS485 segment | 31 |
| **Power supply** | 19.2 V to 28.8 V DC |
| Power consumption | Max. 160 mA at 24 V DC |
| **Others** | |
| Connection | Cage clamps WAGO 231 |
| Operating temperature range | 0 °C to 50 °C |
| Maximum ambient humidity | < 95 % non-condensing |
| Mounting | DIN rail 35 mm |
| Weight | 250 g |
| Dimensions (w × h × d) | (106 × 97 × 73) mm |

*) It is necessary to keep the "Mounting instructions", see below.

**) Insulation strength 500 V AC / 1 minute, galvanic isolation must not be used for safe and unsafe parts separation.

## ORDERING INFORMATION

| | |
|---|---|
| **DMM-RDO12** | Module of 12 relay outputs with protocol MODBUS, connectors WAGO |



**AMiT, spol. s r.o., Naskové 1100/3, 150 00 PRAGUE, Czech Republic**
Tel.: +420 222 780 100, +420 222 781 516, Fax: +420 222 782 297
e-mail: amit@amit.cz

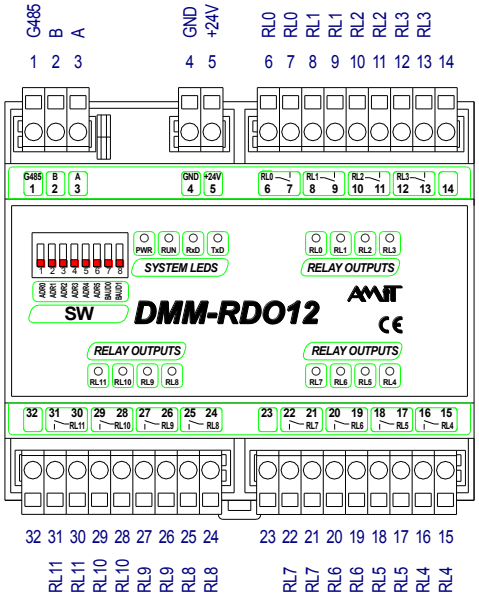
**Technical support: support@amit.cz**
Tel.: +420 549 210 276, +420 549 210 403
www.amit.cz/support

## TERMINALS IDENTIFICATION

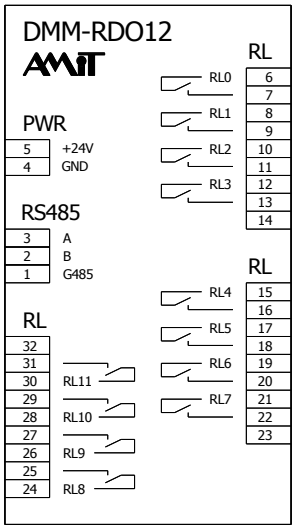
| Terminal | Signal | Description |
|---|---|---|
| 1 | G485 | RS485, shielding |
| 2 | B | RS485, wire B |
| 3 | A | RS485, wire A |
| 4 | GND | Power supply, ground |
| 5 | +24V | Power supply +24 V DC |
| 6 | RL0 | Relay RL0 |
| 7 | RL0 | Relay RL0 |
| 8 | RL1 | Relay RL1 |
| 9 | RL1 | Relay RL1 |
| 10 | RL2 | Relay RL2 |
| 11 | RL2 | Relay RL2 |
| 12 | RL3 | Relay RL3 |
| 13 | RL3 | Relay RL3 |
| 14 | – | |
| 15 | RL4 | Relay RL4 |
| 16 | RL4 | Relay RL4 |

| Terminal | Signal | Description |
|---|---|---|
| 17 | RL5 | Relay RL5 |
| 18 | RL5 | Relay RL5 |
| 19 | RL6 | Relay RL6 |
| 20 | RL6 | Relay RL6 |
| 21 | RL7 | Relay RL7 |
| 22 | RL7 | Relay RL7 |
| 23 | – | |
| 24 | RL8 | Relay RL8 |
| 25 | RL8 | Relay RL8 |
| 26 | RL9 | Relay RL9 |
| 27 | RL9 | Relay RL9 |
| 28 | RL10 | Relay RL10 |
| 29 | RL10 | Relay RL10 |
| 30 | RL11 | Relay RL11 |
| 31 | RL11 | Relay RL11 |
| 32 | – | |

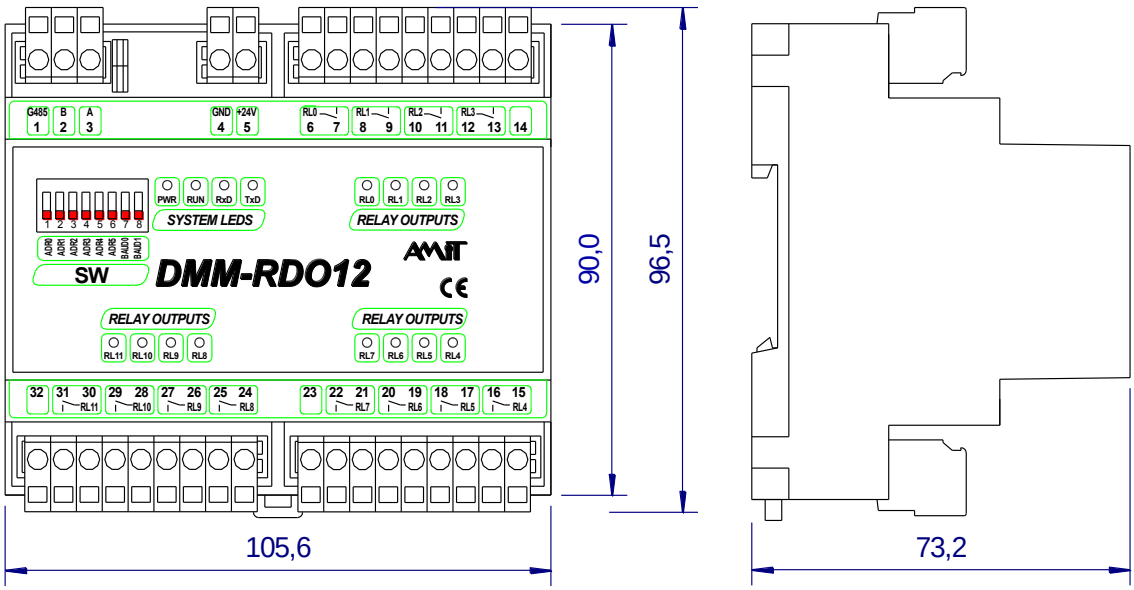
## TERMINALS LOCATION




## RECOMMENDED DRAWING SYMBOL




## MECHANICAL DIMENSIONS



# DMM-RDO12

Module of relay outputs with protocol MODBUS

## JUMPERS – RS485 INTERFACE

| Jumper | Description |
|---|---|
| J6, 1-2 | Idle state line definition + A termination |
| J6, 3-4 | Idle state line definition + B termination |

## PARITY SETTINGS

Turn the unit power supply off, set all switches to OFF position and turn the power supply on again. The parity can be set by the switches ADR0 (DIP 1) and ADR1 (DIP 2) according to a table:

| ADR0 (DIP 1) | ADR1 (DIP 2) | Parity |
|---|---|---|
| OFF | OFF | None |
| ON | OFF | Even |
| OFF | ON | Odd |

The settings must be confirmed by switching the switch BAUD1 (DIP 8) to a position ON ("light snake" is running on module LEDs). Parity settings are displayed on corresponding LEDs. A change will be active after turning the module off and on again.

## SETTING OF ADDRESS AND COMMUNICATION SPEED

Address settings can be performed by the switches ADR0 (DIP 1) to ADR5 (DIP 6). Available address values are 1 to 63. **Address 0 is not allowed!** Communication speed settings can be performed by the switches BAUD0 (DIP 7) and BAUD1 (DIP 8).

**ADDRESS**

| DIP | Value |
|---|---|
| ADR0 (DIP 1) | Value of 1 |
| ADR1 (DIP 2) | Value of 2 |
| ADR2 (DIP 3) | Value of 4 |
| ADR3 (DIP 4) | Value of 8 |
| ADR4 (DIP 5) | Value of 16 |
| ADR5 (DIP 6) | Value of 32 |

**COMMUNICATION SPEED**

| BAUD0 (DIP 7) | BAUD1 (DIP 8) | Communication speed |
|---|---|---|
| OFF | OFF | 9600 bps |
| ON | OFF | 19200 bps |
| OFF | ON | 38400 bps |
| ON | ON | 57600 bps |

An example of address: address = 35, the switches 1, 2 and 6 (1 + 2 + 32) are ON. The change of switches settings will be active after turning the module off and on again.

## SUPPORTED MODBUS FUNCTIONS

| Function | Use |
|---|---|
| 1 | Reading of digital outputs state |
| 5 | Writing of one digital output |
| 15 | Writing of multiple digital outputs |

Relay outputs are mapped to the network Modbus by the coils according to the table.

| DMM-RDO12 output | Modbus Coil number | Modbus Coil type | Description |
|---|---|---|---|
| RL0 | 0 | R/W | RL0 switching-on / off |
| RL1 | 1 | R/W | RL1 switching-on / off |
| … | … | … | … |
| RL10 | 10 | R/W | RL10 switching-on / off |
| RL11 | 11 | R/W | RL11 switching-on / off |

**Warning**: A unit has implemented SW **WATCHDOG**. If the unit does not receive (for 10 seconds) any valid frame (even for another unit on the network), all outputs are set to log. 0.

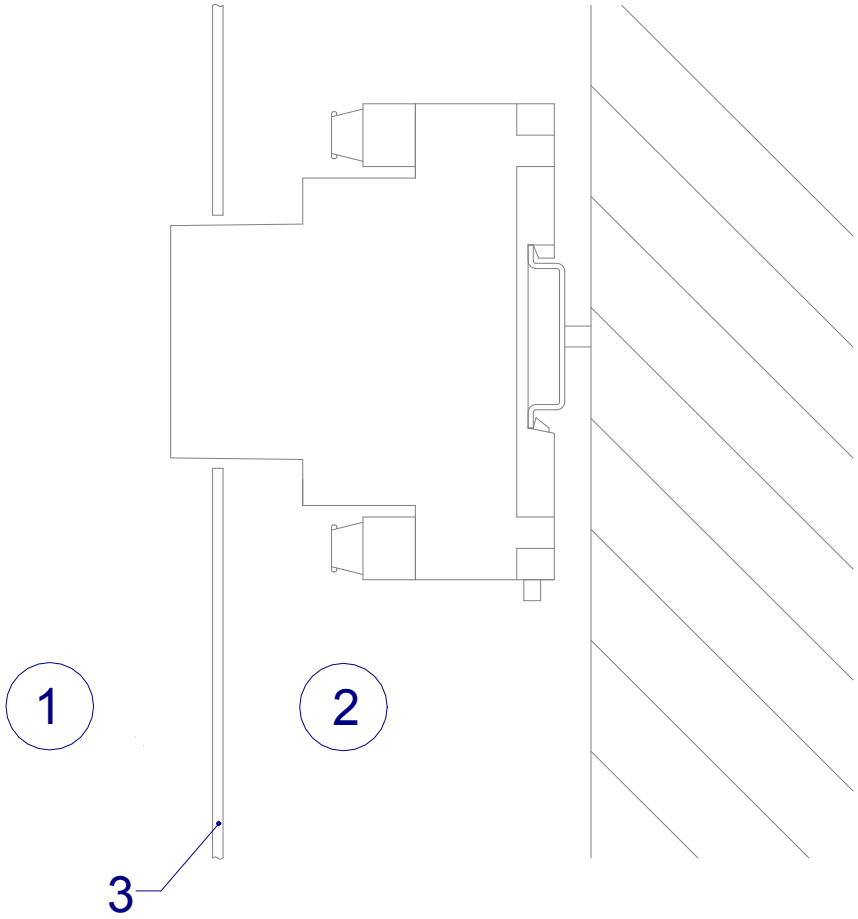


**AMiT, spol. s r.o., Naskové 1100/3, 150 00 PRAGUE, Czech Republic**
Tel.: +420 222 780 100, +420 222 781 516, Fax: +420 222 782 297
e-mail: amit@amit.cz

**Technical support: support@amit.cz**
Tel.: +420 549 210 276, +420 549 210 403
www.amit.cz/support

## MOUNTING INSTRUCTIONS

- **If maximum ambient temperature is not exceeded, the unit is cooled by natural air circulation. It must be mounted on DIN rail located in any position.**
- **The unit is designed for normal environments (not to the environment with explosion hazards, etc.).**
- **Cabling must be installed in such a way that accidental release of any single wire does not bring main voltage on safe part and vice versa.**
- **If the equipment is used in such a way, which is not intended by manufacturer, the protection facility provided by appliance can be violated.**
- **Time after time with regard to way of use, it is necessary to remove dust from the unit. The unit is cleaned by dry brush or soft brush, eventually by a vacuum cleaner.**
- **The circuits switching the network must be self-sealing by a circuit breaker 6 A located near the equipment.**
- **Maximum current in a bulb is greater than its nominal current. Either the short-time value of switched current must not overcome its maximum allowed value.**
- **Only for single-phase systems 230 V AC.**
- **The equipment is designed for mounting into a switchboard.**
- **The unit must be mounted in such a way that the terminals and bottom part of unit are not available to operator – see the figure below. It is recommended to use domestic LW switchboards.**




*Legend*

| Number | Description |
|---|---|
| 1 | Accessible for operator |
| 2 | Inaccessible for operator |
| 3 | Separating barrier |

Other documentation and examples can be downloaded from **www.amitomation.com**.