![domat control system logo]

MW240-B   Small I/O module for lights and blinds control

Summary   **MW240-B is a small I/O module featuring 2 DI and 2 DO (relays). It is used for control of two lighting groups (using switches or buttons) or as a simple I/O module with no embedded bindings between inputs and outputs – the logical functionality is implemented in a master PLC.**

Application

- **Control of two lighting groups, with override from a PLC or SCADA over the bus**
- **Control of a blind**
- **I/O module 2xDI, 2xDO for general use**

Function

In a plastic casing suitable for monting into a flush box there is a board with terminals, and other components. As the device is energized the the outputs set into predefined states and then are controlled either by input signals, or by bus commands, or by combination of both. Priorities may be set: the outputs permanently copy the states of the inputs (local control), or change their states as input states change (the last command is valid), with optional override over the bus.

It is also possible to set the function of bus override: relays are updated either at each change of the bus command, or at each bus command, or permanently with no regards of bus commands frequency. See details in the Modbus map (**domat-int.com/en/downloads/technical-documentation/modbus-tables**).

The module communicates over RS485 as Modbus RTU slave.

Technical data

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Power	24 V AC/DC ±10 %
Consumption	max. 2 W
Working temperature of the module	0 ÷ 70°C
Number of outputs (relays)	2 (NO)

Relay load	230 V AC, max. 4 A (AC1)
Connection - relays	Wires 1.5 mm^2, length 7 cm, stripped tinned ends 10 mm
Connection - others	Screw terminals, for 0,14 – 1 mm^2 wires
Contact lifespan	> 10^5 cycles
Inputs	for potential-free contacts, against G0
Initialization	short-circuit terminals INIT and G0
Communication	Modbus RTU / RS485, galvanically separated (1kV), 1200...115200 bps
Dimensions	49 x 49 x 30 mm

The new version MW240-B could be set to the communication INIT (Modbus address 1, 9600, N, 8) shorting terminals INIT and G0, then switch off and switch on device. For BUS END is necessary to connect an external resistor (120 Ω) to terminals K1+ and K1-.
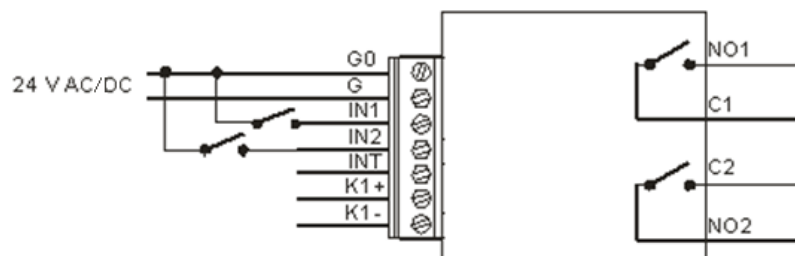
Terminals

Screw terminals

G0   common ground
G   power supply 24 V AC/DC
IN1   input A (referred to as Input 0 in the Modbus table)
IN2   input B (referred to as Input 1 in the Modbus table)
INIT   initialization terminal
K1+   RS485, +
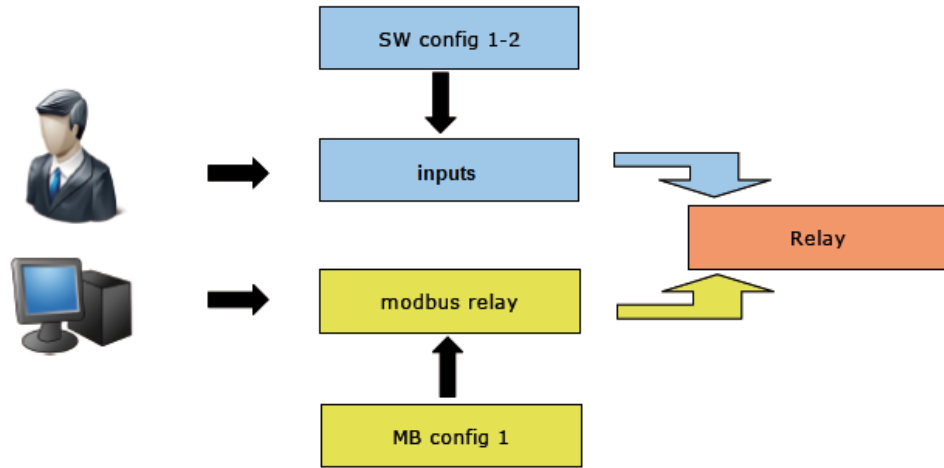K1-   RS485, -

Outputs (wires)

NO1   output relay A (referred to as Relay 0 in the Modbus table)
C1   common relay A
C2   common relay B
NO2   output relay B (referred to as Relay 1 in the Modbus table)

Connection

	The MW240-B controls the relays according to the states of inputs (pushbuttons or switches) and Modbus commands. Priorities and function regarding Modbus write events can be set using Modbus configuration registers, see tables below. The module can be configured for local control (switches / pushbuttons), bus control override, combined control („the last command is valid"), etc.

General function notes

The MW240-B controls the relays according to the states of inputs (pushbuttons or switches) and Modbus commands. Priorities and function regarding Modbus write events can be set using Modbus configuration registers, see tables below. The module can be configured for local control (switches / pushbuttons), bus control override, combined control („the last command is valid"), etc.

Inputs function settings

Edge

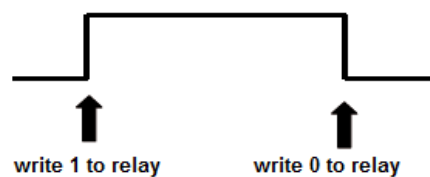The relay status is changed at an edge on the input. Rising or falling edge is selected.

Register	Value
SW config 1	0x05
SW config 2	0x00

State change

The input state is copied to the output, the *Relay* register is written to only at a change of the input state.
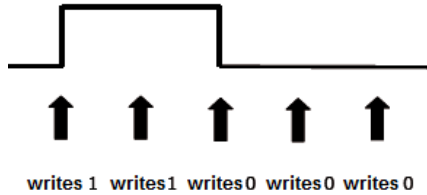
Register	Value
SW config 1	0x50
SW config 2	0x00

General function notes

The MW240-B controls the relays according to the states of inputs (pushbuttons or switches) and Modbus commands. Priorities and function regarding Modbus write events can be set using Modbus configuration registers, see tables below. The module can be configured for local control (switches / pushbuttons), bus control override, combined control („the last command is valid"), etc.

Inputs function settings

Edge

The relay status is changed at an edge on the input. Rising or falling edge is selected.

Register	Value
SW config 1	0x05
SW config 2	0x00

State change

The input state is copied to the output, the *Relay* register is written to only at a change of the input state.

Register	Value
SW config 1	0x50
SW config 2	0x00

Copying of inputs

Periodically (as fast as the processor cycle allows) copies the input state to the output.

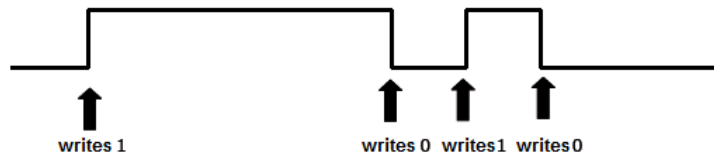| Register	Value
SW config 1	0x00
SW config 2	0x05

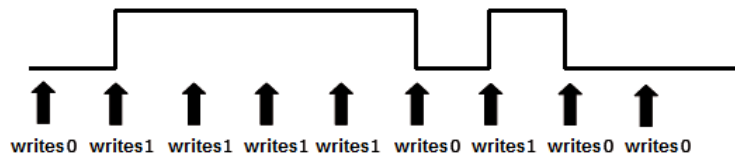writes 1   writes1   writes0   writes0   writes 0

Writing from the bus

Modbus state

The *Modbus relay* values are periodically (as fast as the processor cycle allows) copied to the *Relay* register.
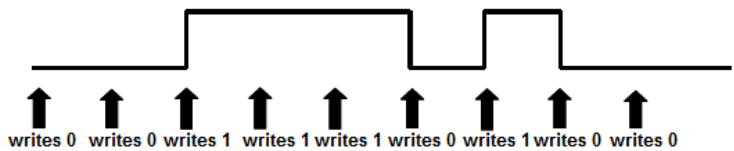
Register	Value
MB config 1	0x05

Modbus change

Each *Modbus relay* value change initiates copying of the new state into the *Relay* register.

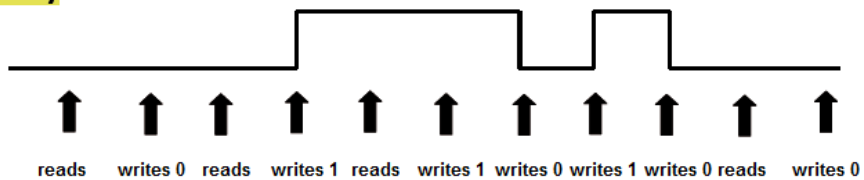| Register	Value
MB config 1	0x0A
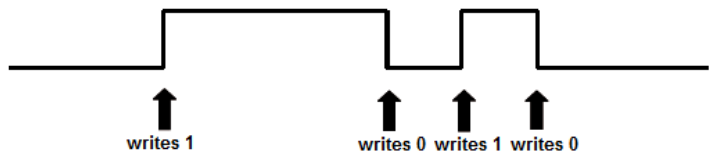
Modbus writing
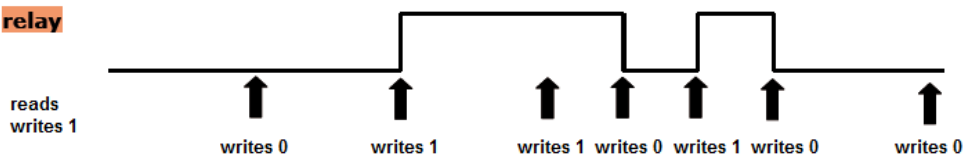
Each write event into the *Modbus relay* register initiates copying of the register value into the *Relay* register.

Register	Value
MB config 1	0x0F

If the function **Copying of inputs** together with function **Modbus state** is selected, priority is set in the *SW/MB config 1* (6 LSB) register.

Safety note The device is designed for monitoring and control of heating, ventilation, and air conditioning systems. It must not be used for protection of persons against health risks or death, as a safety element, or in applications where its failure could lead to physical or property damage or environmental damage. All risks related to device operation must be considered together with design, installation, and operation of the entire control system which the device is part of.

Changes in versions

03/2015 - Changes in initialization mode, bus end, bus galvanic separation, power and relay. Modbus table is now available in separate document.

06/2016 – Added information about support higher serial communication speed.

06/2018 – *Safety note* added, front image changed, minor changes.