Digital output module
Short guide

1. Overview

MU210-401 is an extension module with 8 relay outputs.

The module operates as a slave in Ethernet network with Modbus TCP protocol.

The device is intended for use in industrial automation for creation of decentralized control systems.

2. Environmental conditions

Table 1 Operating conditions

Condition	Permissible range
Ambient temperature	-40…+55 °C
Transportation and storage	
Relative humidity	up to 95 % (at +35 °C, non-condencing)
Attitude	up to 2000 m ASL
IP code	IP20
Vibration / shock resistance	conforms to IEC 61131-2
EMC emission / immunity	conforms to IEC 61131-2

3. Specification

Table 2 General specifications

Parameter		Value
Electrical		
Power supply		24 (10 ... 48) V DC
Power consumption		6 W at 24 V DC
Polarity protection		Yes
Appliance class		II
Interfaces		
Data transfer		Double Ethernet 10/100 Mbps
Protocols		Modbus TCP MQTT SNMP NTP
Configuration interface		USB 2.0 (MicroUSB) Ethernet 10/100 Mbps
Digital outputs		
Outputs number		8
Output type		Relay, NO
Control		On-Off or PWM
Switching capacity	AC	5 A, 250 VAC, resistive load
	DC	3 A, 30 VDC
Switching current, min.		10 mA at 5 VDC
Switching time		15 ms
PWM frequency, max.		1 Hz with 0.05 duty cycle
PWM pulse length, min.		50 ms
Optional functions		Safe state
Service life, electrical	3 A, 30 VDC	35,000 switching cycles
	5 A, 250 VAC	50,000 switching cycles
Service life, mechanical		5,000,000 switching cycles

Parameter	Value
Flash-memory (log file storage)	
File size, max.	2 kB
Number of log files, ,max.	1000
Logging interval, min.	10 s
Real time clock	
Accuracy	±3 s/day at +25 °C ±10 s/day at -40 °C
Backup battery	CR2032
Mechanical	
Dimensions	42 × 124 × 83 mm
Weight	approx. 260 g

4. Installation and connection

Before installation make sure there is enough free space for connecting the module and placing the wires. The module is mounted on a DIN rail or on a vertical surface using screws.

Installation of external connections is carried out by a wire with a cross section of not more than 0.75 mm².

For stranded wires, use end sleeves.

After installation, put the wires into the cable channel of the module housing and close the cover.

If necessary, in order to remove the terminal blocks of the module, loosen the two screws at the corners of the terminal blocks.

CAUTION
Connection and maintenance is performed only when the module power and the power to all devices connected to it is turned off.

Table 3 Network parameters

Parameter	Description	Default value
IP address	IPv4 Internet Protocol address	192.168.1.99
Subnet mask	IP address recognition area in the subnet	255.255.255.0
Gateway	IP address of the gateway	192.168.1.1
DNS server 1	Primary DNS server	77.88.8.8
DNS server 2	Secondary DNS server	8.88.8.8

5. Connection diagrams

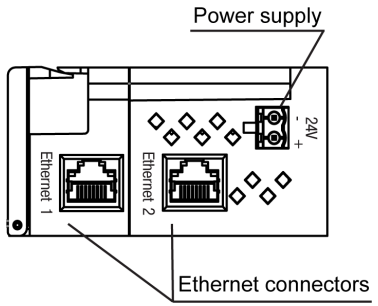


Fig. 1 Device connectors

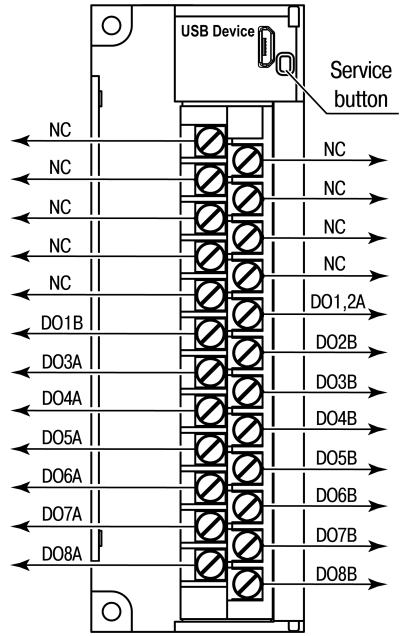


Fig. 2 Front view (open cover)

Table 4 Terminal assignments

Marking	Description
NC	Not connected
DO 1,2A	Common terminal A for outputs 1,2
DO3A…DO8A, DO1B…DO8B	Output terminal

NOTE
It is not allowed to connect wires to NC contacts.

The service button performs the following functions:

- Factory settings restore
- IP-address assignment

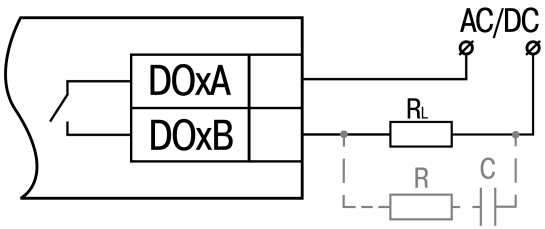


Fig. 3 Relay output wiring

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6. Settings

The module is configured via the Modbus TCP protocol or in the akYtec Tool Pro program via the USB interface (see User Guide). If the module is connected to the USB port, the main module power supply is not required.

7. Indication

Table 5 LEDs

LED	Color	LED State	Description
⏻	green	Off	Power off
		On	Power on
Eth 1	green	Off	Not connected
		Flashing	Data transfer over Ethernet 1 interface
Eth 2	green	Off	Not connected
		Flashing	Data transfer over Ethernet 2 interface
⚠	red	Off	No errors
		On	Program / configuration error
		Flashing (0.1 s / 2 s)	Low battery
		Flashing (0.1 s / 0.5 s)	No requests from master. Safe state activated
		Flashing (0.9 s / 1 s)	Hardware peripherals error (Flash, RTC, Ethernet Switch)
Output LEDs (8)	green	Off	Output relay off
		On	Output relay on

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