



MIDAM multi I/O - Compact I/O module

MIDAM

New

Multi analog and digital input and output module

Midam multi i/o is member of control system **MIDAM CONTROL SYSTEM**. Module is combination of two modules **MIDAM 200** (relay module) one module **MIDAM 401/411** (digital input module), one module **MIDAM 500** (analog input module) and five modules **MIDAM 600** (analog output module) in one box. This combination allows very cost effective module with wide range of use. Communication protocol is compatible with modules ADAM series 4000 ADVANTECH company. Range of analog inputs can be set individually for each channel. Digital inputs have latch possibility.

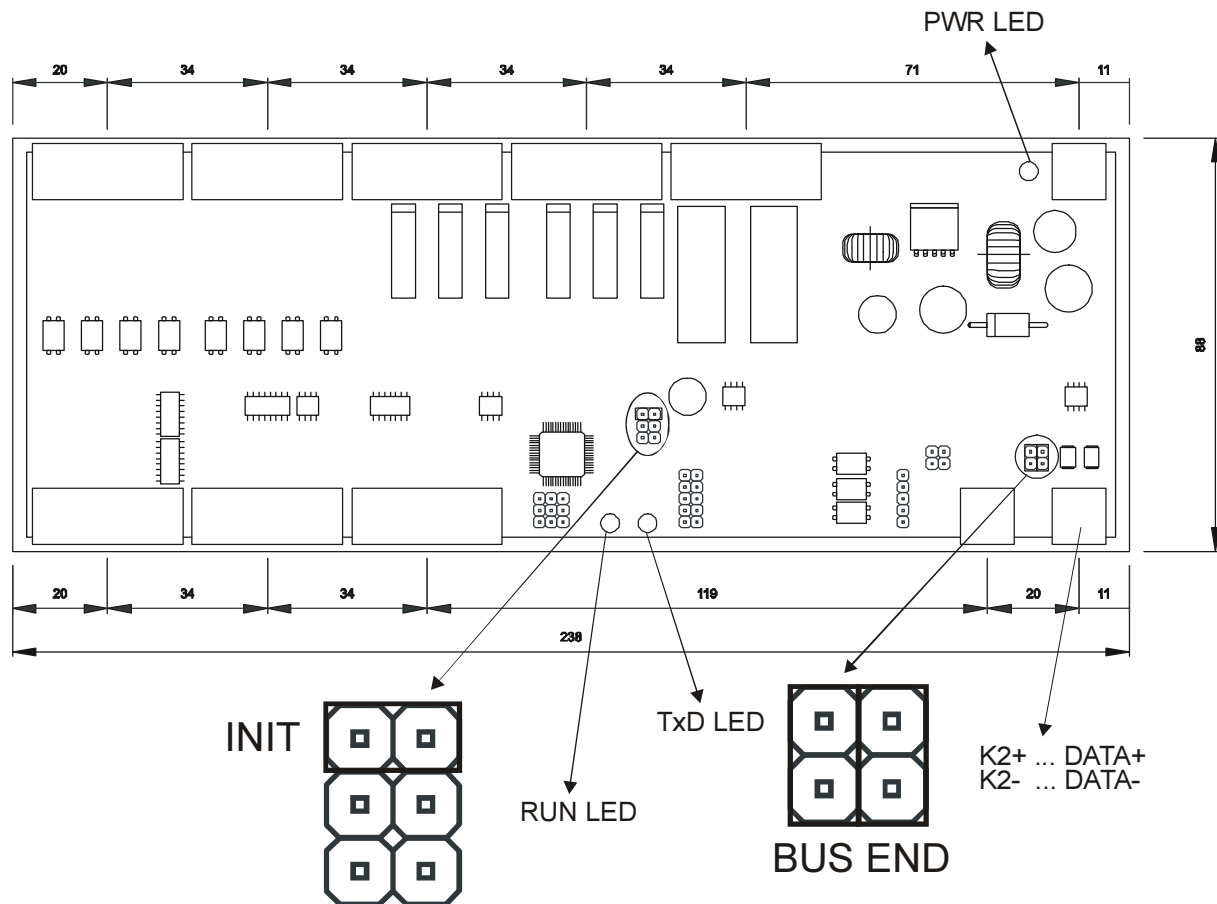
Technical parameters

| | |
|--|---|
| Supply voltage | 10 V ÷ 35 VDC 14 V ÷ 24 VAC |
| Range of temperatures inside the modules | 0 ÷ 70°C |
| Analog inputs | 8x 0-10 VDC, 0-20mA, Pt 1000, Pt100 resolution 16bits |
| Analog outputs | 5x 0-10 VDC, resolution 10 bits |
| Digital inputs | 8x with <i>latch possibility</i> 24VDC or 24VAC or 230VAC |
| Digital outputs | 6x relays (com, no): 5A/250VAC, 5A/30VDC, 750VA, 90W 2x relays (com, no, nc): 8A/250VAC, 8A/24VDC, 2000VA, 192W |
| Communication | RS 485, baud rate 1200, 2400, 4800, 9600, 19200 Bd maximum bus distance 1200 m, asynchronal communication up to 256 modules to one serial port communication protocol compatible with ADAM series 4000 |



When reading current (range 0mA – 20mA), it is necessary to connect 100Ω / 0,1% resistors in parallel to the input terminals so that input current goes through the resistors. The overall input current readings accuracy depends on the accurate resistance value.

Dimensions, LEDs and Jumpers



Description of terminals:

Digital inputs

Digital inputs are galvanic isolated from communication channel and power.

DI1 – DI8 digital inputs 1-8
DGND common ground for all inputs

Input voltage for digital inputs is set up on customer demand during production (24VDC, 24VAC, 230VAC, etc.)

Digital outputs

Digital outputs are galvanic isolated from communication channel and power. There are two types of digital outputs – different relays.

- outputs 1 – 6 ... COM and NO terminals: 5A/250VAC, 5A/30VDC, 750VA, 90W
- outputs 7,8 ... COM, NO and NC terminals: 8A/250VAC, 8A/24VDC, 2000VA, 192W

NO1 – NO8 normally open
COM1 – COM8 common terminal for each relay different
NC7, NC8 normally close

Analog inputs

Analog inputs are galvanic isolated from communication channel. Analog inputs has currently implemented following ranges (on customer demand it is possible to add range):

- Pt100 range from -50°C to 250°C
- Pt1000 range from -50°C to 250°C
- $0\text{V} - 10\text{V}$
- $0\text{mA} - 20\text{mA}$



When $0\text{mA}-20\text{mA}$ range is set, it is necessary to connect $100\Omega / 0,1\%$ resistors in parallel to the input terminals so that input current goes through the resistors. The overall input current readings accuracy depends on the accurate resistance value.

Each channel can be set for different range.

AI1 – AI8 analog input1 – analog input8
AGND common ground for all analog inputs and outputs

Analog outputs

Analog inputs are galvanic isolated from communication channel. Output range is $0\text{V} - 10\text{V}$.

AO1 – AO5 analog output1 – analog output5
AGND common ground for all analog inputs and outputs

For **AO1** is used 12bits D/A converter. For **AO2 – AO5** is used 10bitovým D/A converter.

Power

As a power terminal are use terminals with name **1** and **2**. Supply voltage could be in following ranges:

- $10 - 35\text{ VDC}$
- $14 - 24\text{ VAC}$



ATTENTION:

Power supply (terminals **1** and **2**) and voltages on analog inputs (terminals **AGND** and **AI1 – AI8**) **must be galvanic isolated.**

Communication

Module has two serial communication RS485 channels. Channel 1 (K1+ and K1-) is reserved for future use. Both channels are galvanic isolated from power supply. Channel 2 (K2+ and K2-) is for communication with master (computer, PLC etc.)

Channel 2: K2+ +485
 K2- -485

for future use:

Channel 1: K1+ +485
 K1- -485

Description of additional implemented commands:

Following commands are supported by module **MIDAM multi I/O** to set up input ranges and latch possibilities.

Each command is (must be) terminated with character CR carriage return (013H).

Set up analog input ranges

command: \$aaW12345678

set up input analog range, (number is representing the concrete input), instead numbers is used number representing input range:

- 0 ... 0-20mA
- 1 ... Pt100 (range from –50°C to 250°C)
- 2 ... 0-10V
- 4 ... Pt1000 (range from –50°C to 250°C)

aa ... module address (address of analog input module)

W ... write analog input range

answer: !aa if the command is accepted, **?aa** not accepted

example: \$04W00214444

module on address 04 will have the following ranges

- input1: 0-20mA
- input2: 0-20mA
- input3: 0-10V
- input4: Pt100
- input5: Pt1000
- input6: Pt1000
- input7: Pt1000
- input8: Pt1000

Read analog input ranges

command: \$aaR

read analog input ranges

aa ... module address (address of analog input module)

R ... read analog input range

answer: !aa12345678 if the command is accepted, **?aa** not accepted
numbers represents input range (same as command set up input range)

Set up latch type to digital inputs

command: \$aaV12345678

set up type of latch on digital input (number is representing the concrete input), instead numbers is used number representing latch type:

- 0 ... **input is not latched** – when module is asked for input value it will give actual state of input
- 1 ... **latch to logical 0** – when on input is connected logical 0 is stored until reading input from master, other changes from logical 0 to 1 will not change the stored logical 0
- 2 ... **latch to logical 1** – when on input is connected logical 1 is stored until reading input from master, other changes from logical 1 to 0 will not change the stored logical 1

aa ... module address (address of digital input module)

V ... write latch type to digital input

answer: !aa if the command is accepted, **?aa** not accepted

example: **\$04V00000012**

module on address 04 will have the following ranges

input1: not latched

input2: not latched

input3: not latched

input4: not latched

input5: not latched

input6: not latched

input7: latch to logical 0

input8: latch to logical 1

Read latch digital input types

command: **\$aaP**

read latch type

aa ... module address (address of analog input module)

R ... read latch type

answer: **!aa12345678** if the command is accepted, **?aa** not accepted
numbers represents latch (same as command set up latch type to digital inputs)

Representative



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