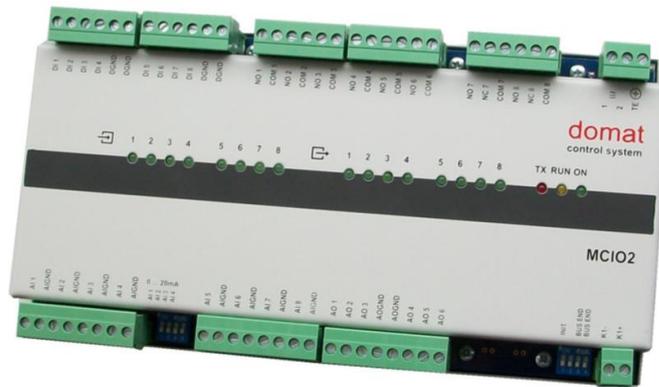


MCIO2

Multi I/O compact module



Summary

The MCIO2 multiple I/O compact module is a microprocessor-controlled, communicative module with the I/O mix optimized for HVAC and home control applications. The module uses a RS485 bus for communication, and can be easily integrated in a variety of supervision and control systems.

Application

- Compact I/O module for data acquisition and HVAC control systems

Function

The MCIO2 module is a multiple I/O module (8 AI, 6 AO, 8 DI, 8 DO). The module communicates by means of a RS485 data bus. The Modbus RTU communication protocol ensures smooth and easy integration in a number of control and data acquisition systems. The Modbus register description is available in a separate document.

The communication circuits are protected against overvoltage. If the module is terminating the communication bus, i.e. it is the last in line, a terminating 120 Ω resistor may be switched on by short-circuiting of the BUS END jumpers (right pack, No. 3 and 4). Green LEDs indicate states of the I/Os, red LED communication (TX), yellow LED system module cycle (RUN), and green LED power on.

The module can be mounted on a standard DIN rail. To remove the modul, pull the plate at the upper part of the module which releases both DIN rail locks at the same time. Move the plate upwards with a screwdriver and remove the module.

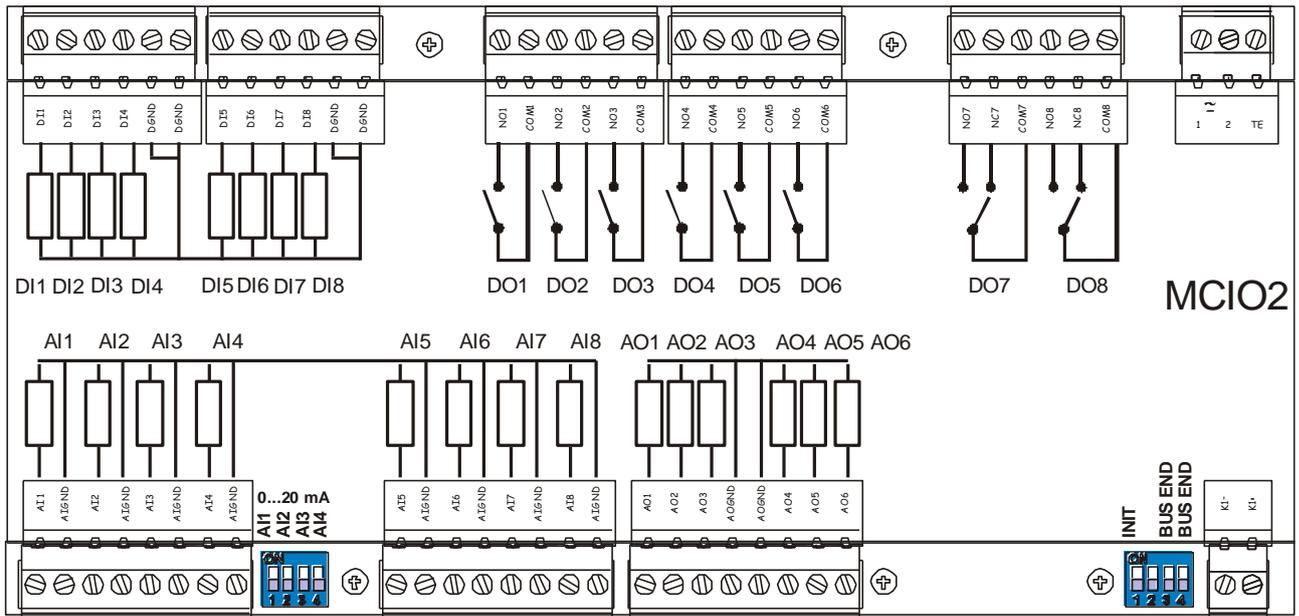
See *domat - Technical application notes* for connection and function examples.

Technical data

Supply voltage	18 V ÷ 35 V DC, 14 V ÷ 24 V AC
Consumption	max. 7.2 VA
Working temperature of the module	0 ÷ 60°C, non-condensing
Communication	RS485, 1200 ... 19200 bit/s

RS485 - K+, K- terminals	
Max. bus length	1200m
Max. number of modules on the bus	up to 256 addresses; the maximum number of modules depends on requested response time: for common HVAC applications, use max. 20 MCIO2
Analogue inputs	8x 0-10 V DC, Pt 1000, resistance 0..1600 Ohm, 0...5000 Ohm, 0(4)...20 mA – selected with jumpers and over the bus (the rest of ranges, for example Pt100, Ni1000, can be transformed from input by predefined transformation in SW of proces station)
Analogue outputs	6x 0-10 V DC 2x common terminal AOGND galvanically separated 1 kV from the rest of the module 10 bit resolution output impedace < 16 Ohm
Analogue outputs load	min. 10kOhm, max. current 50mA, short-circuit-proof outputs – current limitation to 80 mA
Digital inputs	8x 24V AC/DC – input current 4 mA, voltage must be applied e.g. from module powering terminals (no dry contacts) log. 0 ... U < 8 V AC/DC log. 1 ... U > 20 V AC/DC
Digital outputs	6x relay, NO: 3A/250VAC, 3A/30VDC, 750VA, 90W 2x relay, change-over: 8A/250VAC, 8A/24VDC, 2000VA, 192W
Dimensions	217 x 115 x 40 mm (incl. terminals)
CE marking	

Terminals



Switches

DIP switch left:

To use AI1...AI4 as 0(4)...20 mA set the corresponding switch 1...4 to ON. This connects an internal resistor which changes the voltage input to current input. No external resistors are required at these inputs.

DIP switch close to the K1+, K1- terminals, or right:

1 INIT: if ON before power-up the module is in the INIT mode - address 1, communication speed 9600 bps

3, 4 BUS END: if ON the bus is terminated, if OFF the bus is not terminated.

LEDs

Input and output states are indicated by green LEDs at the front panel. The status LEDs have following functions:

LED	colour	function
TX	red	blinking – module is transmitting at RS485
RUN	yellow	blinking – module OK, on or off – module not working
ON	green	on – power OK, off – no power or power supply damaged

Addressing

The Modbus address is set through ModComTool, a configuration software which is free to download at <http://domat-int.com/en/downloads/software>. Default (factory settings) address is 1, communication parameters 9600, 8, N, 1.

Galvanic separation

Analogue input grounds (AIGND), analogue output grounds (AOGND), power source (terminals 1 and 2), digital inputs and digital outputs are separated from each other. This increases EMC significantly and prevents from damaging the module by overvoltage.

For three-wire (power, ground, signal) connection of active output peripherals, such as valves and damper actuators, define power ground (G0), e.g. terminal 2, and connect it to AOGND analogue outputs ground.

For three-wire connection of active input peripherals (pressure, air quality, and humidity sensors etc.) define power ground (G0), e.g. terminal 2, and connect it to AIGND analogue inputs ground.

Digital inputs (DI) are optically separated from all other parts of the module, however, they all have common ground DGND (see image).

All digital outputs (DO) are based on relays and thus galvanically separated from all other parts of the module as well as from each other.

The communication part is optically separated from all other parts of the module.

It is possible to use the same transformer for powering of modules and peripherals. The TE terminal may be connected to the ground potential (PES, shielding terminal).

Copmatibility with MCI0

When changing MCI0 for MCI02 please note the following:

- hardware signals are 100% compatible except for relay load of 3 A instead of 5 A
- it may be necessary to connect the AGND and AOGND terminals if active sensors are used!
- MCI02 is about 20 mm shorter, the terminals are located +/- 15...20 mm in the same position
- it is necessary to rewire the connectors, the new module has connectors heading up and thus better fixed in the sockets
- mind the RS485 connector polarity, K+ is on the right
- the MCI02 contains one extra analog output
- it is necessary to change the application software (insert new MCI02 module, delete the MCI0 and reconnect inputs and outputs), because old and new modules have different Modbus maps! Use IDE 0.9.10.0805 and later, available at <http://domat-int.com/en/downloads/software>.

Related products

M...	I/O modules
IPLC201, 301	MiniPLC process station
IPCT.1	Process station with touchscreen
M012	RS485/RS232 converter
ECIO2	Compact I/O module with Ethernet interface

**Changes in
versions**

04/2015 — Change of AI definition, and resistance range, additional info about transformation for the rest of measuring elements was added.

08/2015 — Change of power supply parameters.