

R800

Module 16 analog inputs/outputs



Summary

The R800 microprocessor-controlled module contains 8 analog inputs and 8 analog outputs. It communicates via the RS485 bus using the Modbus RTU protocol

Application

- Building and technology management systems – collection of analog signals, measurement of temperatures, pressures and other quantities

Function

The R800 module monitors/controls up to 8 analog inputs and 8 analog outputs. The input signals are processed and multiplexed into a 16-bit A/D converter. Each input is individually adjustable (see Technical Data) and the inputs can also be used as 0 to 20 mA current measurement inputs if the respective DIP switch is activated.

If the module terminates the communication bus, i.e. the last in the series, the termination resistor 120 R can be switched by shorting the DIP BUS END switch. Three LEDs located inside the housing enable quick diagnostics – power, communication and system circle indication. Communication circuits are protected against overvoltage and are galvanically isolated from other parts of the module. All settings are stored in EEPROM chip. The module is equipped with a watchdog.

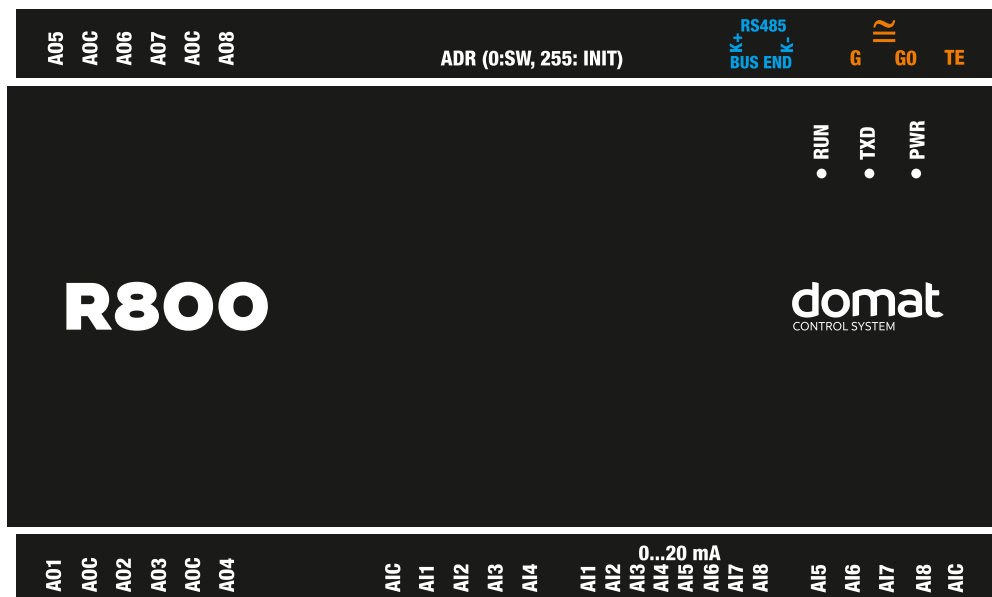
The module can be mounted on DIN rail. For inputs and outputs, power supply and communication are used removable screw connectors.

Technical data

Power	24 V ss/st ±20 %
Consumption	4 W
Communication	Modbus RTU RS485, 1200 ... 115200 bit/s
Galvanic isolation	1 kV
Max. bus length	1200 m
Max. amount of modules on the bus	256

Number of inputs	8× analog input (16 bit, 10 sps - multiplex, 0.25%, 0-10 V, 0-20 mA, 20-1600 Ohm, 20-5000 Ohm, Pt1000 - 50...150 °C, Ni1000 / Pt100 SW)
Number of outputs	8× analog output 0-10 VDC, load impedance >10 kOhm, short-circuit proof
SW	Domat IDE, ModComTool
Housing	Polycarbonate box (certification UL94V0)
Terminals	power and bus M3 screws, for AI and AO M2 screws
Recommended wire	0.35 ... 1.5 mm ²
Protection degree	IP20 (EN 60529)
Dimensions	105.6 × 98.7 × 64 mm
Ambient temperature	External conditions: -5 – 45 °C; 5 – 95 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according to EN 60721-3-3 climatic class 3K5) Storage: -5 – 45 °C; 5 – 95 % relative humidity; non-condensing gases and chemically non-aggressive conditions (according to EN 60721-3-3 climatic class 3K5)
Standards conformity	EMC EN 61000-6-2 ed.3:2005, EN 61000-6-4 ed.2:2006 + A1:2010 (industrial environment) Electrical safety EN 60950-1 ed.2:2006 + A11:2009 + A12:2011 + A1:2010 + A2:2014 + Opr.1:2012 + Z1:2016 Hazardous substances reduction EN 50581:2012

Terminals

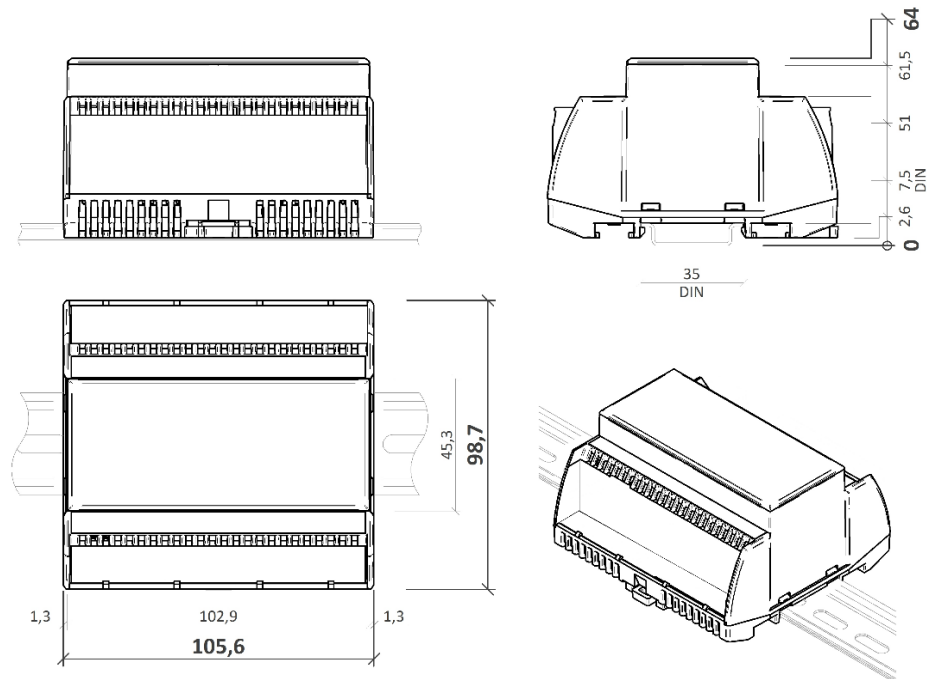


Terminals and connectors:

RS485 K+	port COM1 - serial link RS485, positive
RS485 K-	port COM1 - serial link RS485, negative
G	G power supply
G0	G0 power supply
TE	optional connection for shielding, technical ground
AIC	common wire for input 1 ... 8
AI1 ... AI8	input 1 ... 8

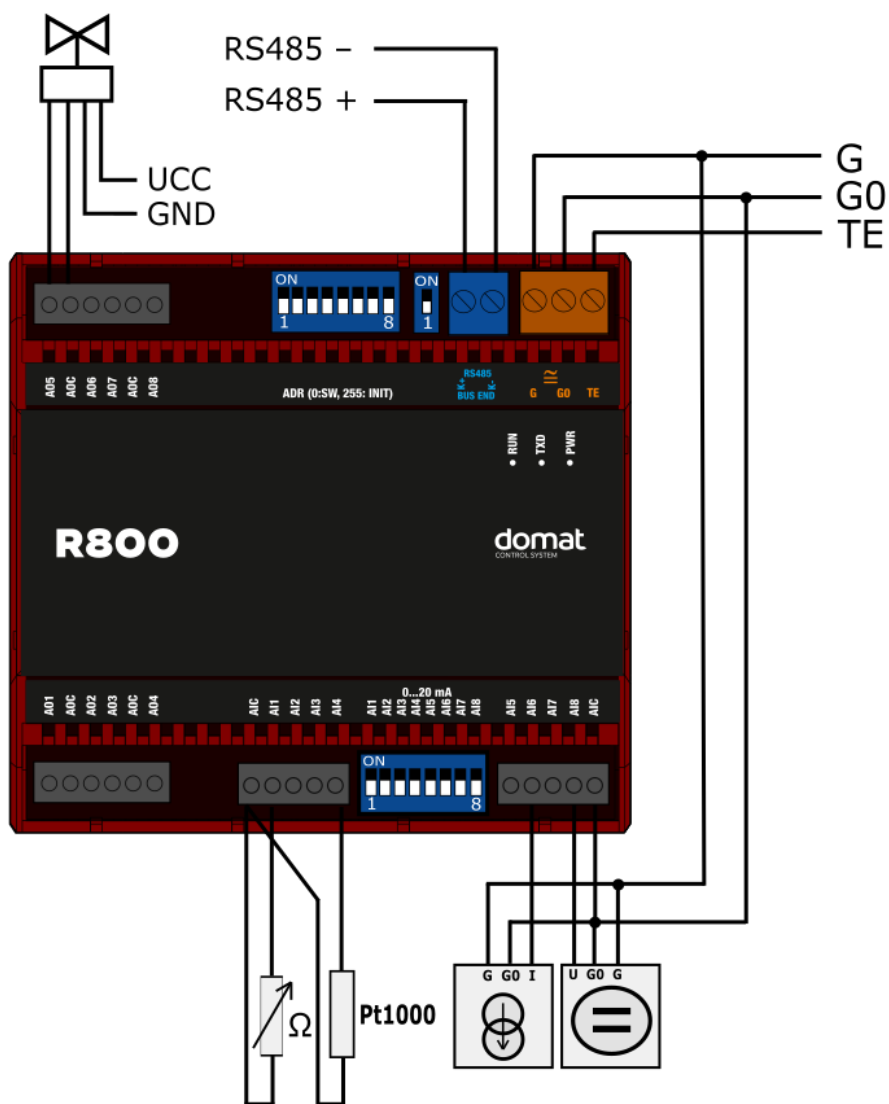
AOC	common wire for output 1 ... 8
AO1 ... AO8	output 1 ... 8
LED indication	
RUN	orange LED – system cycle (OK: LED blinks at an interval of 1 s ON, 1 s OFF; ERROR: different LED blinking pattern, LED permanently on or off)
TxD	red LED – RS485 transmitting data at COM1 (flashing: transmitting data; OFF: no data traffic)
PWR	green LED – power supply (ON: power OK; OFF: no power applied, weak or damaged power supply, ...)
DIP switches	
ADR	SW – if all switches are OFF, the address is used according to Modbus register 4 LSB USER – address is set by DIP switches configuration INIT - if are all switches ON at power-up, configuration parameters are set to defaults DIP 8 = bit 0; switches increase their bit weight from right to left, see below
BUS END	Switch for bus RS485 termination (located at the RS485 connector); ON = bus end; the first and last devices on bus should have bus end ON
0...20 mA	To measure the current (0...20 mA) on individual channels, switch the corresponding DIP switch to the ON position. The range must also be set in the Modbus table (e.g. using the configuration software Domat IDE or ModComTool).

Dimensions



Dimensions are in *mm*.

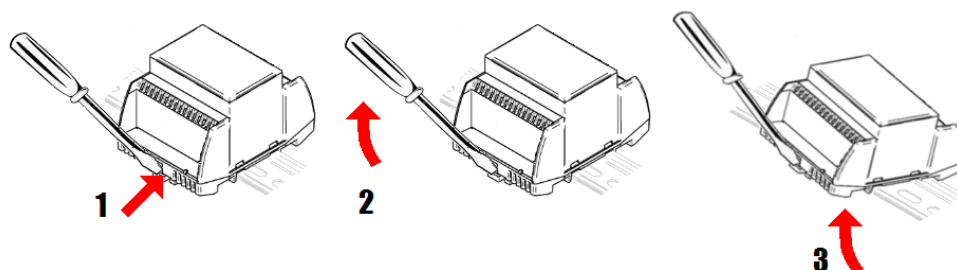
Connection



Installation

The R800 module is fixed on standard DIN rail (by snapping).

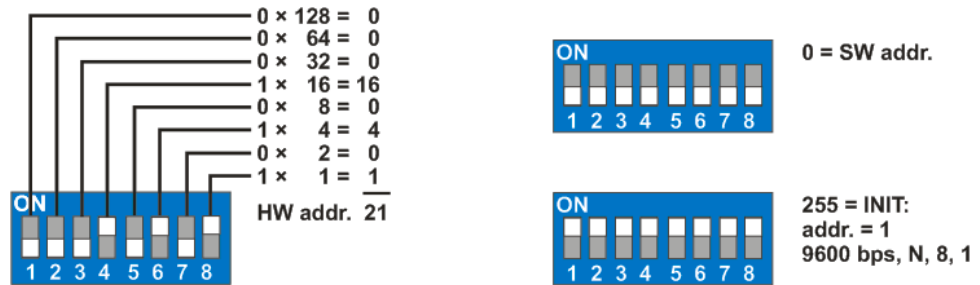
When removing the module from the DIN rail proceed as follows: Place a screwdriver in the plastic slot which is in the middle of bottom part of the module (1). Then push the screwdriver upwards (2). After that, the module can be removed by tilting it upwards (3).



Addressing

The Modbus address can be set as follows:

- **hardwarewise:** using DIP switches. The switches increase their bit weight from right to left, see image with example where address of 21 is set by activation of switches 4, 6, and 8 with bit weight of 16, 4, and 1 respectively. Valid settable range is 1 to 254. Address 0 (all switches OFF) means that the address is set as entered in the Modbus table. Address 255 (all switches ON) brings the module to INIT mode, where Modbus address is 1 and communication parameters are set to N, 8, 1, see image below. All changes apply after the module is switched off and on again.



- **softwarewise** using the ModComTool software, available for free at www.domat-int.com/en/. The default address (factory setting) is 1, default communication parameters are 9600, 8, N, 1. Parity and stopbits can be set in Modbus register 1005 LSB.

The software address is only active if the hardware addressing switch is set to 0.

All changes apply after the module is switched off and on again.

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**

03/2024 – First datasheet version.