

DATA SHEET



mH-DEVELOPER

Central unit of the apartment control system for developers.

The mH-Developer system is designed for controlling heating, lighting and electrical sockets in the installations of houses and flats. The main module is a standalone unit that has been developed based on a detailed analysis of customer needs and in collaboration with developers. Additionally, the basic module can be extended with other functionalities (control of roller shutters, gates, RGB lighting, garden watering) by using extension modules from the F&Home system. The main module, as well as the extension elements, are mounted in the switchgear. The system does not require the installation of additional devices under the buttons - therefore it does not require the use of deepened boxes. The whole system is characterized by simple installation, compact design and a functional mobile application that allows you to configure and control the elements of the system.

Basic functionality

- Heating control (8 zones);
- Ability to connect an external temperature sensor;
- Control of lighting and electrical outlets (12 circuits);
- Control of water, gas and other media valves;
- Electricity meter (indicating total and instantaneous energy consumption).

Power supply

The device is powered by 24V DC. It is recommended to use a pulse power supply with sufficient capacity to power the central unit and possible expansion modules. It is not recommended to power system devices with multiple power sources.

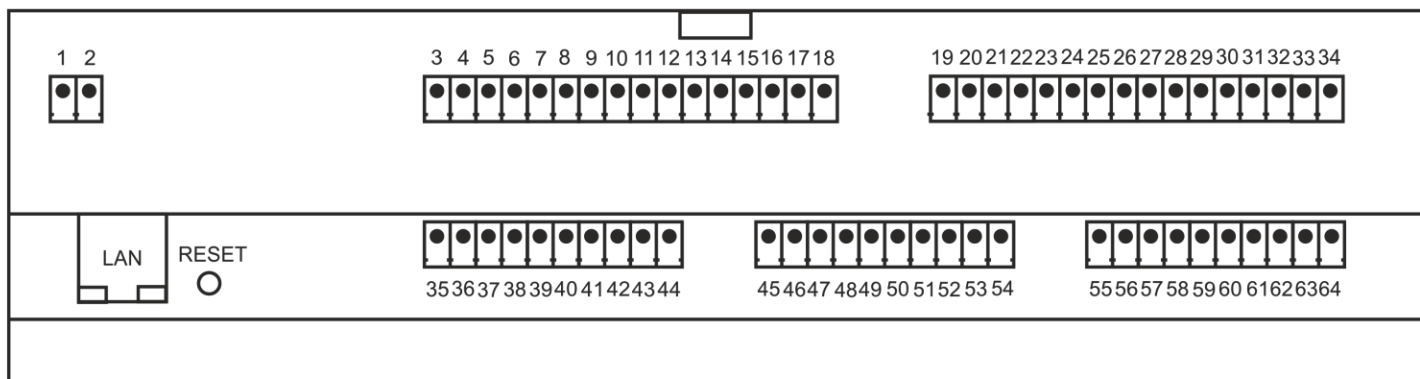
Inputs / outputs

The inputs of the mH-DEVELOPER module are designed to connect monostable (bell) switches supplied with 24 V safe voltage. The input is triggered when the switch is closed and low voltage is applied to the input of the module (the inputs are polarized, so control can be performed with both positive and negative power supply).

Additionally, the module has temperature sensor inputs, to which dedicated (supplied) DS18B20 type digital sensors should be connected. The outputs of the mH-DEVELOPER module are either relay outputs (with a maximum load capacity of 16 A) for general purpose or Triac outputs adapted to control solenoid valves in heating systems.

Triac outputs have a maximum load capacity of 0.5 A.

If there is a need to increase the number of inputs/outputs, the modules of the F&Home wired system (such as mH-IO32, mH-IO12E6) at appropriate levels should be used. In this case, the mH-DEVELOPER module is in level 0 and the subsequent expansion modules must have successive levels (1,2,3...). It is not allowed to use two modules with the same functionality and the same level (address).

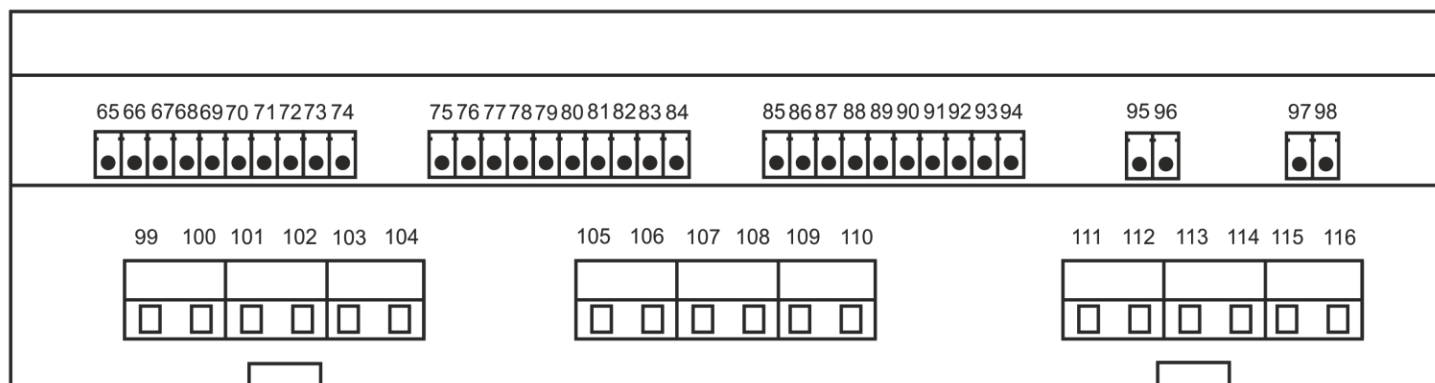


Module inputs/outputs

Number of input/output	Description	Notes
1.2	Power supply	Supply 24V DC voltage
3	L valves power supply	Specify the supply phase for 230 V valves
4	N/C	
5	N valves power supply	Specify the neutral of the 230 V valves power
6	N/C	
7	Valve 1 L	Output L of valve 1
8	N	Neutral of the valves power supply
9	Valve 2 L	Output L of valve 2
10	N	Neutral of the valves power supply
11	Valve 3 L	Output L of valve 3
12	N	Neutral of the valves power supply
13	Valve 4 L	Output L of valve 4
14	N	Neutral of the valves power supply
15	Valve 5 L	Output L of valve 5
16	N	Neutral of the valves power supply
17	Valve 6 L	Output L of valve 6
18	N	Neutral of the valves power supply
19	Valve 7 L	Output L of valve 7
20	N	Neutral of the valves power supply
21	Valve 8 L	Output L of valve 8
22	N	Neutral of the valves power supply
23	N/C	
24	AUX1 NO relay	Normally open contact of the AUX1 relay
25	AUX1 COM relay	AUX1 COM relay power supply
26	AUX1 NC relay	Normally closed contact of the AUX1 relay
27	N/C	
28	AUX2 NO relay	Normally open contact of the AUX2 relay
29	AUX2 COM relay	AUX2 COM relay power supply

30	AUX2 NC relay	Normally closed contact of the AUX2 relay
31	N/C	
32	AUX3 NO relay	Normally open contact of the AUX3 relay
33	AUX3 COM relay	AUX3 COM relay power supply
34	AUX3 NC relay	Normally closed contact of the AUX3 relay
35, 36	COM A	Reference level for IN1 to IN12 inputs. Description under the table.
37	Input 1	Polarized with COM A connector. Description
38	Input 2	Polarized with COM A connector. Description
39	Input 3	Polarized with COM A connector. Description
40	Input 4	Polarized with COM A connector. Description
41	Input 5	Polarized with COM A connector. Description
42	Input 6	Polarized with COM A connector. Description
43, 44	COM A	
45, 46	COM A	
47	Input 7	Polarized with COM A connector. Description
48	Input 8	Polarized with COM A connector. Description
49	Input 9	Polarized with COM A connector. Description
50	Input 10	Polarized with COM A connector. Description
51	Input 11	Polarized with COM A connector. Description
52	Input 12	Polarized with COM A connector. Description
53, 54	COM A	
55, 56	Input A	Freely polarized
57, 58	Input B	Freely polarized
59, 60	Input C	Freely polarized
61, 62	Input D	Freely polarized
63, 64	N/C	

COM A - common level for control inputs Input 1 - Input 12. If the "Input x" inputs are to be controlled with a high level, a power ground must be connected to the COM A connector. If the "Input x" inputs are to be controlled with a low level (for example via the OC outputs), the COM connector A must be connected to the positive of the power supply.



65	Temperature sensor 1 +	
66	Temperature sensor 1 DATA	
67	Ground of the temperature	
68	Temperature sensor 2 +	
69	Temperature sensor 2 DATA	
70	Ground of the temperature	
71	Temperature sensor 3 +	
72	Temperature sensor 3 DATA	
73	Ground of the temperature	
74	N/C	
75	Temperature sensor 4 +	
76	Temperature sensor 4 DATA	
77	Ground of the temperature	
78	Temperature sensor 5 +	
79	Temperature sensor 5 DATA	
80	Ground of the temperature	
81	Temperature sensor 6 +	
82	Temperature sensor 6 DATA	
83	Ground of the temperature	
84	N/C	
85	Temperature sensor 7 +	
86	Temperature sensor 7 DATA	
87	Ground of the temperature	
88	Temperature sensor 8 +	
89	Temperature sensor 8 DATA	
90	Ground of the temperature	
91	Temperature sensor 9 +	Temperature sensor without an actuator channel (Triac). It can be used as an outdoor temperature sensor (for information).
92	Temperature sensor 9 DATA	
93	Ground of the temperature	
94	N/C	
95	ModBUS	Connector A

96	ModBUS bus	Connector B
97	CAN bus	Connector H
98	CAN bus	Connector L
99	COM 1, 2	Common connector for relays 1 and 2 (power
100	1 NO relay	Normally open contact of the relay 1
101	2 NO relay	Normally open contact of the relay 2
102	COM 3, 4	Common connector for relays 3 and 4 (power
103	3 NO relay	Normally open contact of the relay 3
104	4 NO relay	Normally open contact of the relay 4
105	COM 5, 6	Common connector for relays 5 and 6 (power
106	5 NO relay	Normally open contact of the relay 5
107	6 NO relay	Normally open contact of the relay 6
108	COM 7, 8	Common connector for relays 7 and 8 (power
109	7 NO relay	Normally open contact of the relay 7
110	8 NO relay	Normally open contact of the relay 8
111	COM 9, 10	Common connector for relays 9 and 10 (power
112	9 NO relay	Normally open contact of the relay 9
113	10 NO relay	Normally open contact of the relay 10
114	COM 11, 12	Common connector for relays 11 and 12 (power
115	11 NO relay	Normally open contact of the relay 11
116	12 NO relay	Normally open contact of the relay 12

CAN bus

To connect the expansion modules (modules from the wired F&Home system) a two-pin socket described as CAN L and CAN H is used. Pay attention to the correct connection - the replacement of cables will result in a lack of communication between devices.

Operating principle

Inputs. Triggering the input from 1 to 12 changes the state of the output on the assigned relay from 1 to 12 (successive pulses coming to the input change the state of the output as in bistable relays). For example, the first triggering of the input number 1 will result in switching on of the output number 1, the second triggering - in switching off of the output, and the next triggering - in switching it on again. The inputs described as A to D are intended for controlling the mH-L4B dimmer module via the CAN network (it is important that the dimmer module is at level 1). In this case, the dimming inputs operate as follows: short triggering of the input will cause the lighting to be fully switched on (or fully switched off when the light is on). If triggered for a longer period of time, the brightness of the lighting associated with the triggered input in the brightening loop changes from full brightness - dimming up to switching off - brightening to full brightness.

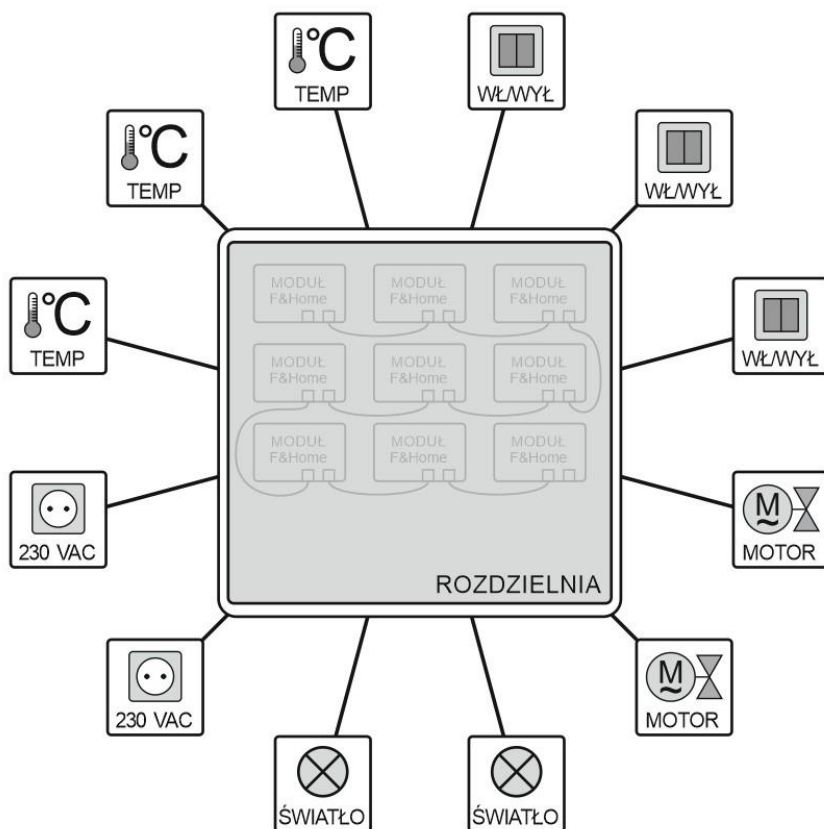
Inputs of the temperature sensors. Up to 9 DS18B20-type temperature sensors can be connected to the device. Each sensor must be connected with a minimum of 3-core independent wire. UTP type cables are most commonly used.

Relay outputs. The outputs for switching on the lighting circuits (or other circuits that operates on an on/off basis). Pay attention to the load capacity of the built-in relays (data in the technical data table).

Outputs of the solenoid valves. The actuators supplied with 230 V should be connected to the outputs of the solenoid valve.

Cables and system architecture

The installation in the system has a star structure, so all cables converging at one central point. Cables from buttons, temperature sensors, solenoid valves and all high voltage cables (230 V, 400 V) supplying the socket circuits, lighting, and other receivers converge in the cabinet.



Several types of cables should be used for the installation:

- a UTP type cable for connecting temperature sensors to the sensor module. An independent wire should be routed to each sensor using three wires. The wires should be laid in one section (they should not be connected even by soldering). Due to the possibility of inducing voltages, the sensor cables should not be routed parallel to the power supply cables (for example, in one tube). The recommended distance between the wires is 10 cm. The maximum cable length is 40 m. Alternatively, the LIYCY 3x0.34 mm cable (Tronic cable) can be used. These are three wires (cable) in the screen (braid) best suited for conducting the signal from sensors. The cross-section of the wire must not be less than 0.34 mm².
- UTP type cable for connecting switches and buttons with I/O modules. It is acceptable to run several control pairs with one cable (several connectors run with one cable to the switchgear). Due to the possibility of inducing voltages, the sensor cables should not be routed parallel to the power supply cables. The recommended distance between the wires is 10 cm. The maximum cable length is 100 m.
- multi-core cable such as Bit500, with a core cross-section of 1 mm² for connecting solenoid valves. The cable must be laid between the F&Home system switchboard and the switchboard (distributor) of the heating. The number of cable wires should be selected according to the number of controlled heating circuits.
- YDY 3x1.5 mm² and YDY 3x2.5 mm² cables for supplying power to receivers such as sockets, lighting points, other receivers. It is allowed to use cables with more conductors, for example, 5x1.5 mm².

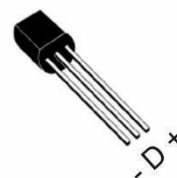
Temperature sensors

The system controls the temperature in the building by measuring the temperature independently in each room. Digital sensors type DS18B20 are used for temperature measurement, which are characterized by high measurement accuracy and correct data transmission even with long cable lengths. The sensors are supplied with the module. The prerequisite for proper operation of the sensors is the use of good quality wires, possibly connecting the screen of the cable to the neutral of the power supply (on the module side) and routing the signal from the sensors with independent wires.

By default, a piece of three-wire cable is soldered to the sensors at the factory. The connection to the UTP / LIYCY cable should be made in the installation box by soldering and very thorough insulation. It is very important to correctly connect the sensors to the module (see table). Incorrect connection of the sensor (wire switch) results in damage to the sensor element.



The temperature sensors are supplied in a set of 9 pieces. There must be 3 cable wires for each sensor (plus, minus, signal). The control voltage of the modules is 5 V. The sensors can be mounted anywhere in the room but away from heat emitting elements (radiators, too close to the floor).



+ brązowy
- biały
D zielony

The color of	Indication	Connection in the
Brown	+	Connector +
White	-	Connector -
Green	SIGNAL (DATA)	Connector with a

Accessories

Any type of equipment (buttons, switches, sockets) available on the market can be used to control the system. The light can only be controlled by means of the normally open buttons (bell buttons). Do not use gang switches, two-way switches or four-way switches.

In the case of glass (touch) buttons, you can use buttons manufactured by F&F or any other manufacturer after consulting the technical department of the F&F.

Technical data table

Module type	logic with actuator elements
Rated supply voltage	24 V DC
Power supply voltage tolerance	-20%, +10%
Maximum current consumption	500 mA
Output voltage	24 V
Maximum input current for a single input	10 mA
Maximum load capacity for a single output (for outputs 1-9)	16 A (AC-1)
Maximum load capacity for a single output (for outputs 10-12)	3 A (AC-1)
Maximum load capacity for a single solenoid valve output	0.5 A
CAN interface	YES (F&Home)
ModBUS interface	YES (Modbus RTU)
Operating temperature	from -25°C to +50°C
Humidity	<=85% (without condensation or aggressive
Dimensions	210x90x59 mm
Ingress protection	IP20
Operating position	any
Enclosure type	for DIN rail
Net weight	

WARNING

The method of connection is specified in this manual. Installation, connection and adjustment should be carried out by authorized electricians who are familiar with the operating instructions and the functions of the module.

The correct operation is affected by the way the module is transported, stored and used. Installation of the module is not recommended in the following cases: missing components, damage to the module or its deformation. In case of malfunction, please contact the manufacturer.