

Device description**MD100Y Radio Control Small Actuating Drive**
with thermostat valve subparts R../RW..**Radio Control Small Actuating Drive MD100Y**

Radio Control Small Actuating Drive MD100Y with thermostat valve subparts R../RW.. or for direct installation on commercial radiator valves for the room-wise temperature control in heating facilities.



Contents subject to change

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Technology for building automation

Notes on the device description

The description contains instructions on using and assembling the Radio Control Small Actuating Drive MD100Y. In case of questions which cannot be clarified with this device description, please refer to the supplier or manufacturer for further information.

The indicated installation instructions/regulations are valid in the Federal Republic of Germany. When utilising the devices in other countries, the builder or operator of the plant is responsible for the observation of the respective national regulations.

The operating staff shall be trained according to the descriptions of the technical data sheet.

Safety Instructions

The respectively valid worker's protection rules and regulations for prevention of accidents must be observed when assembling and using the actuating drives.

Any work concerning the installation or initial operation of the actuating devices shall be exclusively carried out by qualified specialists, see paragraph "Qualified specialists".

Every person utilising the devices shall have read and understood the descriptions in the technical data sheet.

Meaning of the symbols in the technical data sheet:

**Warning**

General warning, strictly observe this notice

**Note**

Further notice to observe

Warning

means danger of bodily injuries or material damage in case of non-observance.

Note

indicates an information which is particularly stressed.

Qualified specialists

Qualified specialists for the purposes set out in this technical data sheet are persons who are familiar with the described devices and possess a qualification for their respective occupation.

These are for instance:

- Authorisation to connect the devices, as well as to switch the devices on and off and disconnect them in compliance with the company-internal rules.
- Knowledge of the regulations for prevention of accidents.
- Knowledge of the utilisation of the devices within the plant system.
etc.

Device description

MD100Y Radio Control Small Actuating Drive

with thermostat valve subparts R../RW..

Application

The radio-controlled, battery-powered small actuating drive MD100Y is installed directly on commercial radiator valves or used in combination with thermostat valve subparts R../RW.. in secondary circuits. It is used for the room-wise temperature control in heating facilities. It is driven permanently via 0..10 V radio telegrams. The actuating drive operates with minimal energy consumption.

Type

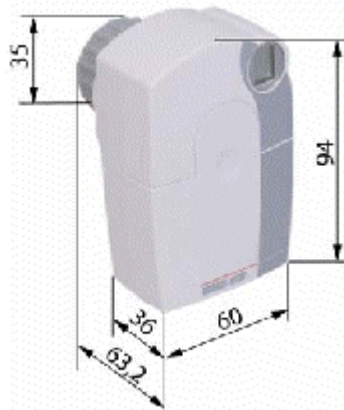
MD100Y Radio-controlled, battery-powered small actuating drive for thermostat valve subparts R../RW or commercial radiator valves, incl. adapter for radiator valves for Danfoss thermostat valves RAV and RA, as well as vandal protection.



MD100Y

Technical data

Operating voltage	battery-powered, 2 alkaline mignon batteries
Battery service life	approx. 3 years (depending on drive frequency)
Drive	radio protocol
Radio frequency	868.35 MHz
Range	10..50 m inside the building (depending on built volumes)
Reception frequency	120 s
Actuation	d.c. motor
Radio telegram	0..10 V DC
Actuating stroke	max. 4.2 mm (automatic stroke adjustment)
Position display	display in % from stroke
Floating time	11 s/mm
Actuating power	80 N
Ambient temperature	0..45 °C
Degree of enclosure protection	IP 30
Fitting position	vertically above the valve down to horizontal position
Manual operation	via adjusting pin (in scope of delivery)
Housing	pure white; battery compartment cover with theft protection
Weight	138 g
Dimensions	



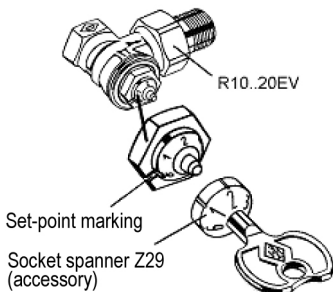
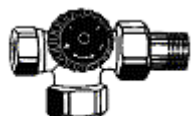
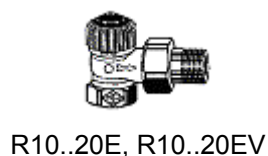
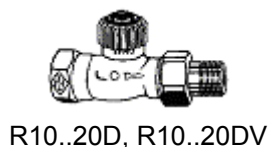
Valve installation

Apart from the generally valid installation regulations for installation work, the following points shall be observed:

- The piping system and the inside of the valve shall be free of foreign matter.
- No bracing between valve and pipeline connection.
- Install the valve in such a way that the actuating drive can be mounted vertically above the fitting down to the horizontal position. Leave free space for actuating drive installation, approx. 60 mm.
- Observe max. pressure difference Δp and flow direction (see paragraph Straight-way and three-way valves).

Thermostat valve subparts

Types Red bronze thermostat valve subparts in straight-way/three-way make for water up to 120°, 10 bar, appropriate for Radio Control Small Actuating Drive MD100Y



	Type	DN	R	kvs	□p (bar)*	
• Straight-way valves	straight gate	R10D	10	3/8"	1.25	1.0
		R15D	15	1/2"	1.35	1.0
		R20D	20	3/4"	2.50	0.7
	corner shape	R10E	10	3/8"	1.25	1.0
		R15E	15	1/2"	1.35	1.0
		R20E	20	3/4"	2.50	0.7
	straight gate with kvs setting	R10DV	10	3/8"	0.73	1.0
		R15DV	15	1/2"	0.73	1.0
		R20DV	20	3/4"	0.73	0.7
	corner shape with kvs setting	R10EV	10	3/8"	0.73	1.0
	R15EV	15	1/2"	0.73	1.0	
	R20EDV	20	1/2"	0.73	0.7	
• Three-way valves	connection left	RW15L	15	1/2"	1.45	1.0
	connection right	RW15R	15	1/2"	1.45	1.0

Technical data		
Nominal width	DN10..20, R3/8"..3/4"	
Pressure stage	PN10	
Connection	Pipe connections acc. to DIN EN 2115	
Stroke	2 mm	
Housing	Rotguss	
Cone	EPDM	
Valve spindle	stainless steel	
Spindle sealing	EPDM	
Medium	Water up to 120°C	
Maintenance	maintenance-free	

* for operational reasons, the differential pressure should not exceed 0.2 bar.

kvs setting at the valves R10..20DV/EV

To adapt to the heat demand, the valves R10..20DV/EV have 6 flow ranges to limit the mass flow rate of the radiator.

The max. flow, kvs value (m³/h), can be selected via the settings 1, 2, 3, 4, 5 and 6 (setting upon delivery = 6 corresponding to kvs value = 0.73).

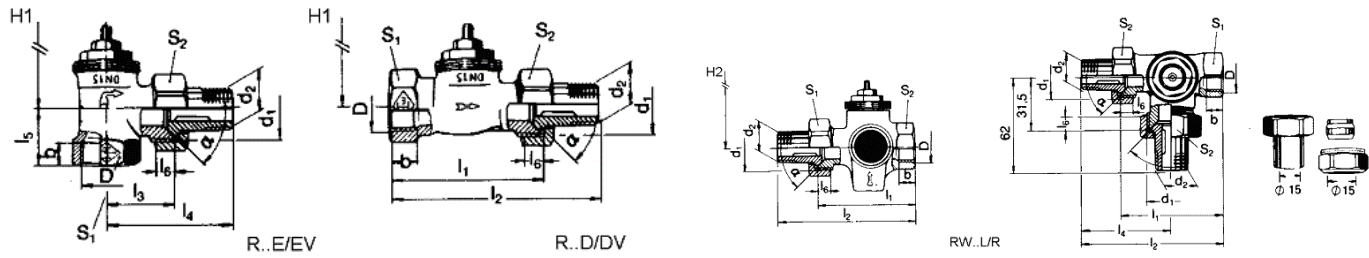
The setting is carried out with a socket spanner Z29 (accessory). The set-point .6 can be read at the valve and is concealed by the installed actuating drive.

Position =	1	2	3	4	5	6
kvs value =	0.054	0.104	0.174	0.247	0.459	0.73

Device description

MD100Y Radio Control Small Actuating Drive


with thermostat valve subparts R../RW..



DN	D	b min	d ₁	d ₂	l ₁ □ 2	l ₂ □ 2	l ₃ □ 1	l ₄ □ 1,5	l ₅ □ 1,5	l ₆ min	Spanner width		H1 □ 2	H2 □ 2
											S1	S2		
10	Rp ¾	10.1	G 6/8	R 3/8	59	85	26	52	22	6	22	27	69	74
15	Rp ½	13.2	G ¾	R ½	66	95	29	58	26	7	27	30		
20	Rp ¾	14.5	G/1	R ¾	74	106	34	66	29	8	32	37		

Function

In control operation, the current position is shown in percent on the display.
 At time intervals of 120 s, the MD100Y is triggered by the assigned Transmitting Module FCS via 0..10 V radio telegrams to perform setting movements (e.g. at the radiator valve).
 Reception and transmission cycles from the MD100Y and the corresponding transmitting module run synchronously, i.e. every 120 s the reception window of the MD100Y opens for the duration of the transmitted radio telegram.

Required battery changes are visually indicated in the display  and acoustically through a series of tones.



In case of radio communication disturbances, the MD100Y automatically takes on a fixed safety position of 30 % opening.

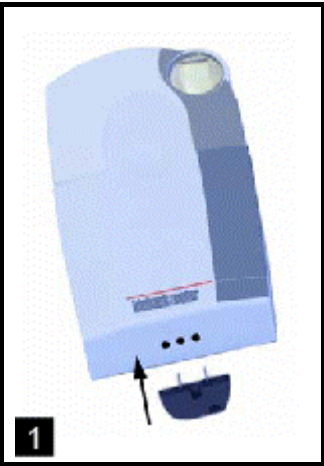
Note

MD100Y Radio Control Small Actuating Drive

with thermostat valve subparts R../RW..

Device description

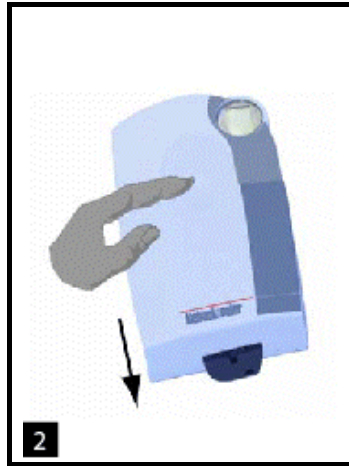
Assembly/Commissioning



Open the battery compartment cover with the special key included. The special key is delivered with the Actuating Drive MD100Y.



Special key to open the battery compartment



Detach the cover of the battery compartment with the special key inserted.



Remove the cover of the battery compartment.



Insert the pair of batteries in the battery compartment.



Warning

Please observe the polarity!

Initial operation

- 1 Insert the pair of batteries in the battery compartment

On the display, **C1** first appears and then a 2-digit number. Then **C2** and again a 2-digit number. These two number blocks comprise the address code preset upon delivery.




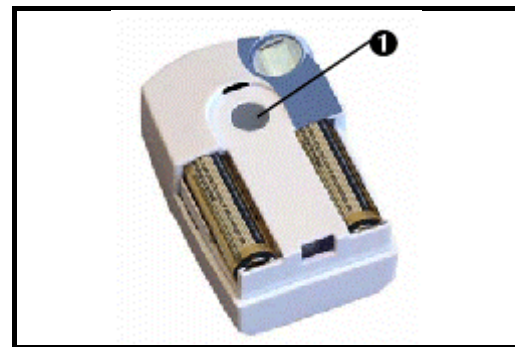
Warning

The address code preset upon delivery can be used for plant operation. A specific addressing need not be carried out.

A final signal tone and the display **A1** end the display mode of the address code preset upon delivery. The MD100Y then automatically drives to installation position (= actuating drive completely run-in). When the installation position is reached, this is signalled by **A2** on the display.

- 2 Mount the MD100Y on the thermostat valve or the radiator valve and screw it down. For Danfoss radiator valves, an adapter from the accessory package must be mounted beforehand (see paragraph "Accessories").
- 3 Shortly press the learning button **1** once.

The running stroke initialisation (valve closes) is signalled by **A3** on the display. After the initialisation phase is completed, the current position **0 %** and a blinking antenna symbol is displayed. 



- 4 Press the learning button **2** for at least 3 s.

→ The MD100Y switches to learning mode
→ The display switches to **AC** + 3 short signal tones.

Now, the actuating drive is ready for receiving a new address code and for synchronisation.



Note

The radio telegrams must be given an address code to protect them against interferences from other radio systems and for the unambiguous assignment of transmitter and receiver. This must be equally set at all devices within one radio path.

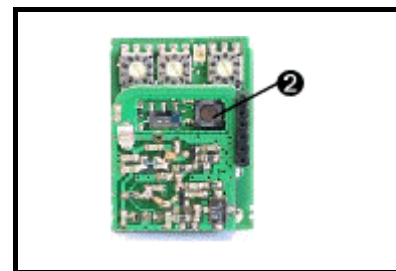
Set the address code, consisting of system code and device address, at the assigned Transmitting Module FCS (also see FCS, Technical data sheet 1.15-90.002-01-de).

- 5 After pressing the learning button **2** on the Transmitting Module FCS, the new address code and the synchronisation of transmission and reception interval is transferred by sending a radio telegram.




Note

If more than one MD100Y is in active learning mode within the transmitting range of the FCS, several actuating drives can be tuned to one transmitter (e.g. several radiators in one room) in the way described above.



The MD100Y acknowledges the correct reception of the code and the successful synchronisation with a series of tones.

Then, the actuating drive switches to normal operation; the current position is shown on the display. Up to the reception of the first regular data telegram, which is also acknowledged by a signal tone, the antenna symbol blinks on the display. 

The received address code is permanently stored and retained after battery change or battery failure as well.

Battery change

After each battery change, an initialisation must be carried out.



Insert the new batteries only after all segments of the display have extinguished. The display can be quickly discharged after taking out the batteries by pressing the learning button **1** for a while.



Used batteries must not be thrown in the household refuse, but brought free-of-charge to local battery collection sites.

- Carry out points **1** and **3** as described in the paragraph "Commisioning".
- The MD100Y acknowledges the reception of the first regular radio telegram with a short signal tone, the antenna symbol permanently appears on the display, and the current setting position is shown.

Manual operation

In control operating mode, the MD100Y performs the setting movements according to the received data of the radio telegram and thus follows a superordinate controller. If required, however, the actuating drive can be manually set to the desired position at any time.

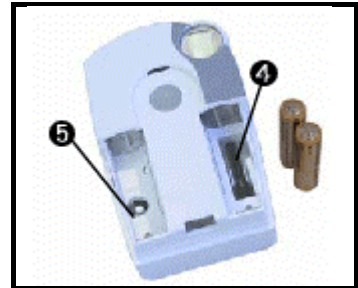
Open and remove the battery compartment cover.

Take out both batteries.

Take the adjusting pin after pressing the spot marked with **4** .

Set the adjusting pin on the peg marked with **5** .

Turn the peg: clockwise = valve open (warmer),
counter-clockwise = valve closed (colder).




Device description

MD100Y Radio Control Small Actuating Drive

with thermostat valve subparts R../RW..

Error message

The Radio Control Small Actuating Drive MD100Y signals states deviating from normal operating mode via acoustic error messages and on the display.

Error message	Possible cause	Repair
Permanent signal tone and F1 on the display	– the valve is sluggish or the valve drive is blocked	– dismount the valve drive
		– manually check the well running of the valve
		– mount the valve drive again
		– if required, consult a heating specialist
Permanent signal tone and F2 on the display	– valve drive not mounted	– newly mount the valve drive
	– setting range too large	– valve is not appropriate
Permanent signal tone and F3 on the display	– setting range too small	– newly mount the valve drive
		– valve is not appropriate
No antenna symbol on the display, the valve drive emits a series of tones every hour The valve is open 30%.	– breakdown of radio communication due to interferences	– arrange the control unit at another position
	– batteries of the control unit are discharged	– replace batteries
	– code of the transmitting unit was reset without synchronising the valve drive to it	– transfer the current code to the valve drive (synchronisation)
Low-Bat-Symbol  on the display, the valve drive emits a series of tones every 2 minutes for one hour.	– the batteries of the valve drive are almost discharged	– replace batteries

MD100Y Radio Control Small Actuating Drive

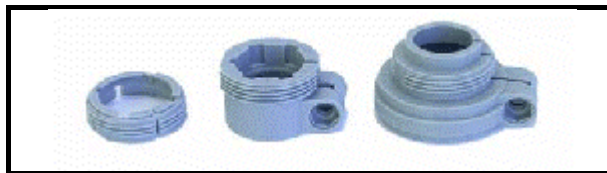
with thermostat valve subparts R../RW..

Device description

Accessories

Danfoss valve adapter

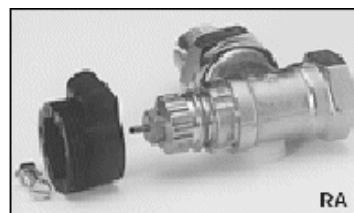
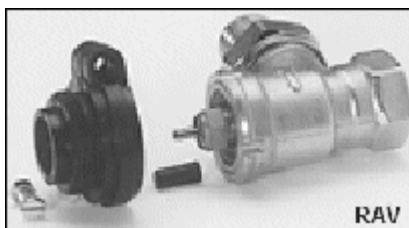
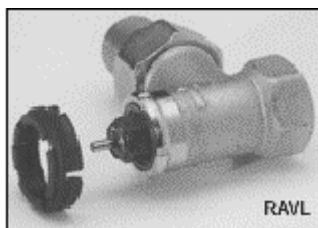
Valve adapters for Danfoss thermostat valves of the product lines RAV and RA are included in the scope of delivery of the MD100Y.



Valve adapter for Danfoss thermostat valves

Assembly

The adapters for the valves of the type RAV and RA are fastened with the included screw and nut after latching on the valve body. In addition, the cylindrical extension must be set on the valve pin of the RAV valves.

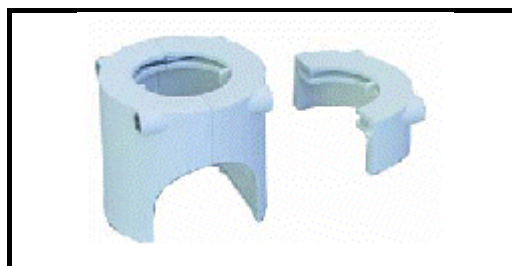


Vandal Protection VS2

Vandal Protection VS2 also belongs to the scope of delivery and covers the area of the mechanical coupling between the MD100Y and the valve body. The component serves to protect against unauthorised dismantling of the actuating drive and is adapted to the straight-way and corner models of the thermostat valve subparts.

Type

VS2 impact-resistant, two-part vandal and dismantling protection for MD100Y. Models for various thermostat valve types.



VS2

Technical data

Material Polyamide PA6, GF30
Color white

Assembly

Mount the MD100Y firmly to the valve.

Place both shells on top and mechanically fix in joggle joint

Insert fastening screws and tighten with hexagon socket screw key no. 2.5.





MD100Y Radio Control Small Actuating Drive

with thermostat valve subparts R../RW..

Device description

