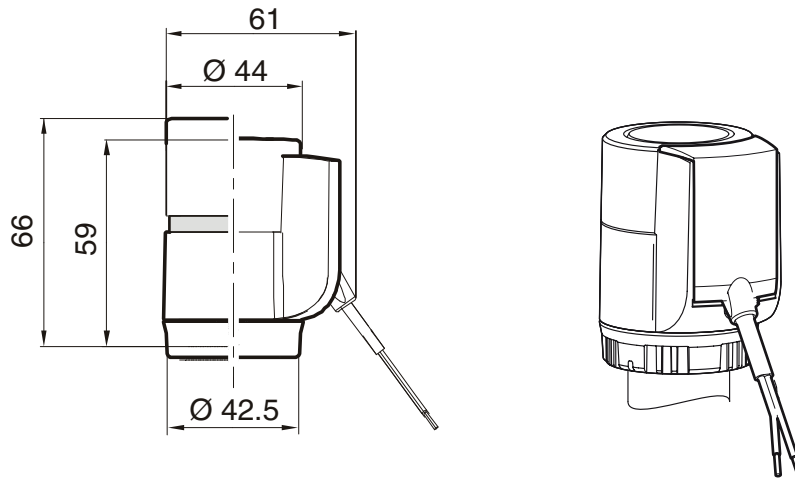


# HERZ-Thermal Actuators

Data Sheet **7711**, Issue 0512

## ☑ Dimensions in mm



## ☑ Thermal Actuator Models

- 1 7711 01 **HERZ- Thermal Actuator M 28 x 1,5, 230 V, 50 Hz**  
normally closed contact (NC), closing force 90 N, power supply 230 V ~, connection threads M 28 x 1,5, max. stroke 4,5 mm, special version for **8531, 8532**
- 1 7711 10 **HERZ- Thermal Actuator M 28 x 1,5, 230 V, 50 Hz**  
normally closed contact (NC), closing force 115 N, power supply 230 V ~, connection threads M 28 x 1,5, max. stroke 4,5 mm
- 1 7711 11 **HERZ- Thermal Actuator M 28 x 1,5, 230 V, 50 Hz**  
normally open contact (NO), closing force 110 N, power supply 230 V ~, connection threads M 28 x 1,5, max. stroke 4,5 mm
- 1 7711 12 **HERZ- Thermal Actuator M 28 x 1,5, 24 V, AC/DC**  
normally closed contact (NC), closing force 115 N, power supply 24 V ~, connection threads M 28 x 1,5, max. stroke 4,5 mm
- 1 7711 13 **HERZ- Thermal Actuator M 28 x 1,5, 24 V, AC/DC**  
normally open contact (NO), closing force 110 N, power supply 24 V ~, connection threads M 28 x 1,5, max. stroke 4,5 mm
- 1 7711 20 **HERZ- Thermal Actuator M 30 x 1,5, 230 V, 50 Hz**  
normally closed contact (NC), closing force 115 N, power supply 230 V ~, connection threads M 30 x 1,5, max. stroke 4,5 mm
- 1 7711 21 **HERZ- Thermal Actuator M 30 x 1,5, 230 V, 50 Hz**  
normally open contact (NO), closing force 110 N, power supply 230 V ~, connection threads M 30 x 1,5, max. stroke 4,5 mm
- 1 7711 22 **HERZ- Thermal Actuator M 30 x 1,5, 24 V, AC/DC**  
normally closed contact (NC), closing force 115 N, power supply 24 V ~, connection threads M 30 x 1,5, max. stroke 4,5 mm
- 1 7711 23 **HERZ- Thermal Actuator M 30 x 1,5, 24 V, AC/DC**  
normally open contact (NO), closing force 110 N, power supply 24 V ~, connection threads M 30 x 1,5, max. stroke 4,5 mm

### Application

HERZ thermal actuators are electrothermal actuating drives for 2-point control in heating and cooling systems to be installed with a thermostat. They are particularly suitable for zone control and for floor heating systems. HERZ thermal actuators can be used with all HERZ valves with M 28 x 1.5 (7710) or M 30 x 1.5 (7711) equipped for thermostatic operation. Rating of auxiliary switch when used with direct current: 4...30 V, 1...100 mA, 1 A, 48 V=.

The circuits for the auxiliary contacts and the actuator must come from the same phase. It is not permitted to apply 400 V~ to the 4 x 0.5 mm<sup>2</sup> cable. Different circuits, such as low and extra-low voltage, should not be operated on this cable.

Before the plug is fitted, the cam should be clicked in the actuator. This cam can not be removed again. It is still possible, however, to fit a 2-point plug subsequently, if needed.

Auxiliary contact accessory for NC (normally closed) operation:

When the actuator opens, the internal contacts close. If normally closed contacts are needed, an accessory (normally open auxiliary contacts) can be used. These contacts open when the actuator opens.

Auxiliary contact accessory for NO (normally open) operation:

When the actuator closes, the internal contacts close. If normally closed contacts are needed, an accessory (normally closed auxiliary contacts) can be used. These contacts open when the actuator closes.

### Function

The thermal drive is actuated by an external contact, e.g. from a room thermostat, and starts to open or close the valve. The actuating movement is achieved by means of an electrically heated expansion element. When the heating current is switched off, the actuator shuts or opens the valve. The HERZ actuating drive is maintenance free and works silently.

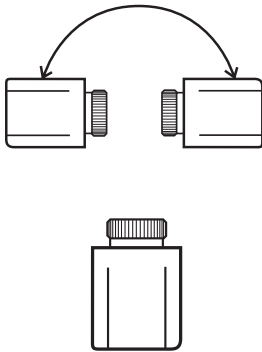
### Emergency Operation

When the thermal actuator is in the factory-set operating mode "closed without current", the valve can be opened by removing the actuating drive in case of power failure.

### Special Design Features

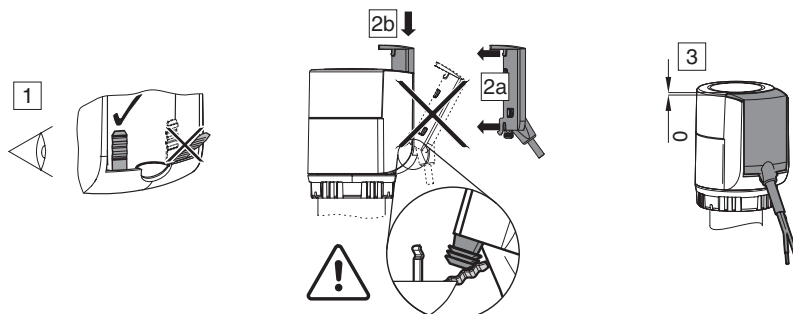
The actuating drive is mounted onto a plastic base and equipped with a plastic cover. There is no metallic connection between the actuating drive and the valve. The drive is mounted onto the valve by means of a knurled nut.

### Installation



Before working on the device shut off the power.

- The connection may be made only by an authorized person.
- The connection must be made according to the wiring diagram.
- The device is intended for connection to fixed cables in closed and dry rooms.
- When installing, make sure that voltage-carrying lines, power supply and relay connection lines, do not come into contact with low-voltage cables, such as sensor wires (minimum distance of 4 mm at base insulated conductors).
- Provide sufficient protection against independent release of all connecting conductors according to EN60730, part 1 requirements.
- Note the VDE 0100, EN 60730, Part 1, and the rules of the local power company.
- If the device does not work, first check the correct connection and the power supply.
- Incorrect connection may damage the actuator! Damage caused by incorrect connection and / or improper handling will not be covered by the warranty!



**☑ Installation of the Thermostatic Valve**

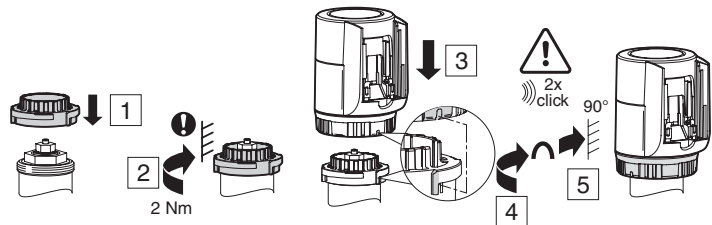
The flow direction must be in accordance with the arrow on the valve body. Avoid installing the actuating drive below the valve spindle axis. Drops of water might penetrate the actuating drive and impair its functioning.

**☑ Installation of the Thermal Actuator**

First screw the bayonet nut to the valve and tighten with 2 N. Then fit the actuator to the valve, using no force. Three grooves on the actuator ring indicate the correct position opposite the three ribs on the bayonet nut. Turn the bayonet ring clockwise until a click is heard. The valve plug is pre-tensioned. When a second click is heard, the actuator is operable. This position is the safety position to prevent slackening caused by vibrations.

Whilst the bayonet nut is being rotated, the actuator adapts itself to the closing dimension of the valve.

For the NO version to work properly, the pressure spring in the valve should have a force of  $F_v \geq 30 \text{ N}$ . Furthermore, the NO version should not be removed from the valve until it has cooled down.

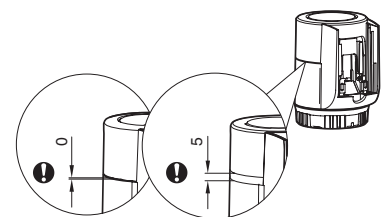


**☑ Position indicator**

The cover acts as the largest-possible position indicator. It is visible in all directions and is noticeable in dark installation locations.

On the 'normally closed' version, the cover rises and the grey stroke part becomes visible. At full stroke, the cover stands up to 5 mm above the upper edge of the plug.

On the 'normally open' version, the cover falls until it is at the same level as the upper edge of the plug. The grey lower part is no longer visible.



**☑ Technical Data**

Order Number	Power supply	Closing force (N)	NC / NO	Connection thread	min. run-time (min)	Weight (kg)
1 7711 01	230 V	90	NC	M 28x1,5	3,5	0,18
1 7711 10	230 V	115	NC	M 28x1,5	3,5	0,18
1 7711 11	230 V	110	NO	M 28x1,5	3,5	0,18
1 7711 12	24 V	115	NC	M 28x1,5	4,5	0,18
1 7711 13	24 V	110	NO	M 28x1,5	4,5	0,18
1 7711 20	230 V	115	NC	M 30x1,5	3,5	0,18
1 7711 21	230 V	110	NO	M 30x1,5	3,5	0,18
1 7711 22	24 V	115	NC	M 30x1,5	4,5	0,18
1 7711 23	24 V	110	NO	M 30x1,5	4,5	0,18

<b>Power supply</b>	230 V~; 50 ... 60 Hz	24 V ~; 50 ... 60 Hz
<b>Power consumption during operation</b>	2 W	2 W
<b>Activation power</b>	ca. 40 W / 40 VA	5 W / 5 VA
<b>Activation current</b>	250 mA	250 mA
<b>max. operating temperature</b>	100 °C	
<b>Operating temperature</b>	0 °C bis 50 °C	
<b>Storage and transport temperature</b>	-25 °C bis 70°C	
<b>Humidity</b>	< 85% rF, ohne Kondensation	
<b>Protection type</b>	IP 54 (EN 60730-1, -2, -14)	
<b>Protection class 230 V</b>	II (EN 60730-1)	
<b>Protection class 24 V</b>	III (EN 60730-1)	
<b>Connection cable</b>	1 m	

**☑ Room Thermostat**

Any conventional room thermostat with thermal offsetting can be used to control the HERZ thermal actuator. If required, several drives can be connected in parallel, depending on the electrical rating of the switching contact.

**☑ Sizing and Installation**

When selecting the switching contacts and sizing the mains fuses, the input current of the heating element must be taken into account. The voltage drop through the electric cable must not exceed 10% in order to maintain the specified operating time.

The table below shows the maximum cable lengths for a thermal actuator for the specified conductor cross sections (in a cable according to specifications, the voltage drop is approx. 5%, at 230 V the voltage drop is 10 V, at 24 V the voltage drop is 1 V).

When using several thermal actuators, the specified cable length must be divided by the number of thermal actuators connected.

Cable cross-section (mm <sup>2</sup> )	230 V, max. Length (m)	24 V, max. Length (m)
2 x 0,75	1500	168
2 x 1,0	2000	224
2 x 1,5	3000	340
2 x 2,5	5000	560

**☑ Resistance Values**

The resistance values for HERZ-valves when operating with HERZ actuators can be found in the HERZ standard diagrams of the respective data sheets.

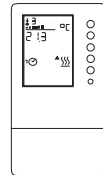
**☑ Accessories 1 7796 04 HERZ-transformer 230/24 V**

The overload-proof security HERZ transformer 230/24 V is provided for connecting HERZ-thermostats and HERZ actuators and is designed for the operation of up to 8 HERZ actuators.

	Execution	According to VDE 0551
	Protection Class	II
	Degree	IP 20
	ISO KI.	T40/E
	Input Voltage	230 V
	Input circuit fuse	50-60 Hz, 315 mA
	Output Voltage	24 V
	Power rating	50 VA
	Quick mounting on Equipment rail	wg DIN 42227/3
	Dimensions	106 x 90 x 74 mm (W x H x D)

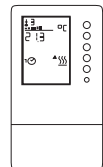
**☑ 1 7791 23 HERZ- Electronic Room Temperature Controller for 2-Point or Pulse Control with digital timer**

For individual time and temperature programmable adjustment. Digital timer with program on a weekly and yearly basis, automatic switching between summer and winter time. Set value range 8-38 °C. Switching difference as 2-point controller 0.4-8 K. Metering precision 0.3 K at a temperature of 20 °C.

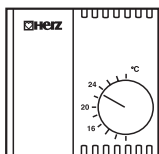


**☑ 1 7791 02 HERZ- Electronic Room Temperature Controller for 2-Point or Pulse Control with digital timer**

Design as 1 7791 23, but operation by 2 alkalimanganese penlight type round cells (AA) 1.5 V, not included in package.



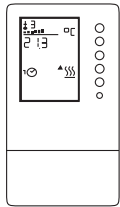
**☑ 1 7790 15 HERZ- Room Temperature Controller for 2-Point Control 230 V, 50 Hz**



1 change-over contact  
Set value range 10-30 °C.  
Switching difference ± 0.2 K fixed

**1 7790 25 HERZ- Room Temperature Controller for 2-Point Control 24 V DC**

- 1 change-over contact
- Set value range 10-30 °C.
- Switching difference ± 0.2 K fixed

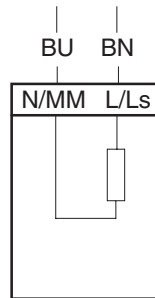


**1 7794 23 HERZ- Electronic Room Temperature Controller with PI control**

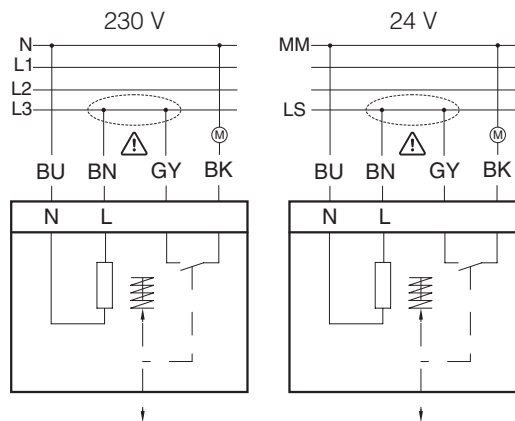
For heating and cooling operation, with programmable time and temperature settings. Outlets for motor (3-point) and thermal drive and pump or fan (on/off signal). Fix basic programme (preset condition) for first start-up. Easy adjustment to system by selecting 8-basis control model by service parameter. Electronics located in the attachable body, white (RAL 9010), front with digital display in viewing window. Digital timer with weekly and yearly programme, relay with elapsed time indicator. For installation on a wall or flush-mounting socket.

**Wiring Diagram**

HERZ-Thermal actuators



HERZ-Thermal actuators with auxiliary contacts



BU	BN	BK	GY
blue	brown	black	grey

**Accessories**

- 1 7711 24 Auxiliary contact for thermal actuators NC, 230 V, 5 (2) A cable length 2 m, Dim. 0,5 x 4
- 1 7711 34 Auxiliary contact for thermal actuators NO, 230 V, 5 (2) A cable length 2 m, Dim. 0,5 x 4
- 1 7711 25 Continuous activation (modulating control) NC  
Connectors for continuous actuation (for 24 V version only)
- 1 7711 35 Continuous activation (modulating control) NO  
Connectors for continuous actuation (for 24 V version only)
- 1 7711 26 Raised bayonet nut, M 30x1,5  
Dimension of actuator + 5 mm  
Closing dimension depending on use: NC 4,5 - 18,5 mm and NO 8,5 - 22,5 mm
- 1 7711 27 Raised bayonet nut, M 28x1,5  
Dimension of actuator + 5 mm  
Closing dimension depending on use: NC 4,5 - 18,5 mm and NO 8,5 - 22,5 mm

Please note: All diagrams are indicative in nature and do not claim to be complete.