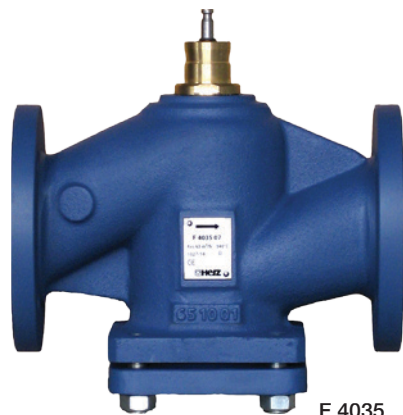


# Control Valves, Actuators and Temperature Controllers



The precise controlling of temperature in technical installations in buildings has become a more important factor than ever before in protecting our environment as well as markedly reducing operating costs. HERZ Control Valves, Drives and Temperature Controllers are a key component of central building control systems.

## TWO-PORT FLANGED VALVE F 4035



F 4035

The Two-Port Flanged Valve is primarily designed to control the flow of circulation water in district heating and HVAC systems, as well as for remote closing of heating pipelines. Circulation medium should be cold, warm and hot

water in temperature range from 5°C to 140°C.

The valve can be utilised in almost all heating, ventilation and air-conditioning systems and in industrial and technological processes. The valve curve is equal percentage. Regulation ratio (ratio between nominal and minimal flow coefficient) is 50:1. The selection of the Two-Port Flanged Valve is according to the diagram of kvs values. The Two-Port Valve is configured so that the seat cone opens when the valve stem is despressed for valves up to nominal diameter DN 65 and the seat cone closes when the valve stem is depressed for the larger sizes. The valve can be installed in all positions, from horizontal to vertical, except in vertical position with the actuator pointing downwards.

The arrow on the valve body must match the direction of fluid flow through the valve. The valves must be installed for the correct application using clean fittings. A HERZ Strainer (4111) should be fitted to prevent impurities during operation. Therefore an installion is recommended. For installation, the local and international standards have to be followed. The Two Way Flanged Valves can be used with different types of actuators, depending on the range of usage. This is described in greater detail in the section "ACTUATING DRIVES FOR FLANGED VALVES".

## THREE-PORT CONTROL VALVE 4037

Control Valves for constant regulation of cold water, warm water or air in closed circuits. Using an electrical actuator, the valve can be set to any intermediate position.

On removing the actuator, the valve will close. The connection of the actuator to the valve spindle ensues automatically.

The first time the valve is used, the drive will extend the spindle and the cone will close automatically when it reaches the lower valve seat. For the HERZ 7712 actuators, the characteristic can be set to linear or quadratic. Valves may only be used in closed circuits and are mostly insulated in the installations. The manual adjuster 9102 (accessory) is assembled onto the valve like an actuator.



4037

These Control Valves are characterised by high reliability and precision. They meet demanding requirements

- quick-closing function
- overcoming differential pressure
- controlling the temperature of the medium
- fulfilling a shut-off function, and all this in low-noise operation

The valve spindle is automatically connected to the actuator spindle. The brass cone regulates an equal-percentage flow in the control passage. In order to compensate for the complementary characteristic of the consumer and ensure a consistent medium quantity irrespective of the valve setting, the mixing passage acts with a linear characteristic. This combination also eliminates any wobbling of the cone in the final setting and at the same time prevents early occurrence of cavitation and erosion. Since there is no spring force counteracting the closure of the valve, the full force of the actuator is available for the permissible pressure difference.



Manual adjuster for HERZ Three-Port Control Valves  
Article No.: 1 9102 40



Three-port Control Valve with actuator  
4037 & 7712

stainless steel spindle, DZR brass cone with glass fibre reinforced teflon sealing ring. DZR brass spindle seal with wiper ring and double EPDM O-ring seal. Nominal pressure 16 bar, nominal diameter DN15 to DN50, equal-percentage characteristic, linear or quadratic adjustable with HERZ 7712 Valve Actuators, linear mixing passage characteristic, valve closes when actuator is removed, application as Mixing Valve (500 N) or as diverting valve (800 N).

### THREE-PORT FLANGED VALVE F 4037

The Three-Port Flanged Valve is designed to control the flow rate of circulation water in pipelines. Valve stem with cone is moved by acting of electric actuator controlled by microprocessor controller. The actuators are described in greater detail in the section "ACTUATING DRIVES FOR FLANGED VALVES". Circulation medium could be cold, warm and hot water in temperature range from 5°C up to 140°C.

The valve is utilised in almost all heating, ventilation and air-conditioning systems and in industrial and technological processes. The Three-Port Flanged Valve is used

The tightness of the control passage is ensured by the modified seat in the body and at the cone by the glass fibre reinforced teflon seal. The gland does not require maintenance. It consists of a brass body, two O-rings, a wiper ring and a lubricant reservoir.

Valve with external thread in accordance with ISO 228-1, DZR (dezincification resistant) cast brass valve body and valve seat,

as a mixing and diverting valve and in the case when it should change water circulation from one pipeline to another. Valve curve is equal percentage. Regulation ratio (ratio between nominal and minimal flow coefficient) is 50:1. Selection of Three-Port Flanged Valve is according to diagram of kvs values. The valve can be installed in all positions, from horizontal to vertical, except in vertical position with the actuator pointing downwards. The arrow on the valve body must match the direction of fluid flow through the valve. The valves must be installed for the correct application using clean fittings. A HERZ Strainer (4111) should be fitted to prevent impurities during operation. Therefore an installation is recommended. For installation, the local and international standards have to be followed.

### THREE-PORT CONTROL VALVE 2137

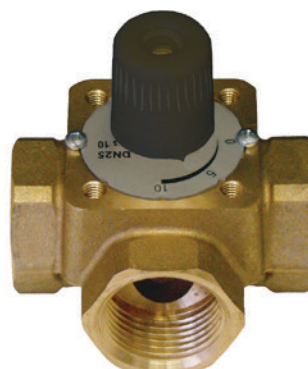
Mixing Valve with threaded connection, PN 10, enables energy-efficient operation. 3-point regulation of flow temperature control in heating installations. Nominal pressure 10 bar. Three-Port Valve with nominal diameter DN15 to DN50, brass body and seat according to CW617N, guaranteed spindle tightness with double EPDM spindle ring, max. operating temperature 130°C.

By turning the spindle, the warm water inlet is steadily opened and the cold water inlet (heating backflow) closed by the same amount. By this means, the temperature of the mixed water increases and the flow remains approximately constant. On closing the warm water inlet, a bypass to the boiler return is opened (by using

the boiler return flow boost), thus enabling thermic circulation. Reversible 7712 Actuators with 90° angle of rotation are suitable for automatic operation. After disengaging the coupling, the valve can be manually adjusted.



Three-Port Control Valve with Actuator  
2137 & 7712



Three-Port Control Valve 2137





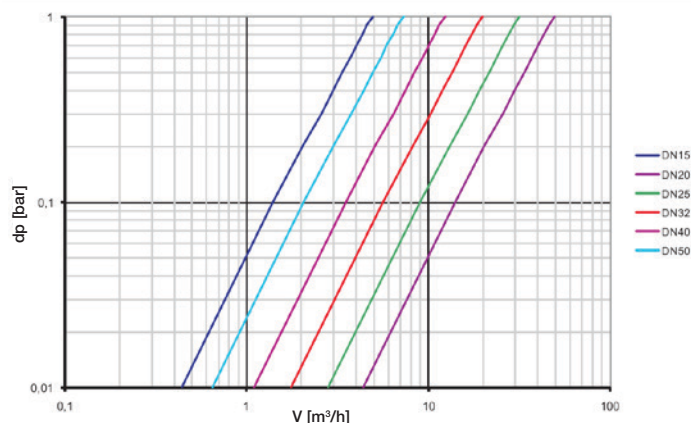
2117

Special ball for linear characteristic in HERZ Two-Port Control Ball Valve

## TWO-PORT CONTROL BALL VALVE 2117

Control Ball Valve for constant regulation of cold water, warm water or air in closed circuits, internal thread PN 40. Precise control and operation without leakage. As regulating unit together with the **7712** Valve Actuators. Nominal pressure 40 bar, nominal diameter DN15 to DN50, equal-percentage ball valve char-

acteristic, directly integrated in the cone, adjustable linear or quadratic characteristic with HERZ **7712** Rotary Actuator, spindle with sliding surface and teflon sliding ring, high rangeability (500:1), low torque due to O-ring mounted sleeve, Ball Valve with internal thread in accordance with ISO 7/1 Rp, DZR (dezincification resistant) forged brass, DZR brass shaft, DZR brass ball, chromed and polished surface, shaft seal with double EPDM O-ring, dirt trap and screw connection available as accessory.



## HERZ CONTROL THREE-PORT VALVE 7762 / 7763

Control Valve for regulating heating zones, secondary induced air devices, fan coils and dual line systems with heat exchanger in conjunction with HERZ **7708** Thermic Valve Actuator, PN 16, linear mixing and no leakage in the control passage for energy-efficient regulation. Nominal pressure 16 bar, nominal diameter DN10 (1/2") to DN20 (1"), equal-percentage characteristic, linear reduced mixing passage characteristic, flat sealing standard variant or version with compression connection. Special HERZ **7763** version for fan coils with cast-

on bypass T-piece. The control passage is closed when the spindle is pushed in. Application as mixing valve, diverting valve via the hermetically sealed third branch. Nickel-plated cast brass valve body, stainless steel spindle, cone with EPDM soft seal for control passage and mixing passage, gland with double O-ring seal. The control passage (A-AB passage) is closed and the mixing passage opened, when the spindle is pushed in. Reset achieved via spring force, spring in valve. The valve can be regulated in the "open" or "closed" position with the **7708** Thermic Valve Actuator. In combination with the "no current - closed" actuator version, the valve control passage is closed in the event of voltage loss.

The KVS values in the bypass are 30% less than those in the control passage. In this manner, the flow resistance is taken into account, enabling the total rate of flow to be kept as constant as possible in each stroke position. The approximate equal-percentage characteristic in the control passage, together with a modulating actuator 0 - 10 V, enables an optimal control. In order to prevent audible flow noise in very quiet rooms, the valve pressure differential may not exceed 0.5 to 0.8 bar, according to the dimensions. Nickel-plated gravity die-cast valve body and flat gasket on the body. Gland with ethylene-propylene O-ring, brass cone with EPDM seal and stainless-steel spindle.

## CONTROL MODULATING VALVE 7760

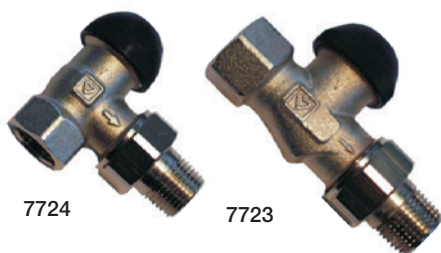
Control Valve for regulating heating zones, secondary induced air devices and fan coils in conjunction with HERZ **7708** Thermic Valve Actuator. PN 16, absolutely no leakage, nominal pressure 16 bar, nominal diameter DN10 to DN20, equal-percentage characteristic, replacement of spindle seal under system pressure, flat sealing or version with compression connection.



Control Valve **7760** with straight-through shape



Three-Port Control Valve **7763** with actuator **7708** and bypass

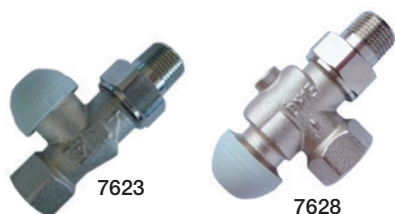


**TS-90-H** as straight and angle patterns

The flow valve is closed when the spindle is pushed in. Reset is achieved via spring force, spring in valve. The valve can be regulated in the “open” or “closed” position with the **7711** Thermic Valve Actuator. In combination with the “no current - closed” actuator version, the valve control passage is closed in the event of voltage loss. The approximate equal-percentage characteristic in the control passage, together with a constant actuator O - 10 V, enables a optimal control. In order to prevent audible flow noise in very quiet rooms, the valve pressure differential may not exceed 0.8 bar. Replacement of the spindle can take place when the valve is under pressure, and requires no additional tool. The spindle seal is sealed against the medium. Nickel-plated brass valve body. Spindle seal with ethylene-propylene O-ring.

## ZONE VALVE TS-90-H

Absolutely no leakage. On/Off valve for controlling heating zones, secondary induced air



**TS-98-VH** as straight and reverse angle patterns

devices and fan coils in conjunction with HERZ **7711** Thermic Valve Actuator. Nominal pressure 16 bar or (in accordance with DIN3841) 10 bar, nominal diameter DN10, 15 and 20, adjustable kvs values with **TS-98-VH**. Straight, angle, reverse angle and three axis versions, closing against pressure, nickel-plated brass valve body, stainless-steel spindle, cone with EPDM sort seal, spindle seal with double O-ring seal, valve length according to DIN3841-T1.

The valve is closed when the spindle is pushed in. Reset is achieved via spring force. The valve can be regulated in the “open” or “closed” position with the **7711** Thermic Valve Actuator. The control element can be assembled in any position - except the hanging mounting position. Penetration of condensation, dripping water etc. in the actuator must be prevented. In order to prevent audible flow noise in very quiet rooms, the valve pressure differ-

ential may not exceed 0.2 bar. Valve inlet with female thread for pipes (thread-sealing) or external thread, outlet with external thread for supplied connecting components: nickel-plated union nut and conically sealed fitting with external thread. Inflow internal or external thread, and outflow with union nut and conically sealed fitting.



**HERZ-TS-3000-H** connection set

## HERZ-TS-3000 CONNECTION SET WITH INTEGRATED THERMOSTATIC VALVE M 30 X 1.5

**HERZ-TS-3000-H** connection sets with integrated pre-settable thermostatic valves in angle or straight pattern are especially suited for time-saving and efficient pre-assembly installation, characterised by their compact and slender design. **HERZ-TS 3000-H** is a combination of flow and return flow having a mean connection value of 50 mm for round and flat tubular radiators. Connection is possible either from the side or in the middle with ½” IG or ¾” AG. For pipe connection from the side, these



**7712**

are equipped with a ¾” AG for the direct assembly of HERZ Compression Sets for copper, soft steel, plastic or multi-layer composite pipes. HERZ Compression Sets with solid rubber gaskets are available especially for stainless steel connecting bends, for op-

timal compensation of the mis-shaped pipes. Furthermore, a thermostatic valve with M 30 x 1.5 is integrated in the HERZ-TS-3000-H Connection Set.

## VERSIONS AVAILABLE

Straight and angle patterns are available enabling pipe connection from underneath or from the rear.

## VALVE ACTUATORS FOR THREE-PORT VALVES

### VALVE ACTUATOR WITH POSITION CONTROLLER FOR 3-PORT VALVES 230V OR 24V, ACTUATING FORCE 500N

Operation via heating control with constant output 0 - 10 V or switching output, linear/equal-percentage characteristic. External manual adjustment with voltage interruption. Coding switches for selecting characteristic and period.

## VERSION



7712

Two-part, self-extinguishing synthetic housing, lower part black and upper part red with synchronous motor, magnetic clutch and maintenance-free drive.

Synthetic console and brass union nut for valve construction. Disengageable drive for valve positioning and handwheel adjustments using SW 6 Allen key.

## VALVE ACTUATOR WITH POSITION CONTROLLER FOR 3-PORT VALVES 230V OR 24V, ACTUATING POWER 800N

Operation via heating control with constant output 0 - 10V or 4 - 20 mA, linear/equal-percentage/quadratic characteristic. External manual adjustment with voltage interruption. Coding switches to select characteristic, period and input signal.

## VERSION

Black housing with stepped motor.



Thermal Actuator 7799

Control electronics, LED display and drive, transparent housing cover with manual crank handle, self-extinguishing synthetic components, zinc cast drive unit and mounting bracket, electronic load-dependent shut-off, automatic adjustment to valve stroke.

Using the **7799** Modulating Valve Actuator, the valve can be regulated to any required position. Depending on the power connection, the valve can be adjusted to a constant 0 - 10V control voltage. Red cable connection: opens the flow with increasing control voltage. White cable connection: closes the flow with increasing control voltage. The control element can be assembled in any position - except the hanging mounting position. Penetration of condensation, dripping water etc. in the actuator must be prevented.

## TWO-PORT CONTROL BALL VALVE ACTUATOR

1 **7712** 60-62

## APPLICATION

Motor for conventional mixing valves and HERZ Two-Port Control Ball Valves.

## MODE OF OPERATION

Control ensues via a closing contact (e.g. thermostat). The angle of rotation is limited to 90°. When the end stops are reached, the actuator is electrically switched off and is thus free of current. Hand operation using the hand lever: press for temporary disengagement, permanent disengagement ensues via the rotary knob on the housing.

## THREE-PORT MIXING VALVE ACTUATOR

## APPLICATION

The 1 **7712** 63 Mixer Actuator is used as the motor for HERZ Three-Way Mixing Valves.

According to the model, control ensues by means of our regulating system with 0 - 10 V output.

## MODE OF OPERATION

The Mixing Actuator is attached by a single screw to the Mixing Valve. The stud bolts supplied serve as a twist lock. The assembly position can be freely selected in 90° steps. Thanks to its compact and slender design, the HERZ Three-Port Mixing Valve Actuator fits into most sections of the valve insulations. The angle of rotation is limited to 90°. When the end stops are reached, the actuator is electrically switched off and is thus free of current. In the event of any control system faults, the actuator can be switched to manual operation using the rotary knob on the housing. In this manner, the drive is disengaged and the Mixing Valve can be set to the position desired by turning the handle. The position is displayed on a reversible dial.



Three-Port Control Valve with Actuator  
**2137 & 7712**



## ACTUATORS FOR FLANGED VALVES

The Flanged Control Valves can be used with different types of actuators, depending on the range of usage. In order to satisfy all control requirements, the actuators are available as modular or 3-point drives with 24V or 230V power supply. The assembly on the valves is very easy, because with the help of clamping jaws the actuator fits perfectly on the valve. Afterwards the actuator must be tightened with two screws and the actuator spindle connected with the valve spindle. In order to achieve this, a manual operation of the actuator is possible.

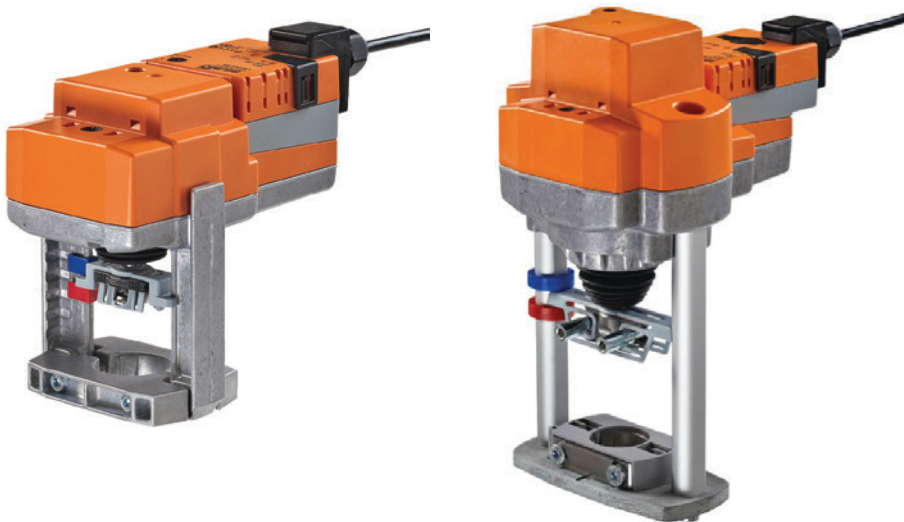
Different forces and strokes are possible, depending on the actuator type. The available forces are 500N, 1000N, 1500N, 2500N and for special cases 12000N with nominal strokes of 20mm, 40mm and 65mm. Thus, the actuators can be used for nearly every district heating and HVAC application. Actuators to the according valves are selected easy and fast with the selection matrix.

### F 7712 90-94

**PRINCIPLE OF OPERATION:** The actuator is connected with a standard modulating signal of DC 0/2 ... 10V and travels to the position defined by the positioning signal. The measuring voltage U serves for the electrical display of the actuator position 0 ... 100% and as slave control signal for other actuators.

### F 7712 95-98 und F 7712 81-85

**PRINCIPLE OF OPERATION:** The actuator is activated with a 3-point signal. If the actuator reaches the end position, then the motor will be switched off via (two) load-dependent switches. These switches protect the motor when there are foreign objects between the fitting seat and the cone.



Actuators F 7712 81-84, 90-94, 95-98 for Flanged Valves



Actuators F 7712 85 and 94 for Flanged Valves

## ACTUATOR SELECTION FOR HERZ VALVES

		F 7712 90 24V, mod	F 7712 91 24V, mod	F 7712 92 24V, mod	F 7712 93 24V, mod	F 7712 94 24V, mod	F 7712 95 24V, 3-pt	F 7712 96 24V, 3-pt	F 7712 97 24V, 3-pt	F 7712 98 24V, 3-pt	F 7712 81 230V, 3-pt	F 7712 82 230V, 3-pt	F 7712 83 230V, 3-pt	F 7712 84 230V, 3-pt	F 7712 85 230V, 3-pt
2 - Way															
F 4035 01 F 4035 40	15	✓					✓				✓				
F 4035 11 F 4035 51	15	✓					✓				✓				
F 4035 21 F 4035 61	15	✓					✓				✓				
F 4035 31 F 4035 71	15	✓					✓				✓				
F 4035 03 F 4035 43	25	✓					✓				✓				
F 4035 13 F 4035 53	25	✓					✓				✓				
F 4035 04 F 4035 44	32		✓					✓				✓			
F 4035 05 F 4035 45	40		✓					✓				✓			
F 4035 06 F 4035 46	50			✓						✓				✓	
F 4035 16 F 4035 56	50				✓				✓				✓		
F 4035 07 F 4035 47	65			✓						✓				✓	
F 4035 08 F 4035 48	80			✓						✓				✓	
F 4035 09 F 4035 49	100			✓						✓				✓	
F 4035 10 F 4035 50	125					✓									✓
F 4035 41 F 4035 52	150					✓									✓
3 - Way															
F 4037 01	15	✓					✓				✓				
F 4037 11	15	✓					✓				✓				
F 4037 21	15	✓					✓				✓				
F 4037 31	15	✓					✓				✓				
F 4037 03	25	✓					✓				✓				
F 4037 13	25	✓					✓				✓				
F 4037 04	32		✓					✓				✓			
F 4037 05	40		✓					✓				✓			
F 4037 06	50			✓						✓				✓	
F 4037 16	50				✓				✓				✓		
F 4037 07	65			✓						✓				✓	
F 4037 08	80			✓						✓				✓	
F 4037 09	100			✓						✓				✓	
F 4037 10	125					✓									✓
F 4037 41	150					✓									✓



## HERZ 7791 ROOM TEMPERATURE CONTROLLER

The **HERZ 7791** is an intelligent digital temperature controller for offices, apartments and single-family houses. Comfort is made available depending on the requirements. For example, at night it will switch over to an energy-saving mode of operation, and next morning will raise the temperature to a pleasant level by fully automatic control of the valves, pumps and boiler as well as other units of a heating system or cooling unit. Where the **7791** Room Temperature Controller really stands out: it possesses three temperature settings, which you can program for each day of the week according to your individual needs.



RTC 7791, 7793 or 7794

In addition, you can pre-program not only the weekend program but holidays as well. All you need to know is displayed in an extremely simple to understand manner in the form of symbols on the housing just five control buttons to ensure ease of use. Furthermore, the **7791** possesses three temperature settings for physiologically and economically ideal room temperature using two-point and quasi-continuous control characteristics.

Familiar symbols are used to display all the important information on the status of the system; the temperature details are digitally displayed on an LCD using an ECO-meter (current and relative energy consumption). The **7791** is available in a version with a four-wire connection. The standard switching program enables times and temperatures to be adjusted to your habits for practically all applications. Your settings will not be lost in the event of a power or battery failure.

Your comfort is rounded off by being able to adjust the settings for an indefinite or limited period of presence or absence, such as parties or holidays (adjustable from two hours to up to five days with the time remaining displayed). The **7791** naturally provides for automatic switching over between summer and winter time, frost protection when switched off as well as effective valve and pump tight-fitting protection.

### The 7791's wide-ranging areas of use

Its controlling qualities and simple operation make it suitable not only for controlling actuators for floor and radiator heating, oil- and gas-fired burners, circulating pumps, fans in storage heaters, but also for heat pumps or gas-fired boilers. The battery version mentioned above is recommended for old and renovated buildings.

## HERZ 7793 ROOM TEMPERATURE CONTROLLER

Compact heating regulator operable on weather or room temperature compensating control. According to use, the flow temperature and/or directly the room temperature is controlled. Simple operation through intuitive user handling and clear display. The temperature measured, operating status, time and day of week are displayed.

Additional application options via extended functionality, such as return flow temperature limitation, manual mode of operation, fixed value control, operation as room temperature guided flow temperature controller (P+PI cascade controller), selectable display also in standard operation mode, calendar switching program with self-deleting or updated commands, reset functions.

The **HERZ 7793** is suitable for use in residential rooms or in hotel rooms, offices or practice premises. It has three different freely programmable temperature settings. In addition, it can take account of holiday periods, short-term absences as well as the influence of extraneous heat.

## HERZ 7794 ROOM TEMPERATURE CONTROLLER

Compact heating regulator for use as an external temperature guided PI flow temperature controller, room temperature guided room temperature controller (PI) or room temperature guided flow temperature controller (P+PI cascade controller) with internal/external sensors. Restriction (min/max) of flow temperature and return flow temperature. Fixed value control of the flow temperature for hot water preparation. For motor actuators on valves or mixers (3 pt) and a pump (on/off).

Also suitable for wall assembly in domestic rooms. Fixed basic program (factory setting) for initial operation. Simple system adjustment by selecting one of the three basic standard models using service parameters. Intuitive, display-assisted operator guidance with simple keyboard and comfortable LCD display. Display of temperature measured option possible.

Automatic switchover between summer and winter time, three temperature settings (reduced, normal and comfort) to regulate room temperature plus a further setting for fixed value control. Temperature settings and switching times programmable. Frost protection in switched-off mode activatable.

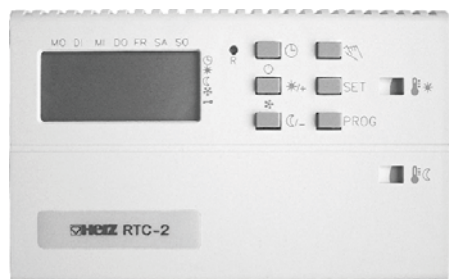
Timer with weekly and annual program. Programmable input function. Two triac outputs and one relay output with operating hours counter. The relay output can be configured as a pilot timer instead of the circulating pump function. Valve and pump tight-fitting protection. Manual operation valve and pump.

Housing made of non-flammable, pure white thermoplastic (RAL 9010). Very easy to assemble. Suitable for wall assembly or flush-mounted box. Electrical connection in plug-in socket with spring clips for cables up to 2.5 mm<sup>2</sup>. Cable inlet.

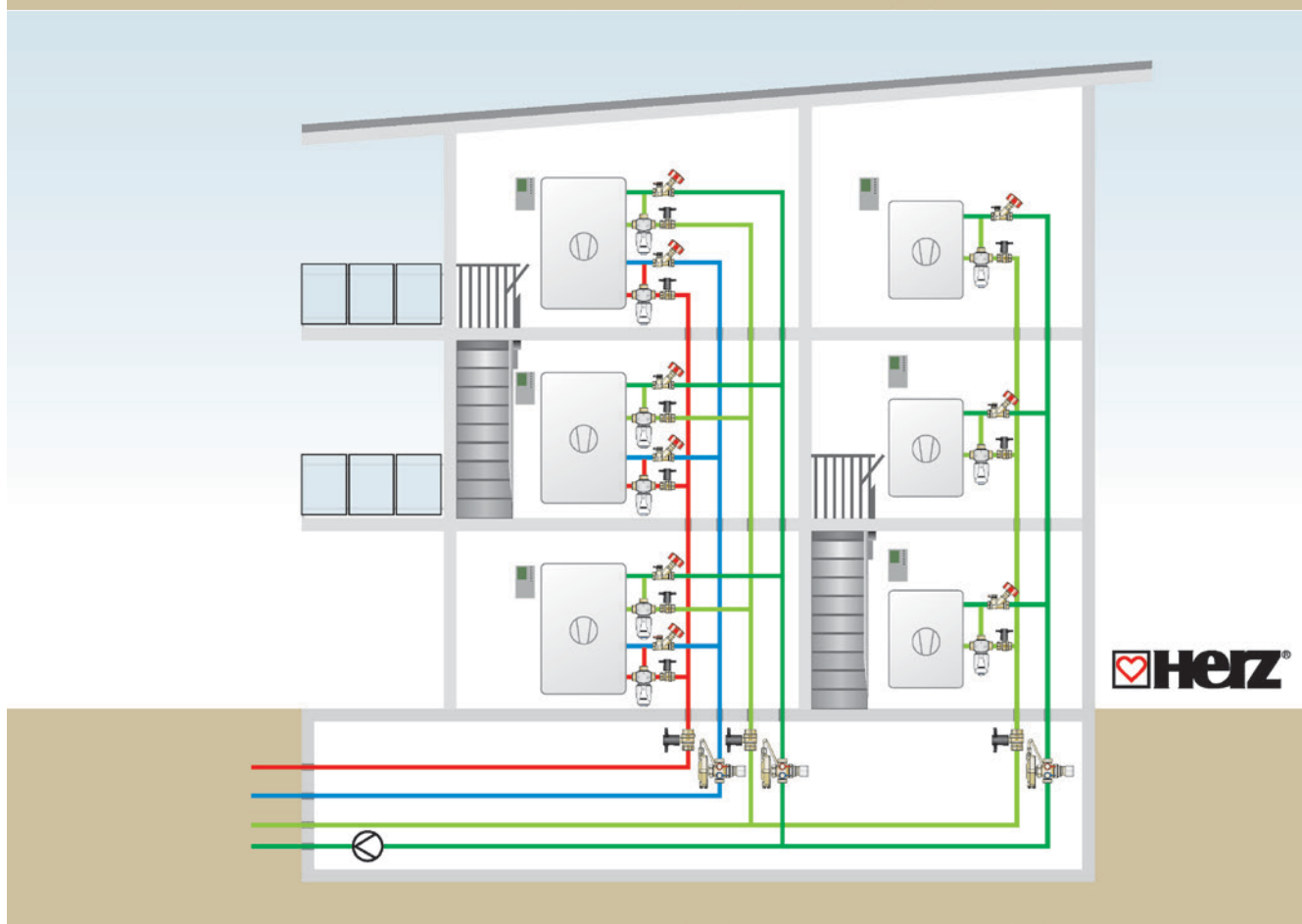
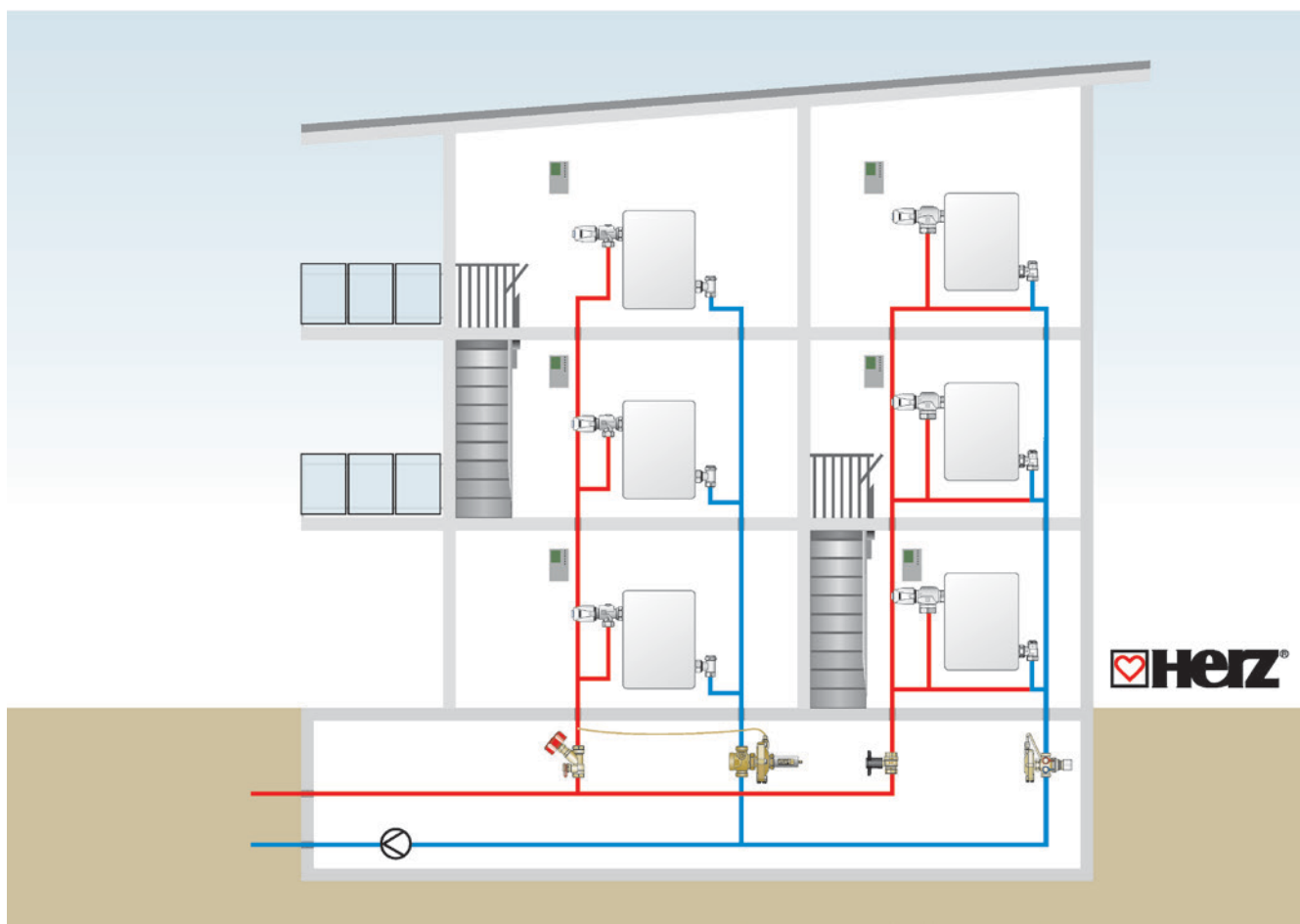
## HERZ RTC-2 ROOM TEMPERATURE COMPUTER

The HERZ RTC-2 is an electronic constant room temperature controller in an operationally safe and childproof 24 V version, with power output between 0 - 10 V for controlling DDC ac-

tuators. The ambient temperature is recorded by an internal NTC sensor. The handling and programming ensues via seven function keys and two control knobs.



7940



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