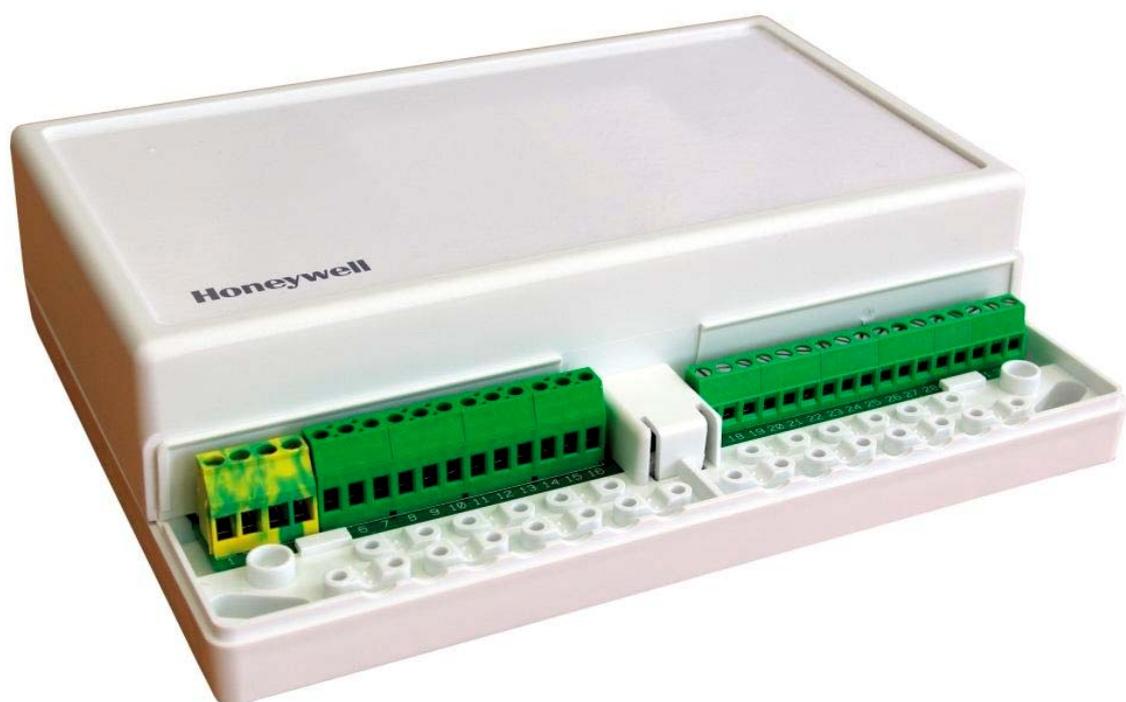




Manual for installation and service of zone regulator

SZ10004



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1. BASIC CHARACTERISTICS

- control up to three independent heating circuits (floor and radiators)
- cooperation with three-point servo drives and pumps (or on/off valves)
- control of zones by independent room units with OpenTherm communication, or on/off room thermostats, or the use of autonomous equithermal regulation
- control of the boiler by OpenTherm communication, i.e. all Therm wall gas boilers with HDIMS, DIMS and MLC control automated systems, Therm electric boilers and boiler cascades
- comfortable control of the spatial temperature in zones with the use of CR 04 units in the regime of equithermal regulation with compensation
- self-configuration system – simple setting
- remote inspection and programming of parameters
- diagnostics of failures and history of operation

2. DESCRIPTION OF REGULATOR

Zone regulator SZ10004 is design to control the heating systems of family houses and large residential and commercial objects. Its main function is the equithermal regulation of the temperature of the heating water in individual heating circuits. The advantage of the zone regulator is the support of intelligent communication with the source of heat through the OpenTherm+ communication protocol. As the source of heat it is possible to use Thermona gas boilers, Thermona electric boilers and Thermona gas cascades, gas-condensing and electric boilers.

Notification: The regulator is exclusively designed for boilers fitted with the OpenTherm communication interface. The regulator does not another control output!

When use SZ10004 for controlling cascade, please use interface IU05 – v. software 1.04.SZ!

The regulator can control up to 3 heating circuits (for example, also a combination of the floor heating and radiator circuits).

The following combination of heating circuits can be selected:

two mixers + one unmixed circuit
two mixed circuits
one mixed + two unmixed circuits
one mixed + one unmixed circuit
three unmixed circuits
two unmixed circuits

for further extension options, see Chapter 12

3. SYSTEM PARTS

Characteristics of parts in relation to the connection with zone regulator SZ10004 as part of the regulation system:

- **Thermal sensors for heating circuits** – it is always necessary to use thermal sensors with VTC characteristics 10k at 25°C, β 3977. Two thermal sensors are **included in the delivery of the regulator**.
- **Room units** – independent room unit CR 04 can be used with the support of OpenTherm+ communication for each zone. CR 04 units are supplied directly from unit SZ 10004.
- **Heat source** – Therm boiler (or Thermona boiler cascade), controlled by zone unit SZ10004 by means of OpenTherm+ communication protocol.

The external sensor is connected directly into the boiler, **NOT** into the zone regulation unit! External temperature information is handed over by means of communication into the zone regulator.

3.1 Inputs and functions

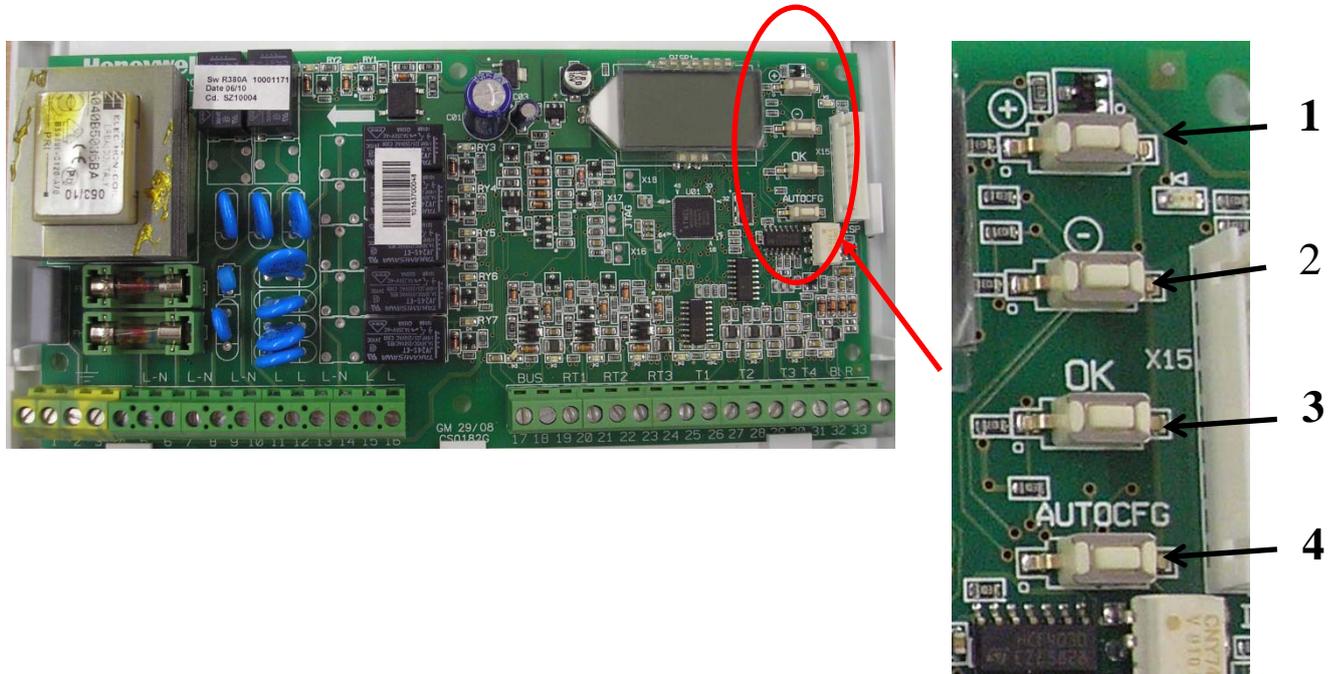
Outputs indicated as T1, T2, T3 and T4 are inputs for thermal sensors whose function depends on the configuration of the unit. The working range is 0°C to +120°C with discrimination 1°C. Inputs indicated T3 and T4 are not used. As soon as the regulator detects the connected thermal sensor and the measured value is outside the working ranges of the temperatures, the regulator will indicate a failure. Identification of error messages is in the text below.

3.2 Outputs and functions

The regulator has 7 independent 230VAC relay outputs (indicated in the text as RY1 to RY7). Depending on the selected configuration each of these outputs will be the respective function. The description of their functions is contained in the documentation below.

4. CONTROL AND SIGNALLING

The control parts of the unit of the zone regulator are located directly on the control electronics and are accessible after opening the front cover.



The control elements on the printed circuit plate (on the part of the components on the printed circuit)

Button	Description	Indicate on the board
1	Increases the value of the selected parameter	⊕
2	Decreases the value of the selected parameter	⊖
3	Confirms the selected parameter	OK
4	Auto-configuration button	AUTOCFG

Signalling parts

LED diodes	Meaning of signalling
LED 1 - green	Auto-configuration
LED 2:16 - yellow	The description is contained in the documentation

5.1 Configuration of outputs for individual applications

The regulator is equipped with seven independent output relays controlling the network voltage (230V). Their function depends on the type of application selected.

The following combination of heating circuits can be selected:

- one unmixed circuit*
- one mixed circuit*
- two unmixed circuits
- three unmixed circuits
- one mixed + one unmixed circuit
- two mixed circuits
- one mixed + two unmixed circuits
- two mixers + one unmixed circuit

The table below shows various configurations of the system which the regulator can control in the heating regime.

Explanations:

Types of heating circuits:

- U = unmixed (so-called pump) circuit
M = mixed circuit

Description of relay outputs

- Pn = pump in mixed circuit
VOn = mixing valve in the circuit n – direction of opening
VCn = mixing valve in the circuit n – direction of closing
Un = pump for unmixed (pump) circuit n or valve (dividing or closing)

Connection No.	Relay	RY1	RY2	RY3	RY4	RY5	RY6	RY7
	Terminals	L(7)-N(8)	L(9)-N(10)	L(11)	L(12)	L(13)-N(14)	L(15)	L(16)
1x room regulator								
1	1xU	U1						
2	1xM	P1	VO1	VC1				
2x room regulator								
3	2xU	U1			U2			
4	1xM + 1xU	P1	VO1	VC1	U1			
5	2xM	P1	VO1	VC1	P2	VO2	VC2	
3x room regulator								
6	3xU	U1			U2	U3		
7	1xM + 2xU	P1	VO1	VC1	U2	U3		
8	2xM + 1xU	P1	VO1	VC1	P2	VO2	VC2	U1

* Connection No. 1 and 2 can be optimally resolved directly by regulation of the boiler. Zone regulation fully supports this connection but the use of regulating properties of Thermona boilers and cascade boiler rooms (equitherm regulation, etc.) is simpler and more economic.

5.2 Connection diagrams for individual applications

5.2.1 Connection No. 1 – one mixed circuit

- not recommended, simpler solution directly by the boiler

5.2.2 Connection No. 2 – one mixed circuit

- not recommended, simpler solution directly by the boiler with the use of regulator CR 04

5.2.3 Connection No. 3 – two mixed circuits

Use, e.g. 1 circuit with equithermal requirement from CR04 (with the requested temperature offset=0), the second additional with the same output temperature with time switching by room on/off regulator or pool exchange with thermostat or time switch, etc.

5.2.4 Connection No. 4 – three unmixed circuits

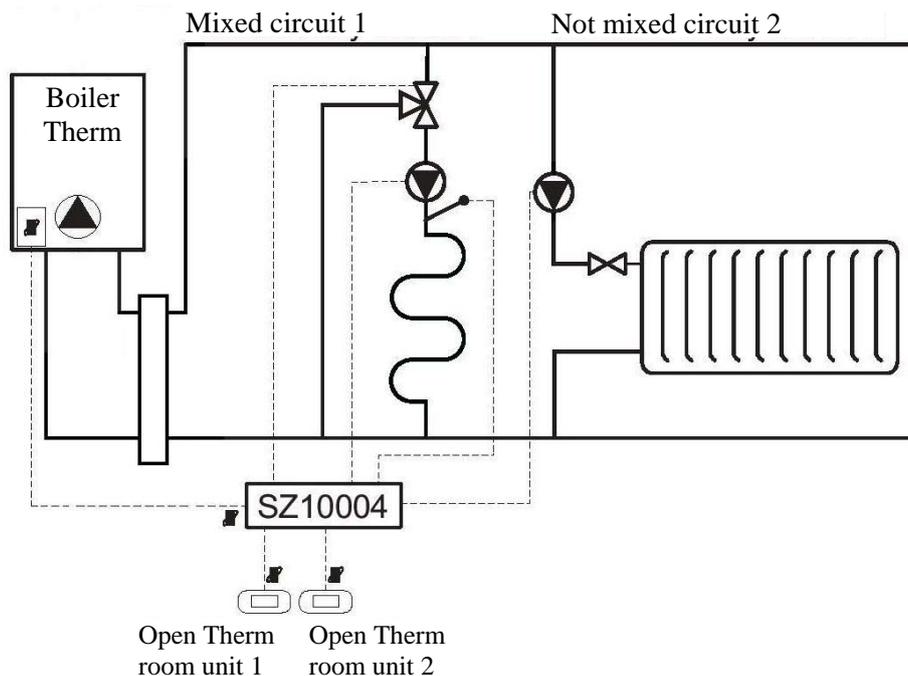
Use is similar as for the diagram No. 3.

5.2.5 Connection No. 5 – one mixed and one unmixed circuit

The regulator ensures the control of the pump and the servo drive on a mixed branch and, at the same time, it ensures the switching of the pump for the second, unmixed branch.

Use can be found, for example, in the case of a combination of the equithermally controlled branch of the heating system (branch No.1 – mixed) with the branch of the air conditioning system (branch No.2 – unmixed).

Orientation diagram



5.2.6 Connection No. 6 – two mixed circuits

The regulator fully ensures the control of the pumps and servo drives in both mixed branches.

The request for independent equithermal regulation of two branches of the heating system is used (branch 1 and 2, mixed).

Orientation diagram

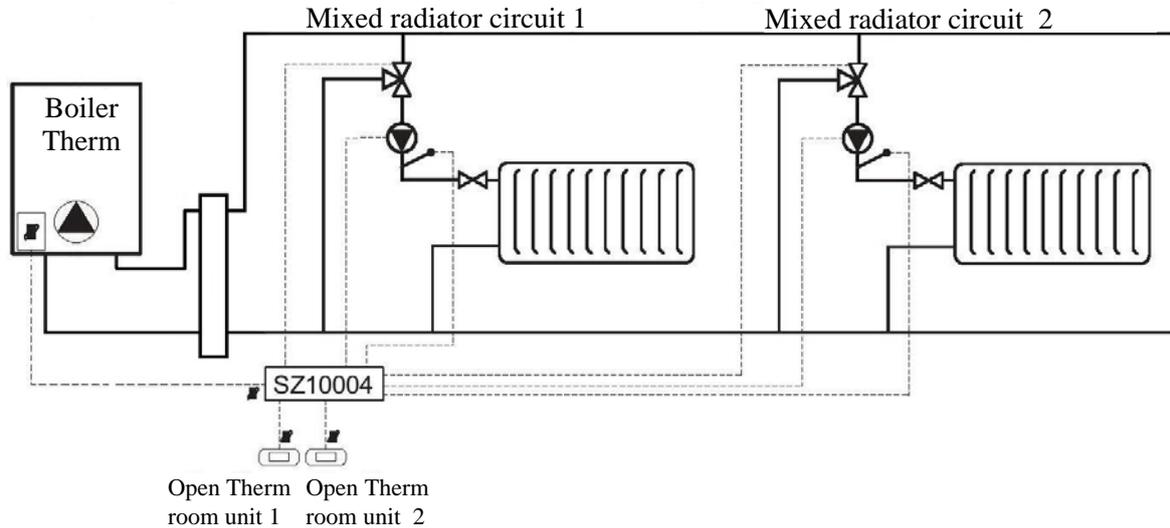
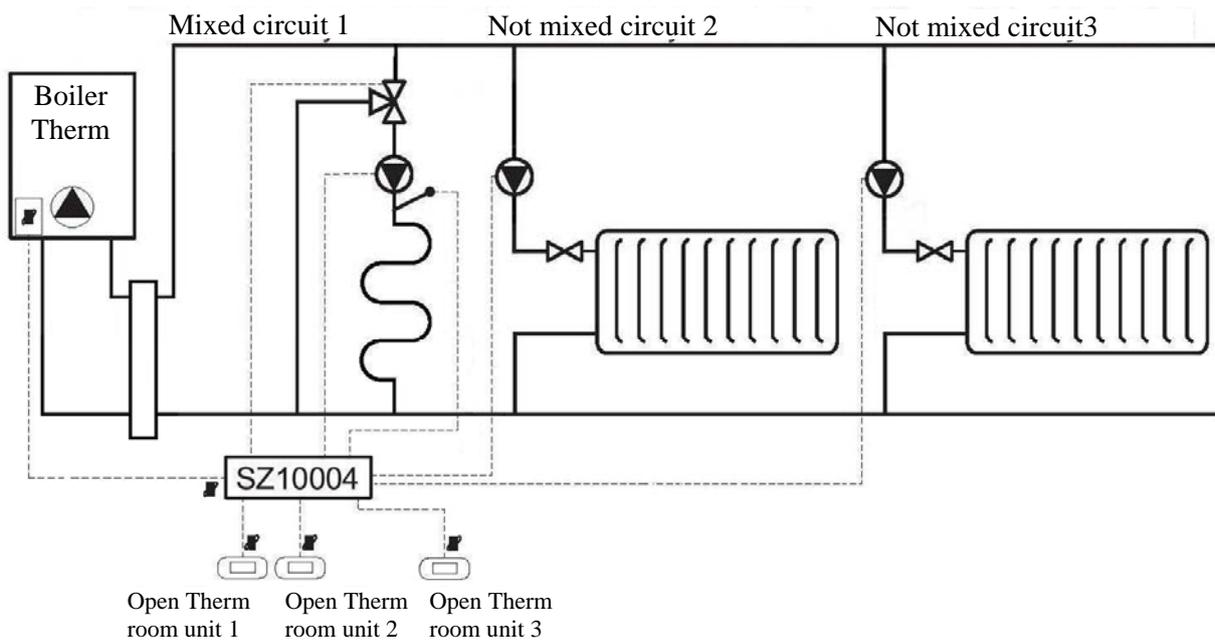


Diagram of electrical connection, see Appendix No. 1 and 2.

5.2.7 Connection No. 7 – one mixed, two unmixed circuits

Orientation diagram



5.2.8 Connection No. 8 – two mixed, one unmixed circuit

The regulator ensures control of the pumps and servo drives on both mixed branches and, at the same time, controls the running of the pump on the unmixed branch.

It is used in the case of the request for independent equithermal regulation of two branches of heating (branch 1 and 2, mixed) and one unmixed (switched) branch.

Orientation diagram

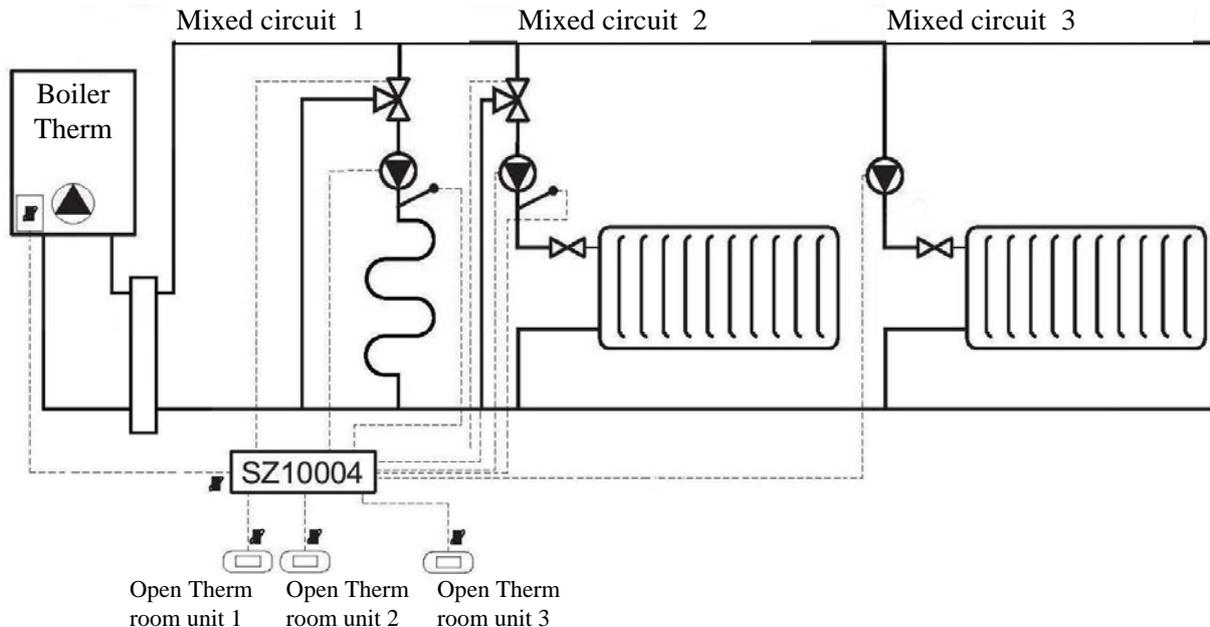


Diagram of electrical connection, see Appendix No. 3 and 4.

Recommended setting of parameters:

Heating circuit of floor heating for zone 1:

Minimum temperature of heating water	=	20	°C
Maximum temperature of heating water	=	45	°C
Offset of requested temperature*	=	5	°C
Upper limit of heating **	=	50	°C
Declination of equithermal curve ***	=	15	Curve number
Shift of equithermal curve ***	=	0	°C
Permanent running of the pump	=	0	---

Explanations:

* Offset of requested temperature is the value of the increase of the input temperature for mixing, i.e. **requested temperature of zone = requested temperature of circuit (from CR04, or autonomous) + offset of requested temperature**

** Upper limit of the heating is used at the floor circuit as protection against heating. Its influence is described in Chapter 7 (failure F 80, F 81).

*** Setting the equithermal curve for autonomous regulation. It is active in the case of a communication failure with the respective CR04, or in configuration without the master regulator.

Heating radiator circuit for heating zone 2:

Recommended setting of parameters:

Minimum temperature of heating water	=	20	°C
Maximum temperature of heating water	=	80	°C
Offset of requested temperature	=	5	°C
Upper limit of heating	=	85	°C
Declination of equithermal curve	=	15	Curve number
Shift of equithermal curve	=	0	°C
Permanent running of the pump	=	0	---

Heating radiator circuit for heating zone 3:

Recommended setting of parameters:

Minimum temperature of heating water	=	20	°C
Maximum temperature of heating water	=	80	°C
Offset of requested temperature	=	0	°C
Upper limit of heating	=	85	°C
Declination of equithermal curve	=	15	Curve number
Shift of equithermal curve	=	0	°C
Permanent running of the pump	=	0	---

This circuit can be used as an auxiliary for additional heating of the pool, etc., therefore, the offset of the regulating temperature is not necessary.

Notes:

The regulator derives the requested temperature on the output of the boiler from the maximum temperature of any used and configured zone. Therefore, in terms of economy, it is necessary not to increase the offsets of individual zones when using the condensing boilers.

The permanent running of the pump is not used as a rule; nevertheless, it can be connected for the mixed circuits by the respective parameter.

It is possible to also use the recommended setting of individual types of zones when using a smaller number of zones.

6. ADJUSTABLE PARAMETERS OF INDIVIDUAL HEATING CIRCUITS

Setting options: 1) Using adjusting buttons directly on the control panel of the regulator (see Chapter 4

2) by means of CR04 service units.

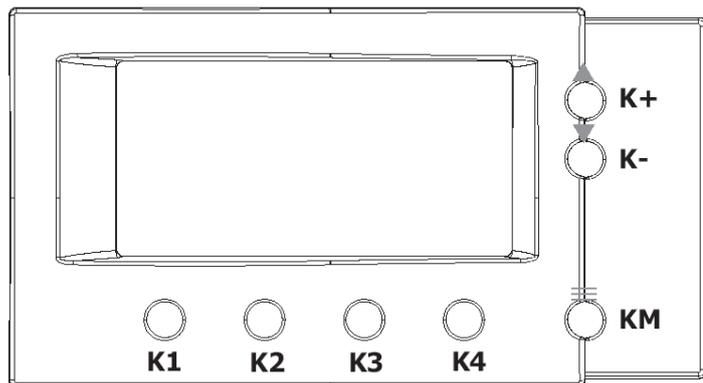
Press button KM for 10 seconds to enter service mode (SERVICE).

Page 1 enables one of the following options:

- INF
- NAS
- PORU
- >>

Press button K4 (>>>) to switch on the second page of the menu which enables one of these options:

- JAZ
- TP
- TPB
- >>>



Using the TP option it is possible to enter the adjustable parameters of the zone regulation. The parameters can be set from any CR04 unit connected to the zone regulator.

Note: Using the TPB option it is possible to enter into the first level of the service menu for boilers with the automatic HDIMS system.

The setting must only be performed by qualified personnel! Unprofessional intervention can cause damage to the regulator!

Tab: Adjustable parameters of individual circuits

	Parameter CR04	Description	Scope	Default setting	Units	Parameter SZ10004
Circuit 1	1	Min.temperature of heating water	10 - 40	20	°C	P-00
	2	Max.temperature of heating water	10 – 85	45	°C	P-01
	3	Offset of requested temperature	0 – 40	35	°C	P-02
	4	Upper limit of heating	0 – 60	50	°C	P-03
	5	Declination of equithermal curve	0 – 30	15	---	P-04
	6	Shift of equithermal curve	0 – 50	0	°C	P-05
	7	Permanent running of the pump	0 – 1	0	---	P-06
Circuit 2	8	Min.temperature of heating water	10 - 40	20	°C	P-07
	9	Max.temperature of heating water	10 – 85	45	°C	P-08
	10	Offset of requested temperature	0 – 40	35	°C	P-09
	11	Upper limit of heating	0 – 60	50	°C	P-10
	12	Declination of equithermal curve	0 – 30	15	---	P-11
	13	Shift of equithermal curve	0 – 50	0	°C	P-12
	14	Permanent running of the pump	0 – 1	0	---	P-13
Circuit 3	15	Min.temperature of heating water	10 - 40	20	°C	P-14
	16	Max.temperature of heating water	10 – 85	45	°C	P-15
	17	Offset of requested temperature	0 – 40	35	°C	P-16

	18	Upper limit of heating	0 – 60	50	°C	P-17
	19	Declination of equithermal curve	0 – 30	0	---	P-18
	20	Shift of equithermal curve	0 – 50	0	°C	P-19
	21	Permanent running of the pump	0 – 1	0	---	P-20
Common parameters	22	Time of running the valve	0 - 15	15	seconds	P-21
	23	Boostvalve open	0 – 30	15	seconds	P-22
	24	Working cycle – time/°C	0 – 15	1	seconds/°C	P-23
	25	Run-out of the pump	0 – 20	1	minutes	P-24
	26	The time of delay in running the pump after starting heating	0 – 255	15	seconds	P-25
	27	Requested TUV temperature (for systems with connected OpenTherm room units)	10 - 65	55	°C	P-26
	28	Not used	---	---	---	P-27

7. ERROR CODES AND FAILURE DIAGNOSTICS

The zone regulator is able to record and indicate various failure statuses in the system

- In the case that one failure occurs in the system, the green LED diode will start to flash at an approximate frequency of 2Hz and on the error code will be displayed on the LCD.
- In the case that further failures occur in the system at the same time, the green LED diode will start to flash with an approximate frequency of 2Hz and the error code will be gradually displayed on the LCD.

At the same time, this error code will be displayed on all OpenTherm room unit displays connected to the zone regulator. It means that the user is informed of the failure and also on those OpenTherm room units which are not located in the circuit in which the failure occurs.

The conditions for the indication of error statuses are as follows:

- Indication of the failure of the thermal sensor input is activated only in the case that it was recorded during the auto-configuration.
- Indication of the failure in communication is activated only in the case that it was recorded during the auto-configuration.
- Indication of the failure in the communication with the room thermostat is activated only in the case that it was recorded during the auto-configuration.
- In the case of the connection of the OpenTherm room unit to the zone regulator outside the auto-configuration regime, there is the indication of the failure of the respective room unit.
- In the case of the change of the type of room unit during the operation of the zone regulator, there is the indication of the failure of the respective room unit.

List of error messages:

Error code	Description
F70	Failure of thermal sensor T1 (circuit 1)
F71	Failure of thermal sensor T2 (circuit 2)
F72	Failure of thermal sensor T3 (circuit1)
F73	Not used
F74	Error in communication with boiler
F75	Error in communication with room unit RT1 (circuit 1)
F76	Error in communication with room unit RT2 (circuit 2)
F77	Error in communication with room unit RT3 (circuit 3)
F78	1. floor heating circuit – damaged thermal sensor, defective connection or location in the heating system
F79	2. floor heating circuit – damaged thermal sensor, defective connection or location in the heating system
F80	1. floor heating circuit – protection against overheating
F81	2. floor heating circuit – protection against overheating

Description of error messages:

Error F70 – thermal sensor T1 is outside its working range (short-circuited or disconnected).

Solution: check the sensor connection, measure the resistance of the thermal sensor or replace the sensor.

Error F71 – thermal sensor T2 is outside its working range (short-circuited or disconnected).

Solution: check the sensor connection, measure the resistance of the thermal sensor or replace the sensor.

Error F72 – thermal sensor T3 is outside its working range (short-circuited or disconnected).

Solution: check the sensor connection, measure the resistance of the thermal sensor or replace the sensor.

Error F73 – thermal sensor T4 is outside its working range (short-circuited or disconnected).

Solution: check the sensor connection, measure the resistance of the thermal sensor or replace the sensor.

Error F78 – 1st circuit of the floor heating – thermal sensor is defective, incorrectly connected or located in the heating system.

Error F79 – 1st circuit of the floor heating – thermal sensor is defective, incorrectly connected or located in the heating system.

Error F80 – protection against overheating of the 1st circuit of the floor heating – if the temperature of heating water exceeds the value of the limit of the floor heating for a period of at least 60 seconds, there is the disconnection of the pump of the respective heating circuit and the respective mixing valve will be closed. A further inspection of the temperature of the heating water will be made later and if the temperature of the heating water is over the limit of the floor heating for a period of at least 60 seconds, there is the indication of this failure. If the temperature of the heating water decreases below the value of the limit of the floor heating -10°C, this error is unblocked.

Error F81 – protection against overheating of the 2nd circuit of the floor heating – the further information is identical with error F80.

8. DISPLAY, LED DIODES AND CONTROL BUTTONS

8.1 Display units

The zone regulator is equipped with:

- 1 x green LED diode
- 16 x yellow LED diode for indication of individual types of inputs and outputs
- 1 x LCD display for display parameters and error codes
- 4 x button

Symbols on the LCD display:



Display of actual operating status:

“St” = Stand-by mode

“CH” = ÚT heating mode

If the regulator works without problems, the green LED diode will shine permanently.

If the regulator works without problems, the green LED diode will shine permanently.

If the green LED diode flashes with a frequency of 4Hz, the auto-configuration of the system has not been completely carried out yet.

If the green LED diode flashes with the frequency 2Hz, an error has occurred in the system and an error code will appear on the display.

7 yellow LED diodes located at individual relays serves for indication of the switching of the respective relay. In the case of switching the relay, the respective LED diode will shine. After disconnection of the relay, the respective LED diode goes off.

The remaining 9 yellow LED diodes serve for the indication of the connection of individual thermal sensors or thermostats which were detected by the regulator during auto-regulation. In the case that some of these LED diodes flash with the frequency 2Hz, then there is a defect in the corresponding thermal sensor or thermostat.

In the case that some of these LED diodes flash with the frequency of 4Hz, the auto-configuration of the system has not been completely carried out yet.

8.2 Buttons

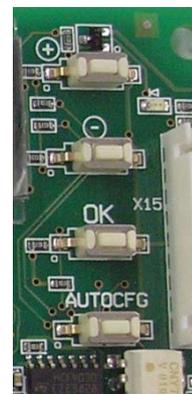
Buttons (+),(-), (OK) are used during the service regime.

Press the OK button to enter or exit the service mode:

- to activate this mode press the button for longer than 5 seconds

Press the AUTOCFG button to run the system auto-configuration:

- to activate this mode press the button for longer than 5 seconds



9. SERVICE MODE AND FUNCTIONS

Press the OK button for more than 5 seconds to enter the service mode. The “TS” symbol will now flash on the display. Use buttons (+) and (-) to select one of the following functions:

- “TS” = setting transparent parameters
- “In” = function of inquiries for values
- “Hi” = history of failures
- “RE” = reset the operation history

The respective symbol for the function will flash on the LCD display. If you decide to select one of the “TS”, “In” or “Hi” functions, **select the OK button for one second** to confirm your selection.

9.1 “TS” function – function of the transparent parameters of the zone regulator (TSP)

In service mode after selection of the “TS” function, the P01 symbol will start to flash on the display. Using buttons (+) and (-) it is possible to select one of the transparent parameters - P00 to P27 (see the list of parameters in Chapter 6). By selecting one of these parameters and its confirmation (by pressing the OK button for 1 second) the value of this parameter can be set. Using buttons (+) and (-) set the requested value of the parameters (will not flash) and confirm this requested value by pressing the OK button and the new value is saved into the memory.

As in the LCD display there are only two character available, in the case of setting the parameters, first of all, the character P is displayed and consequently XX = number of the parameter.

9.2 “In” function – function of inquiry for values

In the service mode after selection of the function “In”, the symbol t01 will start to flash on the display. Using the buttons (+) and (-) it is possible to select one of the seven parameters - t01 to t07. By selecting one of these parameters and its confirmation (pressing the OK button for 1 second) it is possible to display its value (will not flash).

- t00 = temperature measured by thermal sensor T1 (°C) – value within the range 0°C to 125°C
- t01 = temperature measured by thermal sensor T2 (°C) – value within the range 0°C to 125°C
- t02 = not used
- t03 = not used
- t04 = room temperature – sensor 1 (RT1) (°C)
- t05 = room temperature – sensor 2 (RT2) (°C)
- t06 = room temperature – sensor 3 (RT3) (°C)

Parameters t00 to t03 – if a sensor will become disconnected or short circuited, the symbol “—” will be displayed on the display instead of the temperature.

Parameters t04 to t05 – if the room thermostats will be switched on/off, the “On” symbol will be displayed in the case of a switched on thermostat instead of room temperature or “Off” in the case of a disconnected thermostat.

Press the OK button for 1 second to exit from the display function of the values of the individual parameters.

Press the OK button for 3 seconds to exit from the function of inquiries for values “In”.

Because only two characters are available in the LCD display, in the case of values higher than 99, first of all the number of hundreds is displayed, then the number of tens and then units(e.g. in the case of 120, first of all 1 will be displayed and then 20).

9.3 “Hi” function – function for operation history (failures)

In service mode after selection of the “Hi” function, the H01 symbol will start to flash on the display. Using buttons (+) and (-) it is possible to select one of ten parameters - H01 to H07. By selecting one of these parameters and its confirmation (pressing the OK button for 1 second) it is possible to display its value (will not flash).

H00 = record No. 1 (last saved – the latest failure)
H00 = record No. 2
H00 = record No. 3
H00 = record No. 4
H00 = record No. 5
H00 = record No. 6
H00 = record No. 7
H00 = record No. 8
H00 = record No. 9
H00 = record No. 10

Press the OK button for 1 second to exit from the display function of the values of the individual parameters.

Press the OK button for 3 seconds to exit from the function history of the “Hi” operation.

Notification: This function can only be entered through the zone regulator. The operation history is not accessible through the connected OpenTherm room units.

9.4 “RE” function – reset the operation history

Set the “RE” function in service mode. Press the OK button for 3 seconds to delete the whole history of the operation and the regulator will automatically leave the service mode.

Notification: This function can only be entered through the zone regulator. This function cannot be executed through connected OpenTherm room units.

Press the OK button for more than 5 seconds to exit the service mode.

If during 2 minutes there is no pressing of any button, the regulator will automatically exit the service mode.

10. ZONE REGULATOR AND HEATING SYSTEM CONFIGURATION

10.1 Regulator configuration

Press the AUTOCFG button for more than 5 seconds to run the system auto-configuration. Green LED diode starts to flash. After termination of the auto-configuration the green LED diode will stop flashing and will permanently shine. After the first connection of the regulator to the supply, the auto-configuration must be performed. If the regulator records an invalid system configuration, it will stay in auto-configuration mode. The auto-configuration process will last at least 20 seconds also in the case that the regulator detected a valid system configuration. In practice a situation may occur where the system detects a new room temperature and the OpenTherm and auto-configuration function is not active. In such a case the failure will be indicated although the system configuration will not be changed. This situation may occur, for example, in the case where a service technician connects the OpenTherm thermostat from one terminal to another.

Depending on the combination of the connection of regulators and thermal sensors into the regulator, the individual system functions will be set (see table part).

		Regulators			Sensors			Notes:
		RT1	RT2	RT3	T1	T2	T3	
	1 room regulator							
1	1 x U	U1						Unmixed (pump) circuit
2	1 x M	M1			FL1			Mixed circuit No. 1
	2 room regulators							
3	2 x U	U1	U2					Unmixed (pump) circuits 1 and 2
4	1 x M + 1 x U	M1	U1		FL1			Unmixed circuit 1+ unmixed (pump) circuit 1
5	2 x M	M1	M2		FL1	FL2		Mixed circuit 1 and 2
	3 room regulators							
6	3 x U	U1	U2	U3				Unmixed (pump) circuits 1, 2 and 3
7	1 x M + 2 x U	M1	U1	U2	FL1			Mixed circuit 1+ unmixed (pump) circuit 1 and 2
8	2 x M + 1 x U	M1	M2	U1	FL1	FL2		Mixed circuit 1 and 2 + unmixed (pump) circuit 1

Types of heating circuits:

- U Unmixed (pump) circuit
- M mixed circuit

Description of connected parts:

- Un room thermostat for unmixed (pump) circuit n
- Mn room thermostat for mixed circuit n
- FLn Thermal sensor for mixed heating circuit n

10.2 Factory setting

The regulator is not pre-set in production to any system configuration! This means that the regulator will not be functional without performing auto-configuration. After connection of the regulator and after the first connection of the regulator to the supply, the auto-configuration system function must be activated.

11. REGULATION OF HEATING WATER

As soon as the OpenTherm room unit is connected to the zone regulator (CR 04), which is equipped with an equithermal function, the regulation of the temperature of heating water is controlled in the respective heating circuit through the respective room unit with using an internal equithermal algorithm.

11.1 Regulation of the temperature of heating water with connected room unit CR 04

In this case the room unit will calculate the requested temperature of the heating water using the internal regulation algorithm and will send the calculated requested temperature of the heating water to the zone regulator.

Regulation of the zone with the mixed circuit:

The requested output temperature of the mixed circuit is sent through the communication from the respective regulator CR04 and derived from the actual values of the temperatures, time program, default constants and selection of the regulation (see the regulator manual). It is possible to display this temperature on CR04 in the service information mode with the “T UT KALKUL” parameter. The actual temperature of the circuit read by the thermal probe behind the mixing valve is ascertained in this mode by the “T UT VODY” parameter.

Further information can be found in the manual for room unit CR04.

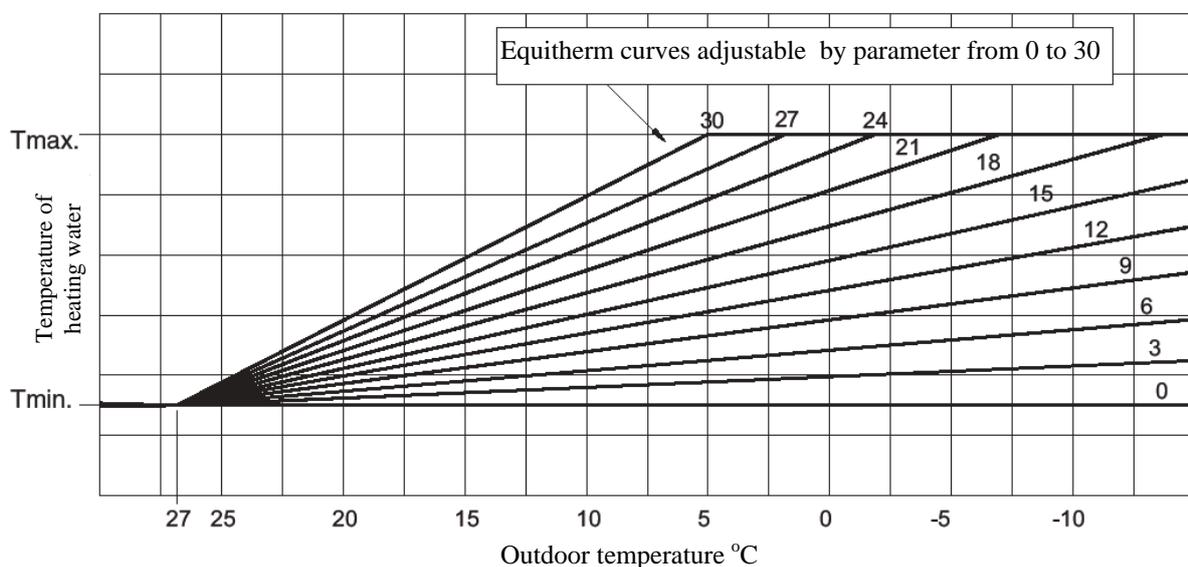
11.2 Regulation of the temperature of heating water without connected room unit CR 04

In this case the internal equithermal function of the zone regulator will be active. For this purpose it is possible to use adjustable parameters through which it is possible to set the equithermal curve for each heating circuit.

30 equithermal curves are available (parameters adjustable from 0 to 30).

Equithermal curves

Dependence of the temperature of the heating water on the adjusted curve and the external temperature

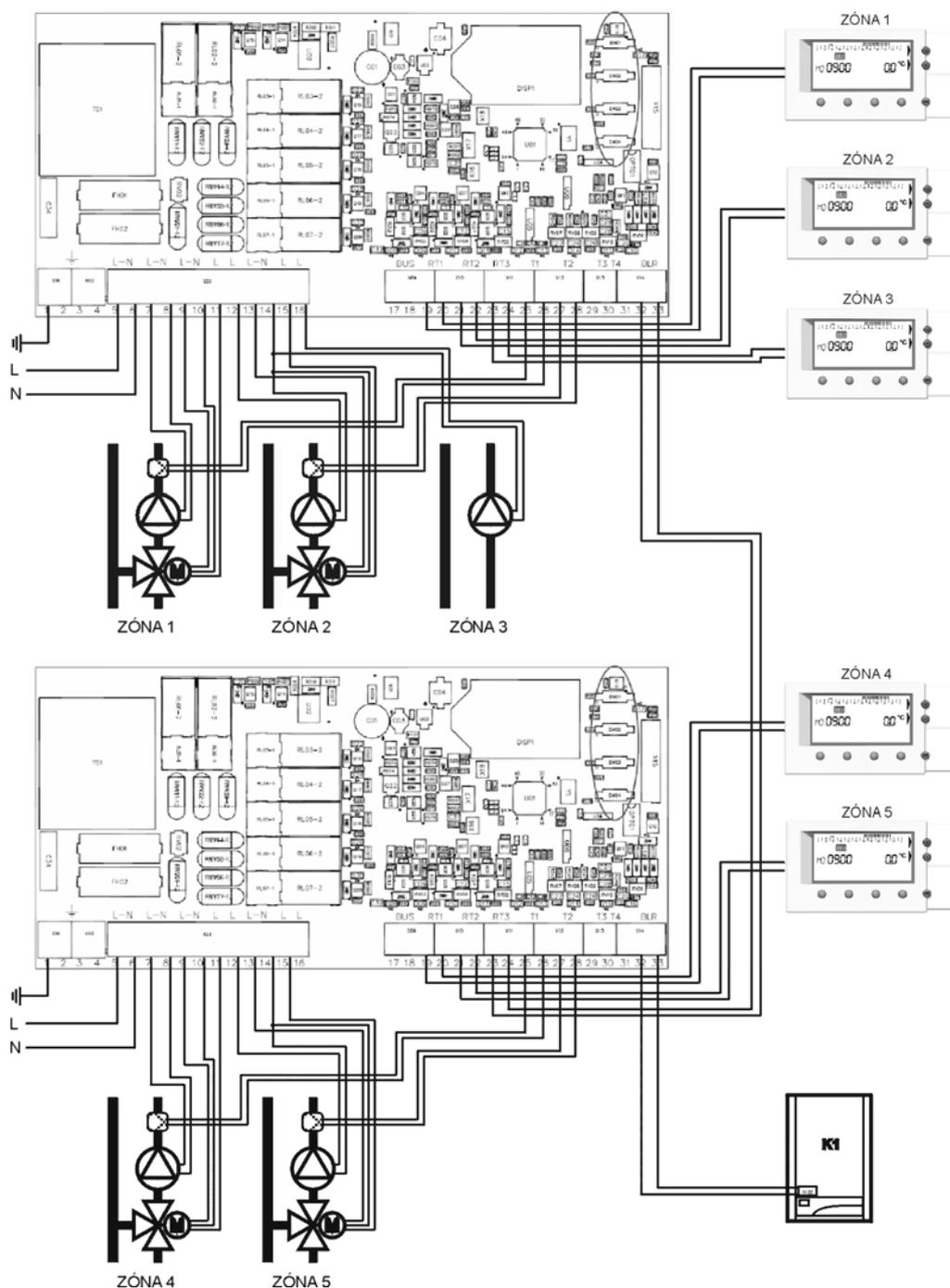


The temperature of the heating water is always within the scope T_{min} . and T_{max} . and is adjustable by means of the individual circuit parameters.

12. OPTION TO EXPAND WITH FURTHER HEATING CIRCUITS

Zone regulation SZ10004 is stated for independent use for the control of a maximum of two mixed and one unmixed branch. If it is necessary to control more mixed circuits, the zone regulation enables the cascade connection of the regulator. With the interconnection of the zone regulator with the secondary regulation, it is possible to control up to two mixed branches. Each branch will again be controlled by the independent unit CR04. With the connection of the further regulator, it is possible to connect a further two mixed branches to the already connected pair. In this manner it is possible to expand the regulation almost without restrictions. In terms of easy orientation, we recommend to control a maximum of 10 mixed branches.

Example: Cascade connection of 2 zone regulators (4 mixed branches + 1 switched branch)



We recommend setting the parameters of the “expanded” branch:

Minimum temperature of heating water	=	20	°C
Maximum temperature of heating water	=	80	°C
Offset of requested temperature	=	0	°C
Upper limit of heating	=	85	°C
Declination of equithermal curve	=	15	Curve number
Shift of equithermal curve	=	0	°C
Permanent running of the pump	=	0	---

It is important to set the off-set to the value 0. Otherwise there would be an incorrect transfer of information.

13. ELECTRIC PARAMETERS AND TOLERANCES

Supply voltage: 230VAC / 50Hz

Electric input power: 5VA

Range of operating temperatures for an ambient environment: -10°C .. +60°C

Range of temperatures of ambient environment for storage: -25°C .. +80°C

Relative moisture: maximum 90% at 40°C non-condensing

Circuit breakers: 2 x 2AF (50x20mm)

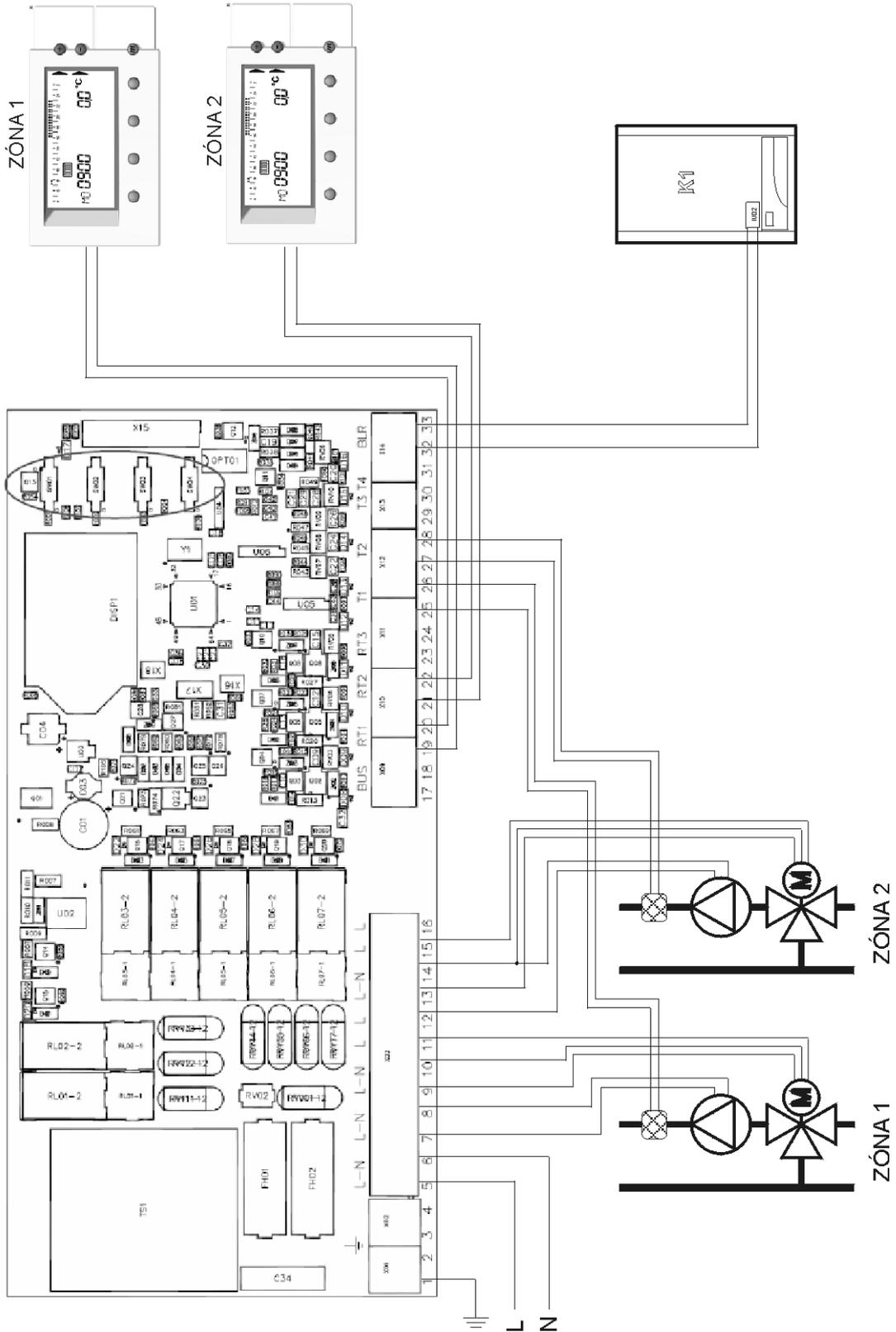
Switched load (relay contacts): 230VAC / 1A - cosφ 0.7 min.

Thermal tolerance (within the range from -5°C .. +100°C) ±3°C

14. APPENDIXES

Appendix No. 1 Diagram No. 1 – Independent boiler as heat source + 2 mixed branches

Connection diagram of regulation - 2 zones



Appendix No. 2 – Cascade boiler room as heat source + 2 mixed branches

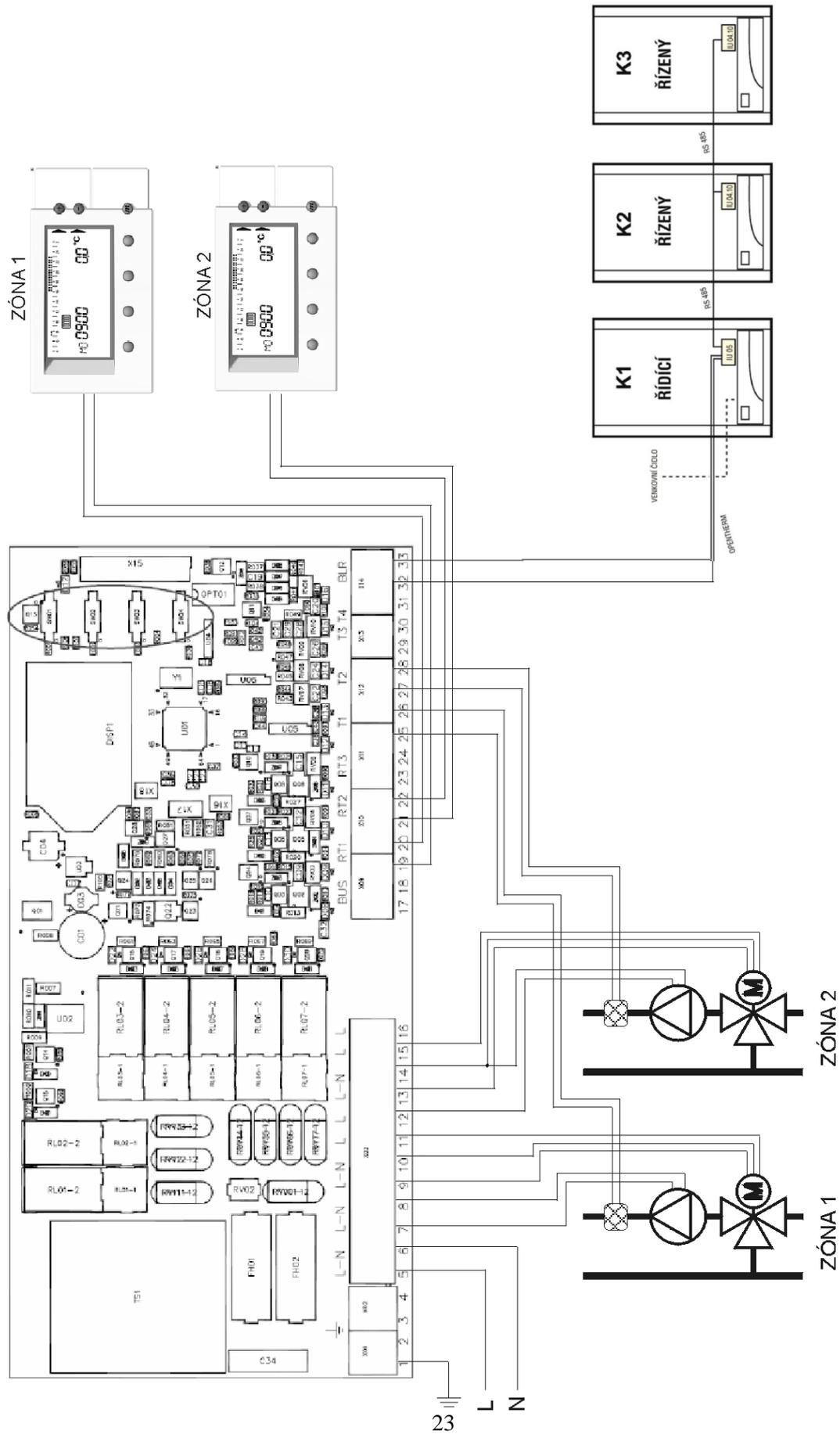


Diagram No. 3 – Independent boiler as heat source + 2 mixed branches + 1 unmixed

Connection diagram of regulation - 3 zones

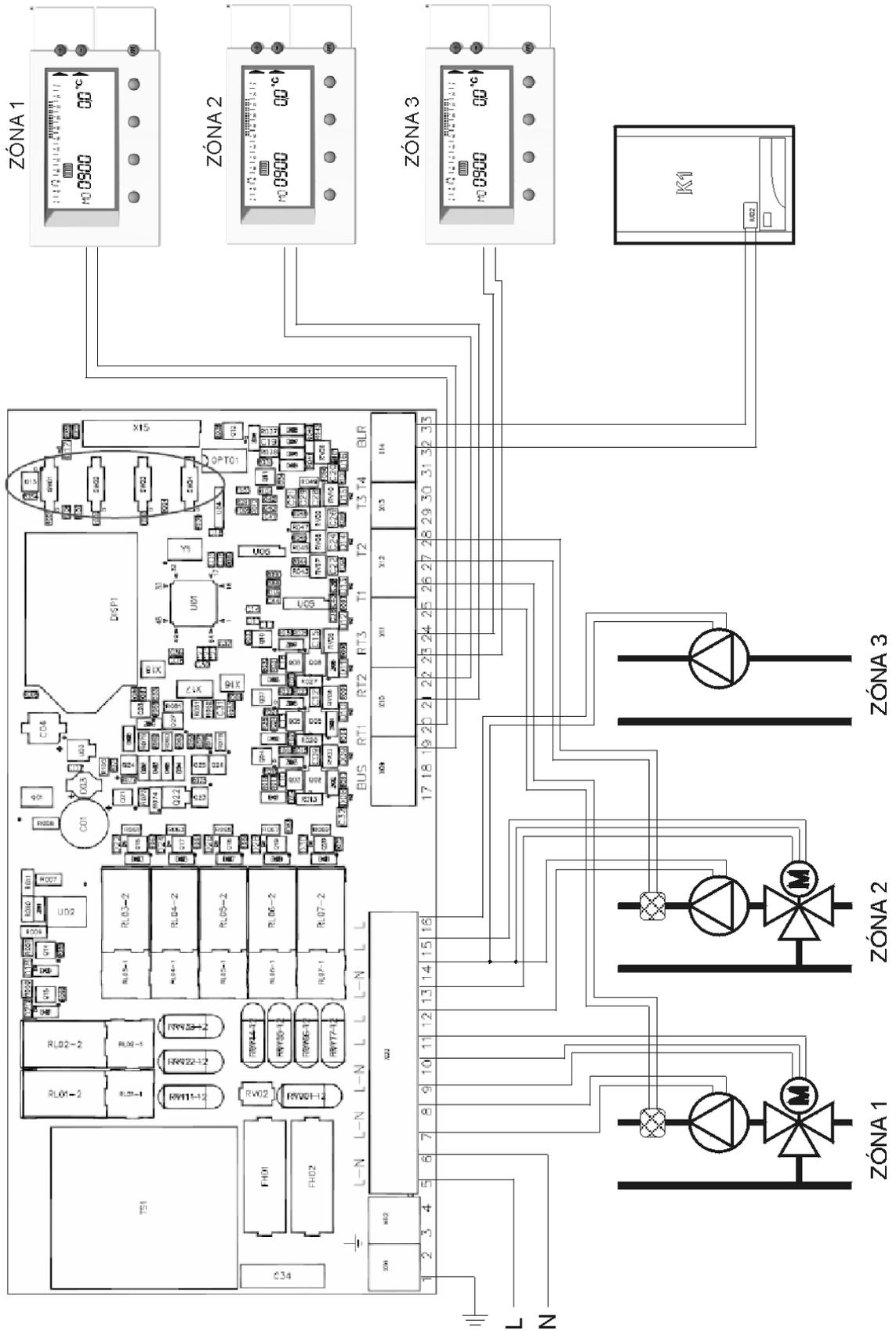


Diagram No. 4 – Cascade boiler room as heat source, 2 mixed branches + 1 unmixed

Connection diagram of regulation - 3 zones

