Explosion-proof digital thermoregulator RIZUR-DCS-2

Intended use and application area

The RIZUR-DCS-2 explosion-proof digital thermoregulator manufactured by OOO «NPO RIZUR» complies with Technical regulations TU-3442-001-12189681-2014, GOST R МЕК 60079-0-2011, GOST R МЕК 60079-11-2010, GOST IEC 60079-1-2011 standards for electric equipment with explosion protection type «Flameproof Enclosure (d)», «Intrinsically Safe Circuit (i)», «Intended for Use in Explosive Gas Atmospheres» , and has 1 Exd[ia IIC Ga] IIB T6 Gb X explosion protection. RIZUR-DCS-2 is supplied together with digital temperature sensors RIZUR-DT with 0 Ex ia IIC T6 Ga X explosion protection marking. According to the explosion protection marking, Ch. 7.3 of Electrical installation code (PUE) and other regulations governing the use of electrical equipment in exareas, the heater is certified for use in ex-areas of internal and external facilities.

Safety of the digital thermoregulator at explosion-hazardous areas is proved by the Customs Union's Certificate of compliance, «On safety of equipment operating in explosive areas» № EAEU RU C-RU.ME92.B.00041/19, and Certificate of compliance with Industrial safety requirements № C-RTE.002.TU.00198

Modbus RTU protocol makes it possible to control the preset values and receive information about the following heating system parameters:

- **Current ambient temperature in the enclosure (cabinet)**
- **Current surface temperature of the heater**
- **Preset ambient temperature**
- **Preset temperature limit for the heater surface;**
- **Preset ambient temperature limit for the relay output**
- **Temperature regulator communication status.**

Design description and functions

Explosion-proof digital thermoregulator RIZUR-DCS-2 is a compact unit with a display and control buttons designed to control any actuators (heating devices: a radiator, a heating cable, a water heating system, etc.; valves, contactors, valve drivers, etc.). RIZUR-DCS-2 temperature regulator is supplied together with temperature sensors, in accordance with the customer's technical specifications.

When controlling actuators, switching the power supply on and off depends on the temperature settings e.g., while working with heating systems, the thermoregulator automatically disables the power supply of the heater when the preset ambient temperature in the box or on the surface of the equipment is achieved, and, accordingly, enables the power supply when the temperature drops lower than the preset minimum value. Similarly, different actuators are controlled in accordance with temperature settings.

The explosion-proof digital thermoregulator processes data received from the temperature sensors connected to it:

- surface temperature sensor of any heating element
- air temperature sensor (in a heating enclosure or cabinet, in internal facilities, etc.)

The base version of RIZUR-DCS-2 is designed to control the operation of one heater. Versions operating with two heaters are also available. In this case, the thermoregulator will control the surface temperature of both heaters connected to it, and the temperature will be regulated when any of the heaters reaches the critical state.

Please note: this version has a number of specific technical features. Please study the design documentation carefully or negotiate exact specifications before purchasing or using the equipment.

RIZUR-DCS-2 can work both autonomously and together with external regulators or other devices (including a computer) that support Modbus RTU protocol, RS-485 physical communication channel. RIZUR-DCS-2 temperature regulator has an extra relay output for temperature alarm, to signal if the temperature surpasses the preset limits.

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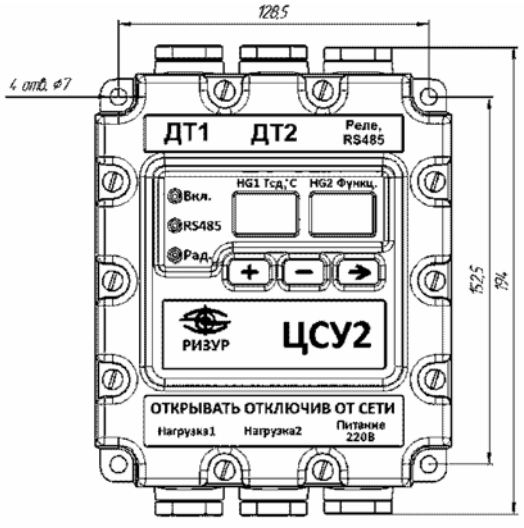
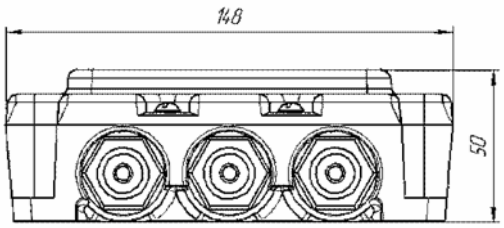
Technical specifications

RIZUR-DCS-2 Thermoregulator	
Installation area	General industrial facilities Ex-areas V-1a and V-1g, acc. to Electrical installation code (PUE), Ch. 7.3
Explosion protection marking	1 Exd [ia IIC Ga] IIB T6 Gb X
Ingress protection	IP68 acc. to GOST 14254-96
Display	LED
Control buttons	Hermetically sealed switches
Local control	Magnetic pen
Interface protocol	Modbus RTU
Physical communication channel	RS-485
Preset temperature limit alarm	Relay, changeover dry contact, 1A
Operating mode transition time after resetting	15 seconds
Heater surface temperature	-30°C...+110°C, an increment of 1°C
Temperature maintained inside	-40°C...+110°C, an increment of 1°C
Total capacity of connected actuators	от 5 W до 5 000 W
Supply voltage	220 (±15%) V (other is possible upon request)
Power consumption	5 W
Ambient temperature	-60°C...+50°C
Warranty period	24 months
Average operation time	Over 10 years

RIZUR-DT sensor	
Sensor type	Digital
Explosion protection marking	0 Exia IIC T6 Ga X
Measuring range of the digital sensor	от -55°C...+125°C, range extension is possible on request - PT100 analogue platinum sensors are used (+200°C...+600°C)
Measurement accuracy of the digital sensor	±0,5°C in the range of -10°C...+85°C ±3°C in the range from -55°C to -11°C and from +86°C to 125°C
Warranty period	24 months
Average operation time	Over 15 years

Dimensions of RIZUR-DCS-2 thermoregulator





Order code for the thermoregulator RIZUR-DCS-2

Ordering information:

RIZUR-DCS-2-	0	-	1	-	1	-	1	-	2	-	3	-	MR20	-	MR20	-	0	-	M20
1	2		3		4		5		6		7		8		9		10		11

1. Design variant	
RIZUR-DCS-2	Design variant of the thermoregulator
2. Remote control	
0	None
M	The Modbus RTU protocol, RS485
3. Relay output signal	
0	None
1	Available
4. Number of controlled heaters	
1	One
2	Two
5. Magnetic pen	
0	Not required
1	Supplied
6. Cable length for the air temperature sensor	
1	1 m
2	2 m
3	3 m
X	Specify the required cable length, m
7. Cable length for the surface temperature sensor	
1	1 m
2	2 m
3	3 m
X	Specify the required cable length, m
8. Cable gland for the heater cable	
M20	Cable gland M20x1.5 for cable diameter of 6-12 mm
MR20	Cable gland M20x1.5 for cable diameter of 6-12 mm with a metal hose DN-15
MB20	Cable gland M20x1.5 for an armored cable with an external diameter of 13-20 mm
X	Please specify type and grade of cable and of the metal hose
9. Cable gland for the power cable	
M20	Cable gland M20x1.5 for cable diameter of 6-12 mm
MR20	Cable gland M20x1.5 for cable diameter of 6-12 mm with a metal hose DN-15
MB20	Cable gland M20x1.5 for an armored cable with an external diameter of 9-17 mm
X	Please specify type and grade of cable and of the metal hose
10. Cable gland for the Modbus RTU cable	
0	None
M20	Cable gland M20x1.5 for cable diameter of 6-12 mm
MR20	Cable gland M20x1.5 for cable diameter of 6-12 mm with a metal hose DN-15
MB20	Cable gland M20x1.5 for an armored cable with an external diameter of 9-17 mm
X	Please specify type and grade of cable and of the metal hose
11. Cable gland for the relay output cable	
0	None
M20	Cable gland M20x1.5 for cable diameter of 6-12 mm
MR20	Cable gland M20x1.5 for cable diameter of 6-12 mm with a metal hose DN-15
MB20	Cable gland M20x1.5 for an armored cable with an external diameter of 9-17 mm
X	Please specify type and grade of cable and of the metal hose