■ CO 9001 Thermostat

Highlights

- **4 RTD input channels**
- **1 programmable limit value**
- **Low power consumption**
- **2 solid state outputs**

General Discription

The **CO 9001** thermostat is a microprocessor controlled measuring device. The thermostat can be used for monitoring up to four RTD input channels. The temperatures are measured by RTDs of type Pt100. The measured values are monitored for exceeding respectively fall short of a predetermined limit value. The exceeding of this limit value will be indicated by the potentional free contacts of a relay. The limiting value must be specified when ordering. The value will be customized at factory.

Design

The CO 9001 is designed DIN-Rail-Mounting according to EN 50022. The unit width is 45 mm.
The case consists of Polyamid PA 6.6 (color green) and is allowed for a temperature range from -40 °C to +100 °C zugelassen.
The unit is provided with 32 srew terminals. The screw terminals can be used for rigid or flexible cables with cross-sections from 0,2 to 2,5 mm^2

Function

The temperatures are measured by 4 separate RTD sensors of the type Pt100. For avoiding additional the currents through the sensors are less than 2 mA. By this way a heating by the sensor currents is avoided. Failures caused by cable resistances to the sensors are avoided by using 4-wire connection.
When operating, the drop-out voltages of the sensors are measured. By the values of drop-out voltages the temperature of each RTD sensors can be calculated. The calculated temperatures are monitored. When exceeding the programmed limit value the the output contacts are activated. The limit value will be programmed according the requirements of the customer.

Relays

By using solid state relays failures by vibration are avoided. In addition the advantages are long life as well as extremely high off-resistance, an lack of contact bounce. Lifetime is infinite if the rated datas of max. currents and voltages are not exceeded. The contact ratings are max. 100 mA and max. 33V. The R$_{ds(on)}$ is typical 10 . Using an other type of solid state relays (option!) it is possible to

switch higher currents.

To avoid destruction by high voltage spikes the output contacts are protected by suppressor diodes with a rated voltage of 33V.

Technical Specifications

Pt100-Eingang

Measuring current	: 2 mA
Measuring range	: -40...100 °C
Accuracy	: < 1°C
Threshold *	: close contact = 70°C
	open contact = 66°C
Relay outputs	: 1 N.O.
	1 N.C.
max. switching voltage	: 33 V
max. switching current	: 100 mA
Power supply	: 16 V...32 V DC
Current	: max 40 mA
Design	
EMV	: ENV 50121-3-2
Protection class	: IP40
Combustible class	: VO (UL94)
Mounting	: EN 50022
environmental temperature	: -25 bis +70 °C
shock resistance	: VDE 0115/Teil
	: 200/ page 52/10.2.11
Dimensions	: 99 x 114,5 x 45 mm

Order key (Example)

CO 9001-	X	X	X	X	X	Performance	
		Threshold				ON	OFF
	0	**0**	**0**	**0**		70°C	66°C
Power Supply							
0	18 ... 36 V DC (standard)						
1	4,5 ... 9 V DC, (option)						
2	9 ... 18 V DC, (option)						
3	36 ... 48 V DC, (option)						

* The switching performance and the switching thresholds had to be specified by the customer. The data in the technical specifications and in the order key are only examples.

Startup

The connection of the device is shown on picture 1. The RTD sensors are connected according to picture 1. Attention! The terminals 4, 8, 12, and 16 are internally connected altogether.

The two relay contacts are isolated to one another and to the input terminals. The relay outputs can switch DC or AC signals. Attention! The rated contact values may not be exceeded.

The unit needs a power supply of 16 to 32 VDC. The power supply must be connected to the terminal 24 (+) and 23 (-). Terminal 22 must be connected to ground.

Pinning Diagram
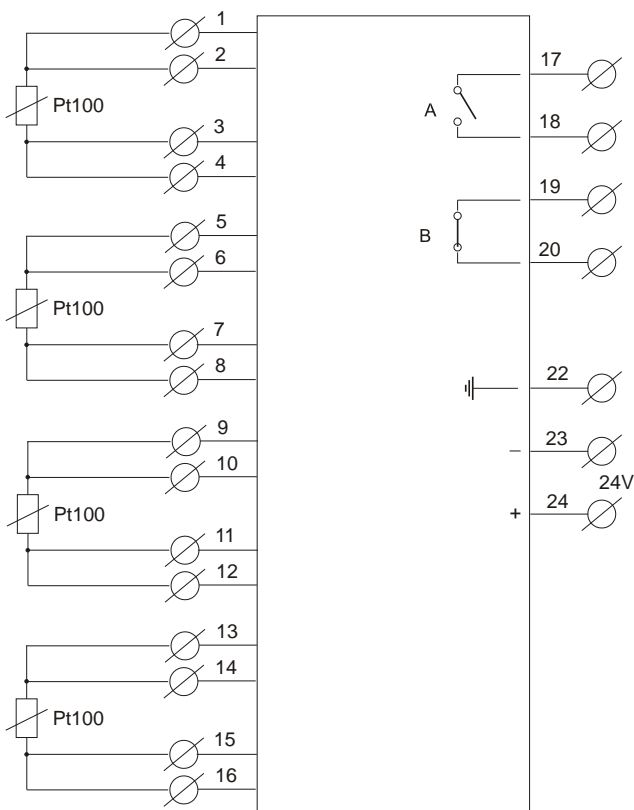
Connections

Terminal 1	Sensor 1/Pt100 - current (+)
Terminal 2	Sensor 1/Pt100
Terminal 3	Sensor 1/Pt100
Terminal 4	Sensor 1/Pt100 - current (GND)
Terminal 5	Sensor 2/Pt100 - current (+)
Terminal 6	Sensor 2/Pt100
Terminal 7	Sensor 2/Pt100
Terminal 8	Sensor 2/Pt100 - current (GND)
Terminal 9	Sensor 3/Pt100 - current (+)
Terminal 10	Sensor 3/Pt100
Terminal 11	Sensor 3/Pt100
Terminal 12	Sensor 3/Pt100 - current (GND)
Terminal 13	Sensor 4/Pt100 - current (+)
Terminal 14	Sensor 4/Pt100
Terminal 15	Sensor 4/Pt100
Terminal 16	Sensor 4/Pt100 - current (GND)
Terminal 17	Operating Contact
Terminal 18	Operating Contact
Terminal 19	Break Contact
Terminal 20	Break Contact
Terminal 22	Ground Wire
Terminal 23	24 VDC (-)
Terminal 24	24 VDC (+)

Dimensions

Technical Subjects To Change