Temperature controller for panel mounting
PID controller, dimensions 48 x 96 mm
Model CS4H

WIKA data sheet AC 85.03

Applications

- Plant construction and industrial ovens
- Process engineering
- Plastics technology and processing
- Ventilation and air-conditioning
- General industrial applications

Special features

- Control characteristic configurable (PID, PI, PD, P, ON/OFF)
- Integrated auto-tuning
- Selectable control output - relay, logic or 4 ... 20 mA
- Multi-function input for Pt100, thermocouples and industrial standard signals
- Optional with 2nd alarm output, heater burnout alarm, 2nd control output, serial interface or transmitter power supply

Temperature controller, model CS4H

Description

The model CS4H is a compact digital temperature controller for the display, control and monitoring of temperature.

The controller features a multi-function input, meaning the configuration of the sensor input can be set. Thus the flexibility of the controller is considerably increased, and stock-holding is made easier. An alarm output for monitoring the actual value is also available as standard.

The control parameters can be set across broad ranges. Auto- tuning, which facilitates finding the optimal control parameters, can be activated.

The controllers are designed for installation in a control panel. The control output can be set either as relay (for slow control), as logic for the control of electronic solid-state relays (for fast control and high current loads) or as a continuous 4 ... 20 mA output.

As options, there is a 2nd alarm output available for monitoring the actual value and the control loop, a heater burnout alarm for monitoring the control output, a 2nd relay output, a 24 V transmitter power supply, and a serial interface RS-485 instead of the standard parameter memory for a 2nd set point.

WIKA
Part of your business

Specifications

Display

Actual value	7-segment LED, 4-digit, red, character size 11.2 mm
Set point	7-segment LED, 4-digit, green, character size 11.2 mm
Indication range	-1999 ... 9999

Input

Number and type	1 multi-function input for resistance thermometers, thermocouples and standard signals
Input configuration	Selectable via terminal connections and menu-driven programming
Resistance thermometer	Pt100, JPt100, 3-wire, max. permissible resistance per connection line: 10 Ω
Thermocouples	Types K, J, R, S, E, T, N, PL-II, C (W/Re5-26): max. permissible external resistance: 100 Ω Type B: max. permissible external resistance: 40 Ω
Standard signals	0 ... 20 mA, 4 ... 20 mA: Input impedance 50 Ω {external measurement shunt} max. permissible input current: 50 mA 0 ... 1 V: Input impedance > 1 MΩ max. permissible input voltage: 5 V 0 ... 5 V, 1 ... 5 V, 0 ... 10 V: Input impedance > 100 kΩ max. permissible input voltage: 15 V
Measuring time	250 ms

Control outputs

Control output 1	3 different versions are possible
Relay contact	Load: AC 250 V, 3 A (resistive load) AC 250 V, 1 A (inductive load, cos φ = 0.4)
Logic level	DC 0 ... 12 V max. 40 mA (short-circuit proof) For the control of an electronic switch relay (solid-state relay, SSR)
{Analogue current signal}	DC 4 ... 20 mA, max. load 550 Ω
{Control output 2} [1] [2]	For "three-step control" can either be set as relay, logic or analogue current signal
Relay contact	Load: AC 250 V, 3 A (resistive load) AC 250 V, 1 A (inductive load, cos φ = 0.4)
Logic level	DC 0 ... 12 V max. 40 mA (short-circuit proof) For the control of an electronic switch relay (solid-state relay, SSR)
{Analogue current signal}	DC 4 ... 20 mA, max. load 550 Ω
Overlap band/deadband	Thermocouples and resistance thermometers: -100.0 ... 100.0 °C Standard signals: -1,000 ... 1,000 (with a scaling of the input with one decimal point, this is taken over by the hysteresis)
Control mode	PID, PI, PD, P, ON/OFF (configurable) To determine the control parameters for PID control, auto-tuning can be activated.
Proportional band	Thermocouples: 0 ... 1,000 °C Resistance thermometers: 0.0 ... 999.9 °C Standard signals: 0.0 ... 100.0 % Control output 2: 0.0 to 10.0 times the proportional band of control output 1
Integral time	0 ... 1,000 s
Derivative time	0 ... 300 s
Cycle time	1 ... 120 s (not available with analogue current signal control output)
Hysteresis	Only available with ON/OFF control mode Thermocouples and resistance thermometers: 0.1 ... 100.0 °C Standard signals: 1 ... 1,000 (with a scaling of the input with one decimal point, this is taken over by the hysteresis).

Alarm outputs   max. 2 (common contact root)

Alarm output 1	For actual-value monitoring Alarm type, switch behaviour, hysteresis and time delay can be set
{Alarm output 2} [1]	Selectable as actual-value monitoring or control-loop monitoring, or as actual-value and control-loop monitoring with combined output
{Heater burnout alarm} [1]	For single-phase heating systems (not possible with analogue current signal control output), optionally configured up to max. 5 A, 10 A, 20 A or 50 A, the current transformer is included in the delivery
Relay contact [3]	Load: AC 250 V, 3 A (resistive load), AC 250 V, 1 A (inductive load, cos φ = 0.4)

{ } Items in curved brackets are optional extras for an additional price.
1) With regard to the options control output 2, alarm output 2 and heater burnout alarm, only 2 options are possible at the same time.
2) A combination of control output 2 and transmitter power supply is not possible.
3) Is valid for alarm output 1 and alarm output 2 or heater burnout alarm.

Options and performance data

{Parameter memory} [5]	Memory for a 2nd set point, can be activated through the short-circuit of 2 connection terminals on the rear of the controller
{Serial interface} [5]	RS-485 The transmission rate can be set (2,400 bps, 4,800 bps, 9,600 bps or 19,200 bps).
{Transmitter power supply} [4]	DC 24 V ± 3V, max 30 mA
Power supply	AC 100 ... 240 V, 50/60 Hz (max. permissible 85 ... 264 V) or AC/DC 24 V, 50/60 Hz (max. permissible 20 ... 28 V)
Power consumption	approx. 8 VA

Case

Material	Polycarbonate, black
Ingress protection	Front: IP 66, Rear: IP 00 (per IEC 60529/EN 60529)
Weight	approx. 250 g
Mounting option	Screw-type mounting brackets for wall thicknesses from 1 to 15 mm

{ } Items in curved brackets are optional extras for an additional price.
4) A combination of control output 2 and transmitter power supply is not possible.
5) For controllers with serial interface, the standard parameter memory is not available anymore.

Inputs of the temperature controller

Input signals	Measuring span		Measuring error of the span in %	
			Standard	Exceptions
Current signals				
0 ... 20 mA, 4 ... 20 mA	-1999 ... 9999 [6]		±0.2 % ±1 digit	-
Voltage signals				
0 ... 1 V, 0 ... 5 V, 0 ... 10 V	-1999 ... 9999 [6]		±0.2 % ±1 digit	-
1 ... 5 V	-1999 ... 9999 [6]		±0.2 % ±1 digit	-
Thermocouples				
Type K, NiCr-Ni	-200 ... +1,370 °C -199.9 ... +400.0 °C	-320 ... +2,500 °F -199.9 ... +750.0 °F	±0.2 % ±1 digit [7] ±2 K	≤ 0 °C: ±0.4 % ±1 digit ≤ 0 °C: ±0.4 % ±1 digit
Type J, Fe-CuNi	-200 ... +1,000 °C	-320 ... +1,800 °F	±0.2 % ±1 digit [7]	≤ 0 °C: ±0.4 % ±1 digit
Type R, PtRh-Pt	0 ... +1,760 °C	0 ... +3,200 °F	±0.2 % ±1 digit [7]	≤ 200 °C: ±6 K
Type S, PtRh-Pt	0 ... +1,760 °C	0 ... +3,200 °F	±0.2 % ±1 digit [7]	≤ 200 °C: ±6 K
Type B, PtRh-PtRh	0 ... +1,820 °C	0 ... +3,300 °F	±0.2 % ±1 digit [7]	≤ 300 °C: without details
Type E, NiCr-CuNi	-200 ... +800 °C	-320 ... +1,500 °F	±0.2 % ±1 digit [7]	≤ 0 °C: ±0.4 % ±1 digit
Type T, Cu-CuNi	-199.9 ... +400.0 °C	-199.9 ... +750.0 °F	±2 K	≤ 0 °C: ±0.4 % ±1 digit
Type N, NiCrSi-NiSi	-200 ... +1,300 °C	-320 ... +2,300 °F	±0.2 % ±1 digit [7]	≤ 0 °C: ±0.4 % ±1 digit
Type PL-II	0 ... +1,390 °C	0 ... +2,500 °F	±0.2 % ±1 digit [7]	-
Type C (W/Re5-26)	0 ... +2,315 °C	0 ... +4,200 °F	±0.2 % ±1 digit [7]	-
Resistance thermometer				
Pt100 (3-wire)	-200 ... +850 °C -199.9 ... +850.0 °C	-300 ... +1,500 °F -199.9 ... +999.9 °F	±0.1 % ±1 digit [7] ±0.1 % ±1 digit [7]	-
JPt 100 (3-wire)	-200 ... +500 °C -199.9 ... +500.0 °C	-300 ... +900 °F -199.9 ... +900.0 °F	±0.1 % ±1 digit [7] ±1 K	-

6) Adjustable decimal point.
7) Referred to the measuring span in °C.

Designation of terminal connectors
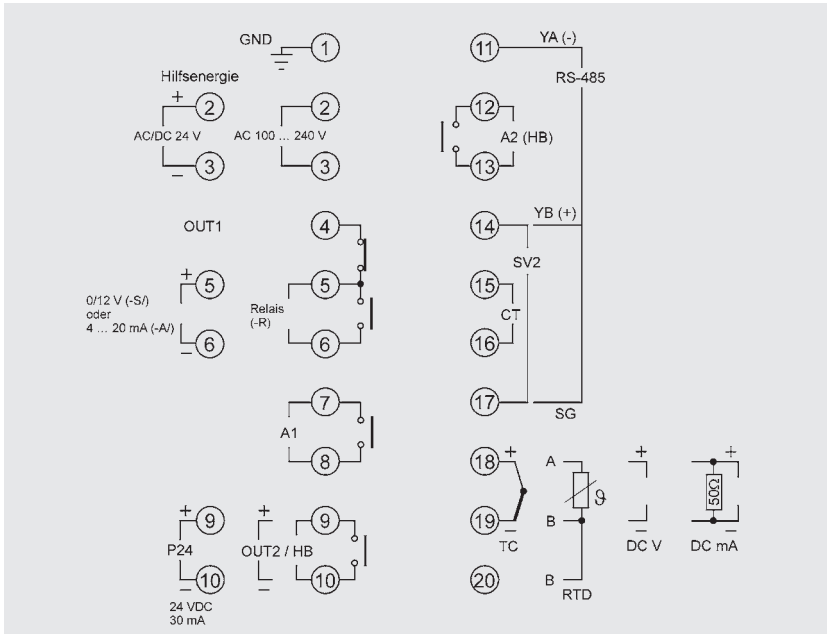
**Legend:**

TC	Input thermocouple
RTD	Input resistance thermometer
DC V	Input voltage signal
DC mA	Input current signal
OUT 1	Control output 1
(-R/)	Control output, relay
(-S/)	Control output, logic level 0 ... 12 V
(-A/)	Control output, 4 ... 20 mA analogue current signal
OUT 2	Control output 2
A1	Alarm output 1
A2	Alarm output 2
HB	Heater burnout alarm
CT	Current transformer for heater burnout alarm
SV2	Parameter memory for 2nd set point
RS-485	Serial interface RS-485
P24	Transmitter power supply

Dimensions in mm

Sealing and screw-type mounting bracket
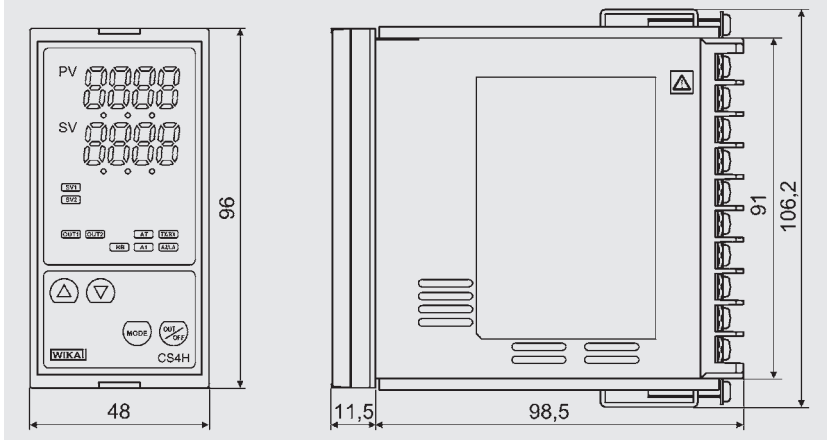
Panel cutout
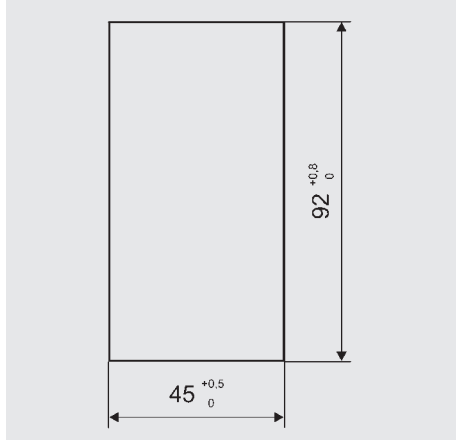
CE conformity

EMC directive
2004/108/EC, EN 61326 emission (group 1, class B) and
interference immunity (industrial application)

Low voltage directive
2006/95/EC, EN 61010-1:2010

Approvals (option)

■ **GOST**, metrology/measurement technology, Russia

Certificates (option)

■ 2.2 test report
■ 3.1 inspection certificate
■ DKD/DAkkS calibration certificate

Approvals and certificates, see website

Ordering information

Model / Control output / Power supply / Instrument configuration / Additional relay output / Additional interface / Terminal
cover / Options

05/2014 GB

WIKA

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30
63911 Klingenberg/Germany
Tel.   +49 9372 132-0
Fax   +49 9372 132-406
info@wika.de
www.wika.de