

Temperature Controller for Rail Mounting PID Controller, Dimensions 75 x 22.5 mm Model CS4R

WIKA Data Sheet AC 85.05

Applications

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

Special Features

- Control characteristic adjustable (PID, PI, PD, P, ON/OFF)
- Integrated auto-tuning function
- Control output optionally relay, logic level or 4 ... 20 mA
- Multi-function input for Pt100, thermocouples and industry standard signals
- Optionally with heater burnout alarm and serial interface



Temperature Controller Model CS4R

Description

Model CS4R is a compact digital temperature controller for displaying, controlling and monitoring temperatures.

The controller has a multi-function input, i. e. the input configuration is adjustable.

Thereby the flexibility of the controller is significantly increased, stock-keeping is simplified.

An alarm output for process value and control loop monitoring is also available as standard.

The control parameters can be set over wide ranges. An auto-tuning function can be activated, which makes it easier to find the ideal control parameters.

The controllers are designed for rail mounting.

The control output is alternatively equipped with a relay (for slow controls), with a logic level to drive a solid state relay (for fast controls and high current loads) or with an analogue current signal 4 ... 20 mA.

The versions with control output 4 ... 20 mA can be re-configured and used as transmitter with output signal 4 ... 20 mA.

Optionally available are a heater burnout alarm for heat current monitoring and a serial interface RS-485.

Specifications

Model CS4R

Display	
- Process value	7-segment-LED, 4-digit, red, character size 7.5 mm
- Setting value	7-segment-LED, 4-digit, green, character size 7.5 mm
- Indication range	-1999 ... 9999
Input	
- Number and type	1 multi-function input for resistance thermometers, thermocouples and industry standard signals
- Input configuration	Selectable via terminal configuration and menu-driven programming
- Resistance thermometers	Pt100, JPt100, 3-wire max. permissible resistance per wire: 10 Ω
- Thermocouples	Type K, J, R, S, B, E, T, N, PL-II, C (W/Re5-26) max. permissible external resistance: 100 Ω for type B: max. 40 Ω
- Standard signals	0 ... 20 mA, 4 ... 20 mA input resistance 50 Ω (external shunt, optionally available) max. permissible input current: 100 mA
	0 ... 1 V input resistance > 1 M Ω max. permissible input voltage: 5 V
	0 ... 5 V, 1 ... 5 V, 0 ... 10 V input resistance > 100 k Ω max. permissible input voltage: 15 V
- Measuring time	250 ms
Control output	3 different versions are possible
- Relay contact	Load: AC 250 V, 3 A (resistive load) AC 250 V, 1 A (inductive load, $\cos \varphi = 0.4$)
- Logic level	DC 0/12 V max. 40 mA (short-circuit proof) To actuate a solid state relay
{- Analogue current signal}	4 ... 20 mA, load max. 550 Ω The control output 4 ... 20 mA can be reconfigured as a transmitter output 4 ... 20 mA
Control characteristic	PID, PI, PD, P, ON/OFF (adjustable)
Control parameters	An auto-tuning function can be activated to find suitable control parameters
- Proportional band	0 ... 110 %
- Integral time	0 ... 1000 s
- Differential time	0 ... 300 s
- Cycle time	1 ... 120 s (not available with control output analogue current signal)
- Hysteresis	Only available with ON/OFF control characteristics Thermocouples and resistance thermometers: 0.1 ... 100.0 $^{\circ}\text{C}$ Standard signals: 1 ... 1000 (the placement of the decimal point follows the input configuration)
Alarm output	Open-collector Load: DC 24 V, max. 0.1 A
- Alarm output 1	For process value and control loop monitoring Alarm type, switching mode, hysteresis and delay adjustable
{- Heater burnout alarm} ¹⁾	For 1 phase heating systems (not available with control output analogue current signal) Alternatively for max. 5 A, 10 A, 20 A or 50 A Current transformer is supplied with controller
{Serial interface}	RS-485 The transfer rate is adjustable (2400 bps, 4800 bps, 9600 bps or 19200 bps)
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. 6 VA
Ambient conditions	
- Ambient temperature	0 ... 50 $^{\circ}\text{C}$
- Storage temperature	-20 ... +50 $^{\circ}\text{C}$
- Humidity	35 ... 85 % relative humidity, non-condensing
Case	
- Material	Polycarbonate
- Colour	Light grey
- Mass	Approx. 150 g
- Mounting	Snap on mechanism for mounting on a DIN rail

{ } Items in curved brackets are optional extras for an additional price.

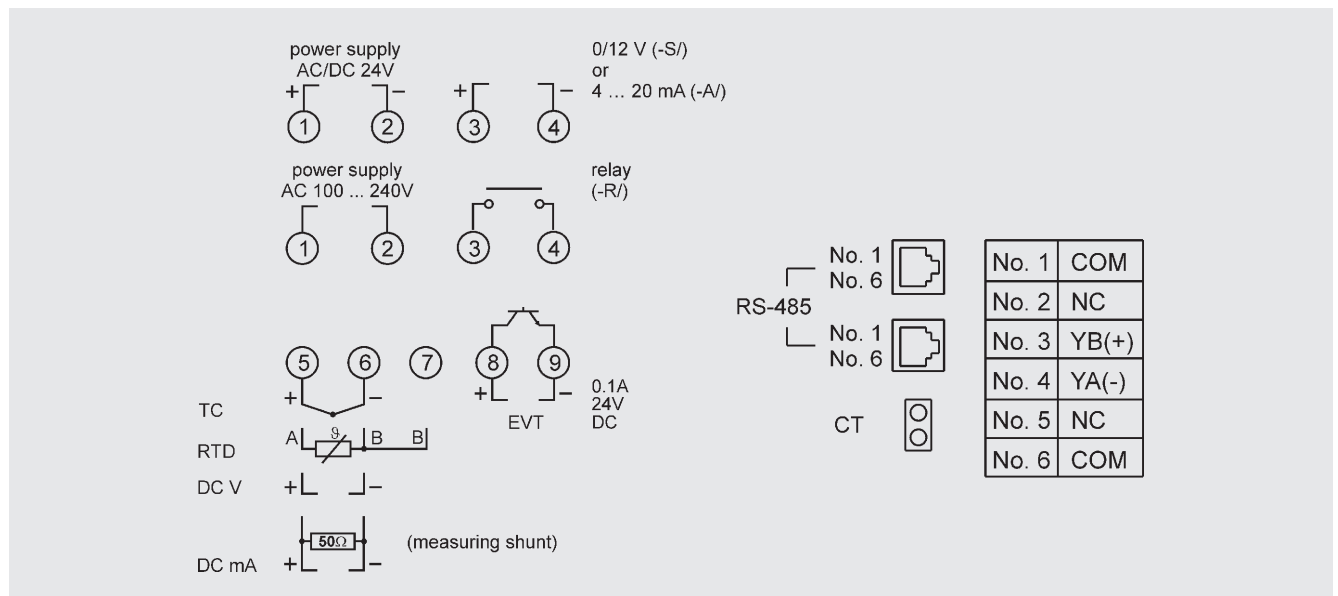
1) In case of combination of alarm output 1 and heater burnout alarm they act on a common Open-collector output.

Input signals	Measuring span		Measuring error in [%] of the span	
			Standard	Exception
Current signals				
0 ... 20 mA	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
4 ... 20 mA	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
Voltage signals				
0 ... 1 V	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
0 ... 5 V	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
1 ... 5 V	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
0 ... 10 V	-1999 ... 9999 ²⁾		± 0.2 % ± 1 Digit	-
Thermocouples				
Type K, NiCr-Ni	-200 ... +1370 °C	-320 ... +2500 °F	± 0.2 % ± 1 Digit ³⁾	≤ 0 °C: ± 0.4 % ± 1 Digit
	-199.9 ... +400.0 °C	-199.9 ... +750.0 °F	± 2 K	≤ 0 °C: ± 0.4 % ± 1 Digit
Type J, Fe-CuNi	-200 ... +1000 °C	-320 ... +1800 °F	± 0.2 % ± 1 Digit ³⁾	≤ 0 °C: ± 0.4 % ± 1 Digit
Type R, PtRh-Pt	0 ... 1760 °C	0 ... 3200 °F	± 0.2 % ± 1 Digit ³⁾	≤ 200 °C: ± 6 K
Type S, PtRh-Pt	0 ... 1760 °C	0 ... 3200 °F	± 0.2 % ± 1 Digit ³⁾	≤ 200 °C: ± 6 K
Type B, PtRh-PtRh	0 ... 1820 °C	0 ... 3300 °F	± 0.2 % ± 1 Digit ³⁾	≤ 300 °C: without details
Type E, NiCr-CuNi	-200 ... +800 °C	-320 ... +1500 °F	± 0.2 % ± 1 Digit ³⁾	≤ 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 ... +1300 °C	-320 ... +2300 °F	± 0.2 % ± 1 Digit ³⁾	≤ 0 °C: ± 0.4 % ± 1 Digit
Type PL-II	0 ... 1390 °C	0 ... 2500 °F	± 0.2 % ± 1 Digit ³⁾	-
Type C (W/Re5-26)	0 ... 2315 °C	0 ... 4200 °F	± 0.2 % ± 1 Digit ³⁾	-
Resistance thermometers				
Pt100 (3-wire)	-200 ... +850 °C	-300 ... +1500 °F	± 0.1 % ± 1 Digit ³⁾	-
	-199.9 ... +850.0 °C	-199.9 ... +999.9 °F	± 0.1 % ± 1 Digit ³⁾	-
JPt100 (3-wire)	-200 ... +500 °C	-300 ... +900 °F	± 0.1 % ± 1 Digit ³⁾	-
	-199.9 ... +500.0 °C	-199.9 ... +900.0 °F	± 1 K	-

2) Decimal point adjustable

3) Referring to the measuring span in °C.

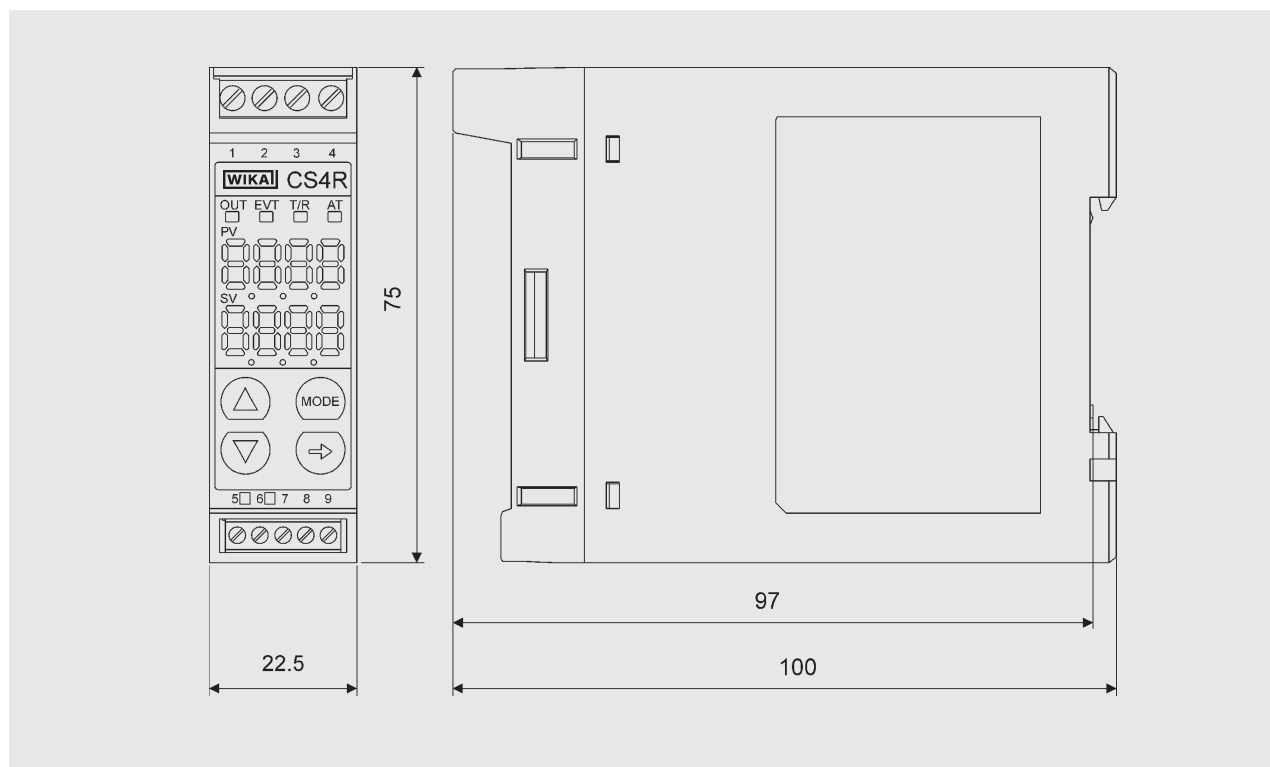
Designation of terminal connectors



Legend:

CT	Current transformer for heater burnout alarm	TC	Input thermocouples
EVT	Output for alarm output 1 and heater burnout alarm	RTD	Input RTD
(-R/)	Control output relay	DC V	Input voltage signal
(-S/)	Control output logic level 0/12 V	DC mA	Input current signal
(-A/)	Control output analogue current signal 4 ... 20 mA	RS-485	Serial interface RS-485

Dimensions in mm



Modifications may take place and materials specified may be replaced by others without prior notice.
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.



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