

# Temperature Controller

PID controller, with Fuzzy Logic,  
self optimizing,  
also with heater burnout alarm

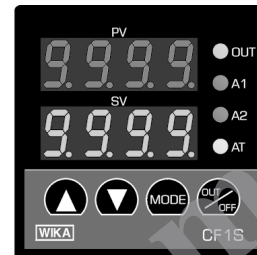
48 mm x 48 mm • Model CF1 S

## Electronic Temperature Measurement

### Areas of application

for control tasks in

- Process and procedure technology
- Plant construction
- Plastic technology and processing
- Ventilation and air conditioning technology



### Features

- **Control characteristic**
  - PID / PD controller, self optimizing
  - two-step controller (ON/OFF)
- **Multi-function input**
  - thermocouples
  - resistance thermometers
- **Control output**
  - relay
  - logic level
  - continuous, 4 ... 20 mA
- **Displays**
  - each one display for process value and setting value
  - LED display, 4-digit
  - switchable for °C or °F
- **Alarm output**
  - max. two alarm contacts
  - setable switching logic, also with stand-by function

### Options

- heater burnout alarm

### Other features

- self optimizing
- self monitoring
- sensor monitoring
- sensor correction
- cold junction compensation

### Description

Compact digital temperature controller with fuzzy logic for controlling, displaying and monitoring temperature signals.

All types of commonly used temperature sensors can be connected to the multi-function input.

The control parameters can be set over wide ranges. Self optimizing parameter setting which can operate with fuzzy logic, as well, may also be brought in. This feature enables an optimal self setting of the controller.

Offered apart from standard features for simple control tasks the feature monitoring control variables (heater burnout alarm) is available as optional extra.

At no extra cost the control output can be provided to choice as relay (for slow control operations), logic level (for fast control operations) or as continuous output 4 ... 20 mA. Optional alarm outputs for monitoring functions.

These controllers have been designed for switch panel mounting.

## Model CF1 S

			max. Measuring range <sup>1)</sup>		Resolution
RTDs	Pt 100	DIN IEC 751	-199.9 ... + 850.0 °C	-199.9 ... + 999.9 °F	0,1 °C / 0,1 °F
			-200 ... + 850 °C	-320 ... + 1560 °F	1 °C / 1 °F
	JPt 100	JIS C 1606	-199.9 ... + 500.0 °C	-199.9 ... + 900.0 °F	0,1 °C / 0,1 °F
Thermocouples	Type K, NiCr-Ni	DIN IEC 584	- 200 ... + 1370 °C	- 320 ... + 2500 °F	1 °C / 1 °F
	Type J, Fe-CuNi	DIN IEC 584	- 200 ... + 1000 °C	- 320 ... + 1800 °F	1 °C / 1 °F
	Type N, NiCrSi-NiSi	DIN IEC 584	0 ... + 1300 °C	0 ... + 2300 °F	1 °C / 1 °F
	Type R, PtRh-Pt	DIN IEC 584	0 ... + 1760 °C	0 ... + 3200 °F	1 °C / 1 °F
	Type B, PtRh-PtRh	DIN IEC 584	0 ... + 1820 °C	0 ... + 3300 °F	1 °C / 1 °F

**Outputs** (continued)

heater burnout alarm	optional (not available with control output in analogue current signal 4 ... 20 mA), for 1 phase systems, max. 20 A or 50 A, current converter is supplied with controller
relay contact	load: AC 250 V, 3 A (ohmic load) AC 250 V, 1 A (inductive load, $\cos \varphi = 0.4$ )
	hysteresis setable: 0.1 ... 100.0 K

**Ambient conditions**

ambient temperature:	0 ... +50 °C
storage temperature:	-20 ... +50 °C
humidity:	35 ... 85 % relative humidity, noncondensing

**Case**

for switch panel mounting 48 mm x 48 mm

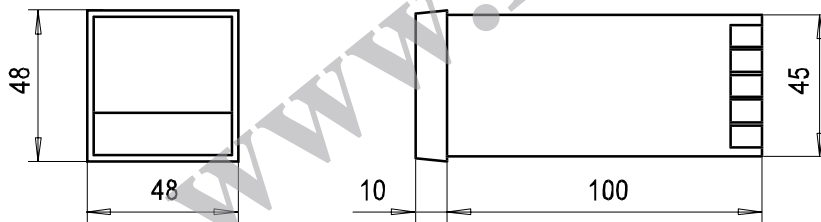
dimensions:	48 mm x 48 mm x 110 mm (W x H x D)
case material:	polycarbonate, flame resistant
operation:	key pad
colour:	black
ingress protection:	panel front IP 50 (IEC 529 / EN 60 529)
mounting:	clips, stainless steel, for switch panel thickness up to 3 mm
weight:	approx. 140 g

**Other features**

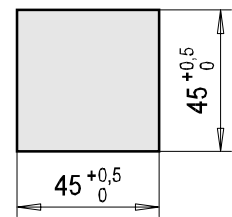
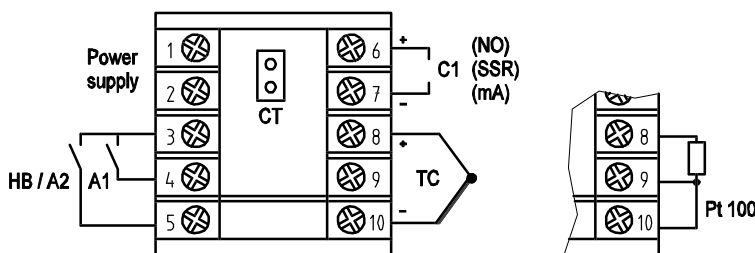
Self monitoring	automatic execution of initial test after connection to power supply, thereafter monitoring due to internal malfunction
Sensor monitoring	optical signalling of sensor burnout and sensor short circuiting
Sensor correction	setable
Cold junction compensation	$\pm 1$ K in ambient temperature range 0 ... 50 °C

**Further options**

- screw bracket (for switch panel thickness from 1 mm up to 15 mm) instead of clips
- ingress protection of panel front IP 54 (additional seal), screw bracket necessary
- terminal cover for additional protection

**Dimensions** in mm

3220 672.01

**Panel cutout** in mm**Designation of terminal connectors**

3220 982.01

**Legend:**

Power supply	power supply
C1	control output
	(NO) relay
	(SSR) logic level
	(mA) analogue current signal
TC	input thermocouple
Pt 100	input resistance thermometer
A1	alarm output 1
optional:	
A2	alarm output 2
HB	heater burnout alarm
CT	connection of current converter

# Order code for temperature controller    Model CF1S    48 mm x 48 mm

Field No.	Code	Features
1		<b>Control output</b>
	R	relay
	S	logic level DC 0/12 V for solid state relay
	A	analogue current signal (4 ... 20 mA)
		<b>Input configuration</b>
2	K1	thermocouple type K (NiCr-Ni), range -200 ... +1370 °C 1)
	J1	thermocouple type J (Fe-CuNi), range -200 ... +1000 °C 1)
	N1	thermocouple type N (NiCrSi-NiSi), range 0 ... +1300 °C 1)
	R1	thermocouple type R (PtRh-Pt), range 0 ... +1760 °C 1)
	B1	thermocouple type B (PtRh-PtRh), range 0 ... +1820 °C 1)
3	11	Pt 100, range -199.9 ... +850.0 °C 1)
		<b>Power supply</b>
	H	AC 100 ... 240 V 50 ... 60 Hz
	L	AC/DC 24 V

## Options:

4		<b>Alarm output 2</b>
	AS	setable switching logic
4		<b>Heater burnout alarm</b>
	W12	for 1 phase (max. 20 A) 2)
	W15	for 1 phase (max. 50 A) 2)
4		<b>Terminal connections</b>
	KA	with additional terminal cover <i>Without terminal cover as standard</i>
4		<b>Mounting provision</b>
	FS	screw bracket <i>Stainless steel clips as standard</i>
4		<b>Ingress protection</b>
	IP	IP 54 3) <i>In front IP 50 as standard</i>
4		<b>Instrument configuration</b>
	V?	to customer's specifications <i>Please state as additional text</i>

## Order code:

CF1S -	3	A	-	<div>1</div>	/	M	-	<div>2</div>	<div>3</div>	Options (Field No. 4):	<div>4)</div>
--------	---	---	---	--------------	---	---	---	--------------	--------------	------------------------	---------------

## Additional text:

- 1) Setable input.
- 2) Not with analogue control output (4 ... 20 mA)
- 3) This option needs to be combined with optional mounting provision: screw bracket, code FS.
- 4) Please separate the codes for several options by a hyphen if you wish to combine options.  
Example: CF1S-3 A - R / M - K1 H - AS - FS - IP

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



**WIKAI Alexander Wiegand GmbH & Co.**  
Alexander-Wiegand-Straße · 63911 Klingenberg  
☎ (0 9372) 132-0 · ☎ (0 9372) 132-406/414  
http://www.wika.de · E-mail: info@wika.de