Universal controller for panel mounting
Models CS6S, CS6H, CS6L

WIKA data sheet AC 85.08

Applications

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

Special features

- Control modes, configurable (PID, PI, P, PD, $^{ON}/_{OFF}$)
- Integrated auto-tuning
- Selectable monitoring output - relay, logic level or 4 ... 20 mA
- Multi-function input for Pt100, thermocouples and standard industrial signals
- Available in 3 case sizes

Configurator

Standard articles

Universal controller, model CS6S

Description

The compact universal controllers of the CS6x series offer display, control and monitoring of temperatures.

The controllers feature a multi-function input, meaning the configuration of the sensor input can be set. Thus the flexibility of the controller is considerably increased, and warehousing 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 monitoring output can be set either as relay (for slow control), as logic level 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 the monitoring of the actual value and the control loop, and a heater burnout alarm for monitoring the monitoring output, or, alternatively, a 2nd monitoring output. An RS-485 serial interface is also possible.

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Smart in sensing

Specifications

Display	
Actual value	7-segment LED, 5-digit, red
Set point	7-segment LED, 5-digit, green
Indication range	-2000 ... 10000

Case designs	
Model CS6S	Dimensions 48 x 48 x 60 mm
Model CS6H	Dimensions 96 x 48 x 60 mm
Model CS6L	Dimensions 96 x 96 x 60 mm

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 thermometers	Pt100, JPt100, 3-wire, max. permissible resistance per connection lead: 10 Ω
Thermocouples ■ Types K, J, R, S, E, T, N, PL-II, C (W/Re5-26) ■ Type B	max. permissible external resistance: 100 Ω max. permissible external resistance: 40 Ω
Standard signals (DC) ■ 0 ... 20 mA, 4 ... 20 mA ■ 0 ... 1 V ■ 0 ... 5 V, 1 ... 5 V, 0 ... 10 V	Input impedance 50 Ω Input impedance > 1 MΩ Input impedance > 100 kΩ
Measuring time	125 ms
Power supply	■ AC 100 … 240 V, 50 … 60 Hz ■ AC/DC 24 V

Monitoring outputs	
■ **Monitoring output 1 (O1)**	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	4 ... 20 mA, max. load 550 Ω
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, resistance thermometers without decimal point: 0 to input range limit Thermocouples, resistance thermometers with decimal point: 0.0 to input range limit Standard signals: 0.0 ... 1,000.0 %
Integral time	0 ... 3,600 s
Derivative time	0 ... 1,800 s
Cycle time	1 ... 120 s (not available with analogue current signal monitoring output)
Hysteresis	Only available with $^{ON}/_{OFF}$ control mode Thermocouples and resistance thermometers: 0.1 ... 1,000.0 °C Standard signals: 1 ... 1,000 (with a scaling of the input with one decimal point, this is taken over by the hysteresis).
■ **Alarm output 1 (EV1)**	
Alarm type	For actual value monitoring, select from 24 alarm types, hysteresis and time delay, configurable
Switch behaviour	$^{ON}/_{OFF}$
Relay contact	Load: AC 250 V, 3 A (resistive load), AC 250 V, 1 A (inductive load, cos φ = 0.4, switch cycles: max. 100,000)

Optional functions

Set point input (EV1, 2 points)	When the parameter memory is selected, the set point can be stored between SV1 and SV4. Set point: 2 points Short circuit: at approx. 16 mA
Alarm output 2 (EV2)	As for alarm output 1 (EV1)
Heater burnout alarm	Monitors the heating current using a current transformer (CT, included in scope of delivery) Rated current: 20 A, 100 A (specify when ordering!) 1-phase: detects overheating with CT1 input 3-phase: detects overheating with CT1 and CT2 inputs Adjustment accuracy: within 5 % of rated value
Monitoring output 2 (O2)	For 3-point control
Output	Logic level: DC 12 V ±15 %, 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, load max. 550 Ω
Proportional band	0.0 to 10.0 times the proportional band of monitoring output 1
Integral time	Identical to the integral time of monitoring output 1
Derivative time	Identical to the derivative time of monitoring output 1
Cycle time	0.5 s or 1 ... 120 s
Overlap band/dead band	Thermocouples and resistance thermometers: -200.0 ... +200.0 °C Standard signals: -2000 ... +2000 (with a scaling of the input with one decimal point, this is taken over by the hysteresis).
Hysteresis	Only available with $^{ON}/_{OFF}$ control mode Thermocouples and resistance thermometers: 0.1 ... 1000.0 °C Standard signals: 1 ... 10000 (with a scaling of the input with one decimal point, this is taken over by the hysteresis).
Cooling mode	■ Air cooling (linear process, standard setting) ■ Oil cooling (1.5 times the slope of the linear process) ■ Water cooling (2 times the slope of the linear process)
Serial interface	RS-485 the transmission rate can be set (9,600 bps, 19,200 bps, or 38,400 bps)
Isolated voltage output (P24)	Output voltage: DC 24 V, 30 mA Ripple voltage: within 200 mV Maximum load current: DC 30 mA

Ambient conditions

Ambient temperature	0 ... 50 °C (32 ... 122 °F)
Storage temperature	-20 ... +50 °C
Humidity	35 ... 85 % relative humidity without condensation
Environmental conditions in accordance with IEC 61010-1	Overvoltage category II, pollution degree 2

Case

Material	Polycarbonate
Colour	Black
Ingress protection	Front: IP66, Rear: IP00 (per IEC 60529/EN 60529)
Weight ■ Model CS6S ■ Model CS6H ■ Model CS6L	 110 g 160 g 220 g
Mounting	Screw-type mounting brackets for wall thicknesses from 1 to 15 mm

Inputs of the universal controllers

| Input signals	Measuring span		Measuring error of the span in %	
			Standard	Exceptions
Current signals				
DC 0 ... 20 mA	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
DC 4 ... 20 mA	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
Voltage signals				
DC 0 ... 1 V	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
DC 0 ... 5 V	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
DC 1 ... 5 V	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
DC 0 ... 10 V	-2,000 ... 10,000 [1]		±0.2 % ±1 digit	-
Thermocouples				
Type K, NiCr-Ni	-200 ... +1,370 °C -200.0 ... +400.0 °C	-328 ... +2,498 °F -328.0 ... +752.0 °F	±0.2 % ±1 digit [2] ±0.2 % ±1 digit [2]	≤ 0 °C: ±0.4 % ±1 digit ≤ 0 °C: ±0.4 % ±1 digit
Type J, Fe-CuNi	-200 ... +1,000 °C	-328 ... +1,832 °F	±0.2 % ±1 digit [2]	≤ 0 °C: ±0.4 % ±1 digit
Type R, PtRh-Pt	0 ... 1,760 °C	32 ... 3,200 °F	±0.2 % ±1 digit [2]	≤ 200 °C: ±6 K
Type S, PtRh-Pt	0 ... 1,760 °C	32 ... 3,200 °F	±0.2 % ±1 digit [2]	≤ 200 °C: ±6 K
Type B, PtRh-PtRh	0 ... 1,820 °C	32 ... 3,308 °F	±0.2 % ±1 digit [2]	≤ 300 °C: without details
Type E, NiCr-CuNi	-200 ... +800 °C	-328 ... +1,472 °F	±0.2 % ±1 digit [2]	≤ 0 °C: ±0.4 % ±1 digit
Type T, Cu-CuNi	-200.0 ... +400.0 °C	-328.0 ... +752.0 °F	±0.2 % ±1 digit [2]	≤ 0 °C: ±0.4 % ±1 digit
Type N, NiCrSi-NiSi	-200 ... +1,300 °C	-328 ... +2,372 °F	±0.2 % ±1 digit [2]	≤ 0 °C: ±0.4 % ±1 digit
Type PL-II	0 ... 1,390 °C	32 ... 2,534 °F	±0.2 % ±1 digit [2]	-
Type C (W/Re5-26)	0 ... 2,315 °C	32 ... 4,199 °F	±0.2 % ±1 digit [2]	-
Resistance thermometers				
Pt100 (3-wire)	-200 ... +850 °C -200.0 ... +850.0 °C	-328 ... +1,562 °F -328.0 ... +1,562.0 °F	±0.1 % ±1 digit [2] ±0.1 % ±1 digit [2]	
JPt100 (3-wire)	-200 ... +500 °C -200 ... +500 °C	-328 ... +932 °F -328 ... +932 °F	±0.1 % ±1 digit [2] ±1 K	

1) Adjustable decimal point.
2) With respect to the measuring span in °C.

Accessories

Description	Order number
Terminal cover for model CS6S 48 x 48 mm, IP20	14154342
Terminal cover for model CS6H 48 x 96 mm, IP20	14154346
Terminal cover for model CS6L 96 x 96 mm, IP20	14154350
Instrument cable incl. USB cable (USB type A) Length approx. 2.2 m	14154359
Current transformer CT for 20 A For heater burnout alarm	14154426
Current transformer CT for 100 A For heater burnout alarm	14154431

Designation of connection terminals
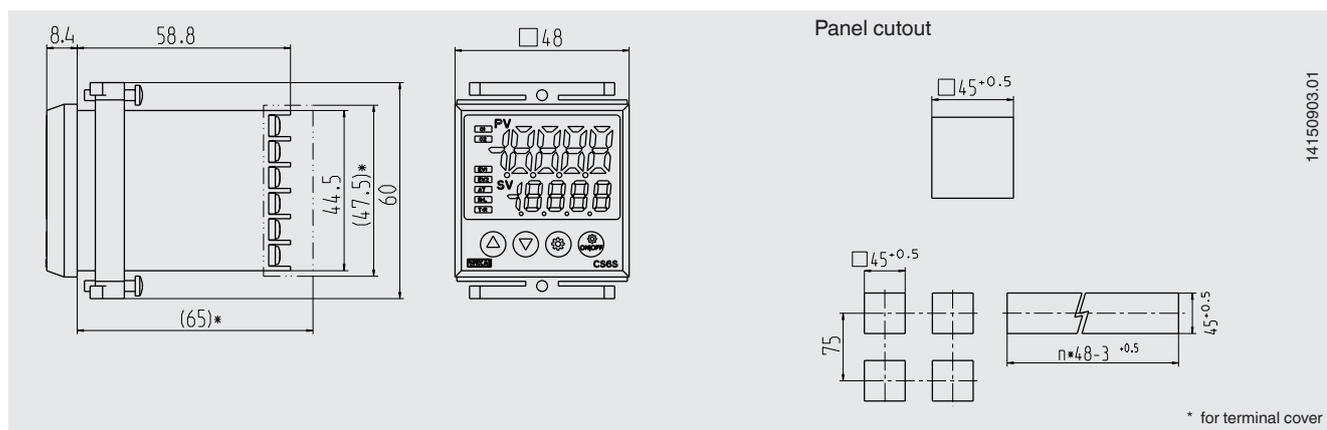
Model CS6S
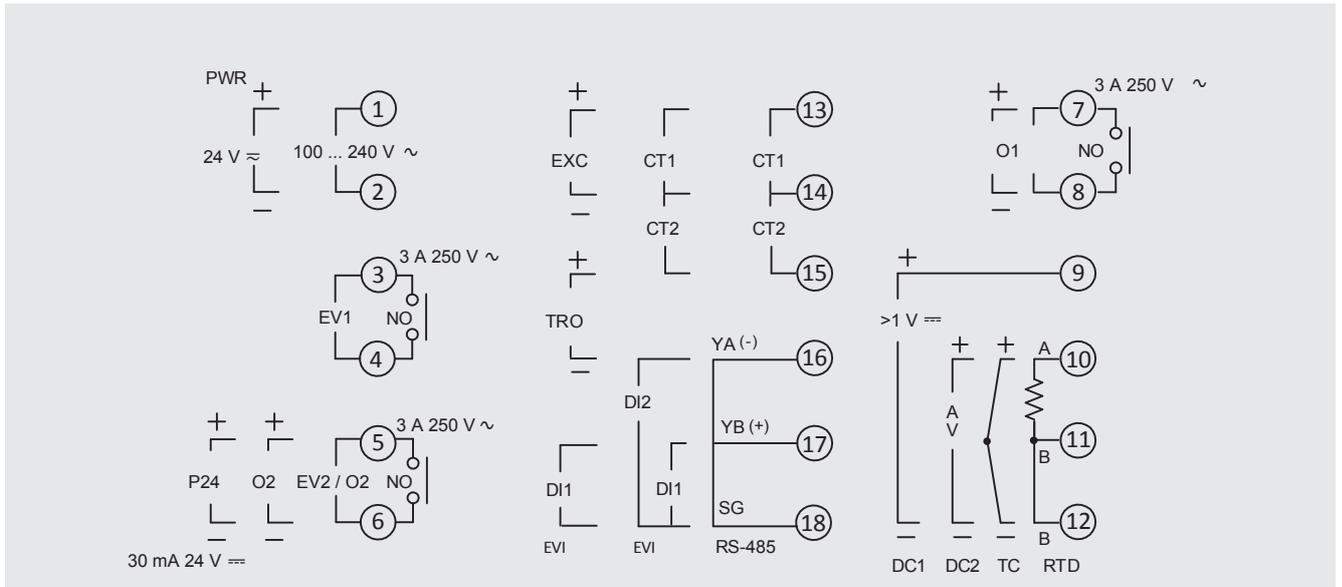
Models CS6H, CS6L
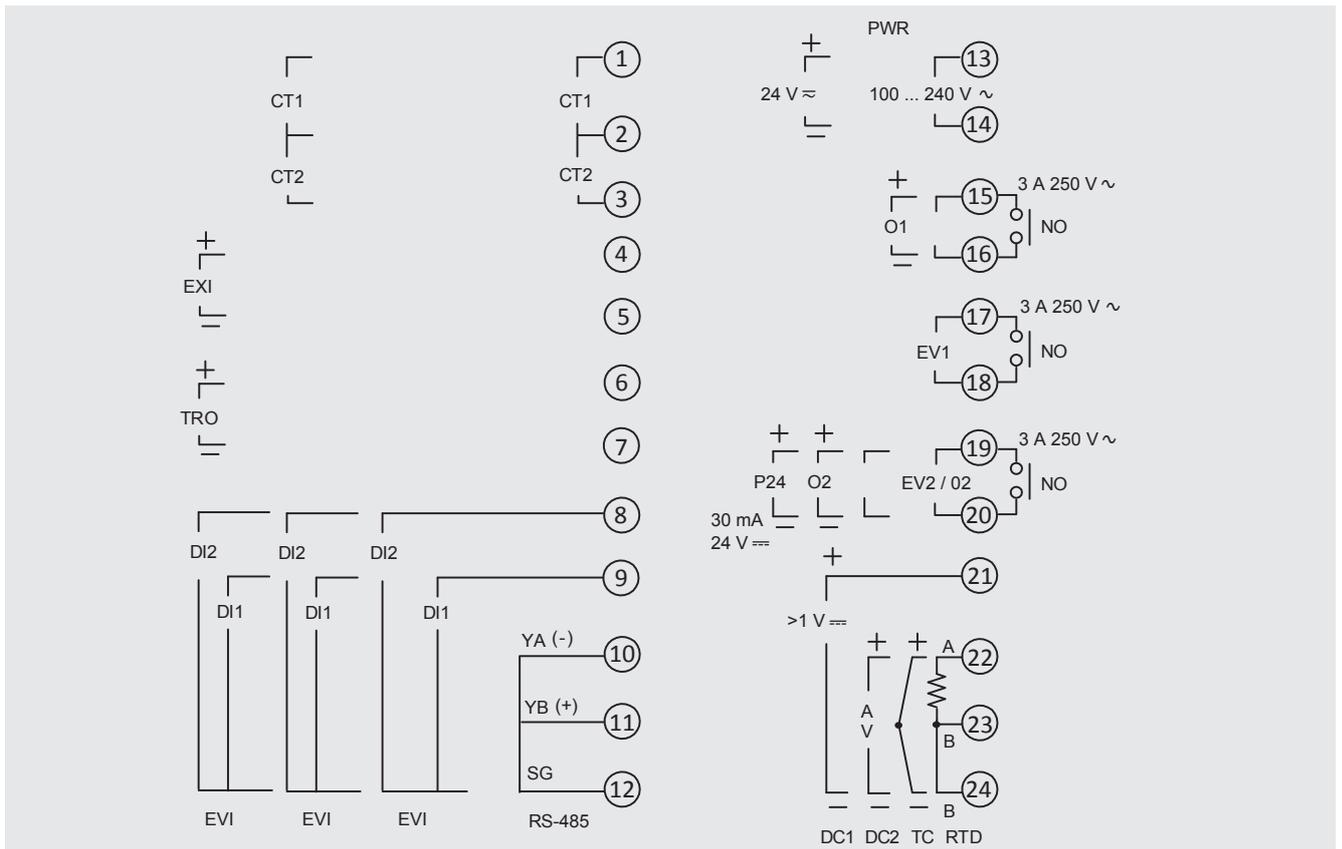
Legend:

PWR	Power supply	CT1	CT input 1
EV1	Alarm output 1	CT2	CT input 2
EV2	Alarm output 2	RS-485	Serial interface RS-485
O1	Monitoring output 1	EVI	Set point input DI1/DI2
O2	Monitoring output 2	EXC	External regulated input
P24	Isolated voltage output, DC 24 V, 30 mA	TRO	Analogue output
TC	Thermocouple input	DC1	DC input 0 ... 5 V or 0 ... 10 V
RTD	Resistance thermometer input	DC2	DC input 0 ... 1 V, 0 ... 20 mA or 4 ... 20 mA

Dimensions in mm

Model CS6S

Panel cutout

$\square 45^{+0.5}$

$\square 45^{+0.5}$

75

$45^{+0.5}$

$n*48-3^{+0.5}$

* for terminal cover

1415090301

Model CS6H

Panel cutout

$45^{+0.5}$

$92^{+0.8}$

$45^{+0.5}$

130

$92^{+0.8}$

$n*48-3^{+0.5}$

* for terminal cover

1415413401
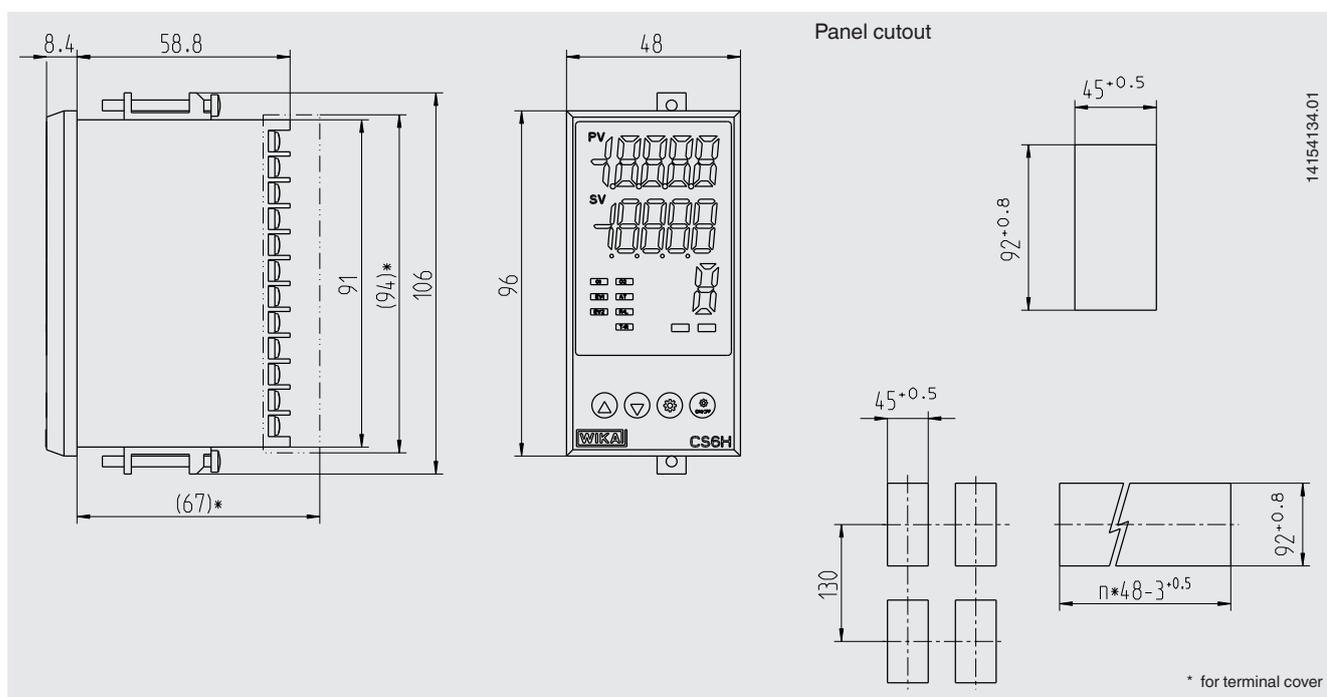
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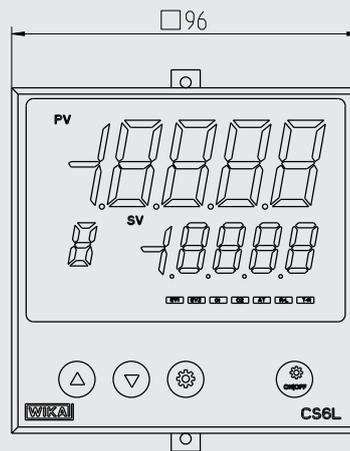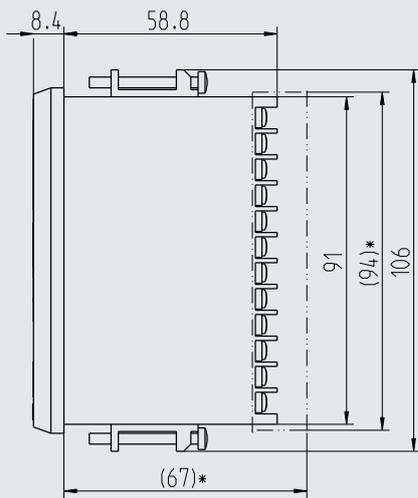
Panel cutout
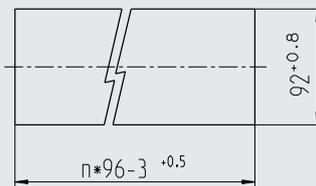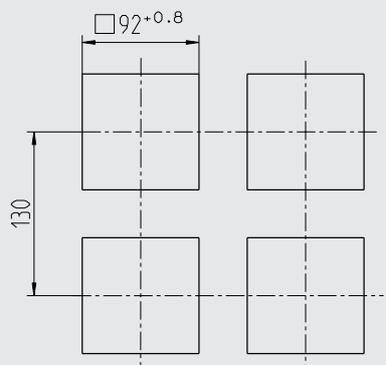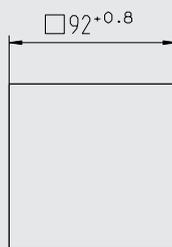
* for terminal cover

Approvals

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive ■ Low voltage directive ■ RoHS directive	European Union

Certificates (option)

2.2 test report

Approvals and certificates, see website

Ordering information

For ordering, select one feature from each of the following 3 categories. In addition, one feature can be selected from option 1 and 2:

Model / Case size

■ Model CS6S (case 48 x 48 x 68 mm)
■ Model CS6H (case 48 x 96 x 68 mm)
■ Model CS6L (case 96 x 96 x 68 mm)

Monitoring output 1

■ Relay
■ Logic level DC 0 ... 12 V for control of a solid state relay (SSR)
■ Analogue current signal 4 … 20 mA

Power supply

■ AC 100 … 240 V, 50 … 60 Hz
■ AC/DC 24 V

Option 1

■ No option necessary
■ Alarm output 2
■ 2nd monitoring output for 3-point control (heating/cooling), logic level
■ 2nd monitoring output for 3-point control (heating/cooling), analogue current signal
■ Isolated voltage output, DC 24 V, 30 mA

Option 2

■ No option necessary
■ Set point input (2 points) + RS-485 serial interface + heater burnout alarm (20 A)
■ Set point input (2 points) + RS-485 serial interface + heater burnout alarm (100 A)
■ Set point input (2 points) + heater burnout alarm (20 A)
■ Set point input (2 points) + heater burnout alarm (100 A)
■ Set point input (2 points) + required accessories for input signals + output signal
■ Serial interface RS-485
■ Heater burnout alarm (20 A)
■ Heater burnout alarm (100 A)
■ Set point input (2 points)

Standard articles

Configurator

Ordering information

Model / Monitoring output 1 / Power supply / Option 1 / Option 2

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