

KF Series

Digital temperature controller

- Proportional control, or ON/OFF control selectable internally
- Simple temperature setting
- Deviation alarm setting
- Clear digital indication
- Direct action/reverse action selectable internally



A
Temperature
Controller

Suffix code

Mode	Code						Description
KF	☐	-	☐	☐	☐	☐	Digital temperature controller
Dimension	2						48(W) X 96(H) mm
	4						48(W) X 48(H) mm
	7						72(W) X 72(H) mm
	9						96(W) X 96(H) mm
Control type	P						Proportional control and ON/OFF control (selectable by internal switch)
	O						Indicator (Only for indication)
Input	K						K thermocouple
	J						J thermocouple
	R						R thermocouple
	D						RTD KPt100 Ω
	P						RTD Pt100 Ω (IEC)
	V						1 – 5 V DC
	C						4 – 20 mA DC
Control output	M						Relay
	C						SCR (current output, 4 – 20 mA DC)
	S						SSR (voltage pulse output, 12 V DC)
Alarm output (Model KF4 excluded)	N						None
	O						High alarm
	P						Low alarm
	W						High/Low alarm
Control action	R						Reverse action (heating control), ※ Selectable by the internal deep switch
	D						Direct action (cooling control) ※ KF4 need separate order
Range code							Refer to the range and input code

(Cautious) digital indicator (only for indication: KF4-O, KF7-O, KF9-O) selects range code just like KF□-O8

Specification

Input

Thermocouple	K, J, R
RTD input	KPt 100 Ω , Pt 100 Ω
DC rated voltage	1 – 5 V DC, 4 – 20 mA DC
Input sampling time	500 ms
Input display resolution	Usually less than 1 $^{\circ}\text{C}$
Input impedance	Thermocouple min 1 M Ω , DC voltage input approx. 1 M Ω
Allowable signal source resistance	Thermocouple max 250 Ω , DC voltage Max 2 k Ω
Allowable wiring resistance	RTD max 10 Ω . (however resistance among 3 wires should be same)
Allowable input voltage	Within ± 10 V (thermocouple, RTD), within ± 20 V (DC voltage)
Cold junction compensation error	± 2.0 $^{\circ}\text{C}$ (0 ~ 50 $^{\circ}\text{C}$)

Performance

Display accuracy	± 1 % of FS ± 1 Digit
Insulation resistance	Min 20 M Ω (500 V DC)
Dielectric strength	2,000 V AC, 50 / 60 Hz, for 1 min (between the different recharging terminal from each other)

Control function and output

Control type	Proportional control, ON/OFF control (selection by internal deep switch, default value:proportional control)
Control action	Reverse action or direct action (selection by internal deep switch, but KF4 is depending on the suffix code)
Setting range	Same as the input range
Proportional band	0.1 ~ 10.0 % of FS
Manual reset(M.R)	± 50 % of MV(amount of output)
Proportional cycle	Approx. 20 sec (relay output), approx. 2 sec (SSR output)
Hysteresis	1 ~ 20 $^{\circ}\text{C}$ (when performing ON/OFF control, it is due to the proportional band setting volume)
Input signal break detection	Output becomes OFF when exceeding 10 $^{\circ}\text{C}$ of range limit
Alarm type	High deviation alarm, low deviation alarm, high/low deviation alarm (due to the suffix code)
Alarm setting range	0 ~ 50 $^{\circ}\text{C}$ deviation alarm, but KF9 is within the range limit as an absolute alarm
Alarm hysteresis	Fix 1 $^{\circ}\text{C}$

Output

Control output	Relay output	Contact capacity : 1 c, 250 V AC, 5 A (resistive load)
	SSR	Approx. more than 12 V DC (resistive load min 800) with disconnection, limits from approx 50 mA
	Current(SCR)	4 – 20 mA DC (resistive load max 600 Ω)
Alarm output	Temperature alarm (relay)	Contact capacity : 1 c, 250 V AC, 5 A (resistive load) but Model KF7 is 1a contact (Model KF4 : No alarm output)

General specification

Power Supply Voltage	100 – 240 V AC, 50 – 60 Hz
Voltage fluctuation	±10 % of the Power Supply Voltage
Power consumption	3 VA max.
Ambient temperature	0 ~ 50 °C
Ambient humidity	35 ~ 85 % RH (without dew condensation)
Storage temperature	-25 ~ 65 °C
Vibration	10 – 55 Hz, Peak amplitude 0.76 mm for 2 min each in 3 axis direction.
Shock	300 $\frac{m}{s^2}$, to direction 6 each 3 times
Weight	376 g(KF9), 256 g(KF7), 158 g(KF4), 276 g(KF2)

Range and input code

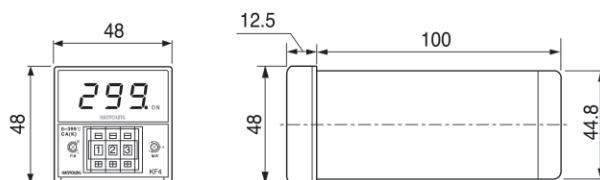
Classification	Code	Input type	Range (°C)	Accuracy
Thermocouple	8	K	0 ~ 399	±1 % of FS ±1 Digit
	11	K	0 ~ 999	
	12	K	0 ~ 1199 *	
	8	J	0 ~ 399	
	13	R	600 ~ 1699 *	
RTD	2	Pt100 Ω	-99 ~ 99	±1 % of FS ±1 Digit
	8	Pt100 Ω	0 ~ 399	
Voltage/current (DC)	4	1 – 5 V DC	0 ~ 99	
	4	4 – 20 mA DC	0 ~ 99	

* KF2 and KF4 cannot select the code number 12 and 13

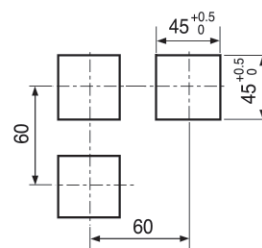
● Dimension and panel cutout (Unit : mm)

KF4

● Dimension

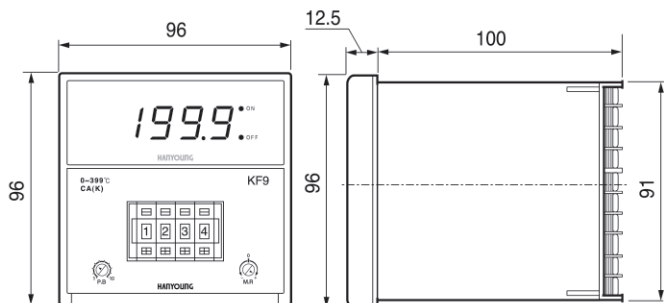


● Panel cutout

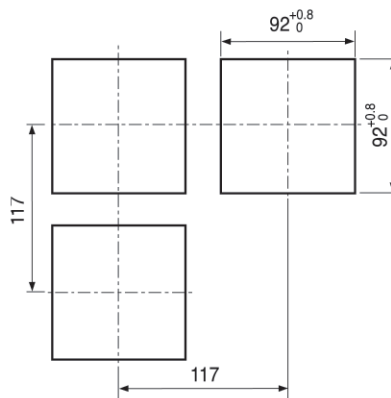


KF9

● Dimension

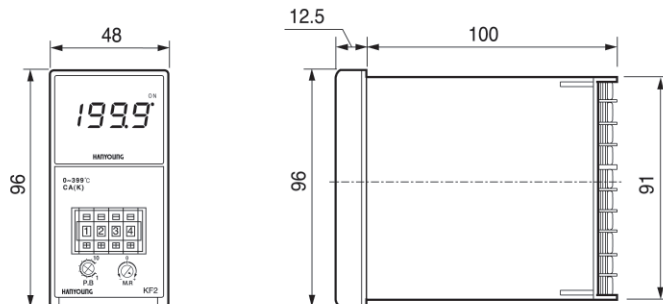


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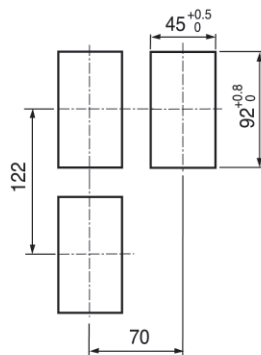


KF2

● Dimension

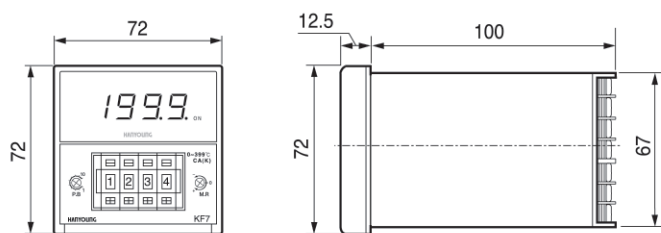


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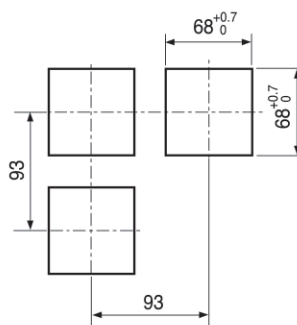


KF7

● Dimension

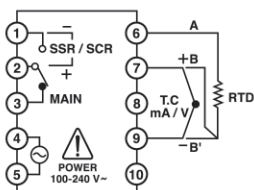


● Panel cutout

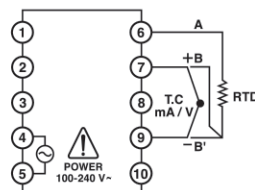


Connection diagram

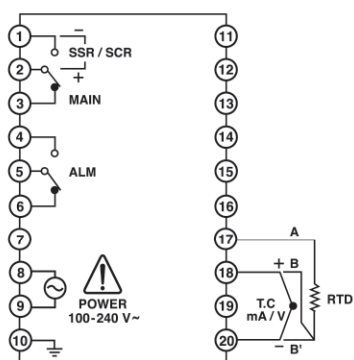
■ KF4



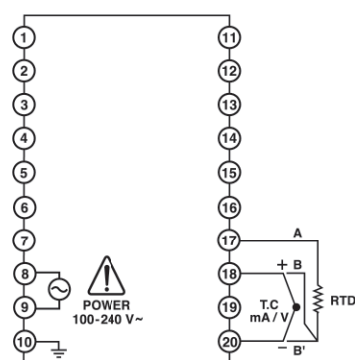
■ KF40



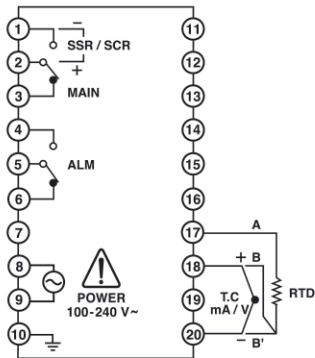
■ KF9



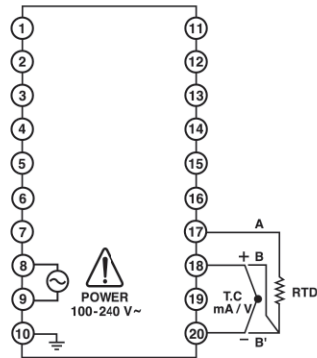
■ KF90



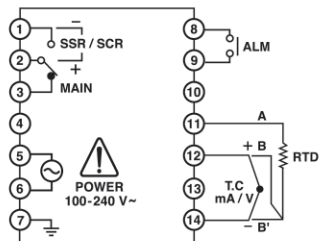
■ KF2



■ KF20



■ KF7



■ KF70

