

NP100

Programmable temperature controller

- 2 pattern / 20 segments (1 pattern / 10 segments)
- Fuzzy function, PID auto tuning
- Group PID 3 types
- Alarm output / Time signal output each 2 contacts
- Contact input 3 contacts (RUN, RESET, HOLD)
- Communication function (RS485 / 422)



Suffix code

Model	Code	Description
NP100-	<input type="checkbox"/> <input type="checkbox"/>	Programmable temperature controller 96(W) X 96(H) mm
Control type	0	Universal type (heating)
Option	0	None
	1	Time signal 2 contacts
	2	Communication function (RS485/422)
	3	Time signal 2 contacts and communication (RS485/422)

Specification

Input	
Thermocouple	K, J, E, T, R, B, S, L, N, U, W, PL2
RTD input	KPt 100 Ω, Pt 100 Ω
DC rated voltage	1 – 5 V DC, 0 – 10 V, -10 – 20 mV, 0 – 100 mV, 4 – 20 mA (attach 250 Ω external resistance)
Input sampling time	250 ms
Input display resolution	Usually less than the decimal points of range
Input impedance	Min 1 MΩ (thermocouple, DC rated voltage : mV) approx. 1 MΩ (DC voltage : V) DC voltage (mV DC) / thermocouple / RTD : ±10 V DC
Allowable signal source resistance	Max 250 Ω (thermocouple input), Max 2 kΩ (DC voltage input)
Allowable wiring resistance	Max 150 Ω /1 wire (RTD input But 3 wires must have same resistance value)
Allowable input voltage	±10 V (thermocouple, RTD, DC voltage : mV), ±20 V(DC voltage : V)
Scaling	-1999 ~ 9999 (SL-H > SL-L)
Cold junction compensation error	±2.0 °C (0 ~ 50 °C)
Input signal break detection	UP Scale / DOWN Scale selection (thermocouple input), UP Scale (RTD input)
Input compensation	-100.0 ~ 100.0 % of FS
Input filter	OFF, 1 ~ 120 sec

Performance

Display accuracy	± 0.1 % of FS ± 1 Digit (K, J, E, T, L, U, W, PL2) ± 0.15 % of FS ± 1 Digit (R, B, S) ± 0.2 % of FS ± 1 Digit (N) ± 0.1 % of FS ± 1 Digit (RTD input) ± 0.1 % of FS ± 1 Digit (DC voltage input) (for the exception, please refer to input type and range chart)
Insulation resistance	Min 20 M Ω , 500 V DC 1st terminal–2nd terminal, 1st terminal–earth terminal, 2nd terminal–earth terminal
Dielectric strength	2300 V AC, 50 / 60 Hz, 1 minute (between the different recharging part)

Control function and output

Pattern and segment	2 patterns, 20 segments (1pattern/10 segments)
Control type	PID auto tuning
Control action	Select either reverse operation (heating) or direct operation (cooling) (By the parameter setting)
Range setting	Same as input range chart
Contact input (DI)	RUN, RESET, HOLD operation selection by the external contact input 3 contacts
Auto tuning	Target value auto tuning
Proportional band	0.1 ~ 999.9 % (FS)
Integral time	OFF, 1 ~ 6,000 sec
Differential time	OFF, 1 ~ 6,000 sec
A.R.W(Anti Reset Wind-up)	Auto, 50.0 ~ 200.0 % (proportional band)
ON/OFF control	Select the output type by parameters
PID group	4 types of PID group
Control mode selection	Select AUTO(programmable control) / MAN(manual control) by the front key
Manual reset	-0.5~105.0 % of output amount (when integral time is OFF)
Input break output	-0.5 ~ 105.0 % of output amount (set an amount of output when input breaks)
Hysteresis	0.0 ~ 100.0 % of FS (ON/OFF control output, alarm output)
Fuzzy operation	Select the fuzzy operation by parameter
Retransmission output	Present value/set value/amount of output/external power supply (24 V DC, 20 mA DC max) selection
Retransmission output scaling	Present value / set value scaling set up
Alarm output	2 contacts (high/low alarm, high/low deviation alarm, pattern end alarm and etc)
Alarm types	21 kinds (selection by parameter)
Proportional cycle	1 ~ 1,000 sec (with relay output, SSR output)

● Output

Control output	Relay	1c contact, 240 V AC, 3 A. 30 V DC 3 A(resistive load) time resolving power : smaller one between 0.1% and 100 ms
	SSR	Approximately min 25 V DC (resistive load min 600 Ω) limits within approximately 30 mA DC with disconnection time resolving power : smaller one between 0.1% or 10ms
	SCR	4 – 20 mA DC (resistive load max 600 Ω) Accuracy : ±0.3 % of FS (4 – 20 mA DC) Resolving power : approx. 3,000
Alarm output	Temperature alarm(Relay)	1 a X 2 contacts, 240 V AC, 3 A , 30 V DC 3 A (resistive load)
Time signal output	Transistor	Open collector output, 24 V DC 30 mA max
Retransmission output	RET	4 – 20 mA DC (resistive load max 600 Ω) Accuracy : ±0.3 % of FS (4 – 20 mA DC), Resolving power : approx. 3,000

● Control output composition

Output symbol	Control output(OUT1)		Control output(OUT2)
	Relay output	SSR/SCR	RET/S.P.S
onoF	ON/OFF		RET (Retransmission output) S.P.S (External power supply) (6 – 7 terminal)
SSr		SSR	
CUr		SCR	
rLY	Relay		

General specification

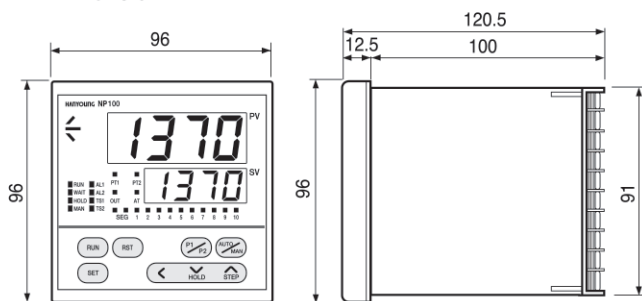
Power supply voltage	100 – 240 V AC, 50 – 60 Hz
Voltage Fluctuation	±10 % of power supply voltage
Power consumption	10 V A max.
Ambient temperature	0 ~ 50 °C
Ambient humidity	35 ~ 85 % RH (without dew condensation)
Storage temperature	-25 ~ 70 °C
Vibration resistance	10 – 55 Hz, peak amplitude 0.75 mm for 2 mins each in 3 axis direction
Shock resistance	300 $\frac{m}{s^2}$, 3 times each in 3 axes direction
Weight	Approx. 696 g (included the weight of box)

Range and input code chart

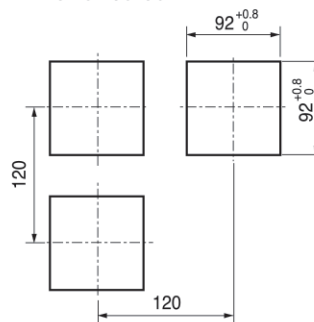
Classification	Code	Input	Range(°C)	Accuracy	Note
Thermocouple		K	-200 ~ 1370 *1	±0.1 % of FS ±1 digit	*1 : max 0 °C : ±0.2 % of FS ±1 Digit *2 : 0 ~ 400 °C : ±5 % of FS ±2 Digit
		K	-199.9 ~ 999.9 *1		
		J	-199.9 ~ 999.9 *1		
		E	-199.9 ~ 999.9 *1		
		T	-199.9 ~ 400.0 *1		
		R	0 ~ 1700	±0.15 % of FS ±1 digit	
		B	0 ~ 1800 *2		
		S	0 ~ 1700		
		L	-199.9 ~ 900.0 *1	±0.1 % of FS ±1 digit	
		N	-200 ~ 1300	±0.2 % of FS ±1 digit	
		U	-199.9 ~ 400.0 *1	±0.5 % of FS ±1 digit	
		W	0 ~ 2300		
		PL2	0 ~ 1390		
	PL2	0 ~ 1390			
RTD		KPt100	-199.9 ~ 500.0	±0.5 % of FS ±1 digit	
		Pt100	-199.9 ~ 640.0		
DC voltage		1 - 5 V	Scaling range -1999 ~ 9999	±0.5 % of FS ±1 digit	※ When using the current input, please select the 1 - 5 V input code and attach 0.1 % of 250 Ω resistance between the 19 and 20 terminal and use it with 4 - 20 mA input.
		0 - 10 V			
		-10 - 20 mV			
		0 - 100 mV			
DC current		1 - 5 V ※			

Dimension and panel cutout (unit : mm)

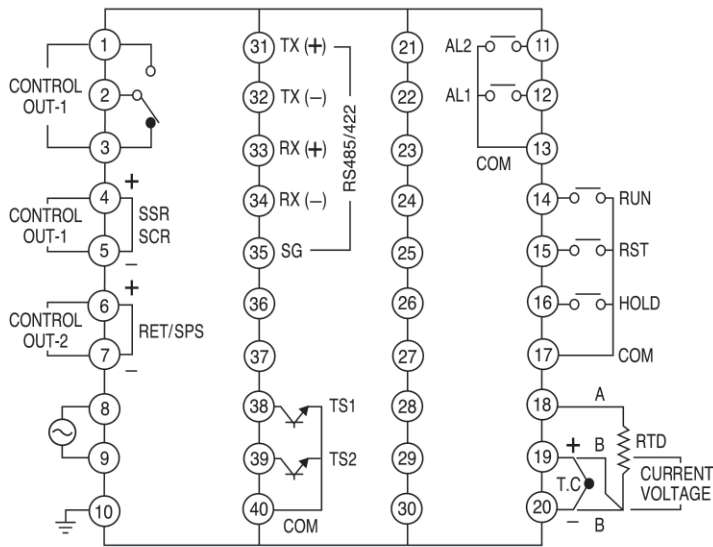
● Dimension



● Panel cutout



●● Connection diagram



Option: communication (RS485/422), 2 contacts of time signal (TS1, TS2)