NP200

Programmable temperature controller

- Multi input/output, ±0.1 % high accuracy
- 30 patterns, 300 segments (1 Pattern/99 segments)
- Heating cooling PID control
- 3 stages level PID selection (PID group 4 types)
- PID auto tuning mode 2 types
- Contact input 7 contacts, user output 10 contacts
- Communication function (RS485 / 422)

Suffix code

Model	Code		Description
NP200-	□	□	Programmable temperature controller, 96(W) X 96(H) ㎜
Control type	0		Universal type (heating)
	1		Heating/cooling type (synchronous control type)
Option		0	None (DI-1 ~ DI-3 standard)
		1	Communication function (RS485/422)
		2	Contact input(DI) 4 contacts (DI-4 ~ DI7)
		3	Communication(RS485/422)+contact input 4 contacts (DI-4 ~ DI7)

※ Option contact input 4 contacts are (DI-4) ~ (DI-7)

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 ㎷, 0 - 100 ㎷, 4 - 20 ㎃ (attach 250 Ω external resistance)
Input sampling time	250 ㎳
Input display resolution	Usually less than the decimal points of range
Input impedance	Min 1 ㏁ (thermocouple, DC voltage input : ㎷). approx. 1 ㏁ (DC voltage: V)
Allowable signal source resistance	Max 250 Ω (thermocouple input). Max 2 ㏀ (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 : ㎷). ±20 V (DC voltage : V)
Scaling	-1999.9 ~ 9999.9 (SL-H 〉SL-L)
Cold junction compensation error	±1.5 ℃ (15 ~ 35 ℃). ± 2.0 ℃ (0 ~ 50 ℃)
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) (for the exception, please refer to the input type and range chart)
	±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)
Insulation resistance	Min 20 MΩ, 500 V DC 1st terminal-2nd terminal, 1st terminal-earth terminal, 2nd terminal-earth terminal
Dielectric strength	2,300 V AC, 50 / 60 Hz, 1 minute (between the different recharging part), 1st terminal-2nd terminal, 1st terminal-earth terminal

Control function and output

Pattern and segment	30 patterns, 300 segments (1 pattern/99 segments)
Operation type	Select the program operation or fixation operation
Control type	PID control and ON/OFF control
Control action	Select either reverse operation (heating) or direct operation (cooling) (By the parameter setting)
Contact input(DI)	Contact input 7 contacts (RUN, RESET, HOLD, STEP, PT-END OFF select operation) 〉(select the pattern by the combination of contact input 4-7)
PID auto tuning	PID auto tuning by standard mode and low measurement value mode (set value -10 % of FS)
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)
Proportion cycle	1 ~ 1000 sec (with relay output and SSR output)
ON/OFF control	Select the output types by the parameter
PID group	4 types of PID group
PID selection	Level PID control / segment PID control selection
Dead zone (D.B)	Set the dead zone when performing the heating/cooling control (-100.0 ~ 50.0 % of output value)
Manual reset	-0.5 ~ 105.0 % of output amount (when integral time is OFF)
Manual output	0 ~ 100 % of output amount
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 the 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 types	20 kinds (selected by the parameter)
Alarm setting range	Absolute alarm (0 ~ 100 % of range), deviation alarm (-100 ~ 100 % of range span)

User output: 10contacts

Number	Setting lists	Description
1	ALM 1~4	Alarm output 1~4 contact
2	TS1~TS5	Time signal output 1~5 contact
3	IS1~IS5	Inner signal output 1~5 contact
4	PTEND	Program pattern end output 1 contact
5	PROG	Output when program RUN 1 contact
6	FIX	Output when the fixed value control 1 contact
7	RESET	Output when the reset 1 contact
8	HOLD	Output when the hold 1 contact
9	WAIT	Output when the WAIT 1 contact
10	MAN	Output when the manual control 1 contact
11	PT UP	Output when the pattern increment 1 contact
12	PT DOWN	Output when the pattern decrement 1 contact
13	PT SOAK	Output when the pattern maintaining 1 contact

Output

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

Control output composition

Classification	Output symbol	Control output(OUT1)		Control output(OUT2)	
		Relay output	SSR / SCR	U 10	SSR / SCR(Current output)
Regular type	ON/OFF	ON/OFF		(U 10)	Retransmission output
	SSR		SSR		
	SCR		SCR		
	RLY	Relay			
Heating and cooling type	SSR/SSR		SSR	(U 10)	SSR
	SCR/SSR		SCR		
	RLY/SSR	Relay	(Retransmission output)		
	SSR/SCR		SSR	(U 10)	SCR
	SCR/SCR		SCR		
	RLY/SCR	Relay	(Retransmission output)		
	SSR/RLY		SSR	Relay	Retransmission output
	SCR/RLY		SCR		
	RLY/RLY	Relay			

General specification

Power supply voltage	100 – 240 V AC, 50 – 60 Hz
Voltage fluctuation	±10 % of power supply voltage
Power consumption	10 VA max.
Ambient temperature	0 ~ 50 ℃
Ambient humidity	35 ~ 85 % RH (without dew condensation)
Storage temperature	–25 ~ 70 ℃
Vibration resistance	10 – 55 Hz, 2 peak amplitude 0.75 mm for 2 hrs each in 3 axis direction
Shock resistance	300 %, 3 times each in 3 axes direction
Weight	Approx. 696 g (included the weight of box)

Range and input code chart

Classification	Input	Code	Range (℃)	Accuracy
Thermocouple	K	K1	−200.0 ~ 1,370.0 *1	±0.1 % of FS. ±1 Digit
	K	K2	−200.0 ~ 1,000.0 *1	
	J	J	−200.0 ~ 1,200.0 *1	
	E	E	−200.0 ~ 1,000.0 *1	
	T	T	−200.0 ~ 400.0 *1	
	R	R	0 ~ 1700	±0.15 % of FS ±1 Digit
	B	B	0 ~ 1800 *2	
	S	S	0 ~ 1700	
	L	L	−200.0 ~ 900.0 *1	±0.1 % of FS, ±1 Digit
	N	N	−200 ~ 1300	±0.2 % of FS ±1 Digit
	U	U	−200.0 ~ 400.0 *1	±0.1 % of FS. ±1 Digit
	W	W	0 ~ 2300	
	PL2	PL2	−200.0 ~ 600.0	
RTD	KPt 100 Ω	KS Pt100 Ω	−200.0 ~ 500.0	
	Pt 100 Ω	Pt100 Ω	−200.0 ~ 640.0	
DC voltage	1 − 5 V	1/5 V	Scaling range −1,999 ~ 9,999	
	1 − 10 V	0/10 V		
	−10 − 20 ㎷	−10/20 ㎷		
	0 − 100 ㎷	0/100 ㎷		
DC current	4 − 20 ㎃ DC	1/5 V *3	Scaling range −1,999 ~ 9,999	

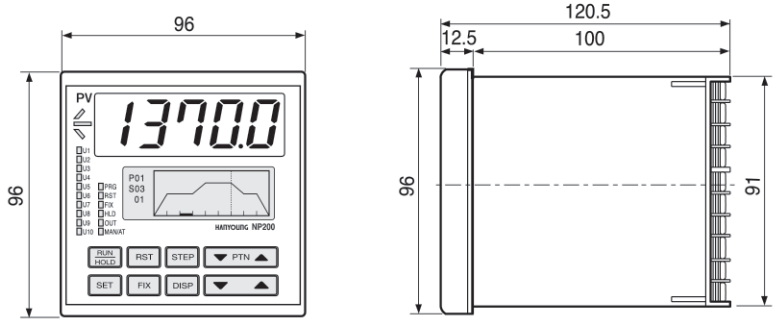
(Cautious) *1 : lower than 0 ℃ degree Celsius : ±0.2 % of FS ±1 Digit

*2 : 0 ~ 400 ℃ degree Celsius range : ±5 % of FS ±2 Digit

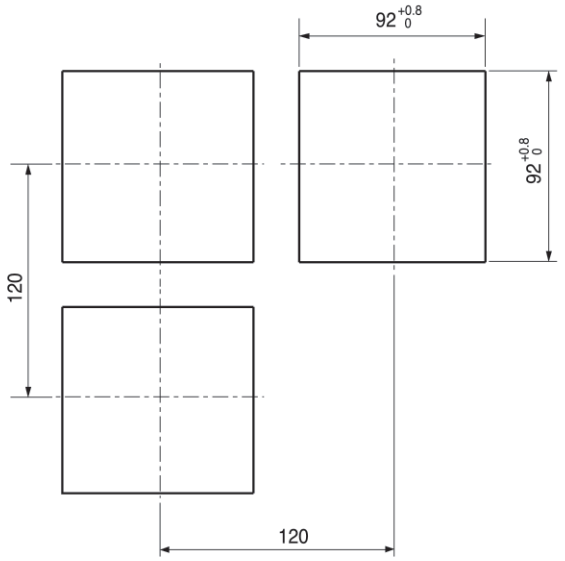
*3 : When using the current input, please attach 0.1 % of 250 Ω resistance between the 19 and 20 terminals and use it as 4 − 20 ㎃ DC input.

Dimension and panel cutout (Unit : ㎜)

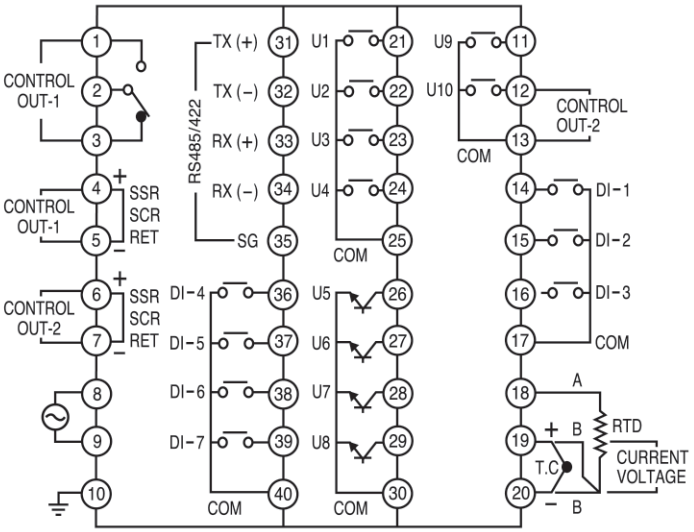
●Dimension



● Panel cutout



Connection diagram



Option: communication (RS485/422), 4 contacts of contact inputs (DI-4 ~ DI-7)