

Digital Temperature Controller

HANYOUNG NUX

BR6

INSTRUCTION MANUAL

We appreciate you for purchasing HanYoung NUX Co.,Ltd product. Before using the product you have purchased, check to make sure that it is exactly what you ordered. Then, please use it following the instructions below.



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Safety information

Before you use, read safety precautions carefully, and use this product properly. The precautions described in this manual contain important contents related with safety; therefore, please follow the instructions accordingly. The precautions are composed of DANGER, WARNING and CAUTION.

DANGER

There is a danger of occurring electric shock in the input/output terminals so please never let your body or conductive substance is touched.

WARNING

- To prevent deflection or malfunction of this product, apply a proper power voltage in accordance with the rating.
- Since this product is not designed with explosion-protective structure, do not use it any place with flammable or explosive gas.
- Reassemble this product while the power is OFF. Otherwise, it may be a cause of malfunction or electric shock.
- There is a possibility of occurring electric shock so please use this product after installing it to a panel while it is operating.
- In case of injury or big damages of property, please use protector to prevent any accident.

CAUTION

- The contents of this manual may be changed without prior notification.
- Before using the product you purchased, make sure that it is exactly what you ordered.
- Make sure that there is no damage or abnormality of the product during the delivery.
- Do not use this product at any place with occurring corrosive (especially noxious gas or ammonia) or flammable gas.
- Do not use this product at any place with direct vibration or impact.
- Do not use this product at any place with liquid, oil, medical substances, dust, salt or iron contents. (Use at Pollution level 1 or 2)
- Do not use this product at any place with a large inductive difficulty or occurring static electricity or magnetic noise.
- Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
- In case of inputting thermocouple, use a compensating cable. (If using a normal wire, there is a possibility of occurring temperature error.)
- For R.T.D input, use a cable which is a lead wire has small resistance and resistances of three wires shall be the same. (If the three wires have different resistances then there will be a temperature error.)
- To avoid an effect of inductive noise to input signal cables, use the product after separating the input signal cables from power, output and load cables.
- Separate an input signal cable from an output signal cable. If separating is not possible, please use the input signal cable after shielding it.
- Use non-earth sensor with thermocouple. (In case of using earth sensor, there is a possibility of occurring malfunction caused by a short circuit.)
- If there is excessive noise from the power supply, using insulated transformer or noise filter is recommended. The noise filter must be attached to a panel which is already connected to a ground and the wire between the filter output side and power supply terminal must be short as possible.
- If twisting the power cables closely together then it is effective against noise.
- When this product is connected onto a panel, use a circuit breaker or switch approved with IEC947-1 or IEC947-3.
- Write down on a label that if the circuit breaker or switch is operating then the power will be disconnected since the circuit breaker or switch is installed.
- Some parts of this product have limited life span, and others are changed by their usage.
- The warranty period for this product including parts is one year if this product is properly used.
- When the power is on, the preparation period of contact output is required. In case of using signals of external interlock circuit or etc., use it with a delay relay.
- In case of replacing this unit with a spare unit, make sure its compatibility because its operation can be different by different parameter settings even though the model name is the same.
- If you find temperature deviation when you install it, please use input compensation function of this temperature controller.

Model and Suffix code

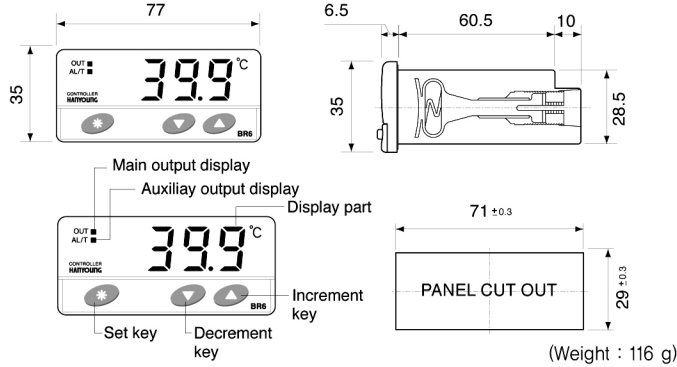
MODEL	Suffix code	Description
BR6	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	External dimension (77×35 mm)
Control	F	ON / OFF
Operation	P	Proportional Operation (P control)
Input	D	Diode (-40.0 ~ 100.0 °C)
Output	M	Relay contact
	S	SSR driving (12 V DC)
Power voltage	P3	10 ~ 24 V DC, AC
	P4	85 ~ 265 V AC (50-60 Hz)

Specification

Power Supply	Refer to Model & Suffix code	
Power Consumption	4 - 5 VA	
Input Sensor	Refer to Model & Suffix code	
Display accuracy	Max. range $\pm 1\%$ + 1 Digit	
Control output (Main Output)	Relay Output	250 V AC, 5 A (Resistive load)
	SSR Output	5 V AC, 50 mA (Max.)
Alarm / Defrost	Relay Output	250 V AC, 5 A (Resistive load)
Control mode	ON / OFF, P control	
Setting method	Digital method by up and Down key	
Other function	Deforcing Timer, Alarm function, Heating/cooling control	
Resistance	Below 10 Ω for each wire	
between wires	0 ~ 50 °C	
Ambient temperature	0 ~ 50 °C	
Ambient humidity	Max. 85 % RH	

Dimension & Panel cutout

Unit : mm

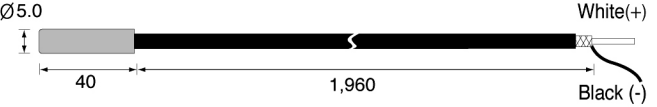


SENSOR (Diode/NYC)

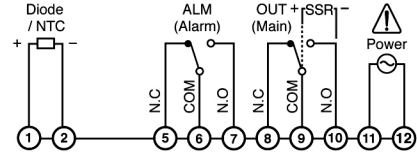
- This sensor is only for the BR6

Name of sensor	Sensory type	Accuracy	Remark
TH540D	Diode	$\pm 2^\circ\text{C}$	When you use Diode sensor, max $\pm 4^\circ\text{C}$ temperature deviation may be happen ($\pm 2^\circ\text{C}$ Sensor deviation & $\pm 2^\circ\text{C}$ controller deviation)
TH540N	Semester	$\pm 1.5^\circ\text{C}$	

※ Extension of sensor length or modification of sensor will be cause of malfunction.



Connection



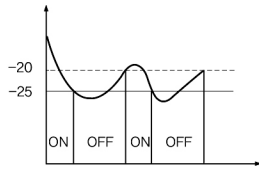
Control method for temperature

Heating / Cooling Control Selection

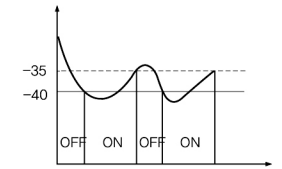
[**HE**] : Heating control
[**COOL**] : Cooling control

Cooling Control (ON/OFF)

P.V > S.V. → Main output relay "ON" / P.V < S.V. → Main output relay "OFF"



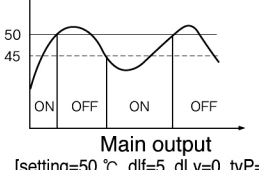
Main output
[setting=-25 °C, dlf=5, dLy=0, tyP=CoL]



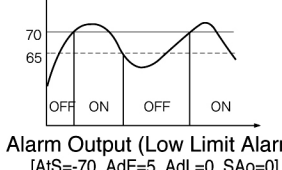
Alarm Output (Low Limit Alarm)
[AtS=-40, AdF=5, AdL=0, SAo=0]

Heating Control (ON/OFF)

P.V > S.V. → Main output relay "OFF" / P.V < S.V. → Main output relay "ON"



Main output
[setting=50 °C, dlf=5, dLy=0, tyP=HEt]



Alarm Output (Low Limit Alarm)
[AtS=-70, AdF=5, AdL=0, SAo=0]

Proportional control

Manipulated variable (output size) of set value operates by proportioning to deviation and this is known as proportional control. Also variation range of manipulated variable from 0~100% is known as the proportional band. Therefore, when proportional band is less than the current temperature, the manipulated variable becomes 100% and when PB is more than the current temperature, the manipulated variable becomes 0% and when set value and current temperature becomes same, the manipulated variable becomes 50%.

