

QX series

HANYOUNG nux

INSTRUCTION MANUAL

Thank you for purchasing Hanyoung Nux products. Please read the instruction manual carefully before using this product, and use the product correctly. Also, please keep this instruction manual where you can view it at any time.

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MA0634E231219

Safety information

Please read the safety information carefully before the use, and use the product correctly. The alerts declared in the manual are classified into Danger, Warning and Caution according to their importance.

DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or property damage

DANGER

- The input/output terminals are subject to electric shock risk. Never let the input/output terminals come in contact with your body or conductive substances.

WARNING

- If there is a possibility of a serious accident due to malfunction or abnormality of this product, install an appropriate protection device.
- Since this product is not equipped with a power switch and fuse, install them separately on the outside (fuse rating: 250 V.a.c., 0.5 A).
- Please supply the rated power voltage, in order to prevent product breakdowns or malfunctions.
- The power supply should be isolated and limited voltage/current or Class 2, SELV power supply device.
- To prevent electric shock and malfunctions, do not supply power until the wiring is completed.
- The product has a built-in explosion-proof structure, so avoid using it in places with flammable or explosive gases.
- Never disassemble, modify, process, improve or repair this product, as it may cause abnormal operations, electric shocks or fires.
- Please disassemble the product after turning OFF the power. Failure to do so may result in electric shocks, product abnormal operations or malfunctions.
- Any use of the product other than those specified by the manufacturer may result in personal injury or property damage. There is a risk of electric shock.

When used in equipment with a high risk of personal injury or property damage (examples: medical devices, nuclear control, ships, aircrafts, vehicles, railways, combustion devices, safety devices, crime/disaster prevention equipment etc.) install double safety devices and prevent accidents. Failure to do so may result in fire, personnel accident or property damage.

CAUTION The contents of this manual may be changed without prior notification.

Please make sure that the product specifications are the same as you ordered.

Please make sure that there are no damages or product abnormalities occurred during shipment.

Use this product in the following environments:

- indoor : use it in the ambient temperature and humidity ranges indicated in the instruction manual.
- use it in locations where corrosive gases (especially harmful gases, ammonia, etc.) and flammable gases are not generated.
- use it in places where vibrations and impacts are not directly applied to product body.
- use it in places without liquids, oils, chemicals, steam, dust, salt, iron, etc. (protection degree 1 or 2).
- avoid places where large radioactive interference, static electricity, magnetic noise are generated.
- avoid places where heat accumulation caused by direct sunlight, radiant heat, etc.
- use it in places with elevation below 2000 m.
- Power input and relay output wires are at least 75 °C of heat resistance and, use copper wires from AWG to 24 AWG.
- Tighten the screw on the terminal is torque from 0.5 N. m to 0.7 N. m.
- Please do not wipe the product with organic solvents such as alcohol, benzene, etc. (wipe it with neutral detergents).
- When water enters, short circuit or fire may occur, so please inspect the product carefully.
- For compensation in the predetermined compensating cable, temperature errors occur when using ordinary cable.
- For RTD input, use a cable with small lead wire resistance and without resistance difference among 3 wires (temperature errors occur if the resistance value among 3 wires is different).

Suffix code

Model	Code	Content
Size	QX	Digital Temperature Controller
	2	48(W) x 96(H) x 62.5(D) mm
	3	96(W) x 48(H) x 62.5(D) mm
	4	48(W) x 48(H) x 63(D) mm
	7	72(W) x 72(H) x 62.5(D) mm
	9	96(W) x 96(H) x 62.5(D) mm
Sensor	K	TC : K, J, T or R
	P	PT : Pt100
OUT 1 (control output 1)	M	Relay output
	S	Voltage pulse output (voltage pulse output for SSR drive)
	C	Current output (4-20 mA current output for SCR drive)
Power	A	100~240 V.a.c. 50/60 Hz
Option	Sub output	A1 : 1 relay output A2 : 2 relay output
	Communication	None
	C	RS-485 communication

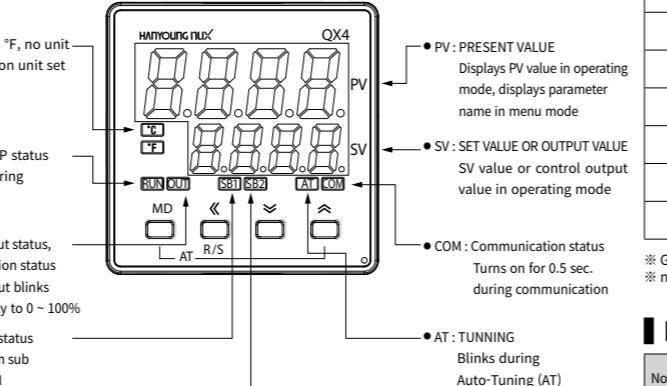
Thermocouple and RTD

Classification	Type	Parameter set value		Temperature range		Tolerance
		Screen display	Communication	°C	°F	
Thermo-couple	K	Y0	1	-200 ~ 1370	-328 ~ 2498	±0.3 % of FS ± 1 digit
		Y1	2	-100.0 ~ 500.0	-148 ~ 932	
	J	Z0	3	-200 ~ 1000	-328 ~ 1832	
		Z1	4	-100.0 ~ 500.0	-148 ~ 932	
측온저항체 (RTD)	R	E0	6	-100.0 ~ 400.0	-148 ~ 752	±0.3 % of FS ± 1 digit
		r0	7	0 ~ 1700	32 ~ 3092	
	Pt100	Pt0	22	-200 ~ 640	-328 ~ 1184	
	Pt1	Pt1	23	-199.9 ~ 640.0	-328 ~ 1184	

Specifications

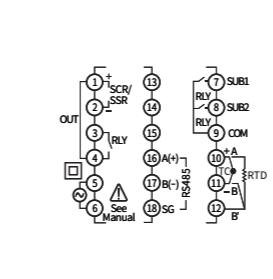
Classification	QX2	QX3	QX4	QX7	QX9
Input	K, J, T, R (ITS-90)	Reference junction compensation accuracy ±1.5 °C (-10 ~ 50 °C within)			
	RTD Pt100				
		Allowable line resistance Each 3 wire within 10 Ω (but the resistance among 3 lines should be same)			
		Sampling cycle 100 ms			
Control output					
		Relay output • Rated switching capacity : 5 A 240 V.a.c., 5 A 30 V.d.c. • Max. switching power : 750 VA, 90 W • Max. switching voltage : 250 V.a.c., 110 V.d.c. • Max. switching current : 5 A • Mechanical life : 20 million times (at 180 CPM)			
		voltage pulse output 12 ~ 15 V.d.c. pulse voltage (load resistance min. 600 Ω)			
		Current output 4 ~ 20 mA ±0.2 % of FS ±1 digit, load resistance: MAX. 600 Ω			
Control					
		Control type ON/OFF, PID control, 2DOF PID control			
		Output operation Reverse action, direct action			
Memory					
		Non-volatile memory life EEPROM unlocked: when setting E2P.L: OFF in G.SET group (EEPROM life: 1 million times write guaranteed) / EEPROM locked: when setting E2P.L: ON in G.SET group (store in RAM)			
Sub output					
		Relay 1 ~ 2 outputs, rated switching capacity: 5 A 240 V.a.c., 5 A 30 V.d.c.			
Option RS-485					
		Communication method EIA RS485 standard, 2-wire half-duplex			
		Max. connections 31 (address setting 1~99 available)			
		synchronous method 2-wire half-duplex			
		Communication distance Within 1.2 km			
		Communic. speed 4800, 9600, 14400, 19200, 38400, 57600 BPS			
		Start bit 1 bit			
		Data length 7 or 8 bit			
		Parity bit NONE, EVEN, ODD			
		Stop bit 1 or 2 bit			
		Protocol PC-LINK STD, PC-LINK WITH SUM, MODBUS-ASCII, MODBUS-RTU			
		Response time Actual response time = processing time + (response time X 50 ms)			
Power					
		AC Power Supply Voltage 100 ~ 240 V.a.c. 50/60 Hz			
		Voltage fluctuation rate ±10 % of power voltage			
		Insulation resistance Min. 20 MΩ, 500 V.d.c.			
		Dielectric strength 3,000 V.a.c., 50/60 Hz for 1 minute (between 1st and 2nd terminal)			
Approval					
		CE GS			
		• Electrostatic discharge (ESD) : KS C 61000-4-2 • EFT (RS) : KS C 61000-4-3 IP65 (front panel) IP65 (front panel) IP65 (front panel) IP65 (front panel)	• Conductive RF (CS) : KS C 61000-4-6 • SURGE : KS C 61000-4-5		
		Weight (g) QX2/QX3 : about 104, QX4 : about 104, QX7 : about 152, QX9 : about 222 ≈ Excluding box and fixing bracket			
		Basic components Main body, Bracket, Rubber packing, Instruction manual			

Part names and functions



Connection diagrams

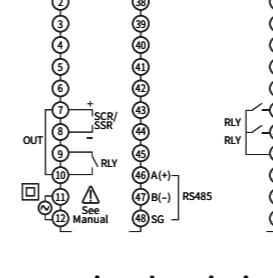
■ QX2/QX3



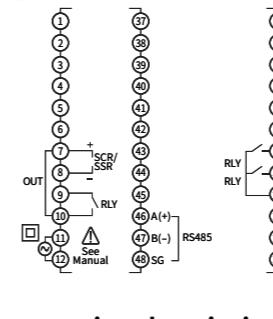
■ QX4



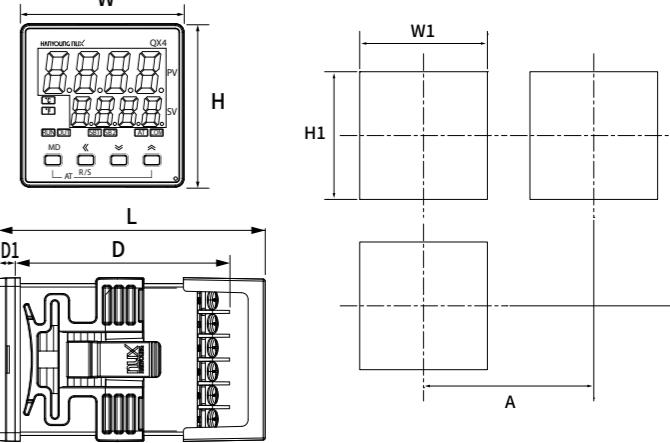
■ QX7



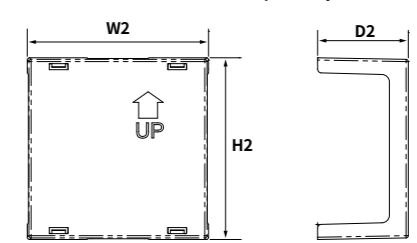
■ QX9



Dimensions and panel cutout



■ Protective cover (※sold separately) dimensions



[unit:mm]

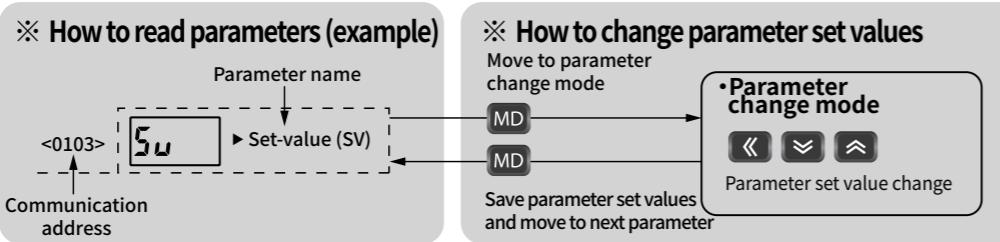
■ Alarm type (An.TY) and alarm operation description

Alarm type set value	Alarm type	Alarm operation	Absolute alarm	Deviation alarm
0	Alarm off		-	
1	High absolute		O	
(7)	High absolute with standby sequence			
2	Low absolute		O	
(8)	Low absolute with standby sequence			
3	High deviation			O
(9)	High deviation with standby sequence			
4	Low deviation			O
(10)	Low deviation with standby sequence			
5	High-Low deviation			O
(11)	High-Low deviation with standby sequence			
6	High-Low range			O
(12)	High-Low range with standby sequence			
13	Sensor error	Burn-out	O	

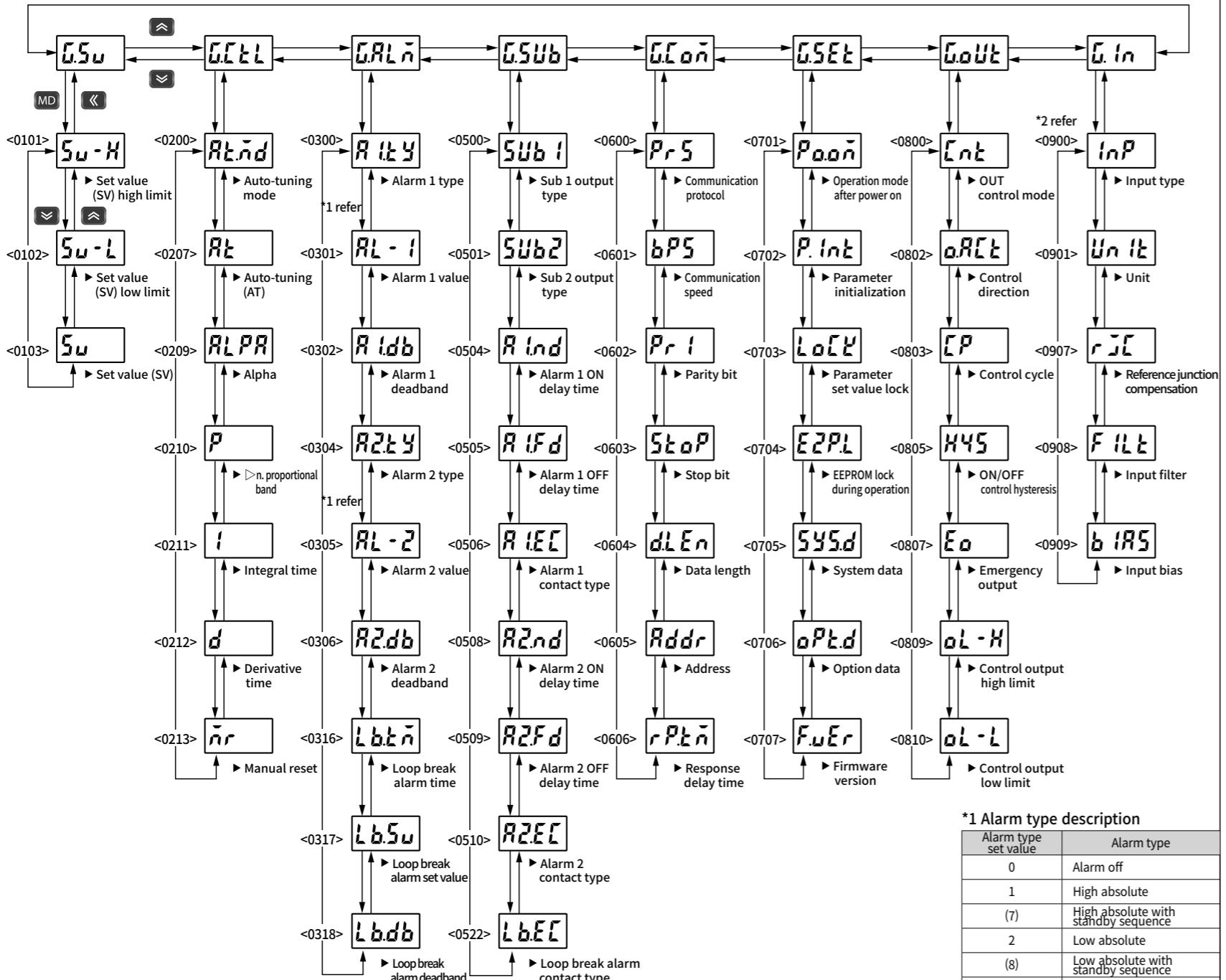
* Grey part: An.DB, △ : SV set value, ▲ : AL-n set value, the number indicated in parenthesis () has standby sequence

* n indicates alarm numbers 1 ~ 2

Parameter configuration



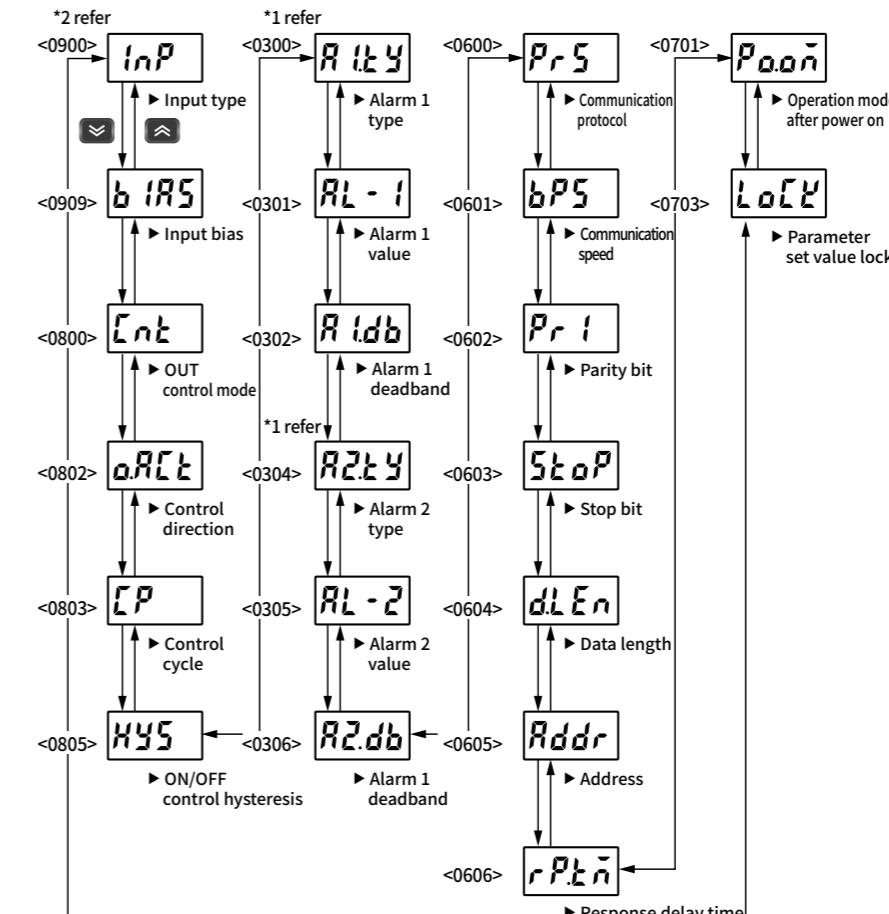
Full Menu: press and hold **MD** + **◀** for 1 sec.



*1 Alarm type description

Alarm type set value	Alarm type
0	Alarm off
1	High absolute
(7)	High absolute with standby sequence
2	Low absolute
(8)	Low absolute with standby sequence
3	High deviation
(9)	High deviation with standby sequence
4	Low deviation
(10)	Low deviation with standby sequence
5	High-Low deviation
(11)	High-Low deviation with standby sequence
6	High-Low range
(12)	High-Low range with standby sequence
13	Sensor error

Basic Menu: press and hold **MD** + **▼** for 1 sec.



*2 Input type description

Parameter set value	Temperature range
Screen display	°C °F
80	-200 ~ 1370 -328 ~ 2498
81	-100.0 ~ 500.0 -148 ~ 932
80	-200 ~ 1000 -328 ~ 1832
81	-100.0 ~ 500.0 -148 ~ 932
80	-100.0 ~ 400.0 -148 ~ 752
80	0 ~ 1700 32 ~ 3092
80	-200 ~ 640 -328 ~ 1184
81	-199.9 ~ 640.0 -328 ~ 1184

Simple menu: press and hold **MD** for 1 sec.

