

# VX series

## INSTRUCTION MANUAL

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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 any time.

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### 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

<b>⚠ DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
<b>⚠ WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
<b>⚠ CAUTION</b>	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 circuit on the outside.  
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. (Overvoltage category II)  
The power supply should be insulated and limited voltage current or Class 2, SELV power supply device.  
To prevent electric shocks and malfunctions, do not supply power until the wiring is completed.  
The product does not have an 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.  
Please use this product after installing it to a panel, because 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 shipping.  
Use this product in the following environments:  
- indoors.  
- 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. (pollution degree 1 or 2).  
- avoid places where large inductive interference, static electricity, magnetic noise are generated.  
- avoid places with 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 18 AWG to 24 AWG.  
- Tighten the screw on the terminal is torque from 0.5 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 thermocouple input, use 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).  
Use the input signal line away from power line and load line to avoid the influence of inductive noise.  
Input signal line and output signal line should be separated from each other. If separation is not possible, use shield wires for input signal line.  
Use a non-grounded sensor for thermocouple (using a grounded sensor may cause malfunctions to the device due to short circuits).  
When there is a lot of noise from the power, we recommend to use insulation transformer and noise filter. Please install the noise filter to a grounded panel or structure, etc. and make the wiring of noise filter output and product power supply terminal as short as possible.  
Tightly twisting the power cables is effective against noise.  
If the alarm function is not set correctly, it will not be output in case of abnormal operation, so please check it before operation.

### Suffix code

Model	Code	Content
VX		LCD Digital Temperature Controller
2		48(W) × 96(H) × 62.5(D) mm
3		96(W) × 48(H) × 62.5(D) mm
4		48(W) × 48(H) × 63(D) mm
7		72(W) × 72(H) × 62.5(D) mm
9		96(W) × 96(H) × 62.5(D) mm
Sensor	U	Universal input
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)
OUT 2 (control output 2)	N	None
	M	Relay output
Power	A	100 ~ 240 V a.c. 50/60 Hz
	D	24 V d.c., Class2
Sub output	A1	1 relay output (VX4 basic option)
	A2	2 relay outputs (VX2, VX7, VX9 basic option)
	A4	4 relay outputs ※ *1
Communication	C	RS-485 communication
Retransmission output (RET)	T	Retransmission output (4 ~ 20 mA)
Digital input (DI)	D2	2 digital inputs (DI 1 ~ 2)
Current detection input (CT)	H1	Current detection input (CT) 1 contact
Remote input (REM)	R	1 input, 4 ~ 20 mA (1 ~ 5 V)

※ \* 1) You can select from VX2, VX3, VX7, VX9 (VX4 is excluded)  
※ Please refer to our user's manual, catalog or homepage for the model names of VX available for order.

### Basic key description

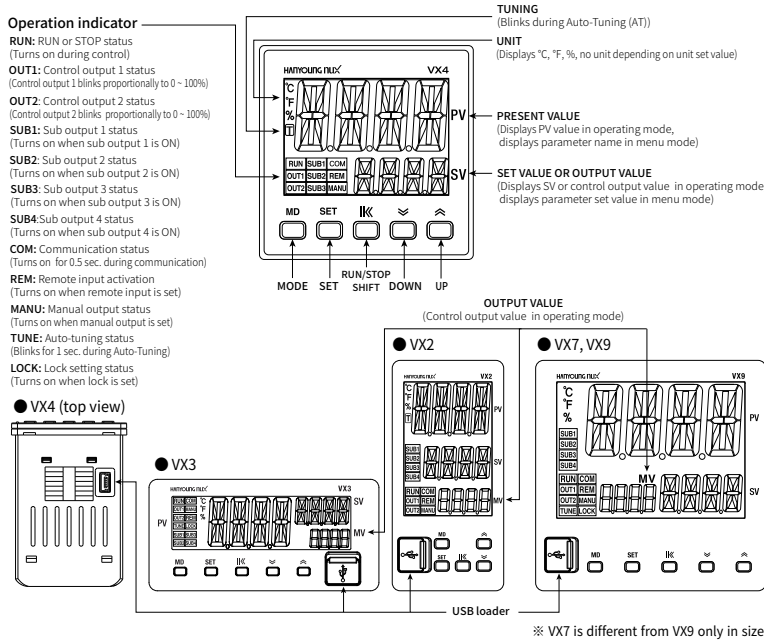
\* 1: Please refer to the description of the right menu key to move between operation and menu mode.  
\* 2: Move to group name or n.PID. Please refer to the parameter configuration below.

No.	Key	Operation mode *1			Menu mode *1		
		Control/Monitoring	SV change	Control output	Manual control output	Simple / Basic / Full	Change parameters
Mode	MD	Move to control output mode		Move to control/monitoring mode	Move to control/monitoring mode	*2	-
Set	SET	Move to SV change mode	Save SV value	-	-	Change Parameter / Move within group	Move to next parameter after saving value
Shift	IK	-	Shift digit position	-	-	-	Shift digit position
Down	↓	-	Decrease value	-	Decrease value	Move among parameters / Move group	Decrease/change value
Up	↑	-	Increase value	-	Increase value	-	Increase/change value

### Specifications

Classification	VX2	VX3	VX4	VX7	VX9
Input	Thermocouple: K, J, E, T, R, B, S, L, N, U, W, PLII Reference junction compensation accuracy: ±1.5 °C (within -10~50 °C) RTD: JPT100, PT100 Allowable line resistance: Each 3 wire within 10 Ω (but the resistance among 3 lines should be same) DC voltage / current: 1 ~ 5 V (4 ~ 20 mA), 0 ~ 5 V, 0 ~ 10 V, 0 ~ 50 mV, 0 ~ 100 mV Sampling cycle: 50 ms				
Control output	Relay output (OVC II, Resistive load): • 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: 240 V a.c., 110 V d.c. • Max. switching current: 5 A • Mechanical life: 20 million times (at 180 CPM) (VX3) Rated switch capacity: 3 A 240 V a.c., 3 A 30 V d.c., maximum switching current: 3 A				
Control	AC voltage type voltage pulse output: 12 V d.c. ± 1 V d.c. pulse voltage (load resistance min. 600 Ω) DC voltage type 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 type: ON/OFF, PID control, 2DOF PID control Output operation: Reverse action, direct action				
Memory	Non-volatile memory life: EEPROM unlocked: when setting EZP.L: OFF in G.SET group (EEPROM life: 1 million times write guaranteed) / EEPROM locked: when setting EZP.L: ON in G.SET group (store in RAM)				
Display part	Display method: Wide viewing angle LCD PV character: 20.5 x 6.9, 19.7 x 7.2, 15.2 x 6.8, 19.8 x 9.3, 29.0 x 13.6 SV character: 12.8 x 5.9, 10.7 x 4.7, 7.4 x 3.9, 10.2 x 4.9, 15.0 x 7.2 MV character: 9.3 x 4.4, 7.3 x 3.5, 7.4 x 3.9, 7.5 x 3.3, 11.0 x 4.8				
USB Loader	Communication method: USB 2.0 Protocol: • Protocol : PC-LINK • Baudrate : 38400 bps • Start bit : 1 bit • Data bit : 8 bit • Parity bit : None • Stop bit : 1 bit Communication distance: Within 5 m Sub output: Relay 1 ~ 4 outputs, rated switching capacity: 5A 240 V a.c., 5 A 30 V d.c. Digital input: Contact input ON : 1 KΩ max., OFF: 100 KΩ min., Non-contact input ON : 1.5 V max., OFF: 0.1 mA max. Current Flow : approx. 2 mA per contact, Voltage at open : Approx. 5 V d.c. Retransmission output: 1 output, 4 ~ 20 mA ± 0.2% of FS ± 1 digit, load resistance: max. 600 Ω Remote input: 1 input, 4 ~ 20 mA (1 ~ 5 V) Current detection input: 1 input or 2 inputs, 0.0 ~ 50.0 A, CT-70 current transformer (sold separately)				
Option	RS-485: • Communic. method: EIA RS485 standard, 2-wire half-duplex • Max. connections: 31 (address setting 1~99 available) • Communic. sequence: No sequence • Communic. distance: Within 1.2 km • Communic. speed: 4800, 9600, 14400, 19200, 38400, 57600 BPS • Protocol: Start bit : 1 bit, Data bit : 7 or 8 bit, Parity bit : NONE / EVEN / ODD, Stop bit : 1 or 2 bit • Response time: PC-LINK STD, PC-LINK WITH SUM, MODBUS-ASCII, MODBUS-RTU Actual response time = processing time + (response time X 50 ms)				
Power	AC Power Supply Voltage: 100 ~ 240 V a.c., 50/60 Hz DC Power Supply Voltage: 24 V d.c., Class2 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) AC voltage type power consumption: Max. 8.5 VA, Max. 8.5 VA, Max. 8.2 VA, Max. 8.5 VA, Max. 9.0 VA DC voltage type power consumption: Max. 2.7 W, Max. 2.7 W, Max. 2 W, Max. 2.8 W, Max. 3.2 W Ambient temperature & humidity: -10 ~ 50 °C, 35 ~ 85 % RH (without condensation) Storage temperature: -25 ~ 65 °C				
Approval	CE, EFT(RS) : KN61000-4-3, SURGE : KN61000-4-5 • Electrostatic discharge (ESD) : KN61000-4-2 • Conductive RF (CS) : KN61000-4-6 IP65 (front panel) IP65 (front panel) IP66 (front panel) IP65 (front panel) IP65 (front panel)				
Weight (g)	202	202	120	194	290
Basic components	Main body, Bracket, 250 Ω resistor (1%), Rubber packing, Instruction manual				

### Part names and functions



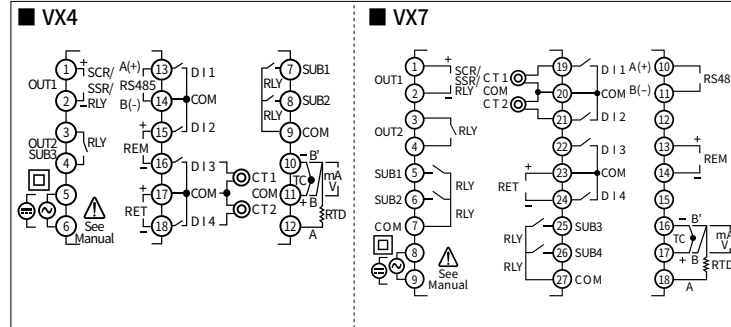
### Function key description (Used in operation mode)

No.	Combination	Description
1	Press and hold SET + IK for 3 sec.	Lock / unlock
2	Press and hold SET + ↑ for 3 sec.	Manual / automatic output mode
3	SET + → for 3 sec.	Auto tuning (AT) on / off
4	Press and hold IK for 1 sec.	Switch RUN / STOP
5	Press ↓ or ←	Release during alarm latch

### Menu key description (Used in operation mode)

No.	Combination	Description
1	Press and hold MD for 1 sec.	Simple menu (set alarm value, PID value, HYS value, etc.) but go to operating mode from menu mode
2	Press and hold MD + SET for 1 sec.	Full menu (set all parameters divided into groups)
3	Press and hold MD + IK for 1 sec.	Basic menu (Set input type, control method, control cycle, alarm type, communication, lock, etc.)

### Connection diagrams



### Input type parameters (INP), input sensor types and ranges

Classification	Type	Parameter set value		Temperature range		Tolerance
		Screen display	Communication	°C	°F	
Thermo couple	K	K0	1	-200 ~ 1370	-328 ~ 2498	±0.2 % of FS ± 1 digit
		K1	2	-100.0 ~ 500.0	-148 ~ 932	
		J0	3	-200 ~ 1200	-328 ~ 2192	
	E	J1	4	-199.9 ~ 900.0	-328 ~ 1652	
		E1	5	-199.9 ~ 900.0	-328 ~ 1652	
		T1	6	-199.9 ~ 400.0	-328 ~ 752	
		R0	7	0 ~ 1700	32 ~ 3092	
RTD	B	B0	8	100 ~ 1800	212 ~ 3272	±0.2 % of FS ± 1 digit 100~200°C: ±2.0% of FS ± 1 digit
		S0	9	0 ~ 1700	32 ~ 3092	
		L1	10	-199.9 ~ 900.0	-328 ~ 1652	
	PLII	N0	11	-200 ~ 1300	-328 ~ 2372	
		U1	12	-199.9 ~ 400.0	-328 ~ 752	
		W0	13	0 ~ 2300	32 ~ 4172	
		PLO	14	0 ~ 1300	32 ~ 2372	
Pt100	JPt0	20	-200 ~ 500	-328 ~ 932	±0.2 % of FS ± 1 digit	
	JPt1	21	-199.9 ~ 500.0	-328 ~ 932		
	Pt0	22	-200 ~ 640	-328 ~ 1184		
	Pt1	23	-199.9 ~ 640.0	-328 ~ 1184		

### Direct current and voltage

Classification	Type	Parameter set value		Range	Tolerance
		Screen display	Communication		
Direct current (Current Input)	4 ~ 20 mA (※)	1-5 V	30	-1999 ~ 9999	±0.2 % of FS ± 1 digit
	0 ~ 20 mA (※)	5 V	31		
Direct voltage (V d.c. / mV d.c.)	1 ~ 5 V	1-5 V	30	-1999 ~ 9999	±0.2 % of FS ± 1 digit
	0 ~ 5 V	5 V	31		
	0 ~ 10 V	10 V	32		
	0 ~ 50 mV	0.05 V	33		
	0 ~ 100 mV	0.1 V	34		

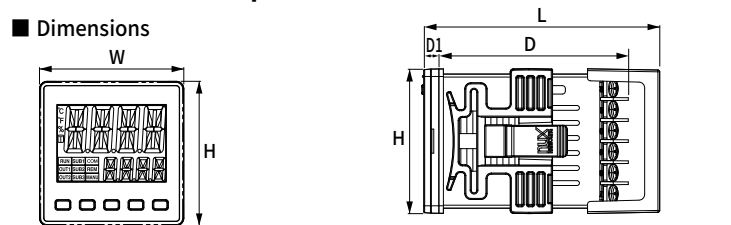
※ When direct current is used, it is recommended to connect 250 Ω (0.1% or less, high precision) resistor in parallel to the outside of the terminal. Please note that the 250 Ω (1%) resistor included with the product is not a precision resistor.

### Remote input

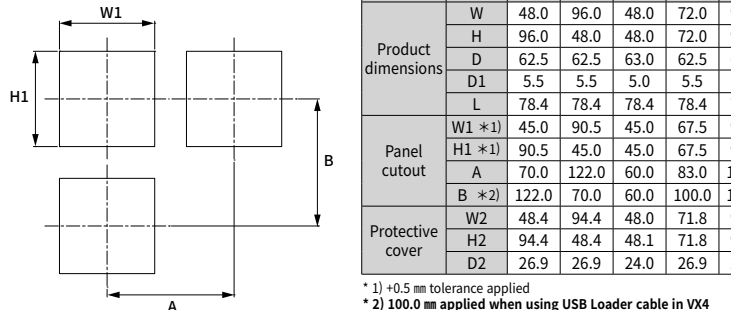
Input	Type	Range	Tolerance
Direct current	4 ~ 20 mA (※)	Same as input setting range	±0.2 % of FS ± 1 digit
Direct voltage	1 ~ 5 V d.c.		

※ When direct current is used, it is recommended to connect 250 Ω (0.1% or less, high precision) resistor in parallel to the outside of the terminal. Please note that the 250 Ω (1%) resistor included with the product is not a precision resistor.

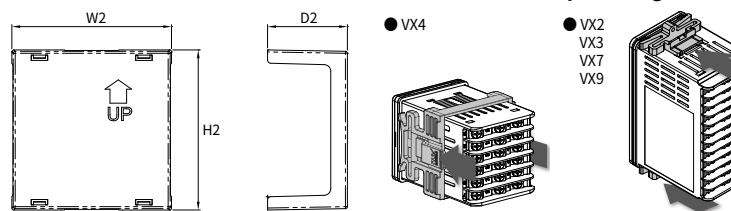
### Dimensions and panel cutout



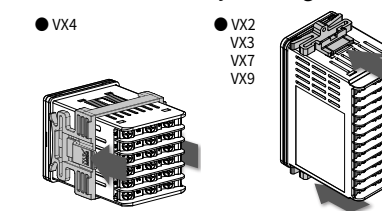
### Panel cutout



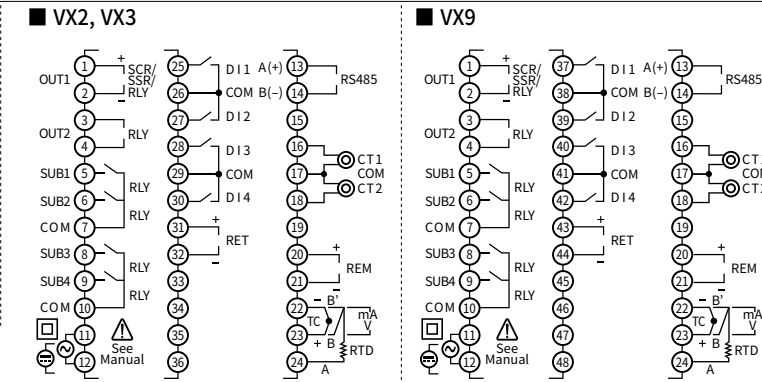
### Protective cover dimensions



### Bracket assembly drawing

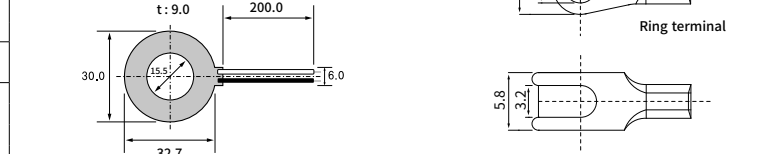


※ When using the input as DC current, it is recommended to connect 250 Ω (0.1% or less high precision) resistor in parallel to the outside of the terminal. The 250 Ω (1%) resistor included with the product is not a precision resistor.

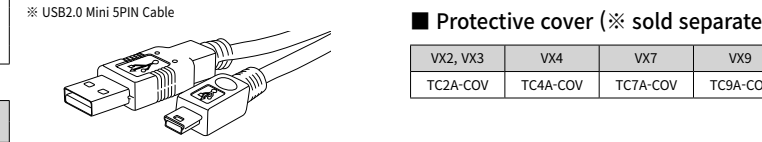


### Current transformer (CT-70, ※ sold separately)

※ Available with HBA option (current ratio: 1000 : 1, current detection range: 0.0 ~ 50.0 A)  
※ Make sure the CTs used are UL Listed or Recognized component (Reinforced insulation) in USA/Canada



### USB Loader Cable (NMC-UM210, ※ sold separately)



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

※ Grey part: An.DB, △: SV set value, ▲: AL-n set value, the number indicated in parenthesis () has standby sequence  
※ n indicates alarm numbers 1 ~ 4

Alarm type set value	Alarm type	Alarm operation	Absolute alarm	Deviation alarm
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			

### ERROR message display

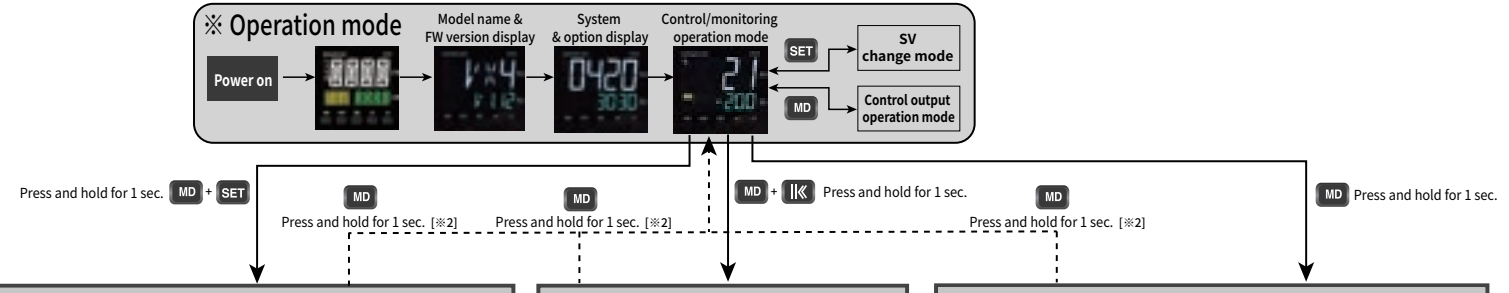
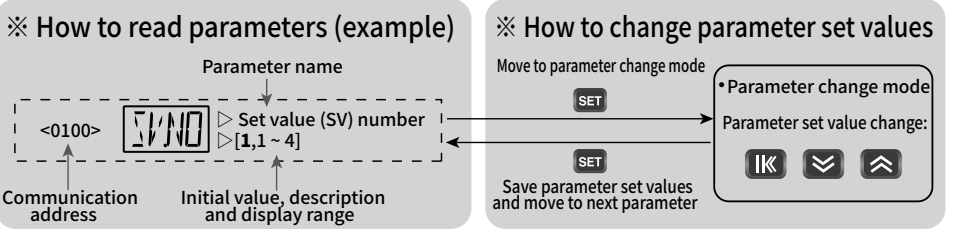
No	Screen display	Content	Cause and Action
1	SYS.E	System Data	System data setting error (please contact us)
2	OPT.E	Option Data	Option data setting error (please contact us)
3	E2P.E	EEPROM	EEPROM error (please contact us)
4	ADC.E	AD Converter	AD Converter error (please contact us)
5	CAL.E	Calibration	Calibration value setting error (please contact us)
6	RJC.E	RJC	Reference contact compensation error (please contact us)
7	AT.E	Auto tuning	Auto-tuning maximum elapsed time (24h) exceeded - Check if the connected sensor and the set sensor are different - If the output is not output from the output terminal when the control output is 100% (please contact us) - If the control output is generated from the instrument but PV does not change (check the wiring status) - If the control output is 0%, enter the P, I, D values manually without running AT for systems where temperature is not likely to drop
8	B.OUT	Burn out	Check sensor wiring status (check for disconnection) Check the sensor settings (check input type parameters (INP)) If the input is exceeded by more than ± OVER
9	OV.R	+Over	Check the sensor settings (if the input is exceeded within +5% of sensor input range)
10	-OV.R	-Over	Check the sensor settings (if the input is exceeded within -5% of sensor input range)

※ Error messages are displayed on PV display window.

※ For further information, please visit our homepage(www.hanyoungnux.com) and refer to the user's manual in the archive.



# Parameter configuration



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

<p><b>SV group</b></p> <ul style="list-style-type: none"> <li>&lt;0100&gt; <b>SVNO</b> ▷ Set value (SV) number [1,1 ~ 4]</li> <li>&lt;0101&gt; <b>SV-H</b> ▷ Set value (SV) high limit [1370, refer to input range]</li> <li>&lt;0102&gt; <b>SV-L</b> ▷ Set value (SV) low limit [-200, refer to input range]</li> <li>&lt;0103&gt; <b>SV-1</b> ▷ Set value 1 (SV1) [-200, refer to input range]</li> <li>&lt;0104&gt; <b>SV-2</b> ▷ Set value 2 (SV2) [-200, refer to input range]</li> <li>&lt;0105&gt; <b>SV-3</b> ▷ Set value 3 (SV3) [-200, refer to input range]</li> <li>&lt;0106&gt; <b>SV-4</b> ▷ Set value 4 (SV4) [-200, refer to input range]</li> </ul> <p>※ 3 MD SET</p> <ul style="list-style-type: none"> <li>&lt;a+0&gt; <b>nP</b> ▷ n. proportional band (heating) [EUS 5.0%, ※1]</li> <li>&lt;a+1&gt; <b>nI</b> ▷ n. integral time (heating) [240, OFF or 1 ~ 6000]</li> <li>&lt;a+2&gt; <b>nD</b> ▷ n. derivative time (heating) [60, OFF or 1 ~ 6000]</li> <li>&lt;a+3&gt; <b>nMP</b> ▷ n. manual reset [50.0, -5.0 ~ 105.0]</li> <li>&lt;a+4&gt; <b>nPC</b> ▷ n. proportional band (cooling) [EUS 5.0%, ※1]</li> <li>&lt;a+5&gt; <b>nIC</b> ▷ n. integral time (cooling) [240, OFF or 1 ~ 6000]</li> <li>&lt;a+6&gt; <b>nDC</b> ▷ n. derivative time (cooling) [60, OFF or 1 ~ 6000]</li> <li>&lt;a+8&gt; <b>nDB</b> ▷ n. heating/cooling deadband [3.0, -100.0 ~ 50.0]</li> </ul>	<p><b>CONTROL group</b></p> <ul style="list-style-type: none"> <li>&lt;0200&gt; <b>ATMD</b> ▷ Auto-tuning mode [STND, STND or LOW]</li> <li>&lt;0207&gt; <b>AT</b> ▷ Auto-tuning (AT) [OFF, OFF or ON]</li> <li>&lt;0208&gt; <b>ARW</b> ▷ Anti-reset wind-up (ARW) [Auto, Auto or 50.0 ~ 200.0]</li> <li>&lt;0209&gt; <b>ALPA</b> ▷ Alpha [50, 0 ~ 100]</li> <li>&lt;a=0210&gt; <b>1PID</b> ▷ 1. PID group</li> <li>&lt;a=0219&gt; <b>2PID</b> ▷ 2. PID group</li> <li>&lt;a=0228&gt; <b>3PID</b> ▷ 3. PID group</li> <li>&lt;a=0237&gt; <b>4PID</b> ▷ 4. PID group</li> <li>&lt;0246&gt; <b>RMUP</b> ▷ Ramp-up [OFF, refer to input range]</li> <li>&lt;0247&gt; <b>UPTM</b> ▷ Ramp-up time [01.00, 00.01 ~ 99.59]</li> <li>&lt;0248&gt; <b>RMDD</b> ▷ Ramp-down [OFF, refer to input range]</li> <li>&lt;0249&gt; <b>DNM</b> ▷ Ramp-down time [01.00, 00.01 ~ 99.59]</li> <li>&lt;0250&gt; <b>MVBL</b> ▷ MV Bumpless [ON, OFF or ON]</li> </ul>	<p><b>ALARM group</b></p> <ul style="list-style-type: none"> <li>&lt;0300+(n-1)x4&gt; <b>ALnTY</b> ▷ Alarm n type [※1, 0 ~ 13]</li> <li>&lt;0301+(n-1)x4&gt; <b>AL-n</b> ▷ Alarm n value [※1]</li> <li>&lt;0302+(n-1)x4&gt; <b>ALnD</b> ▷ Alarm n deadband [1, ※1]</li> <li>&lt;0303+(n-1)x4&gt; <b>ALnS</b> ▷ Alarm n output hold status [RST, RST or SET]</li> <li>&lt;0316&gt; <b>LBTM</b> ▷ Loop break alarm time [480.0 ~ 7200]</li> <li>&lt;0317&gt; <b>LBSV</b> ▷ Loop break alarm set value [2, EUS 0.0 ~ 5.0%]</li> <li>&lt;0318&gt; <b>LBD</b> ▷ Loop break alarm deadband [2, EUS 0.0 ~ 5.0%]</li> <li>&lt;0319&gt; <b>LBS</b> ▷ Loop break alarm output hold status [RST, RST or SET]</li> <li>&lt;0320&gt; <b>H1S</b> ▷ Heater break alarm 1 set value [OFF, 1.0 ~ 50.0]</li> <li>&lt;0321&gt; <b>H1D</b> ▷ Heater break alarm 1 deadband [0.5, 0.1 ~ 50.0]</li> <li>&lt;0015&gt; <b>CTM</b> ▷ Current detection 1 monitoring [0, 0.0 ~ 55.0]</li> <li>&lt;0322&gt; <b>H2S</b> ▷ Heater break alarm 2 set value [OFF, 1.0 ~ 50.0]</li> <li>&lt;0323&gt; <b>H2D</b> ▷ Heater break alarm 2 deadband [0.5, 0.1 ~ 50.0]</li> <li>&lt;0016&gt; <b>CTM</b> ▷ Current detection 2 monitoring [0, 0.0 ~ 55.0]</li> <li>&lt;0324&gt; <b>H2S</b> ▷ Heater break alarm output hold status [RST, RST or SET]</li> </ul>	<p><b>TRANS group</b></p> <ul style="list-style-type: none"> <li>&lt;0400&gt; <b>RETT</b> ▷ Retransmission output type [PV, PV/SV/MV]</li> <li>&lt;0401&gt; <b>T-SH</b> ▷ Retransmission output high limit [1370, ※1]</li> <li>&lt;0402&gt; <b>T-SL</b> ▷ Retransmission output low limit [-200, ※1]</li> <li>&lt;0403&gt; <b>T-AH</b> ▷ Retransm. output high adjust. value [0, ※1]</li> <li>&lt;0404&gt; <b>T-AL</b> ▷ Retransm. output low adjust. value [0, ※1]</li> <li>&lt;0405&gt; <b>REME</b> ▷ Enable remote input [OFF, OFF or ON]</li> <li>&lt;0406&gt; <b>REMH</b> ▷ Remote input high limit [5.000, 1.000 ~ 5.000]</li> <li>&lt;0407&gt; <b>REML</b> ▷ Remote input low limit [1.000, 1.000 ~ 5.000]</li> <li>&lt;0408&gt; <b>R-SH</b> ▷ Remote input high scale value [1370, ※1]</li> <li>&lt;0409&gt; <b>R-SL</b> ▷ Remote input low scale value [-200, ※1]</li> <li>&lt;0410&gt; <b>R-AH</b> ▷ Remote input high adjust. value [0, ※1]</li> <li>&lt;0411&gt; <b>R-AL</b> ▷ Remote input low adjust. value [0, ※1]</li> </ul>	<p><b>SUB group</b></p> <ul style="list-style-type: none"> <li>&lt;0500&gt; <b>SUB1</b> ▷ Sub 1 output type [ALM1, ※1]</li> <li>&lt;0501&gt; <b>SUB2</b> ▷ Sub 2 output type [ALM2, ※1]</li> <li>&lt;0502&gt; <b>SUB3</b> ▷ Sub 3 output type [ALM3, ※1]</li> <li>&lt;0503&gt; <b>SUB4</b> ▷ Sub 4 output type [ALM4, ※1]</li> <li>&lt;0504+(n-1)x4&gt; <b>ANnD</b> ▷ Alarm n ON delay time [0, 0 ~ 999]</li> <li>&lt;0505+(n-1)x4&gt; <b>ANnF</b> ▷ Alarm n OFF delay time [0, 0 ~ 999]</li> <li>&lt;0506+(n-1)x4&gt; <b>ANnEC</b> ▷ Alarm n contact type [N.O, N.O or N.C]</li> <li>&lt;0507+(n-1)x4&gt; <b>ANnL</b> ▷ Alarm n output hold [OFF, OFF or ON]</li> <li>&lt;0520&gt; <b>L1ND</b> ▷ Loop break alarm ON delay time [0, 0 ~ 999]</li> <li>&lt;0521&gt; <b>L1FD</b> ▷ Loop break alarm OFF delay time [0, 0 ~ 999]</li> <li>&lt;0522&gt; <b>L1REC</b> ▷ Loop break alarm contact type [N.O, N.O or N.C]</li> <li>&lt;0523&gt; <b>L2LT</b> ▷ Loop break alarm output hold [OFF, OFF or ON]</li> <li>&lt;0524&gt; <b>H2CE</b> ▷ Enable heater break alarm 2 [OFF, OFF or ON]</li> <li>&lt;0525&gt; <b>H2ND</b> ▷ Heater break alarm ON delay time [0, 0 ~ 999]</li> <li>&lt;0526&gt; <b>H2FD</b> ▷ Heater break alarm OFF delay time [0, 0 ~ 999]</li> <li>&lt;0527&gt; <b>H2REC</b> ▷ Heater break alarm contact type [N.O, N.O or N.C]</li> <li>&lt;0528&gt; <b>H2LT</b> ▷ Heater break alarm output hold [OFF, OFF or ON]</li> </ul>
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**Basic Menu: press and hold MD + IKK for 1 sec.**

<ul style="list-style-type: none"> <li>&lt;0900&gt; <b>INP</b> ▷ Input type [KO, ※1]</li> <li>&lt;0901&gt; <b>UNIT</b> ▷ Unit [°C, ※1]</li> <li>&lt;0904&gt; <b>DP-P</b> ▷ Decimal point position [1, ※1]</li> <li>&lt;0905&gt; <b>SL-H</b> ▷ Scale high limit [100.0, -1999 ~ 9999]</li> <li>&lt;0906&gt; <b>SL-L</b> ▷ Scale low limit [0.0, -1999 ~ 9999]</li> <li>&lt;0907&gt; <b>RJC</b> ▷ Reference junction compensation [ON, OFF or ON]</li> <li>&lt;0908&gt; <b>FILT</b> ▷ Input filter [OFF, OFF or 1 ~ 120]</li> <li>&lt;0909&gt; <b>BIAS</b> ▷ Input bias [0, ※1]</li> </ul>	<ul style="list-style-type: none"> <li>&lt;0800&gt; <b>CNT1</b> ▷ OUT1 control mode [PID, ONOFF or PID]</li> <li>&lt;0801&gt; <b>CNT2</b> ▷ OUT2 control mode [PID, NONE/ONOFF/PID]</li> <li>&lt;0802&gt; <b>ORCT</b> ▷ Control direction [REV, REV or DIR]</li> <li>&lt;0803&gt; <b>CP</b> ▷ Control cycle (OUT1) [※1]</li> <li>&lt;0804&gt; <b>CPC</b> ▷ Control cycle (OUT2) [※1]</li> <li>&lt;0805&gt; <b>HYS1</b> ▷ ON/OFF control hysteresis (OUT1) [1, ※1]</li> <li>&lt;0806&gt; <b>HYS2</b> ▷ ON/OFF control hysteresis (OUT2) [1, ※1]</li> <li>&lt;0807&gt; <b>EO</b> ▷ Emergency output (OUT1) [0.0, ※1]</li> <li>&lt;0808&gt; <b>EOC</b> ▷ Emergency output (OUT2) [0.0, ※1]</li> <li>&lt;0809&gt; <b>OL-H</b> ▷ Control output high limit [100, ※1]</li> <li>&lt;0810&gt; <b>OL-L</b> ▷ Control output low limit [0.0, ※1]</li> </ul>	<ul style="list-style-type: none"> <li>&lt;0700&gt; <b>DIMD</b> ▷ Digital input mode [OFF, OFF or ON]</li> <li>&lt;0701&gt; <b>PODM</b> ▷ Operation mode after power on [RUN, STOP or RUN]</li> <li>&lt;0702&gt; <b>PINT</b> ▷ Parameter initialization [OFF, OFF or ON]</li> <li>&lt;0703&gt; <b>LOCK</b> ▷ Parameter set value lock [0, 0 ~ 2]</li> <li>&lt;0704&gt; <b>E2PL</b> ▷ EEPROM lock during operation [OFF, OFF or ON]</li> <li>&lt;0706&gt; <b>CLSC</b> ▷ Indicator/controller selection [ON, OFF or ON]</li> <li>&lt;0401&gt; <b>SYS</b> ▷ System data [0000 ~ FFFF]</li> <li>&lt;0402&gt; <b>OPT</b> ▷ Option data [0000 ~ FFFF]</li> <li>&lt;0405&gt; <b>FVER</b> ▷ Firmware version [V0.00 ~ Vx.xx]</li> </ul>	<ul style="list-style-type: none"> <li>&lt;0600&gt; <b>PRP</b> ▷ Communication protocol [PCK, ※1]</li> <li>&lt;0601&gt; <b>BP</b> ▷ Baud rate [9.6k, ※1]</li> <li>&lt;0602&gt; <b>PRT</b> ▷ Parity bit [NONE, ※1]</li> <li>&lt;0603&gt; <b>STOP</b> ▷ Stop bit [1, 1 or 2]</li> <li>&lt;0604&gt; <b>LEN</b> ▷ Data length [8, 7 or 8]</li> <li>&lt;0605&gt; <b>ADP</b> ▷ Address [1, 1 ~ 99]</li> <li>&lt;0606&gt; <b>RPTM</b> ▷ Response delay time [0, 0 ~ 10]</li> </ul>
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**Simple menu: press and hold MD for 1 sec.**

<ul style="list-style-type: none"> <li>&lt;0201&gt; <b>AT</b> ▷ Auto-tuning [OFF, OFF or ON]</li> <li>&lt;0301&gt; <b>AL-1</b> ▷ Alarm 1 setting [1570, ※1]</li> <li>&lt;0305&gt; <b>AL-2</b> ▷ Alarm 2 setting [1570, ※1]</li> <li>&lt;0309&gt; <b>AL-3</b> ▷ Alarm 3 setting [1370, ※1]</li> <li>&lt;0313&gt; <b>AL-4</b> ▷ Alarm 4 setting [-200, ※1]</li> <li>&lt;a=0210&gt; <b>1PID</b> ▷ PID No.1</li> <li>&lt;a=0219&gt; <b>2PID</b> ▷ PID No.2</li> <li>&lt;a=0228&gt; <b>3PID</b> ▷ PID No.3</li> <li>&lt;a=0237&gt; <b>4PID</b> ▷ PID No.4</li> <li>&lt;0805&gt; <b>HYS1</b> ▷ ON/OFF control hysteresis (OUT1) [1, ※1]</li> <li>&lt;0806&gt; <b>HYS2</b> ▷ ON/OFF control hysteresis (OUT2) [1, ※1]</li> </ul>	<ul style="list-style-type: none"> <li>&lt;a+0&gt; <b>nP</b> ▷ n. proportional band (heating) [EUS 5.0%, ※1]</li> <li>&lt;a+1&gt; <b>nI</b> ▷ n. integral time (heating) [240, OFF or 1 ~ 6000]</li> <li>&lt;a+2&gt; <b>nD</b> ▷ n. derivative time (heating) [60, OFF or 1 ~ 6000]</li> <li>&lt;a+3&gt; <b>nMP</b> ▷ n. manual reset [50.0, -5.0 ~ 105.0]</li> <li>&lt;a+4&gt; <b>nPC</b> ▷ n. proportional band (cooling) [EUS 5.0%, ※1]</li> <li>&lt;a+5&gt; <b>nIC</b> ▷ n. integral time (cooling) [240, OFF or 1 ~ 6000]</li> <li>&lt;a+6&gt; <b>nDC</b> ▷ n. derivative time (cooling) [60, OFF or 1 ~ 6000]</li> <li>&lt;a+8&gt; <b>nDB</b> ▷ n. heating/cooling deadband [3.0, -100.0 ~ 50.0]</li> </ul>
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**※ 1 : Refer to the User's Manual**  
 ※ Please visit our homepage ([www.hanyoungnux.com](http://www.hanyoungnux.com)) and refer to the user manual in the archive.

**※ 2 : Key to move to operation mode screen**  
 Press and hold **MD** in the parameter setting screen for 1 sec. to move to operation mode screen

**※ 3 : Move to group name display**  
 Press **MD** during parameter display to move to group name (but during parameter display in n.PID, it moves to n.PID).

**※ The parameter display differs depending on suffix code options and parameter settings.**