DRW170808AB

Autonics

Bar Graphic Temperature Controllers
KPN SERIES

INSTRUCTION MANUAL

Thank you for choosing our Autonics product.
Please read the following safety considerations before use.

▣ Safety Considerations

※Please observe all safety considerations for safe and proper product operation to avoid hazards.
※⚠ symbol represents caution due to special circumstances in which hazards may occur.

⚠Warning Failure to follow these instructions may result in serious injury or death.
⚠Caution Failure to follow these instructions may result in personal injury or product damage.

⚠Warning

1. **Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
   Failure to follow this instruction may result in personal injury, fire or economic loss.
2. **Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.**
   Failure to follow this instruction may result in explosion or fire.
3. **Install on a device panel to use.**
   Failure to follow this instruction may result in electric shock.
4. **Do not connect, repair, or inspect the unit while connected to a power source.**
   Failure to follow this instruction may result in fire or electric shock.
5. **Check 'Connections' before wiring.**
   Failure to follow this instruction may result in fire.
6. **Do not disassemble or modify the unit.**
   Failure to follow this instruction may result in fire or electric shock.

⚠Caution

1. **When connecting the power input and relay output, use AWG 20 (0.50mm^2) cable or over and tighten the terminal screw with a tightening torque of 0.74 to 0.90N·m.**
   When connecting the sensor input and communication cable without dedicated cable, use AWG 28 to 16 cable and tighten the terminal screw with a tightening torque of 0.74 to 0.90N·m.
   Failure to follow this instruction may result in fire or malfunction due to contact failure.
2. **Use the unit within the rated specifications.**
   Failure to follow this instruction may result in fire or product damage.
3. **Use a dry cloth to clean the unit, and do not use water or organic solvent.**
   Failure to follow this instruction may result in fire or electric shock.
4. **Keep metal chip, dust, and wire residue from flowing into the unit.**
   Failure to follow this instruction may result in fire or product damage.

▣ Ordering Information

KPN5 5 0 0 - 0 0 0

Power supply	0	100-240VAC 50/60Hz
Option input/output	0	None
	3	Transmission output+Remote SV
Option communication output	0	None
	2	RS485
Control output※1 1 output type	0	Relay, Current, SSR drive voltage selection output
Control output※1 2 output type	1	OUT1: Current, SSR drive voltage selection output OUT2: Current, SSR drive voltage selection output
	3	OUT1: Current, SSR drive voltage selection output OUT2: Relay output
	7	OUT1: Relay output OUT2: Current, SSR drive voltage selection output
	9	OUT1: Relay output OUT2: Relay output
The number of control ouptut	0	1 output type (Heating or Cooling type)
	1	2 output type (Heating&Cooling type)
Size	2	DIN W96×H48mm
	3	DIN W48×H96mm
	5	DIN W96×H96mm
Item	KPN5	Temperature / Process Controller

※1: The 1 output type is heating or cooling output type and the 2 output type is heating&cooling output type.
The 1 output type is able to use only one output among relay, current, SSR drive voltage outputs.
OUT1 of the 2 output type is fixed as heating output and OUT2 of the 2 output type is fixed as cooling output.
If you select the SSR drive voltage or current output model, you can select the appropriate control output.

※**The above specifications are subject to change and some models may be discontinued without notice.**
※**Be sure to follow cautions written in the instruction manual, user manual and the technical descriptions (catalog, homepage).**

▣ Specifications

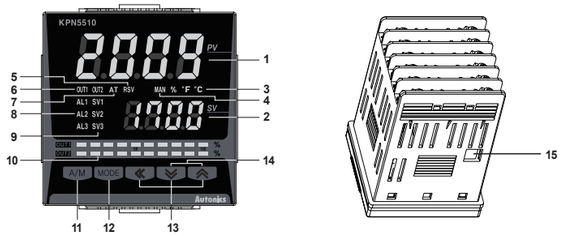
Series		KPN52□□	KPN53□□	KPN55□□
Power supply		100-240VAC∼ 50/60Hz		
Allowable voltage range		90 to 110% of rated voltage		
Power consumption		Max. 15VA		
Display method		7-segment (red, green), control output bar graph: red, green		
Character size	PV (W×H)	8.5×17.0mm	7.0×14.6mm	11.0×22.0mm
	SV (W×H)	6.0×12.0mm	6.0×12.0mm	6.0×12.0mm
Input type	RTD	JPt 100Ω, DPt 100Ω, DPt 50Ω, Cu 100Ω, Cu 50Ω, Nikel 120Ω (6types)		
	TC	K, J, E, T, L, N, U, R, S, B, C, G, PLII (13types)		
	Analog	Voltage: 0 to 100mV, 0 to 5V, 1 to 5V, 0 to 10V (4types) / Current: 0 to 20mA, 4 to 20mA (2types)		
Display accuracy	RTD	• At room temperature (23℃±5℃): (PV ±0.3% or ±1℃, select the bigger one) ±1-digit※1 • Out of range of room temperature: (PV ±0.5% or ±2℃, select the bigger one) ±1-digit		
	TC			
	Analog	• At room temperature (23℃±5℃): ±0.3% F.S. ±1-digit • Out of range of room temperature: ±0.5% F.S. ±1-digit		
	CT input	±5% F.S. ± 1-digit		
Control output	Relay	OUT1, OUT2: 250VAC∼ 5A 1a		
	SSR	Max. 11VDC⎓ ±2V 20mA		
	Current	DC4-20mA or DC0-20mA (max. load 500Ω)		
Alarm output	Relay	AL1, AL2, AL3: 250VAC∼ 3A 1a		
Option output	Transmission	DC4-20mA (max. load 500Ω, output accuracy: ±0.3% F.S. ±1-digit)		
	Communication	RS485 communication output (modbus RTU)		
Option input	CT	0.0 to 50.0A (primary heater current value measuring range) ※CT ratio = 1/1000		
	Remote SV	1-5VDC⎓ or DC4-20mA (current input: using external resistance 250Ω)		
	Digital input	• Contact input: ON - max. 2kΩ, OFF - min. 90kΩ • Non-contact input: ON - residual votage max. 1.0V, OFF - leakage current max. 0.1mA		
Control type	Heating, Cooling Heating&Cooling	ON/OFF, P, PI, PD, PID control mode		
Hysteresis		• Thermocouple / RTD: 1 to 100℃/℉ (0.1 to 100.0℃/℉) variable • Analog: 1 to 100Digit		
Proportional band (P)		0.1 to 999.9℃ (0.1 to 999.9%)		
Integral time (I)		0 to 9999 sec		
Derivative time (D)		0 to 9999 sec		
Control period (T)		0.1 to 120.0 sec (※relay output and SSR drive output only)		
Manual reset value		0.0~100.0%		
Sampling period		50ms		
Dielectric strength		2000VAC 50/60Hz for 1min (between power source terminal and input terminal)		
Vibration		0.75mm amplitude at frequency of 5 to 55Hz (for 1min) in each X, Y, Z direction for 2 hours		
Relay life cycle	Mechanical	Min. 10,000,000 times		
	Electrical	Min. 100,000 times (250VAC 3A resistance load)		
Insulation resistance		Over 100MΩ (at 500VDC megger)		
Noise resistance		Square shaped noise by noise simulator (pulse width 1μs)±2kV R-phase, S-phase		
Memory retention		Approx. 10years (when using non-volatile semiconductor memory type)		
Environment	Ambient temperature	-10 to 50℃, storage: -20 to 60℃		
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH		
Protection		IP65 (front panel, IEC standard)		
Insulation type		Double insulation or reinforced insulation (mark: ▣, dielectric strength between the measuring input part and the power part : 2kV)		
Protection structure		CE		
Weight		Approx. 230g (approx. 160g)		Approx. 316g (approx. 220g)

※1: ◎ At room temperature (23℃±5℃)
- TC K, J, T, N, E type, below -100℃ / TC L, U, PL℃, RTD Cu50Ω, DPt 50Ω: (PV ±0.3% or ±2℃, select the bigger one)±1-digit
- TC C, G type/TC R, S type, below 200℃: (PV ±0.3% or ±3℃, select the bigger one)±1-digit
- TC B type, below 400℃: there is no accuracy standards.

◎ Out of range of room temperature
- RTD Cu50Ω, DPt50Ω: (PV ±0.5% or ±3℃, select the bigger one) ±1-digit
- TC R, S, B, C, G: (PV ±0.5% or ±10℃, select the bigger one) ±1-digit
- Others, below -100℃: within ±5℃

※The weight is with packaging and the weight in parenthesis is only unit weight.
※Environment resistance is rated at no freezing or condensation.

▣ Unit Description



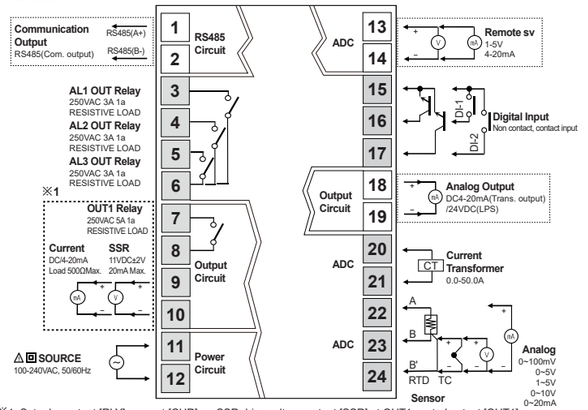
1. **Measured value (PV) display part:** RUN mode: It displays currently measured value (PV).
   Setting mode: It displays the parameter.
2. **Set value (SV) display part:** RUN mode: It displays the set value (SV).
   Setting mode: It displays the set value of the parameter.
3. **Unit (℃/℉/%) indicator:** It displays the unit set at display unit [D.UNT] in parameter 3 group.
4. **Manual control indicator:** It turns ON during manual controlling.
5. **Remote SV control indicator:** It turns ON during remote SV controlling.
6. **Control output (OUT1, OUT2) indicator:** It turns ON when the control output is ON.
   ※When using current output, in case that for manual control MV is 0.0%, the control output indicator turns OFF but the other cases it turns ON always. In case that for auto control MV is over 3.0%, it turns ON and the MV is below 2.0%, it turns OFF.
7. **Auto tuning indicator:** It flashes by 1 sec, when executing auto tuning.
8. **Alarm output (AL1, AL2, AL3) indicator:** It turns ON when the alarm output is ON.
9. **Multi SV indicator:** The SV 1 to 3 indicator turns ON when using multi SV function.
10. **Bar graph for control output:** It displays control output MV as bar graph. The KPN5□00 as 1 output type has one bar graph (OUT1), and the KPN5□1□ as 2 output type has two bar graphs (OUT1, OUT2).
11. **A/M key:** It is used when switching auto control to manual control.
12. **MODE key:** It is used when entering parameter setting group, returning to RUN mode, moving parameter, saving the set value.
13. **keys:** It is used when entering the set value changing mode and moving or changing up/down digit.
14. **Digital input key:** When pressing + keys for 3 sec, at the same time, it operates the function (RUN/STOP, alarm clear, auto tuning) set at digital input key [DI-K] in parameter 5 group.
15. **PC loader port:** It is the PC loader port for serial communication to set parameter and monitoring by DAQMaster installed in PC. Use this for connecting SCM-US (USB/Serial converter, sold separately).

※**The display part is different by options.**

▣ Connections

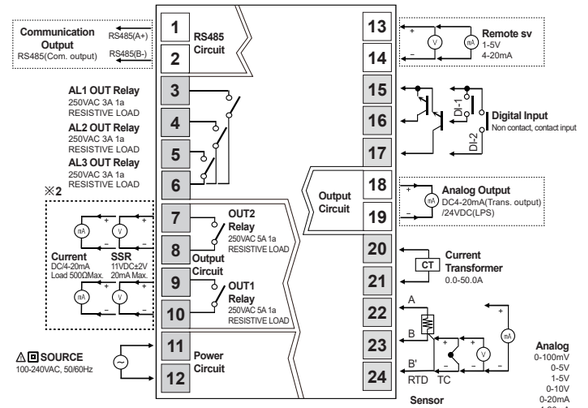
※ Standard model has shaded terminals only.
⋯⋯ is option specification.

● **KPN5□00**



※1: Set relay output [RLY], current [CUR], or SSR drive voltage output [SSR] at OUT1 control output [OUT1] in parameter 3 group.

● **KPN5□1□**



※2: OUT1, OUT2

Model	OUT1 control output	OUT2 control output
KPN5□11	Current, SSR drive voltage selection output	Current, SSR drive voltage selection output
KPN5□13	Current, SSR drive voltage selection output	Relay output
KPN5□17	Relay output	Current, SSR drive voltage selection output
KPN5□19	Relay output	Relay output

※Use teminals of size specified below.

	a	b
<Round>	Min. 3.0mm	Max. 5.8mm
<Forked>	Min. 3.0mm	Max. 5.8mm

▣ Front Panel Display When Power Is ON

When supplying the power to the product, the display part flashes for 1 sec. It displays the model type (option output, control output) and flashes the input type twice and it operates in RUN mode.

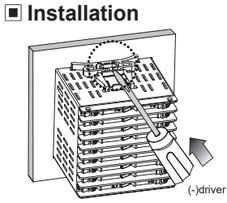
① Flashes whole display part

② Model type display

③ Flashes input type twice

④ Run mode

▣ Installation

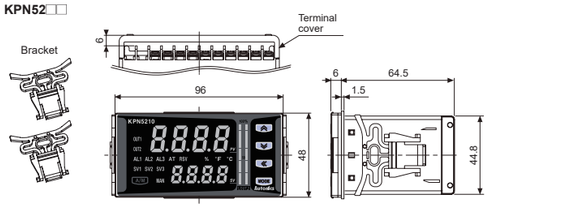


※Insert product into a panel, fasten the bracket by pushing with tools.

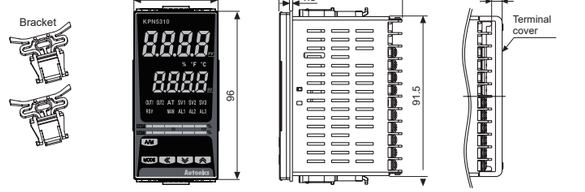
▣ Dimensions

(unit: mm)

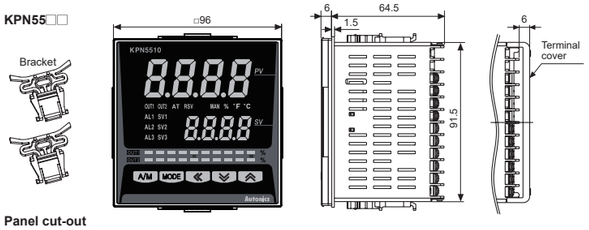
● **KPN52□□**



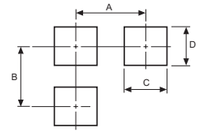
● **KPN53□□**



● **KPN55□□**



● **Panel cut-out**

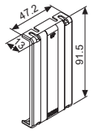


(unit: mm)

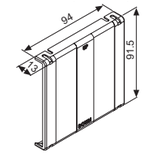
Model \ Unit	A	B	C	D
KPN52□□	Min. 115	Min. 65	92 $^{+0.8}_{0}$	45 $^{+0.6}_{0}$
KPN53□□	Min. 65	Min. 115	92 $^{+0.8}_{0}$	92 $^{+0.8}_{0}$
KPN55□□	Min. 115	Min. 115	45 $^{+0.6}_{0}$	92 $^{+0.8}_{0}$

● **Terminal cover (sold separately)**

• RHA-COVER (48×96mm)

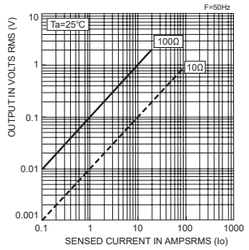


• RLA-COVER (96×96mm)

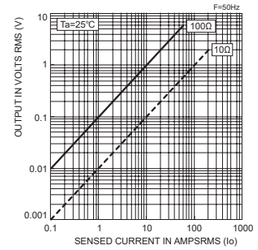


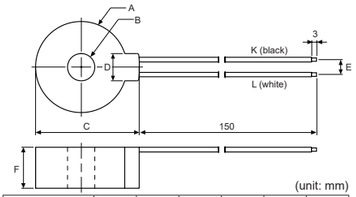
● **Current transformer (CT, sold separately)**

• CSTC-E80LN
Max. load current: 80A (50/60Hz)
※ Max. load current for KPN Series is 50A.
Current ratio: 1/1000,
Wire wound resistance: 31Ω±10%



• CSTC-E200LN
Max. load current: 200A (50/60Hz)
※ Max. load current for KPN Series is 50A.
Current ratio: 1/1000,
Wire wound resistance: 20Ω±10%



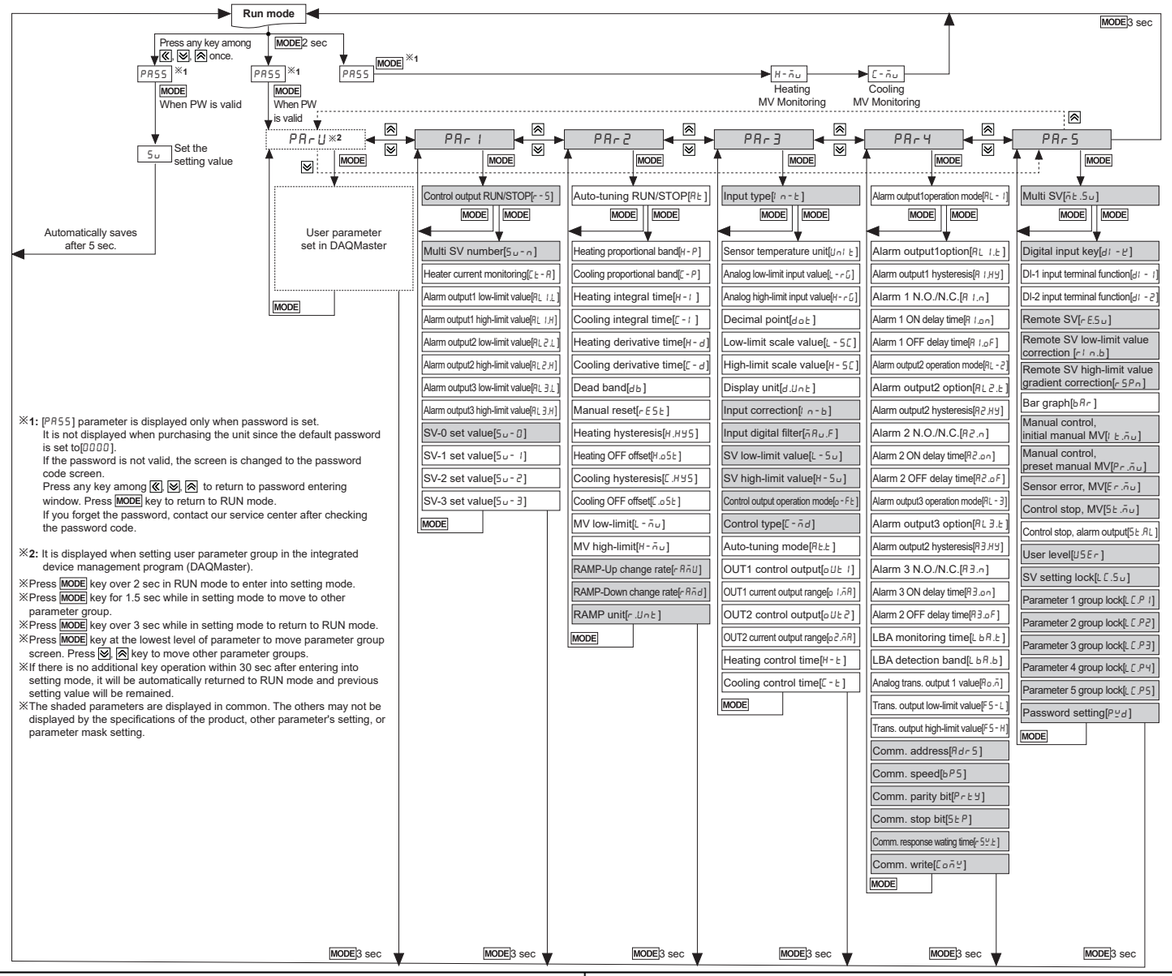


(unit: mm)

Model	A	B	C	D	E	F
CSTC-E80LN	Ø23.3	Ø7	26.5	7	3.8	10.5
CSTC-E200LN	Ø37.1	Ø13	40.8	10	4.5	13.5

※When using CT, do not supply primary current with open CT output. High voltage occurs at CT output part.
※The current for above two CTs is 50A same but inner hole sizes are different. Please use this for your environment.

Flow Chart for Setting Group



※1: [PASS] parameter is displayed only when password is set.
It is not displayed when purchasing the unit since the default password is set to[0000].
If the password is not valid, the screen is changed to the password code screen.
Press any key among ◁ ▽ △ to return to password entering window. Press MODE key to return to RUN mode.
If you forget the password, contact our service center after checking the password code.

※2: It is displayed when setting user parameter group in the integrated device management program (DAQMaster).

※Press MODE key over 2 sec in RUN mode to enter into setting mode.
※Press MODE key for 1.5 sec while in setting mode to move to other parameter group.
※Press MODE key over 3 sec while in setting mode to return to RUN mode.
※Press MODE key at the lowest level of parameter to move parameter group screen. Press ▽ △ key to move other parameter groups.
※If there is no additional key operation within 30 sec after entering into setting mode, it will be automatically returned to RUN mode and previous setting value will be remained.
※The shaded parameters are displayed in common. The others may not be displayed by the specifications of the product, other parameter's setting, or parameter mask setting.

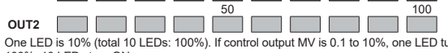
Input Type and Range

Input type		Demical point	Display	Input range (℃)	Input range (℉)
Thermocouple	K (CA)	1	tC.A1	-200 to 1350	-328 to 2463
		0.1	tC.A2	-199.9 to 999.9	-199.9 to 999.9
	J (IC)	1	tC.J1	-200 to 800	-328 to 1472
		0.1	tC.J2	-199.9 to 800.0	-199.9 to 999.9
	E (CR)	1	tC.E1	-200 to 800	-328 to 1472
		0.1	tC.E2	-199.9 to 800.0	-199.9 to 999.9
	T (CC)	1	tC.t1	-200 to 400	-328 to 752
		0.1	tC.t2	-199.9 to 400.0	-199.9 to 752.0
	B (PR)	1	tC-b	0 to 1800	32 to 3272
	R (PR)	1	tC-r	0 to 1750	32 to 3182
	S (PR)	1	tC-S	0 to 1750	32 to 3182
	N (NN)	1	tC-n	-200 to 1300	-328 to 2372
	C (TT)※1	1	tC-C	0 to 2300	32 to 4172
	G (TT)※2	1	tC-G	0 to 2300	32 to 4172
	L (IC)	1	tCL1	-200 to 900	-328 to 1652
		0.1	tCL2	-199.9 to 900.0	-199.9 to 999.9
	U (CC)	1	tCU1	-200 to 400	-328 to 752
		0.1	tCU2	-199.9 to 400.0	-199.9 to 752.0
	Platinel II	1	tC-P	0 to 1390	32 to 2534
RTD	Cu 50Ω	0.1	Cu50	-199.9 to 200.0	-199.9 to 392.0
	Cu 100Ω	0.1	Cu10	-199.9 to 200.0	-199.9 to 392.0
	JPt 100Ω	1	JPt1	-200 to 650	-328 to 1202
		0.1	JPt2	-199.9 to 650.0	-199.9 to 999.9
	DPt 50Ω	0.1	dPt5	-199.9 to 600.0	-199.9 to 999.9
	DPt 100Ω	1	dPt1	-200 to 650	-328 to 1202
		0.1	dPt2	-199.9 to 650.0	-199.9 to 999.9
	Nickel 120Ω	1	ni.12	-80 to 200	-112 to 392
Analog	Voltage	0 - 10V	A-u1	-1999 to 9999 (Display range is variable according to decimal point position.)	
		0 - 5V	A-u2		
		1 - 5V	A-u3		
		0 - 100mV	A-u1		
	Current	0 - 20mA	A-A1		
		4 - 20mA	A-A2		

※1: Same as existing W5 (TT) type sensor ※2: Same as existing W(TT) type sensor

Bar Graph

MV of control output (OUT1, OUT2) is displayed as the bar graph in real-time. According to bar graph setting in parameter 5 group, it displays bar graph by control output or does not display it.

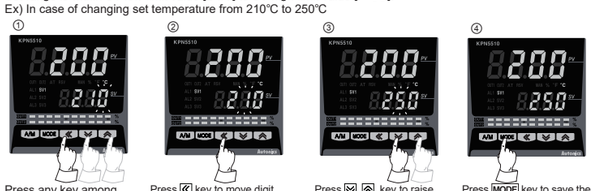


One LED is 10% (total 10 LEDs: 100%). If control output MV is 0.1 to 10%, one LED turns ON. If MV is 90.1 to 100%, 10 LEDs turn ON.

The 1 output type (heating or cooling control) model has one OUT1 bar graph (red).
The 2 output type (heating & cooling control) model has two bar graphs: OUT1 bar graph (red), OUT2 bar graph (green). OUT1 is for heating MV and OUT2 is for cooling MV.

Set Value (SV) Setting

You can set the temperature to control with ◁, ▽, △ keys.
Set range is within SV low-limit value [L-SV] to SV high-limit value [H-Su].
Ex) In case of changing set temperature from 210°C to 250°C



Remote SV Setting

This function is to set SV by inputting analog (DC4-20mA, 1-5VDC) signal to 13, 14 terminals. (Set that remote SV [rE.Su] is ON in parameter 5 group.) Input analog signal is changed to between SV low-limit value and SV high-limit value. This changed signal sets the SV.
※When using remote SV, you cannot select SV setting by front keys and multi SV setting by digital input.

Parameter Mask

This function is able to hide unnecessary parameters to user environment or less frequently used parameters in parameter setting group. You can set this in the integrated device management program (DAQMaster). Though masked parameters are not displayed in parameter setting group, the parameter setting values are applied. For more information, refer to the DAQMaster user manual. Visit our website (www.autonics.com) to download the DAQmaster program and the user manual.

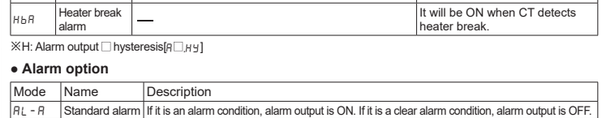
Before applying mask PAr2 → At → H-P → C-P → H-I → C-I → H-d → C-d ···

After applying mask PAr2 → H-P → H-I → H-d ···

The above is masking auto tuning [At], cooling proportional band [C-P], cooling integral time [C-I], cooling derivative time [C-d] parameters in parameter 2 group.

User Parameter Group [PArU] Setting

This function is able to set the frequently used parameters to the user parameter group. You can quickly and easily set parameter settings. User parameter group can have up to 30 parameters in the integrated device management program (DAQMaster). For more information, refer to the DAQMaster user manual.
Visit our website (www.autonics.com) to download the DAQmaster program and the user manual.



The above is setting user parameter group in the DAQMaster with alarm output 1 low-limit value [AL 1L], alarm output 1 high-limit value [AL 1H], SV-0 set value [Su-0] parameter of parameter 1 group, heating hysteresis[H.HYS], cooling hysteresis [C.HYS] parameters of parameter 2 group, input correction [In-b] parameter of parameter 3 group, alarm output 1 hysteresis [A1.HY], alarm output 2 hysteresis [A2.HY] parameters of parameter 4 group.

Auto-tunning

Auto-tuning measures the control subject's thermal characteristics and thermal response rate, and then determines the necessary PID time constant. Application of the PID time constant realizes fast response and high precision temperature control. (When setting control type [C-Ad] to [PId], it appears.)
Set [AT] parameter to [on] in parameter 2 group to start auto-tuning. To stop auto-tuning, change the set as [oFF]. (It maintains P, I, D values of before auto-tuning.)
If sensor break error [oPEn] occurs during auto-tuning, it stops this operation. If the measured temperature is over or below the input range, it operates continuously.
During auto-tuning operation, whole parameters are only available to check.

Alarm

● Alarm operation

Mode	Name	Alarm operation	Description
oFF	—	—	No alarm output
duCC	Deviation high-limit alarm	OFF H ON; SV 100℃ PV 110℃; High deviation: Set as 10℃ / OFF H ON; PV 90℃ SV 100℃; High deviation: Set as -10℃	If deviation between PV and SV as high-limit is higher than set value of deviation temperature, the alarm output will be ON.
JJdu	Deviation low-limit alarm	ON H OFF; PV 90℃ SV 100℃; Low deviation: Set as 10℃ / ON H OFF; SV 100℃ PV 110℃; Low deviation: Set as -10℃	If deviation between PV and SV as low-limit is higher than set value of deviation temperature, the alarm output will be ON.
JduC	Deviation high/low-limit alarm	ON H OFF H ON; PV 90℃ SV 100℃ PV 120℃; Low deviation: Set as 10℃ , High deviation: Set as 20℃	If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be ON.
CduJ	Deviation high/low-limit reserve alarm	OFF H ON H OFF; PV 90℃ SV 100℃ PV 120℃; Low deviation: Set as 10℃ , High deviation: Set as 20℃	If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be OFF.
PuCC	Absolute value high limit alarm	OFF H ON; PV 90℃ SV 100℃; Absolute-value: Set as 90℃ / OFF H ON; SV 100℃ PV 110℃; Absolute-value: Set as 110℃	If PV is higher than the absolute value, the output will be ON.
JJPu	Absolute value low limit alarm	ON H OFF; SV 90℃ SV 100℃; Absolute-value: Set as 90℃ / ON H OFF; SV 100℃ PV 110℃; Absolute-value: Set as 110℃	If PV is lower than the absoulte value, the output will be ON.
LbA	Loop break alarm	—	It will be ON when it detects loop break.
SbA	Sensor break alarm	—	It will be ON when it detects sensor disconnection.
HbA	Heater break alarm	—	It will be ON when CT detects heater break.

※H: Alarm output □ hysteresis[A□.HY]

● Alarm option

Mode	Name	Description
AL-A	Standard alarm	If it is an alarm condition, alarm output is ON. If it is a clear alarm condition, alarm output is OFF.
AL-b	Alarm latch	If it is an alarm condition, alarm output is ON and maintains ON status.
AL-C	Standby sequence 1	First alarm condition is ignored and from second alarm condition, standard alarm operates. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, standard alarm operates.
AL-d	Alarm latch and standby sequence 1	If it is an alarm condition, it operates both alarm latch and standby sequence. When power is supplied and it is an alarm condition, this first alarm condition is ignored and from the second alarm condition, alarm latch operates.
AL-E	Standby sequence 2	First alarm condition is ignored and from second alarm condition, standard alarm operates. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, standard alarm operates.
AL-F	Alarm latch and standby sequence 2	Basic operation is same as alarm latch and standby sequence1. It operates not only by power ON/OFF, but also alarm setting value, or alarm option changing. When re-applied standby sequence and if it is alarm condition, alarm output does not turn ON. After clearing alarm condition, alarm latch operates.

※Condition of re-applied standby sequence for standby sequence 1, alarm latch and standby sequence 1: Power ON
Condition of re-applied standby sequence for standby sequence 2, alarm latch and standby sequence 2: Power ON, changing set temperature, alarm temperature [AL 1,AL2] or alarm operation [AL-1,AL-2], switching STOP mode to RUN mode.

Parameter Initialization

It initializes all parameters to factory default values. Press front ◁, ▽, △ keys for 5 sec. at the same time and [Init] parameter is displayed. Select 'YES' to initialize all parameters.
If the password is set, you must enter the password. After initialing the parameters, the password parameter is also initialized.

Factory Default

● SV setting [Su]

Parameter	Default
Su	0

● Password input parameter

Parameter	Default
PASS	0001

● Parameter 1group [PAr 1]

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
r-S	rUn	AL 1L	1550	AL3L	0000	Su-2	0000
Su-n	Su-0	AL 1H	1550	AL3H	0000	Su-3	0000
Ct-A	00	AL2L	1550	Su-0	0000		
AL 1L	1550	AL2H	1550	Su-1	0000		

● Parameter 2group [PAr 2]

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
At	oFF	H-d	0000	Ko5t	000	rAnU	000
H-P	0100	C-d	0000	C.HYS	002	rAnd	000
C-P	0100	db	0000	C.oSt	000	r.Unt	nIn
H-I	0000	rESt	0500	L-ou	4000		
C-I	0000	HHYS	002	H-ou	1000		

● Parameter 3group [PAr 3]

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
In-t	tCRH	H-SC	1000	o-Ft	HEAt	oUt 1	SSr
Unit	°C	dUnt	°rU		H-C	o1AR	4-20
L-rG	0000	In-b	0000	C-Ad	PId	oUt2	SSr
H-rG	1000	AAuF	000.1		PP	o2AR	4-20
dot	00	L-Su	-200	AtE	tUn1	H-t	020.0 (Relay)
L-SC	000.0	H-Su	1350	oUt 1	rLY	C-t	000.0 (SSR)

● Parameter 4group [PAr 4]

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
AL-1	duCC	A2HY	001	A3on	0000	bPS	96
AL 1t	AL-A	A2n	no	A3oF	0000	Prty	nonE
A1HY	001	A2on	0000	LbAt	0000	Stp	2
A1n	no	A2oF	0000	LbAb	002	rSyt	20
A1on	0000	AL-3	LbA	AoU	Pu	ComW	En.A
A1oF	0000	AL3t	AL-A	F5-L	-200		
AL-2	JJdu	A3HY	001	F5-H	1350		
AL2t	AL-A	A3n	no	Adr5	01		

● Parameter 5group [PAr 5]

Parameter	Default	Parameter	Default	Parameter	Default	Parameter	Default
mt.Su	1	rSPn	1000	St.ou	0000	LCP3	oFF
di-t	StoP	bAr	oUt 1	St.AL	Cont	LCP4	oFF
di-1	oFF		ALL	USEr	Stnd	LCP5	oFF
di-2	oFF	I.tAu	AUto	LCSu	oFF	PWd	0000
rE.Su	oFF	Pr.ou	000.0	LCP1	oFF		
rl nb	0000	Er.ou	000.0	LCP2	oFF		

※Shaded parameters are the factory default of heating&cooling model.

User Manual

For the detail information and instructions, please refer to user manual and user manual for communication, and be sure to follow cautions written in the technical descriptions (catalog, homepage).
Visit our homepage (www.autonics.com) to download manuals.

Comprehensive Device Management Program[DAQMaster]

DAQMaster is the integrated device management program. It is available for parameter setting, monitoring, and user group, parameter mask function setting only for KPN series. Visit our website (www.autonics.com) to download it.

Item	Recommended requirement
System	IBM PC compatible PC, Intel Pentium III above
Operating system	Microsoft Windows 98/NT/XP/Vista/Window 7
Memory	Above 256MB
Hard disk	1GB of Hard disk space or more
VGA	Resoultion display above 1024x768
Other	RS-232 Serial port (9-pin), USB port

Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
2. Check the polarity of the terminals before wiring the temperature sensor. For RTD temperature sensor, wire it as 3-wire type, using cables in same thickness and length. For thermocouple (CT) temperature sensor, use the designated compensation wire for extending wire.
3. Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
4. Do not apply excessive power when connecting or disconnecting the connectors of the product.
5. Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
6. Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller.
7. When changing the input sensor, turn off the power first before changing. After changing the input sensor, modify the value of the corresponding parameter.
8. Do not overlapping communication line and power line. Use twisted pair wire for communication line and connect ferrite bead at each end of line to reduce the effect of external noise.
9. Make a required space around the unit for radiation of heat. For accurate temperature measurement, warm up the unit over 20 min after turning on the power.
10. Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power.
11. Do not wire to terminals which are not used.
12. This unit may be used in the following environments.
    ① Indoors (in the environment condition rated in 'Specifications')
    ② Altitude max. 2,000m
    ③ Pollution degree 2
    ④ Installation category II

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