# Autonics

# KPN SERIES MANUAL

Thank you very much for selecting Autonics products.
**For your safety, please read the following before using.**

## ▣ Caution for your safety

※Please keep these instructions and review them before using this unit.

※Please observe the cautions that follow;
**⚠Warning** Serious injury may result if instructions are not followed.
**⚠Caution** Product may be damaged, or injury may result if instructions are not followed.

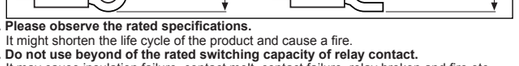
※The following is an explanation of the symbols used in the operation manual.
⚠caution:Injury or danger may occur under special conditions.

### ⚠Warning

1. **In case of using this unit with machinery (Ex: nuclear power control, medical equipment, ship, vehicle, train, airplane, combustion apparatus, safety device, crime/disaster prevention equipment, etc) which may cause damages to human life or property, it is required to install fail-safe device.**
   It may cause a fire, human injury or damage to property.
2. **Install the unit on the panel.**
   It may cause electric shock.
3. **Do not connect, inspect or repair when power is on.**
   It may cause electric shock.
4. **Wire properly after checking terminal number.**
   It may cause a fire.
5. **Do not disassemble the case. Please contact us if it is required.**
   It may cause electric shock or a fire.

### ⚠Caution

1. **This unit shall not be used outdoors.**
   It might shorten the life cycle of the product or give an electric shock.
2. **When connecting wire, AWG 20(0.50mm²) should be used and bolt should be screwed on terminal block with 0.74N·m to 0.90N·m strength.**
   It may cause a malfunction or fire due to contact failure.
3. **For crimpled terminal, select following shaped terminal M3.**




4. **Please observe the rated specifications.**
   It might shorten the life cycle of the product and cause a fire.
5. **Do not use beyond of the rated switching capacity of relay contact.**
   It may cause insulation failure, contact melt, contact failure, relay broken and fire etc.
6. **In cleaning unit, do not use water or an oil-based detergent and use dry towels.**
   It may cause an electric shock or a fire.
7. **Do not use this unit in place where there are flammable or explosive gas, humidity, direct ray of the light, radiant heat, vibration and impact etc.**
   It may cause a fire or an explosion.
8. **Do not inflow dust or wire dregs into the unit.**
   It may cause a fire or a malfunction.
9. **Please wire properly after checking the terminal polarity when connecting temperature sensor.**
   It may cause a fire or an explosion.
10. **In order to install the units with reinforced insulation, use the power supply unit which basic insulation level is ensured.**

## ▣ 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<br>OUT2: Current, SSR drive voltage selection output |
| | 3 | OUT1: Current, SSR drive voltage selection output<br>OUT2: Relay output |
| | 7 | OUT1: Relay output<br>OUT2: Current, SSR drive voltage selection output |
| | 9 | OUT1: Relay output<br>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 without notice.**

## ▣ Specifications

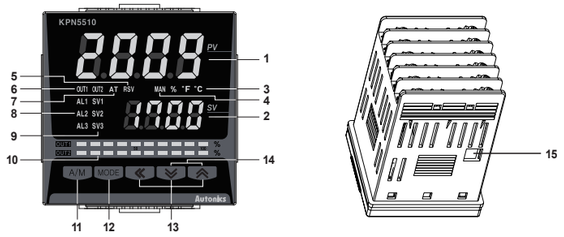
| Series | | KPN52□□ | KPN53□□ | KPN55□□ |
|---|---|---|---|---|
| Power supply | | 100-240VAC 50/60Hz | | |
| Allowable voltage range | | 90 to 110% of rated voltage | | |
| Power consumption | | Max. 15VA | | |
| Display method | | 7 Segment(Red, Green), control output Bar graph: Red, Green | | |
| 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) ±1Digit※1<br>• Out of range of room temperature: (PV ±0.5% or ±2℃, select the bigger one) ±1Digit | | |
| | TC | | | |
| | Analog | • At room temperature(23℃±5℃): ±0.3% F.S. ±1Digit,<br>• Out of range of room temperature: ±0.5% F.S. ±1Digit | | |
| | CT input | ±5% F.S. ± 1Digit | | |
| Control output | Relay | OUT1, OUT2: 250VAC 5A 1a | | |
| | SSR | 11VDC ±2V 20mA Max. | | |
| | Current | DC4-20mA or DC0-20mA (Max. Load 500Ω ) | | |
| Alarm output | Relay | AL1, AL2, AL3 Relay: 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<br>• Non-contact Input: ON-Residual votage max. 1.0V, OFF-leakage current max. 0.1mA | | |
| Control type | Heating, Cooling<br>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 | Over 10,000,000 times | | |
| | Electrical | Over 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 part) | | |
| Insulation type | | Double insulation or reinforced insulation (Mark: ▣ Dielectric strength between the measuring input part and the power part : 2kV) | | |
| 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)±1Digit
- TC C, G type/TC R, S type, below 200℃: (PV ±0.3% or ±3℃, select the bigger one)±1Digit
- 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) ±1Digit
- TC R, S, B, C, G: (PV ±0.5% or ±10℃, select the bigger one) ±1Digit
- Others: Below -100℃: Within ±5℃

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

## ▣ Parts description



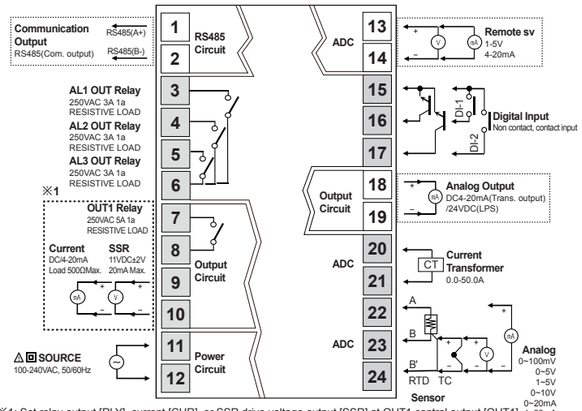

1. **Measured value (PV) display part:** RUN mode: It displays currently measured value (PV).
   Setting mode: It displays the parameter.
2. **Set value (SV) display part:** RUN mode: It displays the set value (SV).
   Setting mode: It displays the set value of the parameter.
3. **Unit (℃/℉/%) indicator:** 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 to Serial converter, sold separately).

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

## ▣ Connections

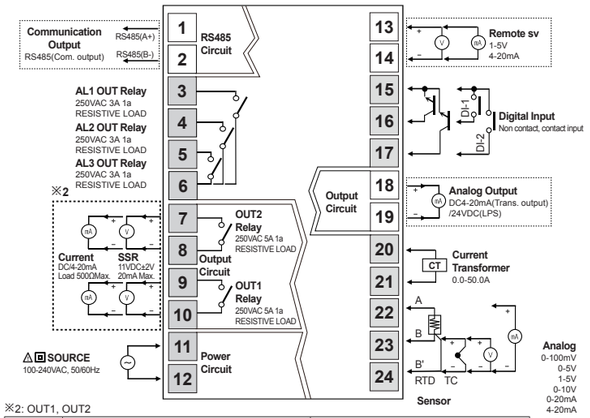
※ Standard model has shaded terminals only.
⋯ is option specification.

● **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 |

## ▣ 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.

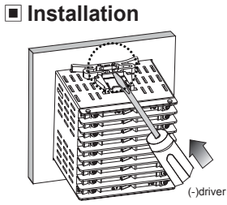
① Flashes whole display part


② Model type display


③ Flashes input type twice


④ Run mode


## ▣ Installation

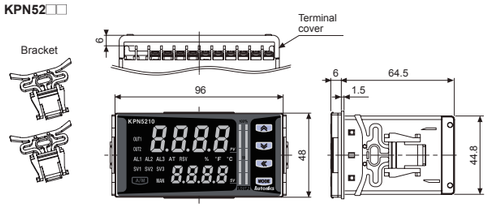



※Insert product into a panel, fasten the bracket by pushing with tools.

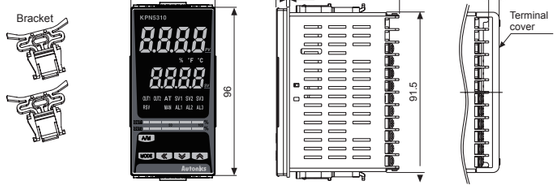
## ▣ Dimensions

(Unit:mm)

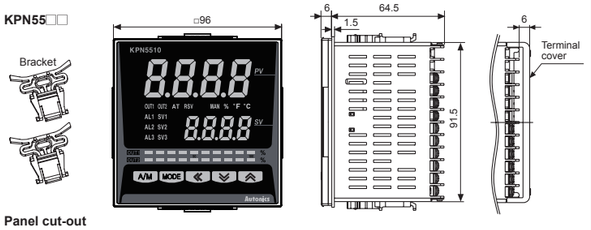
● **KPN52□□**



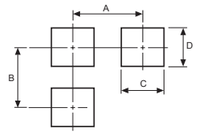

● **KPN53□□**




● **KPN55□□**




● **Panel cut-out**

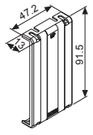



(Unit:mm)

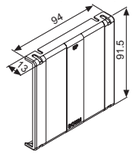
| Model \ Unit | A | B | C | D |
|---|---|---|---|---|
| KPN52□□ | Min. 115 | Min. 65 | 92 +0.8 0 | 45 +0.6 0 |
| KPN53□□ | Min. 65 | Min. 115 | 92 +0.8 0 | 92 +0.8 0 |
| KPN55□□ | Min. 115 | Min. 115 | 45 +0.6 0 | 92 +0.8 0 |

● **Terminal cover(Sold separately)**

• RHA-COVER(48×96mm)

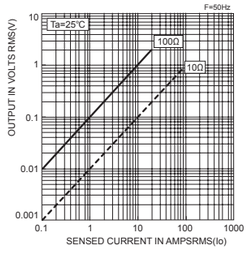



• RLA-COVER(96×96mm )

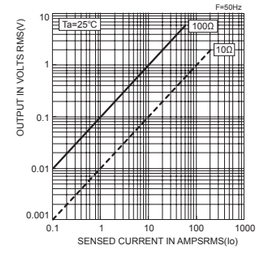


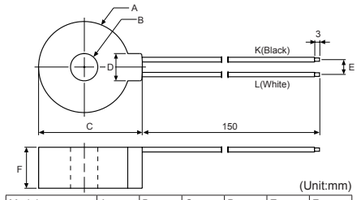

● **Current transformer(CT, Sold separately)**

• 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%



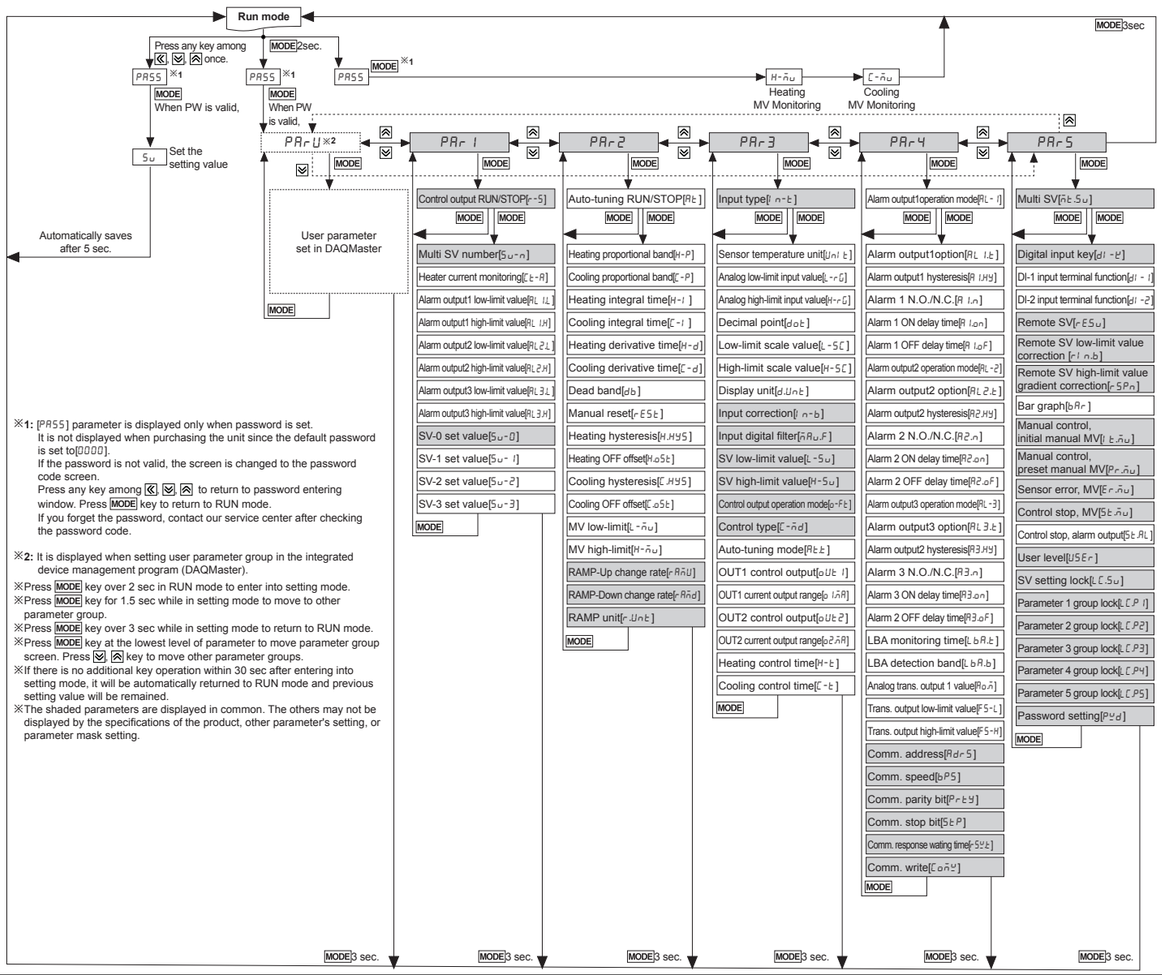




(Unit:mm)

| 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.

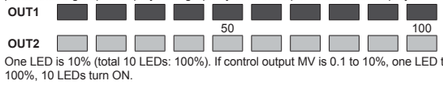
## ■ Input type and temperature range

| Input type | | Dot | Display | Input range(℃) | Input range(℉) |
|---|---|---|---|---|---|
| Thermocouple | K(CA) | 1 | tC.K 1 | -200 to 1350 | -328 to 2463 |
| | | 0.1 | tC.K2 | -199.9 to 999.9 | -199.9 to 999.9 |
| | J(IC) | 1 | tC.J 1 | -200 to 800 | -328 to 1472 |
| | | 0.1 | tC.J2 | -199.9 to 800.0 | -199.9 to 999.9 |
| | E(CR) | 1 | tC.E 1 | -200 to 800 | -328 to 1472 |
| | | 0.1 | tC.E2 | -199.9 to 800.0 | -199.9 to 999.9 |
| | T(CC) | 1 | tC.t 1 | -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 | tCL 1 | -200 to 900 | -328 to 1652 |
| | | 0.1 | tCL2 | -199.9 to 900.0 | -199.9 to 999.9 |
| | U(CC) | 1 | tCU 1 | -200 to 400 | -328 to 752 |
| | | 0.1 | tCU2 | -199.9 to 400.0 | -199.9 to 752.0 |
| RTD | Platinel II | 1 | tC-P | 0 to 1390 | 32 to 2534 |
| | Cu 50Ω | 0.1 | CU50 | -199.9 to 200.0 | -199.9 to 392.0 |
| | Cu 100Ω | 0.1 | CU 10 | -199.9 to 200.0 | -199.9 to 392.0 |
| | JPt 100Ω | 1 | JPt.1 | -200 to 650 | -328 to 1202 |
| | | 0.1 | JPt.2 | -199.9 to 650.0 | -199.9 to 999.9 |
| | DPt 50Ω | 0.1 | dPt.5 | -199.9 to 600.0 | -199.9 to 999.9 |
| | DPt 100Ω | 1 | dPt.1 | -200 to 650 | -328 to 1202 |
| | | 0.1 | dPt.2 | -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-U 1 | -1999 to 9999 (Display range is variable according to decimal point position.) | |
| | Voltage 0-5V | | A-U2 | | |
| | Voltage 1-5V | | A-U3 | | |
| | Current 0-100mV | | AnU 1 | | |
| | Current 0-20mA | | AnA 1 | | |
| | Current 4-20mA | | AnA2 | | |

※**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.

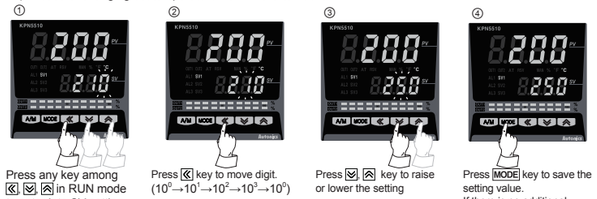



One LED is 10% (total 10 LEDs: 100%). If control output MV is 0.1 to 10%, one LED turns ON. If MV is 90.1 to 100%, 10 LEDs turn ON.

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.

## ■ Flow chart for 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 [rESu] 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.

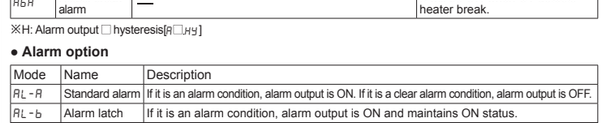
Before applying mask PAr2 → At → H-P → C-P → H-I → C-I → H-d → C-d ···

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[HHYS], cooling hysteresis [CHYS] parameters of parameter 2 group, input correction [In-b] parameter of parameter 3 group, alarm output 1 hysteresis [A 1HY], alarm output 2 hysteresis [A2HY] 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°C, PV 110°C. High deviation: Set as 10°C. / OFF H ON, PV 90°C, SV 100°C. High deviation: Set as -10°C | 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°C, SV 100°C. Low deviation: Set as 10°C. / ON H OFF, SV 100°C, PV 110°C. Low deviation: Set as -10°C | 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°C, SV 100°C, PV 120°C. Low deviation : Set as 10°C , High deviation : Set as 20°C | 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°C, SV 100°C, PV 120°C. Low deviation : Set as 10°C , High deviation : Set as 20°C | 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°C, SV 100°C. Absolute-value: Set as 90°C. / OFF H ON, SV 100°C, PV 110°C. Absolute-value: Set as 110°C | If PV is higher than the absolute value, the output will be ON. |
| JJPu | Absolute value low limit alarm | ON H OFF, PV 90°C, SV 100°C. Absolute-value: Set as 90°C. / ON H OFF, SV 100°C, PV 110°C. Absolute-value: Set as 110°C | 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 [In it] 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 | HoSt | 000 | rAnU | 000 |
| H-P | 0100 | C-d | 0000 | CHYS | 002 | rAnd | 000 |
| C-P | 0100 | db | 0000 | CoSt | 000 | r.Unt | min |
| 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 | °Fo | | H-C | o 1nA | 4-20 |
| L-rG | 0000 | In-b | 0000 | C-Ad | PId | oUt2 | SSr |
| H-rG | 1000 | AnU.F | 000.1 | | PP | o2nA | 4-20 |
| dot | 00 | L-Su | -200 | AtEt | tUn 1 | H-t | 0200 (Relay) |
| L-SC | 0000 | H-Su | 1350 | oUt 1 | rLY | C-t | 0000 (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 |
| A 1HY | 001 | A2on | 0000 | LbAt | 0000 | StP | 2 |
| A 1n | no | A2oF | 0000 | LbAb | 002 | rSUt | 20 |
| A 1on | 0000 | AL-3 | LbA | Aon | Pu | CoMY | En.A |
| A 1oF | 0000 | AL3t | AL-A | FS-L | -200 | | |
| AL-2 | JJdu | A3HY | 001 | FS-H | 1350 | | |
| AL2t | AL-A | A3n | no | Adr S | 01 | | |

### • Parameter 5group [PAr 5 ]

| Parameter | Default | Parameter | Default | Parameter | Default | Parameter | Default |
|---|---|---|---|---|---|---|---|
| mt.Su | 1 | rSPn | 1000 | St.Au | 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 | it.Au | AUto | LCSu | oFF | PYd | 0000 |
| rESu | oFF | Pr.Au | 0000 | LCP 1 | oFF | | |
| r1nb | 0000 | Er.Au | 0000 | LCP2 | oFF | | |

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

## ■ Manual

For the detail information and instructions, please refer to the user manual and the user manual for communication. Visit our homepage (www.autonics.com) to download manuals.

## ■ Integrated 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 (9Pin), USB port |

## ■ Caution for using

1. Please use separated line from high voltage line or power line in order to avoid inductive noise.
2. Please install power switch or circuit-breaker in order to cut power supply off.
3. The switch or circuit-breaker should be installed near by users.
4. This unit is designed for temperature controlling only. Do not apply this unit as a voltage meter or a current meter.
5. In case of using RTD sensor, 3-wire type must be used. If you need to extend the line, 3-wire must be used with the same thickness as the line.
   It might cause temperature difference if the resistance of line is different.
6. In case of making power line and input signal line close, line filter for noise protection should be installed at power line and input signal line should be shielded.
7. Keep away from the high frequency instruments. (High frequency welding machine & sewing machine, big capacitive SCR controller)
8. Installation environment
   ①It shall be used indoor. ②Altitude Max. 2000m. ③Pollution Degree 2. ④Installation Category II.

※**It may cause malfunction if above instructions are not followed.**

## ■ Major products

- Photoelectric sensors
- Fiber optic sensors
- Door sensors
- Door side sensors
- Area sensors
- Proximity sensors
- Pressure sensors
- Rotary encoders
- Connectors/Sockets
- Switching mode power supplies
- Control switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper motors/drivers/motion controllers
- Graphic/Logic panels
- Field network devices
- Laser marking system(Fiber, $CO_2$, Nd:YAG)
- Laser welding/soldering system
- Temperature controllers
- Temperature/Humidity transducers
- SSR/Power controllers
- Counters
- Timers
- Panel meters
- Tachometer/Pulse(Rate)meters
- Display units
- Sensor controllers
- Recorders
- Indicators
- Converters
- Controllers
- Thyristor units
- Pressure transmitters
- Temperature transmitters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