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Please read this manual carefully before using and keep these instructions.

# TKA-550 MANUAL

Thank you for your selecting Table model for temperature controller TKA-550 Series.

■For your safety & life span of the product, please read the manual fully before using and keep these instructions.



## CONTACT INFORMATION

Corporate Headquarters:
AS ONE Corporation International Group
2-1-27, Edobori, Nishi-ku
Osaka 550-8527
Japan
Tel: 81-6-6447 8631
Fax: 81-6-6447 8681
URL: http://help.as-1.co.jp/q

## Caution of using

### ⚠ Caution


Please use the product safely and read the following well before using.
Please keep the manual near at hand and deliver the product together with this manual always.

*This temperature limiter is for indoor, please do not use in other places.
*Pleas It is for resistive load, not using in controlling of heating devices.

### ⚠ Warning

If the product is handled wrongly, it reduce the life span, also may cause the malfunction and injury, please keep the below suggestions.

- 220VAC Only the power supply it will be able to use.
- The product which it sees the consuming electric current is Max. 7A.
  The independent cone count and thu with to use. Also, The case which will use the heater which is thrust electric current, The electric current value 7A to use the fact that it does not go over.
- Please do not process a power code, change it excessively or put heavy things on it.
- It will ask to swell in the product which it sees in order not to get wet, to pay attention.
- Please use it in the place where is no corrosive or flammable gas etc.
- Please do not disassemble the body.
- When there is a strange sound, smell or smoke, please turn off the power switch instantly, unplug the power plug from the outlet and request a repair to the purchasing place.
- In case, the body is dropped and broken, please turn off the power switch instantly, unplug the power plug from the outlet and request a repair to the purchasing place.
- The temperature environment which goes over the ambient temperature 85% other than +50℃ moral scopes from 0, Freezing status, The place where gets with the wave, It uses from the place where the direct light shines, It does not preserve roll up.
- The sensor to attach positively in the objective body which it wants controlling.
  The sensor falls and from the objective body there is worry of the fire due to a temperature rise.

### ⚠ Caution

Please unplug the power plug from the outlet when it is not used for the safety.



AS ONE CORPORATION
2-1-27, Edobori, Nishiku, Osaka, Japan. Tel:81-6-6447 8631, Fax:81-6447 8681. Email:intl-sales@so.as-1.co.jp

# WARRANTY CARD

| | |
|---|---|
| **Product Name & Description :** | **Date of Purchase :** (dd/mm/yyyy) |
| **Model No :** | **Serial No :** |
| **Name of Organization or Institution :** **User's Name:** | |
| **Address :** | |
| **Tel/Fax :** | **E-mail Address :** |
| **Dealer's(company) name :** **Staff :** | |
| **Tel/Fax :** | **E-mail Address :** |

(You can fax or mail to the above information. Please keep the original copy and produce it when necessary)

### < Warranty >

As One Corporation supply this equipment with a 1-year warranty against manufacturing defects from date of purchase. This warranty is valid only if the unit has been used in accordance with the instructions in this manual and for its intended purpose. As One Corporation shall not be responsible for consequential damages, or damages resulting from the abuse or misuse of this equipment.
As One Corporation's liability shall be limited to the repair or replacement of the unit or refund of the purchase price at As One's discretion. If repair or adjustment is necessary and has not been the result of abuse or misuse within the warranty period, please return, freight prepaid, and correction will be made without charge. Out of warranty items will be repaired on a charge basis.

### < Exclusions To Warranty >

The warranty shall not apply and not limited to defects resulting from :

- Improper or inadequate maintenance by customer;
- Repair made to product by a person other than As One Corporation or its duly authorized service representative;
- Use of replacement parts that are obtained from a party who is not an authorized dealer of As One Corporation.
- Misuse(including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, unauthorized modification or alteration of the product by any customer or third party;
- Operation outside of the environmental specifications of the products;
- Connecting or used together with other defective product(s) and/or equipment;
  Inadequate voltage, environmental pollution, natural disaster such as fire, lightning, earthquake, tsunami, and other acts of God;
- Inaccurate or insufficient information on warranty card or loss of warranty card.

**In no event shall As One Corporation be liable to any party for any direct, indirect, special, incidental, or consequential damages, or for any damages resulting from loss of use or profits, anticipated or otherwise, arising out of or in connection with the sale, use or performance of any products, whether such claim is based on contract, tort(including negligence), any theory of strict liability or regulatory action.**

EP-E-03-3260C

## PID control

This means P(Proportional operation), I(Integral operation), D(Differential operation), it can also control the object has delay time. It controls without hunting in a proportional operation, adjust offset with integral operation automatically and response fast with differential operation.

## AT Function

It measures various control objects' thermic characteristics and response speed of heat automatically and calculates PID constants requiring in the optimum control to keep rapid response and high reliability.

## Operation method of AT : Auto operation

①Please wiring firmly and make it as a operation situation.
②Please set the temperature. (Set the target value.)
③Please start the power as ON.
④Please press AT key on the front panel over 3 seconds.
The operation lamp of AT is flickering and starts the tuning.
Repeat ON/OFF control about 3 times, finishes it automatically.
(The operation lamp of AT is turned out automatically.)
*After it finished, P(Proportional operation), I(Integral operation), D(Differential operation) value is inputted automatically. (It memorizes them.)
*If control is in a stable status, it is no need to operate AT.
*If control is in a unstable status, please operate AT again.

## Control method(PIDS type)

ON/OFF Control : P=0, Fixed the sensitivity range 2℃)
Proportional control (P Control) : P≠0, I=0, D=0
(In a default status) (Initial value : P=3%)
PID Control : PIds type
●PidS type : It is controller restraining overshoot.
When a response for SV is late and minimize overshoot.
*Initial position, it is at proportional control of P=3, I=0, D=0.
*Please operate AT.

## Error indication

●LLLL : In case measured sensor is lower than ambient temperature range
●HHHH : In case measured sensor is higher than ambient temperature range
●oPEn : In case input sensor is disconnected or sensor is not connected



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## Setting the machine


## Operation method

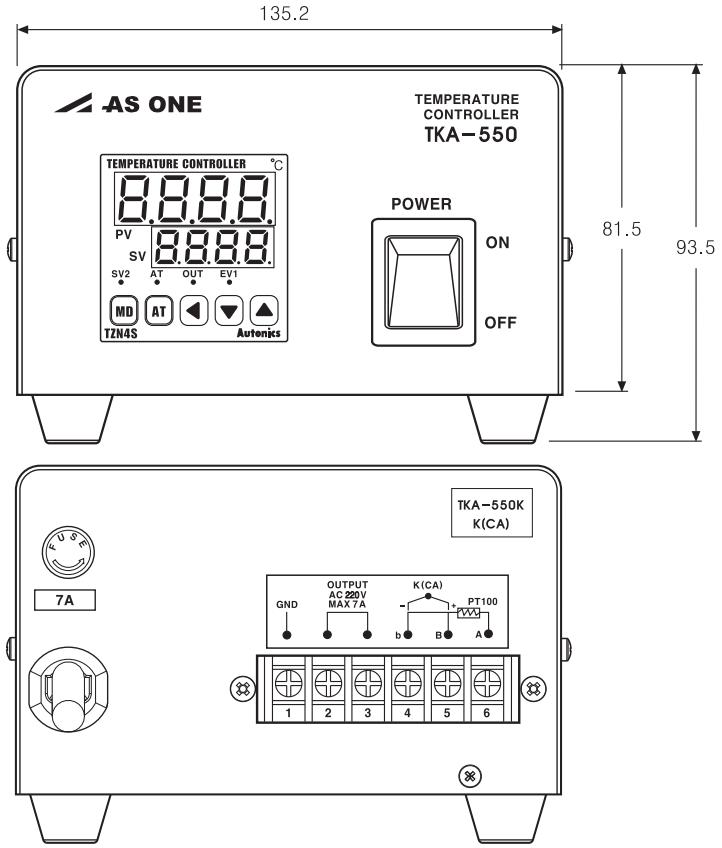
1. Refer to the connection method of terminal block, connect the terminal into terminal block firmly.
2. Place sensors firmly to detect the temperature of temperature control objects.
3. Turn the power switch as ON after plug the power into the outlet.
(Operation lamp is flickering.)
4. Set the control temperature on the setting plug by front side key.
(Refer to "Change method of temperature control".)
5. When it is reached at the SV, operation lamp goes out and when the PV is lower than the SV, power is supplied again and lamp is lighted.

## Maintenance

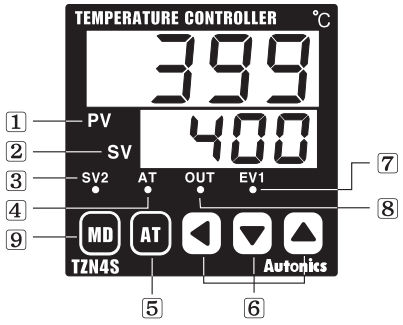
In case of the malfunction, please check the products with the below.
1. When the power is not turned on. (Lamps of controller are not lighted.)
—Please check fuse is connected or not.
2. Power is supplying, but it is not outputted from output terminal ②, ③.
—Please check sensor disconnected or not.
3. The output of output terminal ②, ③ is not disconnected. (It is not be OFF.)
—Please check the PV is in a higher status than the SV.

* If it can not be operated with the above guide, please stop the using and request to the purchasing agent.

## Dimensions




## Name




1 PV : Measure value(Red)
2 SV : Setting value(Green)
3 SV2 : Operation indication lamp of SV2
4 AT : Operation indication lamp of AT
5 AT Key : AT(autotuning) Key
6 ◀ : Setting Shift key
▼, ▲ : Setting UP/DOWN key
7 EV1 : Operation indication lamp of contact point output 1
8 OUT : Output operation indication lamp
9 MD : Mode key



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## Setting parameter for default[Initial value]

【There are enable/disable features by content and specification change.】

**⚠ Caution** – Do not change the contents with * mark.

| ● Parameter setting | TKA-550P | TKA-550K |
|---|---|---|
| SV-2 (Diable) | 0.0 | 0 |
| Over Temperature Protection (AL 1) | 110.0 | 150 |
| AHyS (Diable) | 0.1 | 2 |
| Proportional band (P) | 3.0 | 3.0 |
| Integral (I) | 0 | 0 |
| Differentiate (D) | 0 | 0 |
| Control cycle (t) | 2 | 2 |
| Setting input adjustment (In-b) | 0.0 | 0 |
| Manual reset (rESt) | 0.0 | 0.0 |
| *Setting Lock (LoC) | on | on |

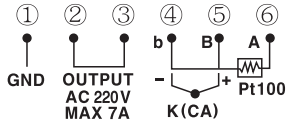
## Specifications

| | |
|---|---|
| Operation switch | : POWER switch and UP • DOWN of temp. controller |
| Power supply | : Universal 220VAC 50/60Hz |
| Allowable power supply | : Within ±10% of the power supply |
| Output | : Supply output by SSR, 220VAC Max.7A(Resistance load) |
| Input • Output method | : Connection with terminal block in a back side |
| Control method | : PID AT type, PIDS(Overshoot control type) |
| Sensor | : PT100Ω(TKA-550P), Thermocouple K(TKA-550K) |
| Setting method | : Setting with UP • DOWN key of all type movement (Operation "Press the front" key) |
| Indication method | : Digital indication with PV/SV-4 axis 7 segment LED (PV=11mm red, SV=8mm green) OUT, EV1:red LED |
| Accuracy of setting • indication | : Higher one ±0.3% or 3℃ for Full Scale |
| Setting temp. range | : 0.0 ~ 199.9℃(TKA-550P) ☞ Set by 0.1℃ unit.<br>0~500℃(TKA-550K) ☞ Set by 1℃ unit.<br>It is changeable by operation of front side key. |
| Ambient using condition | : 0~50℃, 35%~85%(at non-freezing status) |
| Cutting circuit | : When auxiliary output contact is off, it cut off the output of inner relay and light or light out the LED of front panel EV1 and cut off the output in contact A of power relay using low limit of absolute value contact of AL1. |

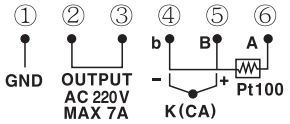
## Connection method of terminal block

**Terminal block**

TKA-550P
(Platinum RTD element)




TKA-550K
(K thermocouple)




◎Connection of temperature sensor

●Platinum RTD element Pt100Ω(P type) : Connect into terminal ④, ⑤, ⑥.
Terminal ⑥ - Terminal A : Red, Lead line : Red
Terminal ⑤ - Terminal B : Except Red, Lead line : White
Terminal ④ - Terminal b : Except Red, Lead line : White
※It is 3-lines type. Connect into "Red" for terminal.lead line, terminal ⑥.

●K thermocouple(C, A)(K type) : Connect into terminal ④, ⑤.
Terminal ⑤ - + , Terminal : Red
Terminal ④ - - , Terminal : Except Red
※To avoid a noise, please keep a distance between temperature sensor cable and power cable.

◎Connection of output supply

●Connect resistance load under 0.7kw into terminal ②, ③.





## Setting temperature change (How to set setting value) : TKA-550P

※Input temperature sensor type is displayed for approx.3 sec after supply power.

PV [In-t] Temperature sensor type
SV [dPt.L] TKA-550P : dPt.L
TKA-550K : KCA.H

※After that, it returns to usable status. [Run mode]

PV [23.0]
SV [100.0] Initial value : 100.0

Change temperature setting value from 100.0℃ to 165.0℃.

●1 : Press [◀] of setting shift key on the above [Run mode] screen.

PV [23.0]
SV [100.0]

"0", 1st decimal place is flashing.

●2 : Press [◀]key once again.

PV [23.0]
SV [100.0]

"0" of 1 digit is flashing.

●3 : Press [◀]key 5 times.

PV [23.0]
SV [105.0]

"5" of 1 digit is flashing.

●4 : Shift the row by press [◀]key.

PV [23.0]
SV [105.0]

"0" of 10 digit is flashing.

●5 : Press [◀]key 6 times.

PV [23.0]
SV [165.0]

"6" of 10 digit is flashing.

●6 : Finish to change by press [MD]key.

PV [23.0]
SV [165.0]

## How to change Over Temperature Protection.

※How to change Over Temperature Protection(AL1).(Initial value : 110.0)

[Usable status] RUN status

PV 23.0

SV 100.0

Change setting value of Over Temperature Protection.

Initial value : 110.0℃ ~ 150.0℃

●1 : Advance to parameter setting mode. Press MD key over 3 seconds.
Ex)It may be adjustable in later part.

[SV-2] → [AL1] → [AHyS] → [ P ] → [ I ]
→ [ d ] → [ t ] → [In-b] → [rESt]
→ [LoC] → Return to [SV-2]

●2 : Unlock the flowchart 1.
Press MD key on SV-2 screen about 9 times and LoC screen is displayed.

PV LoC

SV on

Press ◀ key, change contents of LoC screen.

PV LoC

SV on ON screen is flashing. (It is changeable.)

Press ▲ key. ON screen is flashing. (It is changeable.)

PV LoC

SV oFF OFF screen is flashing. (It is changeable.)

Unlock to set as oFF by MD key.



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## How to change Over Temperature Protection.

● 3 : Press MD key 2 times and AL1 screen is displayed.

PV AL1

SV 110.0

● 4 : Press ◀ key

PV AL1

SV 110.0 Change contents of AL1
"0", 1st decimal place is flashing.

● 5 : Press ◀ key 2 times
Press ▲ key 4 times

PV AL1

SV 150. 0 ※ Change "1"into "5" of 10 digit.

● 6 : Press MD key. (Registration key)

PV AL1

SV 150. 0 ※ It will be disconnected at 150℃.

● 7 : Press MD key 7 times and LoC screen is displayed.
Press ◀ key.

PV LoC

SV oFF OFF screen is flashing.

● 8 : Press ▼ key.
Press MD key(Registration key)

PV LoC

SV on Please ON it and lock to make setting the group 1 of flowchart unchangeable.

● 9 : Press MD key over 3 seconds.

PV 23.0

SV 100.0

***It returns to [Run mode].***