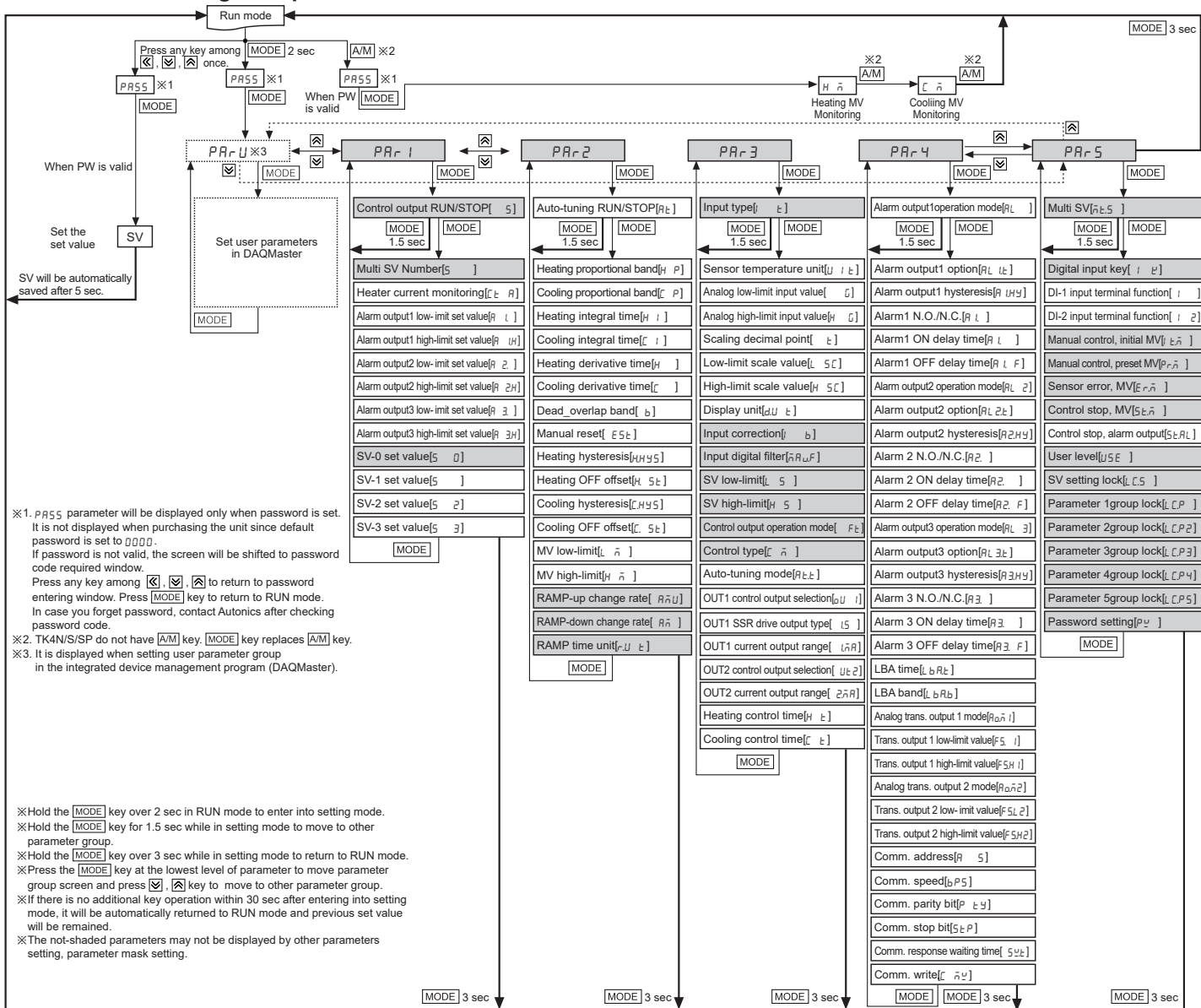


Flow Chart for Setting Group



※1. PR55 parameter will be displayed only when password is set. It is not displayed when purchasing the unit since default password is set to 0000. If password is not valid, the screen will be shifted to password code required window. Press any key among [MODE], [F], [H] to return to password entering window. Press [MODE] key to return to RUN mode. In case you forget password, contact Autonics after checking password code.

※2. TK4N/S/SP do not have [A/M] key. [MODE] key replaces [A/M] key. It is displayed when setting user parameter group in the integrated device management program (DAQMaster).

※Hold the [MODE] key over 2 sec in RUN mode to enter into setting mode.

※Hold the [MODE] key for 1.5 sec while in setting mode to move to other parameter group.

※Hold the [MODE] key over 3 sec while in setting mode to return to RUN mode.

※Press the [MODE] key at the lowest level of parameter to move parameter group screen and press [F], [H] key to move to other parameter group.

※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 set value will be remained.

※The not-shaded parameters may not be displayed by other parameters setting, parameter mask setting.

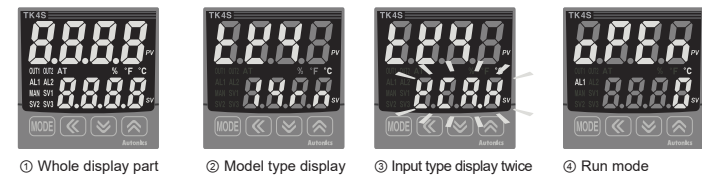
Input Types and Range

Input type		Decimal point	Display	Input range (°C)	Input range (°F)
Thermocouple	K (CA)	1	$\overline{E}CRH$	-200 to 1350	-328 to 2463
		0.1	$\overline{E}CRL$	-199.9 to 999.9	-199.9 to 999.9
	J (IC)	1	$\overline{J}ICH$	-200 to 800	-328 to 1472
		0.1	$\overline{J}ICL$	-199.9 to 800.0	-199.9 to 999.9
	E (CR)	1	$\overline{E}CrH$	-200 to 800	-328 to 1472
		0.1	$\overline{E}CrL$	-199.9 to 800.0	-199.9 to 999.9
	T (CC)	1	$\overline{t}CCH$	-200 to 400	-328 to 752
		0.1	$\overline{t}CCL$	-199.9 to 400.0	-199.9 to 752.0
	B (PR)	1	$\overline{b}Pr$	0 to 1800	32 to 3272
	R (PR)	1	$\overline{r}Pr$	0 to 1750	32 to 3182
	S (PR)	1	$\overline{s}Pr$	0 to 1750	32 to 3182
	N (NN)	1	$\overline{n}nn$	-200 to 1300	-328 to 2372
	C (TT) ^{※1}	1	$\overline{c}Tt$	0 to 2300	32 to 4172
	G (TT) ^{※2}	1	$\overline{g}Tt$	0 to 2300	32 to 4172
RTD	L (IC)	1	$\overline{L}ICH$	-200 to 900	-328 to 1652
		0.1	$\overline{L}ICL$	-199.9 to 900.0	-199.9 to 999.9
	U (CC)	1	$\overline{U}CCH$	-200 to 400	-328 to 752
		0.1	$\overline{U}CCL$	-199.9 to 400.0	-199.9 to 752.0
	Platinel II	1	$\overline{P}LII$	0 to 1390	32 to 2534
	Cu 50Ω	0.1	$\overline{C}U5$	-199.9 to 200.0	-199.9 to 392.0
	Cu 100Ω	0.1	$\overline{C}U10$	-199.9 to 200.0	-199.9 to 392.0
	JPT 100Ω	1	$\overline{J}PtH$	-200 to 650	-328 to 1202
		0.1	$\overline{J}PtL$	-199.9 to 650.0	-199.9 to 999.9
	DPT 50Ω	0.1	$\overline{d}PtS$	-199.9 to 600.0	-199.9 to 999.9
	DPT 100Ω	1	$\overline{d}PtH$	-200 to 650	-328 to 1202
		0.1	$\overline{d}PtL$	-199.9 to 650.0	-199.9 to 999.9
	Nickel 120Ω	1	$\overline{n}I2$	-80 to 200	-112 to 392
Analog	Voltage	0-10V	$\overline{R}U1$	-1999 to 9999 (Display point will be changed according to decimal point position.)	
		0-5V	$\overline{R}U2$		
		1-5V	$\overline{R}U3$		
		0-100mV	$\overline{R}U1$		
	Current	0-20mA	$\overline{R}A1$		
		4-20mA	$\overline{R}A2$		

※1: C (TT): Same temperature sensor as former W5 (TT)
※2: G (TT): Same temperature sensor as former W (TT)

Initial Display When Power ON

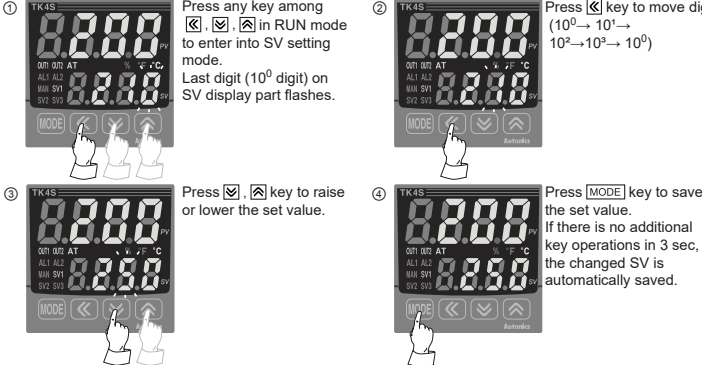
When power is supplied, whole display parts flash for 1 sec. Afterwards, model name and input sensor type will be flash twice and then in enters into RUN mode.



Set Value (SV) Setting

You can set the temperature to control with [MODE], [F], [H] keys. Set range is within SV low-limit value [L 5] to SV high-limit value [H 5].

Ex) In case of changing set temperature from 210°C to 250°C



Parameter Reset

Press [MODE] + [F] + [H] to reset all parameters in memory to default value. Set [i n t] parameter to '4E5' to reset all parameters. In case password function is on, it is required to enter valid password to reset parameters. Password is also reset.

Parameter Mask

This function is able to hide unnecessary parameters to user environment or less frequently used parameters in parameter group. You can set this in the integrated device management program (DAQMaster). Masked parameters are not only displayed. The set value of masked parameters are applied. For more information, refer to the DAQMaster user manual.

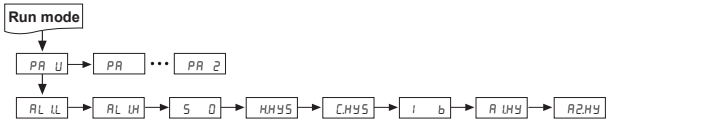
Before applying mask [P R 2] → [A L] → [H P] → [C P] → [H I] → [C I] → [H] → [C] ...

After applying mask [P R 2] → [H P] → [H I] → [H] ...

The above is masking auto tuning [$\bar{a}$ T], cooling proportional band [$\bar{c}$ P], cooling integral time [C I], cooling derivative time [C d] parameters in parameter 2 group.

User Parameter Group [P R U] 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.



The above is setting user parameter group in the DAQMaster with alarm output 1 low-limit value [A L L], alarm output 1 high-limit value [A L H], SV-0 set value [5 0] parameter of parameter 1 group, heating hysteresis [H H Y S], cooling hysteresis [C H Y S] parameters of parameter 2 group, input correction [I b] parameter of parameter 3 group, alarm output 1 hysteresis [A H Y], alarm output 2 hysteresis [A 2 H Y] parameters of parameter 4 group.

Auto-tuning

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] is set as P I, it is displayed.) Set [a T] parameter to [o n] in parameter 2 group to start auto-tuning. To stop auto-tuning, change the set as [o f f]. (t maintains P, I, D values of before auto-tuning.) If sensor break error [o P E n] 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
o F F	—	—	No alarm output
d u C C	Deviation high-limit alarm		If deviation between PV and SV as high-limit is higher than set value of deviation temperature, the alarm output will be ON.
∩ ∩ d u	Deviation low-limit alarm		If deviation between PV and SV as low-limit is higher than set value of deviation temperature, the alarm output will be ON.
∩ d u C	Deviation high/low-limit alarm		If deviation between PV and SV as high/low-limit is higher than set value of deviation temperature, the alarm output will be ON.
C d u]	Deviation high/low-limit reserve alarm		If deviation between PV and SV as high/low-limit is lower than set value of deviation temperature, the alarm output will be OFF.
P u C C	Absolute value high-limit alarm		If PV is higher than the absolute value, the output will be ON.
∩ ∩ P u	Absolute value low-limit alarm		If PV is lower than the absolute value, the output will be ON.
L b R	Loop break alarm	—	It will be ON when it detects loop break.
S b R	Sensor break alarm	—	It will be ON when it detects sensor disconnection.
H b R	Heater break alarm	—	It will be ON when CT detects heater break.

※H: Alarm output [] hysteresis [A] H Y

Alarm option

Mode	Name	Description
R L A	Standard alarm	If it is an alarm condition, alarm output is ON. If it is a clear alarm condition, alarm output is OFF.
R L b	Alarm latch	If it is an alarm condition, alarm output is ON and maintains ON status.
R L 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.
R L 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.
R L 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.
R L F	Alarm latch and standby sequence 2	Basic operation is same as alarm latch and standby sequence 1. It operates not only by power ON/OFF, but also alarm set 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 [A L , A L] or alarm operation [A L , A L], switching STOP mode to RUN mode.

Factory Default

SV setting group [5 U]

Parameter	Factory default
5 u	0

Password input parameter

Parameter	Factory default
PR55	0001

Parameter 1 group [P R 1]

Parameter	Factory default	Parameter	Factory default	Parameter	Factory default	Parameter	Factory default
r S	r U n	A L U H	1550	A L 3 H	1550	5 u 3	0000
5 u n	5 u 0	A L 2 L	1550	5 u 0	0000		
C t A	00	A L 2 H	1550	5 u 1	0000		
A L U L	1550	A L 3 L	1550	5 u 2	0000		

Parameter 2 group [P R 2]

Parameter	Factory default	Parameter	Factory default	Parameter	Factory default	Parameter	Factory default
A L t	o F F	H d	0000	H o S t	000	r A n U	000
H P	0 100	C d	0000	C H Y S	002	r A n d	000
C P	0 100	d b	0000	C o S t	000	r U n t	n i n
H I	0000	r E S t	0500	L n u	-1000		
C I	0000	H H Y S	002	H n u	1000		

Parameter 3 group [P R 3]

Parameter	Factory default	Parameter	Factory default	Parameter	Factory default	Parameter	Factory default
i n t	E C R H	H S C	1000	o F t	H E A t	o I S r	S t n d
U n t	o C	d U n t	o r o	H C	o I A R	4 20	
L r G	0000	i n b	0000	C n d	P I d	o U t 2	C U r r
H r G	1000	n A u F	000.1		P P	o 2 n A	4 20
d o t	00	L S u	200	A L t	t U n I	H t	0 2 0 0 (Relay)
L S C	0000	H S u	1350	o U t I	C U r r	C t	0 2 0 0 (SSR)

Parameter 4 group [P R 4]

Parameter	Factory default	Parameter	Factory default	Parameter	Factory default	Parameter	Factory default
R L I	d u C C	A 2 n	n o	L b R t	0000	b P S	95
R L U t	A L A	A 2 o n	0000	L b R b	002	P r t y	n o n E
A H Y	001	A 2 o F	0000	A o n I	P u	S t P	2
A l n	n o	A L 3	o F F	F S L I	200	r S y t	20
A l o n	0000	A L 3 t	A L A	F S H I	1350	C o n y	E n A
A l o F	0000	A 3 H Y	001	A o n 2	P u		
R L 2	∩ ∩ d u	A 3 n	n o	F S L 2	200		
R L 2 t	A L A	A 3 o n	0000	F S H 2	1350		
A 2 H Y	001	A 3 o F	0000	A d r S	01		

Parameter 5 group [P R 5]

Parameter	Factory default	Parameter	Factory default	Parameter	Factory default	Parameter	Factory default
n t S u	I	P r n u	0000	L C S u	o F F	L C P S	o F F
d i t	S t o P	E r n u	0000	L C P I	o F F	P y d	0000
d i I	o F F	S t n u	0000	L C P 2	o F F		
d i 2	o F F	S t A L	C o n t	L C P 3	o F F		
I t n u	A U t o	U S E r	S t n d	L C P 4	o F F		

※Shaded parameters are for the 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).

Comprehensive Device Management Program[DAQMaster]

DAQMaster is a comprehensive device management software for setting parameters and monitoring processes.

Item	Minimum specifications
System	IBM PC compatible computer with Pentium III or above
Operations	Windows 98/NT/XP/Vista/7/8/10
Memory	256MB+
Hard disk	1GB+ of available hard disk space
VGA	Resolution: 1024×768 or higher
Others	RS232C serial port (9-pin), USB port

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 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.
- 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.
- Do not apply excessive power when connecting or disconnecting the connectors of the product.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller.
- When changing the input sensor, turn off the power first before changing.
- After changing the input sensor, modify the value of the corresponding parameter.
- 24VAC, 24-48VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- 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.
- 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.
- Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power.
- Do not