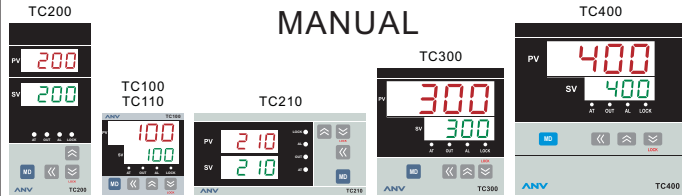


PID TEMPERATURE CONTROLLER MANUAL



NOTICE

Please confirm the specification of controllers is to totally with your requirement before using it, also read this user's manual in detail.

▲ DANGER

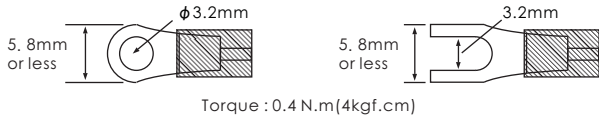
Danger! Electric Shock!

Don't touch AC power wiring terminal when controller has been powered!

Keep the power off until all of the wiring are completed!

▲ WARNING

1. Please confirm the AC power wiring to controller is correct otherwise it would be caused aggravated damage on controller. (TC100/200/210/300/400 with Pin 1,2; TC110 with Pin 7,8)
2. Be sure to use the rated power supply(100~240VAC or 24VDC) otherwise it would be caused aggravated damage on controller.
3. Please confirm wires are connected with correct terminal (Input, Output, Alarm).
4. Use M3 screw-compatible crimp-on terminals with an insulation sleeve, as shown below.



5. Avoid to install controller in following places:

- a. A place where the ambient temperature may reach beyond the range -10 to 50°C.
 - b. A place where the ambient humidity may reach beyond the range from 35 to 85% RH.
 - c. A place where the controller likely to come into contact with water, oil, chemicals, steam and vapor.
 - d. A place where the controller is subject to interface with static electricity, magnetism and noise.
6. For thermocouple(TC) input, use shield compensating lead wire.
 7. For RTD input, use shield wires which have low resistance and no resistance difference between the 3 wires.
 8. DIP switch mounts on the PCB, inside the unit. Power off and detach the case before change setting.

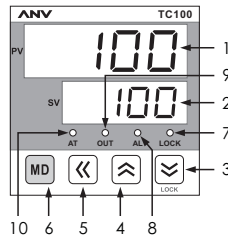
SPECIFICATIONS

Model	TC100 TC110-10 TC110-11 TC110-20 TC110-21	TC200	TC210	TC300	TC400
Dimension(mm)	48Hx48W	96Hx48W	48Hx96W	72Hx72W	96Hx96W
Rated Voltage	100~240VAC 50/60Hz or 24VDC				
Voltage Range	Rated 90~110%				
Accuracy	0.5% of F.S.				
Input	K, J, Pt100				
Output	Relay NO 5A / NC 3A 250VAC and Voltage DC24V (for SSR drive)				
Electrical Life	100000 times or more (Under the rated load)				
Control Algorithms	PID, ON/OFF				
Isolated Resistance	10MΩ or more between input terminals and case(ground) at DC 500V				
Dielectric Strength	1000V AC for 1 minute between input terminals and case(ground) 1500V AC for 1 minute between output terminals and case(ground)				
Power Consumption	Approx.3VA	Approx.4VA	Approx.4VA	Approx.3VA	Approx.4VA
Ambient Temperature	-10 ~ +50°C				
Ambient Humidity	35 ~ 85%RH				
Weight	Approx.130g	Approx.200g	Approx.200g	Approx.200g	Approx.260g

INPUT TYPE TABLE

INPUT TYPE	CODE	RANGE (°C)	RANGE (°F)
K	E1	1	0.0 ~ 400.0°C
	E2	2	0 ~ 1200°C
J	J1	3	0.0 ~ 400.0°C
	J2	4	0 ~ 1200°C
Pt100	Pt1	5	-50.0 ~ 400.0°C
	Pt2	6	-50 ~ 600°C

PARTS DESCRIPTION



SYMBOL		NAME	FUNCTION
PV	1	Present Value	Displays PV
SV	2	Setting Value	Displays SV
≡	3	Down Key / Lock Key	Decrease numerals / Press more then 3 seconds to lock key or unlock key
≡	4	Up Key	Increase numerals
≡	5	Shift Key	Shift digits when settings are changed
MD	6	Mode Key / Save and Exit Key	Use for parameter calling up and set value registration
LOCK	7	Lock Indicator	Lights when lock is activated
AL	8	Alarm Indicator	Lights when alarm is activated
OUT	9	Output Indicator	Lights when output is activated
AT	10	Autotuning Indicator	Lights when autotuning is activated

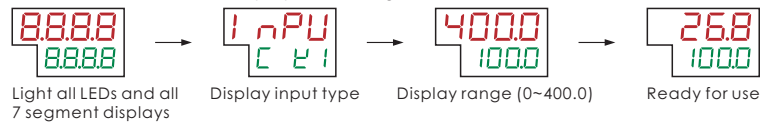
SWITCH FUNCTIONS

Select the sensor input type & control output by DIP switch on the PCB.

DIP Switch Description	ON 1 2 3 ON OFF		
DIP Switch Number	1	2	3
K,J,Type Thermocouple (Default)	ON	OFF	---
Pt100 Type RTD	OFF	ON	---
SSR Output	---	---	ON
Relay Output	---	---	OFF

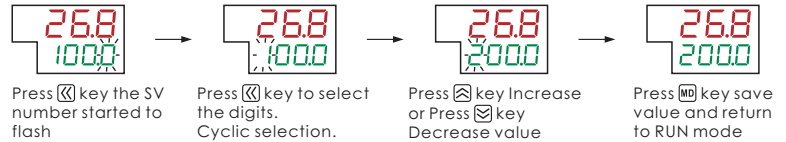
OPERATIONS

POWER ON : Controller will display as following



SETTING SV : Ex: Change SV from 100.0 to 200.0

(Setting without pressing any key over 30 seconds will no save and return to RUN mode)



PARAMETER CONFIGURATION (LEVEL 1)

Press [MD] key into the LEVEL 1 parameter configuration.

(Setting without pressing any key over 30 seconds will no save and return to RUN mode)

UPPER LIMIT ALARM :

Setting range : 0.0 ~ 200.0
Default : 0.0

Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **LOWER LIMIT ALARM** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

LOWER LIMIT ALARM :

Setting range : 0.0 ~ 200.0
Default : 0.0

Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **UPPER ALARM SENSITIVITY** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

UPPER ALARM SENSITIVITY :

Setting range : 0.0 ~ 200.0
Default : 0.0

Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **LOWER ALARM SENSITIVITY** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

LOWER ALARM SENSITIVITY :

Setting range : 0.0 ~ 200.0
Default : 0.0

Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **INCREASE ON/OFF CONTROL SENSITIVITY** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

INCREASE ON/OFF CONTROL SENSITIVITY : (PID control mode without this option)

Setting range : 0.0 ~ 200.0
Default : 0.0

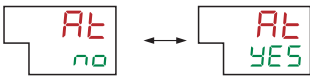
Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **DECREASE ON/OFF CONTROL SENSITIVITY** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

DECREASE ON/OFF CONTROL SENSITIVITY : (PID control mode without this option)

Setting range : 0.0 ~ 200.0
Default : 0.0

Press [≡] key to select the digits. Press [≡] key Increase or Press [≡] key Decrease value. then press [MD] key save value and change to **AUTO TUNING** mode or press [MD] key 3 seconds save value and return to **RUN** mode.

AUTO TUNING : (ON/OFF control mode without this option)



Code	Function
no	Not Auto tuning
YES	Auto tuning

Press key or Press key to select value. Then press key save value and change to **PV COMPENSATION** mode or press key 3 seconds save value and return to **RUN** mode.

PV COMPENSATION :



Setting range : -99.9 ~ 200.0
Default : 0.0

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **SV COMPENSATION** mode or press key 3 seconds save value and return to **RUN** mode.

SV COMPENSATION :



Setting range : -99.9 ~ 200.0
Default : 0.0

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **CP OUTPUT TIME** mode or press key 3 seconds save value and return to **RUN** mode.

CP OUTPUT TIME : (ON/OFF control mode without this option)



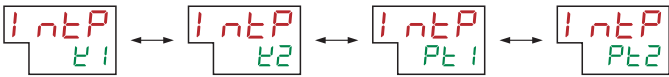
Setting range : 1 ~ 99Sec
Default : 10Sec

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **UPPER LIMIT ALARM** mode or press key 3 seconds save value and return to **RUN** mode.

■ PARAMETER CONFIGURATION (LEVEL 2)

Press key 3 seconds into the LEVEL 2 parameter configuration. (Setting without pressing any key over 30 seconds will be save and return to RUN mode)

INPUT TYPE : (Default : K1)



K : DIP Switch must be 1=ON 2=OFF
P100 : DIP Switch must be 1=OFF 2=ON
(See INPUT TYPE TABLE)

Press key or Press key to select value. Then press key save value and change to **ALARM OUTPUT** mode or press key 3 seconds save value and return to **RUN** mode.

ALARM OUTPUT : (Default : 01)

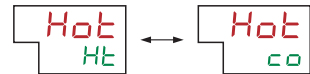


Alarm Mode Setting ▲ : SV △ : Alarm

Code	Function	Code	Function
01	Deviation high alarm OFF ON High → PV	04	Deviation high alarm(The first no-alarm) OFF ON High → PV
02	Deviation low alarm ON Low OFF → PV	05	Deviation low alarm(The first no-alarm) ON Low OFF → PV
03	Deviation high and low alarm ON Low OFF ON High → PV	06	Deviation high and low alarm(The first no-alarm) ON Low OFF ON High → PV

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **MAIN OUTPUT** mode or press key 3 seconds save value and return to **RUN** mode.

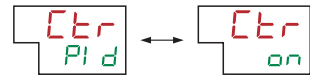
MAIN OUTPUT :



Code	Function
He	Heat (Default)
Co	Cool

Press key or Press key to select value. Then press key save value and change to **CONTROL** mode or press key 3 seconds save value and return to **RUN** mode.

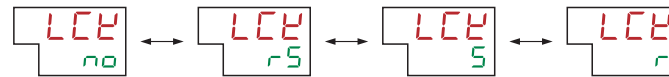
CONTROL :



Code	Function
PI d	PID Control (Default)
on	ON/OFF Control

Press key or Press key to select value. Then press key save value and change to **KEY LOCK** mode or press key 3 seconds save value and return to **RUN** mode.

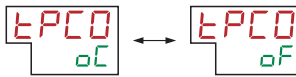
KEY LOCK :



Code	Function	Code	Function
no	Unlock (Default)	5	Lock key
r5	Lock and key	r	Lock key

Press key or Press key to select value. Then press key save value and change to **TEMPERATURE UNIT** mode or press key 3 seconds save value and return to **RUN** mode. Press key 3 seconds to lock key or unlock.

TEMPERATURE UNIT :



Code	Function
oC	°C (Default)
oF	°F

Press key or Press key to select value. Then press key save value and change to **PROPOTION BAND (P)** setting or press key 3 seconds save value and return to **RUN** mode.

PROPOTION BAND (P) : (ON/OFF control mode without this option)



Setting range : 0 ~ 4500
Default : 70

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **INTEGRAL TIME (I)** setting or press key 3 seconds save value and return to **RUN** mode.

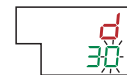
INTEGRAL TIME (I) : (ON/OFF control mode without this option)



Setting range : 0 ~ 3600 Sec
Default : 120 Sec

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **DIFFERENTIAL TIME (D)** setting or press key 3 seconds save value and return to **RUN** mode.

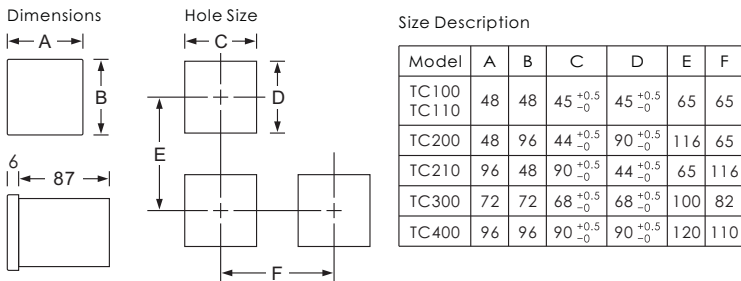
DIFFERENTIAL TIME (D) : (ON/OFF control mode without this option)



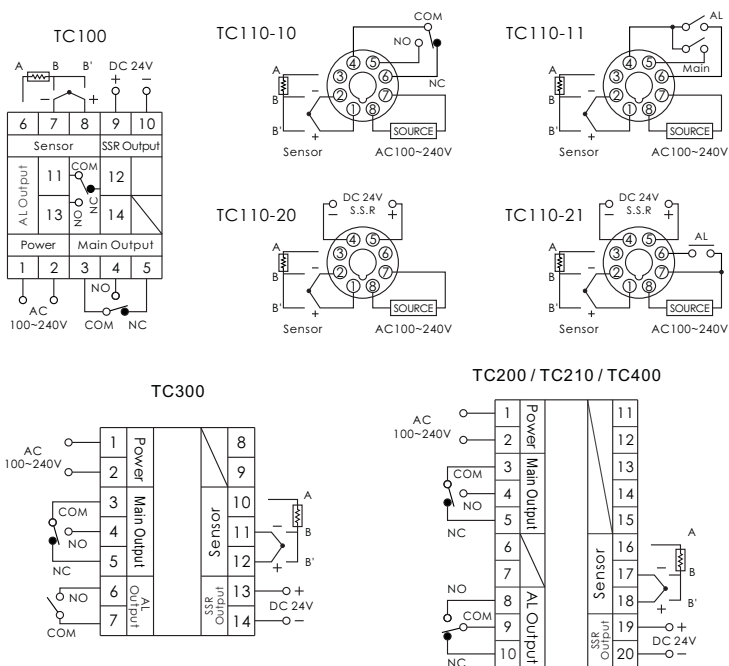
Setting range : 0 ~ 3600 Sec
Default : 30 Sec

Press key to select the digits. Press key Increase or Press key Decrease value. Then press key save value and change to **INPUT TYPE** mode or press key 3 seconds save value and return to **RUN** mode.

■ DIMENSIONS



■ CONNECTION DIAGRAMS



■ ERROE MESSAGE

uuu1	uuu1
Input loop is open(sensor break)or PV is above the selected temperature range.	
nnn1	nnn1
PV is below selected temperature range.	

■ ORDER INFORMATION

Model	Output	Alarm	Input Type	Power
TC300	1	1	1	A
TC100	0	0	See Input Type table	A 100~240VAC
TC110	1	1		D 24VDC
TC200	0	0		
TC210	1	1		
TC300	0	0		
TC400	1	1		