

# CHCT Temperature Controller & timer Instruction Manual

Thanks for choosing our products, please read this manual in detail for your first use

## 1. Model explanation

TREX-CHCT 100 F K01 - VH / MSP - C  

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

- ① Series number
- ② Dimension(W\*H\*D)(mm)

Code	Panel Dimension	Perforate Dimension	Code	Panel Dimension	Perforate Dimension
100	48*48*90	45*45	700	72*72*90	68*68
400	48*96*90	45*92	400B	48*96*68	45*92
401	96*48*35	92*45 separate panel	401B	96*48*68	92*45

- ③ Control effect  
F-- Reverse adjust for heating D-- Positive adjust for refrigeration
- ④ Input signal

Input type	Range	Code	Input type	Range	Code	
TC	K	-20~400℃	K01	TC	E	
		-20~800℃	K02			
	J	-20~400℃	J01	Pt100	P	-20~500℃
		-20~800℃	J02			

- ⑤ ⑦ Main control output (temp)/ Time control output

Code	Output mode	Code	Output mode
M	Relay contact output	V	SSR voltage pulse output
Code	Output mode		
Q	Buzzer		

- ⑥ Alarm mode

Code	Explanation	Code	Explanation	Code	Explanation
N	No alarm				
A	Lower deviation alarm	H	Higher limit alarm	D	Within range alarm
B	Higher deviation alarm	L	Lower limit alarm	E	Out of range alarm

- ⑧ Time counting unit

Code	s	Second	Code	n	Minute	Code	H	Hour

- ⑨ Time trigger mode

Code	Trigger mode of timer
S	Hold on mode, hold the trigger to continue counting
P	Auto-lock, automatically continue counting once triggered.
W	Auto-lock, automatically continue counting once triggered. With delay reset function
T	Edge trigger, start to count only when it is triggered and reset.

- ⑩ Time output relay logic

Code	Action logic
P	Delay before relay pick-up
C	Relay pick-up when timing, Relay open after delay

- ⑪ Software version:4.6

- ⑫ Power supply: Default 220VAC (For CT401B is 85~265VAC)

## 2. Technical specification

This instrument can support Temperature control and time control at the same time. Create a new unique AI adjust mode via combining PID arithmetic and fuzzy control theory, which enable the instrument to meet a variety of control system requirements. At auto-tune function is available.

Basic error:  $\leq \pm 0.5\%F.S \pm 1\text{digit}$ ,  $\pm 0.25\%F.S \pm 1\text{digit}$ ; Cold junction compensation error:  $\leq \pm 2.0^\circ\text{C}$

Sampling cycle: 1 second

Control cycle: 1~100 second adjustable for main output

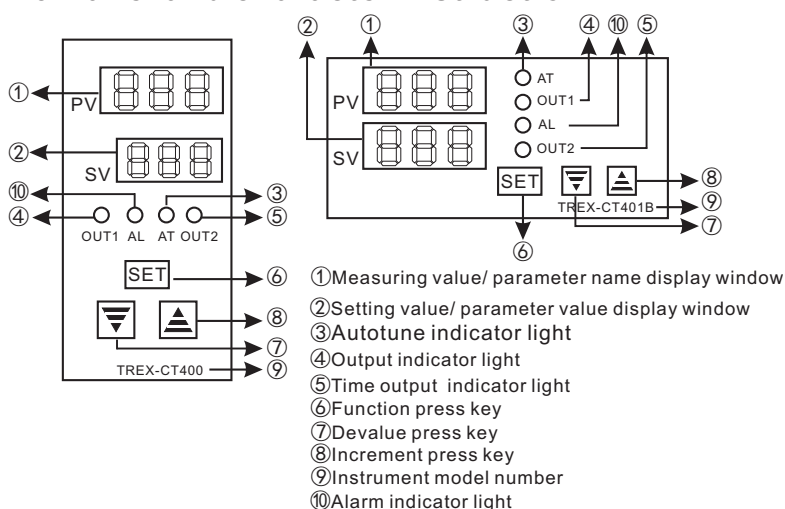
Relay contact output: AC250/3A (resistive load) or AC250/0.3A (inductive loading)

Solid state relay output: DC 0~12V, maximum output current 30mA

Work voltage: 85~265VAC  $\pm 10\%$ , 50/60Hz

Work condition: temperature 0~50℃ humidity <85% no caustic or magnetic field interference

## 3. Panel and character instruction



- ① Measuring value/ parameter name display window
- ② Setting value/ parameter value display window
- ③ Autotune indicator light
- ④ Output indicator light
- ⑤ Time output indicator light
- ⑥ Function press key
- ⑦ Devalue press key
- ⑧ Increment press key
- ⑨ Instrument model number
- ⑩ Alarm indicator light

## 4. Parameter instruction

Code	Parameter name	Setting range	Default value	Describe
Press SET, enter SV setting				
SP	Setting value	CL~CH	150	Given value setting
St	Timing value	0~999	2	Timing value setting
Press SET and hold for 5 second, enter parameter setting				
AL	Alarm value	CL~CH	5	Alarm value setting
Pb	error correct	-50~+100	0	sensor error correct
P	proportion	1~400	15	proportion effect setting
I	integral time	0~999	189	integral effect setting
D	differential	0~999	47	differential effect setting
T	output cycle	1~100s	3s	control cycle output time setting
AT	auto-tuning	0~1	0	start auto-tuning function
LCK	software lock	0~199	2	LCK=2, above parameter unlocks
Set LCK=199, then press SET to enter second parameter group setting				
IP	input spec.	K,J,E,Pt	K	TC: K,J,E ; RTD: Pt100 (Pt100 does not support for this special version)
Fd	Output mode	F, d	F	F: heating ; d: cooling
AP	Alarm mode	0~6	4	AP=0, no alarm AP=1, lower limit alarm AP=2, higher limit alarm AP=3, lower deviation alarm AP=4, higher deviation alarm AP=5, out of range alarm AP=6, within range alarm
bd	Hysteresis of alarm	0~20	1	To define alarm release dead band (hysteresis)
TP	Time trigger mode	0~2	0	TP=0, auto-lock TP=1, trigger TP=2, edge trigger
T2	Time counting unit	0.1s, s, 0.1n, n, h	0	0.1s=0.1 second; s= second 0.1n=0.1 minute; n= minute h= hour
OP	Time output mode	0~1	0	OP=0, output on when times up OP=1, output off when times up
Set LCK=909, then press SET to enter third parameter group setting				
dIP	Decimal	0, 0.0	0	0= 1 digit; 0.0= 1 decimal
F	Timing display mode	UP/dn	0	UP=count up; dn=count down
Lt	Timer output maintain time	0~999	0	Unit Second, output maintain
RST	Reset logic (does not support for this special version)	0~2	0	0: time reset once RST triggered 1: time reset after RST triggered and released (edge trigger) 2: only when RST close, time trigger is valid
CF	Temp. display unit	C / F	C	C: Centigrade F: Fahrenheit
CL	Lowest limit of set value	-30~800	-30	To limit lowest set value
CH	Highest limit of set value	-30~800	800	To limit lowest set value
dL	digital filter	0~1	0	The stronger filter effect, the slower sample speed.

### 5. Parameter setting and definition instruction

**AL:** alarm parameter, this instrument supply one alarm channel. It should be set according to different alarm mode. For example, we need a instrument with high limit alarm function. We will set the alarm mode well in advance before the instrument leaves factory. User can set the alarm value freely.

**Pb deviation correct:** Parameter Pb is for input translation amendment. When it is confirm that the sensor or other part of the system occurs error and can not match the instrument's measuring, user should use this parameter. It compensates the error of sensor and input signal. For thermocouple input signal, when the cold junction compensation occurs error, Pb parameter can be used for amendment.

**P parameter:** proportion of PID. The larger P value, the stronger proportion effect. The smaller P value, the weaker proportion effect. P=0 is for ON-OFF control.

**I parameter:** integral time of PID. The larger I value, the stronger integral effect. The smaller I value, the weaker integral effect. If I=0, integral effect is cancelled, the instrument becomes a PD adjustment.

**d parameter:** differential time of PID. The larger d value, the stronger differential effect. If d=0, differential effect is cancelled. The instrument becomes a PI adjustment at this time.

**AT parameter:** auto-tuning parameter. It is recommended to use AT auto-tuning function for the first use. It will gain a approving PID parameters after auto-tuning.

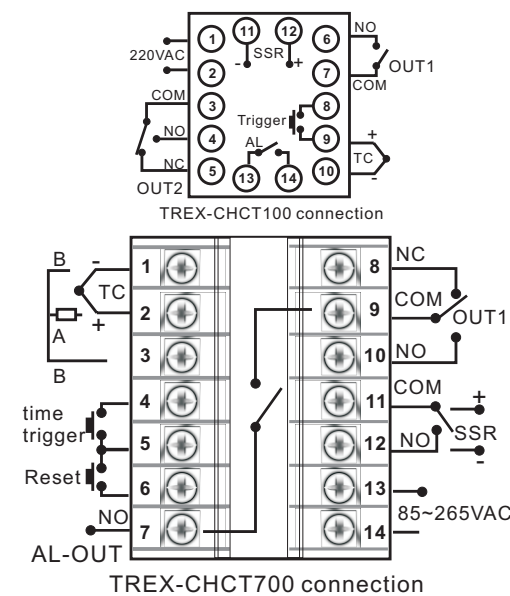
1. Auto-tuning starts: press and hold SET key for 5 second to enter parameter menu. Then set AT as 1. Instrument starts auto-tuning now. At the same time, AT indicator light blinks. When AT indicator light stops blinking, auto-tuning is over. Setting AT to 0 is to cancel auto-tuning.
2. It is ON-OFF control mode when AT auto-tuning function is running. PID parameters will be well set after three control cycles. If the control effect is not satisfying, user can start auto-tuning again. Auto-tuning takes different time according to different system. Power supply should be keep on during auto-tuning.
3. It is ON-OFF control mode, when auto-tuning is undergoing, System may has strong over shoot. If it is not acceptable, please do not use auto-tuning.
4. Auto-tuning may failure because of too long system time constant or strong interference.

**LCK parameter, software parameter lock.** LCK parameter offer different authority.  
 LCK=0, all parameter can not be changed  
 LCK=1, only SP, ST parameter can be modified  
 LCK=2, all parameter can be changed  
 LCK=19/199, Enter the parameter group configuration  
 After setting the important parameter value like input specification and output specification, technical should set LCK value as 0 to avoid mis-operation. (LCK will automatically set as 0 after power-fail.)

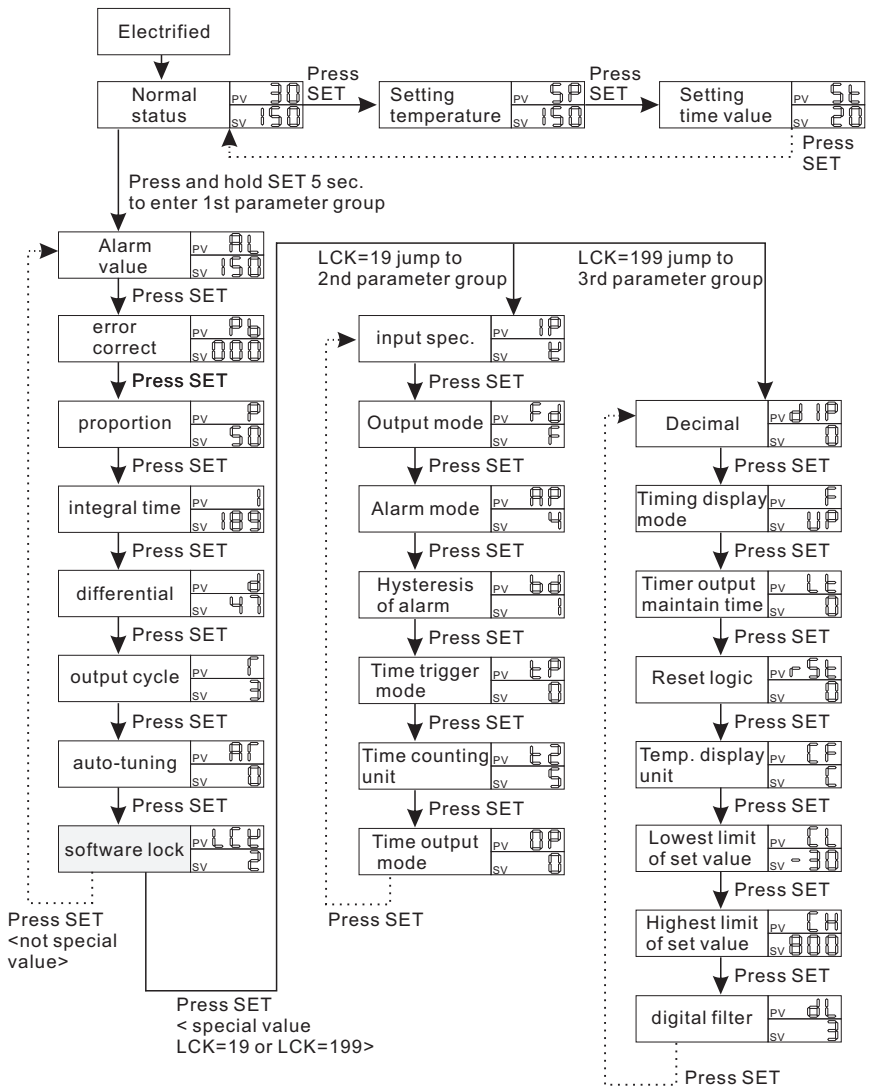
### 7. Caution

1. Please declare practice model number when ordering. Can remark input signal, model, measuring range, output mode and power supply in details.
2. Please if check input signal and specification, power supply, output mode are accord with the control system before make use of the instrument.
3. Please wire according to connection diagram. Please contact the factory if there is any difference.
4. Different thermocouple should go with different compensation cable. When adopting internal compensate mode, please attach cable directly to the instrument. Do not turn it into common cable in case of measuring error.
5. While using RTD input, please choose three compensation cable with the same resistance value in case of measuring error.
6. Please put power supply cable and input signal cable away from large current cable in order to reduce electromagnetic radiation interference. Please use shield cable when they have to be put together.
7. Accessory: a set of install bracket, a piece of instruction manual. If there is any abnormality of the instrument, please refer to the manual or give a ring to the factory.

### 9. Wiring Diagram(Example)



### 6. Parameter setting flow chart



**Note:**

1. During setting state, if there is not any key pressing action for more than 20 seconds, instrument will exit setting state automatically. All your setting will not be saved.
  2. In any status, press and hold SET for 5 seconds to back to normal status and save parameter change.
1. Only electrify after correct wiring. PV window display measuring value while SV window display setting value.
  2. There is not any display and output action after electrify.
    - First, check the wiring.
    - Second, check the power supply.
    - Third, check the power supply with other instrument.
  3. PV window displays 'HHH' or 'LLL'. It means there is abnormality for input signal.
    - First, check the wiring of input ends.
    - Second, check if the input specification accords with instrument factory config.
    - Third, check if the sensor is broken (open loop or short)
  4. The indicator light is ON without any output action after electrify.
    - First, check the wiring of output ends.
    - Second, check if the output specification accords with the external load.
    - Third, check if the external load is broken (open loop or short)
  5. Instrument display or control abnormality
    - First, check the wiring.
    - Second, check the parameter setting.

