FT803 Economical Smart Temperature Controller

1、main features

- FT803,The temperature controller belongs to the economy,The operation is simple, easy to learn and use.
- Use digital calibration technology for input Measurement accuracy:0.3%FS,Support standard thermocouples and platinum resistance,maximum resolution is 0.1℃.
- Use advanced artificial intelligent control algorithm, no overshoot and with the function of auto tuning (AT) and self-adaptation.
- With worldwide power supply of AC/DC100-240V or AC/DC12-24V and various installation dimensions for users to choose.

2、Model defined

FT803 — ☐ ☐ ☐ — ☐ ☐
　　　　　① ② ③　　④ ⑤

①

Code	Panel size(W*H)
G	48X48mm
D	72X72mm
A	96X96mm
E	48X96mm
F	96X48mm

②

Code	OUT(Master output)
N	None
R	Relay contacts output
Q	SSR voltage output
W1	TRIAC no contact normally open output
W2	TRIAC no contact normally closed output

③

Code	ALM(Alarm)
N	None
1	1 relay contact output
2	2 relay contact output

④

Code	Shell color
None	Light gray
B	Black

⑤

Code	Power
None	AC/DC100~240V
D	AC/DC12-24V

3、Technical parameters

size code	G	D	A	E	F
Panel size(W*H)	48X48mm	72X72mm	96X96mm	48X96mm	96X48mm
Panel back depth	86mm	89mm	72mm	99mm	99mm
Panel cutout size	$45^{+0.6}$ X$45^{+0.6}$	$68^{+0.6}$ X$68^{+0.6}$	$92^{+0.6}$ X$92^{+0.6}$	$45^{+0.6}$ X$92^{+0.6}$	$92^{+0.6}$ X$45^{+0.6}$
Gross weight	Approx. 177 g	Approx. 272 g	Approx. 419 g	Approx. 286 g	
Power supply voltage	AC/DC100~240V , or AC/DC12-24V(-15%, +10%/50-60HZ)				
Power consumption	Approx. 5.2 VA at 100 to 240 VAC, Approx. 3 VA at 12 to 24 VDC				
Measurement accuracy	0.3% FS ± 1 measurement unit				

Input type and Measuring range	K(-50~+1300°C),E(0~800°C),J(0~1000°C),N(0~1300°C), Pt100(-200~+600°C)
Decimal point	0、0.0
Response time	≤0.5Sec(when digital filter parameter InF=0)
Output mode — Relay output	3A/250VAC 5A/30VDC
Output mode — SSR Voltage output	12VDC/50mA(Used to drive SSR)
Output mode — TRIAC no contact discrete output	0.2A (continuous), 2A (20mS instantaneous, repeat period≥5s) /100~240VAC
Electromagnetic compatibility (EMC)	IEC61000-4-4(Electrical Fast Transient Burst)±4KV/5KHz;IEC61000-4-5(Surge),4KV
Operating Ambient	Temperature:0~60°C; Humidity≤90%RH

4、Wiring diagram

Wiring graph for G(48X48mm) size

Wiring graph for D(72X72mm) size

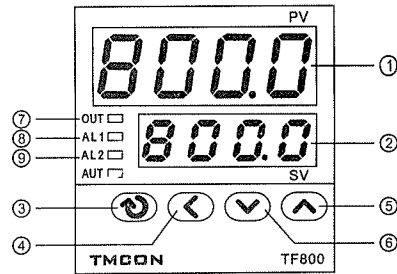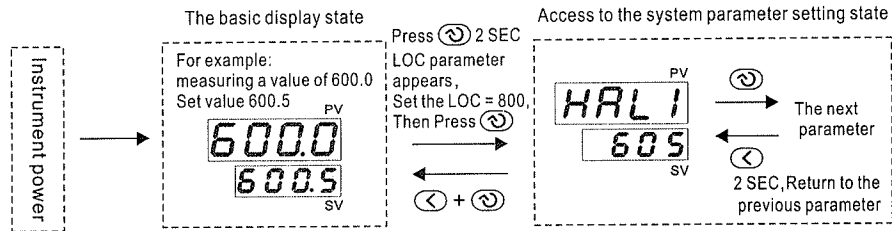Wiring graph for A(96X96mm) size

Wiring graph for E(48X96mm) , F(96X48mm) size

5.Panel Description

① Upper display window
② Lower display window
③ To the parameter key, the Enter key
④ Data shift key
⑤ Increase the key
⑥ Reduce the key
⑦ OUT Lamp
⑧ AL1 Lamp
⑨ AL2 Lamp

6、Display the status and basic operation

The basic display state | Press ② 2 SEC | Access to the system parameter setting state

For example:
measuring a value of 600.0
Set value 600.5

LOC parameter appears,
Set the LOC = 800,
Then Press ②

The next parameter

2 SEC,Return to the previous parameter

6.1.System parameter setting

In the basic display state, press and hold ② key 2 seconds, LOC parameter appears, set the LOC = 800,Then press the ② button to confirm and enter the system parameter setting state. ②, ②, ② Key can directly modify the parameter values. Press the ② key to reducing the data, press the ② key to increase the data,Waiting to modify the value of the decimal point will flash (like a cursor).press key and hold, you can quickly increase / decrease in value, And the speed will be automatically accelerated. also press the ② key to move to modify the data location (cursor), the operation is more efficient. ② Key can be stored to modify parameter values and display the next parameter,press and hold ② key 2 seconds,and can return to the previous parameter; press and hold ② key and then press the ② key can immediately exit the parameter setting state.

6.2 Set Value Setting

In basal display status, if the parameter lock "Loc" isn't locked, we can set setpoint (SV) by pressing ② first、 then can press ②, ② or ② to adjust value. Press ② key to decrease the value, ② key to increase the value, and ② key to move to the digit expected to modify. Keep pressing ② or ②, the speed of decreasing or inscreasing value get quick. The range of setpoint is between the parameter SPL and SPH.

6.3 "At"PID Parameter auto-tuning

"At" parameter "OFF" is set to "ON" and then press the ② KEy to confirm instrument can start the implementation of the auto-tuning Given function,the instrument in the basic display state display will flash the word "At", the instrument after 2 oscillation cycle ON-OFF control can automatically calculate the PID parameters.If you want to advance to give up auto-tuning , "At" parameter "ON" is set to "OFF" and then press ② key to confirm.
Given tuning parameter values obtained are not identical, to perform auto-tuning function, should be first given value set in The most commonly used value or middle value, if the system is good insulation properties of the furnace, the given value should be set in the system uses the maximum, and then Execute the start of the operation of auto-tuning function. Reasons to learn, auto-tuning after the initial use, the effect may not be the best, you need a period of time (usually the same time auto-tuning control) before they can get the best results.

7、Parameter list and function

press and hold ② key 2 seconds, LOC parameter appears, set the LOC = 800,Then press the ② key to confirm and enter the system parameter setting state.

Parameter code	Meaning of parameters	Explain	Setting range
LOC	Parameter lock	LOC<9000, will automatically for 0, allowed to modify the SV Set Value. LOC≥9000, are not allowed to modify the SV Set Value. Set the LOC = 800, then press ② key to confirm, can enter the following system parameters.	0~9999
HAL1	AL1 high limit alarm value	"HAL1" is the absolute value alarm or deviation value alarm, by "ALtd" parameter definition. When the value set to Max. will disable this function.(3200)	-999~ +32000
LAL1	AL1 low limit alarm value	"LAL1" is the absolute value alarm or deviation value alarm, by "ALtd" parameter definition. When the value set to Min. will disable this function.(-999)	
HAL2	AL2 high limit alarm value	"HAL1" is the absolute value alarm or deviation value alarm, by "ALtd" parameter definition. When the value set to Max. will disable this function.(3200)	
LAL2	AL2 low limit alarm value	"LAL1" is the absolute value alarm or deviation value alarm, by "ALtd" parameter definition. When the value set to Min. will disable this function.(-999)	
At	auto-tuning	OFF: close the auto-tuning function. ON: start a auto-tuning function. auto-tuning finish will automatically returns to the OFF state.	ON OFF
AHYS	Alarm hysteresis	Avoid frequent alarm on-off action because of the fluctuation of PV	0~2000
ALtd	Alarm mode	ALtd=0 , AL1is the deviation value alarm,AL2 is the absolute value alarm. ALtd=1 , AL1 and AL2 is the absolute value alarm. ALtd=2 , AL1 and AL2 is the deviation value alarm.	0~2
CntL	Control mode	onoF: on-off control. For situation not requiring high precision. FPId: advanced artificial intelligence "FUZZY PID" control.	onoF FPId
orEv	Selection of heating refrigeration	onr: Reverse acting. Increase in measured variable causes a decrease in the output, such as heating control. ond: Direct acting. Increase in measured variable causes an increase in the output, such as refrigerating control.	onr ond
P	Proportional band	Proportional band in PID and APID control. Instead of percentage of the measurement range, the unit is the same as PV. Generally, optimal P, I, D and CP can obtained by auto tuning. They can also be manually inputted if you already know the correct values.	1~32000
I	Integration time	No integral effect when I=0	1~9999 seconds

d	Differential time	No derivative effect when d=0	0~3200 seconds
CP	Control cycle	CP reflect the instrument operator to adjust the speed, the size of the CP that affect the control accuracy. With SSR, SCR output control cycle preferable to shorter, usually 0.5-3.0 Seconds. The relay switch output is generally in 15-40 seconds. When the output relay switches , the CP will be limited to 3 seconds, And self-tuning At will automatically set the CP as the appropriate value, taking into account the control accuracy And mechanical switch life. When the control mode CntL = onoF, the action of the CP as an output disconnect or power-on output ON Delay time.	0.2~ 300.0
HYS	Control hysteresis	HYS is used for on-off control to avoid frequent on-off action of relay. For a reverse acting (heating) system, when PV > SV, output turns off; when PV<SV-HYS, output turns on. For a direct acting (cooling) system, when PV<SV, output turns off; when PV>SV+HYS, output turns on.	0~2000
Int	Input Signal	Input spec: K、E、J、N、Pt (Pt100)	
dp	Decimal point	0 (no decimal), 0.0 (one decimal place).	0 0.0
SC	Input Shift Adjustment	Sc is used to shift input to compensate the error caused by transducer, input signal, or auto cold junction compensation of thermocouple. PV after compensation=PV before compensation + Sc It is generally set to 0. The incorrect setting will cause measurement inaccurate.	-1999~ +4000
InF	PV input filter	The value of InF will determine the ability of filtering noise. When a large value is set, the measurement input is stabilized but the response speed is slow. Generally, it can be set to 1 to 3. If great interference exists, then you can increase parameter "InF" gradually to make momentary fluctuation of measured value less than 2 to 5. When the instrument is being metrological verified, "InF" s can be set to 0 or 1 to shorten the response time.	0~40
dU	Temperature unit selection	°C: celsius equals °F: fahenheit equals	°C °F
SvL	Low limit of SV	Minimum value that SV is allowed to be.	-9990~ +30000
SvH	Upper limit of SV	Maximum value that SV is allowed to be.	

8、Note

(1) Can not normally display measured values in the display window alternating show: "orAL" character, indicating that the input of the measurement signal abnormalities or Out of range; check Int parameter settings, and then the input sensor signals are the same category, if it is determined the same, check the input sensing Signal not pick the wrong line, if it is determined to not pick the wrong line, check whether the sensor problem, replace another sensor to try.

(2) The instrument used by the local environmental temperature and humidity can not exceed the scope of the provisions, the instrument around should allow sufficient space for heat dissipation, instrument internal temperature rise due to thermal radiation will lead to a result of the measurement accuracy and service life of the affected. In this Case, to be taken to a forced cooling fan or other measures to reduce the ambient temperature.

(3) the extension or connection then the thermocouple leads should be used with the thermocouple type to match the compensation conductor; extend or connect the thermoelectric Resistance of the lead, you should use the minimal resistance of the wire and cable away from power lines and load connection, in order to avoid signal interference.

9、default settings.

Parameter code	factory setting	Parameter code	factory setting	Parameter code	factory setting
Loc	0	CntL	FPId	dP	0.0
HAL1	3200	orEu	onr	Sc	0.0
LAL1	-999	P	25.0	InF	2
HAL2	3200	I	200	dU	°C
LAL2	-999	d	50.0	SuL	-999
At	oFF	CP *		SuH	3200
AHYS	2.0	HYS	2.0		
ALtd	0	Int	P		

* solid state relay output type CP factory is set to 2.0 ,
 the relay contact output type CP factory set to 15.0 .

⚠️ **Read this manual before using, to prevent the error operation caused by the failure to Fully understand the operating procedures, and retain the manual for ready reference.**