

Регуляторы температуры NT, MT, TC, H5-AN, TS, TR, CT-6P, HR, DPM Технические характеристики

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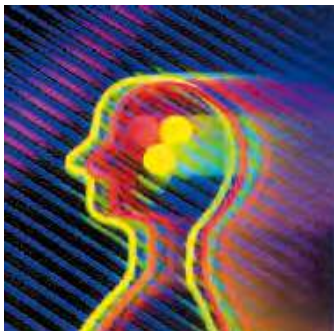
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Think Controls

Self-adaptive Fuzzy + PID Temperature Controller **NT series**

§ Intelligence
§ Performance
§ Reliability

§ Easiness
§ Stability
§ Sensitivity

Complete Human-interface & Function

- | | |
|-------------|------------------------------------|
| * 輸出量顯示 | * Output volume display |
| * 負載電流量顯示 | * Load current display |
| * 關閉控溫功能 | * Turn off control function |
| * 快速自動演算鍵 | * Fast auto-tuning setting |
| * 緩衝起動功能 | * Soft start function |
| * 加熱斜率控制 | * Ramp control function |
| * 手動輸出控制 | * Manual output control function |
| * 全機種可附通訊功能 | * Communication function available |

c  us  Rohs



陽明電機股份有限公司
FOTEK CONTROLS CO., LTD.

www.fotek.com.tw

Model guiding / 型號索引

Ex.	NT	48	R	CT	RS
	1	2	3	4	5
1	Series (系列名稱)				
2	Outline (外形) (Unit: mm)				
3	Output method (輸出方式)				
4	Optioned (附加功能)				
5	Optioned (附加功能)				

How to set the function or parameter / 如何設定功能及參數

1. 「Temperature setting status」: Press 「SET」 key instantaneously to enter into the temperature setting status.
 2. 「Auto-tuning status」: Press 「▲」 key 3 sec to set 「Auto-tuning」, then press 「▲」 key 3 sec to reset it.
 3. 「Manu-output status」: Press 「▼」 key 3 sec to turn off the output control, then press the 「SET」 key to set the 「Manu-output volume」. If press 「▼」 key 3 sec may to release 「Manu-output status」.
 4. 「Display mode selecting」: Press 「SET」 key 3 sec to select display mode
 - 4-1. Without CT type: Display 「Output volume」 (u.xx) → then press 「SET」 key 3 sec → to display 「Temperature set value」
 - 4-2. With CT type: Display 「output volume」 (u.xx) → then press 「SET」 key 3 sec → to display 「Load current」 (xx.xx) → then press 「SET」 key 3 sec → to display 「Temperature set value」
 5. 「Parameter setting status」: Press 「F」 key 3 sec to enter into the parameter setting status.
 6. 「Alarm setting status」: Press 「SET」 & 「F」 key 3 sec to enter into the Alarm setting status.
 7. 「Communication setting status」: Press 「SET」 & 「▼」 key 3 sec to enter into the Communication setting status.
 8. 「Soft start function」: At the final parameter of 「setting of alarm」, Press 「SET」 key 3 sec to set the **Soft start setting value 「SV2」**.
the fixed output volume is set by the manual output volume.
 9. 「Ramping control」: At the 「rAP」 parameter in the 「setting of alarm」 level, if 「rAP = 0」, it has not the ramping control function.
if 「rAP ≠ 0」, it will perform the ramping control function.
 10. 「Display mode setting」: At the 「Sdc」 parameter in the 「Setting of parameter」 level, if 「Sdc = n」, it will be kept on the selected display mode, if 「Sdc = A」, it will be returned to the Temperature set value mode after 10 seconds.
-
1. 「溫度值設定狀態」: 按「SET」鍵一下就可進入「溫度值設定狀態」
 2. 「自動演算狀態」: 按「▲」鍵3秒可進入「自動演算狀態」; 再按「▲」鍵3秒解除「自動演算狀態」
 3. 「手動輸出控溫狀態」: 按「▼」鍵3秒關閉輸出(顯示「OFF」), 再按「SET」鍵3秒後可設定「手動輸出量」(顯示n.xx), 完成手動輸出量設定後如果再按「▼」鍵3秒可解除「手動輸出控溫狀態」回復自動控溫狀態。
 4. 「顯示模式選擇」: 按「SET」鍵3秒
 - 4-1. 無CT型: 「輸出量顯示」(u.xx) → 再按「SET」鍵3秒 → 「溫度設定值顯示」
 - 4-2. CT型: 「輸出量顯示」(u.xx) → 再按「SET」鍵3秒 → 「負載電流量顯示」(xx.xx) → 再按「SET」鍵3秒 → 「溫度設定值顯示」
 5. 「參數設定」: 按「F」鍵3秒: 進入「參數設定」狀態
 6. 「警報設定」: 按「SET」&「F」鍵3秒: 進入「警報設定」狀態
 7. 「通訊參數設定」: 按「SET」&「▼」鍵3秒: 進入「通訊參數設定」狀態
 8. 「緩衝起動設定」: 在警報設定的最後一個參數時按「SET」鍵3秒可設定「緩衝起動設定值(SV2)」, 固定輸出量由手動輸出量設定。
 9. 「加熱速率控制」: 可設定警報設定層的參數「rAP」; 「rAP = 0」時沒有溫升速率控制功能, 「rAP ≠ 0」時執行溫升速率控制。
 10. 「顯示自動切換設定」: 可設定參數設定層的參數「Sdc」; 「Sdc = n」時持續顯示「選擇顯示模式」; 「Sdc = A」時10秒後會自動切回「溫度設定值顯示模式」。

Fuzzy + PID Intelligent Temperature Controller

NT series

CE / RoHS

General Specification / 共同規格

Model	Model	Panel type	Rail type
Model	型號	NT-10 NT-48 NT-20 NT-21 NT-72E NT-96E NT-22 NT-32	
Outline (Unit: mm)	外形尺寸	24*48*100 48*48*72 48*96*60 96*48*60 72*72*60 96*96*60 22.6*75*100 32*75*65	
Alarm output	警報輸出	Single alarm Two alarm Single alarm Two alarm	
Power supply	工作電壓	90~265 VAC/ 50/60 Hz or 24VDC/AC (Optional)	
Power consumption	消耗電流	5 VA max. or 100mA max. (24VDC/AC)	
Input method	輸入方式	PT / K / J / R / S / T / B / E / N / L (Selectable) or 4~mA or 0~10VDC (Optional)	
Control method	控制方式	Fuzzy + PID or ON / OFF selectable	
Control output	控制輸出	Relay or SSR or 4~20mA (Optional)	
Alarm output	警報輸出	Relay 1a (3A/250VAC SPDT)	
Display range	顯示範圍	-999 ~ 9999	
Accuracy of display	顯示精度	± (0.1 % OF F.S. + 1 DIGIT)	
Setting range	設定範圍	-999 ~ 9999	
Memory method	記憶方式	EEPROM	
Insulation resistance	絕緣強度	OVER 50MΩ / 500VDC	
Dielectric strength	耐壓強度	OVER 2.5 KV / 1 MINUTE	
Operating circum.	使用環境	-25°C ~ 80°C ; 35%~85% RH	
EMC standard		ESD : 8 KV Air Discharge (Level3) / EN-61000-4-2 RF Interference : 10V / M / ENV-50140 Burst test : 2KV / EN61000-4-4	

Setting of Communication / 通訊參數設定

Function	Range	Descrip
Control status 控制狀態 Press [SET] & ▼ key 3 sec nt l er NO. 控制器編號設定 Press [SET] key mm n ation protocol 通訊協定選擇 Press [SET] key mm n ation speed 通訊速率選擇 Press [SET] key t n guration 資料結構選擇 Press [SET] key	-200 ~ 9999 1 ~ 255 0 ~ 1 96 / 192 / 384 8N1 / 8O1 / 8E1 8N1 / 7O1 / 7E1	1> Range: 1~255 1> 「rs=0」: Modbus-RTU 2> 「rs=1」: Modbus-ASCII 1> 「bPS =96」: 9600 bps 2> 「bPS =192」: 19200 bps 3> 「bPS =384」: 38400 bps 1> 「b l t =8N1」: 8 bit non parity 2> 「b l t =8O1」: 8 bit odd parity 3> 「b l t =8E1」: 8 bit even parity 4> 「b l t =8N2」: 8 bit non parity 5> 「b l t =7O1」: 7 bit odd parity 6> 「b l t =7E1」: 7 bit even parity

Setting of parameter / 參數設定

Function	Range	Description
Control status 控制狀態 8888 8888	-200 ~ 9999	
Press [F] key ↓ 3 sec Cycle time 動作週期 C t 15	0 ~ 99	1> 「 CT = 0 」: ON/OFF control 2> Disappeared in Linear output type
Press [SET] key ↓ Auto tuning 自動演算 A t 0	0 ~ 1	1> 「 At = 0 」: Control status 2> 「 At = 1 」: Auto tuning status
Press [SET] key ↓ Auto tuning bias 自動演算偏差值 t u 0	0 ~ 99	1> Auto tuning value = 「SV - tu」
Press [SET] key ↓ Proportion band 比例帶 P 10	0 ~ 3999	1> 「 CT = 0 」 → 「P」 is disappeared
Press [SET] key ↓ Integral time 積分時間 I 120	0 ~ 3999	1> 「 CT = 0 」 → 「I」 is disappeared
Press [SET] key ↓ Derivative time 微分時間 d 30	0 ~ 3999	1> 「 CT = 0 」 → 「d」 is disappeared
Press [SET] key ↓ Hysteresis 動作應差 H y s 1	0 ~ 99	1> 「 CT = 0 」 → 「Hys」 is appeared only 2> 「PV > SV」 → Out ON ; 「PV < (SV - Hys)」 → Out OFF
Press [SET] key ↓ Gain 輸出控制增益 GAn 1.0	0.1~9.9	1> Gain of output control
Press [SET] key ↓ Input selecting 輸入選擇 I n t k	PT / K / J / R / S T / B / E / N / L	1> 10 input type are selectable
Press [SET] key ↓ Unit selecting 單位選擇 U n t C	°C / °F	
Press [SET] key ↓ Decimal point selecting 小數點選擇 d p 0	0 / 1	1> 「 dp = 0 」: Without decimal point 2> 「 dp = 1 」: One decimal point
Press [SET] key ↓ Input shift setting 輸入修正 S h t 0	-999 ~ 9999	1> 「PV」 = (PV + Sht)
Press [SET] key ↓ Control method setting 控制方式 H_C Htr	Htr / cLr	1> 「 Htr 」: Heating control 2> 「 cLr 」: Cooling control
Press [SET] key ↓ Alarm mode setting 警報模式 A L t 0	0 ~ 26	1> Refer to the mode of Alarm
Press [SET] key ↓ Display mode setting 顯示自動切換設定 S d c n	n / A	1> 「 n 」: Manual setting 2> 「 A 」: Auto setting
Press [SET] key		

Fuzzy + PID Intelligent Temperature Controller

NT series

AVUS / CE / RoHS

04

Setting of alarm / 警報設定

Function	Range	Description
Control status 控制狀態 Press [SET] & [F] key ↓ 3 sec	8888 8888 0 ~ 9999	
Lock setting 鎖定設定 Press [SET]	L c k 0 0 ~ 3	1> 「Lck=0」: Unlock ; Lck=1」: SV settable only 「Lck=2」: SV&AL settable ; 「Lck=3」: All lock
AL1 Limit setting AL1 警報設定 Press [SET]	A L 1 50 -999 ~ 9999	1> Refer to the mode of Alarm
AL2 Limit setting AL2 警報設定 Press [SET]	A L 2 50 -999 ~ 9999	1> Refer to the mode of Alarm
Hysteresis of alarm 警報應差值設定 Press [SET]	A L H 1 0 ~ 9999	Ex. $PV \geq (SV + AL1) \rightarrow AL1$ ON, $PV < (SV + AL1 - ALH) \rightarrow AL1$ OFF
Flick timer 警報閃爍輸出時間設定 Press [SET]	t 10 0 ~ 99	1> Range: 0~99 sec 2> Cycle time of flick timer
Setting limit 最大設定值限制 Press [SET]	S L h 400 0 ~ 9999	1> $SV \leq SLH$ 2> Range of transmitter : 0~SLH→
Output limit 輸出量限制設定 Press [SET]	O u t 100 0 ~ 100%	1> Output volume = Control output volume * 「Out」
Process output volume 實際輸出量 Press [SET]	U n 0.0 0 ~ 99.99	1> Display the output volume
Max. display value setting 最大顯示值設定 Press [SET]	dSPH 1000 0 ~ 9999	1> Current or Voltage input type will be appeared only 2> Max. input value will be transmitted into the dSPH
Min. display value setting 最小顯示值設定 Press [SET]	dSPL 0 -999 ~ 9999	1> Current or Voltage input type will be appeared only 2> Min. input value will be transmitted into the dSPL
Process current of heater 實際加熱器輸出電流值 Press [SET]	C t u 0.00 0 ~ 99.99	1> Range: 0.00 ~ 99.99 A
Heater break setting 加熱器斷線電流設定值 Press [SET]	H b 1.00 0 ~ 99.99	1> Range: 0.00 ~ 99.99 A 2> 「C t u」 < 「H b」 → AL2 ON
CT Low limit setting CT最小值設定 Press [SET]	C t L 0.00 0 ~ 99.99	1> Range: -9.99 ~ 99.99 2> Offset of CT current
CT High limit setting CT最大值設定 Press [SET]	C t h 30.00 0 ~ 99.99	1> Range: 0.00 ~ 99.99 2> To set the max.CT current
Ramp control setting 溫升速率控制 Press [SET]	r A P 0 0 ~ 9999	1> Range: 0 ~ 9999 °C or °F / minute 2> Rap=0: Without Ramp control function
Min. output volume setting 最小輸出量設定 Press [SET] 3 sec	L o t 0 0 ~ 100%	1> Range: 0 ~ 100% 2> Setting of min. output volume
Soft start setting 緩起動設定 Press [SET]	SV2 0 -999 ~ 9999	1> 「SV2」 = 0: Without soft start function 2> 「PV」 < 「SV2」: output volume is fixed at manual output volume 3> 「PV」 ≥ 「SV2」: Output volume is controlled by PID

Mode of alarm / 警報模式【NT-□□】

0	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2)	1	AL1 ON (SV - AL1) SV AL2 ON SV (SV+AL2)	2	AL1 ON (SV - AL1) SV AL2 ON (SV - AL2) SV
3	AL1 ON (SV - AL2) SV (SV+AL1) AL2 ON SV (SV+AL2)	4	AL1 ON (SV - AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)	5	AL1 ON (SV - AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)
6	AL1 ON AL1 AL2 ON AL2	7	AL1 ON First cycle unable AL1 AL2 ON AL2	8	AL1 ON First cycle unable (SV - AL1) SV AL2 ON SV (SV+AL2)
9	AL1 ON First cycle unable (SV - AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)	10	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2) tnr 99h59m	11	AL1 ON AL1 AL2 ON AL2
12	AL1 ON AL1 AL2 ON AL2	13	AL1 ON SV (SV+AL1) AL2 ON (SV - AL2) SV	14	AL1 ON SV (SV+AL1) AL2 ON (SV - AL2) SV
15	AL1 ON 1 SV (SV+AL1) AL2 ON SV (SV+AL2)	16	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2) tnr 99h59m	17	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2) tnr 99m59s
18	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2) 99m59s	19	Non-used	20	AL1 ON Flicker SV (SV+AL1) AL2 ON SV (SV+AL2)
21	AL1 ON Flicker SV (SV+AL1) AL2 ON First cycle unable (SV - AL1) SV (SV+AL2)	22	AL1 ON Flicker SV (SV+AL1) AL2 ON (SV - AL1) SV	23	AL1 ON Flicker SV (SV+AL1) AL2 ON (SV - AL1) SV
24	AL1 ON Flicker SV (SV+AL1) AL2 ON (SV - AL1) SV (SV+AL2)	25	AL1 ON Flicker SV (SV+AL1) AL2 ON (SV - AL1) SV (SV+AL2)	26	AL1 ON AL1 SV AL2 ON First cycle unable (SV - AL2) SV

- 「Alt=15」: t = ON time of AL2 for cooling, OFF time is controlled by PID.
- 「ALH」: Hysteresis of alarm. Ex. $PV \geq (SV+AL1) \rightarrow AL1$ ON, $PV < (SV+AL1-ALH) \rightarrow AL1$ OFF
- 「tnr」= Process time of tnr, if 「tnu $\geq$ tnr」 $\rightarrow$ AL2 is turned ON or OFF

Mode of alarm / 警報模式【NT-□□-CT & eTC-48 & NT-22】

0	AL1 ON SV (SV+AL1)	1	AL1 ON (SV - AL1) SV	2	AL1 ON (SV - AL1) SV (SV+AL1)
3	AL1 ON (SV - AL1) SV (SV+AL1)	4	AL1 ON AL1	5	AL1 ON AL1
6	AL1 ON First cycle unable AL1	7	AL1 ON First cycle unable (SV - AL1) SV (SV+AL1)	8	AL1 ON (SV - AL1) SV (SV+AL2)
9	AL1 ON (SV - AL1) SV (SV+AL2)	10	AL1 ON First cycle unable (SV - AL1) SV (SV+AL2)	11	AL1 Flick ON SV (SV+AL1)

- 「Alt = 11」: t = ON time of AL for cooling, OFF time is controlled by PID.
- 「ALH」: Hysteresis of alarm. Ex: $PV \geq (SV+AL1) \rightarrow AL1$ ON; $PV < (SV+AL1-ALH) \rightarrow AL1$ OFF
- NT-22□-CT: HB alarm output is AL1
- NT-48□-CT: HB alarm output is AL2

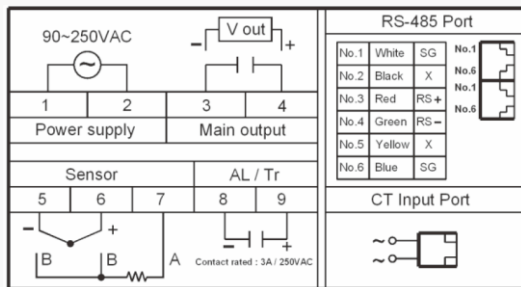
Fuzzy + PID Intelligent Temperature Controller

NT series

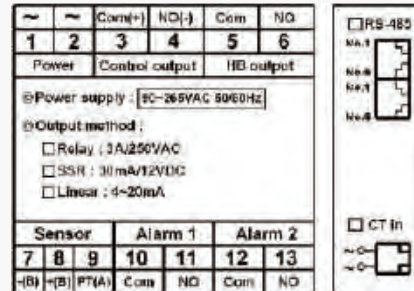
CE / RoHS

Connection diagram / 接線圖

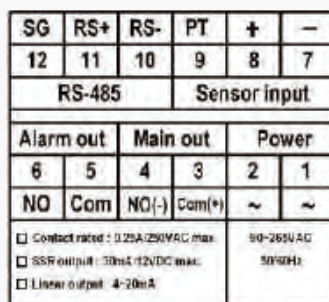
NT - 22-□□



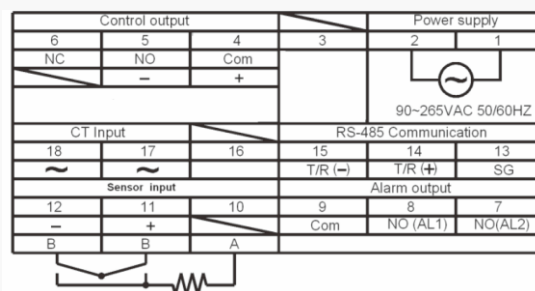
NT - 32-□□



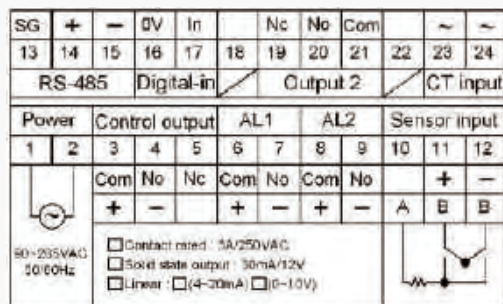
NT - 10-□□



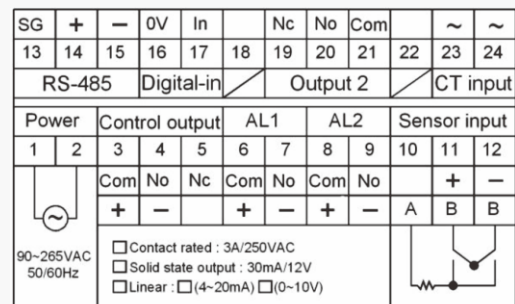
NT - 48-□□



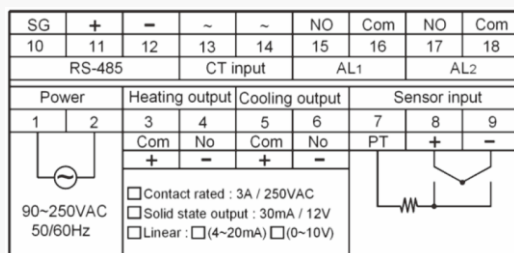
NT - 20-□□



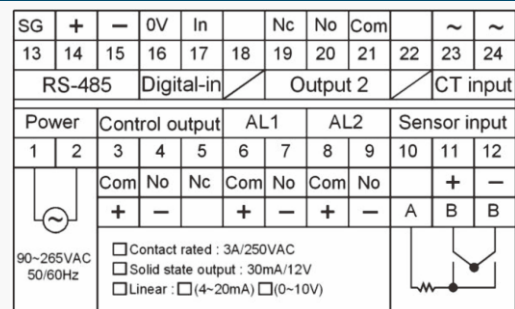
NT - 21-□□



NT - 72-□□E

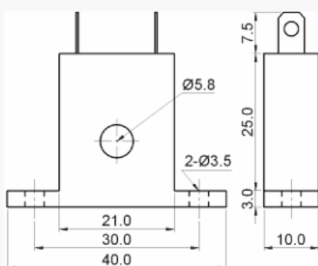


NT - 96-□□E

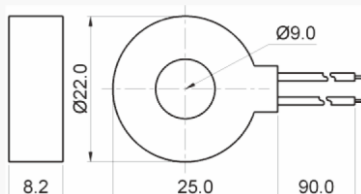


Attachment / 附件

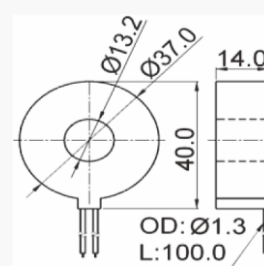
CT-06: Load current 10 A max



CT-09: Load current 30 A max.



CT-100: Load current 100 A max.



Outline dimension / 外形圖

NT - 22-□□	NT - 32-□□
NT - 10-□□ Fixed Hole 45.0mmX23.0mm Thickness 1~8mm	NT - 48-□□ Fixed Hole 45.0mmX45.0mm Thickness 1~8mm
NT - 20-□□ Fixed Hole 45.0mmX31.0mm Thickness 1~8mm	NT - 21-□□ Fixed Hole 45.0mmX31.0mm Thickness 1~8mm
NT - 72-□□E Fixed Hole 68.0mmX68.0mm Thickness 1~8mm	NT - 96-□□E Fixed Hole 89.2mmX89.2mm Thickness 1~8mm

Specification may be modified without notice in advance. (2015/5/5)

MT Series PID+Fuzzy Temperature Controller

FUZZY PID CONTROLLER

- ※ **Artificial Intelligence <AI> Control**
Fuzzy+PID Control
- ※ **Enhanced Autotuning Method**
AT BIAS VALUE SETTABLE
- ※ **Multi-Input Type**
K/J/PT SELECTABLE
- ※ **Alarm Function**
15 MODES SELECTABLE
- ※ **RUN/STOP Function**
OPERATED ON THE PANEL EASILY
- ※ **Communication Function**
RS-485 OPTIONED



Guiding of Model/型號索引

EX. MT-4896-R-RS-mA

① ② ③ ④ ⑤

① **Series** / 系列代號

MT Series Temperature Controller

② **Outline** / 外型尺寸

4896=48<W>×96<H> mm×mm

48=48<W>×48<H> mm×mm

72=72<W>×72<H> mm×mm

96=96<W>×96<H> mm×mm

20=48(W)×96(H) mm×mm

21=96(W)×48(H) mm×mm

③ **Output Method** / 輸出方式

R=Relay Output

V=Voltage Pulse Output

L=Linear 4~20 mA Output

④ **Other** / 其他

Non=Standard

RS=RS-485

CT=Current Transmitter

S:PV Resender

⑤ **Input** / 輸入

Non=K/J/PT

mA=mA

V=0~10V

VR=Variable Resistance



Nomenclature/圖示說明

PV: Display of The Process Value 顯示現在值

SV: Display of The Setting Value 顯示設定值

[SET] : Key of Setting 設定鍵

[F] : Key of Shift & Function 功能鍵及移位鍵

[▲] : Key of Increasing or Autotuning 上加鍵及自動演算鍵

[▼] : Key of Decreasing & ON/OFF 下減鍵及開關鍵

■ General Specification & Characteristic / 共同規格及特性

Specification & characteristic		Data
Power supply	工作電壓	90 ~ 265 VAC 50/60 Hz
Power consumption	消耗電流	5VA max.
Sensor input	測溫體	K / J / PT-100Ω selectable
Control output	Relay	繼電器
	Voltage	電壓
	Linear	線性輸出
Alarm output	警報輸出	3A/ 250 VAC SPDT
Control method	控制方式	Fuzzy + PID or ON / OFF settable
Operating circumstance	工作環境	-20°C~+75°C ; 25% ~ 85% RH
Display accuracy	顯示精度	±0.1% of FS + 1 digit
Cycle time	動作週期	0 ~ 99 sec
Proportional band (P)	比例帶	0 ~ 999
Integral time (I)	積分時間	0 ~ 3999
Derivative time (D)	微分時間	0 ~ 3999
Alarm range	警報範圍	-99 ~ 999
PV sampling time	取樣時間	0.1 sec
Input shift	輸入校正	-99 ~ +99
AT bias (TU)	自動演算偏差量	0 ~ 999
Memory method	記憶方式	EEPROM
Insulation resistance	絕緣阻抗	Over 50MΩ / 500VDC
Dielectric strength	耐壓強度	Over 2.5 kV / 1 minute
EMC standard		ESD : 8 KV Air Discharge (Level 3)/EN-61000-4-2 RF Interference: 10V/M/ENV50140 Bursttest:2KV/EN61000-4-4

■ Mode of alarm / 警報模式

ALT	Alarm description / 警報說明	ALT	Alarm description / 警報說明	ALT	Alarm description / 警報說明
0	AL1 ON SV (SV+AL1) AL2 ON SV (SV+AL2)	1	AL1 ON (SV-AL1) SV AL2 ON SV (SV+AL2)	2	AL1 ON (SV-AL1) SV AL2 ON (SV-AL2) SV
3	AL1 ON (SV-AL2) SV (SV+AL1) AL2 ON SV (SV+AL2)	4	AL1 ON (SV-AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)	5	AL1 ON (SV-AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)
6	AL1 ON (SV-AL2) SV (SV+AL1) AL2 ON SV (SV+AL2)	7	AL1 ON First cycle unable AL1 AL2 ON AL2	8	AL1 ON First cycle unable (SV-AL1) SV AL2 ON SV (SV+AL2)
9	AL1 ON First cycle unable (SV-AL1) SV (SV+AL1) AL2 ON SV (SV+AL2)	10	AL1 ON SV (SV+AL1) AL2 ON SV tnr 99h59m	11	AL1 ON AL1 AL2 ON AL2
12	AL1 ON AL1 AL2 ON AL2	13	AL1 ON SV (SV+AL1) AL2 ON (SV-AL2) SV	14	AL1 ON SV SV+AL1 AL2 ON (SV-AL2) SV
15	AL1 ON Flick ON SV (SV+AL1) AL2 ON SV (SV+AL2)	16	AL1 ON SV SV+AL1 AL2 ON SV tnr 99h59m	17	AL1 ON SV SV+AL1 AL2 ON SV tnr 99m59s
18	AL1 ON SV SV+AL1 AL2 ON SV tnr 99m59s	19	Non-use Note		

1 > 「ALT=15」: t = AL2 flick ON time settable, OFF time is controlled by PID
2 > 「ALH」 is hysteresis of alarm
Ex: PV ≥ (SV+AL1) → AL1 ON, PV < (SV+AL-ALH) → AL1 OFF
3 > 「tnr」 = Process time of timer: 「tnr ≥ tnr」 → AL2 is turned ON or OFF

MT Series PID+Fuzzy Temperature Controller



Setting of Parameter / 參數設定

Function 參數設定	Symbol 參數符號	Range 範圍	Remarks 備註
Control status 控溫狀態 Press Key ↓ 3 sec	 1999	1>-999~9999	① CT=0 ON/OFF控制 CT=0 ON/OFF Control
Cycle Time 動作週期 Press Key ↓	 15	0~99	② 線性輸出型不顯示 Linear Type Disappeared
Auto Tunning 自動演算 Press Key ↓	 0	0 or 1	① AT=0 控溫狀態 AT=0 Control Status AT=1 自動演算狀態 AT=1 Autotunning Status
Autotunning Bias 演算偏差值 Press Key ↓	 0	0~999	① 演算值 = SV-Tu Autotunning Value=SV-Tu
Proportional Band 比例帶 Press Key ↓	 25	0~999	① CT=0 P值不顯示 CT=0 P Disappeared
Integral Time 積分時間 Press Key ↓	SEC 150	0~3999	① CT=0 I值不顯示 CT=0 I Disappeared
Derivative Time 微分時間 Press Key ↓	SEC 41	0~3999	① CT=0 D值不顯示 CT=0 D Disappeared
Hysteresis 應差設定 Press Key ↓	 2	-99~999	① CT=0 才顯示 CT=0 Appeared only
Input Selecting 輸入選擇 Press Key ↓	 L	K/J/Pt	① K:0~1372°C ② J:0~1200°C ③ PT:-200~850°C
Unit Selecting 單位選擇 Press Key ↓	 °C	°C/°F	
Decimal Selecting 小數點選擇 Press Key ↓	 0	0 or 1	① dp=0 No Decimal Point ② dp=1 One decimal Point
Code 通信碼選擇 Press Key ↓	 0	0~2	① Communication type appeared only ② RS=0: BCD code (8N1) ③ RS=1: ASCII code (8N1) ④ RS=2: ASCII code (7O1)
BPS 傳輸速率 Press Key ↓	 192	96 or 192	① 「96」:9600bps ② 「192」:19200bps
Input Shift 輸入校正 Press Key ↓	 0	-99~999	
Alarm Mode 警報模式 Press Key ↓	 0	0~15	① 參考警報模式 Prefer to the mode of Alarm
Contoller No. 控制器編號 Press Key	 00	0~99	① 附RS-485才顯示 Communication Type Appeared Only

Setting of Alarm/警報設定

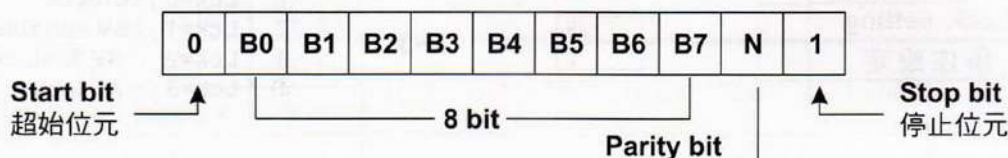
Function 參數設定	Symbol 參數符號	Range 範圍	Remarks 備註
Control status 控溫狀態	1999 1999	-999~9999	
Press SET Key 3 sec			
Lock setting 鎖住設定	LcL 0	0~3	① 「Lck=0」:Unlock ② 「Lck=1」:SV settable only ③ 「Lck=2」:SV & AL settable only ④ 「Lck=3」:All lock
Press SET Key			
AL1 alarm setting AL1 警報值設定	AL1 50	-999~9999	
Press SET Key			
AL2 alarm setting AL2 警報值設定	AL2 50	-999~9999	① Refer to mode of alarm
Press SET Key			
Hysteresis of alarm 警報值應差設定	ALH 1	0~9999	Ex. Alarm mode=「0」 「PV>(SV+AL1)」→AL1 ON 「PV≤(SV+AL1-ALH)」→AL1 OFF
Press SET Key			
Heater break setting 加熱器斷線值設定	Hb 10.0	0.0~「CTH」	① 「CT」Type appeared only ② 「ctu」<「HB」→AL2 ON At heating status
Press SET Key			
Heating current 加熱器實際電流值	ctu 20.0		① 「CT」Type appeared only
Press SET Key			
Max. CT value 最大電流值設定	ctH 30.0	0.0~999.9	① 「CT」Type appeared only
Press SET Key			
Limit of setting 設定值上限設定	SLH 400	-999~9999	① SV≤「Limit of setting」
Press SET Key			
Limit of output 最大輸出量設定	Out 100	0~100%	① Ton≤「Limit of output」 (Ton=Heating time)

MT Series PID+Fuzzy Temperature Controller



Setting of Communication / 通信協定

Communication Standard	EIA RS-485	Communication Speed	「9600」 or 「19200」 bps
Bits	16 bits	Communication Station	0~99
Communication configuration	8N1 (RS=0 or 1) 7O1 (RS=2)	Communication Code	BCD (RS=0) ASCII (RS=1 or 2)



Process of Protocol

Read command:

@	ID	R	Address	FCS	CR
---	----	---	---------	-----	----

Reesponse:

@	ID	R	Response code	Data	FCS	CR
---	----	---	---------------	------	-----	----

Write command:

@	ID	W	Address	FCS	CR
---	----	---	---------	-----	----

Response:

@	ID	W	Response code	FCS	CR
---	----	---	---------------	-----	----

Address:Parameter Address

位址：參數位址

NO 號碼	Description 說明
00	AL1:Alarm # 1(Range:-99~999)
01	AL2:Alarm#2 (Range:-99~999)
02	Non-use
03	SLH:Limit of set (Range:0000~9999)
04	HYS:Hysteresis (Range:0000~9999)
05	Non-use
06	Non-use
07	CT Cycle Time (Range:00~99)
08	P:Proportion band (Range:0000~0999)
09	I:Integral time (Range:0000~3999)
10	D:Dervative time (Range:0000~3999)
11	INT:Input type(K:0000、J:0001、PT:0002)
12	UNT:Unit('C:0000、'F:0001)
13	SHT:Input shift(Range:-99~0099)
14	ALT:Alarm mode (Range:0000~0015)
15	Non-use
16	Setting value (Range:-99~9999)
17	TU:Autotunning (Range:-99~0999)
18	ID:Station No (Range:0000~0099)
19	RV:Process Value (Range:-99~9999)
20	LCK:Setting lock (0000、0001、0002、0003)
21	AT:Setting of autotunning (AT OFF:0000、AT ON:0001)
22	Value of SV & PV
23	Status of OUT/AL1/AL2
24	Decimal point setting (Non:0000、One:0001)
25	ON/OFF setting (ON:0000、OFF:0001)

Remarks:

@:Start code / 起始碼

CR: Stop code / 停止碼

ID:Station munber / 控制器編號

R:Read command / 讀取指令

W:Write command / 寫入指令

Address: Parameter address / 參數位址

Data: Data for reading or writing / 讀寫資料

FCS: Checking Sum / 查核碼

Response code:回應碼

00:Command completed / 指令完成

01:Address error / 位址錯誤

02:Data error / 資料錯誤

03:FCS error / 查核碼錯誤

04:Command error / 指令錯誤

05:Lock / 未開放

PID+Fuzzy Temperature Controller MT Series

EX: To read the PV=31 of temperature controller (ID=0)

Read command:

@	ID	R	Address	FCS	CR
---	----	---	---------	-----	----

RS=1 or 2: @ 0 0 R 1 9 1A 0D 「FCS=40*30*30*52*31*39=1 A」

RS=0 :40 00 52 19 0B 0D 「FCS=40*00*52*19=0 B」

Read response:

@	ID	R	Response code	Data	FCS	CR
---	----	---	---------------	------	-----	----

RS=1 or 2: @ 0 0 R 00 00 31 0D

RS=0 :40 00 00 00 31 23 0D

EX: To write the SV=100 of temperature controller (ID=1)

Write command:

@	ID	W	Address	Data	FCS	CR
---	----	---	---------	------	-----	----

RS=1 or 2: @ 0 1 W 1 6 0 1 0 0 10 0D 「FCS=40*30*31*57*31*36*30*31*30*30=1 0」

RS=0 :40 01 57 16 01 00 01 0D 「FCS=40*01*57*16*01*00=0 1」

Write response:

@	ID	W	Response code	Address	Data	CR
---	----	---	---------------	---------	------	----

RS=1 or 2: @ 0 1 W 00 16 0D

RS=0 :40 01 57 00 16 0D

Note: 【FCS=□□*□□*□□ ; 「*」=「XOR」】

Symbol	Description	ASCII Code	Symbol	Description	ASCII Code	Symbol	Description	ASCII Code
@	Start code	40	C	HEX	43	4	HEX/BCD	34
R	Read	52	D	HEX	44	5	HEX/BCD	35
W	Write	57	E	HEX	45	6	HEX/BCD	36
CR	Stop Code	0D	F	HEX	46	7	HEX/BCD	37
-	Minus	2D	1	HEX/BCD	31	8	HEX/BCD	38
A	Hex	41	2	HEX/BCD	32	9	HEX/BCD	39
B	Hex	42	3	HEX/BCD	33			

Status of OUT/ AL1/AL2 (Address=23)

Data	Out	AL1	AL2
00 00	OFF	OFF	OFF
00 01	ON	OFF	OFF
00 02	OFF	ON	OFF
00 03	ON	ON	OFF

Data	Out	AL1	AL2
00 04	OFF	OFF	ON
00 05	ON	OFF	ON
00 06	OFF	ON	ON
00 07	ON	ON	ON

MT Series PID+Fuzzy Temperature Controller

■ Illustration/功能說明

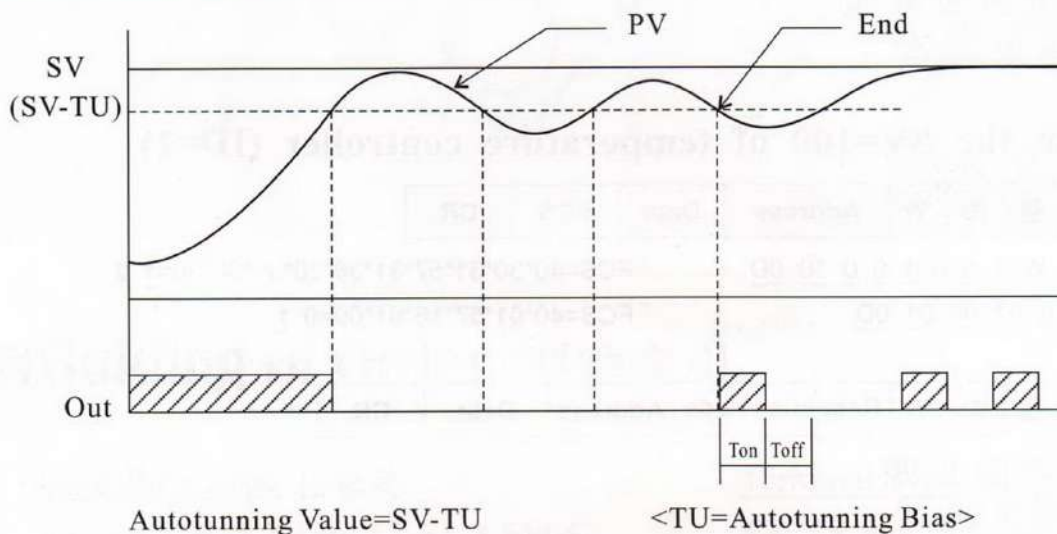
Cycle Time<CT>動作週期

$CT = T_{on} + T_{off}$

T_{on} = Time of Heater ON 加熱時間

T_{off} = Time of Heater OFF 不加熱時間

Auto Tunning<AT> 自動演算



Input Shift<SHT>輸出校正

To Correct The Difference Between The Actual Value And The PV Value
可修正實際值和顯示值的誤差

PV Resender 顯示值再傳送

The Range of Transmitter Is Set By The SLH.

Ex. SLH=200,0~200 Will be Transmitted To 4~20mA

"OFF" Key 關閉鍵

To Turn OFF All Output Of Temperature Controller, Only Display
The Value of PV.

可關閉溫控器所有輸出，只顯示實際溫度值。

Atuo Tunning Key 自動演算鍵

If Press The  Key 3 Seconds, It May Enter To The Status of Auto Tunning.

按  鍵3秒，可以進入自動演算狀態。

Notice

■ Notice of Use / 使用注意事項

1. Please Install The Temperature Controller In The Circumstance

Temperature: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (Without Icing or Condensation)

Humidity: $35\% \sim 85\%\text{RH}$

The high Ambient Temperature May Shorten The Service Life of Temperature Controller, Please Don't Let It Exceed 75°C

溫度控制器安裝環境

溫度: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (無結冰或結露)

濕度: $35\% \sim 85\%\text{RH}$

高溫環境可能縮短溫度控制器壽命，請不要讓工作的環境溫度超過 75°C

2. The Service Life of Relays Are Affected By The Switching Load.

Please Assure The Switching Load Are Under The Rated Current.

繼電器壽命受工作負載影響很大，請勿超載使用。

3. Thermcouple Type, If Need To Extend The Thermcouple Lead Wire Please Be Sure To Use The Compensation Wires That Must To Match The Thermcouple Type.

PT Resistance Type, If Need To Extend The PT Sensor Lead Wire Please Be Sure To Use The Low Resistance Wire.

熱電偶感溫線，如果須延長時務必使用同規格的補償導線。

白金電阻型感溫線，如果須延長時務必使用低阻抗電線。

4. The Lead Wire of Temperature Sensor, Please Separate It Away From The Power Lines or High Tension Lines To Avoid Noise Interruption.

感溫線請勿與和高壓線或動力線結紮在一起。

5. It is Suggested To Settle The Separated Alarm System, In Case of The Alarm of Temperature Controller May Not Be Operated Properly When The Device is Abnormal.

建議設置獨立的警報系統，以免溫控器異常時警報器功能失效。

6. The Temperature Controller May Be Interrupted By Movable Phone or Wireless Device.

溫控器可能會受行動電話或無線發射器干擾。

7. Outline of Crimp Terminal 端子夾外型



■ Notice Of Safety/安全注意事項

Definition of Symbol Marks



WARNING

Potentially Hazardous Situation
In Case Of Mishandling, May Result In Death
Or Serious Injury
潛在危險
如果操作失誤，有可能導致死亡或嚴重傷害。



CAUTION

Potentially Hazardous Situation
In Case of Mishandling, May Result In Slight Dangerous.
潛在危險
如果操作失誤，有可能導致輕微傷害。



WARNING

1. Please Do Not Touch The Terminals While The Power Is Supplied, If Do, It May Result In Electronic Shock.
送電中，請勿碰觸接線端以免觸電。
2. Please Do Not Let The Metal or Wire Cuttings Drop Into The Inside of Temperature Controller, If Do, It May Result In Malfunction, Burning Out or Fire.
請勿讓鐵屑或鋼絲掉入溫控器內，以免造成溫控器失效，燒毀甚至起火。
3. Please Make Sure To Wire The Temperature Controller Correctly Before Power ON, If Not, It May Result In Malfunction or Burning out.
送電前請確認配線是否正確，否則可能導致異常或燒毀。
4. Please Do Not Modify or Repair The Temperature Controller, To Avoid Resulting In Malfunction or Burning out.
請勿修改或修理溫控器，以免造成異常燒毀。



CAUTION

1. Please Rate The Power Supply Voltage Within The Specified Range, If Not, It May Result In Malfunction or Burning.
工作電壓請限制在規格內，否則可能造成溫控器異常或燒毀。
2. Please Rate The Load Within The Specified Value, If Not, It May Result In Malfunction or Burning.
工作負載請勿超過額定電流，否則可能造成溫控器異常或燒毀。
3. Please Settle a Separated Alarm System To Ensure Safety Protection In The Event of Malfunction, If Not, It May Result In A Serious Accident.
請設置獨立警報系統，確保溫控器異常時安全保護，否則可能造成嚴重意外事故。

- * High Reliability by S.M.T. & TQC.
- * With Cold Junction Compensation,
Suited to Operated at -20 C ~ +60 C
- * All type with Sensor Break Alarm LED.
- * With P+D Control to Control Temperature Easily.
- * High Accuracy of Displaying & Setting
Less than 0.5% of F.S.
- * With Stand-by/Over-heat Alarm.(Optioned).
- * With Heater Break Alarm.(Optioned).
- * 表面貼焊技術及全面品質管，提供最可靠性產品
- * 具冷接點補償，適用於周圍溫度 -20 C ~ +60 C
- * 全機種具有測溫斷線警報
- * P+D 控制易於控溫
- * 高精度的顯示及設定精度，低於全刻度 0.5%
- * 具有待機 / 過熱警報功能 (選擇機種)
- * 具有加熱器斷線警報功能 (選擇機種)



■ Guiding of Model

Ex. TC - 4896 D A - PT - R 3 - F - S - A

① ② ③④ ⑤ ⑥⑦ ⑧ ⑨ ⑩

① Product 產品代號

TC = Temperature Controller

② Outline 外型

48 = 48(W) X 48(H) mm X mm
4896 = 48(W) X 96(H) mm X mm
72 = 72(W) X 72(H) mm X mm
96 = 96(W) X 96(H) mm X mm

③ Method of Setting 設定方式

D = Digital Swith
A = Trimmer

④ Method of Display 顯示方式

A = Analog Deviation Meter
D = Digital LED Display
N = Without Display

⑤ Type of Sensor 感溫線種類

PT = RTD PT-100 Ω
J = J Type Thermocouple
Non = K Type Thermocouple

⑥ Method of Output 輸出方式

R = Relay (5A/250VAC)
V = Voltage (20mA/12V)
L = Linear (4~20mA)

⑦ Range of Setting 設定範圍

Digital Switch

0 = -99 ~ + 99
1 = 0 ~ +199
3 = 0 ~ +399
5 = 0 ~ +599
9 = 0 ~ +999
11 = 0 ~ +1199

Trimmer

05 = -50 ~ +50
1 = 0 ~ +100
2 = 0 ~ +200
4 = 0 ~ +400
6 = 0 ~ +600
12 = 0 ~ +1200

⑧ Unit of Degree 刻度單位

F = F
non = C

⑨ Method of Control 控制方式

S = ON/OFF
non = P+D ON/OFF

⑩ Alarm 警報

A = With Stand-by / Over Heat Alarm
AH = With Stand-by / Over Heat Alarm
& Heater Break Alarm
Non = Without Alarm

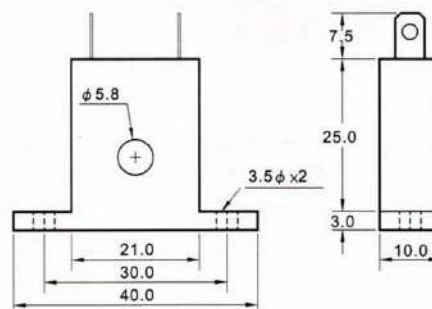
General Data & Attachment

**TC
Series**

General Data 共同規格	Sensor Type 感溫線	K < CA > , J < IC > or PT-100 Ω
	Output Method 輸出方式	Relay < 5A / 250VAC > , Voltage < 20mA / 12V > , Linear < 4~20mA >
	Control Method 控制方式	P+D ON/OFF , ON/OFF or Proportion
	Proportion Band 比例帶	Appro 2.5% of F.S.
	Cycle Time 動作週期	2 Sec or 20 Sec < ON+OFF >
	Manual Reset 偏移修正	Trimmer., Range $\pm 10^{\circ}$
	Unit of Degree 單位	$^{\circ}\text{C}$ or $^{\circ}\text{F}$
AL Alarm AI警報	Setting Method 設定方式	Trimmer (AL)
	Setting Range 設定範圍	$0 \sim +50^{\circ}$, $0 \sim -50^{\circ}$ or $-50^{\circ} \sim +50^{\circ}$ of Setting Value
	Output Method 輸出方式	Relay , 0.5A/250VAC
HB Alarm Hb警報	Setting Method 設定方式	Trimmer (HB)
	Setting Range 設定範圍	0.5A~25A ; 1.0A~50A
	Output Method 輸出方式	Relay , 0.5A/250VAC
Electrical Data 電氣規格	Power Supply 工作電壓	110 / 220 VAC $\pm 20\%$ 50 / 60Hz
	Current Consumption 耗電流	2.5VA max.
	Insulation Resistance 絕緣阻抗	Over 50M Ω / 500 VDC Between Power And Another Terminal
	Dielectrical Strength 耐壓強度	Over 2.5KV / 1min Between Power And Another Terminal
Mechanical Data 機械規格	Operating Temp./Hum 工作環境	$-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$; 35%~85% RH
	Vibration Resistance 耐振動	10~55Hz / 1.5mm , 2Hrs in X.Y.Z Direction
	Panel Thickness 面板厚度	1.0~8.0mm

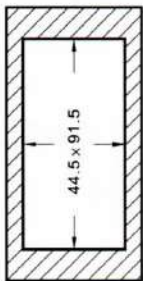
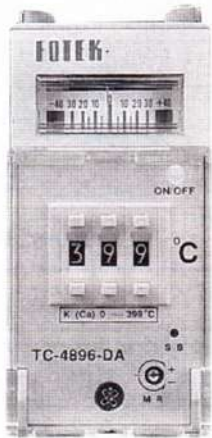
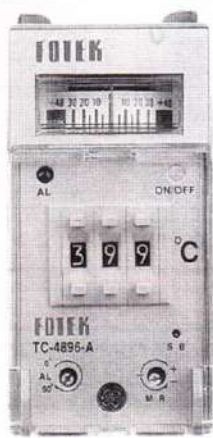
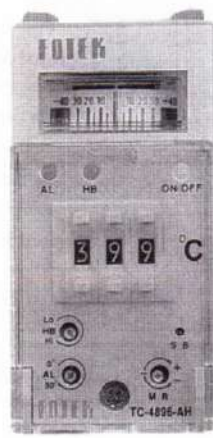
Attachment/附件

CT provided with Heater Break Alarm type only.
只有加熱器斷線警報功能機種附 CT



TC-4896 Series

DIN 48X96 Temperature Controller

	Model	TC-4896-DA-□ -□	TC-4896-DA-□ -□ -A	TC-4896-DA-□ -□ -AH
	DIN48 X 96 			
	Alarm 警報	Non	AL Alarm	AL+HB
Display 顯示方式	Method 方式	Analog Deviation Meter		
	Tolerance 誤差	1.0% of F.S.		
	Range 範圍	$\pm 40^{\circ}$		
Setting 設定方式	Method 方式	Digital Switch < 3 Digits >		
	Tolerance 誤差	0.5% of Setting Range		
	Range 範圍	-99~+99, 0~199, 0~399, 0~599, 0~999		

Dimension & Fixed Hole/外型及固定孔尺寸

Outline

Technical drawing of the temperature controller showing front and side views with dimensions:

- Front View:
 - Width: 48.0
 - Height: 96.0
- Side View:
 - Mounting flange thickness: 9.0
 - Flange width: 7.0
 - Terminal block width: 100.0

Fixed Hole (Thickness 1~8mm)

Single Cutout Multi Juxtaposed Cutout

單個開孔

Diagram of a single cutout showing dimensions:

- Height: 91.5
- Width: 44.5

多個並排開孔

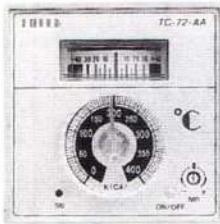
Diagram of multiple juxtaposed cutouts showing dimensions:

- Height: 91.5
- Length: L
- Formula: $L = 48N - 4.0$

N	2	3	4	5	6
L	92.0	140.0	188.0	236.0	284.0

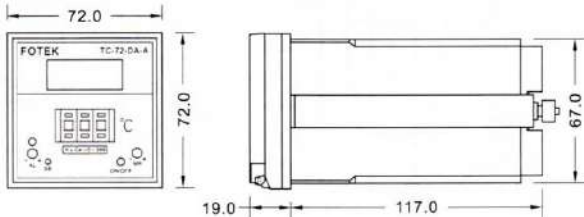
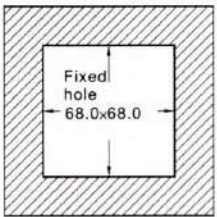
DIN 72X72 Temperature Controller

TC-72 Series

	Model	TC-72-AN-□ -□	TC-72-AA-□ -□	TC-72-AA-□ -□ -A
Outline 外型	DIN72 X 72			
	Alarm 警報	Non	Non	AL Alarm
Display 顯示方式	Method 方式	Non	Analog Deviation Meter	
	Tolerance 誤差	Non	1.0% of F.S.	
	Range 範圍	Non	± 40°	
Setting 設定方式	Method 方式	Trimmer < Variable Resister >		
	Tolerance 誤差	1.0% of Setting Range		
	Range 範圍	0~100 , 0~200 , 0~400 , 0~600 , 0~1200		

	Model	TC-72-DN-□ -□	TC-72-DA-□ -□	TC-72-DA-□ -□ -A
Outline 外型	DIN72 X 72			
	Alarm 警報	Non	Non	AL Alarm
Display 顯示方式	Method 方式	Non	Analog Deviation Meter	
	Tolerance 誤差	Non	1.0% of F.S.	
	Range 範圍	Non	± 40°	
Setting 設定方式	Method 方式	Digital Switch		
	Tolerance 誤差	0.5% of Setting Range		
	Range 範圍	-99 ~+99 , 0~199 , 0~399 , 0~599 , 0~999 , 0~1199		

■ Dimension & Fixed Hole/外型及固定孔尺寸

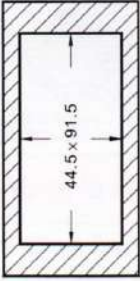
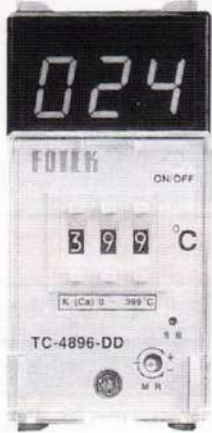
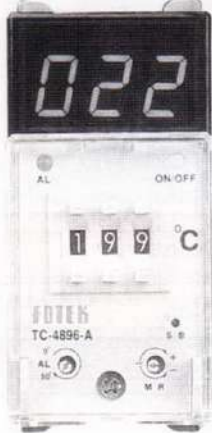
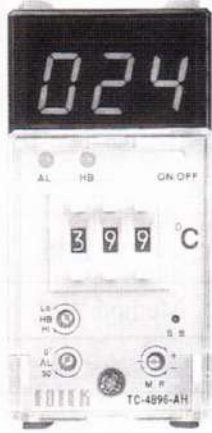
Outline	Fixed Hole (Thickness 1~8mm)
	

DIN 48X96

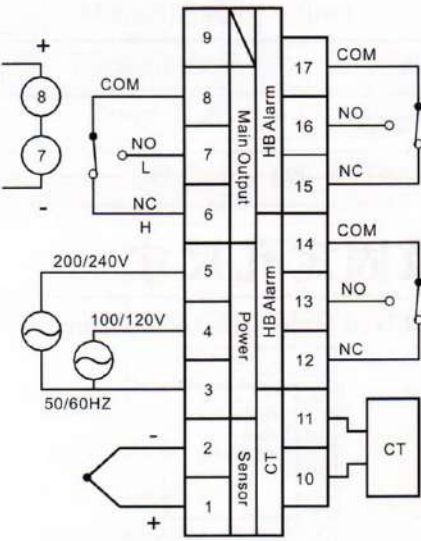
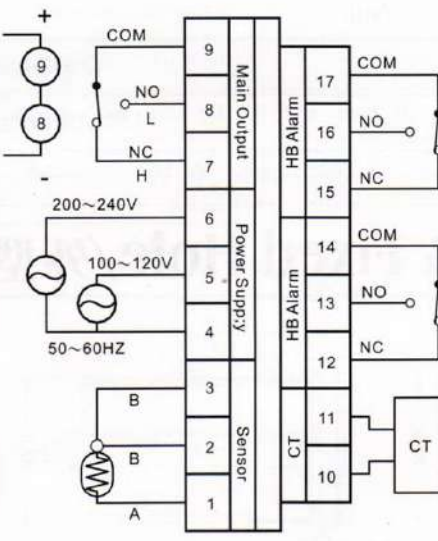
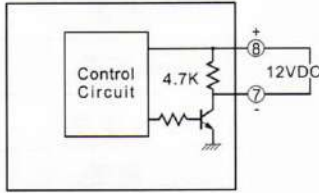
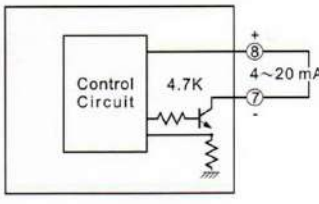
Temperature Controller

TC-4896

Series

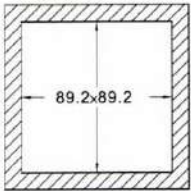
	Model	TC-4896-DD-□ -□	TC-4896-DD-□ -□ -A	TC-4896-DD-□ -□ -AH
Outline 外型	DIN48 X 96			
				
Alarm 警報		Non	AL Alarm	AL+HB
Display 顯示方式	Method 方式	14 mm 7 Segment Red LED		
	Tolerance 誤差	0.5% of F.S. + 1 Digit		
	Range 範圍	-99~+99 , 0~999		
Setting 設定方式	Method 方式	Digital Switch < 3 Digits >		
	Tolerance 誤差	0.5% of Setting Range		
	Range 範圍	-99~+99 , 0~199 , 0~399 , 0~599 , 0~999		

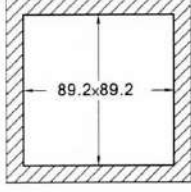
■ Connection Diagram & Output Circuit/接線圖及輸出回路

Thermocouple Type < K or J >	RTD PT-100 Ω Type	Voltage Output
		 

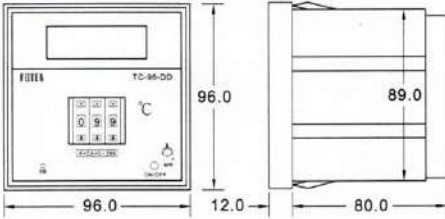
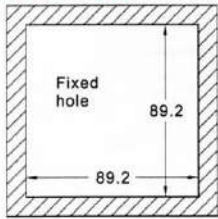
DIN 96X96 Temperature Controller

TC-96 Series

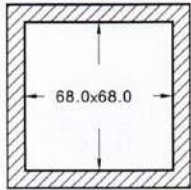
	Model	TC-96-AD-□ -□	TC-96-AD-□ -□ -A	TC-96-AD-□ -□ -AH
Outline 外型	DIN96 X 96 			
	Alarm 警報	Non	AL Alarm	AL+HB Alarm
Display 顯示方式	Method 方式	14mm 7 Segment Red LED		
	Tolerance 誤差	0.5% of F.S.		
	Range 範圍	-99 ~+99 , 0~999 , 0~1200		
Setting 設定方式	Method 方式	Trimmer < Variable Resister >		
	Tolerance 誤差	1.0% of F.S.		
	Range 範圍	-50 ~+50 , 0~100 , 0~200 , 0~400 , 0~600 or 0~1200		

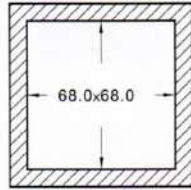
	Model	TC-96-DD-□ -□	TC-96-DD-□ -□ -A	TC-96-DD-□ -□ -AH
Outline 外型	DIN96 X 96 			
	Alarm 警報	Non	AL Alarm	AL+HB Alarm
Display 顯示方式	Method 方式	14mm 7 Segment Red LED		
	Tolerance 誤差	0.5% of F.S.		
	Range 範圍	-99 ~+99 , 0~999 , 0~1200		
Setting 設定方式	Method 方式	Digital Switch		
	Tolerance 誤差	0.5% of F.S.		
	Range 範圍	-99 ~+99 , 0~199 , 0~399 , 0~599 , 0~999 , 0~1199		

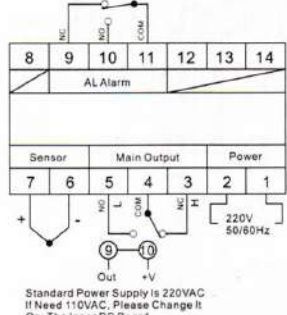
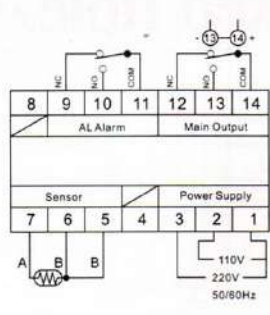
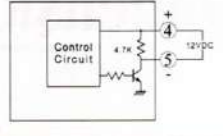
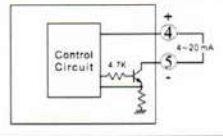
■ Dimension & Fixed Hole/外型及固定孔尺寸

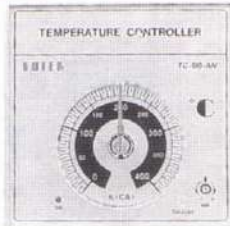
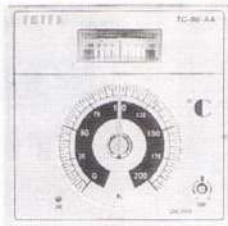
Outline	Fixed Hole (Thickness 1~8mm)
	

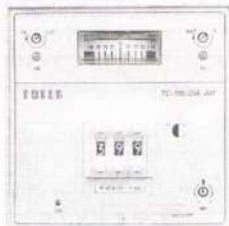
TC-72 Series

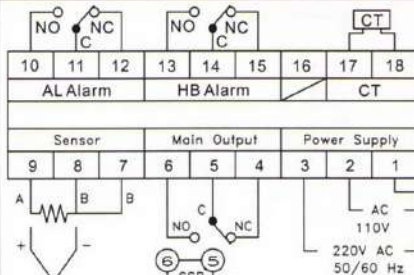
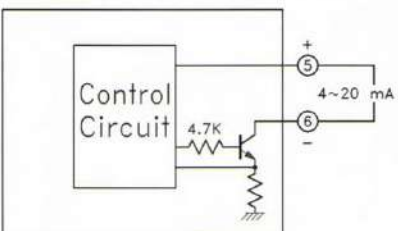
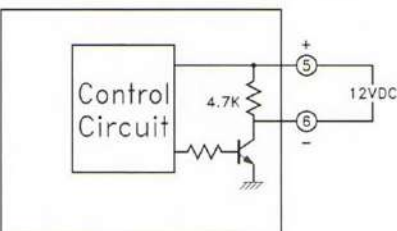
Model	TC-72-AD-□ -□	TC-72-AD-□ -□ -A
Outline 外型 		
Alarm 警報	Non	AL Alarm
Display 顯示方式 Method 方式 Tolerance 誤差 Range 範圍	14mm 7 Segment Red LED 0.5% of F.S. 0~999 or 0~1999	
Setting 設定方式 Method 方式 Tolerance 誤差 Range 範圍	Trimmer < Variable Resister > 1.0% of F.S. 0~100 , 0~200 , 0~400 , 0~600 , 0~1200	

Model	TC-72-DD-□ -□	TC-72-DD-□ -□ -A
Outline 外型 		
Alarm 警報	Non	AL Alarm
Display 顯示方式 Method 方式 Tolerance 誤差 Range 範圍	14mm 7 Segment Red LED 0.5% of F.S. -99~99 , 0~999 or 0~1999	
Setting 設定方式 Method 方式 Tolerance 誤差 Range 範圍	Digital Switch 0.5% of Setting Range -99 ~+99 , 0~199 , 0~399 , 0~599 , 0~999 , 0~1199	

K type	PT type	Voltage Output
		
		Linear Output
		

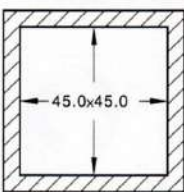
TC-96-AN-□ -□	TC-96-AA-□ -□	TC-96-AA-□ -□ -A	TC-96-AA-□ -□ -AH
			
Non	Non	AL Alarm	AL+HB Alarm
Non	Analog Deviation Meter		
Non	1.0% of F.S.		
Non	± 40°		
Trimmer < Variable Resister >			
1.0% of F.S.			
-50 ~+50 , 0~100 , 0~200 , 0~400 , 0~600 or 0~1200			

TC-96-DN-□ -□	TC-96-DA-□ -□	TC-96-DA-□ -□ -A	TC-96-DA-□ -□ -AH
			
Non	Non	AL Alarm	AL+HB Alarm
Non	Analog Deviation Meter		
Non	1.0% of F.S.		
Non	± 40°		
Digital Switch			
0.5% of F.S.			
-99 ~+99 , 0~199 , 0~399 , 0~599 , 0~999 , 0~1199			

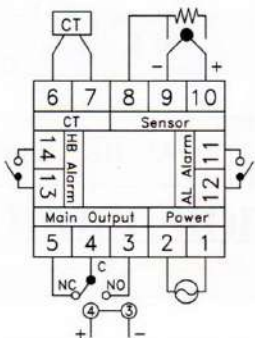
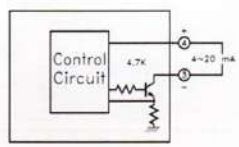
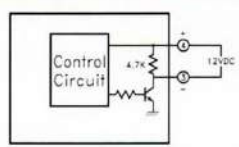
Connection Diagram 接線圖	Linear Output 線性輸出	Voltage Output 電壓輸出
		

TC-48 Series

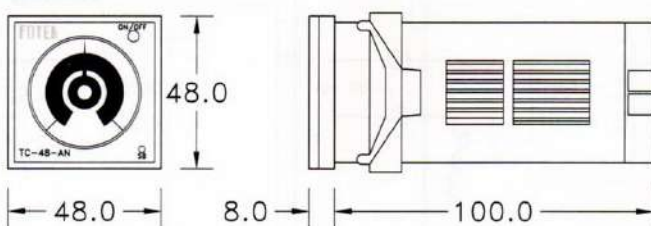
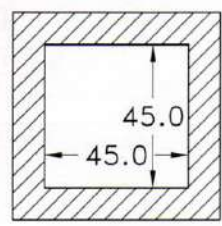
DIN 48X48 Temperature Controller

Model	TC-48-AN-□ -□	TC-48-DN-□ -□	TC-48-DD-□ -□	TC-48-DD-□ -□ -AH
Outline 外型				
Alarm 警報	Non	Non	Non	AL+HB Alarm
Display 顯示方式	Method 方式	Non	Non	0.36" 7-Segment Red LED
	Tolerance 誤差	Non	Non	0.5% of F.S.
	Range 範圍	Non	Non	-99~+99, 0~999
Setting 設定方式	Method 方式	Trimmer	Digital Switch	
	Tolerance 誤差	1.0%	0.5% of Setting Range	
	Range 範圍	100, 200, 400	-99 ~+99, 0~199, 0~399, 0~599, 0~999	

■ Connection Diagram/接線圖

K / J & PT-100 Type	Linear Output
 Standard Power Supply Is 220VAC , If Need 110VAC , Please Change It On The Inner PC Board. 標準工作電壓是220VAL , 如果要用110VAL , 可在 基板上變更。	
	Voltage Output
	

■ Dimension & Fixed Hold/外型及固定孔尺寸

Outline	Fixed Hole (Thickness 1~8mm)
	

DIN 48X48 Temperature Controller

H5-AN series

- ☆ DIN 48X48
- ☆ All Type With Sensor Break Alarm LED
全機種附斷線警報指示燈
- ☆ With Cold Junction Compensation, Suited To Operated At $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$.
附冷接點補償，適用 $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$
- ☆ Setting Accuracy Less Than 1.0% of F.S.
設定精度少於1.0%
- ☆ With P+D Control To Control Temperature Easily.
PFD控制方式，可精確控溫



■ Specification/規格

Model型號	H5 - AN - □ □ - □
Sensor Type感溫線	K<CA>or J<1C>or PT-100Ω
Control Method控制方式	P+D ON/OFF or ON/OFF
Output Method輸出方式	Relay < 5A/250 VAC > or Voltage < 20 mA/12V >
Cycle Time動作週期	2 sec or 20 sec
Degree Unit單位	$^{\circ}\text{C}$
Power Supply工作電壓	110 / 220 VAC 20%, 50/60Hz
Current Consumption耗電流	2.5 VA max.
Insulation Resistance絕緣阻抗	100MΩ / 500 VDC
Dielectric Strength耐壓強度	2.5 KV / 1 min
Vibration Resistance抗振動	10~55 Hz/1.5mm, 2Hrs
Operating Temp/Hum工作環境	$-20 \sim +60^{\circ}\text{C}$; 35%~85% RH
Weight重量	Appr. 185g

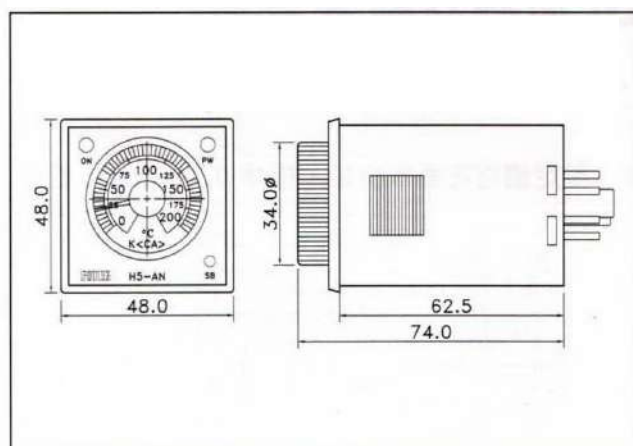
■ Guiding of Model/型號索引

H5 - AN - PT - R 4 - S

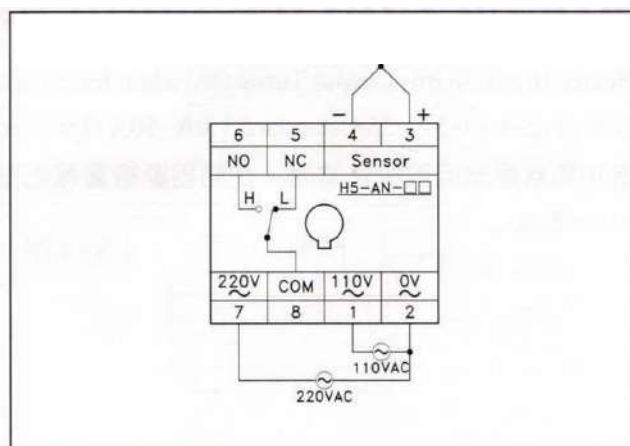
① ② ③ ④ ⑤ ⑥

- ① **Series 系列**
H5 series
- ② **Method of Setting 設定方式**
AN = Trimmer Type
- ③ **Type of Sensor**
NOU = K Type
J = J Type
PT = PT Type
- ④ **Method of Output 輸出方式**
R = Relay < 5A/250 VAC >
V = Voltage < 20mA/12 VDC >
- ⑤ **Range of Setting 設定範圍**
1 = 0 ~ 100
2 = 0 ~ 200
4 = 0 ~ 400
- ⑥ **Method of Control 控制方式**
Non = P+D ON / OFF
S = ON / OFF

■ Dimension/外型尺寸



■ Connection Diagram/接線圖



Notice

■ Notice of Use / 使用注意事項

1. Please Install The Temperature Controller In The Circumstance

Temperature: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (Without Icing or Condensation)

Humidity: $35\% \sim 85\%\text{RH}$

The high Ambient Temperature May Shorten The Service Life of Temperature Controller, Please Don't Let It Exceed 75°C

溫度控制器安裝環境

溫度: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (無結冰或結露)

濕度: $35\% \sim 85\%\text{RH}$

高溫環境可能縮短溫度控制器壽命，請不要讓工作的環境溫度超過 75°C

2. The Service Life of Relays Are Affected By The Switching Load.

Please Assure The Switching Load Are Under The Rated Current.

繼電器壽命受工作負載影響很大，請勿超載使用。

3. Thermcouple Type, If Need To Extend The Thermcouple Lead Wire Please Be Sure To Use The Compensation Wires That Must To Match The Thermcouple Type.

PT Resistance Type, If Need To Extend The PT Sensor Lead Wire Please Be Sure To Use The Low Resistance Wire.

熱電偶感溫線，如果須延長時務必使用同規格的補償導線。

白金電阻型感溫線，如果須延長時務必使用低阻抗電線。

4. The Lead Wire of Temperature Sensor, Please Separate It Away From

The Power Lines or High Tension Lines To Avoid Noise Interruption.

感溫線請勿與和高壓線或動力線結紮在一起。

5. It is Suggested To Settle The Separated Alarm System, In Case of The Alarm of Temperature Controller May Not Be Operated Properly When The Device is Abnormal.

建議設置獨立的警報系統，以免溫控器異常時警報器功能失效。

6. The Temperature Controller May Be Interrupted By Movable Phone or Wireless Device.

溫控器可能會受行動電話或無線發射器干擾。

7. Outline of Crimp Terminal 端子夾外型



■ Notice Of Safety/安全注意事項

Definition of Symbol Marks



WARNING

Potentially Hazardous Situation

In Case Of Mishandling, May Result In Death Or Serious Injury

潛在危險

如果操作失誤，有可能導致死亡或嚴重傷害。



CAUTION

Potentially Hazardous Situation

In Case of Mishandling, May Result In Slight Dangerous.

潛在危險

如果操作失誤，有可能導致輕微傷害。



WARNING

1. Please Do Not Touch The Terminals While The Power Is Supplied, If Do, It May Result In Electronic Shock.
送電中，請勿碰觸接線端以免觸電。
2. Please Do Not Let The Metal or Wire Cuttings Drop Into The Inside of Temperature Controller, If Do, It May Result In Malfunction, Burning Out or Fire.
請勿讓鐵屑或鋼絲掉入溫控器內，以免造成溫控器失效，燒毀甚至起火。
3. Please Make Sure To Wire The Temperature Controller Correctly Before Power ON, If Not, It May Result In Malfunction or Burning out.
送電前請確認配線是否正確，否則可能導致異常或燒毀。
4. Please Do Not Modify or Repair The Temperature Controller, To Avoid Resulting In Malfunction or Burning out.
請勿修改或修理溫控器，以免造成異常燒毀。



CAUTION

1. Please Rate The Power Supply Voltage Within The Specified Range, If Not, It May Result In Malfunction or Burning.
工作電壓請限制在規格內，否則可能造成溫控器異常或燒毀。
2. Please Rate The Load Within The Specified Value, If Not, It May Result In Malfunction or Burning.
工作負載請勿超過額定電流，否則可能造成溫控器異常或燒毀。
3. Please Settle a Separated Alarm System To Ensure Safety Protection In The Event of Malfunction, If Not, It May Result In A Serious Accident.
請設置獨立警報系統，確保溫控器異常時安全保護，否則可能造成嚴重意外事故。



■ Guiding of Order/型號索引

Lead Wire Type 出線式

Ex. TS-1-K-3.2-150-T2-S1-1.5M-G

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① Product 產品代號

TC = Temperature Controller

② Shape 外型

Refer to table-1

③ Sensor Type 測溫體種類

K = K Type Thermocouple

J = J Type Thermocouple

PT = RTD PT-100

④ Diameter of Protection Tube 保護管外徑

Refer to table-2

⑤ Length of Protection Tube 保護管長度

Refer to table-2

Unit = mm

Terminal Type 端子式

Ex. TS-8-K-6.4-150-T2-C1-U

① ② ③ ④ ⑤ ⑥ ⑦ ⑨

⑥ Fixed Method 固定方式

Refer to Table-3-1 & Table-3-2

⑦ Connection Method 出線方式

Lead Wire Type Refer to Table-4-1

Terminal Type Refer to Table-4-2

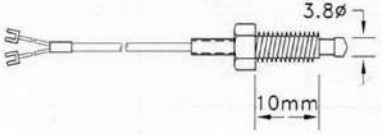
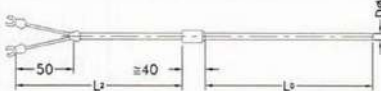
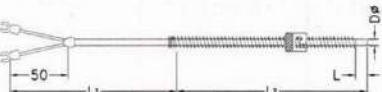
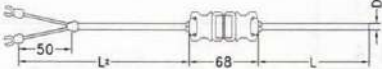
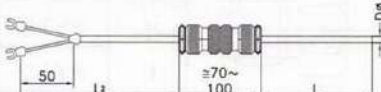
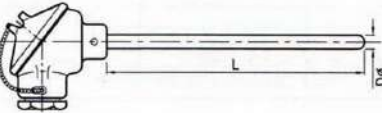
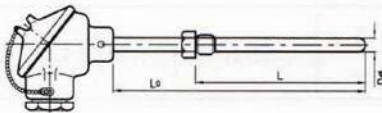
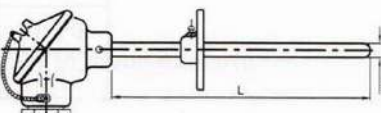
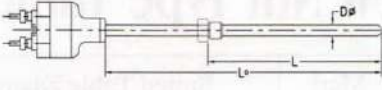
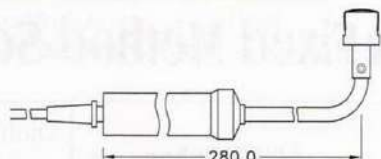
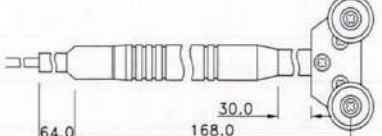
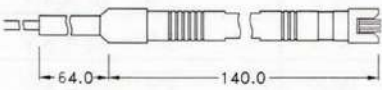
⑧ Length of Lead Wire 出線長度

Lead Wire Type Refer Tto Table4-1

⑨ Shielded Method 屏蔽方式

Refer to Table-5

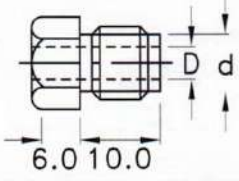
■ Shape Table-1 / 外型

TS-1	Screw type 螺絲型	TS-2	Screw type 管方型	TS-3	Inserting type 插入型
					
TS-4	Push lock type 壓扣型	TS-5	Fast connector type 快速接頭型	TS-6	Fast connector type 快速接頭型
					
TS-7	Closed Terminal type 圓頭型	TS-8	Closed Terminal type 圓頭型	TS-9	Closed Terminal type 圓頭型
					
TS-10	Exposed terminal type 扁頭型	TS-11	Exposed terminal type 扁頭型	TS-12	Surface type 表面型
					
TS-13	Surface type 表面輪型	TS-14	Surface type 表面型	TS-N	Special type
				Except the above shape , we accept Your order to manufacture. 除上述形狀，我們可接受特殊形狀訂做。	

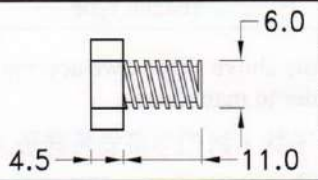
■ Dimension of Protection Tube Table-2 / 保護管尺寸

Specification 規格	Data
Diameter (外徑)	1.6φ, 3.2φ, 4.8φ, 6.4φ, 8.0φ, 10.0φ, 12.0φ, 15.0φ, 22.0φ
Length (長度)	Any Length is Available , Accept Order to Manufacture. Unit : mm

■ Fixed Method-Sealed Screw Type Table 3-1/固定方式-管牙型

Dimension	Outline <d>	Mark 標示	Suited Tube Diameter 適用管徑	Screw (牙規)	
				O.D.	Pitch <mm>
	PT1/8	T-1	1.6 ϕ , 3.2 ϕ , 4.8 ϕ	9.728 ϕ	0.9071
	PF1/8	F-1			
	PT1/4	T-2	3.2 ϕ , 4.8 ϕ , 8.0 ϕ , 10.0 ϕ	13.157 ϕ	1.3368
	PF1/4	F-2			
	PT3/8	T-3	4.8 ϕ , 6.4 ϕ , 8.0 ϕ , 10.0 ϕ , 12.0 ϕ	16.662 ϕ	1.3368
	PF3/8	F-3			
	PT1/2	T-4	6.4 ϕ , 8.0 ϕ , 10.0 ϕ , 12.0 ϕ , 15.0 ϕ	20.955 ϕ	1.8143
	PF1/2	F-4			
	PT3/4	T-6	8.0 ϕ , 10.0 ϕ , 12.0 ϕ , 15.0 ϕ	26.441 ϕ	1.8143
	PF3/4	F-6			
	PT 1"	T-8	10.0 ϕ , 12.0 ϕ , 15.0 ϕ , 22.0 ϕ	33.249 ϕ	2.3091
	PF 1"	F-8			

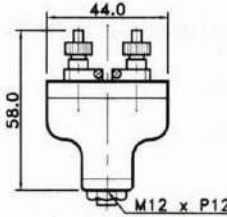
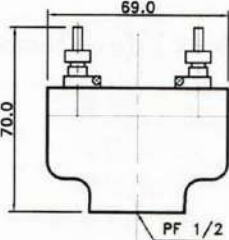
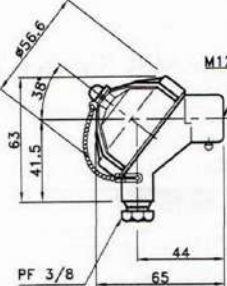
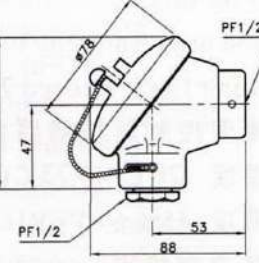
■ Fixed Method-Screw Nut Type Table 3-2/固定方式-螺絲型

Dimension	Outline <d>	Mark 標示	Suited Tube Diameter 適用管徑	Screw (牙規)	
				O.D.	Pitch <mm>
	M6	M-6	3.8 ϕ	5.8 ϕ	0.5mm
	M8	M-8	3.8 ϕ or 4.8 ϕ	7.8 ϕ	1.0mm
	W1/4	W-4	3.8 ϕ or 4.8 ϕ	6.35 ϕ	
	W5/16	W-5	3.8 ϕ or 4.8 ϕ	7.9 ϕ	

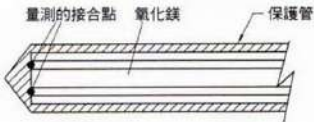
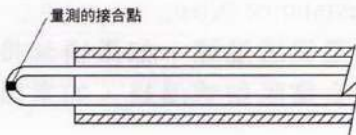
■ Connection Method-Lead Wire Type Table 4-1 接線方式-出線式

Mark 代號	Feature 特性	Temp.max 最高耐溫	Core 導線蕊絨	Length of Lead Wire 出線長度
S1	Stainless Net Coat 不銹鋼鋼線	150 C	0.32 X 4	Standard Length 標準長度 1M, 1.5M, 2M, 5M Any Length is Available Accept Order to Manufacture with Charge 任何長度皆可接受收費訂做。
S2			0.65 X 1	
T1	Tafolon Coat 鐵氟龍線	200 C	0.32 X 4	
T2			0.65 X 1	
P-1	PVC Coat PVC 線	90 C	0.32 X 4	
P-2			0.65 X 1	

■ Connection Method-Terminal Type Table 4-2

E2	Exposed Type	E2	Exposed Type	C1	Closed Type	C2	Closed Type
							
	Dia. of Tube $\leq 12\phi$ 最大管徑 $\leq 12\phi$	Dia. of Tube $\leq 22\phi$ 最大管徑 $\leq 22\phi$		Dia. of Tube $\leq 12\phi$ 最大管徑 $\leq 12\phi$		Dia. of Tube $\leq 22\phi$ 最大管徑 $\leq 22\phi$	

■ Shielded Method Table 5

G	Grounded Type 接地型	U	Ungrounded Type 非接地型	E	Exposed Type 露出型
					

■ Remarks

Compensation Wire

Including PVC or TAFOLON Cable with $0.32\phi \times 8$ or $0.65\phi \times 2$

If you need to extend the Lead Wire of Temperature Sensor,

Compensation Wire is Required.

Sheathed Type Protection Tube

Protection Tube is Filled with MO_2 , If is Curvable.

Suited to Any Condition.

Notice

■ Notice of Use / 使用注意事項

1. Please Install The Temperature Controller In The Circumstance

Temperature: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (Without Icing or Condensation)

Humidity: $35\% \sim 85\%\text{RH}$

The high Ambient Temperature May Shorten The Service Life of Temperature Controller, Please Don't Let It Exceed 75°C

溫度控制器安裝環境

溫度: $-20^{\circ}\text{C} \sim +75^{\circ}\text{C}$ (無結冰或結露)

濕度: $35\% \sim 85\%\text{RH}$

高溫環境可能縮短溫度控制器壽命，請不要讓工作的環境溫度超過 75°C

2. The Service Life of Relays Are Affected By The Switching Load.

Please Assure The Switching Load Are Under The Rated Current.

繼電器壽命受工作負載影響很大，請勿超載使用。

3. Thermcouple Type, If Need To Extend The Thermcouple Lead Wire Please Be Sure To Use The Compensation Wires That Must To Match The Thermcouple Type.

PT Resistance Type, If Need To Extend The PT Sensor Lead Wire Please Be Sure To Use The Low Resistance Wire.

熱電偶感溫線，如果須延長時務必使用同規格的補償導線。

白金電阻型感溫線，如果須延長時務必使用低阻抗電線。

4. The Lead Wire of Temperature Sensor, Please Separate It Away From The Power Lines or High Tension Lines To Avoid Noise Interruption.

感溫線請勿與和高壓線或動力線結紮在一起。

5. It is Suggested To Settle The Separated Alarm System, In Case of The Alarm of Temperature Controller May Not Be Operated Properly When The Device is Abnormal.

建議設置獨立的警報系統，以免溫控器異常時警報器功能失效。

6. The Temperature Controller May Be Interrupted By Movable Phone or Wireless Device.

溫控器可能會受行動電話或無線發射器干擾。

7. Outline of Crimp Terminal 端子夾外型



■ Notice Of Safety/安全注意事項

Definition of Symbol Marks



WARNING

Potentially Hazardous Situation
In Case Of Mishandling, May Result In Death
Or Serious Injury
潛在危險
如果操作失誤，有可能導致死亡或嚴重傷害。



CAUTION

Potentially Hazardous Situation
In Case of Mishandling, May Result In Slight Dangerous.
潛在危險
如果操作失誤，有可能導致輕微傷害。



WARNING

1. Please Do Not Touch The Terminals While The Power Is Supplied, If Do, It May Result In Electronic Shock.
送電中，請勿碰觸接線端以免觸電。
2. Please Do Not Let The Metal or Wire Cuttings Drop Into The Inside of Temperature Controller, If Do, It May Result In Malfunction, Burning Out or Fire.
請勿讓鐵屑或鋼絲掉入溫控器內，以免造成溫控器失效，燒毀甚至起火。
3. Please Make Sure To Wire The Temperature Controller Correctly Before Power ON, If Not, It May Result In Malfunction or Burning out.
送電前請確認配線是否正確，否則可能導致異常或燒毀。
4. Please Do Not Modify or Repair The Temperature Controller, To Avoid Resulting In Malfunction or Burning out.
請勿修改或修理溫控器，以免造成異常燒毀。



CAUTION

1. Please Rate The Power Supply Voltage Within The Specified Range, If Not, It May Result In Malfunction or Burning.
工作電壓請限制在規格內，否則可能造成溫控器異常或燒毀。
2. Please Rate The Load Within The Specified Value, If Not, It May Result In Malfunction or Burning.
工作負載請勿超過額定電流，否則可能造成溫控器異常或燒毀。
3. Please Settle a Separated Alarm System To Ensure Safety Protection In The Event of Malfunction, If Not, It May Result In A Serious Accident.
請設置獨立警報系統，確保溫控器異常時安全保護，否則可能造成嚴重意外事故。



FOTEK

Temperature transmitter $\odot$ CE RoHS

二線式PT溫度傳送器

- Applied in Alloy-aluminum head
- Wide loop voltage 6~36VDC
- Linearity accuracy 0.1% of FS
- Current loop transmitter 4~20mA
- 大圓頭專用
- 廣泛回路電壓6~36VDC
- 線性精度低於 0.1%
- 電流傳送4~20mA



FOTEK

Model guiding / 型號索引

Ex. TR - 2W - PT - 100E

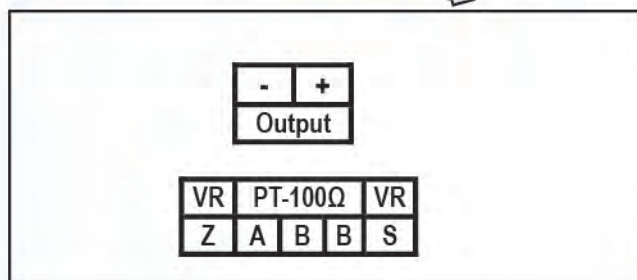
1 2 3 4

1	Series(系列名稱)	「TR」: Transmitter (傳送器)
2	Wiring(接線方式)	「2W」: Two wires
3	Sensor type	「PT」: PT-100Ω
4	Range transmitter	「100E」: -100 ~ +100 °C 「100」: 0 ~ +100 °C 「150」: 0 ~ +150 °C 「200」: 0 ~ +200 °C 「300」: 0 ~ +300 °C 「400」: 0 ~ +400 °C 「600」: 0 ~ +600 °C

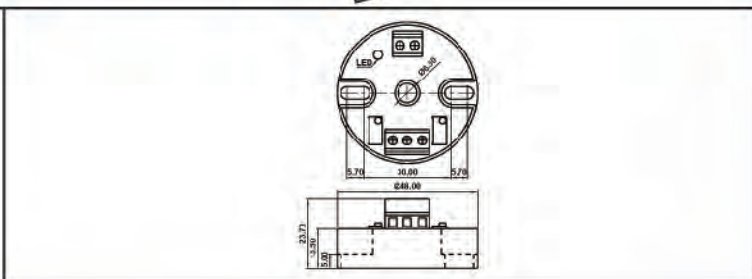
Specification/規格

Specification	Data
Sensor 感溫線	PT-100Ω
Loop voltage 回路電壓	6 ~ 36 VDC
Output 輸出方式	4 ~ 20 mA (2 wires)
Loop resistance 回路阻抗	400 ~ 1.8KΩ
Zero adjuster 零點調整	±10% of FS (25 turns trimmer)
Span adjuster 斜率調整	±10% of FS (25 turns trimmer)
Linearity accuracy 線性精度	0.1% of FS max.
Thermal drift 溫度飄移	± 0.01% of FS max.
Response time 反應時間	150ms max.
Sensor break 輸入斷線	Output current over 30.0mA
Sensor shorted 輸入短路	Output current less than 4.0mA
Protection 保護等級	(IEC 60529): IP00
Housing material 外殼材質	Intensive Nylon (UL94V-0)
Operating circumstance 工作環境	-25°C ~ +85°C ; 35~85% RH

Connection/接線圖

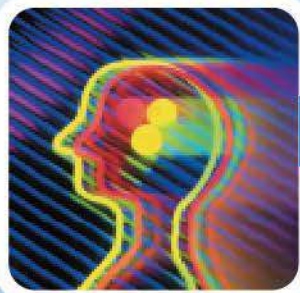


Outline / 外形圖



How to adjust the trimmer / 如何調整調整器

1. Zero adjuster : To adjust the offset of 4 mA / 可調整 4 mA 輸出偏差
Sensor input 100 Ω may adjust the output current equal to 4 mA.
溫度輸入端接 100 Ω 後調整輸出電流= 4 mA
2. Span adjuster : To adjust the offset of 20 mA / 可調整 20 mA 輸出偏差
Please refer the sensor input resistance value to adjust the output current equal to 20 mA.
請依下列溫度對應阻值接溫度輸入端後調整輸出電流= 20 mA
「100 °C=138.51Ω」 「150 °C=157.33Ω」 「200 °C=175.86Ω」
「300 °C=212.05Ω」 「400 °C=247.09Ω」 「600 °C=313.71Ω」

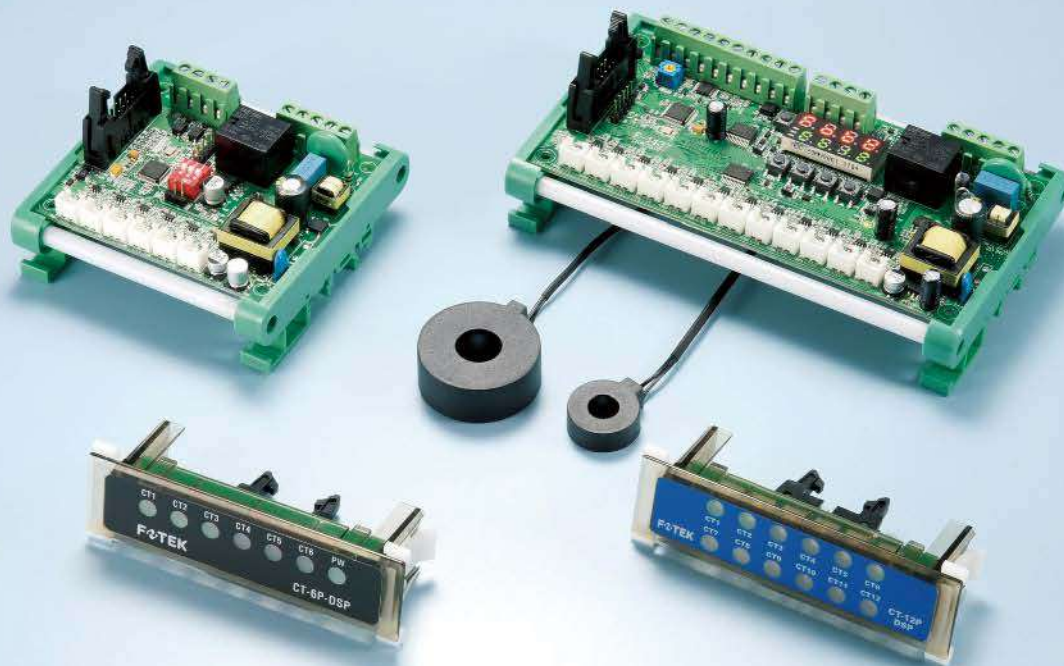


FOTEK

PCB type RoHS

多點電流偵測通訊板

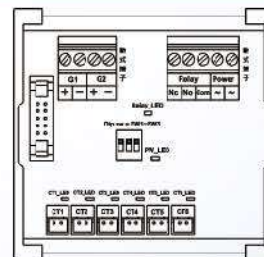
Current detector



CT-6P series Six ports current detector

Specification / 規格

Model	型號	CT-6P
Power supply	電源	90~265VAC 50/60Hz
Alarm output	警報輸出	Relay 5A/250VAC
Current consumption	耗電流	3VA max
Gate-in	同步輸入	2 ports (12VDC)
CT input ports	CT 輸入點	6 ports
Detectable current min.	最小偵測電流	0.3A
Function switch	功能切換開關	Dip sw 3P
CT input	CT 輸入	20mA max.
Attachment option	選配	CT-6P-DSP



Dimension / 外形尺寸

CT-6P-□□	CT-6P-DSP	CT-09-PE

CT-12P series 12 ports current detector

Specification / 規格

Type	型式	Standard 基本型	Communication 斷線檢出型	Current transmitter 電流傳送型
Model	型號	CT-12P	CT-12P-RS	CT-12PE-RS
Communication	通訊	non	RS-485	RS-485
Current transmitter	電流傳送	non	non	cu.01 ~ cu.12
Detection function	偵測功能	斷線	斷線+輸出短路	斷線+輸出短路+電流偵測
Power supply	電源	90~265VAC 50/60Hz		
Current consumption	耗電流	5VA max		
Display	顯示器	4 + 4 digits		
CT input	CT 輸入	0 ~ 20mA (VAC)		
Alarm output	警報輸出	Relay 10A/250VAC		
Gate-in	同步輸入	4 ports (ON/OFF or 4~20mA or 1~5V)		
CT input ports	CT 輸入點	12 ports		
Detectable current min.	最小偵測電流	0.1A		
Reset key	復歸按鍵	Taco switch		
Attachment option	選配	CT-12P-DSP		

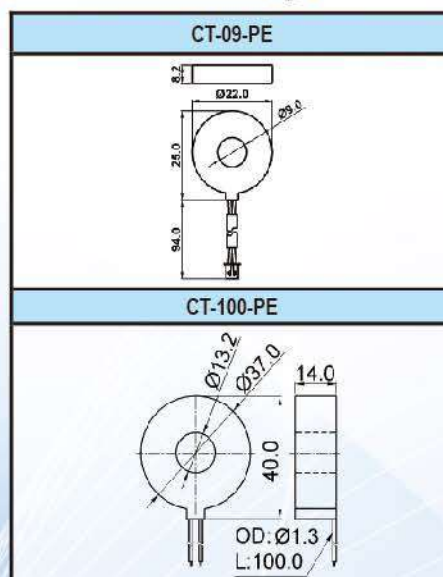
Detection setting of CT / CT偵測設定【CT-12PK/ CT-12P / CT-12P-RS/ CT-12PE-RS】

Function		Range	Description
	F o t k Ct.12 C t.01 on C t.02 on C t.03~11 on C t.12 oFF	on or oFF on or oFF on or oFF on or oFF	1> 「Ct.01=on」: Turn ON CT-01 detecting / 開啟偵測 Ct-01 功能 2> 「Ct.01=oFF」: Turn OFF CT-01 detecting / 關閉偵測 Ct.01 功能 1> 「Ct.02=on」: Turn ON CT-02 detecting / 開啟偵測 Ct-02 功能 2> 「Ct.02=oFF」: Turn OFF CT-02 detecting / 關閉偵測 Ct-02 功能 1> 「Ct.03=on」: Turn ON CT-03 detecting / 開啟偵測 Ct-03 功能 2> 「Ct.03=oFF」: Turn OFF CT-03 detecting / 關閉偵測 Ct-03 功能 1> 「Ct.12=on」: Turn ON CT-12 detecting / 開啟偵測 Ct-12 功能 2> 「Ct.12=oFF」: Turn OFF CT-12 detecting / 關閉偵測 Ct-12 功能

Current value of CT / 電流顯示值【CT-12PE-RS】

Function	Display	Range
	F o t k Ct.12 Cu.01 nn.n Cu.02 nn.n Cu.03 nn.n Cu.12 nn.n	0.0~99.9 0.0~99.9 0.0~99.9 0.0~99.9

Outline外形



Setting of parameter / 參數設定【CT-12P / CT-12P-RS】

Function		Range	Description
Control status 控制狀態	Fotk Ct.12		
Press SET & F key 3 sec Lock setting 鎖定設定	Lck 10		1> 「Lck=10」: Unlock 2> 「Lck≠10」: All lock
Press SET Control method of load selecting 負載控制方式選擇	nod 0	0 or 1	1> 「nod=0」: ON/OFF control 2> 「nod=1」: Phase control
Press SET Reset time of CV display 偵測模式選擇	ct 2	0 ~ 99 s	1> 「ct=2」: Current value display reset time= 2*2 seconds 2> For ON/OFF control only
Press SET Detection mode selecting 偵測模式選擇	Fun 0	0 ~ 2	1. 「Fun=0」: Heater break detection only / 斷線偵測功能 2. 「Fun=1」: Heater break & Short circuit detection / 斷線+輸出短路偵測 3. 「Fun=2」: Heater break & Short circuit & Over current detection 斷線+輸出短路+過電流偵測
Press SET Alarm Delay time setting 警報動作延遲時間設定	ond 6	0~99s	1> 「ond=6」: Power on delay 6 seconds to detect alarm status 2> 「ond=6」: Alarm status delay 6 seconds to output
Press SET Reset method selection 復歸方式選擇	rst 0	0 or 1	1> 「rst=0」: Power ON reset or External reset 2> 「rst=1」: Auto reset or External reset
Press SET Current display adjusting 電流顯示值修正	CAd 0.0	-9.99 ~ +9.99	1> CV = CV+ 「CAd」
Press SET Low level setting of IN-1 IN-1 低電流設定	HbL.1 0.1	0.0~99.9	※ 「HbL」及「HbH」 → 「HbL.1」/ 「HbL.1」: Limit of current for CT-01 / CT-02 / CT-03 → 「HbH.2」/ 「HbL.2」: Limit of current for CT-04 / CT-05 / CT-06 → 「HbH.3」/ 「HbL.3」: Limit of current for CT-07 / CT-08 / CT-09 → 「HbH.4」/ 「HbL.4」: Limit of current for CT-10 / CT-11 / CT-12
Press SET High level setting of IN-1 IN-1 高電流設定	HbH.1 30.0	0.0~99.9	
Press SET Low level setting of IN-4 IN-4 低電流設定	HbL.2 0.1	0.0~99.9	
Press SET High level setting of IN-4 IN-4 高電流設定	HbH.4 30.0	0.0~99.9	
			1. 「CV-01~CV-03」 < 「HbL.1」 → Delay 「ond」 time to turn ON Relay 「CV-01~CV-03」 > 「HbL.1」 → Delay 「ond」 time to turn ON Relay 2. 「CV-04~CV-06」 < 「HbL.2」 → Delay 「ond」 time to turn ON Relay 「CV-04~CV-06」 > 「HbL.2」 → Delay 「ond」 time to turn ON Relay 3. 「CV-07~CV-09」 < 「HbL.3」 → Delay 「ond」 time to turn ON Relay 「CV-07~CV-09」 > 「HbL.3」 → Delay 「ond」 time to turn ON Relay 4. 「CV-10~CV-12」 < 「HbL.4」 → Delay 「ond」 time to turn ON Relay 「CV-10~CV-12」 > 「HbL.4」 → Delay 「ond」 time to turn ON Relay

Dimension / 外形尺寸

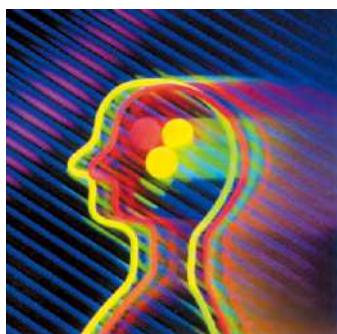
T-12P	CT-12P-DSP

Setting of parameter / 參數設定 【CT-12PE-RS】

Function		Range	Description
Control status 控制狀態 Press SET & F key 3 sec Lock setting 鎖定設定 Press SET Control method of load selecting 負載控制方式選擇 Press SET Reset time of CV display 偵測模式選擇 Press SET Detection mode selecting 偵測模式選擇 Press SET Alarm Delay time setting 警報動作延遲時間設定 Press SET Reset method selection 復歸方式選擇 Press SET CT-1 rated current setting CT-1 額定電流設定 Press SET CT-2 rated current setting CT-2 額定電流設定 Press SET CT-3 ~CT-12 rated current setting CT-3~CT-12 額定電流設定 Press SET	Fotk Ct.12 Lck 10 nod 0 ct 15 Fun 0 ond 6 rst 0 Cth.1 30.0 Cth.2 30.0 Cth.n 30.0	0 or 1 0 ~ 99 s 0 ~ 2 0 ~ 99 s 0 or 1 0.0 ~ 999.9 0.0 ~ 999.9 0.0 ~ 999.9	1> 「Lck=10」: Unlock 2> 「Lck≠10」: All lock 1> 「nod=0」: ON/OFF control 2> 「nod=1」: Phase control 1> 「ct=15」: Current value display reset time= 15*2 seconds 2> For ON/OFF control only 1. 「Fun=0」: Heater break detection only / 斷線偵測功能 2. 「Fun=1」: Heater break & Short circuit detection / 斷線+輸出短路偵測 3. 「Fun=2」: Heater break & Short circuit & Over current detection 斷線+輸出短路+過電流偵測 1> 「ond=6」: Power on delay 6 seconds to detect alarm status 2> 「ond=6」: Alarm status delay 6 seconds to output 1> 「rst=0」: Power ON reset or External reset 2> 「rst=1」: Auto reset or External reset 1> Rated current of CT-1 1> Rated current of CT-2 1> Rated current of CT-3~ CT-12

Setting of Communication / 通訊參數設定 【CT-12P-RS/ CT-12PE-RS】

Function		Range	Description
Control status 控制狀態 Press SET & V key 3 sec Controller NO. 控制器編號設定 Press SET key Communication protocol 通訊協定選擇 Press SET key Communication speed 通訊速率選擇 Press SET key Data configuration 資料結構選擇 Press SET key	Fotk Ct.12 ld 1 rs 0 bPS 384 bit 8N1	-200 ~ 9999 1 ~ 255 0 ~ 1 96 / 192 384 / 152 8N1 / 8E1 8O1 / 7O1	1> Range : 1~255 1> 「rs=0」: Modbus-RTU 2> 「rs=1」: Modbus-ASCII 1> 「bPS=96」: 9600 bps 2> 「bPS=192」: 19200 bps 3> 「bPS=384」: 38400 bps 4> 「bPS=152」: 115200 bps 1> 「bit=8N1」: 8 bit non parity 2> 「bit=8O1」: 8 bit odd parity 3> 「bit=8E1」: 8 bit even parity 4> 「bit=8N2」: 8 bit non parity 5> 「bit=7O1」: 7 bit odd parity 6> 「bit=7E1」: 7 bit even parity



Think Controls

CE Rohs

FOTEK

HR series Heat Runner Controller 熱流道控制器

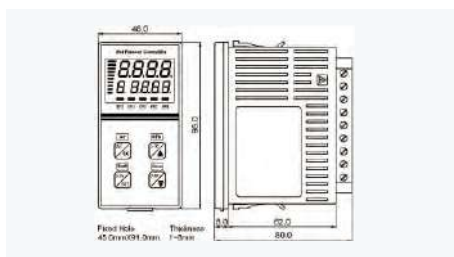
- ※ 數位SCR控制，最適快速升溫射嘴恆溫控制
- ※ 獨創高速負載短路偵測功能
- ※ 簡化熱流道專用功能及操作程序
- ※ 全功能型熱流道及射嘴控制器
 - 緩啟動控制
 - 待機功能
 - 手動控溫
 - 簡易關機功能
 - 簡易自動演算功能
 - 加速升溫（Boost）功能



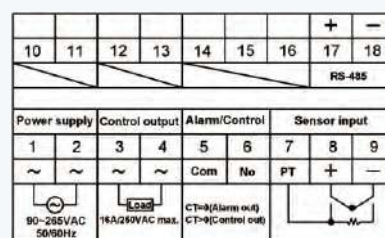
Specification / 規格

Type	型式	標準型	標準通訊型	短路偵測型	短路偵測通訊型
Model	型號	HR-20A	HR-20A-RS	HR-20P	HR-20P-RS
Communication	通訊	Non	RS-485	Non	RS-485
Detection	偵測功能	感溫線斷線/感溫線反接		感溫線斷線/感溫線反接/負載短路偵測/輸出短路偵測	
Special function	特殊功能	緩啟動/待機/停機/手動控制			
Control method	控制方式	PID + Fuzzy SCR相位控制（線性半波相位控制；50/60Hz自動偵側）			
Rated current	額定電流	16A/250VAC max.			
Load voltage	負載電壓	90~265VAC 50/60Hz			
Output method	輸出方式	Triac（40A/600VAC）或 Relay（5A/250VAC）可選擇			
Operating voltage	工作電壓	90~265VAC 50/60Hz			
Protection fuse	保險絲	16A/250VAC			
Alarm output	警報輸出	Relay（5A/250VAC）			
Input method	感溫線	K / J 可選擇（出廠設定 J type）			
Display range	顯示範圍	-999 ~ 9999 或 -99.9 ~ 999.9 可選擇			
Accuracy of display	顯示精度	±（0.1 % of F.S. + 1 DIGIT）			
Setting range	設定範圍	-999 ~ 9999或 -99.9 ~ 999.9 可選擇			

Outline dimension / 外形尺寸



Connection diagram / 接線圖



Setting of parameter / 參數設定

Function	Display	Range	Description
Control status 控制狀態 Press [SET] & [▼] Key 3 sec	8888 8888		
Detecting selection 異常偵測選擇 Press [SET] Key	dEF OnP		1> 「dEF」 = OnA : 全時偵測「L-ER/O-ER」功能 2> 「dEF」 = OnP : 開機偵測「L-ER/O-ER」功能 3> 「dEF」 = OFF : 關閉偵測「L-ER/O-ER」功能
Cycle time setting 動作週期時間設定 Press [SET] Key	Ct 0	0.0 ~ 9.9	1> 「Ct = 0」 : 相位控制 2> 「Ct > 0」 : PID ON/OFF控制
Auto tuning mode 自動演算模式 Press [SET] Key	Atn n	n or A	1> 「Atn = n」 : 手動自動演算 2> 「Atn = A」 : 送電自動演算
Auto tuning 自動演算 Press [SET] Key	At no	n or A	1> 「At = no」 : 正常控溫狀態 2> 「At = YES」 : 自動演算狀態
Proportion band 比例帶 Press [SET] Key	P 25	0 ~ 999	1> 比例帶
Integral time 積分時間 Press [SET] Key	I 100	0 ~ 3999	1> 積分時間
Derivative time 微分時間 Press [SET] Key	d 25	0 ~ 3999	1> 微分時間
Input selection 輸入選擇 Press [SET] Key	Ink J	PT/K/J/R/S T/B/E/N/L	1> 10 種測溫輸入可選擇
Unit selection 單位選擇 Press [SET] Key	Unit °C	°C / °F	1> 溫度顯示單位選擇
Decimal point selection 小數點選擇 Press [SET] Key	dP 0	0 / 1	1> 「dp = 0」 : 無小數 2> 「dp = 1」 : 小數一位
Input shift setting 輸入修正 Press [SET] Key	Sht 0	-99 ~ +999	1> 「PV」 = (PV + Sht)
Alarm mode setting 警報模式設定 Press [SET] Key	Alt 0	0 ~ 3	1> 參考警報模式
Function selection 功能選擇設定 Press [SET] Key	Fun noF		1. 「Fun=ALL」 : 有待機設定及緩啟動設定功能 2. 「Fun=Stb」 : 只有待機設定功能 3. 「Fun=SoF」 : 只有緩啟動設定功能 4. 「Fun=noF」 : 沒有待機設定及緩啟動設定功能
Controller NO. 控制器編號設定 Press [SET] Key	Id 1	1 ~ 255	1> Range : 1~255
Communication protocol 通訊協定選擇 Press [SET] Key	rs 0	0 ~ 1	1> 「rs=0」 : Modbus-RTU 2> 「rs=1」 : Modbus-ASCII
Communication speed 通訊速率選擇 Press [SET] Key	bPS 192	96/192/384	1> 「bPS =96」 : 9600 bps 2> 「bPS =192」 : 19200 bps 3> 「bPS =384」 : 38400 bps
Data configuration 資料結構選擇 Press [SET] Key	bit 8n1	8N1 / 8E1 8O1 / 7O1	1> 「bit=8N1」 : 8 bit non parity 2> 「bit=8O1」 : 8 bit odd parity 3> 「bit=8E1」 : 8 bit even parity 4> 「bit=8N2」 : 8 bit non parity 5> 「bit=7O1」 : 7 bit odd parity 6> 「bit=7E1」 : 7 bit even parity

Setting of alarm / 警報設定

Function	Display	Range	Description
Control status 控溫狀態	8888 8888	-999 ~ 9999	
Press [SET] & [AT/△] Key 3 sec Lock setting 鎖定設定	Lck 0	0 ~ 3	1> 「Lck=0」: Unlock; 「Lck=1」: SV settable only 2> 「Lck=2」: SV&AL settable; 「Lck=3」: All lock
Press [SET] AL1 Limit setting AL1 警報設定	AL1 20	-999 ~ 9999	Refer to alarm mode
Press [SET] Hysteresis of alarm 警報應差值設定	ALH 1	-999 ~ 9999	Hysteresis of alarm
Press [SET] Delay time of alarm on 警報動作延遲時間設定	ond 1200	0 ~ 9999	1> Unit: Second 2> For alarm mode #2 (Alt.2)
Press [SET] Setting limit 最大設定值限制	SLh 400	0 ~ 9999	1> $SV \leq SLH$
Press [SET] Output limit 輸出量限制設定	Out 100	0 ~ 100%	1> Limit of output volume 2> Output volume = Control output volume * 「Out」
Press [SET] Process output volume 實際輸出量	Un 0.0	0 ~ 100%	1> Display of output volume
Press [SET] Min. output volume setting 最小輸出量設定	Lot 0	0 ~ 100%	
Press [SET]			

警報模式

ALT.0: 無警報輸出

ALT.1: $PV > (SV + AL1) \rightarrow AL1 \text{ ON}$; SV 交替顯示 SV 值及 OhAL

ALT.2: 加熱異常警報 (加熱器斷線偵測); 開機或 ON/OFF 或改變設定值重新計時

$PV < (SV - AL1) \rightarrow$ 超過「Ond」時間 AL1 ON; SV 交替顯示 SV 值及 OhAL

$PV > (SV + AL1) \rightarrow$ 超過「Ond」時間 AL1 ON; SV 交替顯示 SV 值及 HbAL

* $(SV - AL1 - ALH) \leq PV \leq (SV + AL1 - ALH)$ 即解除警報延遲動作限制,

$PV < (SV - AL1)$ 或 $PV > (SV + AL1)$ 警報立即動作。

ALT.3: 第一週不動作; $(SV - AL1 - ALH) \leq PV \leq (SV + AL1 - ALH) \rightarrow AL \text{ OFF}$; $PV \geq (SV - AL1 - ALH)$ 解除第一週不動作限制。

$PV > (SV + AL1) \rightarrow AL1 \text{ ON}$; SV 交替顯示 SV 值及 OhAL

$PV < (SV - AL1) \rightarrow AL1 \text{ ON}$; SV 交替顯示 SV 值及 HbAL (第一週不動作)

* 開機或改變設定點或 ON/OFF 重新啟動第一週不動作限制。

故障排除

異常符號	說明	異常排除	異常符號	說明	異常排除
FFF	感溫線斷線; 關閉輸出/手動解除	檢查感溫線接線是否鬆脫	---	感溫線反接; 關閉輸出/手動解除	檢查感溫線接線正負是否反接
O-Er	輸出短路; 關閉輸出/手動解除	1. 檢查輸出是否短路。 2. 須關電或按 ON/OFF 鍵解除。	oHAL	超溫警報; 警報輸出/自動解除	1. 檢查警報設定值是否適當。 2. 檢查輸出是否短路燒毀。 3. 重新 AT 自動演算出最佳的 PID 值
L-Er	負載短路或 保險絲燒毀 關閉輸出/手動解除	1. 檢查保險絲是否燒毀開路。 2. 檢查加熱器是否短路。 3. 須關電或按 ON/OFF 鍵解除。	HbAL	低溫警報; 警報輸出/自動解除	1. 檢查警報設定值是否適當。 2. 檢查加熱器是否開路斷線。 3. 重新 AT 自動演算出最佳的 PID 值

■ Procedure of operating / 操作流程

1. Soft start (緩啟動) : rAp 單位: 度/分鐘 $\Delta SV > RAP$



- 1-1. 按[SET]鍵3秒進入加熱速度設定狀態: 「rAp」= 0: 不執行Soft start (緩啟動)
- 1-2. 「rAp」設定範圍: 0~9999或0.0~999.9度
- 1-3. 「rAp」> 0: 開機或ON/FF或改變溫度設定或待機切換正常控溫時執行Soft start (緩啟動)

※ 解除Soft start (緩啟動): 執行Soft start中按「SET」鍵3秒可解除Soft start (緩啟動)狀態。

2. Stand by (待機): 按[▲] 3秒 (SV = SV2)



- 2-1. 按[stb/▲]鍵3秒進入待機溫度設定狀態
 - 2-2. 待機溫度設定狀態中按[SET]鍵進入待機時間設定狀態
 - 2-3. 待機時間設定狀態中按[SET]鍵進入待機控溫狀態
 - 2-4. 待機控溫狀態中按[SET]鍵進入待機溫度設定狀態
- * 「tnr」= 0: 開機時進入自動控溫; 手動設定「待機控溫」時須手動解除「待機控溫」。
- * 「tnr」> 0: 開機時進入待機控溫; 計時到自動解除「待機控溫」進入自動控溫。
- * 待機時間 (tnr) 範圍: 0~999分鐘。

※ 解除Stand by (待機): Stand by狀態中按「[▲]」鍵3秒解除Stand by, 回復正常控溫。

3. Manual (手動控溫):



>>> 按[OFF/▼] + [stb/▲] 鍵3秒→ SV顯示「n.000」, 可設定手動輸出量及手動控溫

※ 解除Manual: 手動控溫狀態中按[OFF/▼] 鍵3秒解除手動控溫, 回復正常控溫。

4. OFF (關機):



>>> 按[OFF/▼] 鍵3秒→ SV顯示「OFF」進入關機狀態

※ 解除OFF: 關機狀態中按[OFF/▼] 3秒解除關機狀態, 回復正常控溫。

5. 「Boost」(加速升溫): 按[SET] & [STb/▲] 鍵3秒; SV = b.100全輸出; 放開即回復自動控溫

6. AT (自動演算): 按[AT/<<] 鍵3秒進入自動演算狀態, 亮起AT燈, SV值閃爍。

自動演算狀態中按[AT/<<] 鍵3秒解除自動演算狀態, 回復正常控溫。

7. 參數設定: 按[SET] & [▼] 鍵3秒

8. 警報設定: 按[SET] & [AT/<<] 鍵3秒

9. 警報或控溫選擇: 可由動作週期時間參數 (CT) 設定選擇警報輸出是「警報或控溫輸出功能」

- 1> 「Ct = 0»: 警報輸出功能; 警報Relay輸出; SCR控溫輸出 (#3/#4腳位); 負載電流15A以內。
- 2> 「Ct > 0»: 警報輸出變成控溫Relay輸出, 須外加SSR-40VA即可控制負載電流15A以上 (無警報輸出)

◆DEW POINT & HUMIDITY & TEMPERATURE METER ALL IN ONE

"露點計 & 濕度計 & 溫度計"三合一

◆DEW POINT & TEMPERATURE SETTABLE

露點 & 溫度 可設定

◆LOWEST DEW POINT DISPLAY : - 69 °C

最低露點顯示 : - 69 °C

◆TO DISPLAY DP/TEMP OR HUM/TEMP SELECTABLE

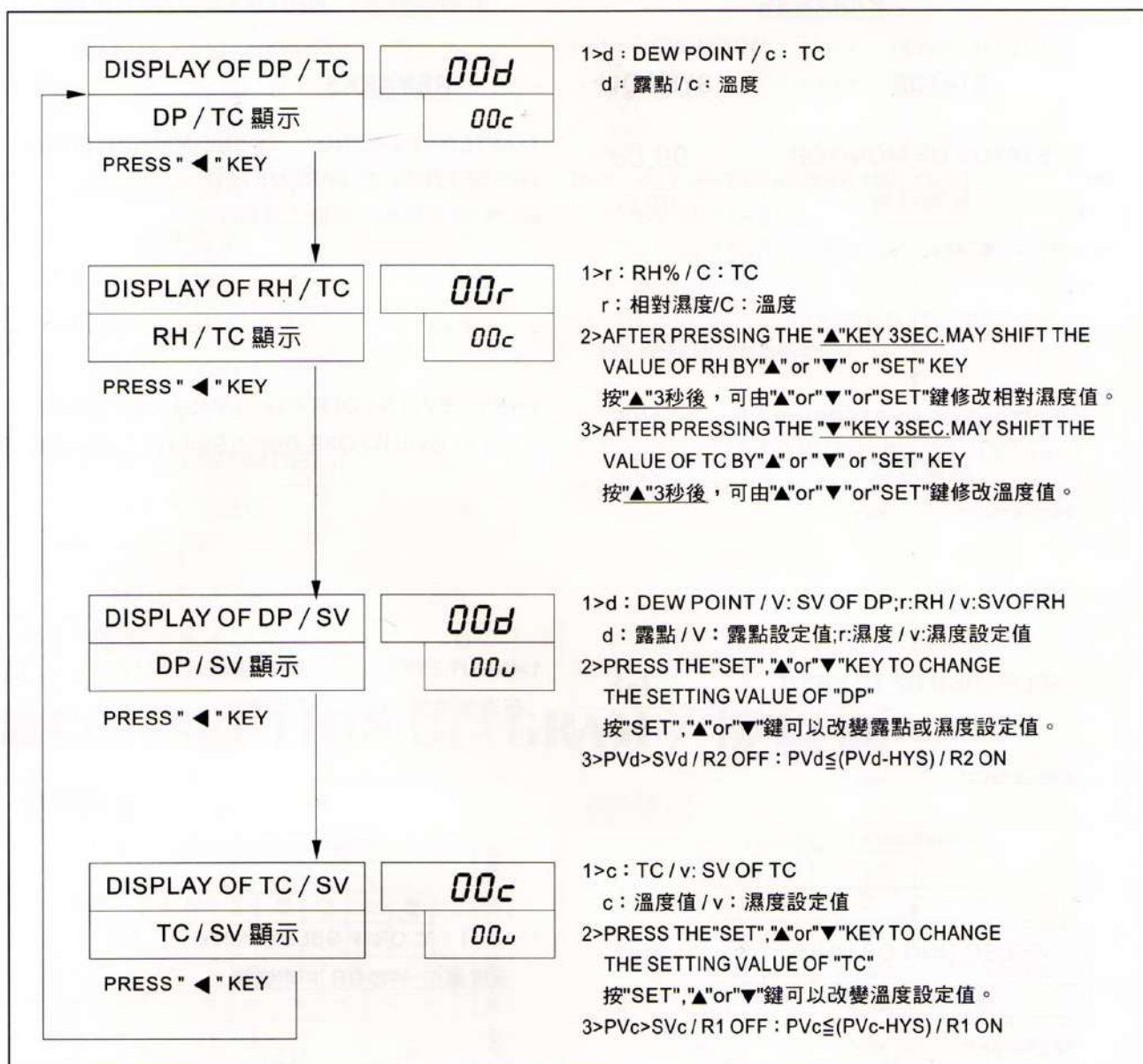
可選擇顯示"露點 / 溫度" 或 "濕度 / 溫度"



■SPECIFICATION/規格

MODEL 型號	DPM-1	DPM-2	DPM-1-S	DPM-2-S
OUTLINE 外形	48 x 96	96 x 48	48 x 96	96x48
POWER SUPPLY 工作電壓	90~265 VAC, 50/60 Hz / 5 VA MAX.			
SENSOR 1 測溫體	K , J OR PT TYPE			
SENSOR 2 相對濕度感測器	RELATIVE HUMIDITY SENSOR <0.800VDC ~3.800VDC>			
TEMP OUTPUT 溫度控制輸出	RELAY 1c <5A/250VAC>			
DP/RH OUTPUT 露點／濕度控制輸出	RELAY 1a <5A/250VAC>			
CONTROL METHOD 控制方式	ON / OFF			
DP/RH TRANSMITTER 露點濕度再傳送	NON		4 ~ 20 mA	
RANGE OF HUMIDITY 濕度顯示範圍	0.0% ~ 99.9%			
RANGE OF DEW POINT 露點顯示範圍	- 69℃ ~ 20.0℃			
RANGE OF TEMPERATURE 溫度顯示範圍	0℃ ~ 999℃			
ACCURACY OF DISPLAY 顯示精度	± (0.1 % OF F.S. + 1 DIGIT)			
SETTING RANGE 設定範圍	±99			
TEMPERATURE SHIFT 溫度修正	±9.99			
HUMIDITY SHIFT 濕度修正	±9.99			
RESPONSE TIME 反應時間	1 SEC			
MEMORY METHOD 記憶方式	EEPROM			
INSULATION RESISTANCE 絕緣強度	OVER 50MΩ			
DIELECTRIC STRENGTH 耐壓強度	OVER 2.5 KV/ 1 MINUTE			
OPERATING CIRCUMSTANCE 使用環境	20℃ ~ 75℃ ； 35%~85% RH			
EMC STANDARD	ESD : 8 KV AIR CHARGE < LEVEL 3>/EN-61000-4-2			
	BURST TEST : 2 KV / EN61000-4-4			

■ SELECTING OF MONITOR (顯示選擇)



■ HOW TO SHIFT THE DISPLAY VALUE OF RELATIVE HUMIDITY (如何修正濕度顯示值)

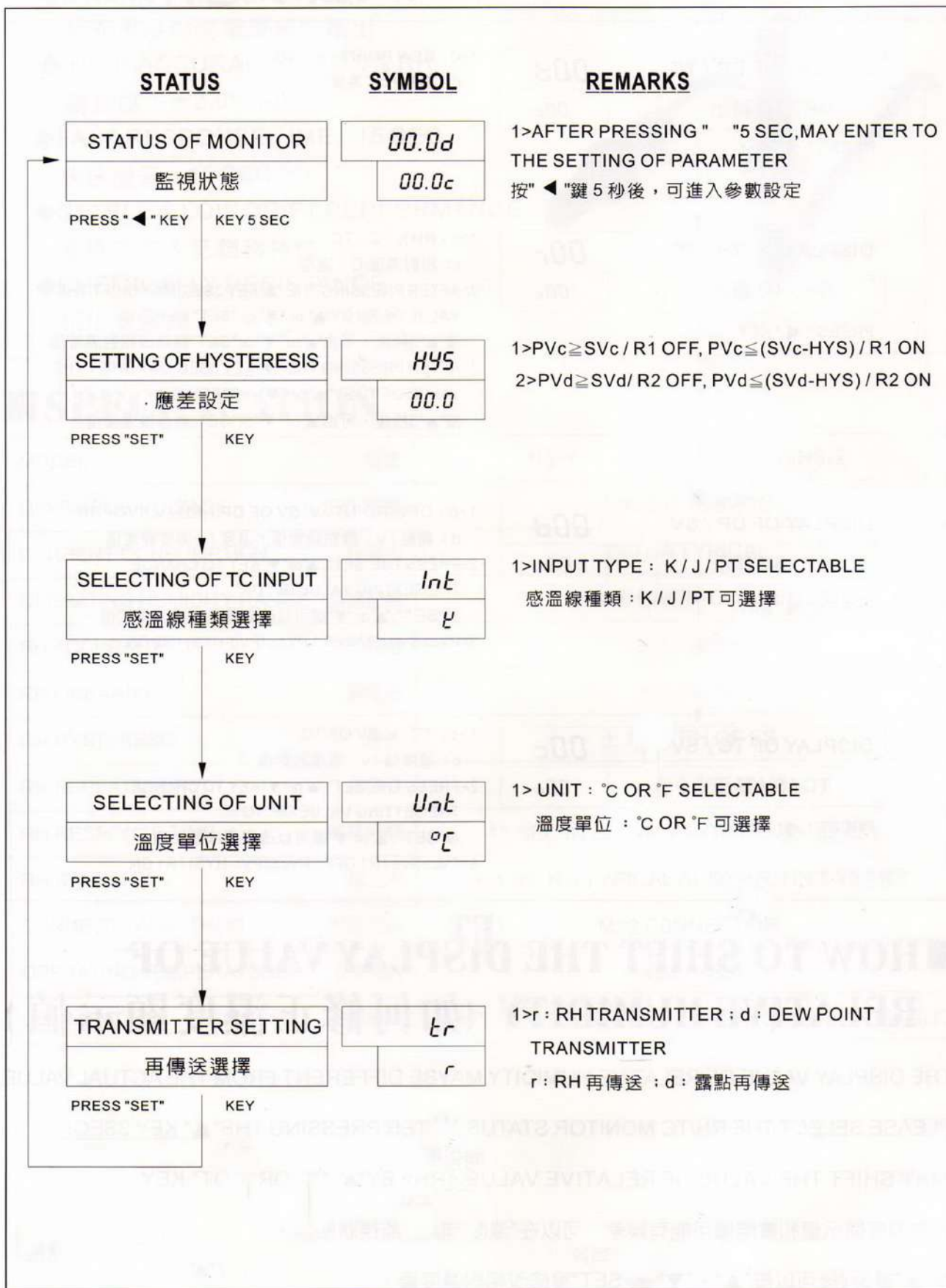
THE DISPLAY VALUE OF RELATIVE HUMIDITY MAYBE DIFFERENT FROM THE ACTUAL VALUE, PLEASE SELECT THE RH/TC MONITOR STATUS, AFTER PRESSING THE "▲" KEY 3SEC.,

MAY SHIFT THE VALUE OF RELATIVE VALUE <RH> BY "▲", "▼" OR "SET" KEY

相對濕度顯示值和實際值可能有誤差，可以在"濕度 / 溫度"監視狀態中，

按"▲"鍵3秒後可以按"▲"，"▼"或"SET"鍵修改相對濕度值。

■ SETTING OF PARAMETER / 參數設定



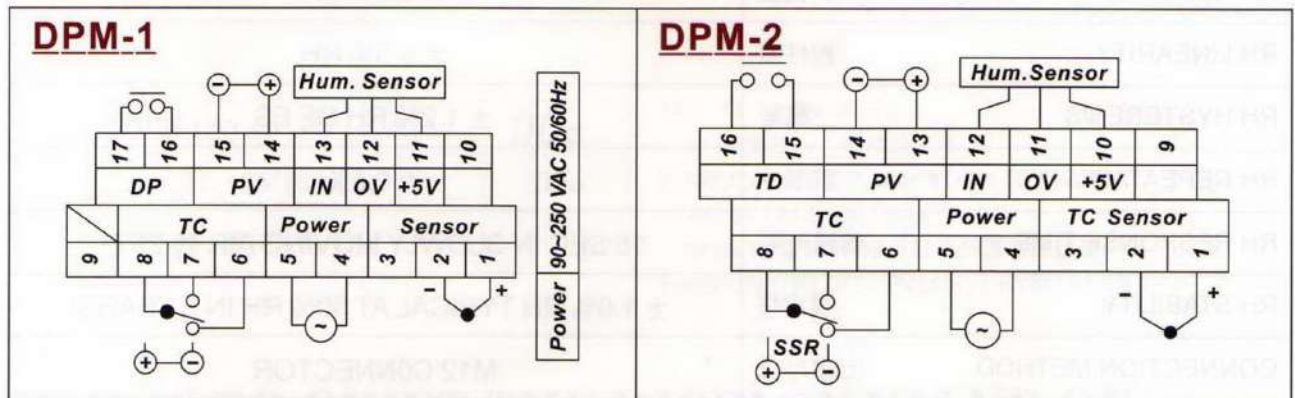
濕度 / 溫度 / 露點計 DEW POINT & HUMIDITY METER

DPM
series

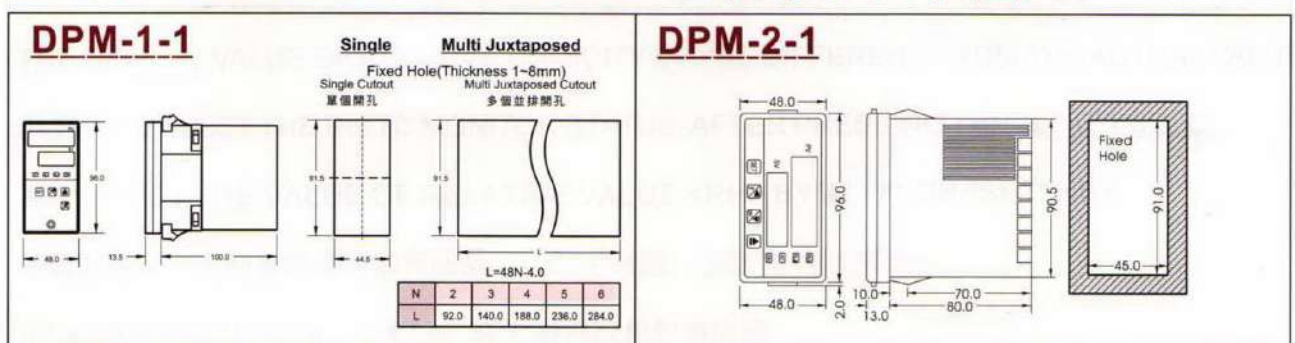
■ SETTING OF TRANSMITTER / 傳送設定

MONITOR SELECTING	SYMBOLS	REMARKS
STATUS OF NORMAL 監視狀態	00.0d 00c	1>d : DEW POINT ; c or F : TEMPERATURE d : 露點 c or F : 溫度
PRESS "SET" ↓ KEY 3 SEC		
SETTING OF LOCK 鎖定設定	LcL 0	1> 0 : ALL SETTING ARE UNLOCK 1 : SV SETTABLE 2 : SV SETTABLE 3 : ALL LOCK
PRESS "SET" ↓ KEY		
HI LIMIT OF TRANSMITTER 傳送上限設定	SLH 90	1> THE SLH IS CONVERTED TO "20.0" mA "SLH"轉成"20.0mA"
PRESS "SET" ↓ KEY		
LO LIMIT OF TRANSMITTER 傳送下限設定	SLL 0	1> THE "SLL" IS CONVERTED TO "4.0" mA "SLL"轉成"4.0mA"
PRESS "SET" ↓ KEY		
LO LIMIT OF DP 露點下限值設定	dPL -5l	

■ CONNECTION DIAGRAM / 接線圖



■ OUTLINE DIMENSION 外形尺寸圖



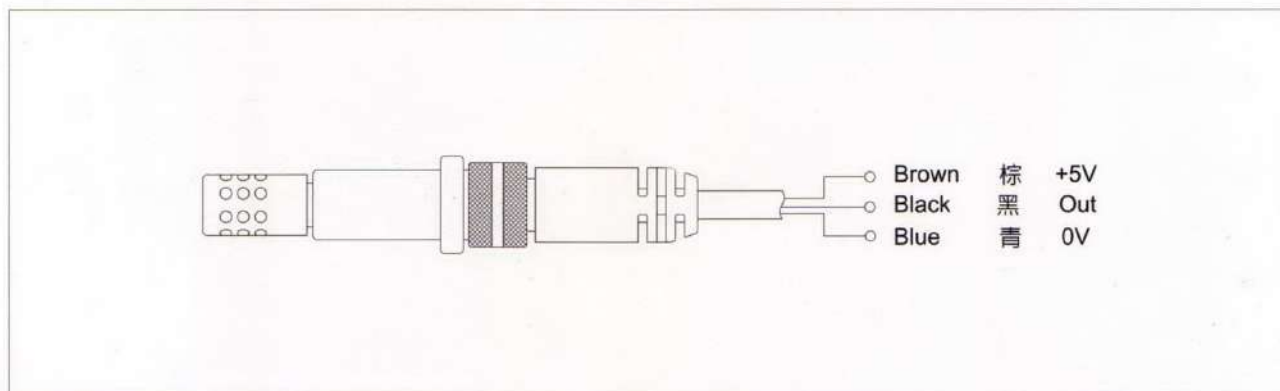
- ◆ LINEAR VOLTAGE OUTPUT vs %RH
相對濕度對應電壓線性輸出
- ◆ HIGH ACCURACY : $\pm 2.0\%$ RH
高精度 : $\pm 2.0\%$ RH
- ◆ FAST RESPONSE TIME : 15 SEC
快速應答 : 15 SEC
- ◆ STABLE & LOW DRIFT PERFORMANCE
高穩定性 & 低飄移特性
- ◆ CHEMICALLY RESISTANCE
抗化學腐蝕



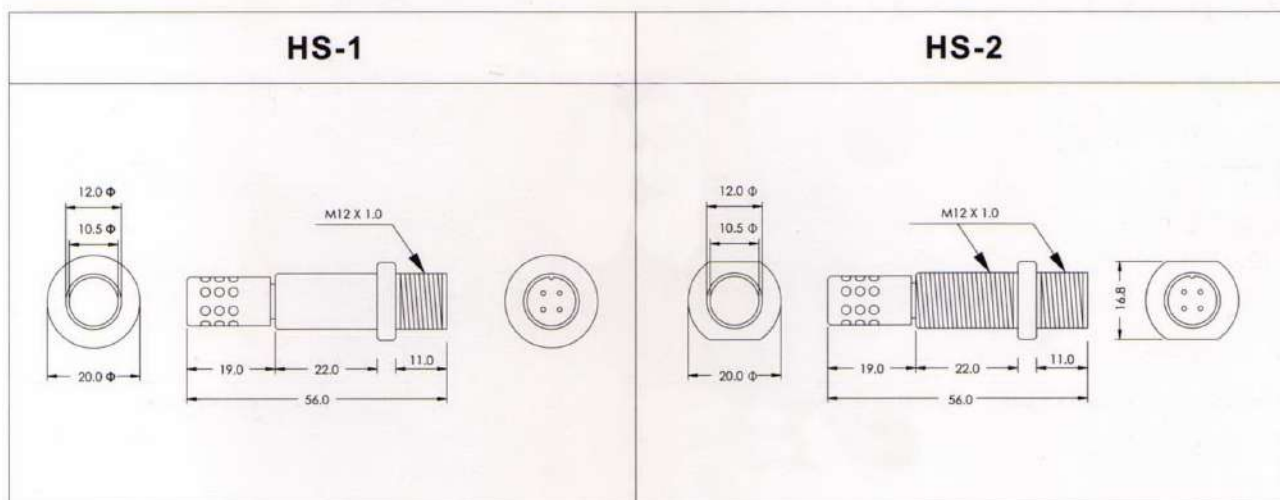
SPECIFICATION

MODEL	型號	HS-1	HS-2
OPERATING VOLTAGE	工作電壓	4.0V DC~ 5.5VDC	
CURRENT CONSUMPTION	耗電流	200 μ A TYPICAL	
OPERATING HUMIDITY RANGE	濕度範圍	0 ~ 100% RH, NON-CONDENSING	
RH ACCURACY	RH 精度	$\pm 2.0\%$ RH	
RH LINEARITY	線性度	$\pm 0.5\%$ RH	
RH HYSTERESIS	應差	$\pm 1.2\%$ RH OF FS	
RH REPEATABILITY	重復性	$\pm 0.5\%$	
RH RESPONSE TIME	響應時間	15 SEC IN SLOWLY MOVING AIR @ 25°C	
RH STABILITY	穩定性	$\pm 1.0\%$ RH TYPICAL AT 50% RH IN 5 YEARS	
CONNECTION METHOD	出線方式	M12 CONNECTOR	
OPERATING TEMPERATURE	工作溫度	- 40°C ~ 85°C	
COMMENT	注意事項	LIGHT SENSITIVE, SHIELDED FROM BRIGHT LIGHT	

■ CONNECTION DIAGRAM



■ OUTLINE DIMENSION



По вопросам продаж и поддержки обращайтесь:

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