Specificatio TS4M TS4C Series DUAL INDICATOR TEMPERATURE CONTROLLER AC Power 100-240VAC~ 50/60Hz Power supply AC/DC Power 24VAC~ 50/60Hz, 24-48VDC= **TS4 SERIES** Allowable voltage range 90 to 110% of rated voltage AC Power Max. 5VA(100-240VAC 50/60Hz) Power consumption AC/DC Power Max. 5V(24VAC 50/60Hz), Max. 3W(24-48VDC) Display method INSTRUCTION MANUAL 7.0×15.8mm 10.2×20.0mm 7.0×20.0mm Character PV(W×H) size SV(W×H) 4.2×7.6mm 7.2×15.0mm Input RTD DIN Pt100Ω, Cu50Ω (Allowable line resistance max.5Ω per a wire) type K(CA), J(IC), L(IC), T(CC), R(PR), S(PR) Same. 200 Display RTD accuracy TC For TS4M--P, add ±1°C by accuracy standard. 1288 Relay 250VAC~ 3A 1a 1388 Control SSR 12VDC==±2V 20mA Max output 7788 DC4-20mA Load 2500Max Current Alarm output AL1, AL2 Relay; 250VAC~ 1A 1a 1 188. Control method ON/OFF control, P. PI, PD, PID control 1386 1988 1 to 100°C/°E (0 1 to 50 0°C/°E) Hysteresis MODE « ¥ » Proportional band(P) 0.1 to 999.9°C/°F : 1888 • 888 nos < > 🔊 « » « MODE Integral time(I) 0 to 9999 sec. 0 to 9999 sec. Derivative time(D) 0.5 to 120.0 sec. Control period(T) Thank you for choosing our product. 0.0 to 100.0% Manual reset Please read the following safety considerations before use. 100ms Sampling period Dielectric AC power 2000VAC 50/60Hz 1min.(between input terminal and power terminal) strength AC/DC power 1000VAC 50/60Hz 1min.(between input terminal and power terminal) Safety Considerations Vibration Mechanical OUT: Over 5,000,000 times, AL1/2: Over 5,000,000 times *Please observe all safety considerations for safe and proper product operation to avoid hazards. Relay life OUT: Over 200,000 times(250VAC 3A resistive load) Electrical «Safety considerations are categorized as follows. cycle AL1/2: Over 300,000 times(250VAC 1A resistive load) Warning Failure to follow these instructions may result in serious injury or death Insulation resistance Min. 100MΩ(at 500VDC megger) Caution Failure to follow these instructions may result in personal injury or product damage Noise *The symbols used on the product and instruction manual represent the following Memory retention A symbol represents caution due to special circumstances in which hazards may occur. Environ Ambient temp. -10 to 50°C, Storage: -20 to 60°C -ment Ambient humi. 35 to 85%RH, Storage: 35 to 85%RH A Warning Insulation type 1. Fail-safe device must be installed when using the unit with machinery that may cause Approx. 147g Approx. 203g serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment Weiaht *2 (approx. 100g) (approx. 133g) ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.) %1: ○ At room temperature(23°C±5°C) Failure to follow this instruction may result in fire, personal injur, or economic loss. Below 200°C of thermocouple R(PR), S(PR) is (PV ±0.5% or ±3°C, select the higher one) ±1 digit Over 200°C of thermocouple R(PR), S(PR) is (PV ±0.5% or ±2°C, select the higher one) ±1 digit 2. Install on a device panel to use. Failure to follow this instruction may result in electric shock or fire Termocouple L (IC), RTD Cu50Ω is (PV ±0.5% or ±2°C, select the higher one) ±1 digit 3. Do not connect, repair, or inspect the unit while connected to a power source. Out of room temperature range Below 200°C of thermocouple R(PR), S(PR) is (PV ±1.0% or ±6°C, select the higher one) ±1 digit Over 200°C of thermocouple R(PR), S(PR) is (PV ±0.5% or ±5°C, select the higher one) ±1 digit Failure to follow this instruction may result in electric shock or fire 4. Check 'Connections' before wiring. Failure to follow this instruction may result in fire Thermocouple L(IC), RTD Cu50Ω is (PV ±0.5% or ±3°C, select the higher one) ±1 digit 5. Do not disassemble or modify the unit. For TS4M- -P. add ±1°C by accuracy standard. *2: The weight includes packaging. The weight in parentheses is for unit only. # Environment resistance is rated at no freezing or condensation. Failure to follow this instruction may result in electric shock or fire **▲** Caution Unit Description 1. When connecting the power input and relay output, use AWG 20(0.50mm²) cable or over and tighten the terminal screw with a tightening torque of 0.74~0.90N m. When connecting the sensor input and communication cable without dedicated cable, use AWG 28~16 cable and tighten the terminal screw with a tightening torque of 0.74~0.90N m. Failure to follow this instruction may result in fire or malfunction due to contact failure 2. Use the unit within the rated specifications Failure to follow this instruction may result in fire or product damage 3. Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in electric shock or fire 4. Do not use the unit in the place where flammable/explosive/corrosive gas, humidit, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in fire or explosion 5. Keep metal chip, dust, and wire residue from flowing into the unit MODE 《 [⊗] Failure to follow this instruction may result in fire or product damage auto tuning. Ordering Information 5. MODE key T S 4 M-2 4 R-P No-mark Bolt wiring method setting values. Connector plug connection method^{*1} 6. Adjustment Used when entering into set value change mode, digit moving and digit up/down. Current output and SSR drive output selectable 7. Digital input key Press 🕲 + 🛞 keys for 3 sec. to operate the set function Relay contact + SSR drive output** (RUN/STOP, alarm output reset, auto tuning) in digital input key [d! - L]. 24VAC 50/60Hz, 24-48VDC Power supply 8. Temperature unit (°C/°F) indicator 100-240VAC 50/60Hz It shows current temperature unit. Sub output Alarm1 + Alarm2 output 2 Input Sensor and Temperature Range м DIN W48 × H48mm Input sensor Display DIN W72 × H72mm -50 to 1200 **РГВН** DIN W48 × H96mm K(CA) PC BI DIN W96 × H96mm JI E.H -30 to 800 J(IC) Digit 9999 (4 digit) JI C.L -40 to 800 Setting type LI E.H Dual display type, set by touch switch Thermocouple L(IC) 1151 Temperature controller -50 to 400 E E E.H T(CC) *1: Only for TS4M model. FEE1 *2: In case of the AC voltage model, SSR drive output method (standard ON/OFF control, cycle R(PR) r Pr 0 to 1700 control, phase control) is available to select. S(PR) SP 0 to 1700 dPt.H -100 to 400 The above specifications are subject to change and some models may be discontinued DPt1000 dPE. -100.0 to 400.0 without notice. RTD Be sure to follow cautions written in the instruction manual and the technical descriptions -50 to 200 C U 5.H Cu50Ω (catalog, homepage). -50.0 to 200.0

Dimensions TS4H TS4B TS4M Series 7 segment (PV: red, SV: green), other display part(green, red) LED method 12.7×21.7mm 5.7×16.0mm 9.7×15.7mm NOE 🔇 💙 🔗 At room temperature(23°C ± 5°C): (PV ± 0.5% or ±1°C, select the higher one) ± 1 digit Out of room temperature range: (PV± 0.5% or ±2°C, select the higher one)± 1digit TS4H Series 48 61.25 0000 HODE 《 》 & 0.75mm amplitude at frequency of 5 to 55Hz in each X, Y, Z direction for 2 hours Bracket TS4C, TS4H, TS4B Series TS4M Series Square-wave noise by noise simulator(pulse width 1µs) ±2KV R-phase and S-phase Approx. 10 years (when using non-volatile semiconductor memory type) Double insulation or reinforced insulation (mark: , dielectric strength between the measuring input part and the power part : AC power 2kV, AC/DC power 1kV) 14 24 Approx. 194g Approx. 275g (approx. 124g) (approx. 179g) Connections ●TS4M-R/A rent Output DC4-20mA Load 250ΩMax 1. Present temperature (PV) display (Red) 1) RUN mode: Present temperature (PV) display 2) Parameter setting mode: Parameter display 1 6 11 2. Set temperature (SV) display (Green) 2 7 1) RUN mode: Set temperature (SV) display 3 SSR OUT: 12VDC ±2V 20mA Max. B 4 13 8 2) Parameter setting mode SENSOR Parameter setting value display 9 . Control/Alarm output display indicator 13 10 1) OUT: It turns ON when the control output is ON. During SSR drive output type in CYCLE/ TC RTD B' 5 $\mathbb{A}^{\overline{\Box}}$ PHASE control, this indicator turns ON when SOURCE: 100-240VAC MV is over 3.0%. 2) AL1/AL2: It turns ON when the alarm output is ON. I. Auto tuning indicator AT indicator flashes by every 1 sec during operating ●TS4C/H/B-R/A 8 SSR OUT: 12VDC ±2V ⊕ ◀ 1 Used when entering into parameter groups, returning to RUN mode, moving parameter, and saving 9 ⊝₊ 2 Current Output 3 DC4-20mA Load 250ΩMa 250VAC 3A 4 10-12 6 14 7 Temperature range(°C) Temperature ran -58 to 2192 -50 0 to 999 9 -58 0 to 999 9 -22 to 1472 -30.0 to 800.0 -22.0 to 999.9 -40 to 1472 -40.0 to 800.0 -40 to 999.9 -58 to 752 -50.0 to 400.0 -58.0 to 752.0 32 to 3092

8888 HODE ≪ 🐸 🕫 8.8.8.8 8.8.8.8

11VDC±2V 20mA Max

C0/4-20mA





	24	4VAC 5VA 50/60Hz 4-48VDC 3W	,			GENOOR	
ge(°F)	%TS4 Series has selectabl	e control output	Relay out	tput, and	•	TS4M-A	
	SSR drive output. AC/DC function	voltage type do	es not hav	/e SSRP		SSR	Current
	%1: 12VDC±2V 20mA Max	L				11 -	
	%2: AC voltage type: 100-2 AC/DC voltage type: 24	240VAC 5VA 50/	60Hz		E	비밀 ゐ	
	AC/DC voltage type: 24	4-48VDC 3W	INZ		5	S 13 → -ĭ	2
	%Use crimp terminals or terr	ninals of size spe	cified below	v. (unit: mm)	11VDC±2V	DC0/4-20mA
	a a	Terminal a	b	с		20mA Max.	Load 250ΩMax
		1 to 8 6	Max. 1.7	Max. 3.7	•	TS4C/H/B-A	1
		9 to 11 6 to 8	Max. 2.1	Max. 4.2		SSR	Current
		12 to 14 6 to 8	Max. 1.5	Max. 3.5			3
		a lo I		ta b	E		
	<pre></pre>	* -	<forked></forked>	<u> </u>	d	2	4

32 to 3092

-148 to 752

-58 to 392

-58 0 to 392 0

-148.0 to 752.0

% Press MODE key over 3 sec in any parameter group, it saves the set value and returns to RUN mode. (Exception: Press MODE key once in SV setting group, it returns to RUN mode). If no key entered for 30 sec., it returns to RUN mode automatically and the set value of parameter is not be saved. * Press MODE key again within 1 sec. after returning to RUN mode, it advances of the first parameter of previous parameter group. * Press MODE key to move next parameter * Parameter marked in :...: might not be displayed depending on other parameter settings. ※ Set parameter as 'Parameter 2 group → Parameter 1 group → Setting group of set value' order considering parameter relation of each setting group. *1: It is not displayed for AC/DC power model (TS4 - 22R)



Functions

. Auto tuning [RE] Auto tuning measures the control subject's thermal characteristics and thermal response rate, and then determines the necessary PID time constant. (When control type[[-nd] is set as PId, it is displayed.) Application of the PID time constant realizes fast response and high precision temperature control. If error [oPEn] occurs during auto tuning, it stops this operation automatically. To stop auto tuning, change the set as [oFF]. (It maintains P, I, D values of before auto tuning.) 2. Hysteresis [H95] Heating operation In case of ON/OFF control, set between ON and OFF intervals ON 4] OFF

as hysteresis. (When control type [[-nd] is set as and F, it is displayed.) If hysteresis is too small, it may cause control output hunting (takeoff, chattering) by external noise, etc. 3. SSR drive output selection(SSRP function) [55c.51

 SSRP function is selectable one of standard ON/OFF control, cycle control, phase control by utilizing standard SSR drive output.

Hysteresis

[HY5]

emperatur

Realizing high accuracy and cost effective temperature control as linear output(cycle control and phase control)

Select one of standard ON/OFF control [5End], cycle control [E9EL], phase control [PHR5] at [55m] parameter of parameter 2 group. For cycle control, connect zero cross turn-on SSR or random turn-on SSR. For phase control, connect random turn-on SSR.



When selecting phase or cycle control mode, the power supply for load and temperature controller must be the same.

K In case of selecting PID control type and phase [PHR5] / cycle [PHR5] control output modes, control cycle [L] is not allowed to set.

% For AC/DC power model (TS -22R), this parameter is not displayed and it is available only standard control by relay or SSR

1)Standard ON/OFF control mode [5 End] A mode to control the load in the same way as Relay output type.



A mode to control the load by repeating output ON / OFF according to the rate of output within setting cvcle. Having improved ON / OFF noise feature by Zero Cross type



3)Phase control mode [PHR5] A mode to control the load by controlling the phase within AC half cycle. Serial control is available

RANDOM Turn-on type SSR must be used for this mode



It displays alarm output ON and OFF interval and hysteresis is applied to both AL1 OUT and AL2 OUT. ECRH, JI C.H, LI C.H, ECC.H, PP, SP, dPE.H, CUS.H: 1 to 100 EERL, JI EL, LI EL, EEEL, JPEL, EUSL: 0.1 to 50.0



5. Digital input key (🛛 + 🗟 3sec.) [di - b]



arm	<u> An I.A</u>	Alarm	Alarm outp When the c	uts are two current temp	and each o erature is	one ope out of a larm late	rates individual larm range, ala sh or alarm late	rm clears	dby
eratio Iarm	on	option	sequence 1 key[d1 - E]	I/2, press di of paramete	gital input er 2 group	key(⊠+ set as R	3 sec., digit Lr E), or turn C	al input FF the po	wer
odo	Name	Alarm oper	and turn O	N to clear al	arm.	r	Description		
0			allon			N	lo alarm output		
i (D	Deviation high-limit alarm	OFF SV 100°C	H ON △ PV 110°C	OFF ↓H↑ △ PV 90°	ON SV C 100°C		f deviation betw is high-limit is h alue of deviation	een PV ar igher than on tempera	nd SV set ture,
2.0	Deviation Iow-limit alarm	ON HIGH deviation	OFF SV 100°C	High deviat	ON A PV 110°C	OFF I	f deviation betw is low-limit is hi value of deviation	gher than	nd SV set ture,
		Lower deviati	on: Set as 10°C	Lower devia	ation: Set as	-10°C t	he alarm outpu	t will be Of	N.
3.0	Deviation high/low- limit alarm		DNTH¥ O △ A PV S 90°C 100 High/Lower devi	FF H	TON △ PV 10℃ 10℃	li a v ti	f deviation betw is high/low-limit value of deviation he alarm outpu	is higher to n temperative of the temperative of temperati	nd SV han set ture, N.
4.	Deviation high/low- limit reserve	OFF	H C △ A PV S 90°C 10	N V F D°C 11		li a v	f deviation betw is high/low-limit value of deviation	een PV ar is higher t	nd SV han set ture,
	alarm	H	High/Lower devi	ation: Set as	10°C	t	ne alarm outpu	will be Of	-F.
5.0	Absolute value high limit alarm	OFF ↓H ↑ O PV 90°C Absolute-v	N SV 100°C /alue Alarm:	OFF SV 100°0 Absolute	HTON PV C 110°C e-value Alar	nm:	f PV is higher the alue, the output	nan the ab t will be O	solute N.
6.0	Absolute value low limit alarm	ON H, ON H, PV 90°C Absolute-v	OFF SV 100°C value Alarm:	Set SV 100°C Absolute	ON H ON H PV C 110°C e-value Alar	OFF If	f PV is lower th value, the output	an the abs t will be O	olute N.
	Sensor	Set a	is 90°C	Set	as 110°C		t will be ON wh	en it detec	ts
нЦ	break alarm	_				S	ensor disconne	ection.	te loon
R.🗆	alarm	<u> </u>				b	reak.	on it uetec	ы ююр
H: Ala	arm output hy	ysteresis[RH	192]						
tion	Name	Descriptio	n						
⊡.A	Standard alarm	If it is an al is OFF.	arm condition,	alarm outpu	ut is ON. If	f it is a c	lear alarm cond	lition, alarr	n output
□.ь	Alarm latch	(Alarm out)	put HOLD)	alannoutp					
70	Standby sequence 1	First alarm operates. V	condition is ig When power is	nored and fi supplied ar	rom secon	nd alarm	condition, stan	dard alarm	1
		Is ignored a	and from the s	econd alarm	n condition	alarm co n, standa	ird alarm opera	tes.	ndition
⊡d	Alarm latch and standby sequence 1	If it is an al power is su from the se	and from the s arm condition, upplied and it i econd alarm co	econd alarm it operates s an alarm o ondition, ala	both alarn condition, t condition, t rm latch op	alarm co n, standa n latch a this first perates.	ndition, this his and alarm opera nd standby see alarm condition	tes. Juence. Wi is ignored	ndition nen I and
□.J	Alarm latch and standby sequence 1 Standby sequence 2	If it is an al power is su from the se First alarm operates. V does not tu	and from the s arm condition, upplied and it is cond alarm co condition is ig When re-applie urn ON. After c	econd alarm it operates s an alarm o ondition, alar nored and fi ed standby s learing alarr	n condition both alarm condition, t rrm latch op rom secon sequence a m condition	alarm co n, standa n latch a this first perates. nd alarm and if it i n, standa	indition, this first and alarm opera nd standby sec alarm condition condition, stan s alarm conditi ard alarm opera	dard alarm conduction a	ndition nen l and n putput
	Alarm latch and standby sequence 1 Standby sequence 2 Alarm latch and standby sequence 2	If it is an al power is su from the see First alarm operates. V does not tu Basic oper power ON/ standby se clearing ala	and from the s arm condition, upplied and it i econd alarm co condition is ig When re-applie Irm ON. After c ation is same a OFF, but also quence and if arm condition,	econd alarm it operates s an alarm of ondition, alar nored and fi d standby s learing alarr as alarm late alarm settin it is alarm of alarm latch	to it is an a n condition both alarm condition, t rrm latch op rom secon sequence a m condition ch and sta g value, or ondition, a operates.	alarm co n, standa n latch a this first perates. nd alarm and if it i n, standa ndby se r alarm ou	Indition, this ins rid alarm opera and standby seed alarm condition condition, stan s alarm conditii ard alarm opera quence1. It oper piption changing tput does not to	dard alarm co dard alarm co dard alarm co ates. erates not co When re irm ON. Aft	ndition nen l and butput only by applied er
id	Alarm latch and standby sequence 1 Standby sequence 2 Alarm latch and standby sequence 2 on of re-applie ing set tempera ng set tempera N mode.	Is ignored. If it is an all power is su from the se First alarm operates. V does not tu Basic oper power ONV standby se clearing all d standby see ture, alarm te m	and from the s arm condition, upplied and it i cond alarm co condition is ig When re-applie atton is same a OFF, but also quence and if arm condition, uence for stan upence for stan mperature (RL	econd alarm it operates s an alarm o nordition, alai nored and fit d standbys learing alarm sa alarm latta alarm settin it is alarm o alarm lattch iby sequenc dby sequenc dby sequenc i, RL 2) or al	In this are an a condition both alarm condition, t rm latch op rom secon sequence a m condition, t a condition, a g value, or ondition, a operates. e 1, alarm 1 æ 2, alarm arm operat	alarm co n, standa n latch a this first perates. nd alarm and if it i n, standa ndby se r alarm ou latch and latch and tion (RL -	nolition, this this rid alarm opera- nd standby sec alarm condition condition, stan s alarm conditia ard alarm opera- quence1. It opp uption changing tput does not tu I standby seque d standby seque i, RL - 2), switc	dard alarm is ignored dard alarm n, alarm c ates. rates not a . When re rm ON. Aft nce 1: Pow nce 2: Pow ning STOP	ndition nen l and boutput conly by capplied er er ON ver ON, mode
i D.F Conditiu Conditiu Conditiu Conditiu Senso e funct letect other uRb].	Alarm latch and standby sequence 1 Standby sequence 2 Alarm latch and standby sequence 2 on of re-applie ing set tempera mg set tempera v mode. or break alar ction that alai ted during ter units using a	If it is an all fit is an all fit is an all fit is an all for the set from the set from the set for the set for the set of the set o	and from the s arm condition, upplied and it i cond alarm cc condition is ig when re-applie irm ON. After c ation is same - dofF, but also quence and if arm condition, uence for stan mperature (RL ill be ON whe controlling. Yo c contact. It is	econd alarm it operates s an alarm of nored and fi d standby s learing alarn sa alarm latch alarm settin it is alarm catal alarm latch fby sequence dby sequence dby sequence dby sequence selectable	In this are a conditionation to conditionation to conditionation to conditionation to the conditionation of the conditionation of the condition of the conditionation of the conditionationation of the conditionationationation of the conditionationationationation of the conditionationationationationationationation	alarm co a, standa n, standa n latch a this first perates. ad alarm and if it i n, standa r alarm out latch and tion (RL - hected co standa	Induiton, this time and standby see alarm condition condition, stan s alarm condition and alarm opera quence 1. It operation option changing tput does not tu i standby seque d standby seque d standby seque t, RL - 2), switc or when sensor ensor is conne rd alarm [5bR	darin to tes. juence. Wi is ignored dard alarm on, alarm of tess. arates not e when re rm ON. Aft nee 1: Pow nee 2: Pow ning STOP r's discon cted with R] or alar	ndition hen l and butput poly by applied er er ON ver ON, mode nection buzzer m latch
i i i i i i i i i i	Alarm latch and standby sequence 1 Standby sequence 2 Alarm latch and standby sequence 2 on of re-applie on of re-applie on of re-applie on of re-applie on of re-applie on set tempera N mode. or break alarm units using a break alarm s control loop	If it is an all off it	and from the s arm condition, upplied and it i cond alarm cc condition is ig twhen re-applie rm ON. After c ation is same - duence and if arm condition, upence for stan upence for stan upence for stan upence for stan controlling. Yo c contact. It is	econd alarm it operates s an alarm of nored and fi d standby s learing alarm s alarm lata alarm settin it is alarm to dby sequence dby sequence dby sequence i, RL2) or al en sensor is u can chece selectable emperature	to initial and a conditional both alarm conditions, t rm latch or rom sequence a n condition condition, a g value, or ondition, a g value, or operates. s not conrr ck whethe between change of change of ch	alarm co a, standa n, standa in latch a this first perates. ad alarm and if it i n, standa indby se r alarm cu latch and latch and latch and latch and latch and latch and latch and latch and latch and latch and b of RL -	Induor, this the rat alarm opera nd standby see alarm condition condition, star s alarm conditiar ard alarm opera quence1. It ope potion changing tput does not tu I standby seque d standby seque d standby seque t, RL - 2), switc or when sensor ensor is conne rd alarm [55R ubject. For hea	tes. uence. Wi is ignored dard alarm on, alarm of attes. when re- irrates not to When re	ndition nen l and putput only by applied er er ON er ON, mode nectior buzzer m latch
i F Conditiu Conditiu Condition Conditio	Alarm latch and standby sequence 1 Standby sequence 2 Alarm latch and standby sequence 2 Alarm latch and standby sequence 2 on of re-applie ing set tempera tion of re-applie or break alarm break alarm s control loop cooling control dover than I AV is 0%(100)	It is gined of the second seco	and from the s arm condition, upplied and it i cond alarm cc condition is ig when re-applie im ON. After c ation is same e OFF, but also Quence and if arm condition, uence for stan mperature (RL ill be ON whe controlling. Yo c contact. It is ts alarm by te notrol output N on band [L &R ng control) an e [L &R,L], al	econd alarm it operates s an alarm of s and alarm of it operates s an alarm of operations, alal learing alarm as alarm lated alarm settin its alarm of alarm lated by sequence dby sequence of by sequence its alarm of selectable mperature WV is not arm output d PV is not arm output	In this are an econdition both alarm condition, t rm latch op rom secono sequence a n condition ch and sta g value, or condition, a operates. e 1, alarm be 2, alarm arm operat between change c 6(0% for c .BA monit t decreasi	alarm co. a, standad a, standad hits first , standad hits first , standad and if it i n, standad if it i n, standad alarm ou latch and latch and latch and latch and latch and latch and box first si standad of the si stopping to ring tio N.	Induon, this the rat alarm opera- nd standby see alarm condition condition, stan s alarm condition and alarm opera quence 1. It opera- pation changing tput does not to i standby seque d standby seque d standby seque t, RL - 2), switc or when sensor end alarm [5b R ubject. For he: control) and P me [L b RL], or w than LBA do	tes. uence. Wi is ignored dard alarm on, alarm of tes. variates not el when re 1: Pow nce 1: Pow nce 2: Pow ning STOP r's discon cted with R] or alar ating V is not when co ater of the second tes of tes of	ndition nen and noutput only by applied er er ON mode mection moluzzer m latch
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lanual reset[rE5E]

en selecting P/PD control mode, certain temperature erence exists even after PV reaches stable status because ter's rising and falling time is inconsistent due to thermal racteristics of controlled objects, such as heat capacity ter capacity. This temperature difference is called offse manual reset [rE5+] function is to set/correct offset. en PV and SV are equal, reset value is 50.0%. After control

table, PV is lower than SV, reset value is over 50.0% or PV igher than SV, reset value is below 50.0%.

·Manual reset [-E5E] by control result Set below 50.0 as reset value



nput correction[i n - b]

ntroller itself does not have errors but there may be error by external input temperature sensor. function is for correcting this error

.) If actual temperature is 80°C but controller displays 78°C, set input correction value [1 o - b] as '002' and controller displays 80°C.

the result of input correction, if current temperature value (PV) is over each temperature range input sensor, it displays 'HHHH' or 'LLLL'

nput digital filte [68.F] urrent temperature (PV) is fluctuating repeatedly by rapid change of input signal, it reflects to M d stable control is impossible. Therefore, digital filter function stabilizes current temperature value. example, set input digital fil er value as 0.4 sec, and it applies digital fil er to input values during 0.4 and displays this values. Current temperature may be different by actual input value.

r	r	0	r	

olay	Description	Troubleshooting
n	Flashes if input sensor is disconnected or sensor is not connected.	Check input sensor state.
н	Flashes if measured sensor input is higher than temperature range.	When input is within the rated
L	Flashes if mesured sensor input is lower than temperature range	disappears.

Factory Default

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The AC/DC voltage models do not have SSR drive output method[55r.ñ]. In case of control output oUE], if set as 55r, it supports only ON/OFF output.

Installation





nsert product into a panel, fasten bracket by pushing with tools as shown above

Cautions during Use

ollow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.

check the polarity of the terminals before wiring the temperature sensor

For RTD temperature sensor, wire it as 3-wire type, using cables in same thickness and length. For thermocouple (CT) temperature sensor, use the designated compensation wire for extending wire Keep away from high voltage lines or power lines to prevent inductive noise. n case installing power line and input signal line closely, use line filter or varistor at power line and

hielded wire at input signal line. to not use near the equipment which generates strong magnetic force or high frequency noise.

nstall a power switch or circuit breaker in the easily accessible place for supplying or disconnecting ne power.

Do not use the unit for other purpose (e.g. voltmeter, ammeter), but temperature controller Vhen changing the input sensor, turn off the power first before changing

After changing the input sensor, modify the value of the corresponding parameter

24VAC, 24-48VDC power supply should be insulated and limited voltage/current or Class 2, SELV oower supply device.

lake a required space around the unit for radiation of heat.

For accurate temperature measurement, warm up the unit over 20 min after turning on the power. Make sure that power supply voltage reaches to the rated voltage within 2 sec after supplying power. Do not wire to terminals which are not used.

This unit may be used in the following environments

Indoors (in the environment condition rated in 'Specifications' ③Pollution degree 2

②Altitude max. 2,000m (a)Installation category II

Major Products

- Photoelectric Sensors emperature Controllers emperature/Humidity Tran SSRs/Power Controllers

- Timers Panel Meters Fachometer/Pulse (Rate) Meters Display Units
- ensor Controllers