

PID溫度/程序控制器

MAC5

特性

- ◆最新型的控制器 業界首創三組獨立PID高精度調節器的精簡設計
- ◆高亮度大字元顯示，0.3%FS的精度，250ms的取樣時間，雙四位顯示字元；上下限警報等功能
- ◆廣泛用於半導體製造、儀錶測量、環境試驗設備、石油化工、冶金等自動控制領域



規格

Input

- Thermocouple** : 500Ω or more, external resistance tolerance level 100Ω or less input resistance
Influence of lead-wire 1.2 μV/10Ω
- Burnout** : Standard equipment (Up Scale only)
- Measuring range** : Refer to measuring range code table
- Compensation accuracy of reference junction** :
±1°C (ambient temperature 18-28°C)
At the time of vertical plural proximity attachment ±2°C
±2°C (ambient temperature 0-50°C)
At the time of vertical plural proximity attachment ±3°C
Several minutes after power-on, accuracy is not guaranteed.
Reaches the accuracy level within 5 minutes after power-on.
- Tracking of a reference junction** : Below the ambient temperature of 0.5°C/min, compensation accuracy of reference junction ±1°C
- Resistance bulb stipulated current resistance bulb** : Approx. 0.25mA
- Lead wire resistance tolerance level** : 5Ω or less per wire (Resistance of three lines should be equal)
- Measuring range** : Refer to measuring range code table
- Voltage (mV) Input resistor** : 500kΩ or more.
- Input voltage range** : Refer to measuring range code table.
- Voltage input (V) Input resistor** : 500kΩ or more
- Input voltage range** : Refer to measuring range code table
- Current input (mA) reception Resistance** : 250Ω (built-in)
- Input range** : Refer to measuring range code table.
- Sampling period** : 0.25 second
- PV filter** : 0-9999 second
- PV offset compensation** : ±500 unit
- PV gain correction** : ±5.00%
- Option**
- Control output 2 (Option)** : Control output 2 is exclusive option of event 3 and DI 4.
Contact : normal open (1a) 240V AC 2A (resistance load)
Voltage pulse (SSR drive) : 12V DC+1.0-1.5V MAX20mA
Display accuracy ±1% (accuracy maintenance range 23°C±5°C)
Load regulation ±0.2%, resolution approx. 1/12000
- Event 3 (Option)** : Control output 2 is exclusive option of event 3 and DI 4.
Item and contents are same with event 1 and 2.
- DI (option)** : DI is exclusive selection option with control output 2, Event3
Input rating : 5V DC 0.5mA
- Allotment function** : 2nd SV, 3rd SV, 4th SV, Control RUN, Manual output, Auto tuning, Latching release, Super key lock.
Input minimum retention time : 0.25 second
Input of operation : Non-voltage contact or open collector

Control

- Control system** : PID control with an auto tuning function or ON-OFF operation
- Proportional band (P)** : OFF and 0.1-999.9% of measuring range (ON-OFF operation by OFF setting)
(If both I and D are OFF, P operation)
- ON-OFF Differential-gap (DE)** : 1-999 unit
- Integration Time (I)** : OFF, 1-6000 seconds (PD operation by OFF setting)
- Manual Reset (MR)** : ±50.0% (effective when set as I = OFF)
- Output limiter (OL/OH)** : 0.0-100.0% (OL<OH) (set resolution 0.1)
- Soft start** : OFF, 0.5-120.0 seconds (set resolution 0.5)
- Proportional period** : 0.5-120.0 seconds (set resolution 0.5)
- Control output characteristic** : Possible to choose either RA (heating) or DA (cooling).
- Manual output** : 0.0-100.0% (set resolution 0.1)
* Each parameter, (P, I, D, DE, MR, OL, and OH) belongs to 1~3 categories.
- Control output 1 Contact** : normal open (1a) 240V AC 2A (resistance load)
Voltage pulse (SSR drive) : 12V DC+1.0-1.5V MAX20mA
Current 4-20mA DC load resistance 500Ω or less
Display accuracy ±1% (accuracy maintenance range 23°C±5°C)
Load regulation ±0.2%, resolution approx. 1/12000
- Event 1 2** : 2 sets
- Output rating** : Contact Normal open (1a) 240V AC 2A (resistance load) EV1·EV2 and common Kind of event
- Setting range** : Upper limit absolute value alarm, Lower limit absolute value alarm within measuring range
Upper limit deviation alarm, Lower limit deviation alarm -1999-2000 unit
Within deviation alarm, without deviation alarm 0-2000unit
Standby operation OFF No standby operation, 1 Only at the Time of Power-on, standby operation,
2 At the Time of power switch on, each alarm operating point is changed, deviation alarm's execution SV is changed, and RUN/STBY(RST) is switched over standby operation, at the time of AUTO/MAN switchover.
- Latching** : Alarm operation maintenance function (Release is done by key operation, or power OFF. In the case of release power OFF, all alarms are called off simultaneously)
- Differential gap** : 1-999 unit
- Output characteristic** : Choose from normal open (NO) or normal closing (NC).
If NC is chosen and power is turned on, relay becomes ON about 1.8 seconds and becomes OFF at event power range.
- Allotment Function** : Upper limit absolute value Alarm, Lower limit absolute value alarm, scale over alarm, Upper limit deviation value alarm, lower limit deviation value alarm.
Within deviation alarm, Without deviation alarm, Run signal.

外觀尺寸

MAC5A 96mm×96mm



MAC5B 48mm×96mm



MAC5C 72mm×72mm

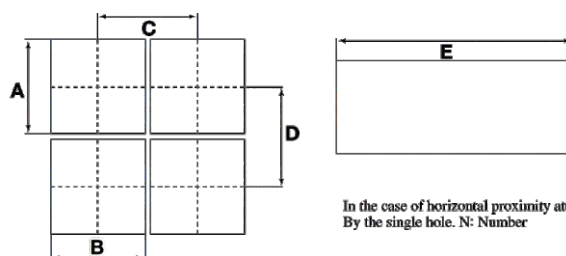


MAC5D 48mm×48mm



Unit : mm

	A	B	C	D	E
MAC5A	92 ^{+0.8} ₋₀	92 ^{+0.8} ₋₀	96min	96min	(96×N-4) ^{+0.8} ₋₀
MAC5B	92 ^{+0.8} ₋₀	45 ^{+0.6} ₋₀	48min	96min	(48×N-3) ^{+0.6} ₋₀
MAC5C	88 ^{+0.7} ₋₀	68 ^{+0.7} ₋₀	72min	72min	(72×N-4) ^{+0.7} ₋₀
MAC5D	45 ^{+0.6} ₋₀	45 ^{+0.6} ₋₀	48min	48min	(48×N-3) ^{+0.6} ₋₀



In the case of horizontal proximity attachment
By the single hole. N: Number

Note: Proximity attachment by a single hole is possible only in the case of horizontal direction
When an apparatus that was attached in vertical direction is removed, a dedicated detachment tool is required.

型號選用

●MAC5A・MAC5B

Item	Code	Specification
1. Series	MAC5A-	96×96mm size Digital controller
	MAC5B-	48×96mm size Digital controller
2. Input	M	Thermocouple (K, J, T, E, R, S, U, N, B, P II, Wre5-26) Input resistor about 500kΩ or more
		Resistance bulb (Pt100, JPt100) Specified current about 0.25mA
	V	Voltage (0~10mV, 0~20mV, -10~10mV, 0~50mV, 0~100mV) Input-resistance 500kΩ or more
		I
3. Control Output 1	C	Contact 1a 240V AC 2A (Resistance load)
	S	Voltage pulse (SSR drive voltage) 12V+1~-1.5V 20 mA DC
	I	Current 4~20mA DC Maximum load resistance 500Ω
	V	Voltage 0~10V DC MAX 2mA
4. Power Supply	F-	90~264V AC
	L-	21.6V~26.4V AC/DC
5. Event Output	N	None
	E	Event outputs 1,2 (two points) Contact 1a 240V AC 2A (Resistance load)
6. Control output 2	N-	None
	C-	Contact 1a 240V AC 2A (Resistance load)
	S-	Voltage pulse (SSR drive voltage) 12V+1~-1.5V 20 mA DC
	I-	Current 4~20mA DC Maximum load resistance 500Ω
	V-	Voltage 0~10V DC MAX 2mA
	Event output	E-
DI	D-	DI 4 (one point) Input rating 5V DC 0.5mA
7. DI	N	None
	D	DI 1, 2, 3 (three points) Input rating 5V DC 0.5 mA
8. CT Input	N	None
	H	CT Input Two points
9. Analog output	N	None
	T	Current 4~20 mA DC Load resistance 300Ω or less
10. Communication	N	None
	R	RS485

●MAC5C, MAC5D

Item	Code	Specification
1. Series	MAC5C-	72X72 mm size Digital Controller
	MAC5D-	48X48 mm size Digital Controller
2. Input	M	Thermocouple (K, J, T, E, R, S, U, N, B, PLII,WRe5-26) Input resistor about 500kΩ or more
		Resistance bulb (Pt 100, JPt 100) Specified current about 0.25mA
	V	Voltage (0~10mV, 0~20mV, -10~10mV, 0~50mV, 0~100mV) Input-resistance 500kΩ or more
		I
3. Control Output 1	C	Contact 1a 240V AC 2A (Resistance load)
	S	Voltage pulse (SSR drive voltage) 12V+1~-1.5V 20mA DC
	I	Current 4~20mA DC Maximum load resistance 500Ω
	V	Voltage 0~10V DC MAX 2mA
4. Power Supply	F-	90~264V AC
	L-	21.6~26.4V AC/DC
5. Event Output	N	None
	E	Event output 1, 2 (two points) Contact 1a 240V AC 2A(Resistance load)
6. Control output 2	N-	None
	C-	Contact 1a 240V AC 2A (Resistance load)
	S-	Voltage pulse (SSR drive voltage) 12V+1~-1.5V 20mA DC
	I-	Current 4~20 mA DC Maximum load resistance 500Ω
	V-	Voltage 0~10V DC MAX 2mA
	Event Output	E-
DI	D-	DI 4 (one point) Input rating 5V DC 0.5mA
7. DI	N	None
	D	DI 1, 2, 3 (three points) Input rating 5V DC 0.5mA
CT input	H	CT Input Two points
8. Analog output	N	None
	T	Current 4~20 mA DC Load resistance 300Ω or less
Communication	R	RS485

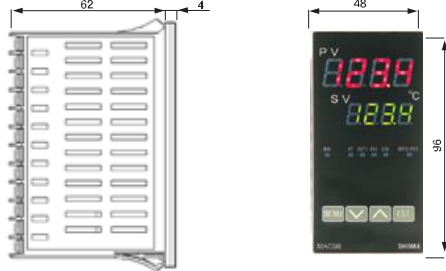
External Dimension

unit: mm

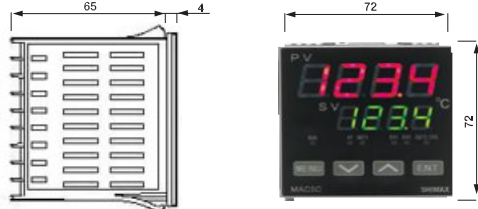
MAC 5A 96X96



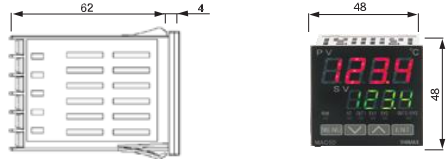
MAC 5B 48X96



MAC 5C 72X72



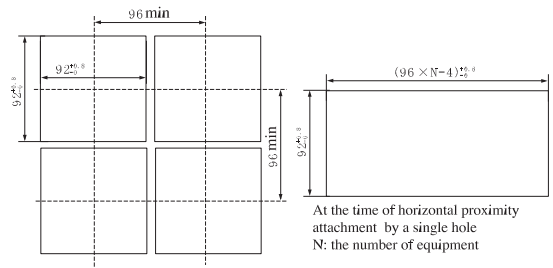
MAC 5D 48X48



Panel Cutout

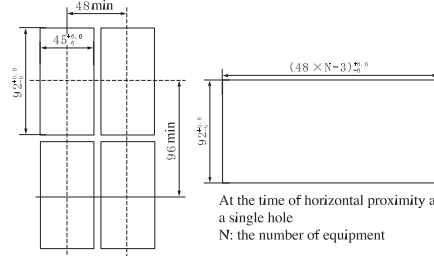
unit: mm

MAC5A



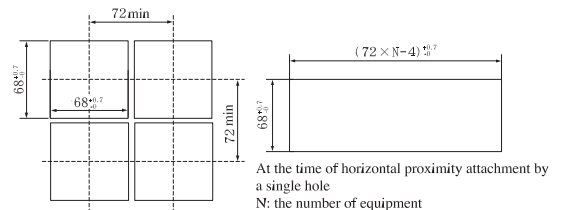
At the time of horizontal proximity attachment by a single hole
N: the number of equipment

MAC5B



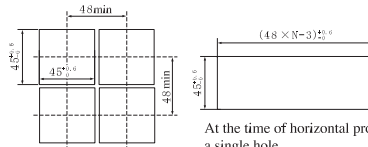
At the time of horizontal proximity attachment by a single hole
N: the number of equipment

MAC5C



At the time of horizontal proximity attachment by a single hole
N: the number of equipment

MAC5D



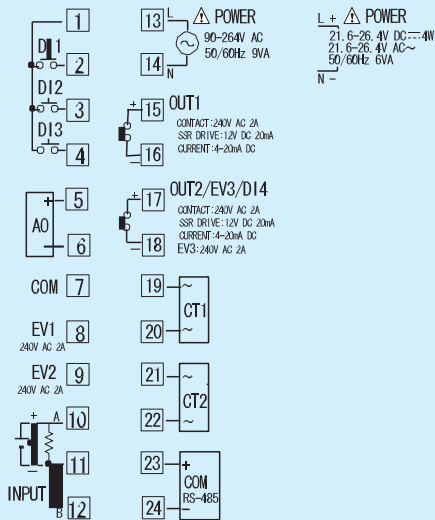
At the time of horizontal proximity attachment by a single hole
N: the number of equipment

Proximity attachment by a single hole is possible only in the case of horizontal direction
When an apparatus that was attached in vertical direction is removed, a dedicated detachment tool is required

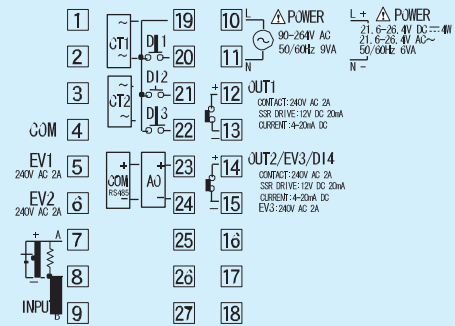
Terminal Arrangement Diagram

MAC5A

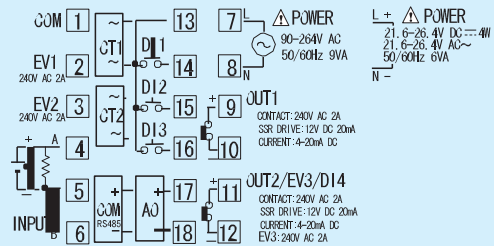
MAC5B



MAC5C



MAC5D



The contents of this instruction are subject to change without notice.