SHIMAX

DIGITAL CONTROLLER

CE

MAC3 SERIES



MAC3A
(W96×H96mm)

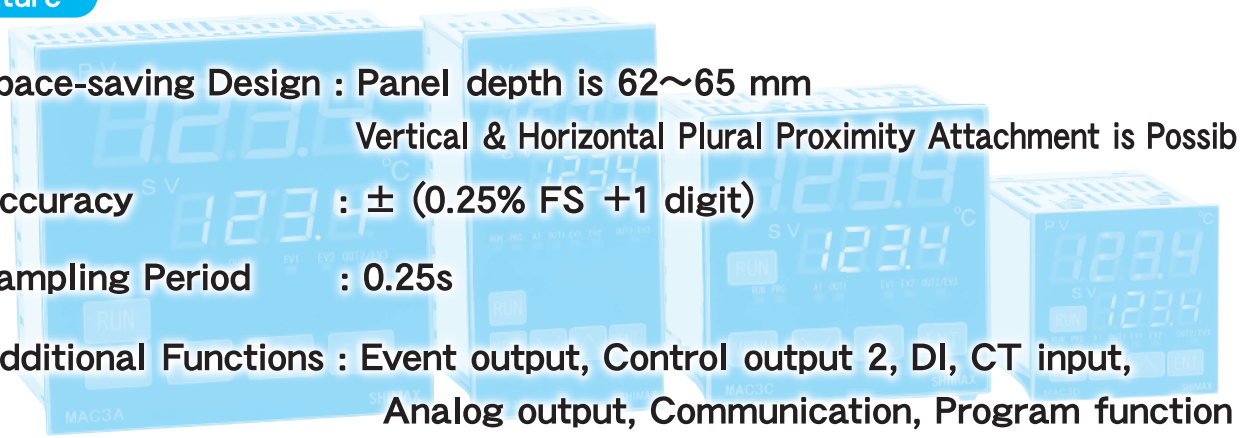
MAC3B
(W48×H96mm)

MAC3C
(W72×H72mm)

MAC3D
(W48×H48mm)

Compact Digital Controller With Abundant Additional Functions

Feature



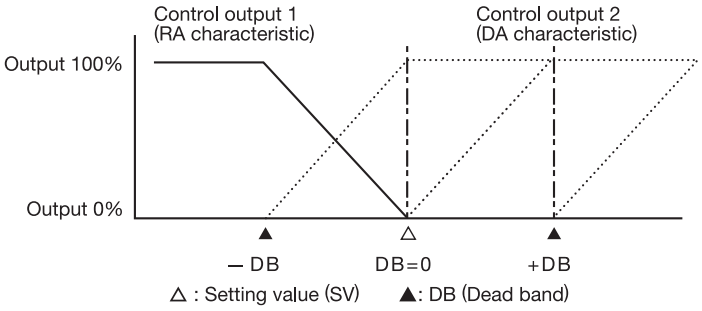
- Space-saving Design : Panel depth is 62～65 mm
  Vertical & Horizontal Plural Proximity Attachment is Possible
- Accuracy : ± (0.25% FS +1 digit)
- Sampling Period : 0.25s
- Additional Functions : Event output, Control output 2, DI, CT input, Analog output, Communication, Program function

Control Output 2

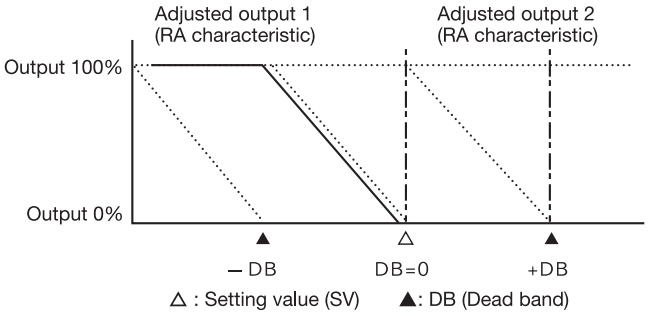
Two output-characteristics figure

Output of two output-characteristics is shown as follows.
◎Conditions : P operation, Manual reset 1(ニ,ー)

1) OUT 1 RA (Heating) ･OUT 2 DA (Cooling) operation

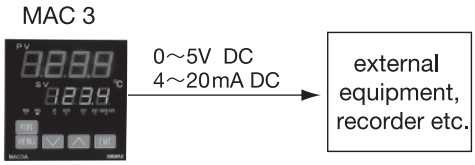


2) OUT 1 RA (Heating)･OUT 2 RA (Heating) operation

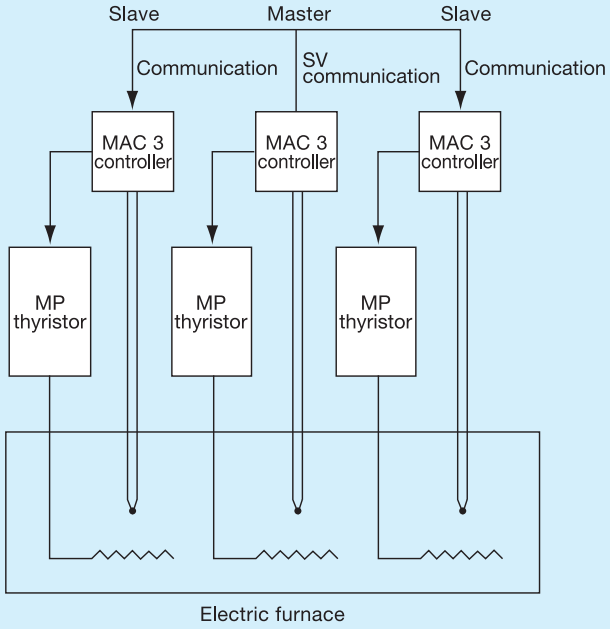


Analog Output

Choose from PV, SV, OUT 1, OUT 2, and CT 1

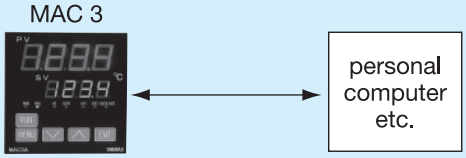


Example: Tunnel kiln Program temperature control



Communication

Serial communication to a personal computer/ sequence can be performed by RS-485.



Event Output

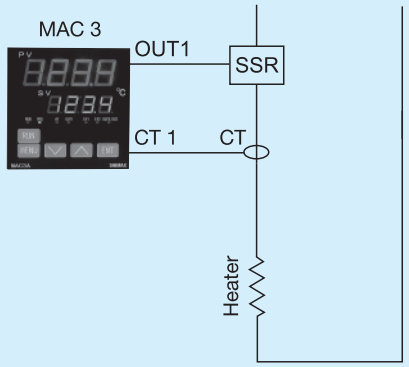
Table of Allotment Function

Function	Character	Remark
No allotment	non	
Upper limit absolute value alarm	HA	
Lower limit absolute value alarm	LA	
Scaling over alarm	So	Operates when signals such as HHHH, LLLL, B, are shown
Upper limit deviation alarm	Hd	
Lower limit deviation alarm	Ld	
Within deviation alarm	Id	
Out deviation alarm	od	
RUN signal	run	Operates while PROG ,FIX are in operation.
Control loop alarm (Heater disconnection / Loop)	ct1	
Step signal	StP	When being changed, it operates for 1 second.
Pattern end signal	P_E	At pattern end time, it operates for 3 seconds
Program end signal	End	At program end time, it operates for 3 seconds
Hold signal	HoLd	During a time hold, it operates
Program signal	Pro0	When a program is chosen, it operates
Up slope signal	u_SL	While the inclination of program control is going up, it operates ("on Hold operation" included)
Down slope signal	d_SL	While the inclination of program control is descending, it operates ("on Hold operation" included).
Guarantee signal	GuA	If EV value, being set up in the program flat part, approaches the targeted value further, it operates

Output rating: Contact Normal open (1a) 240V AC 2A (Resistance load) EV 1- EV 2 in common

CT Input (Control Loop Alarm)

Control Loop Alarm

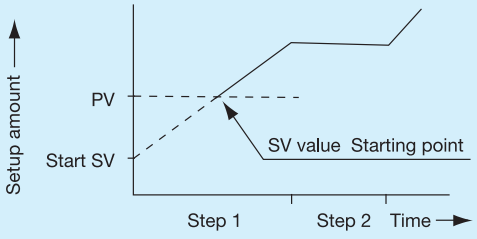


When contact/voltage pulse output is ON,disconnection alarm is given at below EV setup

When contact/voltage pulse output is OFF, loop alarm step signal is given at beyond EV setup

PV start function

When PV value is within the setting range of Step 1 at the time of program operation start, SV value starts from the PV value.



DI

Allotment Functional Table

Character	Function	Input Detection	Content
non	no allotment		
Sb1	1st SV	level	execution SV = 1st SV with closed DI terminal
Sb2	2nd SV	level	execution SV = 2nd SV with closed DI terminal
Sb3	3rd SV	level	execution SV = 3rd SV with closed DI terminal
Sb4	4th SV	level	execution SV = 4th SV with closed DI terminal
run	control RUN	level	RUN with closed DI terminal , STBY with opened
Pro0	program	level	program with closed DI terminal , constant value with opened
AMn	manual output	level	manual with closed DI terminal , automatic with opened
At	auto tuning	edge	AT starting with closed DI terminal edge
HoLd	hold	level	temporally stops program's time with closed DI terminal
SHCP	skip	edge	shift to the program's next step with closed D1 terminal edge
Pt_1	Pattern 1	level	progrom pattern 1 with closed DI terminal edge
Pt_2	Pattern 2	level	progrom pattern 2 with closed DI terminal edge
Pt_3	Pattern 3	level	progrom pattern 3 with closed DI terminal edge
Pt_4	Pattern 4	level	progrom pattern 4 with closed DI terminal edge
L_rS	latching release	edge	all the latching are released with closed DI terminal edge
LocK	super keylock	level	super keylock with closed DI terminal, release with opened DI terminal

Input rating 5V DC 0.5mA

Insulation Block Figure

——— is basic insulation. ——— is functional insulation. ---------- is un-insulating.

Power Supply		
Measurement input (PV)	System	control output 1 (contact)
		control output 1 (voltage pulse / Electric current)
		control output 2 (contact)
External control input 1 (DI 1)		control output 2 (voltage pulse / electric current)
External control input 2 (DI 2)		event output 1 (EV 1)
		event output 2 (EV 2)
External control input 4 (DI 4)		event output 3 (EV 3)
Current transformer 1 (CT 1)		analog output (AO)
		communication

Specification

Display

■Display Method

Digital display : MAC3A (96×96 size)
PV Red 7 segment LED four-digit (character height= about 20mm)
SV Green 7 segment LED four-digit (character height = about 13mm)

MAC3B (48×96 size)
PV Red 7 segment LED four- digit (character height = about 12mm)
SV Green 7 segment LED four-digit (character height = about 9mm)

MAC3C (72×72 size)
PV Red 7 segment LED four- digit (character height = about 16mm)
SV Green 7 segment LED four-digit (character height = about 11mm)

MAC3D (48×48 size)
PV Red 7 segment LED four-digit (character height = about 12mm)
SV Green 7 segment LED four-digit (character height = about 9mm)

Status display : RUN (green), PRG (green), AT (green), OUT1(green)
EV1 (yellow), EV2 (yellow), OUT2/EV3 (yellow)

■Display accuracy : ± (0.25%FS +1 digit) CJ error is not included. 400℃ or less of B thermocouple is not covered under accuracy warranty. Display accuracy during EMC examination is ± 5% FS.

■Accuracy maintenance range : 23 ± 5℃

■Display range : -10%～110% of measuring range But, -200～600℃ of Pt 100 is -240～680℃

■Display resolution : depends on measuring range and scaling.

■Input scaling : possible at the time of voltage and electric current input -1999～9999 (Span 10～10000 count, No decimal point at the position of decimal 0.1, 0.01, 0.001)

Setup

■Setting system : by five front keys (MENU ▽ △ ENT RUN).

■SV setting range : the same as a measuring range.

■Setting lock : communication and a key setup (three- level), DI (one level)

Operation classification	Level	Content of lock
Communication & key setup	OFF	no lock
	1	execution SV, manual numerical change, and change of key lock level are possible
	2	manual numerical change as well as change of key lock level are possible
	3	change of key lock level is possible
	4	change of key lock level is possible. Run key operation can not be perhibited
DI setup		super key lock (screen shift prohibited. fixed to basic screen)

Irrespective of a setting lock by communication & key setup, RUN key is constantly effective
But during the super key lock execution by DI, RUN key is not received.

■SV setting limiter : the same as measuring range (lower limit < upper limit).

■Setup of unit : possible to set up at the time of sensor input, ℃, ˚F

Input

■Multi input

Thermocouple input resistance : 500kΩ and more, external resistance tolerance level 100Ω or less

Influence of lead resistance : 1.2μV/10Ω

Burnout : Standard equipment (up scale only)

Measuring range : See "Measuring range character table" on P7

Reference junction Compensation accuracy : ±1℃ (ambient temperature 18～28℃)
At the time of vertical plural proximity attachment ±2℃
±2℃ (ambient temperature 0～50℃)
At the time of vertical plural proximity attachment ±3℃
＊Immediately after switching on a power supply, accuracy is not covered by warranty. It reaches in accuracy within 5 minutes after the power supply is switched on.

Tracking of reference junction : below the ambient temperature of 0.5℃ / min, compensation accuracy of reference junction ±1℃

Resistance bulb stipulated current : approx. 0.25 mA

Lead wire resistance tolerance level : 5Ω or less per wire (resistance of three lines should be equal)

Influence of lead resistance : per line less than 5Ω 0.2%FS
per line less than 10Ω 0.5%FS
per line less than 20Ω 1.0%FS

Measuring range : See "Measuring range character table" on P7

Voltage (mv) Input resistance : more than 500kΩ

Input voltage range : See "Measuring range character table" on P7

■Voltage input (V) Input resistance : more than 500kΩ

Input voltage range : See "Measuring range character table" on P7

■Electric current input (mA) Reception resistance : 250Ω (built-in)

Input current range : See "Measuring range character table" on P7

■Sampling period : 0.25 second

■PV filter : 0～9999 seconds

■PV offset compensation : ± 500 unit

■PV gain compensation : ± 5.00%

Control

■Control system : PID control with auto tuning function, or ON-OFF operation

■Proportional band (P) : OFF and 0.1～999.9% of measuring range (ON-OFF operation by OFF setup)

■ON-OFF differential gap (DF) : 1～999 unit

■Integration time (I) : OFF, 1～6000 seconds (PD operation by OFF setup)

■Derivative time (D) : OFF, 1～3600 seconds (PI operation by OFF setup)

} P operation if both I and D are OFF

■Manual reset (MR) : ±50.0% (I= effective at the time of OFF setup)

■Output 2 dead band : -1999～5000 unit

■Output limiter (OL,OH) : 0.0～100.0% (OL< OH) (setting resolution 0.1)

■Soft start : OFF, 0.5～120.0 seconds (setting resolution 0.5)

■Proportional period : 0.5～120.0 seconds (setting resolution 0.5)

■Control output characteristic : output 1, output 2. Possible to choose either RA (heating) or DA (cooling)

■Manual output : 0.0～100.0% (setting resolution 0.1)
＊Each parameter of P, I, D, DF, MR, OL, and OH are three kinds of 1～3 both in output 1 and output 2

Control Output 1

■Contact : Normal open (1a) 240V AC 2A (resistance load)

■Voltage pulse (SSR drive) : 12(-1.5 to +1.0)V DC MAX 20mA

■Electric current : 4 to 20mA DC 500ohm or less of load resistance
Accuracy ±1%(23˚C±5˚C), Resolution about 1/12000

■Voltage : 0 to 10V DC MAX 2mA
Accuracy ±1%(23˚C±5˚C), Resolution about 1/12000

Option

Program function

■Number of Pattern and Steps : 1 Pattern 40 steps, 2 Pattern 20 Steps, or 4 Pattern 10 Steps

■PID selection : To each output, three kinds or PID 1, PID 2, and PID 3

■Time setup : 0 minute and 0 second～99 minutes and 59 seconds, or 0 hour and 0 minute～99 hours and 59 minutes, or 0.0～999.9 hours and ∞ (infinity)

■Time setting resolution : 1 second or 1 minute or 0.1 hour

■Time accuracy : ± (setup time×0.005 +0.25 second)

■Inside step setting parameter : SV, time, PID No.

■Number of repetitions : 1～9999 times, and ∞

■Time signal : Allotment to event is possible (One second at step change, 3 seconds for pattern end, and 3 seconds for program end)

■PV start function : equipped

■guarantee soak function : equipped

■Time hold function : Possible at a front key, DI allotment, or communication

■Step skip : Possible at a front key, DI allotment, or communication

■Power failure compensation : not equipped (although the content of setting is held, lapsed time, execution step, and the times of execution are reset)

Control output 2

: control outputs 2 is the exclusive selection option of event 3 and DI4

■Contact : normal open (1a) 240V AC 2A (resistance load)

■Voltage pulse (SSR drive) : 12(-1.5 to +1.0)V DC MAX 20mA

■Electric current : 4 to 20mA DC 500ohm or less of load resistance
Accuracy ±1%(23˚C±5˚C), Resolution about 1/200

■Voltage : 0 to 10V DC MAX 2mA
Accuracy ±1%(23˚C±5˚C), Resolution about 1/200

Event 1-2

: Two-point set

■output rating : contact normal open (1a) 240V AC 2A (resistance load)
EVI-EV2 and common

■Event type : See “Event output Allotment function table" on P3

■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, out deviation alarm 0～2000 unit
control loop alarm 0.0～50.0A

■Standby operation : No OFF standby operation
1 Standby operation = only at the time of power input
2 Standby operation = at the time of: power-supply input, change of each alarm action point,change of deviation alarm's execution SV, switching of RUN/STBY (RST),and switching of auto / manual

■Latching : Alarm operation holding function :
(Release is performed by key operation, DI, or the power supply OFF. Release by DI and release by power supply OFF release all the alarms simultaneously)

■Differential gap : 1～999 unit

■Output characteristic : Choose either normal open (NO) or normal close (NC)
"Note" If NC is chosen:
Relay turns to ON about 1.8 seconds later when power supply is turned on. And turns to OFF at event power range

● Event 3

: Event 3 is the exclusive selection option of control output 2 and D14

: Item and the content are the same as event 1 and event 2

● DI 1,2

: Two-point set In MAC3C and MAC3D, exclusive selection option with CT input

■Input rating : 5V DC 0.5mA

■Allotment functional type : See " DI input allotment function list table " on P3

■Minimum holding time of input : 0.25 second

■Input of operation : Non-voltage contact or open collector

●DI4

: exclusive selection option with control output 2 and event 3

■Number of inputs : One point

: Item and the content are the same as D1 and D2

●Communication function

: In MAC3C and MAC3D, exclusive selection option with analog output

■Communication type : EIA standard RS-485

■Communication method : Two-wire system half duplex multidrop (bus) system

■Synchro system : Start/stop system

■Communication range : Maximum 500m (depends on conditions)

■Transmission speed : 1200, 2400, 4800, 9600, 19200, 38400 bps

■Data format : Start 1bit, stop 1, 2bit, data length 7,8 bits,
No parity, odd number, even number

■Master function : Choose from SV, OUT 1, or OUT 2
(1:n The number of slave equipment. Maximum 31)
*When MAC 3 is installed as the master,slave address range should be continuation
*At the time of master setup, it is improper to make bus connection to other host PC etc
*At the time of cascade control, the input range of master apparatus and slave apparatus should be the same

■Slave address : 1～255

■Parameter preservation mode : Choose from RAM, MIX, and EEP mode

■Error detection : Not equipped. Choose from addition, addition complement of 2, exclusive OR, CRC-16, and LRC

■Flow control : Not equipped

■Delay : 1～500 ms (Resolution 1 ms)

■Communication code : ASCIIcode or binary code

■Protocol : SHIMAX standard or MODBUS ASCII, MODBUS RTU protocol

■Terminal resistance : 120Ω (external connection)

■The number of connection : A maximum of 32 equipments (depends on conditions. A host included)

● Analog Output (AO)

: In MAC3C and MAC3D, exclusive selection option with communication function

■Output type : Choose from PV, SV, OUT 1, OUT 2, and CT 1

■Output rating : 4～20mA DC 300Ω or less of load resistance, display accuracy ±0.3%
(Accuracy maintenance range 23℃±5℃)
Load regulation ±0.05%. Resolution about 1/50,000
0～5V DC load current 2mA MAX, display accuracy ±0.3%.
Resolution about 1/50,000

■Scaling function : Equipped (limit depends on output type)
Analog output lower limit < analog output upper limit

■Output limiter : 0.0～100% (reverse setup is possible)

● CT input

: In MAC3C and MAC3D, exclusive selection option with DI 1 and DI 2

■Detection method : Electric current judging system by CT sensor

■Range of detection : 0.0～55.0A

■Sampling period : 125 ms

■Detection accuracy : ±5%FS

■Detection delay time : 0.5～30.0 seconds

■Alarm output : allotted to event

■Type of object to detect : alloted to OUT I, OUT 2, EV I, EV 2, and EV 3

■Setting range of alarm operation point : 0.0～50.0A

■Recommended CT sensor : Product of U_RD co., CTL-6-L ,CTL-6-V, CTL-6-P-H, CTL-6-S-H, CTL-12L-8

General specification

■Data retention : Non-volatile memory (EEPROM)

■Momentary stop dead time : within 0.02 second. Should have no influence with 100% dip

■Environmental condition for use
Temperature : -10～55℃
Humidity : Below 90% RH (no condensation)
Height : Altitude 2000m or under
Category : II
Degree of contamination : 2

■Storage temperature conditions : -20～65℃

■Electric supply voltage : 90-264V AC 50/60Hz, or 21.6-26.4V AC (50/60 Hz)/DC

■Power consumption : 90-264V AC Maximum 9 VA, 21.6-26.4V AC Maximum 6VA,
21.6-26.4 V DC Maximum 4W

■Conformity standard : CE (EMC: Class A)

■Insulation Class : Class I equipment

■Input noise cleaning ratio : Normal 50 dB or more

■Impulse-proof noise : Power supply Normal 100ns / 1μs ±1500V

■Insulation resistance : Between input and output, and power terminal 500V, DC 20MΩ or more
: Between analog output or communication, and other input and output 500V DC, 20MΩ or more

■Electric strength : Between input and output, and power supply terminal
1500V AC For1 minute or 1800V AC 1 second
: analog output or DI or between communication and other input and output
500V AC For 1 minute or 600V AC For 1 second

■Vibration-proof : Frequency 10～55～10Hz, Amplitude 0.75 mm (half amplitude)
…100 m/S² direction 3 directions
Sweep rate 1 octave /minute (About 5 minutes/cycle for round-trip)
Numbers of sweep 10 times

■Material of case : PPE or PC

■Case color : light gray

■Outside dimension
MAC3A : W96×H96×D69mm (Depth of panel is 65mm)
MAC3B : W48×H96×D66mm (Depth of panel is 62mm)
MAC3C : W72×H72×D69mm (Depth of panel is 65mm)
MAC3D : W48×H48×D66mm (Depth of panel is 62mm)

■Thickness of panel : 1.2～2.8mm

■Fitting hole size
MAC3A : W92×H92mm Attachment hole size of horizontal plural proximity attachment W (96×N−4) mm H92
MAC3B : W45×H92mm N = the number of equipment W (48×N−3) mm H92
MAC3C : W68×H68mm W (72×N−4) mm H68
MAC3D : W45×H45mm W (48×N−3) mm H45

■Mass
MAC3A : About 220g
MAC3B : About 160g
MAC3C : About 160g
MAC3D : About 120g

■Isolation : Except for input, system, and contact, control output is un-insulated
: Between event output EV1 and event output EV2 is un-insulated
: Others are basic insulation or functional insulation.
See " Insulation block figure " on P3

■Order code table

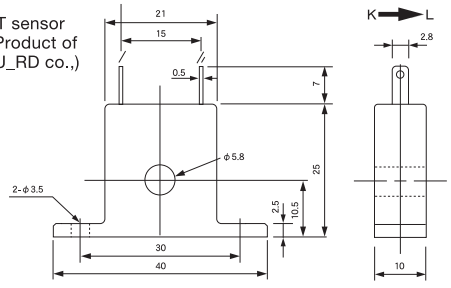
●MAC3A・MAC3B

Item	Code	Specification
1. Series	MAC3A—	96×96mm size Digital controller
	MAC3B—	48×96mm size Digital controller
2. Input	M	Thermocouple (k, J, T, E, R, S, U, N, B, PⅡ, Wre5—26) Input resistor about 500kΩ or more Resistance bulb (Pt100, JPt100) Specified current about 0.25mA Voltage (0 ～ 10mV, 0 ～ 20mV, −10～10mV, 0～50mV, 0～100mV) Input-resistance 500kΩ or more
	V	Voltage (0～1V, 0～2V, −1～1V, 1～5V,0～5V, 0～10V) Input resistance 500kΩ or more
	I	Current (4～20mA, 0～20mA) Reception resistance 250Ω
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—	Event output 3(one point) Contact 1a 240V AC 2A (Resistance load)
DI	D—	DI 4 (one point) Input rating 5V DC 0.5mA
7. DI	N	None
	D	DI 1, 2 (Two points) Input rating 5V DC 0.5 mA
8. CT Input	N	None
	H	CT Input
9. Analog output	N	None
	T	Current 4～20 mA DC Load resistance 300Ω or less
	V	Voltage 0～5V DC MAX 2mA
10. Communication	N	None
	R	RS485
11. Program function	P	Program function

■Optional Product

Name of product	Model
CT sensor (Product of U_RD co.,)	CTL－6－S－H（0.0～50.0A）

CT sensor
(Product of
U_RD co.,)



●MAC3C, MAC3D

Item	Code	Specification
1. Series	MAC3C—	72X72 mm size Digital Controller
	MAC3D—	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 Voltage (0～10mV, 0～20mV, −10～10mV, 0～50mV, 0～100mV) Input-resistance 500kΩ or more
	V	Voltage (0～1V, 0～2V, −1～1V, 1～5V, 0～5V, 0～10V) Input resistance about 500kΩ or more
	I	Current (4～20mA, 0～20mA) Reception resistance 250Ω
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—	Event output 3 (one point) contact 1a 240V AC 2A (Resistance load)
DI	D—	DI 4 (one point) Input rating 5V DC 0.5mA
7. DI	N	None
	D	DI 1, 2 (Two points) Input rating 5V DC 0.5mA
CT input	H	CT Input
8. Analog output	N	None
	T	Current 4～20 mA DC Load resistance 300Ω or less
	V	Voltage 0～5V DC MAX 2mA
Communication	R	RS485
9. Program function	P	Program function

■Measuring Range Character Table

Input Type			Code	Measureing Range	
				Unit Code ㄷ (℃)	Unit Code ㄱ (℉)
Multi input	Thermo Couple	R	r 1	0 ～1700	0 ～3100
		K	K 1	−199.9～ 400.0	−300 ～ 700
		K	K 2	0 ～1200	0 ～2200
		K	K 3	0.0～ 300.0	0 ～ 600
		K	K 4	0.0～ 800.0	0 ～1500
		J	J 1	0 ～ 600	0 ～1100
		J	J 2	0.0～ 600.0	0 ～1100
		T	t 1	−199.9～ 200.0	−300 ～ 400
		E	E 1	0 ～ 700	0 ～1300
		S	S 1	0 ～1700	0 ～3100
		*5 U	U 1	−199.9～ 200.0	−300 ～ 400
		N	n 1	0 ～1300	0 ～2300
		*1 B	b 1	0 ～1800	0 ～3300
		*3 Wre5-26	S-26	0 ～2300	0 ～4200
		*4 PLII	PL2	0 ～1300	0 ～2300
	Resistance Bulb Pt100		P 1	−200 ～ 600	−300 ～1100
			P 2	−100.0～ 200.0	−150.0～ 400.0
		*6	P 3	0.0～ 100.0	0.0～ 200.0
		*6	P 4	−50.0～ 50.0	− 60.0～ 120.0
			P 5	−100.0～ 300.0	−150.0～ 600.0
			P 6	−199.9～ 300.0	−300 ～ 600
			P 7	−199.9～ 600.0	−300 ～1100
			P 8	0 ～ 250	0 ～ 500
			JP 1	−200 ～ 500	−300 ～ 900
			JP 2	−100.0～ 200.0	−150.0～ 400.0
		*6	JP 3	0.0～ 100.0	0.0～ 200.0
		*6	JP 4	− 50.0～ 50.0	− 60.0～ 120.0
			JP 5	−100.0～ 300.0	−150.0～ 600.0
			JP 6	−199.9～ 300.0	−300 ～ 600
			JP 7	−199.9～ 500.0	−300 ～ 900
			JP 8	0 ～ 250	0 ～ 500

Input Type			Character	Measuring Range
Multi input	Voltage (mV)	*7 0～ 10	A 1	Scaling range: −1999～9999 count Spang:10～10000 count Change of decimal point's position is possible. (no decimal point,0.1,0.01,0.001)
		0～100	A 2	
		*7 −10～ 10	A 3	
		0～ 20	A 4	
		0～ 50	A 5	
	Voltage (V)	1～ 5	b 1	
		0～ 5	b 2	
		−1～ 1	b 3	
		0～ 1	b 4	
		0～ 2	b 5	
		0～ 10	b 6	
	Current (mA)	4～20	AA 1	
		0～20	AA 2	

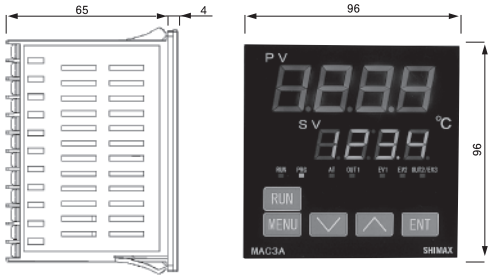
Thermocouple B, R, S, K, E, J, T, N: JIS / IEC
Resistance bulb Pt 100: JIS / IEC
JPt 100: the former JIS

*1 Thermocouple B: Below 400℃(752℉) is not covered by accuracy warranty
*2 Thermocouple Accuracy of the range of 0～−100℃ (−148℉) of the in dicated value at K, T, and U, is ±0.5%FS. Accuracy of −100℃ or under is ±1.0% FS
*3 Thermocouple Wre5-26: Product of Hoskins Mfg. co.,
*4 Thermocouple PLII : Platinel
*5 Thermocouple U: DIN 43710
*6 Resistance bulb Pt/JPt 50.0℃, Accuracy of 0.0～100.0℃ is ±0.3% FS.
*7 Voltage (mV) Accuracy of 0～10mV −10～10mV are ±0.3% of input range

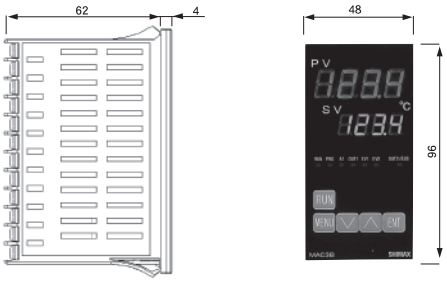
External Dimension

unit: mm

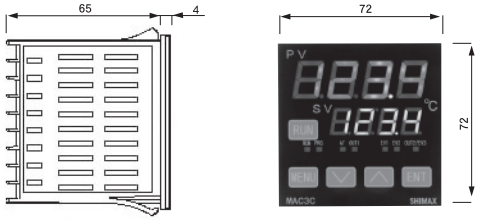
MAC3A 96X96



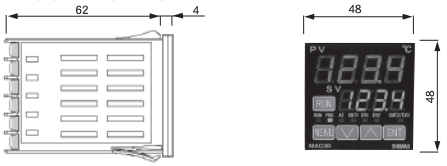
MAC3B 48X96



MAC3C 72X72



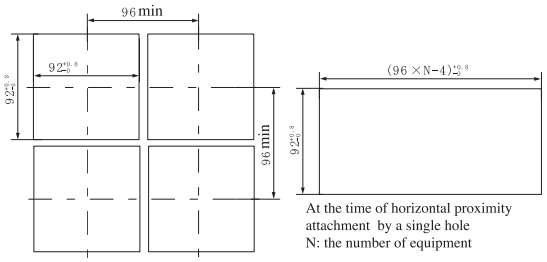
MAC3D 48X48



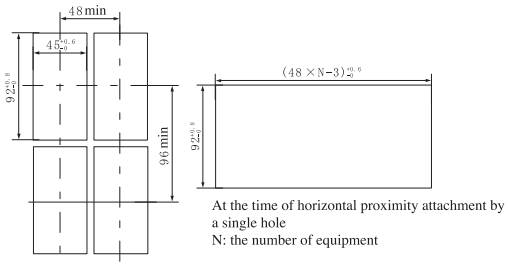
Panel Cutout

unit: mm

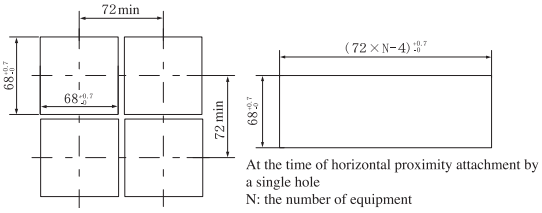
MAC3A



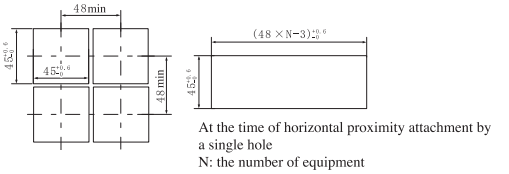
MAC3B



MAC3C



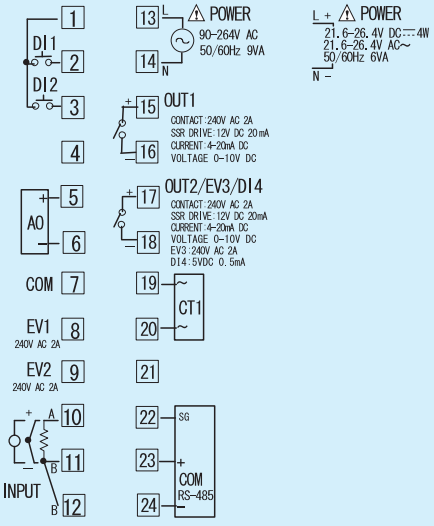
MAC3D



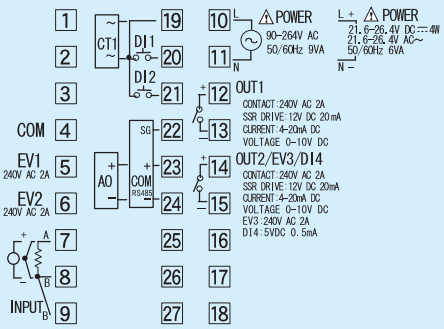
Proximity attachment by a single hole is possible only in the case of horizontal direction
When an apparatus that was attached in vertical direction is removed, a dedicated detachment tool is required

Terminal Arrangement Diagram

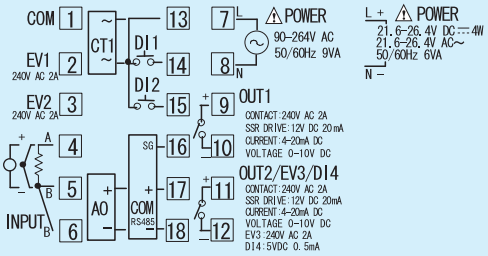
MAC3A
MAC3B



MAC3C



MAC3D



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

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