

Xiamen Maxwell Automation Limited

All-in-one E-catalog

Version 202008



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General Features:

- Dual LCD three color display
- TC / RTD input, analog universal input
- Standard mode with PID, ON-OFF, Manual control mode
- 0.2%F.S measuring accuracy
- Auto/manual control bumpless transfer
- Alarm delay output
- Alarm output relay excitation configurable
- Alarm output interlock function
- Run/Stop mode switchable
- Output% real-time indication
- °C/°F display selectable
- Alarm standby, heater break, heater shortcircuit alarm
- Soft-start and output restriction function
- Flexible on the parameters arrangement
- Optional features
 - RS485 Modbus RTU Communication
 - PV/SV Re-transmission
 - Heating+cooling dual output
 - Remote setting value
 - Output% remote setting under manual control mode
 - 2 alarms
 - Ramp and soak mode, 1 step of ramp+1 step of soak
 - Temperature+timer mode
 - Event input SV setting mode(SV1,SV2,SV3,SV4)
 - Three wires motor valve direct/reverse act control via 2 relays

Technical Specifications

Ordering Information

FT200 (48mm*48mm)(width*height)	
FT204 (48mm*96mm)(width*height)	
FT205 (96mm*48mm)(width*height)	1 2 3 4 5 6 7 8 9 10 11 12
FT207 (72mm*72mm)(width*height)	
FT209 (96mm*96mm)(width*height)	

1:Controllver version

U	Standard PID type
P	Ramp and soak version, 1 ramp + 1 soak, total 2 segments
X	Motor valve direct/reverse control version(two relays)

2:Input

Blank	No code in this position means standard TC/RTD input
A	4-20mA,0-10Vdc

3:OUTPUT 1

R	Relay output
V	SSR Drive/Voltage pulse output
D	4-20mA output
E	0-10Vdc
A	Relay output, for motor valve direct act control

4:OUTPUT 2(output 2 is only available for heating+cooling controller)

N	No output2(For single output controller, choose code N)
R	Relay output
V	SSR Drive/Voltage pulse output
D	4-20mA output
E	0-10Vdc
A	Relay output, for motor valve reverse act control

5:Number of Alarms

1	1 alarm
2	2 alarms
3	3 alarms

6:Power Source

96	85~265Vac 50/60HZ
24	24Vac/24Vdc

7:PV/SV re-transmission

N	No re-transmission function	
A	4-20mA re-transmission via OP2	F 4-20mA re-transmission via AU3
B	0-20mA re-transmission via OP2	G 0-20mA re-transmission via AU3
E	0-10Vdc re-transmission via OP2	K 0-10Vdc re-transmission via AU3

8:RS-485 Communication

N	No communication feature
K	RS-485 modbus RTU communication

9:AUX power source

N	No aux power	B 24Vdc grounded	D 12Vdc grounded
A	24Vdc isolated	C 12Vdc isolated	

10:Position feedback(analog feedback input from INP2)

N	No position feedback	A 4-20mA	B 0-20mA
C	0-5Vdc/potentiometer	D 1-5Vdc	E 0-10Vdc

11:Remote SV setting

N	No remote SV feature	A 4-20mA via INP2	B 0-20mA via INP2
C	0-5Vdc via INP2	D 1-5Vdc via INP2	E 0-10Vdc via INP2
F	4-20mA via INP3	G 0-20mA via INP3	H 0-5Vdc via INP2
J	1-5Vdc via INP3	K 0-10Vdc via INP3	W D1/D2 terminals event input

12:Manual output% remote setting

N	No remote SV feature	A 4-20mA via INP2	B 0-20mA via INP2
C	0-5Vdc via INP2	E 0-10Vdc via INP2	F 4-20mA via INP3
G	0-20mA via INP3	H 0-5Vdc via INP3	K 0-10Vdc via INP3

Display specifications

Display	Upper 4 digits, lower 4 digits, 11 segment LCD display
LED indicators	OP1,OP2,AU1,AU2,ATU,COM,MAN,PRG(48mm*48mm) OP1,OP2,ATU,AU1,AU2,AU3,COM,MAN,PRG,SV1,SV2 SV3,SV4

Input specifications

Inputs	Thermocouple (K,E,J,T,S,R,B,N,Wu3_Re25) RTD (Pt100) Analog signals(0-50mV, 10-50mV,0-5Vdc,0-10Vdc, 1-5Vdc,2-10Vdc,4-20mA,0-20mA,0-10mA)
Resolution	1/0.1° for TC/RTD input 1/0.1/0.01/0.001 for analog input
Indication accuracy	0.2% of F.S. ±1°
Temperature unit	°C / °F Selectable

Technical Specifications

Output specification

Control Output	Relay Contact (SPST) 5A @ 230V AC/30V DC, resistive SSR Drive (Voltage Pulse) 12V DC, 20mA Current 4 to 20mA DC (loop impedance : 500 Ω max) alarm output relay(SPST) 3A@230Vac(resistive load)
Retransmission	4-20mA, 0-10Vdc(loop impedance : 500 Ω max)

Power source and auxiliary power source

Main source	85~265Vac 50/60HZ or 24VDC/AC(optional)
Sensor power	24Vdc, 12VDC(optional)

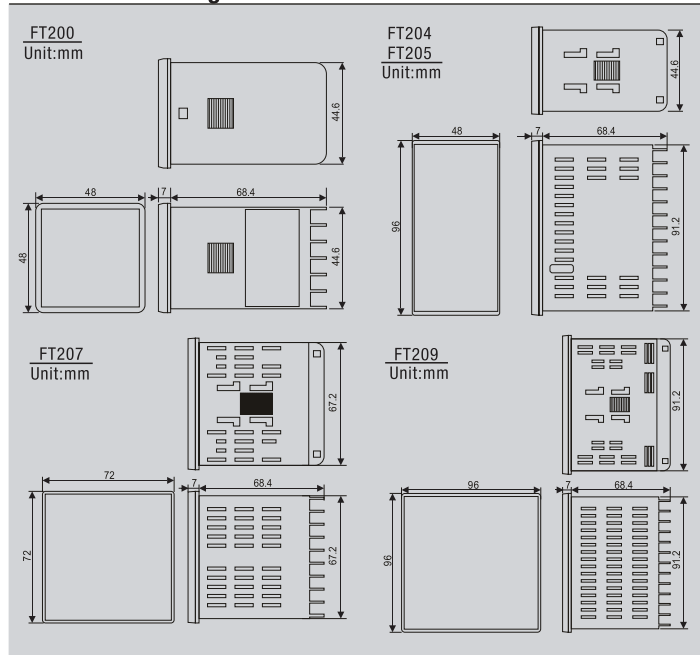
Environmental Specifications

Temperature	Operating : 0 to 50oC (32 to 122oF) Storage : -20 to 75oC (-4 to 167oF)
Humidity	(non-condensing) 85% RH

Mechanical Specifications

Mounting	Panel mount
Weight	0.17 kg(48mm*48mm) 0.27 kg(48mm*96mm) 0.27 kg(96mm*48mm) 0.35 kg(96mm*96mm)

Size and mounting

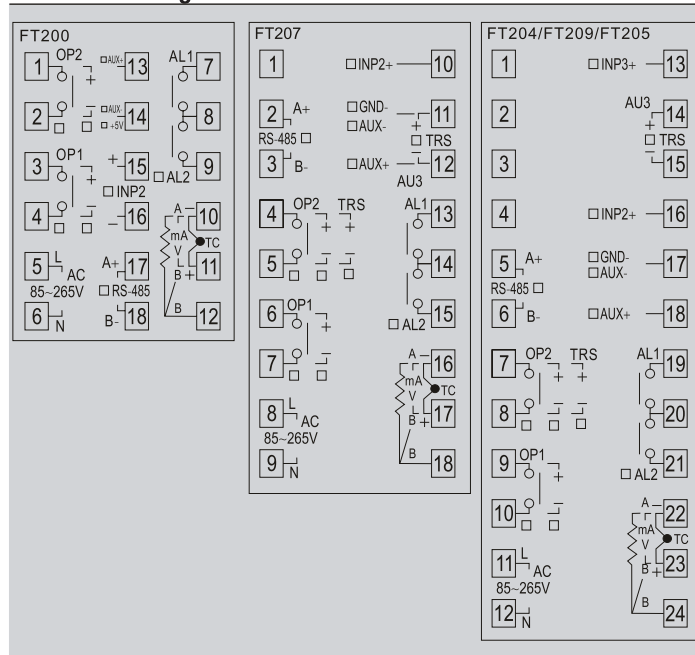


Input sensor and range

Code	Input type	Code	Input type	Code
K	0.0 to 200.0 °C	K D2	0.0 to 100.0 °C	D D1
	0.0 to 400.0 °C	K D4	0.0 to 200.0 °C	D D2
	0 to 400 °C	K A4	-50.0 to 200.0 °C	D G2
	0 to 600 °C	K A6	-100.0 to +200.0 °C	D F2
	0 to 1300 °C	K B3	-199.9 to +200.0 °C	D F3
E	0.0 to 200.0 °C	E D2	0 to 100 °C	D A1
	0.0 to 300.0 °C	E D3	0 to 200 °C	D A2
	0 to 200 °C	E A2	0 to 400 °C	D A4
	0 to 400 °C	E A4	0 to 800 °C	D A8
	0 to 800 °C	E A8	-100 to 200 °C	D C2
J	0.0 to 300.0 °C	J D3	-200 to 400 °C	D C4
	0.0 to 400.0 °C	J D4	-200 to 600 °C	D C6
	0 to 300 °C	J A3	-200 to 800 °C	D C8
	0 to 400 °C	J A4		
	0 to 1000 °C	J A0		
T	0 to 300 °C	T D4		
	0 to 400 °C	T A4		
	0 to 400 °C	T A4		
S **	0 to 1600 °C	S B6		
R	0 to 1769 °C	R B8		
B	200 to 1800 °C	B B8		
N	0 to 1300 °C	N B3		
Wu3_Re25	60 to 2200 °C	W B0		

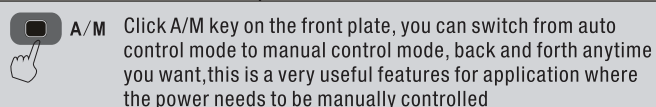
Code	Input type	Code	Input type	Code
V	0 to 50mV	V 02	-1999 to 9999	V 10
V	10 to 50mV	V 10	-199.9 to 999.9	V 03
V	0 to 5VDC	V 03	-19.99 to 99.99	V 08
V	0 to 10VDC	V 04	-1.999 to 9.999	V 09
V	1 to 5VDC	V 08		
V	2 to 10VDC	V 09		
A	4 to 20mA	A 03		
A	0 to 20mA	A 02		
A	0 to 10mA	A 01		

Terminal arrangement

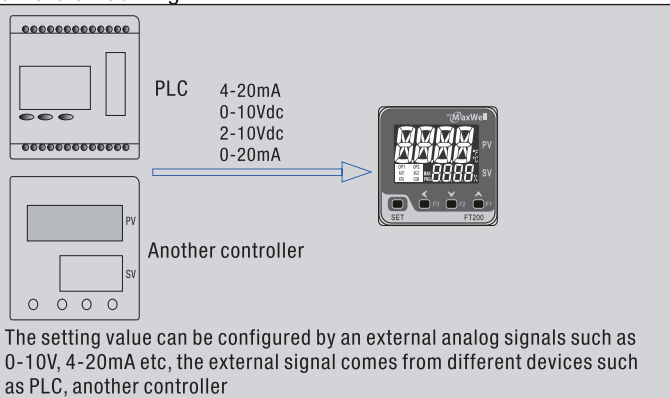


Unique features

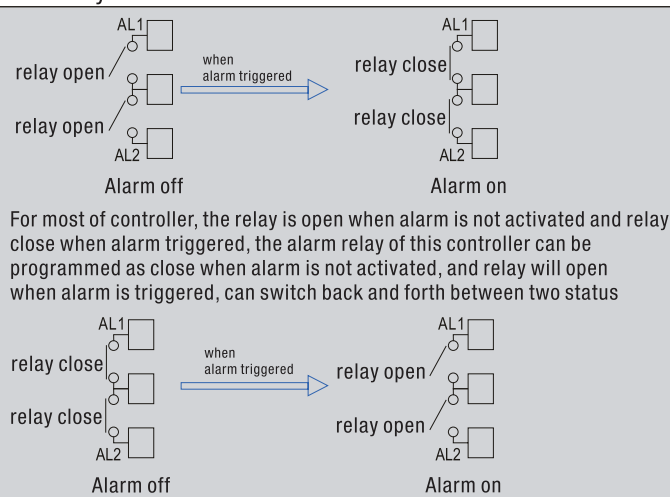
Auto/manual control bumpless transfer



Remote SV setting



Alarm relay excitation



The accuracy is not guaranteed for type S thermocouple in the range of 0-100
Remark 1: user can switch input between thermocouple and RTDs via software
Remark 2: analog input except 0-50mA, 10-50mV needs to be specified when order

Technical Specifications

Event SV input setting

Maximum four different setting value can be programmed with the controller and you can switch between different SV via terminals at the back, 3 terminals at the back.
 If D1 open, D2 open, SV=SV1. D1 close, D2 open, SV=SV2
 D1 open, D2 close, SV=SV3. D1 close, D2 close, SV=SV4

Ramp and soak mode optional

Ramp and soak mode is available on request, total 1 ramp and 1 soak only, temperature can ramp up to SV based on preset ramp up rate, and soak at the SV for as long as it takes, this control mode with timer involved.

Three wires motorized valve control option

This controller can also be made as a controller for three wires motorized valve, typically 2 relays output, 1 relay control the open of the valve, other relay control the close of the relay, some of the valve with feedback signals both feedback valve and non-feedback valve compatible

Process value and setting value re-transmission

Process value or setting value can be re-transmitted as 4-20mA or 0-10 Vdc analog signal and feed to chart recorder or digital displays

RS-485 Modbus RTU communication

Controllers can be connected to HMI and PLC via RS-485 modbus RTU communication

Heating and cooling dual output control mode

This controller can be made as dual PID heating+cooling, it is popular in application such plastic extrusion industry

*We have a strong R&D team and we are capable of custom made items based on customer's specific requirements. for more information you need, please contact our sales team



Features:

- Dual display, 4 digits, 7 segments LED display
- Thermocouple input(K,E,J,T,S,R,B,N,Wu3_Re25,PT100)
- PID, PID Autotune, ON-OFF Control Mode
- **Built-in Relay + SSR Drive output, output field selectable**
- 0.3%F.S measuring accuracy
- Bar graphic display indication
- °C/°F display selectable
- **loop break alarm**
- **Parameter reset to factory default value**
- **RUN/STOP function**
- **Optional features**
 - RS485 Modbus RTU Communication
 - Maximum 2 alarms

Ordering Information

MTD-48-561	(48mm*48mm)(Width*Height)	
MTD-49-561	(48mm*96mm)(Width*Height)	
MTD-72-561	(72mm*72mm)(Width*Height)	
MTD-96-561	(96mm*96mm)(Width*Height)	

1:Input

Blank	No code in this position means standard model, TC/RTD input
A	4-20mA, 0-10Vdc.

2:Main output

C	Relay output+SSR Drive Output
D	4-20mA
E	0-10VDC

3:Number of Alarms

1	1 alarm
2	2 alarms

4:Power Source

96	85~265Vac 50/60HZ
24	24VDC/AC

5:Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

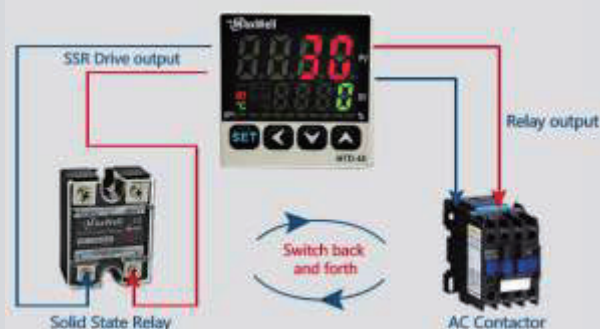
6:Auxiliary Power Supply

N	Without auxiliary power
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Example: MTD-48-561-C-1-96-N-N (MTD, size 48mm*48mm, Relay+SSR Drive, 1 alarm, 85~265Vac source), TC/RTD input

Unique Features

1) MTD series Controller with built-in SSR Drive output and Relay output, if you want to use this controller to trigger a AC contractor or bigger load relay, select the Relay output, if you want to use this controller to trigger a solid state relay, select the SSR drive output



Technical Specifications

- 2) This controller offers a RUN/STOP feature where you can STOP the output in the middle of a process which is useful for some of application
- 3) This controller offers a feature where all the parameters can be reset to factory default value in case the parameters was messed up. this helps a new customers to explore this controller yet do not worry about getting lost in the process

Display

Digits	4 digits 7 segments LED, Dual display
LED Indicators	OP1, OP2, AT, AL1, AL2, COM, °C, °F, PRG

Input Specifications

Inputs	Thermocouple(K, J, R, S, B, T, E, N, Wu3_Re25) RTD(PT100)
Sampling time	500ms
Input Filter(FTC)	0 to 66(1-30 normal, 31-60 enhanced)
Resolution	1/0.1° for TC/RTD only Decimal point position selectable
Temperature Unit	°C/°F Selectable
Indication Accuracy	For TC inputs: 0.2% of F.S. ± 1° For R & S type TC inputs: 0.5% of F.S. ± 2° (20 min of warm up time for TC inputs) For RTD inputs: 0.2% of F.S. ± 1

Output Specifications

Main Control Output	1 main output, heating or cooling selectable
Contact Rating(SPST)	5A @ 250Vac Resistive Load(Main Output) 3A @ 250Vac Resistive Load(Alarm output)
SSR Drive	12V DC(20mA)

Supply Voltage

Supply Voltage	85~265Vac 50/60HZ
Power Consumption	6VA max @230Vac

Environmental Specifications

Temperature	Operating: 0 to 50°C(32 to 122°F) Storage: -20 to 75°C(-4 to 167°F)
Humidity(non-condensing)	95%RH
Weight	0.17kg(48mm*48mm)
Protection	Dust proof for front plate

Functional Specifications

Control Action	1)PID 2)ON-OFF, when P=0 3)Time proportional when P≠0 I=0 D=0
Proportional Band(P)	0.0 to 200.0
Integral Time(I)	0 to 3600 sec
Derivative Time(D)	0 to 3600 sec
Cycle Time	0 to 999 sec
Hysteresis Width	0.0 to 999.0
Alarms modes	Deviation high / Deviation low Deviation high/low alarm Deviation band alarm Process high alarm/ Process low alarm LBA(loop break alarm)
Input offset	-199 to 199
Lower limit SV	-1999~9999
Higher limit SV	-1999~9999

Optional features

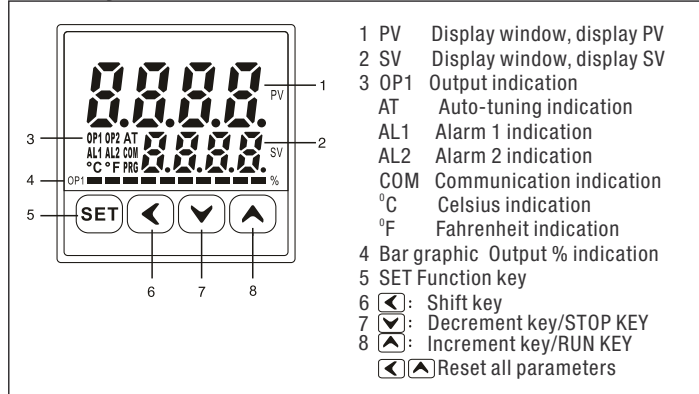
Serial communication

Interface standard	RS-485
Communication address	0 to 127, maximum 36 units per line
Transmission mode	Half duplex
Transmission protocol	Modbus RTU
Transmission format	Support 03 read command, 06 and 10 write command 1 start bit+8 digital bit+N+1 stop bit(8.N.1) 1 start bit+ 8 digital bit+N+2 stop bit(8.N.2)
Transmission speed	2400,4800,9600,19200(9600 default)

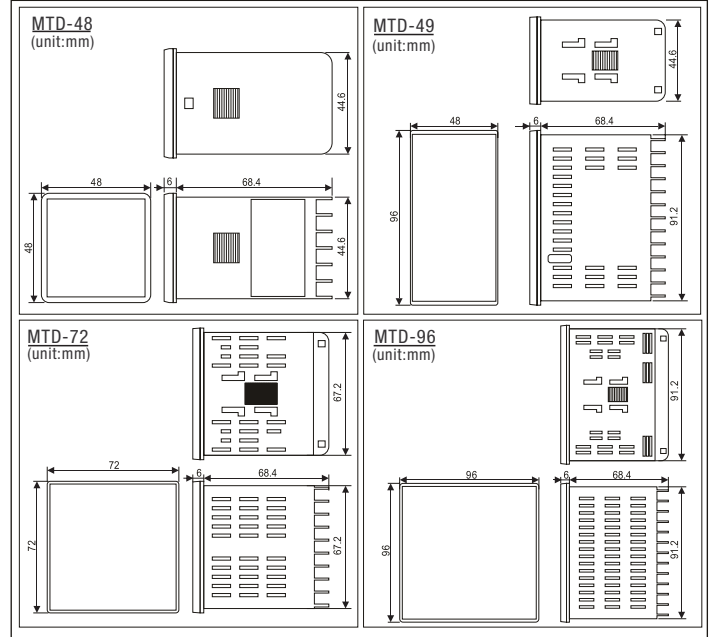
Compliance

IEC/EN 61326(EMI/EMC)
IEC/EN 61010 Revision 3 2010 Edition(Safety)

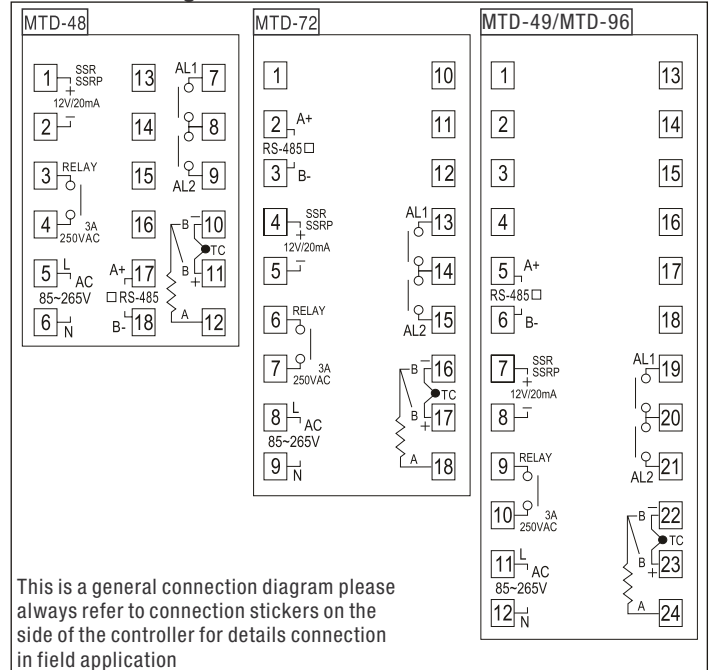
Panel Layout



Dimensions



Terminal Arrangement





Features:

- Dual display, 4 digits, 7 segments LED display
- TC / RTD input, analog universal input
- PID, PID Autotune, ON-OFF
- 0.3%F.S measuring accuracy
- Bar graphic display indication
- °C/°F display selectable
- Alarm standby function
- Soft-start function for analog output
- Optional features
 - RS485 Modbus RTU Communication
 - PV/SV Re-transmission
 - 2 alarms(standard package with 1 alarm only)

Ordering Information

MTA-48 (48mm*48mm)(Width*Height)	<div style="display: flex; justify-content: space-around; align-items: center;"> 1 2 3 4 5 </div>
MTA-49 (48mm*96mm)(Width*Height)	
MTA-94 (96mm*48mm)(Width*Height)	
MTA-72 (72mm*72mm)(Width*Height)	
MTA-96 (96mm*96mm)(Width*Height)	

1:Input

Blank	No code in this position means standard model, TC/RTD input
A	4-20mA, 0-10Vdc
B	Thermocouple, RTD(PT100), analog 4-20mA, 0-10Vdc input configurable via software, cost is higher

2:Main output

R	Relay output
V	SSR Drive/Voltage pulse output
D	4-20mA output
E	0-10Vdc output

3:Number of Alarms

1	1 alarm
2	2 alarms

4:Power Source

96	85~265Vac 50/60HZ
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5:Process Value Re-transmission output

N	Without Re-transmission
P42	Process value Re-transmitted as 4-20mA
P010	Process value Re-transmitted as 0-10Vdc
S42	Setting value Re-transmitted as 4-20mA
S010	Setting value Re-transmitted as 0-10Vdc

6:RS-485 Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

Things you should know when ordering MTA series controllers

- 1: MTA standard version only supports thermocouple/RTD inputs, blank, no code
- 2: Please specify the code "A" if you need analog input like 0-10V/4-20mA in this case, controller only supports 0-10Vdc/4-20mA analog signal, do not support TC/RTD
- 3: Code "B" is for real universal inputs, you can switch freely between TC/RTD analog inputs, in this case, the controller supports all inputs, TC/RTD/Analog
- 4: For size 48mm*48mm and 72mm*72mm, can not select 2 alarms and re-transmission function at the same time, as these two function share the same terminals, so you can either go with the 2 alarms or re-transmission function. can't have both.
- 5: The analog re-transmission function and main analog control output can not be selected at the same time. for example, if you select 4-20mA as the main control output, then the analog re-transmission will not be available. vice versa.
- 6: This model do not have 24VDC/24VAC version.

Technical Specifications

Display

Digits	4 digits 7 segments LED, Dual display
LED Indicators	OUT1, OUT2, AT, AL1, AL2, AL3, MAN, COM, PRO

Input Specifications

Inputs	Thermocouple(K, J, R, S, B, T, E, N, Wu3_Re25) RTD(PT100) DC Analog Inputs(2-10Vdc, 1-5Vdc, 4-20mA) (0-10Vdc, 0-5Vdc, 0-20mA) (0-50mV, 0-20mV)
Sampling time	500ms
Input Filter(FTC)	0 to 60(1-30 normal, 31-60 enhanced)
Resolution	1/0.1° for TC/RTD only Decimal point position selectable: 1/0.1/0.01/0.001 for analog input
Temperature Unit	°C/°F Selectable
Indication Accuracy	For TC inputs: 0.3% of F.S. ± 1° For R & S type TC inputs: 0.5% of F.S. ± 2° (20 min of warm up time for TC inputs) For RTD inputs: 0.2% of F.S. ± 1° For Analog input: ± 0.5%. ± 1 digit (F.S.=Full Scale)

Output Specifications

Main Control Output	1 main output, heating or cooling selectable
Contact Rating(SPST)	5A @ 250Vac Resistive Load(Main Output) 3A @ 250Vac Resistive Load(Alarm output)
Current	0/4 to 20mA DC(loop impedance: 500Ω max.)
SSR Drive	12V DC(20mA)
Retransmission	
Current	4 to 20mA DC(loop impedance: 500Ω max.)
Voltage	0 to 10Vdc(Load resistance: 10KΩ Min)

Supply Voltage

Supply Voltage	85~265Vac 50/60HZ
Power Consumption	6VA max @230Vac

Environmental Specifications

Temperature	Operating: 0 to 50°C(32 to 122°F) Storage: -20 to 75°C(-4 to 167°F)
Humidity(non-condensing)	95%RH
Weight	0.17kg(48mm*48mm) 0.25kg(48mm*96mm, 96mm*48mm) 0.27kg(72mm*72mm) 0.32kg(96mm*96mm)
Protection	Dust proof for front plate

Functional Specifications

Control Action	1)PID 2)ON-OFF, when P=0 3)Time proportional when P≠0 I=0 D=0
Proportional Band(P)	0.0 to 200.0
Integral Time(I)	0 to 3600 sec
Derivative Time(D)	0 to 3600 sec
Cycle Time	0 to 999 sec
Hysteresis Width	0 to 999
Alarms modes	Deviation high / Deviation low Deviation high/low alarm Deviation band alarm Process high alarm/ Process low alarm
Input offset	-199 to 199
Output lower limit	0.0 to 100%
Output higher limit	0.0 to 100%

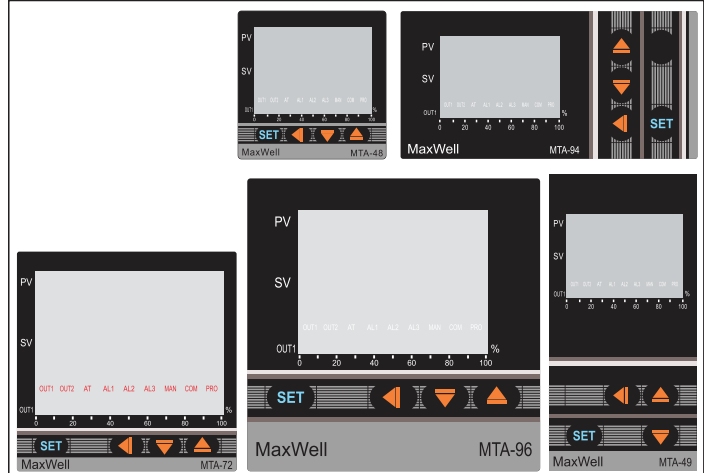
Optional features

Serial communication	
Interface standard	RS-485
Communication address	0 to 127, maximum 36 units per line
Transmission mode	Half duplex
Transmission protocol	Modbus RTU
Transmission format	Support 03 read command, 06 and 10 write command 1 start bit+8 digital bit+N+1 stop bit(8.N.1) 1 start bit+ 8 digital bit+N+2 stop bit(8.N.2)
Transmission speed	2400,4800,9600,19200(9600 default)

Compliance

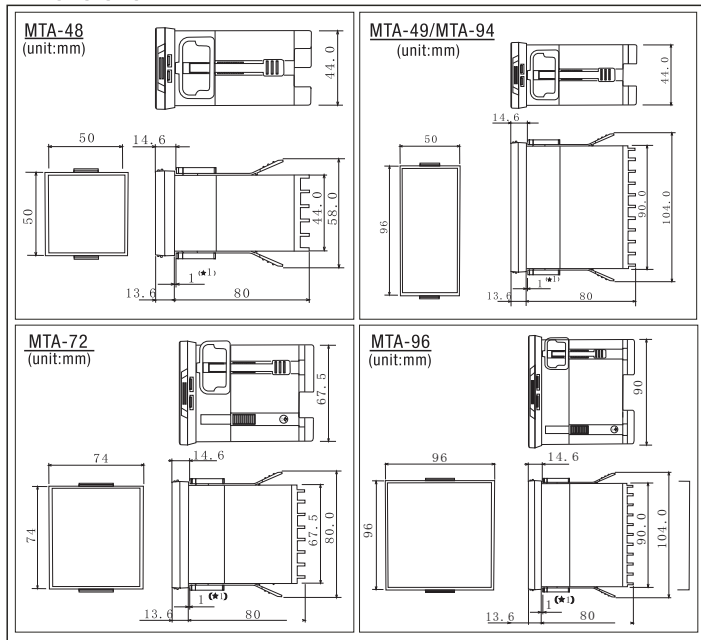
IEC/EN 61326(EMI/EMC)
IEC/EN 61010 Revision 3 2010 Edition(Safety)

Panel Layout

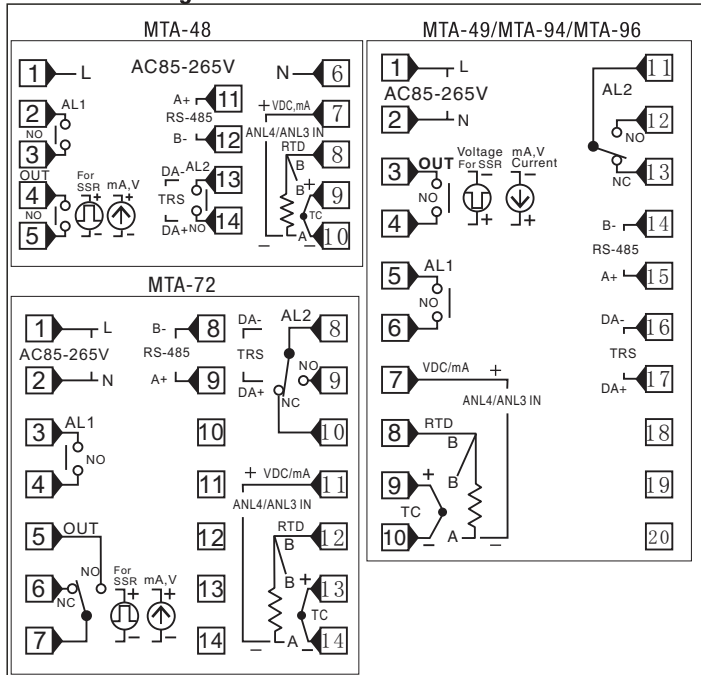


- PV window, display PV or parameter notation
- SV window, display SV or parameter value
- Bar graphic, shows the output percentage
- SET**: Function key
- ◀**: Shift key
- ▼**: Decrement key
- ▲**: Increment key
- OUT1: Output 1 indicator
- OUT2: Output 2 indicator
- AT: Auto-tuning indicator
- AL1: Alarm 1 indicator
- AL2: Alarm 2 indicator
- AL3: Alarm 3 indicator
- MAN: Reserved indicator
- COM: Communication indicator
- PRO: Reserved indicator

Dimensions



Terminal Arrangement



This is a general connection diagram please always refer to connection stickers on the side of the controller for details connection in field application



Features:

- Dual display, 4 digits, 7 segments LED display
- TC / RTD input, analog universal input
- PID, PID Autotune, ON-OFF, time proportional
- Auto/manual control bumpless transfer
- 0.2% F.S measuring accuracy
- Bar graphic display indication
- °C/°F display selectable
- Alarm standby function
- Soft-start function for analog output
- Optional features
 - Remote setpoint
 - Motorized valve control
 - RS485 Modbus RTU Communication
 - Master/Slave communication
 - PV/SV Re-transmission
 - AUX power
 - Preheating function
 - Multi group of setting point

Ordering Information

FT100 without Auto/manual switch key
FT101 with auto/maual switch key

FT100 (48mm*48mm)(Width*Height)	
FT101 (48mm*48mm)(Width*Height)	
FT400 (48mm*96mm)(Width*Height)	1 2 3 4 5 6 7 8
FT500 (96mm*48mm)(Width*Height)	
FT700 (72mm*72mm)(Width*Height)	
FT900 (96mm*96mm)(Width*Height)	

(This model do not support TC/RTD and analog at the same time, specify code A if you need analog input, factory default is TC/RTD input)

1:INPUT	
Blank	No code in this position means standard model, TC/RTD input
A	Analog 0-10V, 4-20mA etc

2:Main output

R	Relay output
V	SSR Drive/Voltage pulse output
D	4-20mA output

3:Number of Alarms

1	1 alarm
2	2 alarms
3	3 alarms

4:Power Source

96	85~265Vac 50/60HZ
24	24VDC/AC

5:Process Value or Setting value Re-transmission output

N	Without Re-transmission
P42	PV Re-transmitted as 4-20mA
P010	PV Re-transmitted as 0-10Vdc
S42	SV Re-transmitted as 4-20mA
P010	SV Re-transmitted as 0-10Vdc

6:Communication

N	Without Communicaiton
K	With Modbus RTU RS-485 communication

7:Remote SV or Position Feedback

N	Without Remote SV or Position Feedback
A	Remote SV(4-20mA)
B	Remote SV(0-20mA)
C	Remote SV(0-10mA)
D	Remote SV(0-5Vdc)
E	Remote SV(0-10Vdc)
F	Remote SV(1-5Vdc)
G	Remote SV(2-10Vdc)
R	3 wire potentiometer position feedback

8:Auxiliary Power Supply

N	Without auxiliary power
24	24VDC Auxiliary Power Supply

For example: FT100-R-A-1-96-NNNN
Size: 48mm*48mm, Relay output, TC/RTD input, 1 alarm
85~265Vac, without any other additional features

Display

Technical Specifications

Digits	4 digits 7 segments LED, Dual display
LED Indicators	OP1, OP2, AT, AL1, AL2, AL3, MAN, COM, PRG

Input Specifications

Inputs	Thermocouple(K, J, R, S, B, T, E, N, Wu3_Re25) RTD(PT100) DC Analog Inputs(2-10Vdc, 1-5Vdc, 4-20mA) (0-10Vdc, 0-5Vdc, 0-20mA) (0-50mV, 0-20mV)
Sampling time	500ms
Input Filter(FTC)	0 to 66(1-30 normal, 31-60 enhanced)
Resolution	1/0.1° for TC/RTD only Decimal point position selectable: 1/0.1/0.01/0.001 for analog input
Temperature Unit	°C/°F Selectable
Indication Accracy	For TC inputs: 0.2% of F.S. ± 1° For R & S type TC inputs: 0.5% of F.S. ± 2° (20 min of warm up time for TC inputs) For RTD inputs: 0.2% of F.S. ± 1° For Analog input: ± 0.5%. ± 1 digit (F.S.=Full Scale)

Output Specifications

Main Control Output	1 main output, heating or cooling selectable
Contact Rating(SPST)	5A @ 250Vac Resistive Load(Main Output) 3A @ 250Vac Resistive Load(Alarm output)
Current	0/4 to 20mA DC(loop impedance: 500Ω max.)
SSR Drive	12V DC(20mA)
Retransmission	
Current	4 to 20mA DC(loop impedance: 500Ω max.)
Voltage	0 to 10Vdc(Load resistance: 10KΩ Min)

Supply Voltage

Supply Voltage	85~265Vac 50/60HZ
Power Consumption	6VA max @230Vac

Environmental Specifications

Temperature	Operating: 0 to 50°C(32 to 122°F) Storage: -20 to 75°C(-4 to 167°F)
Humidity(non-condensing)	95%RH
Weight	0.17kg
Protection	Dust proof for front plate

Functional Specifications

Control Action	1)PID 2)ON-OFF, when P=0 3)Time proportional when P≠0 I=0 D=0
Proportional Band(P)	0.0 to 200.0
Integral Time(I)	0 to 3600 sec
Derivative Time(D)	0 to 3600 sec
Cycle Time	0 to 999 sec
Hysteresis Width	0.0 to 100.0
Manual Control Power	0 to 100%
Alarms modes	Deviation high / Deviation low Deviation high/low alarm Deviation band alarm Process high alarm/ Process low alarm
Input offset	-199 to 199
Auto-tune offset	0 to 199.0°
Output lower limit	0.0 to 100%
Output higher limit	0.0 to 100%

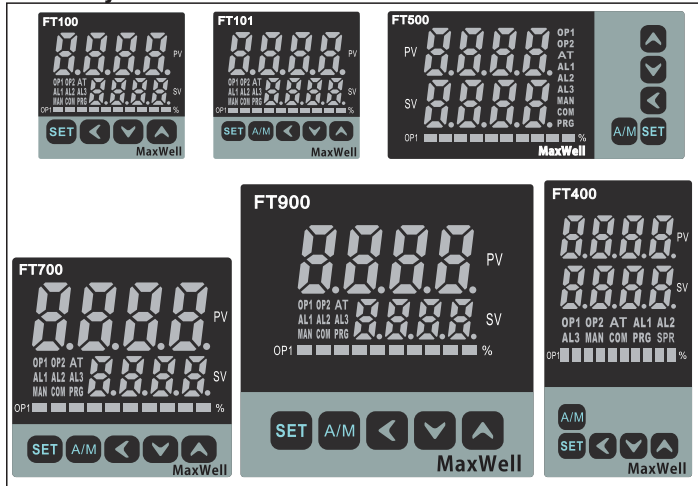
Optional features

Auto/manual control	48mm*48mm, 1/16DIN also available for this function(Model FT101)
Remote setpoint input	
Inputs	4-20mA,0-20mA,0-10mA,0-5Vdc,0-10Vdc 1-5Vdc, 2-10Vdc
Input resistance	100 ohm
Range	-5% to 105%
Scale range	-1999 to 9999 with fixed 10 for TC/RTD as per resolution selected for analog input
Serial communicaiton	
Interface standard	RS-485
Communication address	0 to 127, maximum 36 units per line
Transmission mode	Half duplex
Transmission protocol	Modbus RTU
Transmission format	Support 03 read command, 06 and 10 write command 1 start bit+8 digital bit+N+1 stop bit(8.N.1) 1 start bit+ 8 digital bit+N+2 stop bit(8.N.2)
Transmission speed	2400,4800,9600,19200(9600 default)

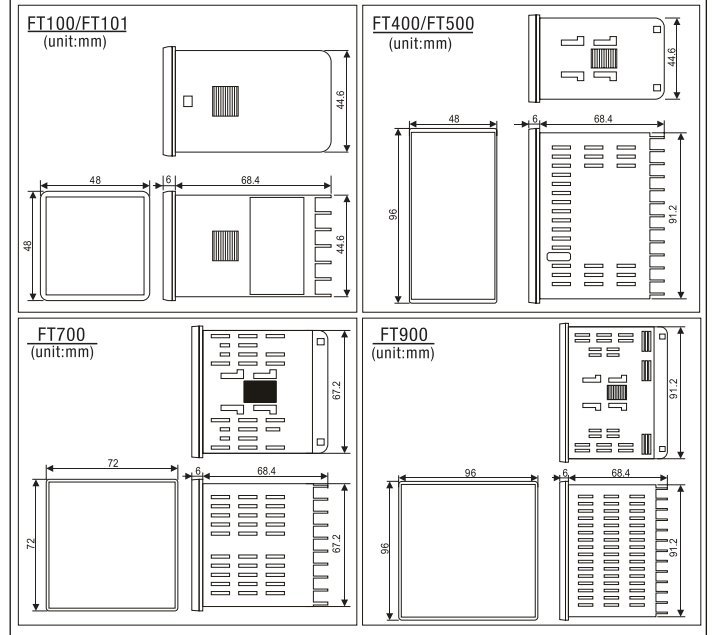
Compliance

IEC/EN 61326(EMI/EMC)
IEC/EN 61010 Revision 3 2010 Edition(Safety)

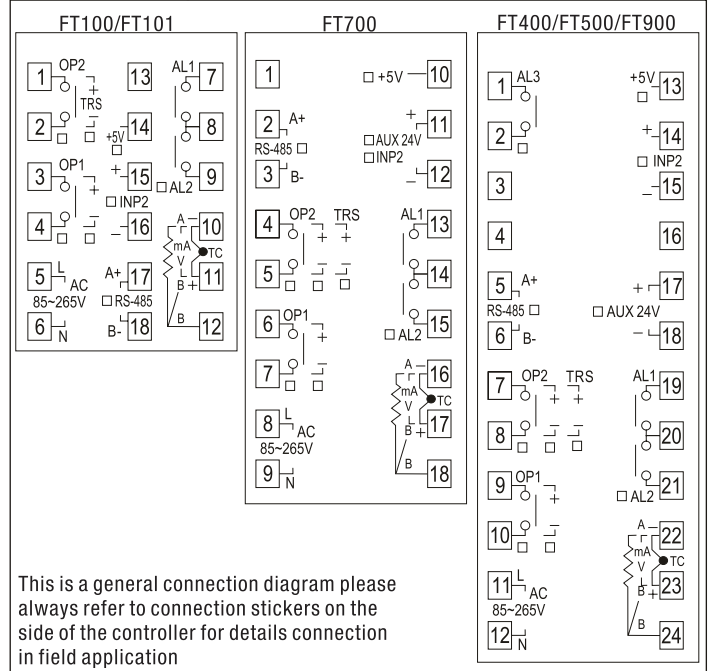
Panel Layout



Dimensions



Terminal Arrangement



This is a general connection diagram please always refer to connection stickers on the side of the controller for details connection in field application

PV window, display PV or parameter notation
SV window, display SV or parameter value
Bar graphic, shows the output % or position
feedback value 0-100%

- [SET]: Function key
- [A/M]: Auto/Manual transfer key and enter key
- [<]: Shift key
- [v]: Decrement key
- [>]: Increment key

- OP1 : Output 1 indicator
- OP2 : Output 2 indicator
- AT : Auto-tuning indicator
- AL1 : Alarm 1 indicator
- AL2 : Alarm 2 indicator
- AL3 : Alarm 3 indicator
- MAN : Manual control indicator
- COM : Communication indicator
- PRG : Reserved indicator
- SPR : Reserved indicator



This is a unique products, a temperature+SCR 2 in 1 item offers a turn-key solution for electric panel builders, it saves a lot of efforts, a perfect solution for any resistive loads, load can be attached to this unit directly, with load capacity up to 80 amps

General Features:

- Combo 2 in1 temperature controller+SCR
- Resistive load can be attached to this unit directly
- Load capacity, 48A,60A,80A
- 24VDC power supply for maximum safety
- C/F display selectable
- Maximum 15 units can be daisy chained together
- Wiring on the power supply and RS-485 can be done at once
- True universal input, TC/RTD/Analog/potentiometer
- Heating or cooling control configurable
- RS-485 modbus RTU communication as standard feature
- PID control mode or ON/OFF control mode selectable
- 0.2%FS measuring accuracy, decimal points for TC/RTD and analog
- Auto/manual control bumpless transfer
- Soft-start for analog output
- Run/Stop function
- Output high/low limits configurable
- With dual line 4 digits LED display in front of the panel
- Four rubber keys for setting purpose, programming is possible even without the master device

Ordering Information

KDF100-662
 1 2 3 4

1:Main function

- PID** This device will be used as a PID controller+SCR
- SCR** This device will be used as a SCR

This is a 2 in 1 unit, temperature controller+SCR, in field application, this unit can be used as a temperature controller+SCR which works just like every other temperature controller on the market, or in some of cases, the PID controller function can be switched off and the unit will be used as a pure SCR only, you can switch back and forth between this two functions, the ordering code is just a factory default option on the unit, you can configure it via respective parameters later on

2:Input type and range

Ordering code	Input type and range
K	K type thermocouple -30 to 1300 °C / -20 to 2360 °F
E	E type thermocouple -30 to 600 °C / -20 to 1100 °F
J	J type thermocouple -30 to 800 °C / -20 to 1460 °F
N	N type thermocouple -30 to 1300 °C / -20 to 2360 °F
W	Wu3_Re25 thermocouple 600 to 2000 °C / 1000 to 3632 °F
S	S type thermocouple 0 to 1600 °C / 0 to 2900 °F
T	T type thermocouple -30 to 400 °C / -20 to 740 °F
R	R type thermocouple 0 to 1700 °C / 0 to 3080 °F
B	B type thermocouple 200 to 1800 °C / 400 to 3260 °F
D	Pt100 -199 to 800 °C / -199 to 1400 °F
V03	0-5VDC -1999 to 9999 Potentiometer input
V04	0-10DC -1999 to 9999
V08	1-5VDC -1999 to 9999
V09	2-10VDC -1999 to 9999
A02	0-20mA -1999 to 9999
A03	4-20mA -1999 to 9999

3:Current ratings(Actual load should be no more than 80% of ratings)

- 48A** Resistive load 48A
- 60A** Resistive load 60A
- 80A** Resistive load 80A

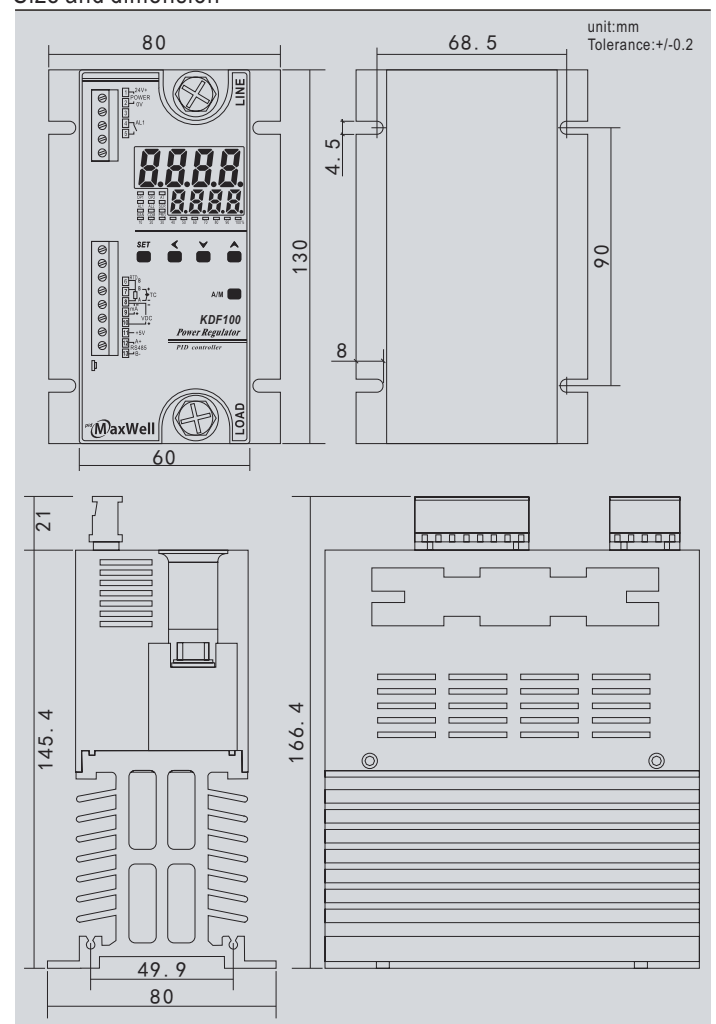
4:Cooling fans

- N** Without fans
- F** With fans(24VDC/150mA)

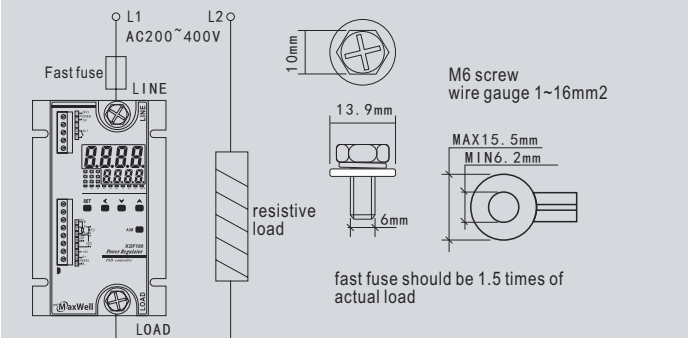
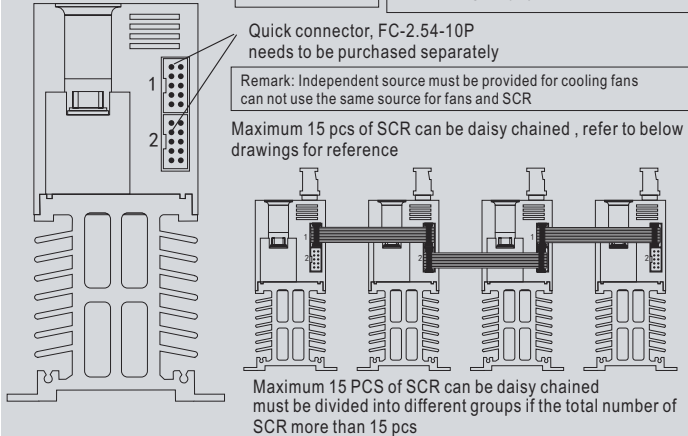
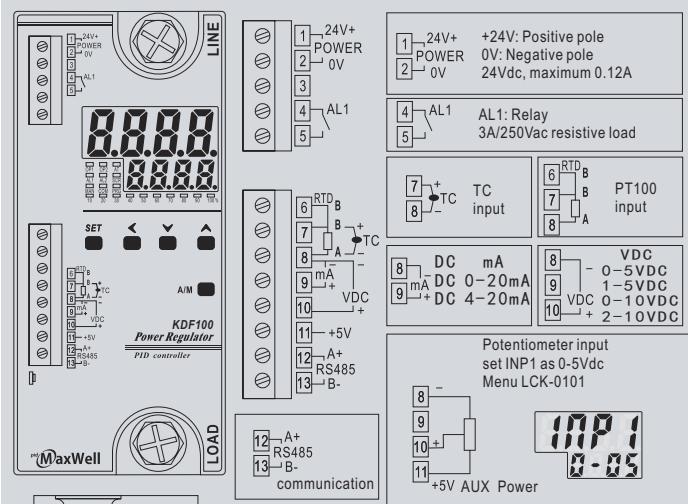
KDF100-662-PID-A03-80A-F

- 1:PID controller+SCR
- 2:4-20mA input
- 3:80A load
- 4:with cooling fans

Size and dimension

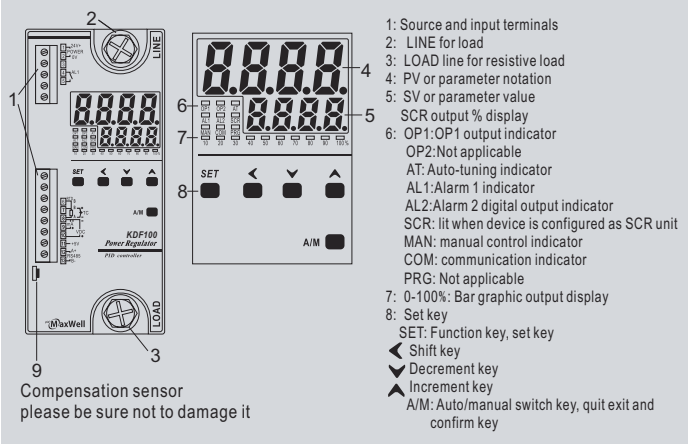


Wiring



- High frequency device should be placed far away from this device
- Please make sure that there is no unattached metal parts left in the cabinet
- Please make sure input is correctly wired to the SCR otherwise the units might be damaged

Panel Description



Overall images





General Features:

- Standard din rail mount temperature controller
- TC input(K,E,J,T,S,R,B,N,Wu3_Re25)
- PID control mode, RUN/STOP function on both loops
- **RS-485 modbus RTU communication as standard feature**
- External handheld configuration device available
- 0.2%FS measuring accuracy, maximum 0.1 resolution
- Auto-tuning for both loops.
- User friendly and easy to install and uninstall

**Dual loop Two separate inputs !!
Two separate outputs !!**

Technical Specifications

Ordering Information

DR02B-65x
1 2 3 4 5

1:Control mode

N	Without PID control
F	PID reverse control(heating control)

2:Default input sensor type and range selection

KB3	K	0 to 1300 °C	K	B3
EA6	E	0 to 600 °C	E	A6
JA8	J	0 to 800 °C	J	A8
TA4	T	0 to 400 °C	T	A4
SB6	S	0 to 1600 °C	S	B6
RB7	R	0 to 1700 °C	R	B7
BB8	B	200 to 1800 °C	B	B8
NB3	N	0 to 1300 °C	N	B3
WB0	Wu3_Re25	600 to 2000 °C	W	B0

3:Output 1[OP1] for #1 loop

N	Without output
M	Relay output
V	SSR Drive output
T	Triac output

4:Output 2[OP2] for #2 loop

N	Without output
M	Relay output
V	SSR Drive output
T	Triac output

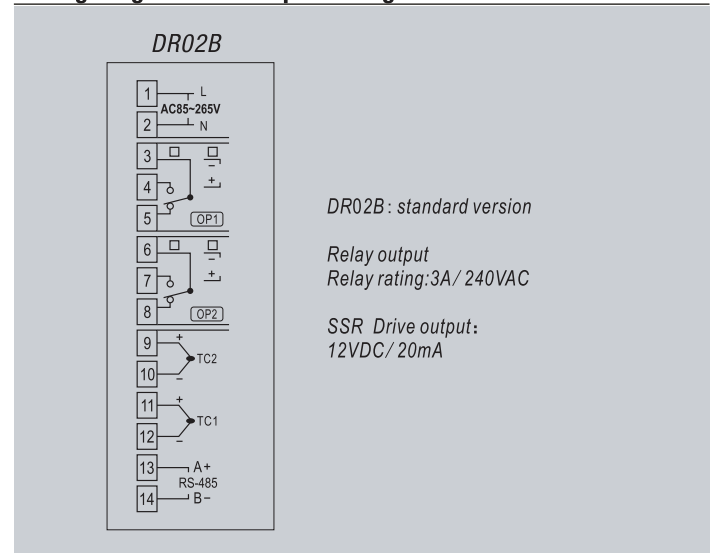
5:Communication features

N	Without communication
5	RS-485 communication

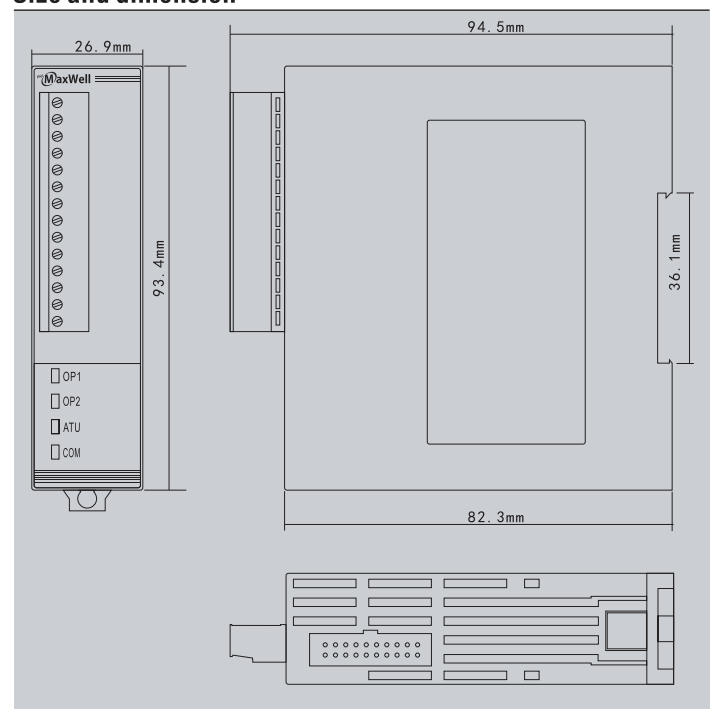
DR02B-F-KB3-M-M-5: DR02B series din rail mount temperature controller
 PID reverser control(for heating)
 Factory default input is K type sensor
 Range is B3: 0~1300 celsius
 Output 1 for #1 loop is Relay
 Output 2 for #2 loop is Relay
 With RS-485 modbus RTU communication feature

Remark: This dual loop controller works with thermocouple only, and the input is configurable, the choice you made is only for factory default purpose you can change to other sensor later via external programming device or from HMI etc.

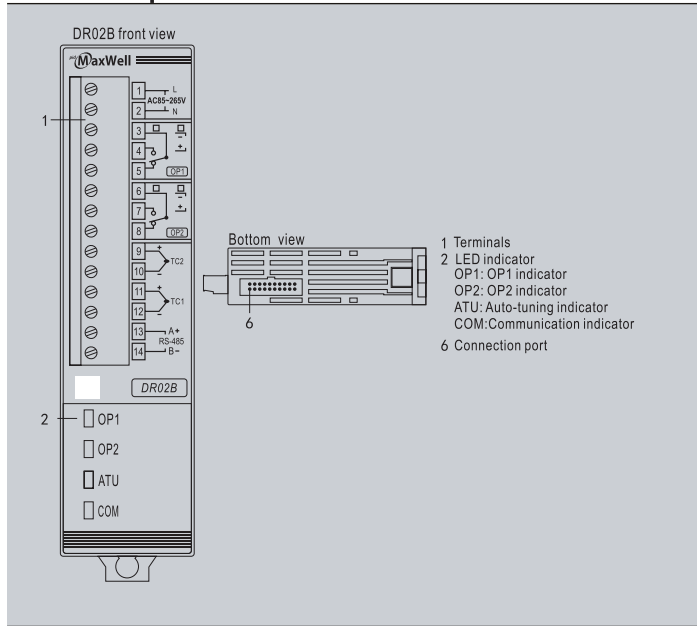
Wiring diagram and output ratings



Size and dimension

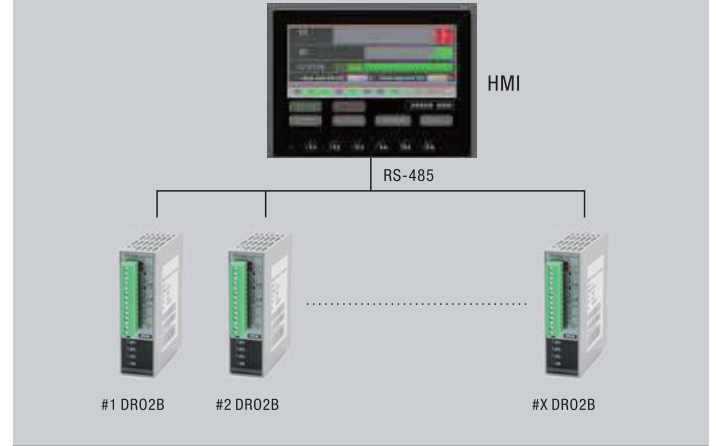


Panel description



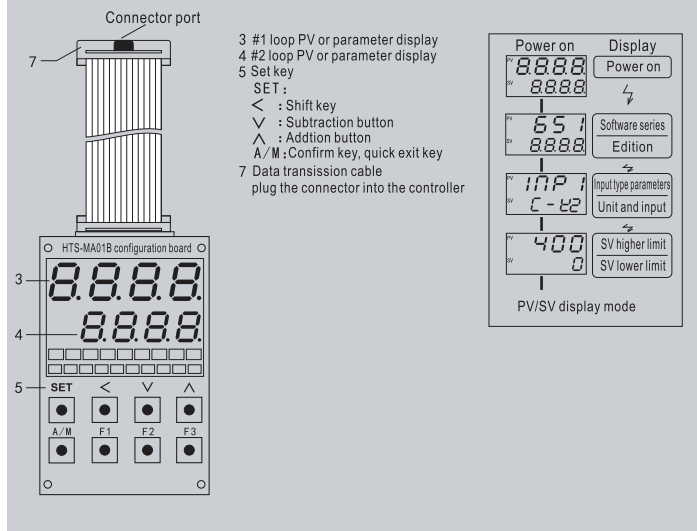
Typical application

In a system where you have multiple temperature controllers, all controllers can be integrated into the HMI, hence improve the user experience with the system. Most of the HMI out there has features like temperature record and event record function, which works perfectly with temperature controller, in this system, the HMI will be master device and RS-485 controller will be slave device.



External handheld configuration device

HTS-MA01B configuration board, this configuration board has to be purchased separately





General Features:

- Standard din rail mount temperature controller
- Dual channel 4 outputs, 2 main outputs and 2 auxiliary outputs
- 2 auxiliary outputs can be configured as alarm, cooling or digital I/O ports
- 24VDC power supply for maximum safety
- C/F display selectable
- Maximum 15 units can be daisy chained together
- Wiring on the power supply and RS-485 can be done at once
- TC/RTD input(K,E,J,T,S,R,B,N,Wu3_Re25,PT100)
- Heating or cooling, heating+cooling control configurable
- RS-485 modbus RTU communication as standard feature
- PID control mode or ON/OFF control mode selectable
- 0.3%FS measuring accuracy, maximum 0.1 resolution
- Auto/manual control bumpless transfer
- Soft-start for analog output
- Run/Stop function
- Output high/low limits configurable
- With dual line 4 digits LED display in front of the panel
- Four rubber keys for setting purpose, programming is possible even without the master device

Ordering Information

DR04C-653
 1 2 3 4 5

1:Factory default input

Input Code	Type of input and range
K	Thermocouple type K, range -30~1300°C/-20~2372°F
E	Thermocouple type E, range -30~600°C/-20~1112°F
J	Thermocouple type J, range -30~800°C/-20~1472°F
N	Thermocouple type N, range -30~1300°C/-20~2372°F
W	Thermocouple type Wu3_Re25, range 600~2000°C/1000~3632°F
S	Thermocouple type S, range 0~1600°C/0~2912°F
T	Thermocouple type T, range -30~400°C/-20~752°F
R	Thermocouple type R, range 0~1700°C/0~3092°F
B	Thermocouple type B, range 200~1800°C/400~3272°F
D	RTD Pt100, range -199~800°C/-199~1472°F

The type of inputs is configurable via master device or via front setting keys, but still the user have to choose one as the factory default input, in most of cases, K is the options and you can change it to other inputs later on. the accuracy of type S and R is not guaranteed when the process value is less than 200°C

2:OP1 and OP2 output type, AU1 and AU2 output type

Code	OP1/OP2	AU1/AU2
1	Relay output(NO) 3A/250V	Relay output(NO) 3A/250V
2	Voltage pulse(SSR drive 12Vdc)	Voltage pulse(SSR drive 12Vdc)
3	Voltage pulse(SSR drive 12Vdc)	Relay output(NO)3A 250V
4	Relay output(NO)3A 250V	Voltage pulse(SSR drive 12Vdc)
5	Analog output	Relay output(NO) 3A/250V
6	Analog output	Voltage pulse(SSR drive 12Vdc)
7	Relay output(NO)3A 250V	Analog output
8	Voltage pulse(SSR drive 12Vdc)	Analog output
9	Analog output	Analog output

Remark: The OP1 and OP2 output have to be the same, AU1 and AU2 have to be the same as well, for example, if you choose relay output for OP1, then OP2 will be relay too, and if you choose 4-20mA for AU1, then the output for AU2 will be 4-20mA as well, it's not possible to choose different output type between OP1 and OP2 AU1 and AU2, but AU1 and AU2 output can be configured as alarm output, cooling output or digital I/O ports, this brings a lot of possibilities on how to use this controller. please refer to user manual for the further elaboration on the configuration of AU1 and AU2

3:Specify the output when OP1 and OP2 are analog output

N	OP1/OP2 is not analog output
2	DC 0~20mA(OP1 and OP2 is 0-20mA output)
8	DC 4~20mA(OP1 and OP2 is 4-20mA output)
5	DC 0~5Vdc(OP1 and OP2 is 0-5Vdc)
6	DC 0~10Vdc(OP1 and OP2 is 0-10Vdc)
7	DC 1~5Vdc(OP1 and OP2 is 1-5Vdc)

4:Assign the functionality for AU1 output(physical output type already specified under section 2, and physical output type has to be the same as AU2)

A1	AU1 assigned as deviation high alarm for #1 loop(relay output)
B1	AU1 assigned as deviation low alarm for #1 loop(relay output)
H1	AU1 assigned as absolute value high alarm for #1 loop(relay)
J1	AU1 assigned as absolute value low alarm for #1 loop(relay)
O	AU1 assigned as digital I/O ports
WM	AU1 assigned as cooling output for #1 loop(relay)
WV	AU1 assigned as cooling output for #1 loop(SSR drive)
W2	AU1 assigned as cooling output for #1 loop(DC 0~20mA)
W8	AU1 assigned as cooling output for #1 loop(DC 4-20mA)
W5	AU1 assigned as cooling output for #1 loop(0~5VDC)
W6	AU1 assigned as cooling output for #1 loop(0~10VDC)
W7	AU1 assigned as cooling output for #1 loop(1~5VDC)

5:Assign the functionality for AU2 output(physical output type already specified under section 2, and physical output type has to be the same as AU1)

A2	AU2 assigned as deviation high alarm for #2 loop(relay output)
B2	AU2 assigned as deviation low alarm for #2 loop(relay output)
H2	AU2 assigned as absolute value high alarm for #2 loop(relay)
J2	AU2 assigned as absolute value low alarm for #2 loop(relay)
A1	AU2 assigned as deviation high alarm for #1 loop(relay output)
B1	AU2 assigned as deviation low alarm for #1 loop(relay output)
H1	AU2 assigned as absolute value high alarm for #1 loop(relay)
J1	AU2 assigned as absolute value low alarm for #1 loop(relay)
O	AU2 assigned as digital I/O ports
WM	AU2 assigned as cooling output for #2 loop(relay)
WV	AU2 assigned as cooling output for #2 loop(SSR drive)
W2	AU2 assigned as cooling output for #2 loop(DC 0~20mA)
W8	AU2 assigned as cooling output for #2 loop(DC 4-20mA)
W5	AU2 assigned as cooling output for #2 loop(0~5VDC)
W6	AU2 assigned as cooling output for #2 loop(0~10VDC)
W7	AU2 assigned as cooling output for #2 loop(1~5VDC)

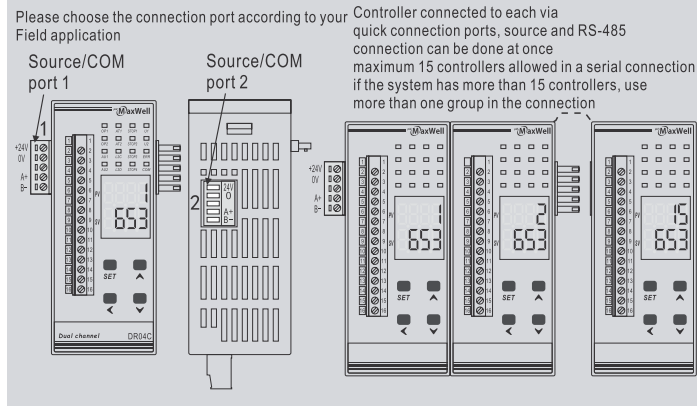
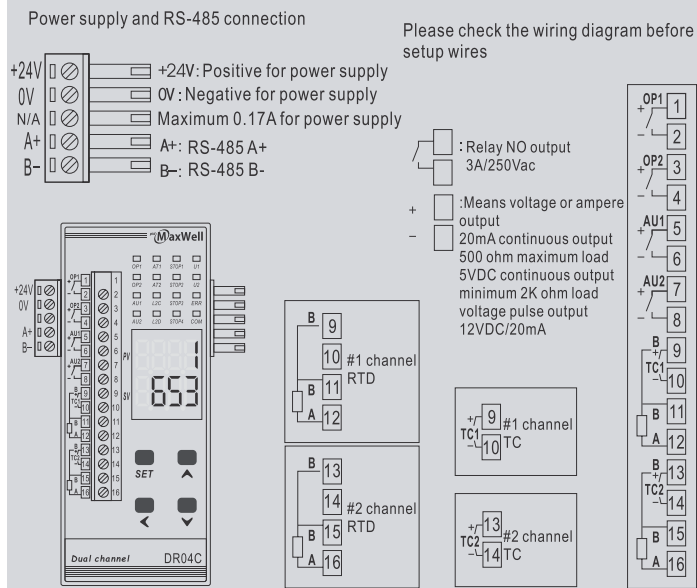
DR04C-653-K-1-N-A1-A2

1 2 3 4 5

DR04C-653 Din rail mount temperature controller

- 1:Default input: Type K, inputs are configurable via master device or via front key
- 2:Output 1 and Output 2:Relay
- 3:Output 1 and Output 2 is not analog output
- 4:Auxiliary output 1 is relay output and assigned as deviation high alarm for #1 loop you can change the functionality of AU1 output via master device or via front plate. The AU1 can be configured as alarm for #1 loop, can be configured as the cooling control output for #1 loop or as the digital I/O ports which only respond to the master device.
- 5:Auxiliary output 2 is relay output and assigned as deviation high alarm for #2 loop you can change the functionality of AU1 output via master device or via front plate. The AU1 can be configured as alarm for #1 loop or #2 loop, can be configured as the cooling control output for #2 loop or as the digital I/O ports which only respond to the master device.

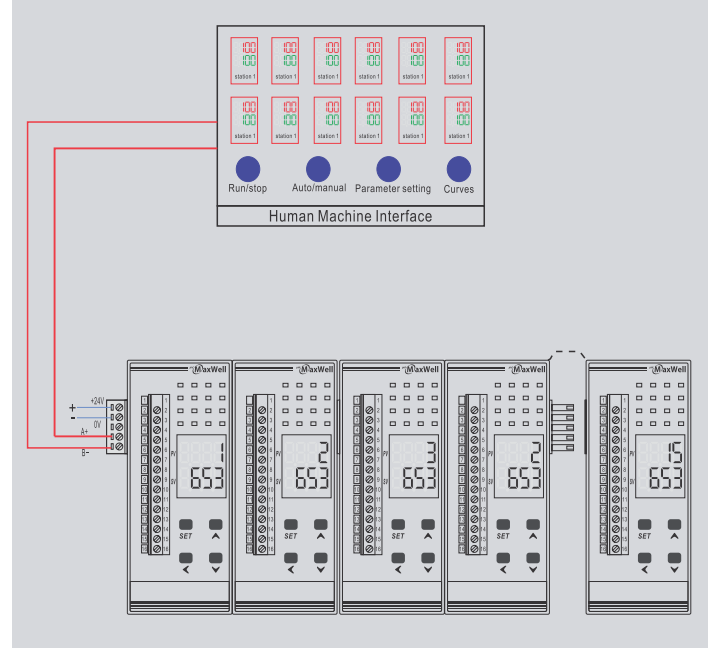
Wiring



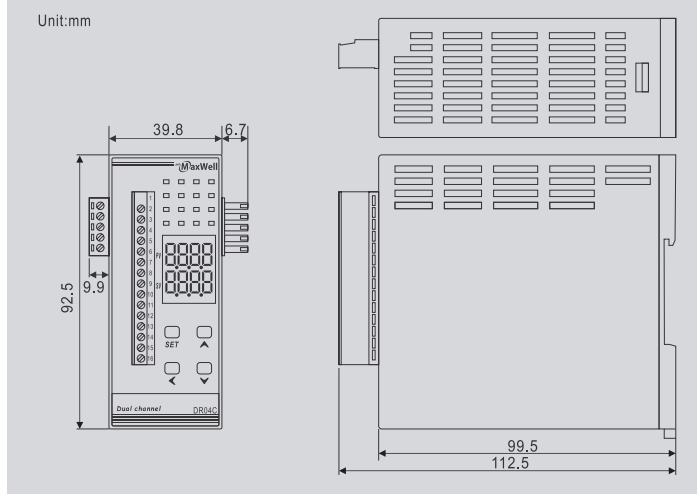
Further elaboration on features of this model

- This is dual channel 4 outputs controller, it's two loop so the input will be 2 inputs but with 4 outputs, the configuration on the auxiliary outputs is very flexible. The 2 main outputs served as the output for the PID control process or ON/OFF control process, the two auxiliary outputs can be configured for different filed application, below is a breakdown on different function for auxiliary outputs
 - >for some of application where they need 2 alarms, any one of the two auxiliary outputs can be configured as second alarm for #1 loop or #2 loop, for instance, the AU2 output can be assigned as the second alarm for #1 loop, plus the AU1 which is alarm 1 for #1 loop, in this case, the total alarm for #1 loop will be 2 alarms
 - >The AU1 or AU2 output can be configured as cooling output for #1 loop or #2 loop, this features makes this controller perfect for heating+cooling application
 - >The AU1 or AU2 output can also be configured as the digital I/O ports which served as event outputs

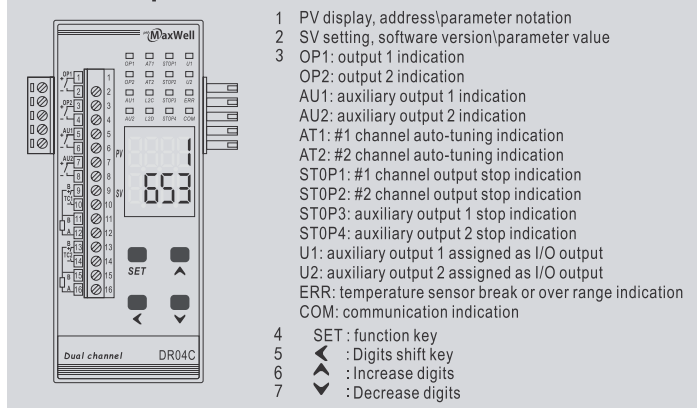
Typical Application with HMI



Size and Dimension



Panel Description





General Features:

- Standard din rail mount temperature controller
- Four channel 4 outputs
- 24VDC power supply for maximum safety
- C/F display selectable
- Maximum 15 units can be daisy chained together
- Wiring on the power supply and RS-485 can be done at once
- TC input(K,E,J,T,S,R,B,N,Wu3_Re25)
- Heating or cooling selectable
- RS-485 modbus RTU communication as standard feature
- PID control mode or ON/OFF control mode selectable
- 0.3%FS measuring accuracy, maximum 0.1 resolution
- Auto/manual control bumpless transfer
- Soft-start for analog output
- Run/Stop function
- Output high/low limits configurable
- With dual line 4 digits LED display in front of the panel
- Four rubber keys for setting purpose, programming is possible even without the master device

Ordering Information

DR04D-652
1 2 3

1:Factory default input

Input Code	Type of input and range
K	Thermocouple type K, range -30~1300°C/-20~2372°F
E	Thermocouple type E, range -30~600°C/-20~1112°F
J	Thermocouple type J, range -30~800°C/-20~1472°F
N	Thermocouple type N, range -30~1300°C/-20~2372°F
W	Thermocouple type Wu3_Re25, range 600~2000°C/1000~3632°F
S	Thermocouple type S, range 0~1600°C/0~2912°F
T	Thermocouple type T, range -30~400°C/-20~752°F
R	Thermocouple type R, range 0~1700°C/0~3092°F
B	Thermocouple type B, range 200~1800°C/400~3272°F

The type of inputs is configurable via master device or via front setting keys, but still the user have to choose one as the factory default input, in most of cases, K is the options and you can change it to other inputs later on. the accuracy of type S and R is not guaranteed when the process value is less than 200°C

2:Specify OP1/OP2/OP3/OP4 output type

Code	OP1/OP2	OP3/OP4
1	Relay output(NO) 3A/250V	Relay output(NO) 3A/250V
2	Voltage pulse(SSR drive 12Vdc)	Voltage pulse(SSR drive 12Vdc)
3	Voltage pulse(SSR drive 12Vdc)	Relay output(NO)3A 250V
4	Relay output(NO)3A 250V	Voltage pulse(SSR drive 12Vdc)
9	Analog output	Analog output

Remark: The OP1 and OP2 output have to be the same, OP3 and OP4 have to be the same as well, for example, if you choose relay output for OP1, then OP2 will be relay too, and if you choose 4-20mA for OP3, then the output for OP4 will be 4-20mA as well, it's not possible to choose different output type on OP1 and OP2 same goes to OP3 and OP4, they have to be the same output

3:Specify the output when OP1/OP2/OP3/OP4 are analog output

N	OP1/OP2 is not analog output
2	DC 0~20mA
8	DC 4~20mA
5	DC 0~5Vdc
6	DC 0~10Vdc
7	DC 1~5Vdc

DR04D-652-K-3-N

1 2 3

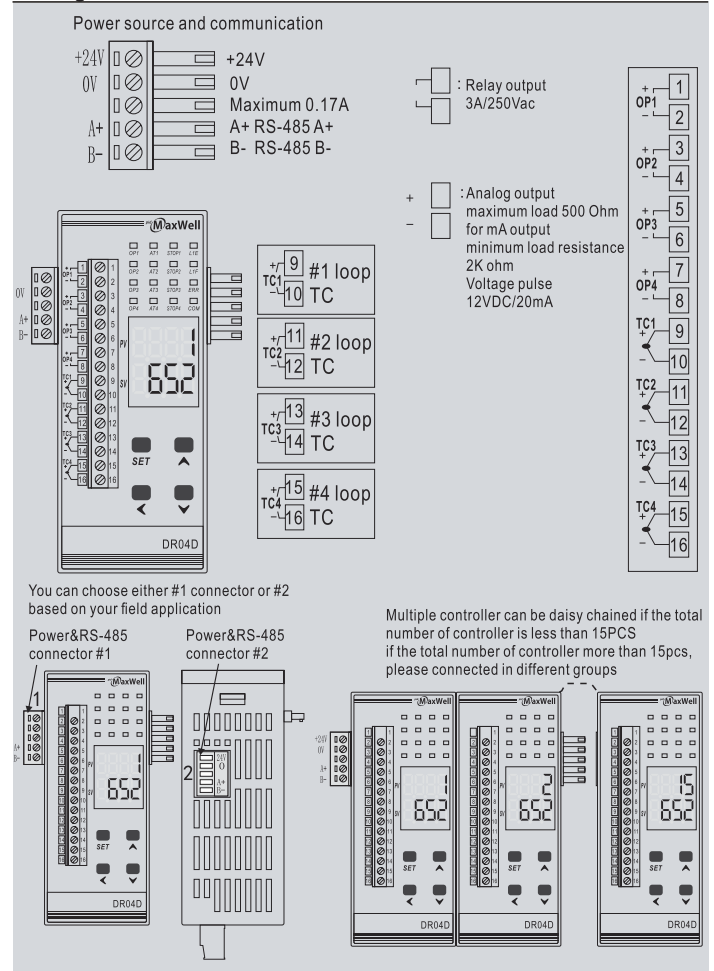
DR04D-652 Din rail mount temperature controller

- 1:**Default input: Type K, inputs are configurable via master device or via front key
- 2:**Output 1 and Output 2:SSR Drive(12VDC 20mA)
- 3:**Output 3 and Output 4:Relay output(3A/250Vac)

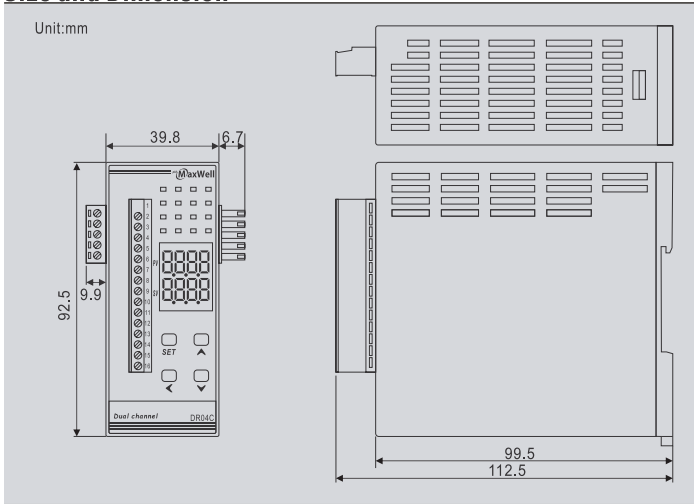
Further elaboration on features of this model

- 1.This is four channel 4 outputs controller, it's four loop so the input will be 4 inputs and with 4 outputs
2. Control mode can be standard PID mode or ON/OFF mode
3. Soft-start function available for analog output
4. Auto/manual control bumpless transfer for each channel
- 5.RUN/STOP function for each channel
- 6.Output high/low configurable
- 7.Four separate groups of PID
- 8.Auto-tuning can be activated on each channel
- 9.The wiring on this device is extremely easy, the power source and RS-485 shares the same terminals, the wiring on the RS-485 and power source can be done at once together
- 10.Up to 15 units can be daisy chained and powered by single 24VDC source
- 11.Display and setting buttons available on the panel makes the configuration possible even without master device

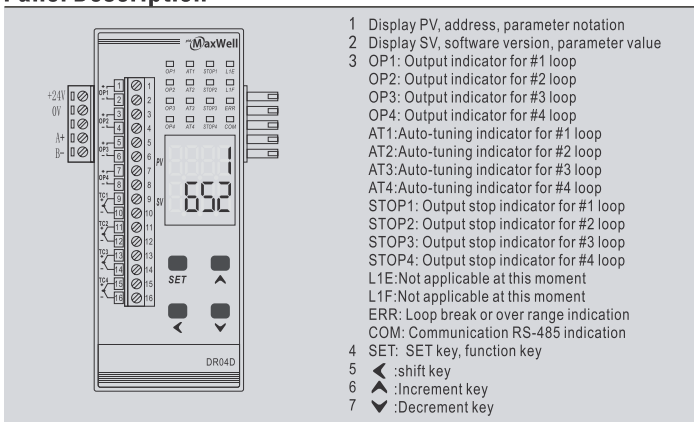
Wiring



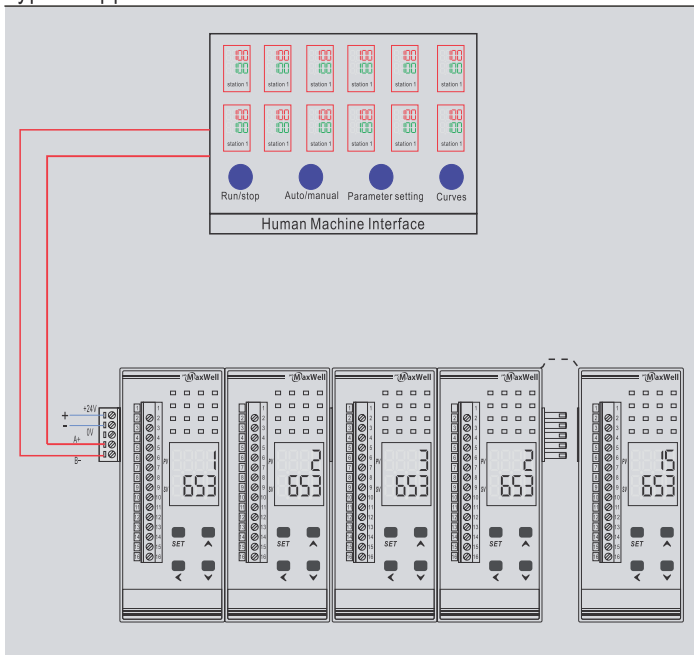
Size and Dimension



Panel Description



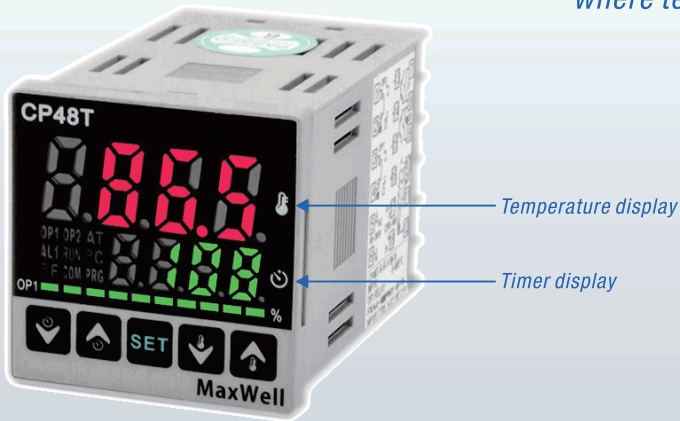
Typical Application with HMI



Ideal solution for heat press transfer printing or other application where temperature and time involved at the same time

Features:

- Dual display, 4 digits, 7 segments LED display
- Thermocouple input(K, E, J, T, S, R, B, N, Wu3_Re25, PT100, Analog)
- PID, PID Autotune, ON-OFF Control Mode
- Built-in Timer+Temperature Controller
- Timer have to be triggered manually and externally
- Timer can be reset manually or automatically
- Timer counting up and counting down selectable
- Timer output reset delay
- °C/°F display selectable
- 0.3%F.S measuring accuracy
- Bar graphic display indication
- Optional features
 - RS485 Modbus RTU Communication
 - Timer external reset optional



Technical Specifications

Ordering Information

CP48T	(48mm*48mm)(Width*Height)					
CP49T	(48mm*96mm)(Width*Height)	1	2	3	4	5
CP72T	(72mm*72mm)(Width*Height)					
CP96T	(96mm*96mm)(Width*Height)					

1:Input

Blank	No code in this position means standard model, TC/RTD input
A	4-20mA, 0-10Vdc.

2:Output for temperature control(OP1)

R	Relay output
V	SSR Drive output
D	4-20mA output
5	0-5Vdc
6	0-10Vdc
7	1-5Vdc
T	Triac output

3:Output for timer(OP2)

R	Relay output
V	SSR Drive output
T	Triac output

4:Timer external reset function

Y	With external reset function(via D2 terminal)
N	Without external reset function

5:Power Source

96	85~265Vac 50/60HZ
24	24Vdc/ac

6:Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

Example: CP48T-R-R-Y-96-N

- CP48T: size 48mm*48mm, TC/RTD input
- R:Temperature control output Relay
- R:Timer control output Relay
- Y: With external dry contact D2 for timer reset function
- 96:Power source is 85~265Vac
- N: Without communication function

General Specifications

Electrical Specifications

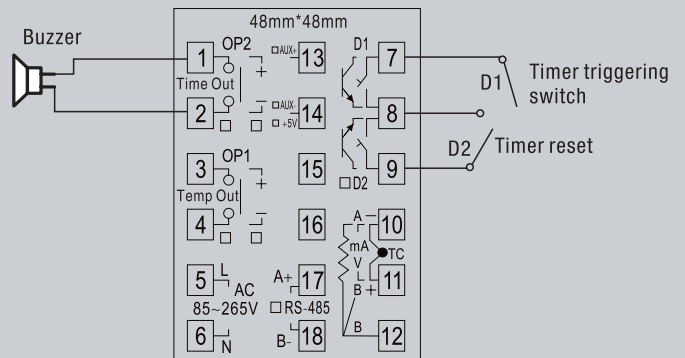
Display	Upper for temperature, lower for time
Input	TC/RTD/Analog
Output for temperature	Relay/SSR Drive/4-20mA
Output for timer	Relay/SSR
Temp control mode	PID on/off mode
Timer triggering mode	Manually triggered from external switch(D1)
Timer output reset delay range	0.0~200.0 seconds
Timer reset mode	Manually reset from external switch(D2)
Timer counting mode	Counting up or down configurable
Timer setting range	1~9999 seconds(set from key pad)
Timer unit	Seconds
Timer relay output mode	Relay pull-in when timer kicks off or timer terminate
Power source	85~265Vac or 24VDC/AC
Measuring accuracy	0.3% F.S
Display unit	°C or °F display selectable
Communication	Modbus RS-485 RTU optional

Mechanical Enviromental Specifications

Size	48mm*48mm, 48mm*96mm, 72mm*72mm, 96mm*96mm
Weight	0.17kg/ 0.27kg/0.27kg/0.35kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

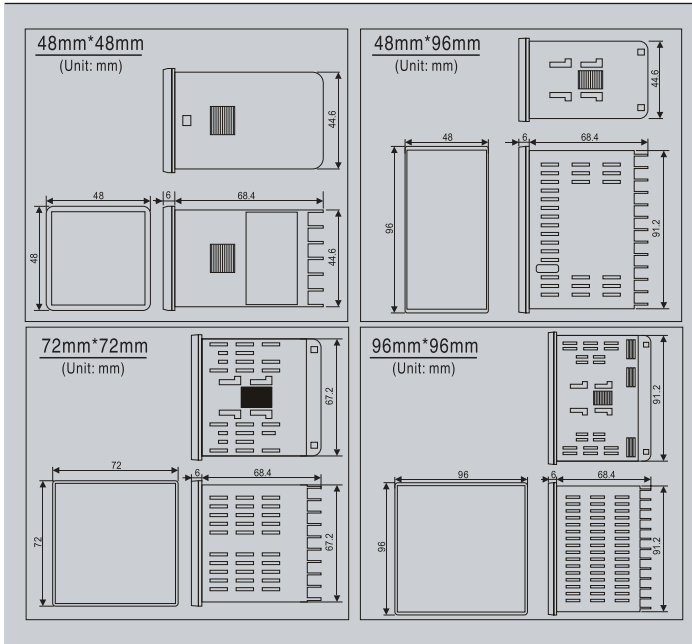
Things you should about the built-in timer

The major concept of this device is that the timer being built-in together with the controller, so this one device can be a solution for application where time and temperature involved, therefore it is essential to understand all the features come with the timer, below is the wiring diagram for size 48mm*48mm along with the explanation.

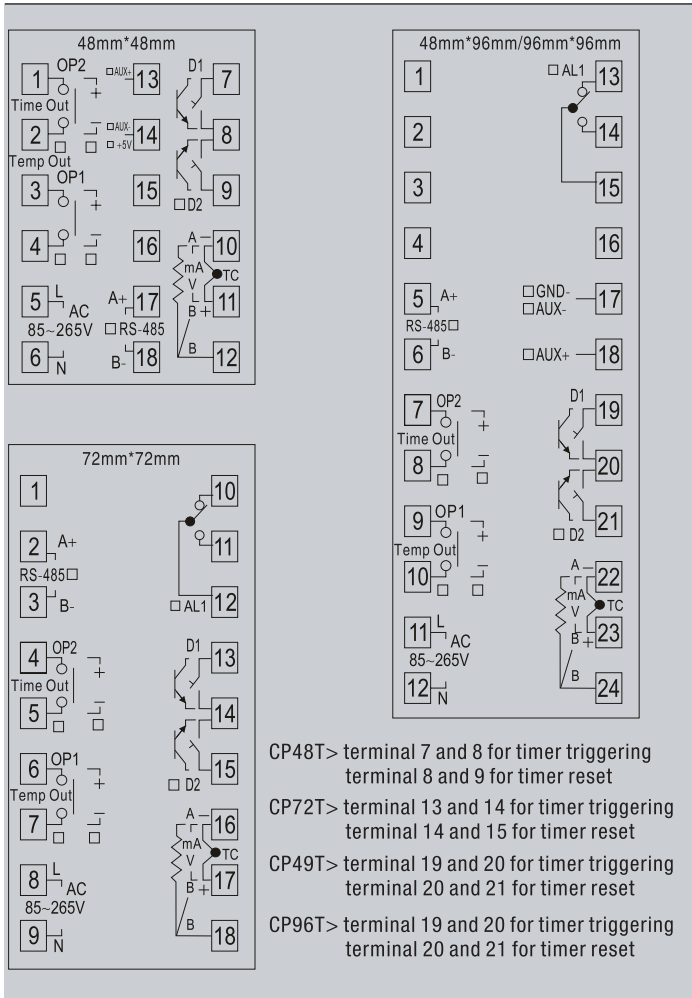


Terminal 7 and 8 can be connected with a toggle switch, push button or foot switch or simply a dry contact switch for triggering the timer, terminal 8 and 9 will be used to reset the timer, a typical application would be heat transfer printing, for example, when PV reach to SV, you can press down the heat plate and trigger the timer at the same time for let's say 15 seconds, when 15 seconds runs out, the timer relay will pull-in and the buzzer will make noise for 5 seconds(configurable).

Dimension and cutout sizes



Wiring diagram





Features:

- Dual display, 4 digits, 7 segments LED display
- Thermocouple input (K, E, J, T, S, R, B, N, Wu3_Re25, PT100, Analog)
- PID, PID Autotune, ON-OFF Control Mode
- **Built-in Timer+Temperature Controller**
- Various timer triggering mode
- Timer can be triggered right after power on
- Timer can be triggered when PV reach to SV
- Relay output for timer can be set as on delay or off delay
- LED indicators available to indicate the status of the program
- User can check how much time elapsed
- Program can be aborted during the process
- Memory retention function
- °C/°F display selectable
- 0.3%F.S measuring accuracy
- Bar graphic display indication
- Optional features
 - RS485 Modbus RTU Communication
 - 24VDC/AC source available

Technical Specifications

Ordering Information

FT100-610 (48mm*48mm)(Width*Height)	
FT400-610 (48mm*96mm)(Width*Height)	1
FT700-610 (72mm*72mm)(Width*Height)	2
FT900-610 (96mm*96mm)(Width*Height)	3
	4
	5
	6
	7
	8

1:Input

Blank	No code in this position means standard model, TC/RTD input
A	4-20mA, 0-10Vdc.

2:Output for temperature control(OP1)

R	Relay output
V	SSR Drive output
D	4-20mA output
E	0-10Vdc

3:Alarm for temperature control(AL1)

1	1 alarm(relay output)
---	-----------------------

4:Output for timer(AL2)

1	1 alarm(relay output)
---	-----------------------

5:Power Source

96	85~265Vac 50/60HZ
24	24Vdc/ac

6:Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

7:PV Re-transmission

N	Without PV re-transmission function
P42	PV re-transmitted as 4-20mA
P010	PV re-transmitted as 0-10Vdc

8:Auxiliary power supply

N	Without auxiliary power supply
A	24Vdc isolated
B	24Vdc grounded
C	12Vdc isolated
D	12Vdc grounded
E	9Vdc isolated
F	9Vdc grounded

eg:FT100-610-R-1-1-96-N-N-N

1. This item is combo temperature + time 2 in 1 controller
2. Standard model with 1 alarm for temperature control, and 1 output for program execution
3. This model supports TC/RTD input as a standard version, standard model is TC/RTD input and leave the position 1 blank without any code. if you need 0-10VDC, 4-20mA input, choose the code "B"

General Specifications

Electrical Specifications

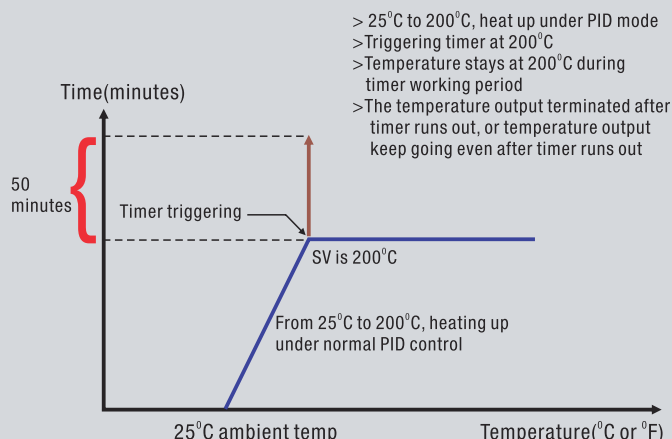
Display	Upper for temperature, lower for temp/time
Input	TC/RTD/Analog
Output for temperature	Relay/SSR Drive/4-20mA
Output for timer	Relay
Temp control mode	PID on/off mode
Timer triggering mode	Automatic triggering
Timer output reset mode	Manually reset from panel
Timer counting mode	Counting up
Timer setting range	1~9999 minutes
Timer unit	Minute
Timer relay output mode	Relay pull-in when timer kicks off or timer terminate
Power source	85~265Vac or 24VDC/AC
Measuring accuracy	0.3% F.S
Display unit	°C or °F display selectable
Communication	Modbus RS-485 RTU optional

Mechanical Enviromental Specifications

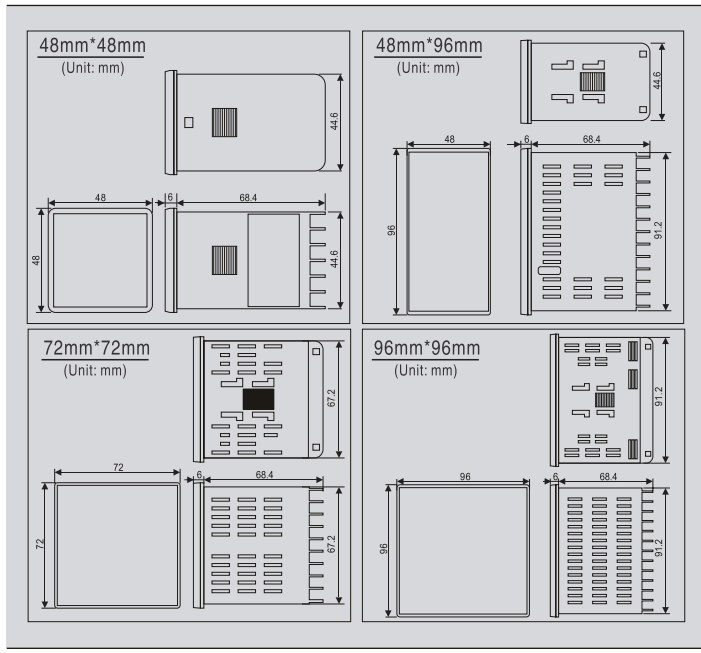
Size	48mm*48mm, 48mm*96mm, 72mm*72mm, 96mm*96mm
Weight	0.17kg/ 0.27kg/0.27kg/0.35kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

Explanation on the working pattern of this controller

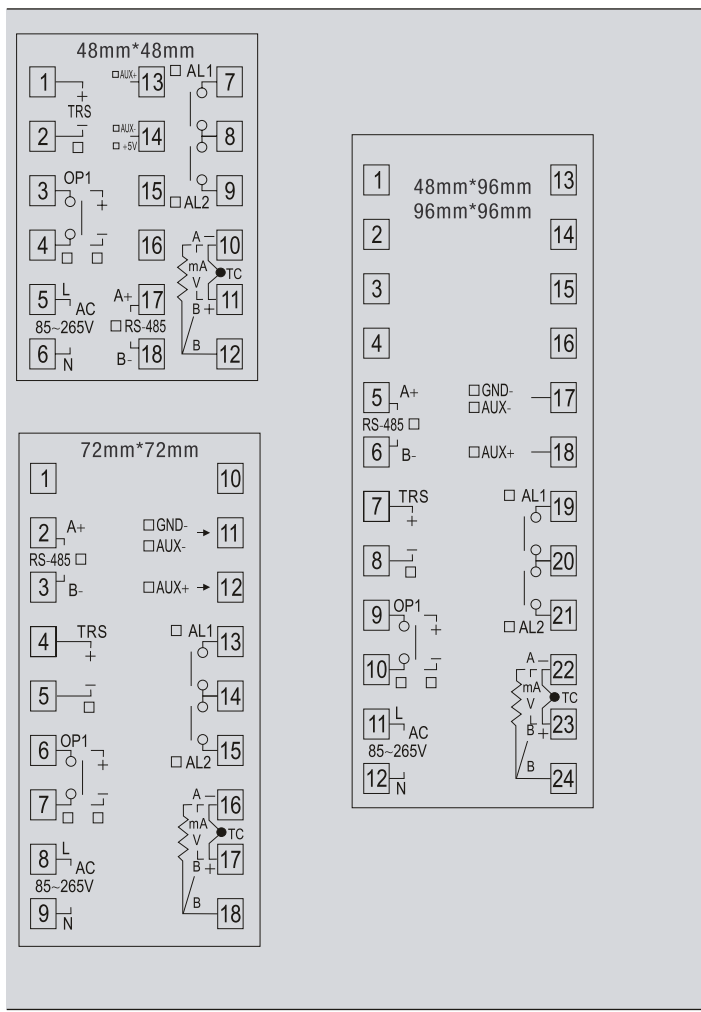
The timer will be triggered automatically when temperature reach to a preset value, for example, in an application where the temperature starts from the ambient temp at 25°C, you put the setting value at 200°C, the timer can be triggered automatically at any point from 0°C to 200°C. and the timer starts to tick at a preset period of time from 0-9999 minutes.



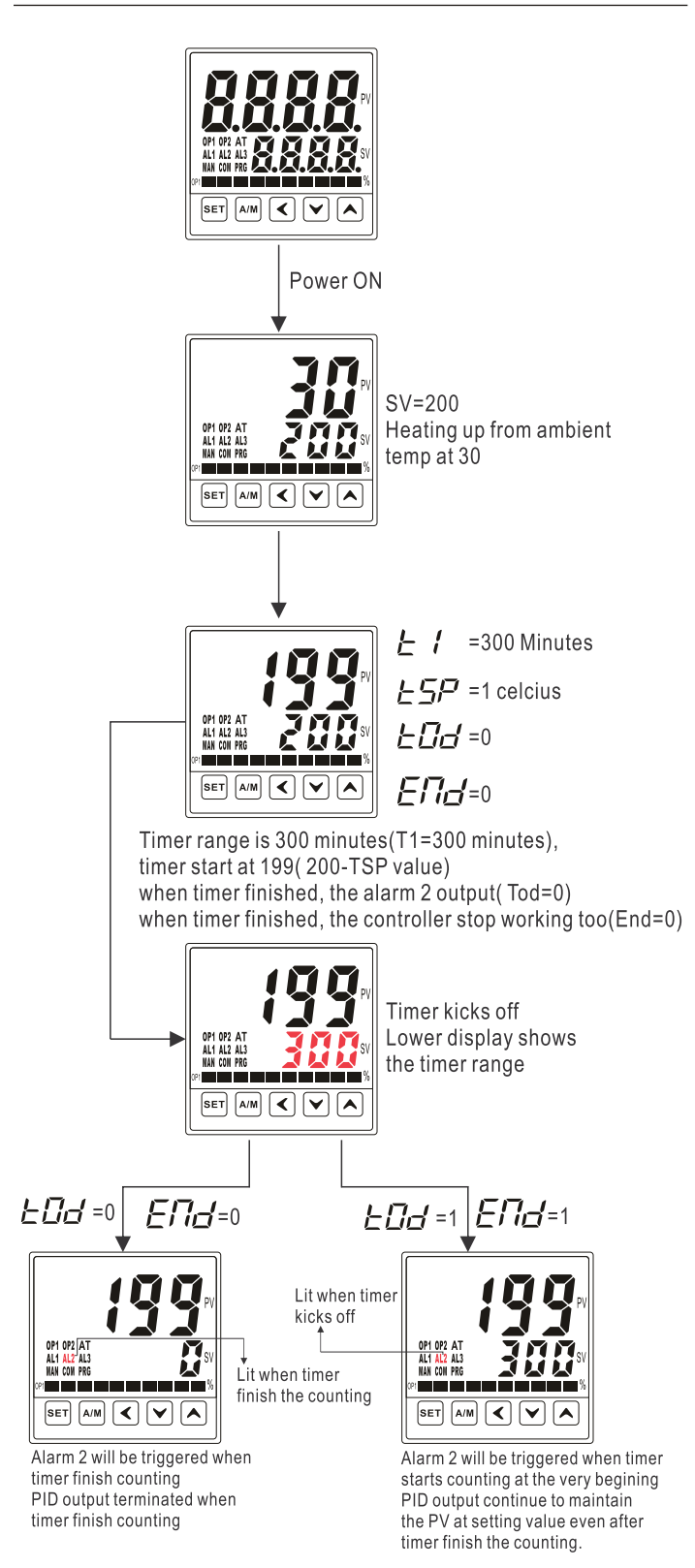
Dimension and cutout sizes



Wiring diagram



Typical procedure





Features:

- Dual display, 4 digits, 7 segments LED display
- Thermocouple input (K, E, J, T, S, R, B, N, Wu3_Re25, PT100, Analog)
- PID, PID Autotune, ON-OFF Control Mode
- **Built-in Timer+Temperature Controller**
- Various timer triggering mode
- Timer can be triggered right after power on
- Timer can be triggered when PV reach to SV
- Relay output for timer can be set as on delay or off delay
- LED indicators available to indicate the status of the program
- User can check how much time elapsed
- Program can be aborted during the process
- Memory retention function
- °C/°F display selectable
- 0.3%F.S measuring accuracy
- Bar graphic display indication
- Optional features
 - RS485 Modbus RTU Communication
 - 24VDC/AC source available

Technical Specifications

Ordering Information

FT100-610 (48mm*48mm)(Width*Height)	
FT400-610 (48mm*96mm)(Width*Height)	1
FT700-610 (72mm*72mm)(Width*Height)	2
FT900-610 (96mm*96mm)(Width*Height)	3
	4
	5
	6
	7
	8

1:Input

Blank	No code in this position means standard model, TC/RTD input
A	4-20mA, 0-10Vdc.

2:Output for temperature control(OP1)

R	Relay output
V	SSR Drive output
D	4-20mA output
E	0-10Vdc

3:Alarm for temperature control(AL1)

1	1 alarm(relay output)
----------	-----------------------

4:Output for timer(AL2)

1	1 alarm(relay output)
----------	-----------------------

5:Power Source

96	85~265Vac 50/60HZ
24	24Vdc/ac

6:Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

7:PV Re-transmission

N	Without PV re-transmission function
P42	PV re-transmitted as 4-20mA
P010	PV re-transmitted as 0-10Vdc

8:Auxiliary power supply

N	Without auxiliary power supply
A	24Vdc isolated
B	24Vdc grounded
C	12Vdc isolated
D	12Vdc grounded
E	9Vdc isolated
F	9Vdc grounded

eg:FT100-610-R-1-1-96-N-N-N

1. This item is combo temperature + time 2 in 1 controller
2. Standard model with 1 alarm for temperature control, and 1 output for program execution
3. This model supports TC/RTD input as a standard version, standard model is TC/RTD input and leave the position 1 blank without any code. if you need 0-10VDC, 4-20mA input, choose the code "B"

General Specifications

Electrical Specifications

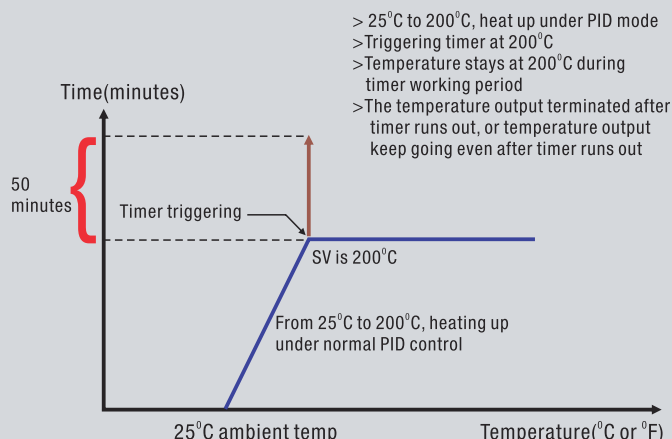
Display	Upper for temperature, lower for temp/time
Input	TC/RTD/Analog
Output for temperature	Relay/SSR Drive/4-20mA
Output for timer	Relay
Temp control mode	PID on/off mode
Timer triggering mode	Automatic triggering
Timer output reset mode	Manually reset from panel
Timer counting mode	Counting up
Timer setting range	1~9999 minutes
Timer unit	Minute
Timer relay output mode	Relay pull-in when timer kicks off or timer terminate
Power source	85~265Vac or 24VDC/AC
Measuring accuracy	0.3% F.S
Display unit	°C or °F display selectable
Communication	Modbus RS-485 RTU optional

Mechanical Enviromental Specifications

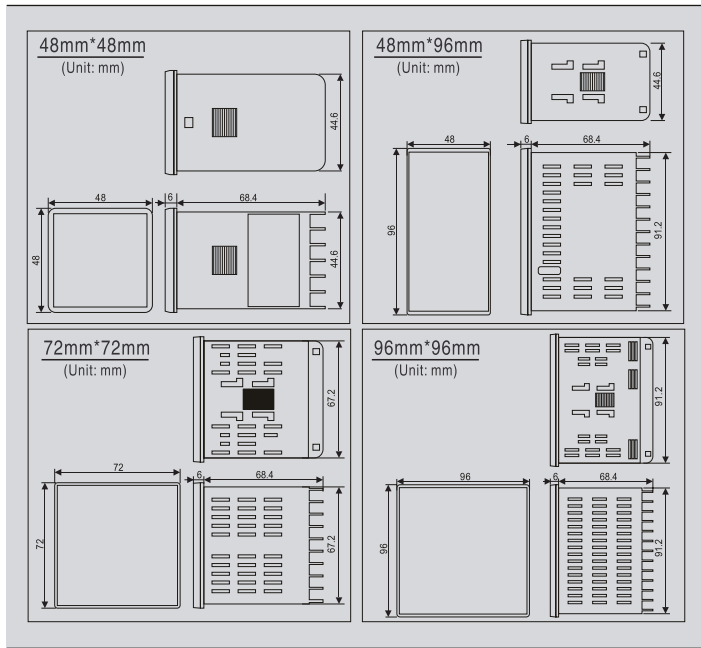
Size	48mm*48mm, 48mm*96mm, 72mm*72mm, 96mm*96mm
Weight	0.17kg/ 0.27kg/0.27kg/0.35kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

Explanation on the working pattern of this controller

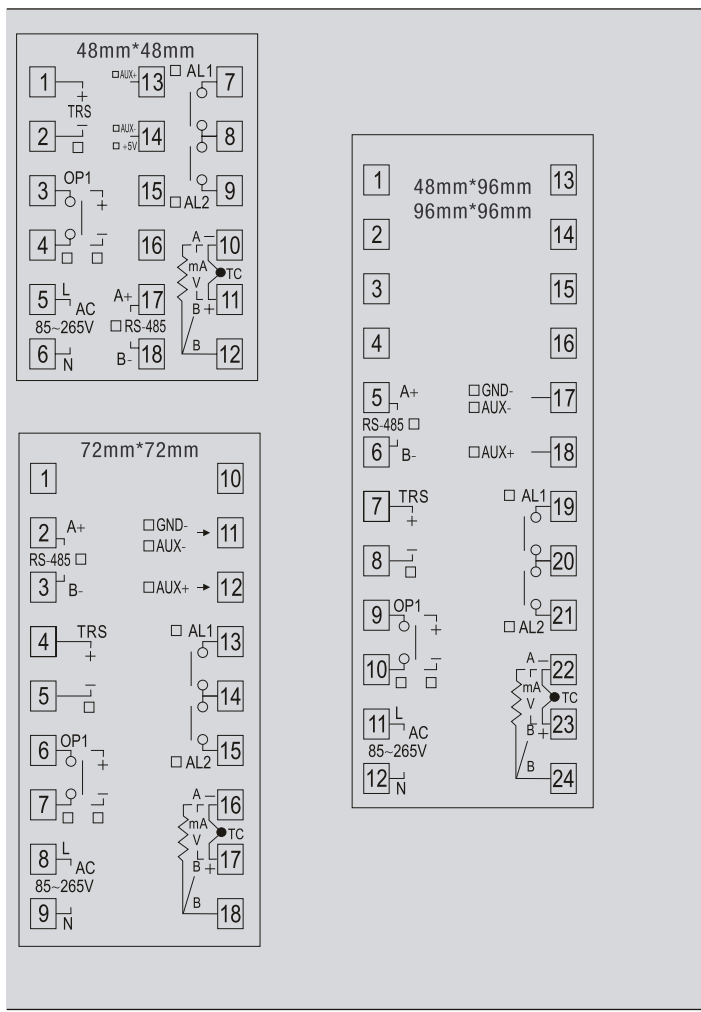
The timer will be triggered automatically when temperature reach to a preset value, for example, in an application where the temperature starts from the ambient temp at 25°C, you put the setting value at 200°C, the timer can be triggered automatically at any point from 0°C to 200°C. and the timer starts to tick at a preset period of time from 0-9999 minutes.



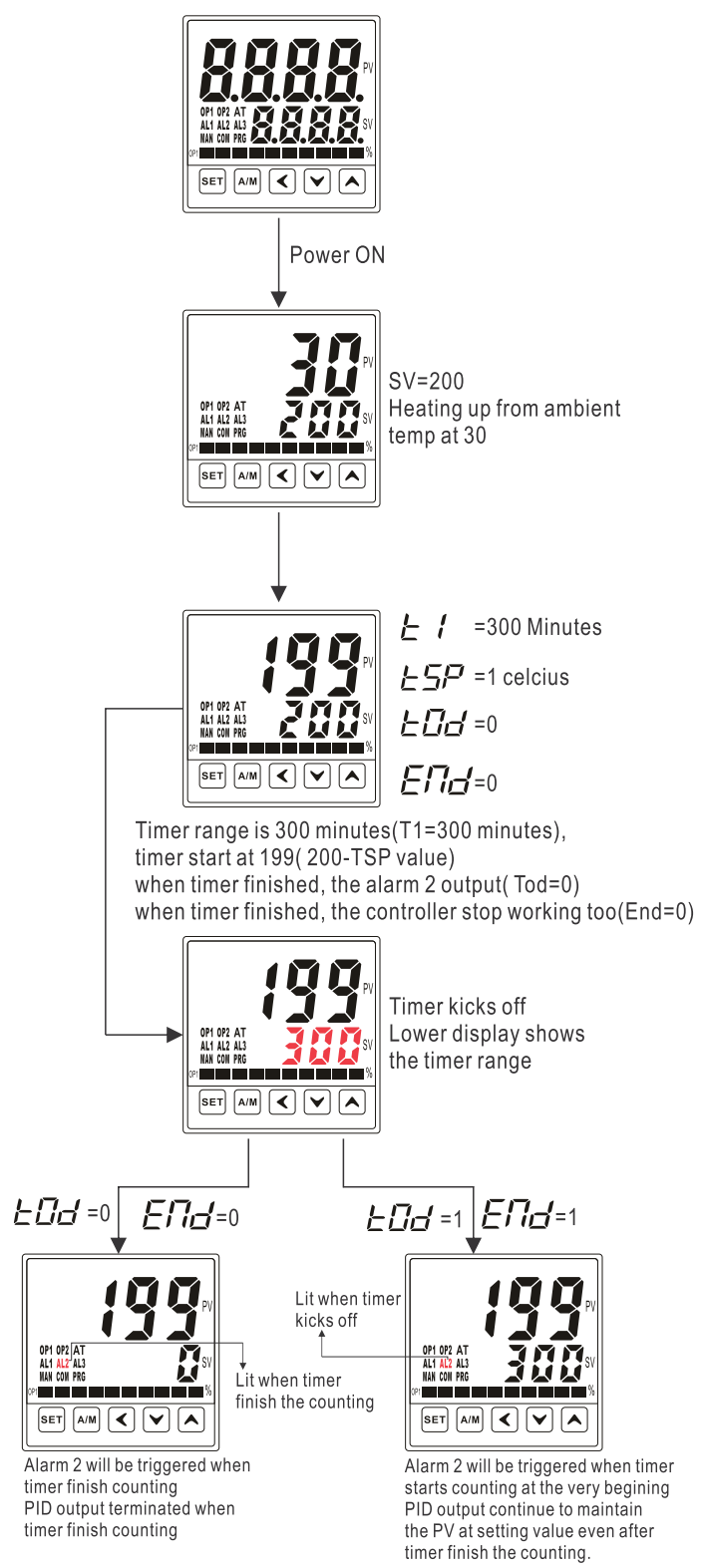
Dimension and cutout sizes



Wiring diagram



Typical procedure





General Features:

- **3 wires valve motor drive PID controller(VMD)**
- One relay for valve reverse running, one relay for valve forward running
- Work with valve with feedback signal or without feedback signal
- TC/RTD, analog input
- Auto/manual control bumpless transfer on panel
- 0.2% F.S accuracy
- PID control mode or ON/OFF Control mode selectable
- RS-485 modbus RTU communication optional
- **Perfect for application such as gas klin control**
- **Bar graphic display shows the valve position if the valve has feedback signal, otherwise the bar graphic display will indicate output percentage**
- °C/°F display selectable
- **Optional features**
 - RS485 Modbus RTU Communication
 - PV Re-transmission
 - 24VDC auxiliary power

Technical Specifications

Ordering Information

MTC-48-V (48mm*48mm)(width*height)	
MTC-49-V (48mm*96mm)(width*height)	
MTC-94-V (96mm*48mm)(width*height)	1 2 3 4 5 6 7 8
MTC-72-V (72mm*72mm)(width*height)	
MTC-96-V (96mm*96mm)(width*height)	

1:OUTPUT 1(Valve opening control)

M	Relay output for valve opening control
N	No output

2:OUTPUT 2(Valve closing control)

M	Relay output for valve closing control
N	No output

3:Number of Alarms

N	No alarm
1	1 alarm
2	2 alarms
3	3 alarms

4:Power Source

96	85~265Vac 50/60HZ
-----------	-------------------

5 :Position feedback for valve position

N	No position feedback	A 4-20mA	B 0-20mA
T	special inputs	C 0-10mA	D 0-5Vdc
E	0-10Vdc	F 1-5Vdc	G 2-10Vdc
R	potentiometer feedback(resistance feedback)		

6:PV re-transmission

N	No re-transmission function
A	4-20mA re-transmission
B	0-20mA re-transmission
E	0-10Vdc re-transmission

7:RS-485 Communication

N	No communication feature
K	RS-485 modbus RTU communication

8:AUX power source

N	No aux power	B 24Vdc grounded
A	24Vdc isolated	

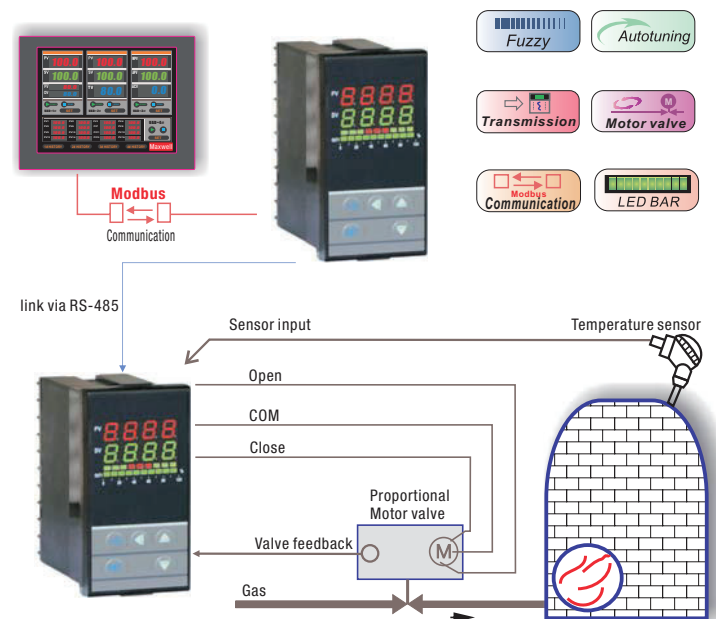
Eg: MTC-96-V-M-M-1-96-R-NNN

MTC-96-V series valve temperature controller, 2 relay outputs for valve opening and closing, 1 alarm outputs for temperature with potentiometer position feedback. source 85~265Vac

Further elaborate on valve temperature control

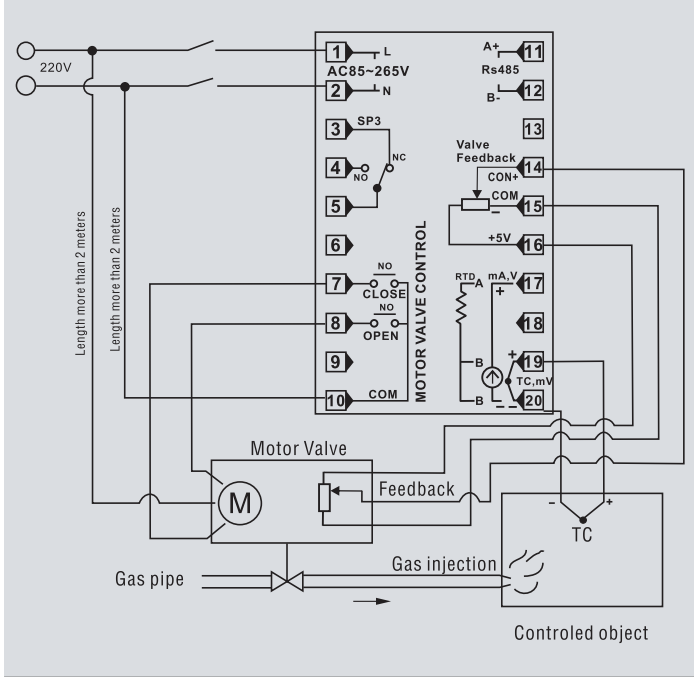
MTC-V valve temperature controller controls the current position of a valve or damper by accepting in a signal from a position indicator, the controls can be programmed for ON/OFF, PID control mode, for greater design flexibility, MTC-V controller accepts TC, RTD and analog signals, An auto/manual key is located on the front panel in order to toggle between manual operation and automatic operation, The RS-485 serial communications works with Modbus RTU protocol. During normal operation, the controller will display the present value(PV), set point value(SV), two relays ,one control the opening of the valve and the other one control the closing of the valve, by doing so, the temperature can be controlled at the set point.

- 3 wires motor valve PID control

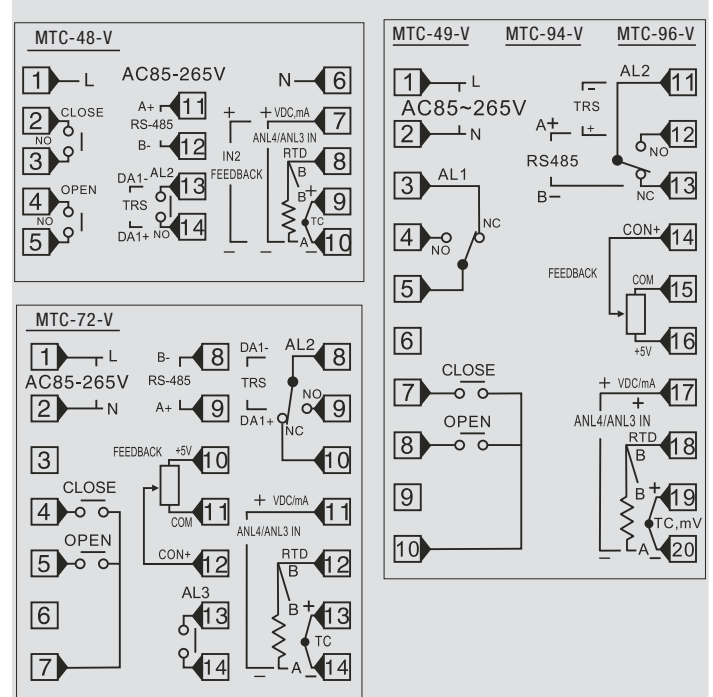


Technical Specifications

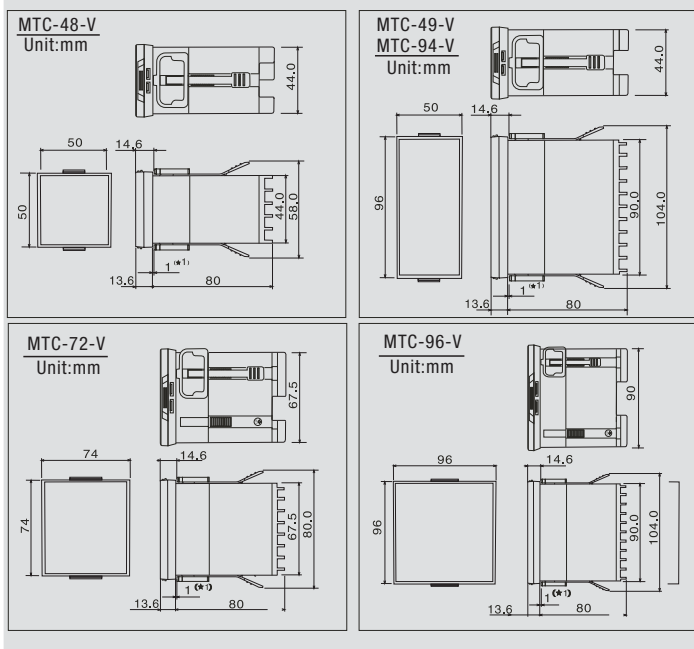
Wiring example for MTC-49-V, MTC-94-V and MTC-96-V



Terminal arrangement



Size and mounting



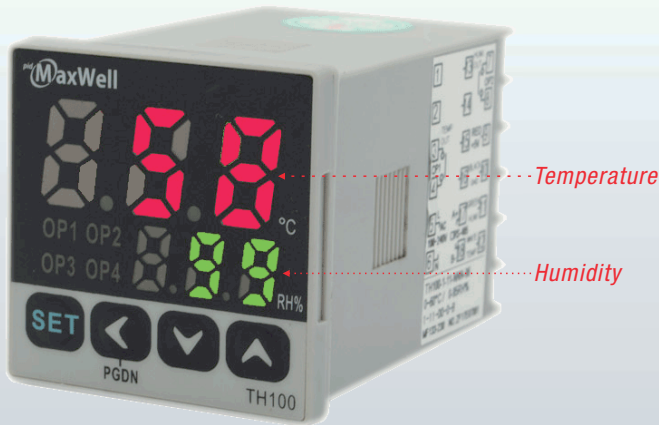
Ratings:

- Alarm relay: 250Vac, 3A(Resistive load)
- Control relay: 250Vac, 5A(Resistive load)
- SSR Drive output: voltage pulse 12VDC(load shall be 600 ohm or more)
- Current output: 4-20mA DC(load shall be less than 500 ohm or less)
- Triac single phase zero-crossing: 100A or less

Input sensor and range

Input type	Code	Input type	Code
K	0.0 to 200.0 °C K D2	Pt100	0.0 to 100.0 °C D D1
	0.0 to 400.0 °C K D4		0.0 to 200.0 °C D D2
	0 to 400 °C K A4		-50.0 to 200.0 °C D G2
	0 to 600 °C K A6		-100.0 to +200.0 °C D F2
	0 to 1300 °C K B3		-199.9 to +200.0 °C D F3
	0.0 to 200.0 °C E D2		0 to 100 °C D A1
0.0 to 300.0 °C E D3	0 to 200 °C D A2		
0 to 200 °C E A2	0 to 400 °C D A4		
0 to 400 °C E A4	0 to 800 °C D A8		
0 to 800 °C E A8	-100 to 200 °C D C2		
0.0 to 300.0 °C J D3	-200 to 400 °C D C4		
0.0 to 400.0 °C J D4	-200 to 600 °C D C6		
0 to 300 °C J A3	-200 to 800 °C D C8		
0 to 400 °C J A4			
0 to 1000 °C J A0			
0 to 300 °C T D4	Input type		Code
0 to 400 °C T A4	AN1 0 to 50mV	-1999 to 9999	V 02
0 to 1600 °C S B6	AN2 10 to 50mV	-1999 to 9999	V 10
0 to 1769 °C R B8	AN3 0 to 5VDC	-199.9 to 999.9	V 03
200 to 1800 °C B B8	AN3 0 to 10VDC	-199.9 to 999.9	V 04
N 0 to 1300 °C N B3	AN4 1 to 5VDC	-19.99 to 99.99	V 08
Wu3_Re25 600 to 2200 °C W B0	AN4 2 to 10VDC	-1.999 to 9.999	V 09
	AN4 4 to 20mA		A 03
	AN3 0 to 20mA		A 02
	AN3 0 to 10mA		A 01

The accuracy is not guaranteed for type S thermocouple in the range of 0-100
 Remark 1: user can switch input between thermocouple and RTDs via software
 Remark 2: analog input except 0-50mA, 10-50mV needs to be specified when order



Features:

- Dual display, 3 digits, 7 segments LED display
- 1% accuracy for temperature, 5% accuracy for RH
- Temperature and humidity sensor range: 0-60°C, 0-85% RH
This is the range for our standard temperature and humidity sensor
- Operating condition: 0-50°C, 0-85% RH
- TH100, TH700 is single loop controller, TH900 available with dual loop configuration
- ON/OFF control mode
- Heating or cooling configurable, humidify or dehumidify configurable
- Optional features
 - RS485 Modbus RTU Communication
 - 24VDC optional

Technical Specifications

Ordering Information

TH100(48mm*48mm)(Width*Height)

TH700(72mm*72mm)(Width*Height)

TH900(96mm*96mm)(Width*Height)

1 2 3 * 4 5 6 7

1: Control loops

1	Single loop
2	Dual loop (only available with TH900)

2: OP1 control mode for temperature control (#1 loop)

N	No output 1	Remark: heating or cooling mode is configurable via software, this is just a selection for factory default setting, you can change back and forth between heating or cooling control
1	Heating	
2	Cooling	

3: OP2 control mode for humidity control (#1 loop)

N	No output 1	Remark: humidify or dehumidify mode is configurable via software, this is just a selection for factory default setting, you can change back and forth between humidify or dehumidify control
1	humidifying	
2	dehumidifying	

4: OP3 control mode for temperature control (#2 loop, TH900 only)

N	No output 1	Remark: heating or cooling mode is configurable via software, this is just a selection for factory default setting, you can change back and forth between heating or cooling control
1	Heating	
2	Cooling	

5: OP4 control mode for humidity control (#2 loop, TH900 only)

N	No output 1	Remark: humidify or dehumidify mode is configurable via software, this is just a selection for factory default setting, you can change back and forth between humidify or dehumidify control
1	humidifying	
2	dehumidifying	

6: Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

7: Power supply

96	85~265Vac 50/60HZ
24	24VDC/AC

Eg: TH100-1-1-1-N-N-N-96

TH100, single loop, heating (factory default), humidify (factory default) with out RS-485 communication, 85~265Vac source

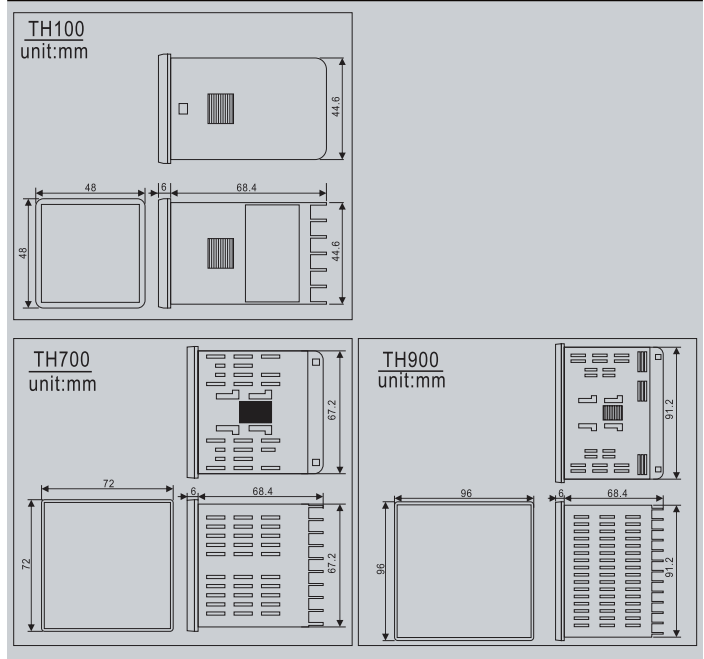
Spare parts

Temperature and humidity sensors
Item number: HTMR-030
Specs:
Temperature NTC10K/3950,,
humidity hygistor 0-3V
power source: 5Vdc
Cable length: 5 meters
PVC cable

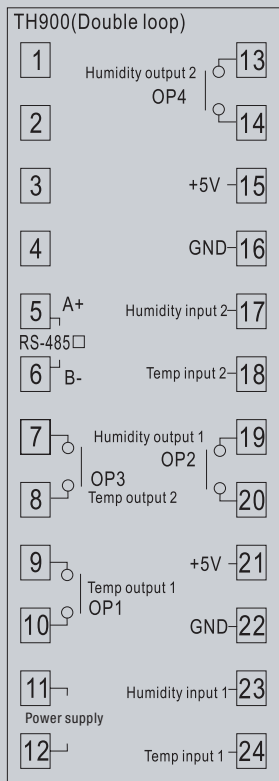
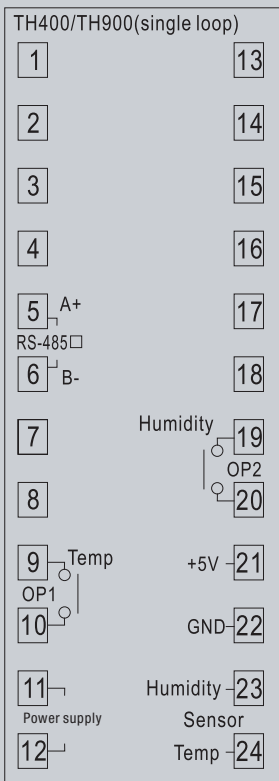
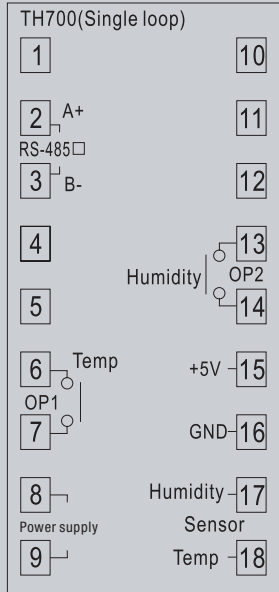
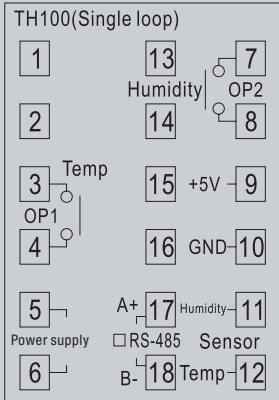


HTMR-030

Size and mounting



Terminal arrangement



Relay rating: 3A/250VAC
For resistive load

MaxWell

Ramp and Soak Controller/Profile Controller

Programmable Controller
FTX00-P Series

Maximum 32 segments
4 different programs
Easy to operate

- Power supply 85~265Vac 50/60Hz
- High accuracy 0.2%F.S
- Selectable input from panel(TC,RTD,Analog)
- Relay/SSR Drive/4-20mA output
- Heating or cooling control mode
- Various alarm mode
- Auto/Manual bumpless transfer from front panel
- PV/SV re-transmission output optional
- RS-485 communication optional
- Master/Slave communication mode
- 24VDC auxiliary power supply available
- Various program execution mode
- User friendly



Ordering Information

FT100
FT400
FT700
FT900

	P						
	2	3	4	5	6	7	8

1:Size Information

FT100: 48mm(Width)*48mm(Height)
FT400: 48mm(Width)*96mm(Height)
FT700: 72mm(Width)*72mm(Height)
FT900: 96mm(Width)*96mm(Height)

2:Version Code

P: Programmable temperature controller
also known as Ramp and soak controller

3:Output

R: Relay	5: 0-5VDC
V: SSR drive	6: 0-10VDC
D: 4-20mA	7: 1-5VDC
2: 0-20mA	

4:Alarm options

1: 1 alarm
2: 2 alarms
3: 3 alarms

5:Power supply

96: 85~265VAC

6:Re-transmission

N: Without re-transmission
P42: PV re-transmission as 4-20mA
P005: PV re-transmission as 0-5VDC
P010: PV re-transmission as 0-10VDC
S42: SV re-transmission as 4-20mA
S005: SV re-transmission as 0-5VDC
S010: SV re-transmission as 0-10VDC

7:Communication

N: Without communication
K: RS-485 Modbus RTU

8:Auxiliary Power supply

N: Without auxiliary power supply
24: 24VDC

Detailed Features

● Input Signals

TC:K,S,E,J,T,B,N,R
RTD:Pt100

Analog signal:0-5V,1-5V,0-10V,2-10V,0-20mV,0-50mV,4-20mA, 0-10mA,0-20mA

● Display

Dual line four digits LED display, bar graphic display. Celcius and Fahrenheit switchable

● Measuring accuracy and resolution

0.2%F.S accuracy, maximum 0.1 resolution for TC and RTD input, 0.001 resolution for analog signal such as 4-20mA.

● Main output

Relay contact output, SSR Drive output, 4-20mA output, 0-20mA output, 0-5Vdc output
0-10Vdc output, 1-5Vdc output

● Control action

Heating or cooling control configurable, PID algorithm. when P=0, ON/OFF control.

● Alarm and alarm mode

Maximum 3 alarms,15 different alarm modes, refer to user manual for detailed alarm modes

● Auto/manual control switch

Auto/manual bumpless switch between each other, available for all sizes except size 48mm*48mm

● PV/SV Re-transmission function

The process value or setting value can be re-transmitted as analog signal such as 4-20mA

● Decimal pp

The process value or setting value can be re-transmitted as analog signal such as 4-20mA

● Programming

Maximum 4 programs can be programmed, each program with maximum 8 segments, all different program can be linked as one program with maximum 32 segments.

● Output restriction

The maximum output can be restrained in certain range, for example 80%, maximum output can be defined at specific segments

● System timing

The system timing unit can be seconds, hours, or minutes and field configurable

● Program monitoring

Be able to check current running segments and program running time. RS-485 optional for remote monitoring and configuration

● Program control

>Program can be executed from "0" or from the process value
>Program can be executed automatically right after power on
>Program can be executed or terminated from front panel
>Program can be restored after power failure situation.
>Program can be configured to repeat itself after finish a program
>Program can be configured to STOP itself after finish a program

● Holdback function

Holdback indicates that the process value is lagging the set point by more than a preset amount and that the program is in HOLD, waiting for the process to catch up.

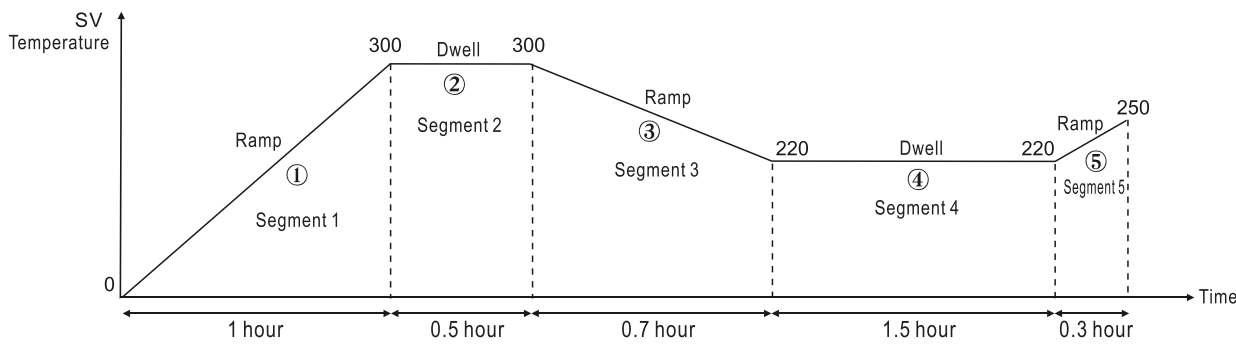
● Master/Slave communication mode

Number of controllers can be connected to a master controller as slave controller, any setting you made to the master controller will be reflected to the slave controller, This will save a lot of time if more controllers are doing the same job at the same time with same settings.

Temperature Controller/Solid State Relay/Rotary Encoder/Proximity Sensors/Capacitive Sensors

A typical application

Suppose we need a program with 5 segments, using #1 program for the application, check below curve. the maximum output ratio restricted to 80% at segment 4 to avoid damage. system timing unit: hours



How to create a program like figure shows at right

PV 25 SV 0 PV/SV mode

Press SET until you see PLCK

PV PLCK SV 0002

SET PLCK=2 to access to program configuration menu

SET

PV PLNK SV 0001

SET PLNK=1 to use the #1 program for the application

SET

PV PSEL SV 0001

SET PSEL=1 goes to parameter menu for #1 program

SET

PV 5' 1.1 SV 300

Set the SV for #1 segment at 300C

SET

PV tr 1.1 SV 1.0

Set the ramp time for #1 segment at 1 hour

SET

PV ot 1.1 SV 100.0

Maximum output for #1 segment is 100%

SET

PV 5' 1.2 SV 300

Set the SV for #2 segment at 300

SET

PV tr 1.2 SV 0.5

Dwell time for #2 segment at 0.5 hour

SET

PV ot 1.2 SV 100.0

Maximum output for #2 segment is 100%

SET

PV 5' 1.3 SV 220

Set the SV for #3 segment at 220 C

SET

PV tr 1.3 SV 0.7

Ramp time for #3 segment is 0.7 hour

SET

PV ot 1.3 SV 100.0

Maximum output for #3 segment is 100%

SET

PV 5' 1.4 SV 220

Set the SV for #4 segment at 220 C

SET

PV tr 1.4 SV 1.5

Dwell time for #4 segment at 1.5 hour

SET

PV ot 1.4 SV 80.0

Maximum output for #4 segment is 80%

SET

PV 5' 1.5 SV 250

Set the SV for #5 segment at 250 C

SET

PV tr 1.5 SV 0.3

Ramp time for #5 segment is 0.3 hour

SET

PV ot 1.5 SV 100.0

Maximum output for #5 segment is 100%

SET

PV 5' 1.6 SV 888.8

SET SV as any random value for #6 segment

SET

PV tr 1.6 SV 888.8

SET any random value for time of #6 segment

SET

Press SET key for 3 seconds or light press A/M key to save the configuration and exit from the programming menu

PV ot 1.6 SV 0.0

SET maximum output as 0.0% for #6 segment

PV 25 SV 0

PV/SV mode

*Program automatically terminated

Set the maximum output menu as 0.0% at certain segment if a program less than 8 segments and program ending when it comes to the last segment. in above case, the program only have 5 segments, then set the maximum output for #6 segment as 0.0%, program ends after 5 segments.

*Program automatically jumping

If a program needs to skip on certain segments, set the segment time as 0.0, when program runs to the segment where the time has been set as 0.0, it will go to next segment automatically, for example, in a program where we want to skip on segment 4, then SET the time for segment 4 as "0.0", then program automatically goes to segment 5 from segment 3.



Features:

- DC to AC, AC to AC Single Phase Solid State Relay
- 3.2-32Vdc input for DC to AC, 90~280Vac input for AC to AC
- load amps, 10~120 amps
- Load 24~480Vac
- LED process indication
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - Built-in RC Snubber for all amps
 - 10,25,40 use TRIAC, 60 and above use back to back SCR
 - Using top quality TRIAC and back to back SCR
 - Units completely sealed with resin to have maximum isolation

Technical Specifications

Ordering Information

MS- **1** - **2** - **3** - **4**

1: Type of solid state relay

1 Single phase solid state relay

2: Input configuration

DA DC input, range 3.2-32Vdc
AA AC input, range 90~280Vac

3: Load voltage

48 24~480Vac 50/60HZ

4: Load current

10 10 amps
25 25 amps
40 40 amps
60 60 amps
80 80 amps
100 100 amps
120 120 amps

eg: MS-1DA4840, for DC to AC 40 amps 480Vac relay
 MS-1AA48100, for AC to AC 100 amps 480Vac relay

Guidelines on the selection and usage of a solid state relay

- 1) Current rating, as a general rule consider using the relay at no more than **50%** of its rated current for resistive load such as a heater, considering using the relay at no more than **10%** of its rated current for inductive load, such as a motor, in this application, the relay only can be used to control the start and stop of the motor, not reverse of the motor
- 2) **Heatsinks** must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions(contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order
- 7) Our relay can only be used for resistive load or inductive load, capacitive load is not suitable

Application

High-low temperature chamber, heaters, plastic machinery, incubation machine, Oiling machine, HVAC, Elevator control Lighting, Fountain controller

Electrical Technical Features(For DC to AC type)

Load Voltage	24~480Vac
Control Voltage	3.2-32Vdc
Minimum turn-on voltage	3.2Vdc
Minimum turn-off voltage	1Vdc
Maximum input current	25mA
Maximum turn-on time	10ms
Maximum turn-off time	10ms
Maximum Off-state Leakage Current [@ Rated Voltage]	5mA
Maximum On-state Voltage Drop [@ Rated Current]	1.6Vrms
Minimum Off-state dv/dt [@ Maximum Rated Voltage]	500V/μs
Dielectric Strength[50/60Hz]	input/output≥3500Vrms
Dielectric Strength[50/60Hz]	input,output/base≥2500Vrms
Transient Overvoltage	1200Vpk

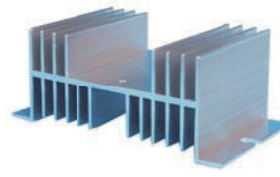
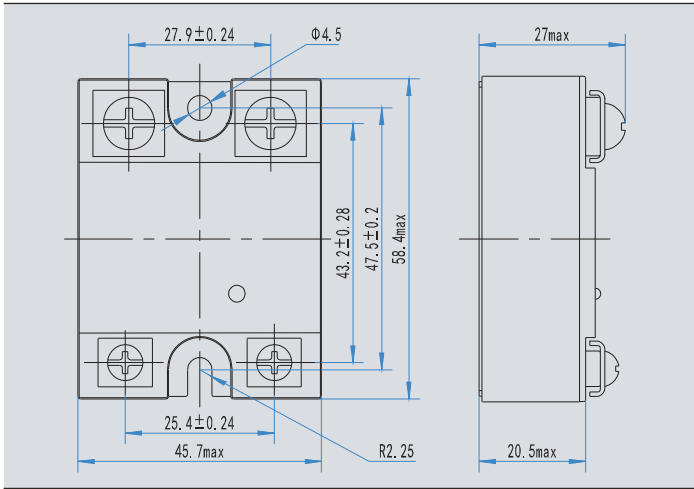
Electrical Technical Features(For AC to AC type)

Load Voltage	24~480Vac
Control Voltage	90~280Vac
Minimum turn-on voltage	90Vac
Minimum turn-off voltage	10Vac
Maximum input current	10mA
Maximum turn-on time	40ms
Maximum turn-off time	40ms
Maximum Off-state Leakage Current [@ Rated Voltage]	5mA
Maximum On-state Voltage Drop [@ Rated Current]	1.6Vrms
Minimum Off-state dv/dt [@ Maximum Rated Voltage]	500V/μs
Dielectric Strength[50/60Hz]	input/output≥3500Vrms
Dielectric Strength[50/60Hz]	input,output/base≥2500Vrms
Transient Overvoltage	1200Vpk

Mechanical and storage

Operating condition	-30°C~+75°C 35~85% RH
Storage condition	-30°C~+95°C
Weight	0.1kg
Housing material	Fire retardant ABS

Size



Model: MW-W-70
Size: 70mm*100mm*50mm
For 40 amps SSR
Mounting method: Panel mount

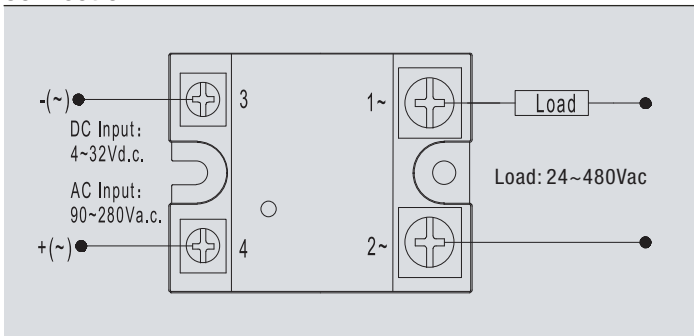
Model: MW-W-100
Size: 100mm*100mm*50mm
For 60 amps SSR
Mounting method: Panel mount

MW-W-70 and MW-W-100 looks like the same only difference is the length



Model: MW-H-55
Size: 55mm*80mm*80mm
For 40 amps SSR
Mounting method: Panel mount or din rail mount with din rail adaptor

Connection



Model: MW-E-52
Size: 52mm*74mm*40mm
For 40 amps SSR
Mounting method: Panel mount or din rail mount with din rail adaptor

Certificates



Packing information

Individual box for each pcs
10 pcs in a secondary box
200 pcs per master carton



Model: MW-DT-50
Size: 50mm*100mm*96mm
For 60 amps SSR
Mounting method: Panel mount or din rail mount directly

Din rail mount slot for direct din mount purpose



Model: MW-T-80
Size: 80mm*80mm*70mm
For 80amps,100amps,120amps
Mounting method: Panel mount or din rail mount with din rail adaptor

Accessories

The primarily supporting unit for solid state relay is heatsinks, heatsinks has a lot of options in terms of mounting method, size and shape, below is a reference table to help you select the suitable heatsink for your application, here we only discuss the heatsink for single phase SSR both DC to AC and AC to AC.

ITEM NO	SIZE(mm)	Compatible SSR	Mouting method
MW-I-50	60x50x50	10A/25A	Panel mount or direct Din rail mount
MW-W-70	70x100x50	40A	Panel mount only
MW-W-100	100x100x50	60A	Panel mount only
MW-H-55	55x80x80	40A	Panel mount or Din rail mount
MW-T-80	80x80x70	80A/100A/120A	Panel mount or Din rail mount
MW-DE-50	50x94x80	80A/100A/120A	Panel mount or Din rail mount
MW-E-52	52x74x40	40A	Panel mount or Din rail mount
MW-DT-50	50x100x96	60A	Panel mount or direct Din rail mount



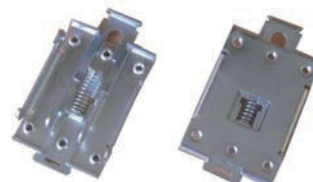
Model: MW-DE-50
Size: 50mm*94mm*80mm
For 80amps,100amps,120amps
Mounting method: Panel mount or din rail mount with din rail adaptor

Images and size



Model: MW-I-50
Size: 60mm*50mm*50mm
For 10 amps/25 amps SSR
Mounting method: Panel mount or din rail mount directly

Din rail mount slot



Model: CLM-1
Din rail clamp
Can be attached to below model and convert the unit to din rail mount type
MW-H-55
MW-T-80
MW-DE-50
MW-E-52



Features:

- DC to AC, AC to AC three phase solid state relay
- 5-32Vdc input for DC to AC, 90~280Vac input for AC to AC
- load amps, 10~200 amps
- Load 24~680Vac
- LED process indication
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - Built-in RC Snubber circuit for all amps
 - 10,25,40 use TRIAC, 60 and above use back to back SCR
 - Using top quality TRIAC and back to back SCR
 - Units completely sealed with resin to have maximum isolation

Technical Specifications

Ordering Information

MS-1-2-3-4

1: Type of solid state relay

3 Three phase solid state relay

2: Input configuration

DA DC input, range 5-32Vdc
AA AC input, range 90~280Vac

3: Load voltage

48 24~680Vac 50/60HZ

4: Load amps

10 10 amps
25 25 amps
40 40 amps
60 60 amps
80 80 amps
100 100 amps
120 120 amps
150 150 amps
200 200 amps

eg: MS-3DA4825, for DC to AC 25 amps 680Vac relay
MS-3AA48150, for AC to AC 150 amps 680Vac relay

Guidelines on the selection and usage of a solid state relay

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, considering using the relay at no more than 10% of its rated current for inductive load, such as a motor, in this application, the relay only can be used to control the start and stop of the motor, not reverse of the motor.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 680Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 680Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order
- 7) Our relay can only be used for resistive load or inductive load, capacitive load is not suitable

Application

High-low temperature chamber, heaters, plastic machinery, incubation machine, Oiling machine, HVAC, Elevator control Lighting, Fountain controller

Electrical Technical Features (For DC to AC type)

OUTPUT SPECIFICATIONS

Operating Voltage [VAC]	24-680Vac
Maximum Transient Overvoltage [Vpk]	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA]	Less 10m Ams
Maximum Surge Current [Adc] (10ms)	7*rated current
Maximum On-State Voltage Drop @ Rated Current [Vdc]	1.5
Maximum Off-State dv/dt [V/uSec]	1000

INPUT SPECIFICATIONS

Control Voltage Range	5-32VDC
Minimum Turn-on Voltage	5.2 VDC
Minimum Turn-off Voltage	1VDC
Leakage Current	15mA
Maximum Turn-on Time [msec]	Less 8.3m Sec
Maximum Turn-off Time [msec]	Less 1/2AC cycle

GENERAL SPECIFICATIONS

Dielectric Strength, Input-Output Base (50/60Hz)	3500
Dielectric Strength, Input-Output (50/60Hz)	3500
Minimum Insulation Resistance	10 ⁹ ohm
Ambient Operating Temperature Range	-20 ^o C~+80 ^o C
Ambient Storage Temperature Range	-40 ^o C~+100 ^o C
Switching Type	Zero-Crossing
Weight (g) +/- 50g	380g

Electrical Technical Features (For AC to AC type)

OUTPUT SPECIFICATIONS

Operating Voltage [VAC]	24-680Vac
Maximum Transient Overvoltage [Vpk]	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA]	Less 10m Ams
Maximum Surge Current [Adc] (10ms)	7*rated current
Maximum On-State Voltage Drop @ Rated Current [Vdc]	1.5
Maximum Off-State dv/dt [V/uSec]	1000

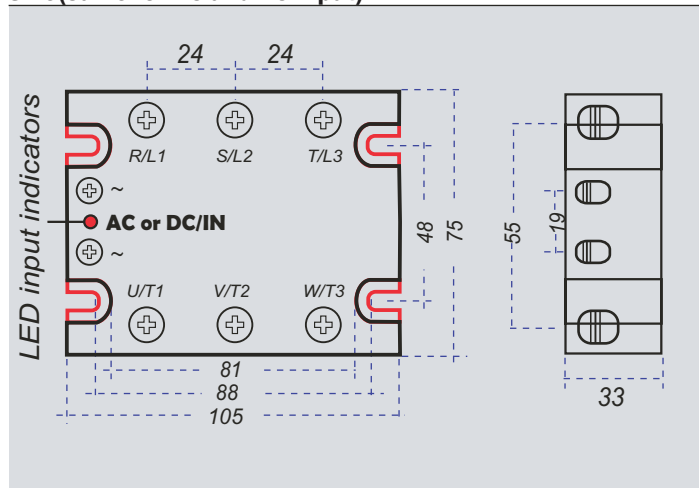
INPUT SPECIFICATIONS

Control Voltage Range	90~280Vac
Minimum Turn-on Voltage	80Vac
Minimum Turn-off Voltage	10Vac
Leakage Current	15mA
Maximum Turn-on Time [msec]	Less 8.3m Sec
Maximum Turn-off Time [msec]	Less 1/2AC cycle

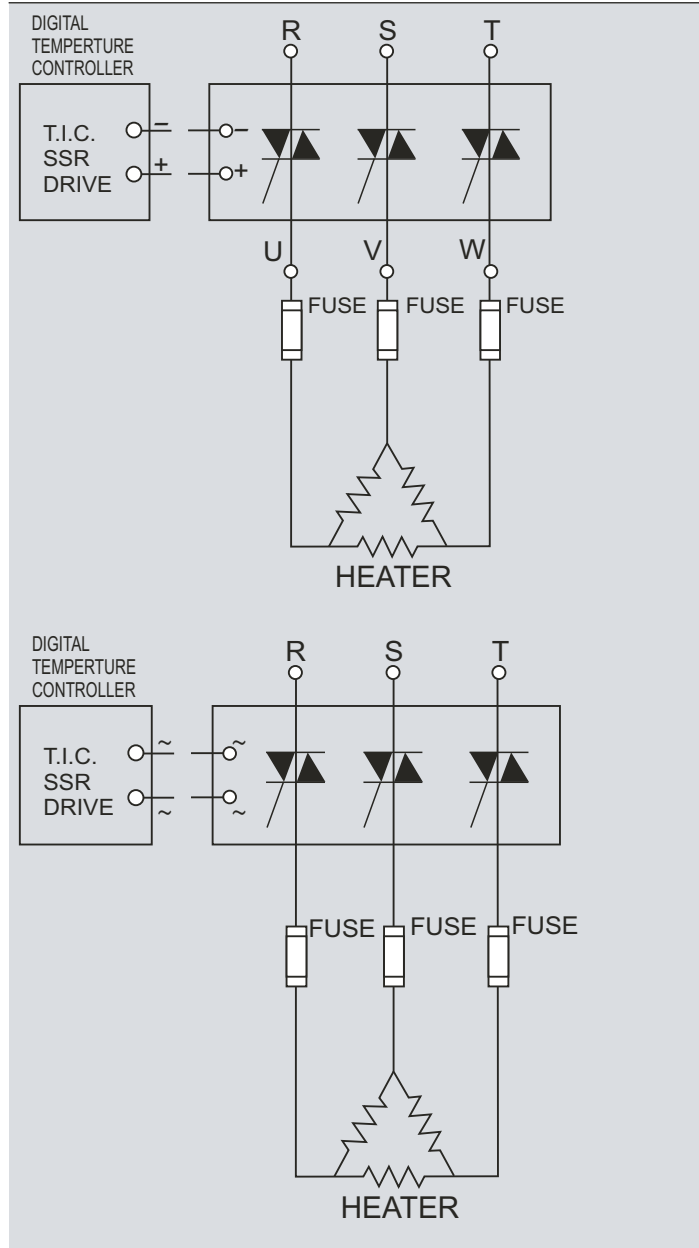
GENERAL SPECIFICATIONS

Dielectric Strength, Input-Output Base (50/60Hz)	3500
Dielectric Strength, Input-Output (50/60Hz)	3500
Minimum Insulation Resistance	10 ⁹ ohm
Ambient Operating Temperature Range	-20 ^o C~+80 ^o C
Ambient Storage Temperature Range	-40 ^o C~+100 ^o C
Switching Type	Zero-Crossing
Weight (g) +/- 50g	380g

Size(same for DC and AC input)



Connection



Certificates



Packing information

Individual box for each pcs
50 pcs per master carton

Accessories(heatsink and cooling fans)

The primary supporting unit for solid state relay is heatsinks, heatsinks has a lot of options in terms of mounting method, size and shape, below is a reference table to help you select the suitable heatsink for your application, here we only discuss the heatsink for three phase SSR both DC to AC and AC to AC.

ITEM NO	SIZE(mm)	Compatible SSR	Mouting method
MW-L-150	150x88x35	10A/25A	Panel mount only
MW-E-105	105x74x40	10A/25A	Panel mount or din rail mount
MW-H-110	110x80x80	40A	Panel mount or din rail mount
MW-H-150	150x80x80	60A	Panel mount or din rail mount
MW-Y-110	110x125x135	80A	Panel mount only
MW-Y-150	150x125x135	100A/120A	Panel mount only
MW-Y-170	170x125x135	150A/200A	Panel mount only
MW-DT-120	120x100x96	60A/80A/100A	Panel mount or direct Din rail mount
MW-F-120	120x130x93	80A	Panel mount only

Images and size



Model: MW-L-150
Size: 150mm*88mm*35mm
For 10 amps/25 amps SSR
Mounting method: Panel mount only



Model: MW-E-105
Size: 105mm*74mm*40mm
For 10 amps/25 amps SSR
Mounting method: Panel mount and din rail mount



Model: MW-H-110
Size: 110mm*80mm*80mm
For 40 amps SSR
Mounting method: Panel mount and din rail mount
Compatible with 8cm*8cm fans



Model: MW-H-150
Size: 150mm*80mm*80mm
For 60 amps SSR
Mounting method: Panel mount and din rail mount
Compatible with 8cm*8cm fans



Model: MW-Y-110
Size: 110mm*125mm*135mm
For 80 amps SSR
Mounting method: Panel mount only
Compatible with 12cm*12cm fans

Images and size



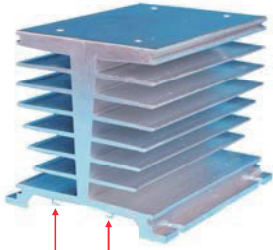
Model: MW-Y-150
 Size: 150mm*125mm*135mm
 For 100 /120 amps SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



Model: MW-Y-170
 Size: 170mm*125mm*135mm
 For 150/200 amps SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



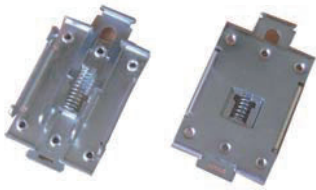
Din rail mount slot

Model: MW-DT-120
 Size: 120mm*100mm*96mm
 For 60/80/100 amps SSR
 Mounting method: Panel mount and
 din rail mount directly with din rail
 mount slot, check image to the left



Model: MW-F-120
 Size: 120mm*130mm*93mm
 For 80 amps SSR
 Mounting method: Panel mount only

Compatible with 8cm*8cm fans



Model: CLM-1
 Din rail clamp
 Can be attached to below model and
 convert the unit to din rail mount type
 MW-E-105
 MW-H-110
 MW-H-150

Cooling fans



110VAC

Model: MF-1-S-8-110
 8cm*8cm
 sleeve bearing fans
 source:110Vac



220VAC

Model: MF-1-S-8-220
 8cm*8cm
 sleeve bearing fans
 source:220Vac



110VAC

Model: MF-1-S-12-110
 12cm*12cm
 sleeve bearing fans
 source:110Vac



220VAC

Model: MF-1-S-12-220
 12cm*12cm
 sleeve bearing fans
 source:220Vac



Features:

- DC to AC/ AC to AC Single Phase Solid State Relay
- 3.2-32Vdc for DC input, 90~280Vac for AC input
- 60/80/100/120/150/200/250/300/400/500/600/800/1000 amps
- **Load 24~680Vac**
- LED process indication
- Panel mount
- Zero-crossing trigger
- 60~120 same sizes, 150~400 same size, 500~1000 same sizes
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - Built-in RC Snubber
 - Accessories included
 - High load voltage for harsh industrial environment

Technical Specifications

Ordering Information

MS-1-2-3-4

1: Type of solid state relay

1 Single phase industrial type solid state relay

2: Input configuration

DA DC to AC Solid State Relay, input 3-32Vdc
AA AC to AC Solid State Relay, input 90~280Vac

3: Load voltage

68 Load is 24~680Vac 50/60HZ

4: Load amps

60	60 amps
80	80 amps
100	100 amps
120	120 amps
150	150 amps
200	200 amps
250	250 amps
300	300 amps
400	400 amps
500	500 amps
600	600 amps
800	800 amps
1000	1000 amps

eg: MS-1DA68250, single phase industrial type solid state relay, 3-32Vdc
250 amps 680Vac
MS-1AA68150, single phase industrial type solid state relay, 90~280Vac
150 amps 680Vac

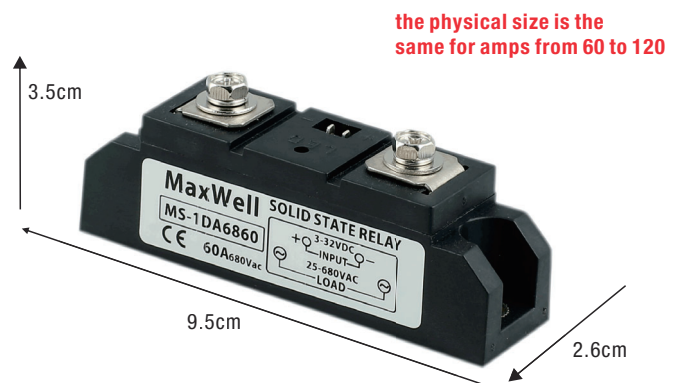
Guidelines on the selection and usage of a solid state relay

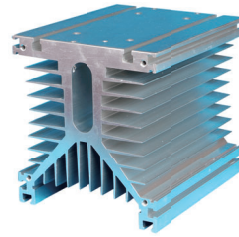
- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, considering using the relay at no more than 10% of its rated current for inductive load, such as a motor, in this application, the relay only can be used to control the start and stop of the motor, not reverse of the motor
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions(contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 680Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 680Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order
- 7) Our relay can only be used for resistive load or inductive load, capacitive load is not suitable

Technical features

Load Voltage	24~680Vac
Control Voltage	3.2-32Vdc/90~280Vac
Turn off voltage	<3.5Vdc
Trigger current	12mA max.
Control method	Zero crossing trigger
Leak current	≤5mA
Response time	≤10mS
Input immunity	2.5 KV
Isolation strength	4500V rms
Insulation strength	100Mohm/500Vdc(EN60950/VDE0805)
Operating condition	-30°C~+75°C 35~85% RH
Mounting	Panel mount
Indicator	LED indication
Weight	0.1~0.3kg depends on the load
Housing	Fire retardant ABS

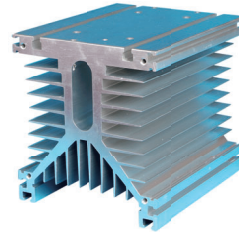
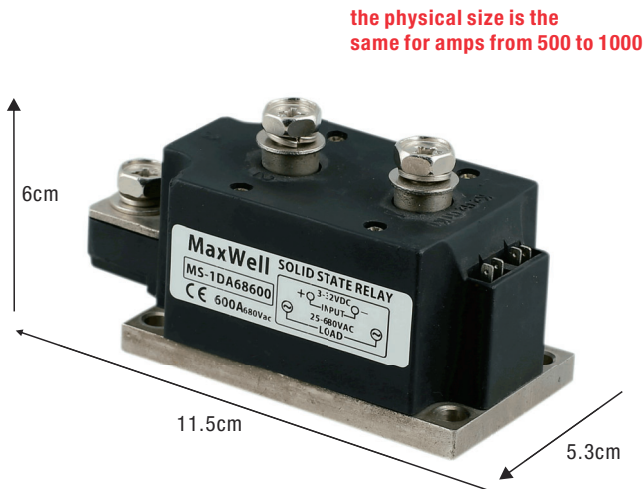
Image and size





Model: MW-Y-170
 Size: 170mm*125mm*135mm
 For 150-400 amps
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



Model: MW-Y-200
 Size: 200mm*125mm*135mm
 For 500-1000 amps
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans

Accessories(heatsink and cooling fans)

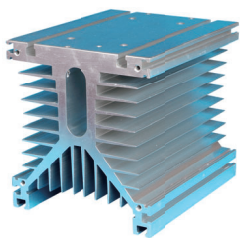
The primary supporting unit for solid state relay is heatsinks, heatsinks has a lot of options in terms of mounting method, size and shape, below is a reference table to help you select the suitable heatsink for your application, here we only discuss the heatsink for industrial type solid state relay.

MW-Y-70	70x125x135	for 60-1000 amps 1 pcs of SSR only	Panel mount only
MW-Y-150	150x125x135	For 60-120 amps	Panel mount only
MW-Y-170	170x125x135	For 150-400 amps	Panel mount only
MW-Y-200	200x125x135	For 500-1000 amps	Panel mount only



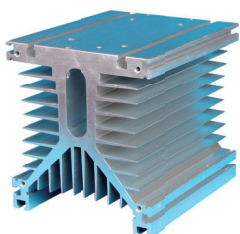
110VAC Model: SP101A
 12cm*12cm
 sleeve bearing fans
 source:110Vac

220VAC Model: 2123HSL
 12cm*12cm
 sleeve bearing fans
 source:220Vac



Model: MW-Y-70
 Size: 70mm*125mm*135mm
 This is suitable to mount 1 pcs of SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



Model: MW-Y-150
 Size: 150mm*125mm*135mm
 For 60-120 amps SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



Features:

- Single phase DC to AC cost effective solid state relay
- 3.2-32Vdc input for DC to AC
- Load amps, 10 amps, 25 amps, 40 amps.
- Load 24~480Vac
- LED process indication
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise

- Grey housing
- Terminal type
- Compact size
- Built-in RC Snubber for all three models
- 10, 25, 40 use TRIAC solution
- With protection cover for greater protection

LOGO and item Number laser printed, private label service available on request

Technical Specifications

Ordering Information

JX-**1**-**2**-**3**-**4**

1: Type of solid state relay

1 Single phase solid state relay

2: Control signal

DA DC input, range 3.2-32Vdc

3: load voltage

48 24~480Vac 50/60HZ

4: Load amps

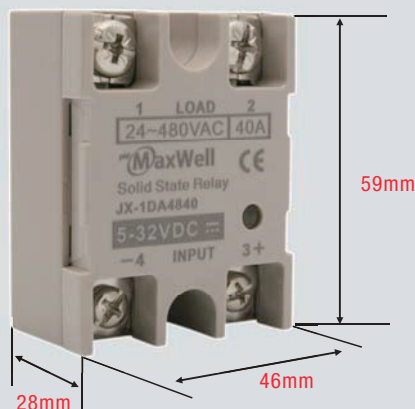
10 10 amps
25 25 amps
40 40 amps

eg: JX-1DA4840 40amps DC to AC solid state relay

Guidelines on the selection and usage of a JX series SSR

- 1) This series of SSR can be used for resistive and small inductive load
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order

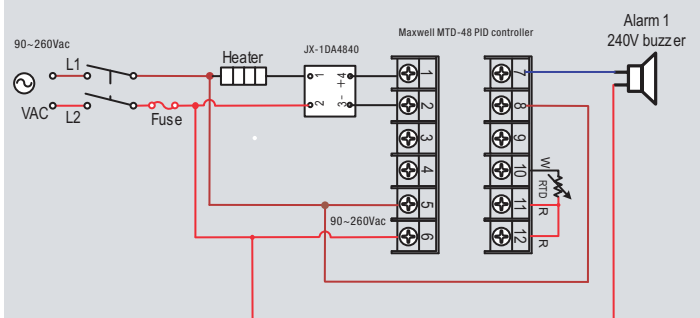
Size and dimension



Electrical Technical Features (For DC to AC type)

Load Voltage	24~480Vac
Control Voltage	3.2-32Vdc
Minimum turn-on voltage	3.2Vdc
Minimum turn-off voltage	1Vdc
Maximum input current	25mA
Maximum turn-on time	10ms
Maximum turn-off time	10ms
Maximum Off-state Leakage Current [@ Rated Voltage]	5mA
Maximum On-state Voltage Drop [@ Rated Current]	1.6Vrms
Minimum Off-state dv/dt [@ Maximum Rated Voltage]	500V/μs
Dielectric Strength [50/60Hz]	input/output ≥ 3500Vrms
Dielectric Strength [50/60Hz]	input, output/base ≥ 2500Vrms
Transient Overvoltage	1200Vpk

Solid state relay wiring setup in a heating application



Parts lists for above system

- Solid state relay JX-1DA4840
- Fuse
- Heater: 3300W, 220V (15 amps)
- PID Controller MTD-48
- 240V buzzer



Features:

- DC to DC solid state relay
 - 5-32Vdc input for DC to DC
 - load amps from 10 amps to 120 amps
 - Load is 60VDC, 110VDC, and 220Vdc, three options
 - LED process indication
 - Panel mount
 - mosfet triggering
 - All models with the same physical size
 - Fast response and no noise
- Black housing
 - Terminal type
 - Compact size
 - This item can be used for small heating application and ideal for valve control etc

Technical Specifications

Ordering Information

MS-1-2-3

1: Type of solid state relay

DD DC to DC input, 5-32Vdc

2: load voltage

60 60Vdc load
110 110Vdc load
220 220Vdc load

3: Load amps

10 10 amps
25 25 amps
40 40 amps
60 60 amps
80 80 amps
100 100 amps
120 120 amps

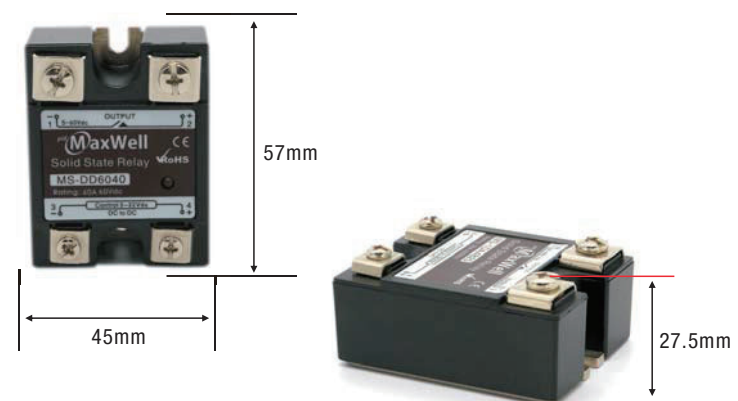
Guidelines on the selection and usage of a solid state relay

- 1) This series of SSR is suitable for small resistive load in heating application and for inductive load such as valve control
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Several options in terms of the load voltage, 60Vdc, 110Vdc, 220Vdc

Electrical Technical Features

Load voltage	60Vdc/110Vdc/220Vdc
Control voltage	5-32Vdc
Control current	5-50mA DC
On voltage drop	<1.5V
Off leakage current	<2mA
On-off time	<10ms
Dielectric strength	2000VAC
Insulation resistance	500M.Ω/500VDC
Ambient Temperature	-30°C~+75°C
Indicator	LED
Weight	0.1kg
Mounting method	Chassis mount

Size and dimension



Packing information

Individual box for each pcs
 10 pcs in a secondary box
 200 pcs per master carton



Features:

- Single phase DC to AC cost effective solid state relay
- 3.2-32Vdc input for DC to AC
- load amps from 10 amps to 120 amps
- Load 24~480Vac
- LED process indication
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise



Your switching solutions for heating !!

- Black housing
- Terminal type
- Compact size
- Built-in RC Snubber for all amps
- 10,25,40 use TRIAC, 60 and above use back to back SCR
- This series SSR is designed for resistive load application only a typical resistive load would be heaters, this is an ideal choice for heating application

Technical Specifications

Ordering Information

MS-1-2-3-4-5

1: Type of solid state relay

1 Single phase solid state relay

2: Input configuration

DA DC input, range 3.2-32Vdc

3: load voltage

48 24~480Vac 50/60HZ

4: Load amps

10	10 amps
25	25 amps
40	40 amps
60	60 amps
80	80 amps
100	100 amps
120	120 amps

5: Scope of application

R For resistive load only, heating application

eg: MS-1DA4840-R, 40 amps SSR, DC to AC, for resistive load

Guidelines on the selection and usage of a solid state relay

- 1) This series of SSR only suitable for resistive load in heating application, always consider to use the SSR to its 50% of current ratings.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order

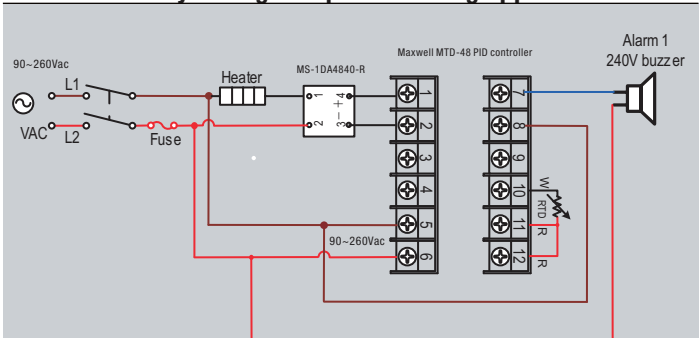
Mechanical and storage

Operating condition	-30°C~+75°C	35~85% RH
Storage condition	-30°C~+95°C	
Weight	0.1kg	
Housing material	Fire retardant ABS	

Electrical Technical Features (For DC to AC type)

Load Voltage	24~480Vac
Control Voltage	3.2-32Vdc
Minimum turn-on voltage	3.2Vdc
Minimum turn-off voltage	1Vdc
Maximum input current	25mA
Maximum turn-on time	10ms
Maximum turn-off time	10ms
Maximum Off-state Leakage Current [@ Rated Voltage]	5mA
Maximum On-state Voltage Drop [@ Rated Current]	1.6Vrms
Minimum Off-state dv/dt [@ Maximum Rated Voltage]	500V/μs
Dielectric Strength [50/60Hz]	input/output 3500Vrms
Dielectric Strength [50/60Hz]	input, output/base 2500Vrms
Transient Overvoltage	1200Vpk

Solid state relay wiring setup in a heating application



Parts lists for above system

Solid state relay MS-1DA4840-R
 Fuse
 Heater: 3300W, 220V(15 amps)
 PID Controller MTD-48
 240V buzzer



Features:

- DC to AC, three phase solid state relay for resistive load
- 5-32Vdc input
- load amps, 10 amps, 25 amps, 40 amps.
- Load 24~480Vac
- LED process indication
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - Built-in **RC Snubber circuit** for all amps
 - 10,25,40 use TRIAC
 - Using top quality TRIAC
 - Units completely sealed with resin to have maximum isolation

Technical Specifications

Ordering Information

MS-1-2-3-4-5

1: Type of solid state relay

3 Three phase solid state relay

2: Input configuration

DA DC input, range 5-32Vdc

3: Load voltage

48 24~480Vac 50/60HZ

4: Load amps

10 10 amps
25 25 amps
40 40 amps

5: Type of SSR

R For resistive load, cost-effective

eg: MS-3DA4840-R, for DC to AC 40 amps 480Vac relay

Guidelines on the selection and usage of a solid state relay

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, this item can only be used for resistive load
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) This SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order
- 7) This relay can only be used for resistive load

Application

High-low temperature chamber, heaters, plastic machinery, incubation machine, etc

Electrical Technical Features (For DC to AC type)

OUTPUT SPECIFICATIONS

Operating Voltage [VAC]	24-480Vac
Maximum Transient Overvoltage [Vpk]	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA]	Less 10m Ams
Maximum Surge Current [Adc] (10ms)	7*rated current
Maximum On-State Voltage Drop @ Rated Current [Vdc]	1.5
Maximum Off-State dv/dt [V/uSec]	1000

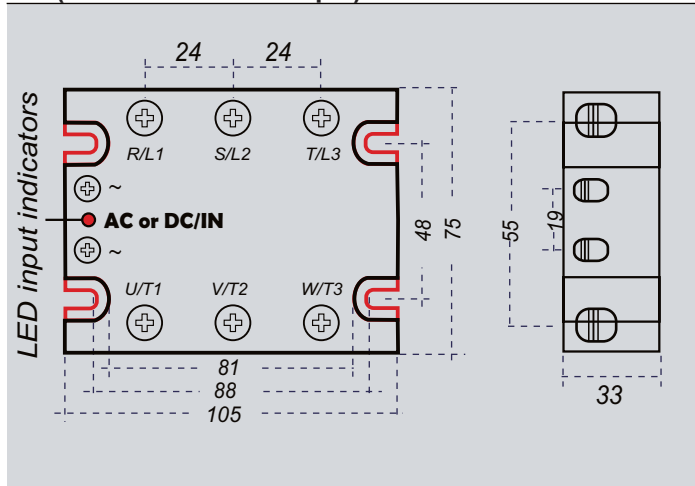
INPUT SPECIFICATIONS

Control Voltage Range	5-32VDC
Minimum Turn-on Voltage	5.2 VDC
Minimum Turn-off Voltage	1VDC
Leakage Current	15mA
Maximum Turn-on Time [msec]	Less 8.3m Sec
Maximum Turn-off Time [msec]	Less 1/2AC cycle

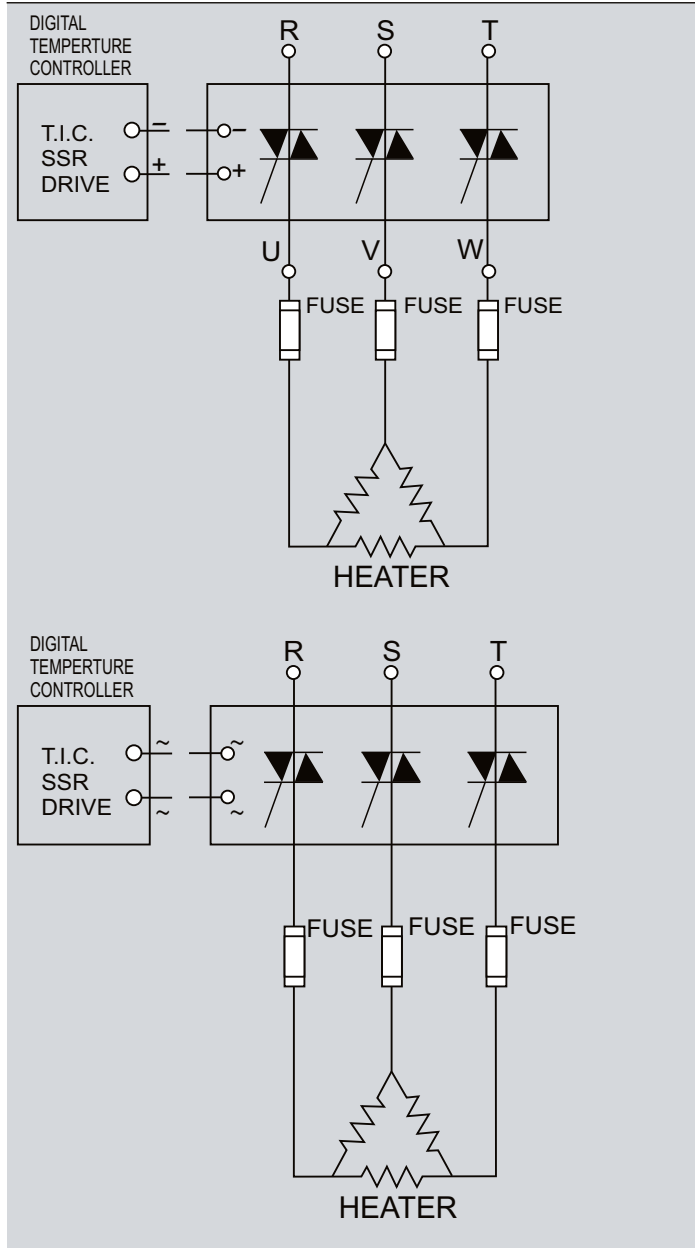
GENERAL SPECIFICATIONS

Dielectric Strength, Input-Output Base (50/60Hz)	3500
Dielectric Strength, Input-Output (50/60Hz)	3500
Minimum Insulation Resistance	10 ⁹ ohm
Ambient Operating Temperature Range	-20 ⁰ C~+80 ⁰ C
Ambient Storage Temperature Range	-40 ⁰ C~+100 ⁰ C
Switching Type	Zero-Crossing
Weight (g) +/- 50g	380g

Size(same for DC and AC input)



Connection



Certificates



Packing information

Individual box for each pcs
50 pcs per master carton

Accessories(heatsink and cooling fans)

The primary supporting unit for solid state relay is heatsinks, heatsinks has a lot of options in terms of mounting method, size and shape, below is a reference table to help you select the suitable heatsink for your application, here we only discuss the heatsink for three phase SSR both DC to AC and AC to AC.

ITEM NO	SIZE(mm)	Compatible SSR	Mouting method
MW-L-150	150x88x35	10A/25A	Panel mount only
MW-E-105	105x74x40	10A/25A	Panel mount or din rail mount
MW-H-110	110x80x80	40A	Panel mount or din rail mount
MW-H-150	150x80x80	60A	Panel mount or din rail mount
MW-Y-110	110x125x135	80A	Panel mount only
MW-Y-150	150x125x135	100A/120A	Panel mount only
MW-Y-170	170x125x135	150A/200A	Panel mount only
MW-DT-120	120x100x96	60A/80A/100A	Panel mount or direct Din rail mount
MW-F-120	120x130x93	80A	Panel mount only

Images and size



Model: MW-L-150
Size: 150mm*88mm*35mm
For 10 amps/25 amps SSR
Mounting method: Panel mount only



Model: MW-E-105
Size: 105mm*74mm*40mm
For 10 amps/25 amps SSR
Mounting method: Panel mount and din rail mount



Model: MW-H-110
Size: 110mm*80mm*80mm
For 40 amps SSR
Mounting method: Panel mount and din rail mount
Compatible with 8cm*8cm fans



Model: MW-H-150
Size: 150mm*80mm*80mm
For 60 amps SSR
Mounting method: Panel mount and din rail mount
Compatible with 8cm*8cm fans



Model: MW-Y-110
Size: 110mm*125mm*135mm
For 80 amps SSR
Mounting method: Panel mount only
Compatible with 12cm*12cm fans

Images and size



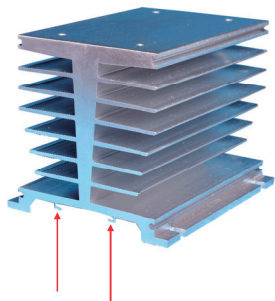
Model: MW-Y-150
 Size: 150mm*125mm*135mm
 For 100 /120 amps SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



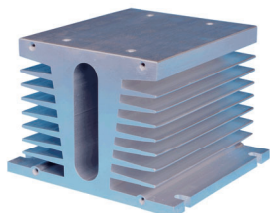
Model: MW-Y-170
 Size: 170mm*125mm*135mm
 For 150/200 amps SSR
 Mounting method: Panel mount only

Compatible with 12cm*12cm fans



Din rail mount slot

Model: MW-DT-120
 Size: 120mm*100mm*96mm
 For 60/80/100 amps SSR
 Mounting method: Panel mount and
 din rail mount directly with din rail
 mount slot, check image to the left



Model: MW-F-120
 Size: 120mm*130mm*93mm
 For 80 amps SSR
 Mounting method: Panel mount only

Compatible with 8cm*8cm fans



Model: CLM-1
 Din rail clamp
 Can be attached to below model and
 convert the unit to din rail mount type
 MW-E-105
 MW-H-110
 MW-H-150

Cooling fans



110VAC

Model: MF-1-S-8-110
 8cm*8cm
 sleeve bearing fans
 source:110Vac



220VAC

Model: MF-1-S-8-220
 8cm*8cm
 sleeve bearing fans
 source:220Vac



110VAC

Model: MF-1-S-12-110
 12cm*12cm
 sleeve bearing fans
 source:110Vac



220VAC

Model: MF-1-S-12-220
 12cm*12cm
 sleeve bearing fans
 source:220Vac



Features:

- Dual channel DC to AC single phase solid state relay
- 4-32Vdc input, 24~480Vac load
- 20amps, 25amps, 40amps, 50amps, 60amps optional.
- Load 24~480Vac
- LED process indication for both channel
- Panel mount
- Zero-crossing trigger
- All models with the same physical size
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - 2500Vrms dielectric strength

Technical Specifications

Ordering Information

MS- **1** - **2** - **3** - **4**

1: Load voltage

480 24~480Vac load

2: Load type

H High load voltage, up to 480Vac

3: Load current

20 20 amps
25 25 amps
40 40 amps
50 50 amps
60 60 amps

4: Triggering mode

P Zero-crossing trigger
R Random trigger

eg: MS-480-H-40-P, 40 amps, dual channel, zero-crossing trigger SSR

Guidelines on the selection and usage of a solid state relay

- 1) Current rating, as a general rule consider using the relay at no more than **50%** of its rated current for resistive load such as a heater, considering using the relay at no more than **10%** of its rated current for inductive load, such as a motor, in this application, the relay only can be used to control the start and stop of the motor, not reverse of the motor
- 2) **Heatsinks** must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions(contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order
- 7) Our relay can only be used for resistive load or inductive load, capacitive load is not suitable

Application

High-low temperature chamber, heaters, plastic machinery, incubation machine, Oiling machine, HVAC, Elevator control Lighting, Fountain controller

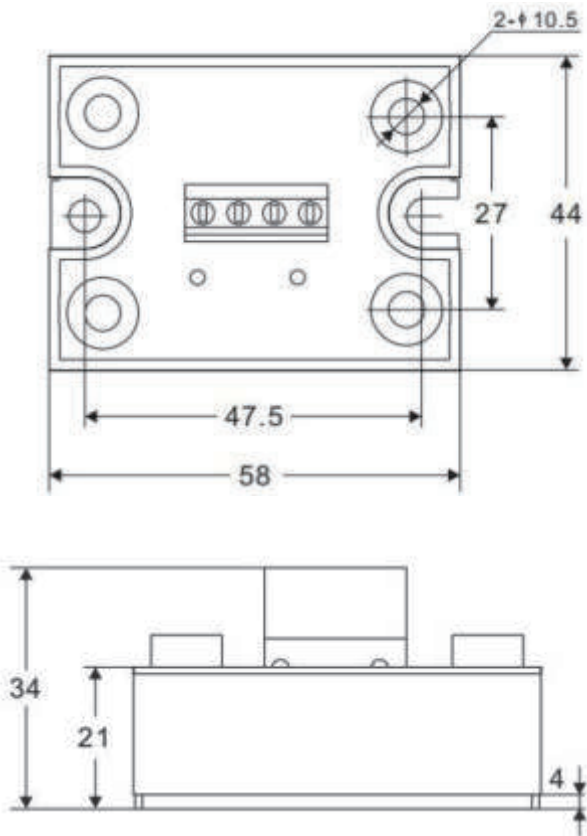
Electrical Technical Features(For DC to AC type)

Load Voltage	24~480Vac
Control Voltage	4-32Vdc
Minimum turn-on voltage	4Vdc
Minimum turn-off voltage	1Vdc
Maximum/minimum input current	12mA/7mA
Maximum turn-on time	10ms
Maximum turn-off time	10ms
Maximum Off-state Leakage Current [@ Rated Voltage]	5mA
Maximum On-state Voltage Drop [@ Rated Current]	1.5V
Minimum Off-state dv/dt [@ Maximum Rated Voltage]	1000V/ μ s
Dielectric Strength[50/60Hz]	input/output \geq 3500Vrms
Dielectric Strength[50/60Hz]	input,output/base \geq 2500Vrms
Transient Overvoltage	1200Vpk

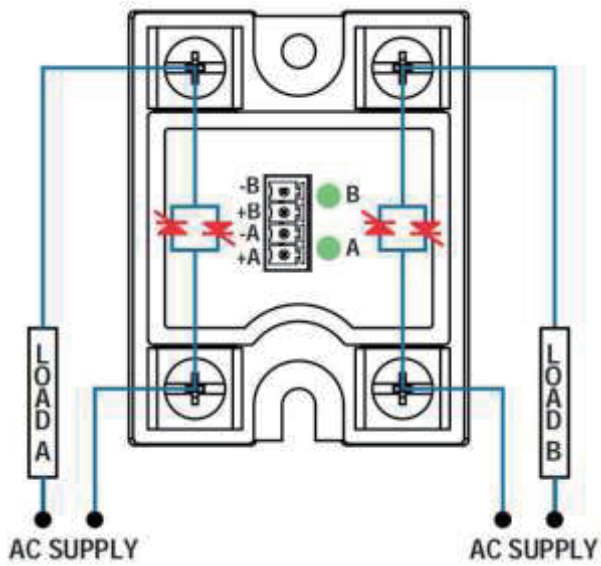
Mechanical and storage

Operating condition	-30°C~+85°C 35~85% RH
Storage condition	-40°C~+125°C
Weight	0.1kg
Housing material	Fire retardant ABS

Size



Connection



Certificates





Features:

- DC to AC Single Phase Solid State Relay
 - 3-32Vdc Input
 - 10/25/40/50/60/75/80/90/100 amps
 - Load 24~480Vac
 - LED process indication
 - Panel mount
 - Zero-crossing trigger
 - All models with the same size
 - Fast response and no noise
- Grey housing
 - Terminal type
 - Compact size

*Cost saving, very competitive price
ideal solution for heating applicaiton!!!*

Technical Specifications

Ordering Information

SSR short for Solid State Relay

SSR - 1 - 2 - 3

1: Load current options

10	10 amps
25	25 amps
40	40 amps
50	50 amps
60	60 amps
75	75 amps
80	80 amps
90	90 amps
100	100 amps

2: Input configuration

D Input DC 3-32Vdc

3: Load type

A Load is 24~480Vac

Example: SSR-40DA means 40 amps DC input AC load single phase SSR

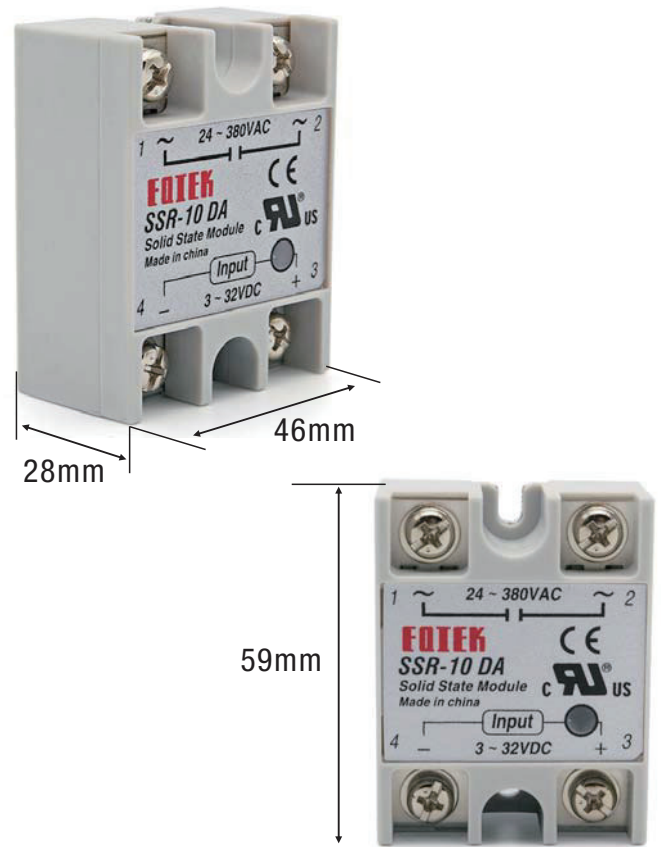
Technical Features

Load Voltage	24~480Vac
Control Voltage	3.2-32Vdc
Turn off voltage	<3.5Vdc
Trigger current	12mA max.
Control method	Zero crossing trigger
Leak current	≤5mA
Response time	≤10mS
Input immunity	2KV
Isolation strength	3500V rms
Insulation strength	100Mohm/500Vdc
Operating condition	-30°C~+75°C 35~85% RH
Weight	0.1kg

Guidelines on the selection and usage of a solid state relay

- 1) This series of SSR only suitable for resistive load in heating application, always consider to use the SSR to its 50% of current ratings.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 110V/220V/380V to maximum 480Vac
- 6) This is a normally open SSR, with no control input, the relay output is non-conducting, some specific types of SSR have a normally closed output, this needs to be specified before order

Size and shape



Packing information

Individual box for each pcs
10 pcs in a secondary box
200 pcs per master carton



Features:

- Three phase power regulator, auto phase detection
- Soft start function to protect SCR and load against surge current
- Integrated display with various LED indicator for status and error display
- Integrated heatsink and fans with temperature detection
- Over temperature alarm, output protection after alarm on(except SCR-51)
- Maximum and minimum output configurable
- Auto/manual control bumpless transfer(except SCR-51)
- Run/stop function
- RS-485 modbus RTU display
- Event input function
- Rated load voltage 380~440Vac 50/60HZ
- Power supply for SCR to work is 220Vac, 380Vac, 12-24VDC optional
- Input, 0-10Vdc, 4-20mA, 0-5Vdc, 1-5Vdc, 2-10Vdc, 0-20mA, 0-10mA
- Rated current options, 40 amps, 60 amps, 75 amps, 100 amps.
- This SCR only compatible with resistive load

Technical Specifications

Ordering Information

SCR-**1**-**2****3****4****5**-**6****7**

1: Type of SCR power regulators

51	51 series SCR regulator(without alarm and RS-485 function)
6	6 series SCR regulator
7	7 series SCR regulator

2: Load phase

3	3 phase load system
----------	---------------------

3: Load current

4	40 amps 380~440Vac
6	60 amps 380~440Vac
7	75 amps 380~440Vac
1	100 amps 380~440Vac(only SCR-6 with 100 amps option)

3: Power supply for the unit itself

2	220Vac
4	380Vac
D	12-24Vdc

4: Input signal

1	0-10mA
2	0-20mA
8	4-20mA
5	0-5Vdc(potentiometer)
6	0-10Vdc
7	1-5Vdc
3	2-10Vdc

5: Over temperature alarm(This is only available for SCR-6 and SCR-7)

N	without alarm
M	with 1 alarm, relay output

6: Communication(This is only available for SCR-6 and SCR-7)

N	without communication
M	With RS-485 modbus RTU communication

Remark: T-51 series do not have alarm and RS-485 options, only SCR-6 and SCR-7 have alarm and RS-485 option
only SCR-6 series available with 100 amps

eg: SCR-6-3128-NN(SCR-6 3 phase regulator, 100 amps, 4-20mA input)
SCR-7-3728-MM(SCR-7 3 phase regulator, 70 amps, 4-20mA input,
with 1 alarm, with RS-485 communication)

Size and dimensions



Model: SCR-51-3428 40 amps
overall size:118mm*140mm*118mm
Mounting size:55mm*135mm

Model: SCR-51-3628 60 amps
overall size:133mm*140mm*118mm
Mounting size:55mm*135mm

Model: SCR-51-3728 75 amps
overall size:133mm*140mm*118mm
Mounting size:55mm*135mm



Model: SCR-7-3428 40 amps
overall size:160mm*110mm*148mm
Mounting size:105mm*100mm

Model: SCR-7-3628 60 amps
overall size:160mm*110mm*148mm
Mounting size:105mm*100mm

Model: SCR-7-3728 75 amps
overall size:160mm*110mm*148mm
Mounting size:105mm*100mm



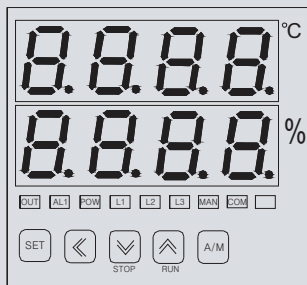
Model: SCR-6-3428 40 amps
overall size:160mm*140mm*145mm
Mounting size:120mm*130mm

Model: SCR-6-3628 60 amps
overall size:160mm*140mm*145mm
Mounting size:120mm*130mm

Model: SCR-6-3728 75 amps
overall size:160mm*140mm*145mm
Mounting size:120mm*130mm

Model: SCR-6-3128 100 amps
overall size:220mm*140mm*145mm
Mounting size:150mm*130mm

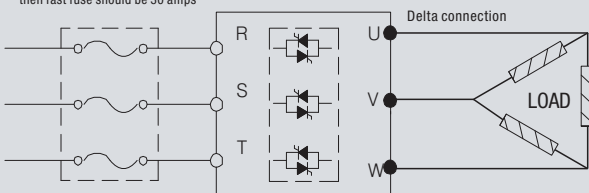
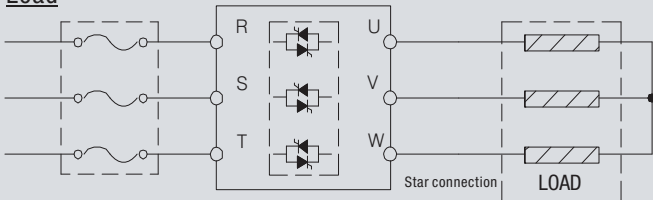
Panel discription



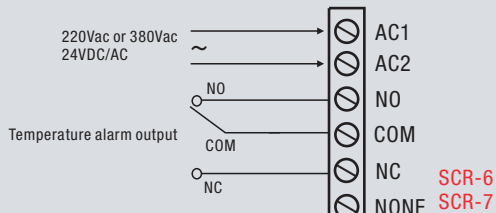
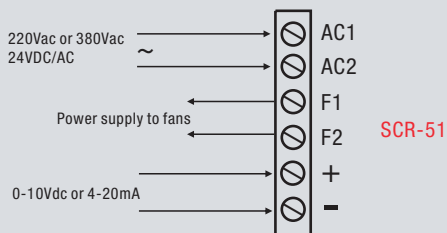
- INDICATOR**
- OUT: The flashing frequency indicate the output ratio
 - AL1: Over temperature alarm indicator
 - POW: Power feed indicator
 - L1: Phase indicator, when L1 absence, lights on
 - L2: Phase indicator, when L2 absence, lights on
 - L3: Phase indicator, when L3 absence, lights on
 - MAN: Manual control indicator
 - COM: Communication indicator
- SET KEY**
- SET: Parameter setting and configuraion
 - A/M: Manual/auto control switch
 - POW: Power feed indicator
 - <: Left shift key, to shift the display unit
 - v: Decrease key or Stop key

Connection diagram

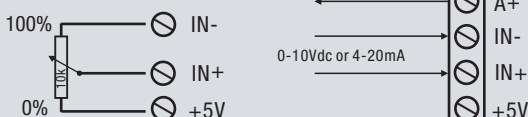
Load



Input



Potentiometer



Operation flow chart

Power on



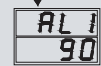
Press SET once to enter into configuration menu



SET



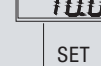
SET



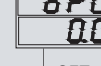
SET



SET



SET



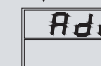
SET



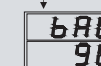
SET



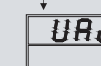
SET



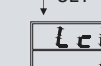
SET



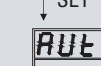
SET



SET



SET



SET



SET

UAd: each SCR has an address if it comes with RS-485 function the communication address of specific SCR will be assigned to this parameter, for example, if the lower shows "1" then this is number 1 device

LcP
SET LCK=101 to enter into configuration menu 1

AL1
SCR temperature higher limit alarm, the maximum allowable temperature will be assigned to this parameter, for example, you can put 80°C as the higher limit, the AL1 alarm will be triggered if the temperature crosses AL1 value, and the output of the SCR will be restrained to EOP value

EoP
when AL1 triggered, the SCR output will be constrained to a certain value to protect the SCR, the output value will be assigned to EOP value for example, EOP=25%, when AL1 triggered, the output goes down to 25% immediately

OPL
Minimum output, the output will be higher than OPL value regardless of the input

OPH
Maximum output, the output will be lower than OPH value regardless of the input

BUF
Soft-start, range: 0.0~100.0
if BUF=0, means it takes 10 seconds for the SCR output changes from OPL-OPH, if BUF=100, soft-start function disabled

ADD
This parameter is used to set the SCR address if it comes with the RS-485 function, range: 0-127

BAU
This parameter used to configure the communication speed if the SCR comes with RS-485 function, options are
24:2.4 KBPS 48:4.8KBPS, 96:9.6KBPS 192:19.2KBPS

Setting of the parameters in menu 1 all finished
press SET to UAd and LCK to enter into menu 2

LcP
Set LCK=202 to menu 2

AUto
Auto control manual control configuration
0: auto/manual control function disabled
1: auto/manual control function enabled

rUN
Run/stop function configuration
0: run/stop function disabled
1: run/stop function enabled

Hz
Choose the frequency based on your power
50H: for 50HZ
60H: for 60HZ



~Universal input type~

Features:

- Three phase power regulator, auto phase detection
- **Work with all kinds of input, 0-10Vdc, 4-20mA, 0-5Vdc, potentiometer you don't have to choose the input when order this model, it works with all inputs**
- Soft start function to protect SCR and load against surge current
- Integrated display with various LED indicator for status and error display
- Integrated heatsink and fans with temperature detection
- Over temperature alarm, output protection after alarm on
- Maximum and minimum output configurable
- Auto/manual control bumpless transfer
- Run/stop function
- Rated load voltage 380~480Vac 50/60HZ
- Power supply for SCR to work is 100-240Vac, 12-24VDC optional
- Rated current options, 40 amps, 60 amps, 75 amps.
- This SCR only compatible with resistive load

Technical Specifications

Ordering Information

SCR-**1**-**2****3****4**-**5**

1: Type of SCR power regulators

7E 7E series Universal input SCR power regulator

2: Load phase

3 3 phase load system

3: Load current

4 40 amps 380~480Vac
6 60 amps 380~480Vac
7 75 amps 380~480Vac

4: Power supply for the unit itself

2 100-240Vac
4 380Vac
D 12-24Vdc

5: Over temperature alarm

N without alarm
M with 1 alarm, relay output

Remark: SCR-7E-372-N(SCR-7E 3 phase regulator, 75 amps, 100-240Vac)

Size and dimensions

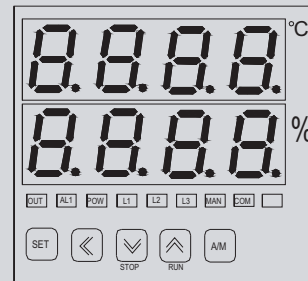


Model: SCR-7E-34 **40** amps
 overall size:160mm*110mm*148mm
 Mounting size:105mm*100mm

Model: SCR-7E-36 **60** amps
 overall size:160mm*110mm*148mm
 Mounting size:105mm*100mm

Model: SCR-7E-37 **75** amps
 overall size:160mm*110mm*148mm
 Mounting size:105mm*100mm

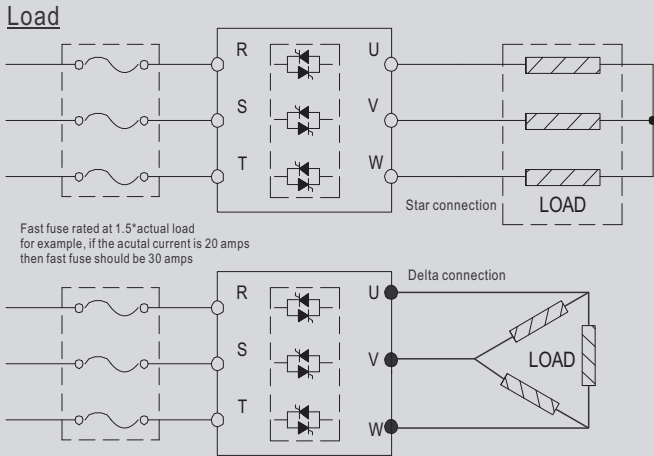
Panel description



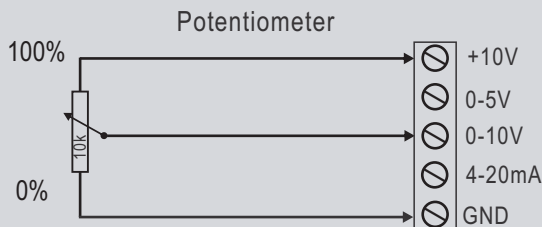
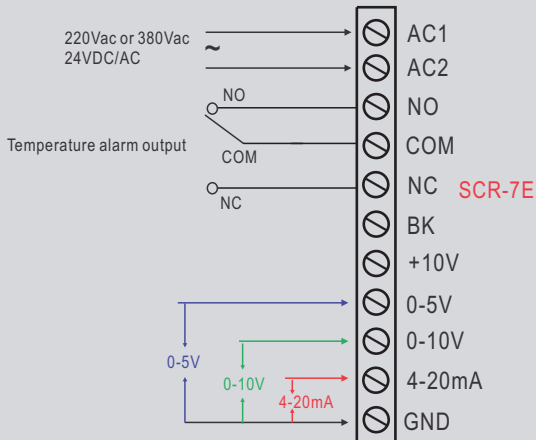
INDICATOR OUT: The flashing frequency indicate the output ratio
 AL1: Over temperature alarm indicator
 POW: Power feed indicator
 L1: Phase indicator, when L1 absence, lights on
 L2: Phase indicator, when L2 absence, lights on
 L3: Phase indicator, when L3 absence, lights on
 MAN: Manual control indicator
 COM: SCR-7E do not available with RS-485

SET KEY SET: Parameter setting and configuraion
 A/M: Manual/auto control switch
 POW: Power feed indicator
 <: Left shift key, to shift the display unit
 v: Decrease key or Stop key

Connection diagram



Input



Operation flow chart

Power on

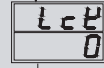


Press SET once to enter into configuration menu



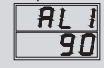
UAd each SCR has an address if it comes with RS-485 function the communication address of specific SCR will be assigned to this parameter, for example, if the lower shows "1" then this is number 1 device

SET



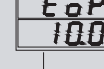
LcP
SET LCK=101 to enter into configuration menu 1

SET



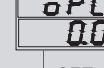
AL1
SCR temperature higher limit alarm, the maximum allowable temperature will be assigned to this parameter, for example, you can put 80°C as the higher limit, the AL1 alarm will be triggered if the temperature crosses AL1 value, and the output of the SCR will be restrained to EOP value

SET



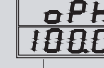
EoP
when AL1 triggered, the SCR output will be constrained to a certain value to protect the SCR, the output value will be assigned to EOP value for example, EOP=25%, when AL1 triggered, the output goes down to 25% immediately

SET



OPL
Minimum output, the output will be higher than OPL value regardless of the input

SET



OPH
Maximum output, the output will be lower than OPH value regardless of the input

SET



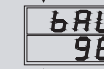
BUF
Soft-start, range: 0.0~100.0
if BUF=0, means it takes 10 seconds for the SCR output changes from OPL-OPH, if BUF=100, soft-start function disabled

SET



ADD
This parameter is used to set the SCR address if it comes with the RS-485 function, range: 0-127

SET



BAU
This parameter used to configure the communication speed if the SCR comes with RS-485 function, options are 24:2.4 KBPS 48:4.8KBPS, 96:9.6KBPS 192:19.2KBPS

SET



Setting of the parameters in menu 1 all finished press SET to UAd and LCK to enter into menu 2

SET



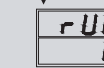
LcP
Set LCK=202 to menu 2

SET



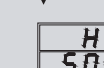
AUto
Auto control manual control configuration
0: auto/manual control function disabled
1: auto/manual control function enabled

SET



rUN
Run/stop function configuration
0: run/stop function disabled
1: run/stop function enabled

SET



Hz
Choose the frequency based on your power
50H: for 50HZ
60H: for 60HZ



Features:

- Three phase SCR power regulator
- Supports 0-10Vdc, 4-20mA, 0-5Vdc, Potentiometer input
- Swith between different inputs by connecting with different terminals
- Load amps, 10~200 amps
- Load 380Vac +/- 18%
- Panel mount
- Phase angled control
- All models with the same physical size
- Input selectable from the terminals
 - Black housing
 - Terminal type
 - Compact size
 - Built-in RC Snubber circuit for greater protection
 - Suitable for resistive load or inductive load to some extent
 - Flame retardant expoy sealed, fire retardant ABS housing
 - Contactless and sparkless control effect

Technical Specifications

Ordering Information

MS-1-2-3-4-5

1: Three phase

3 Three phase SCR power regulator

2: Type of device

VD SCR power regulator also known as voltage regulator

3: load voltage

38 24~380Vac +/- 18%

4: Load amps

10	10 amps
25	25 amps
40	40 amps
60	60 amps
80	80 amps
100	100 amps
120	120 amps
200	200 amps

5: Input configuration

C 0-10Vdc, 4-20mA, 0-5Vdc, Potentiometer switch between different inputs by connecting with different terminals

eg: MS-3VD3840C, three phase SCR power regulator, 40 amps

Electrical Technical Features

Operating Voltage [VAC]	200-440Vac
Load current	>0.25 <40 amps
Frequency range	47-63HZ
Voltage drop at the output	<1.5V
Actual input effective range(0-5V)	0.9-4.7Vdc
Actual input effective range(0-10V)	1.7-9.5Vdc
Actual input effective range(4-20mA)	5mA-19.2mA
Dielectric Strength , Input-Output (50/60Hz)	2500V AC 1 minute
Ambient Operating Temperature Range	-20°C~+60°C
Ambient Storage Temperature Range	-20°C~+70°C
Heat generation continous/ampere load	1.2-1.5 Watt/A
Weight	0.6 kg

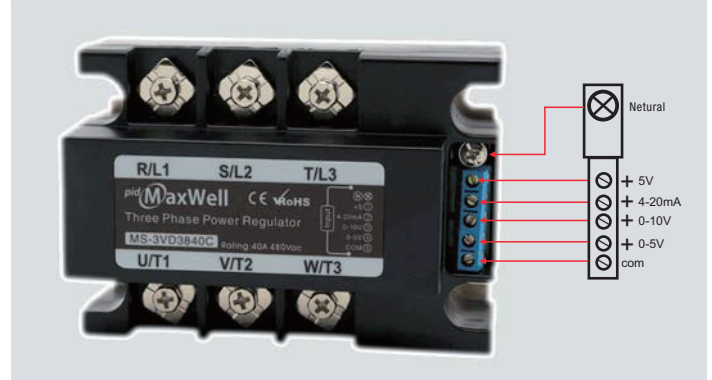
Size and dimensions



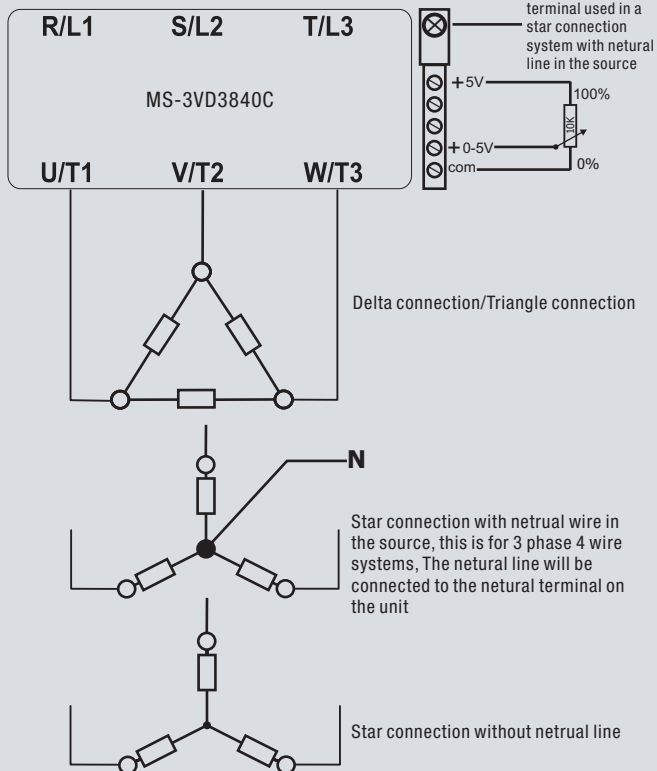
Guidelines on the selection and usage of this 3 phase SCR

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, considering using the relay at no more than 10% of its rated current for inductive load, some customers has been using this item for motor speed control
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions(contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SCR to help the heat radiation
- 5) Our SCR is 380Vac load type with 18% deviation

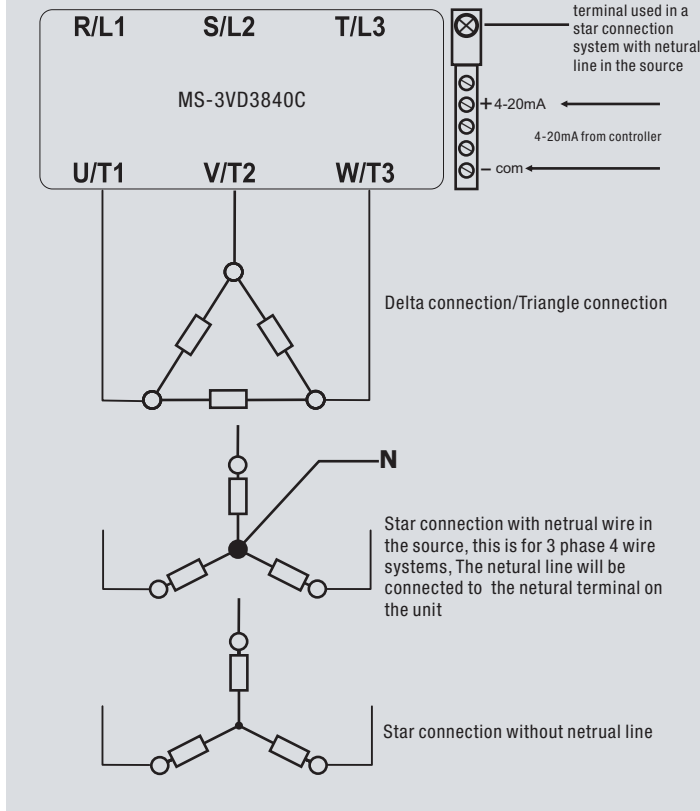
Connection diagram



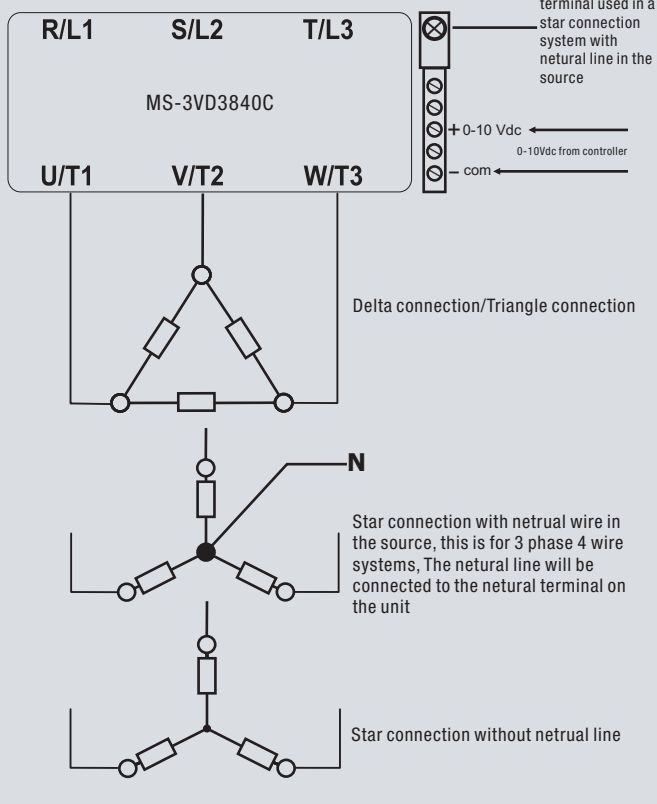
Potentiometer input



4-20mA input



0-10VDC input



Note: Please follow the guidelines on our heatsink and cooling fans for a proper heatsink and cooling fans, accessories will be sold separately



Features:

- Three phase power regulator, auto phase detection
- Soft start function to protect SCR and load against surge current
- Integrated display with various LED indicator for status and error display
- Integrated heatsink and fans with temperature detection
- Over temperature alarm, output protection after alarm on
- Maximum and minimum output configurable
- Auto/manual control bumpless transfer
- Run/stop function
- RS-485 modbus RTU display
- 1 alarm with relay output(NO+NC), standard feature
- Rated load voltage 200~440Vac(+/-15%) 50/60HZ
- Power supply for SCR to work is 85-265Vac, 12-24VDC optional
- Input, 0-10Vdc, 4-20mA, 0-5Vdc, 1-5Vdc, 2-10Vdc, 0-20mA, 0-10mA
- Rated current options, 100 amps, 125 amps, 150 amps, 175 amps, 200 amps.
- This SCR only compatible with resistive load

Technical Specifications

Ordering Information

TC-200S- **1** - **2** - **3** - **4** - **5**

Type of SCR power regulators

TC-200S Maxwell Power Regulator, TC-200S series

1: Power supply for the unit itself

2 85~265Vac 50/60HZ
D 12-24VDC

2: Load Voltage

2 3 phase 200V~240V(+/-15%)
4 3 phase 380V~440V(+/-15%)

3: Load amps

100 100A
125 125A
150 150A
175 175A
200 200A

4: Communication

N without communication
M With RS-485 modbus RTU communication

5: Input configuration

A03 4-20mA
V08 1-5VDC
V09 2-10VDC
A02 0-20mA
V03 0-5VDC
V04 0-10VDC

ITEM NO	Current	Load(3 phase)	
		220V star connection	380V delta connection
TC-200S-2-4-100-N-A03	100A	48KW	90KW
TC-200S-2-4-125-N-A03	125A	57KW	101KW
TC-200S-2-4-150-N-A03	150A	68KW	118KW
TC-200S-2-4-175-N-A03	175A	78KW	136KW
TC-200S-2-4-200-N-A03	200A	90KW	150KW

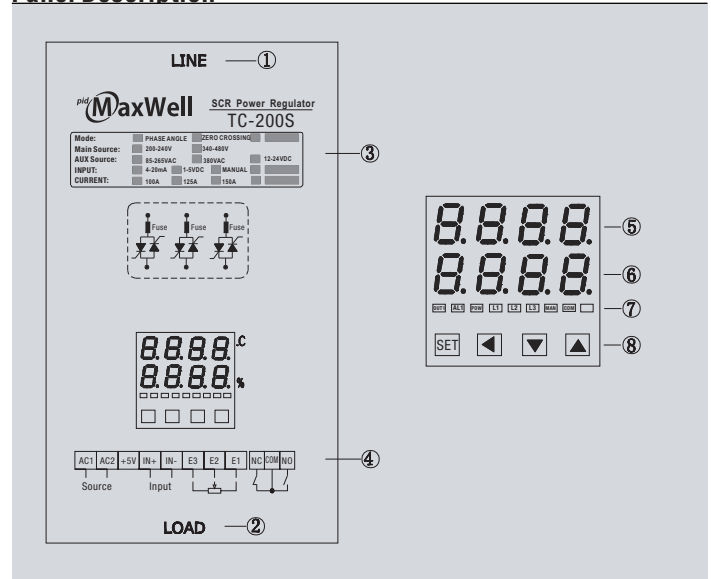
Remark: TC-200S-2-4-100-M-A03
TC-200S series
2: power source 85~265Vac
4: 3 phase 200~440V +/-15% load

100: 100 amps
M: with RS-485 communication
A03: input is 4-20mA, 1-5VDC, 2-10Vdc

Cautions and notes

1. Fast fuse must be deployed in the system to protect SCR
2. SCR is not going to work if the load is less than 0.5A or without load
3. A lot of heat will be generated when SCR operates, the ambient temperature must be less than 50°C, the integrated fans will be activated if temperature on the SCR heatsink greater than 60°C, if the ambient more than 60°C, additional fans must be installed in the control cabinet to help the cooling. otherwise the self-protection mechanism will be triggered and output will stop
4. The screw must be fastened securely on the input and output, otherwise excessive heat will be accumulated on the screw and result in damage of the SCR

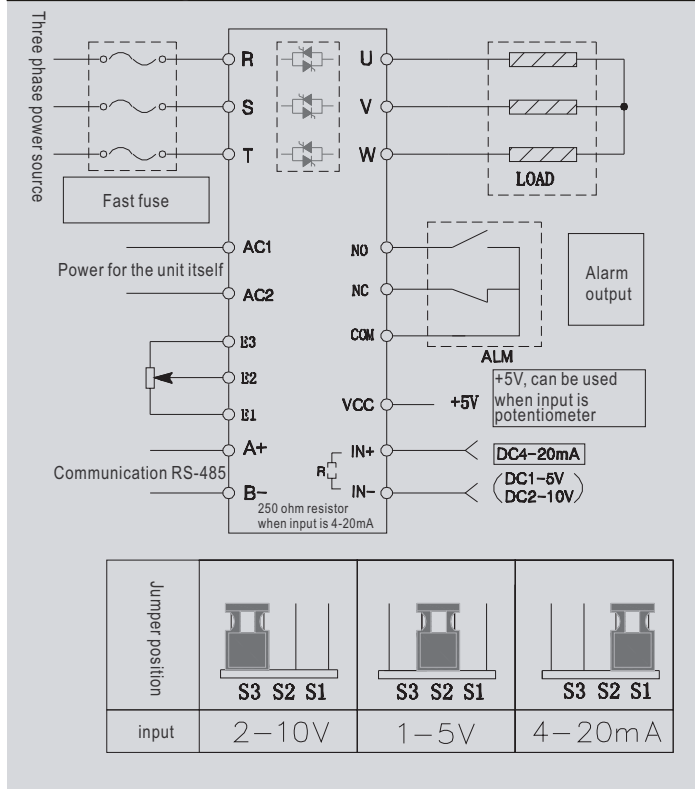
Panel Description



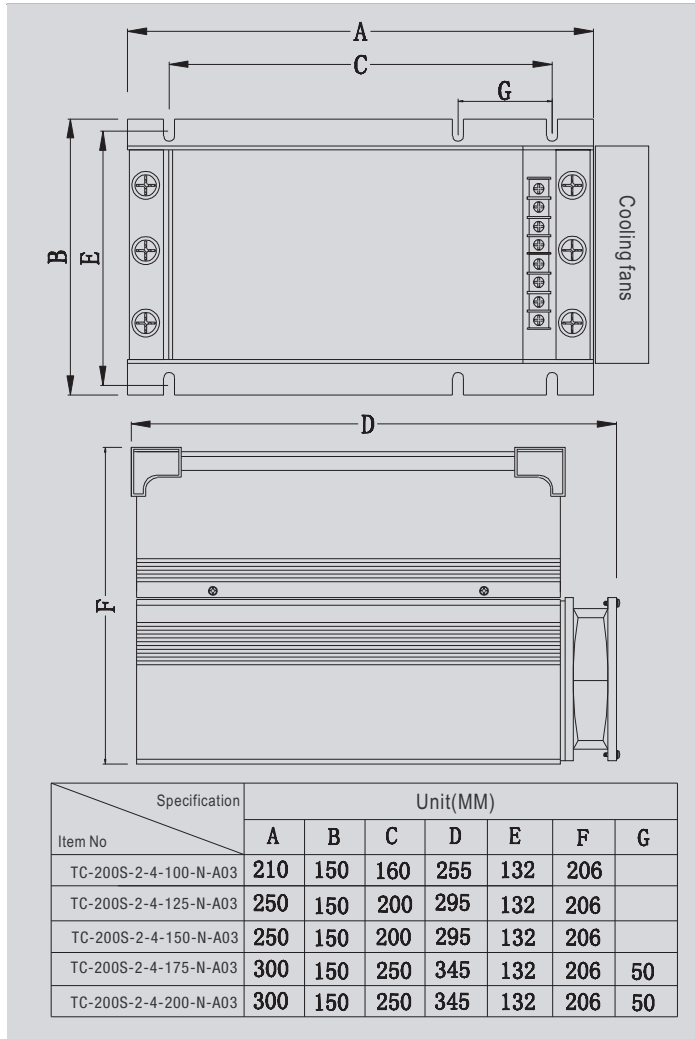
- 1: Load input
- 2: Load output
- 3: Specification
- 4: Terminals for connection
- 5: Temperature/parameter notation
- 6: SV, parameter value, input%

- 7: Various indicators
Out: output status
AL1: alarm for over temperature of lack of phase
L1: L1 line drop or fast fuse burn out
L2: L2 line drop or fast fuse burn out
L3: L3 line drop or fast fuse burn out
COM: communication indication
- 8: Set button
SET, function key, set key
◀: shift key
▼: decrement key
▲: increment key

Connection diagram



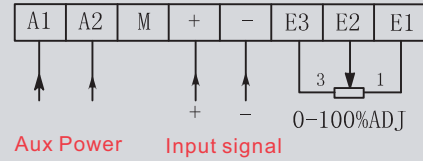
Size and dimension



Wiring instructions for different functions

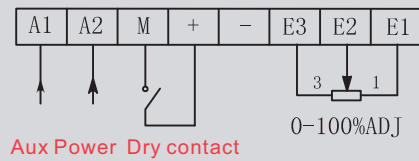
There are different ways to wire the SCR for different application, please check carefully on this part before using

(1) Analog input (mA, mV), and output ratio external adjustable, for example, can manually adjust the output from 0%~100%



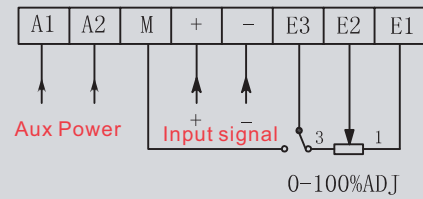
>Output ratio external adjustable(0%-100%)
>The output ratio will always be 100%
When short circuit E3 and E2

(2) Dry contact input, and output ratio external adjustable, for example, can manually adjust the output from 0%~100%

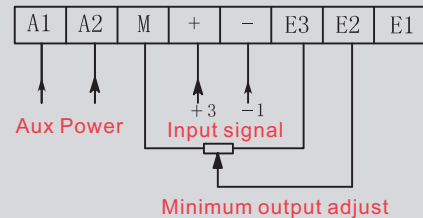


>Output ratio external adjustable(0%-100%)
>The output ratio will always be 100%
When short circuit E3 and E2

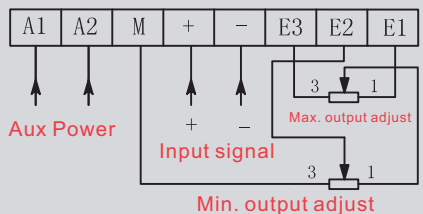
(3) Analog input (mA, mV), manual/auto control switchable, output ratio external adjustable, this wiring pretty much the same as type (1) the difference is the manual/auto control is switchable in this mode



(4) Analog input (mA, mV), Minimum output ratio can be pre-determined regardless of the input signal, even if input signal is "0" the SCR output will be restrained at its preset value.



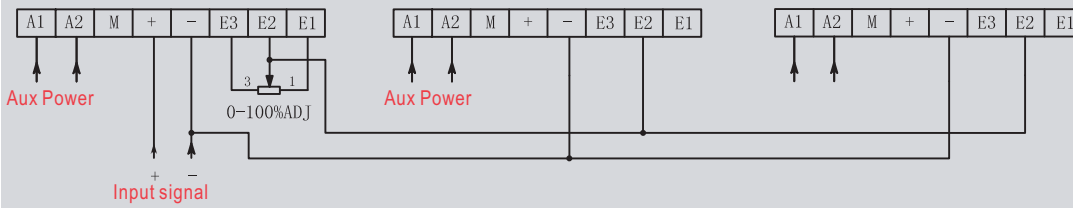
(5) Analog input (mA, mV), Minimum and maximum output ratio can be restrained within a range. The SCR output will not response to input signals if input signals drives the output out of the preset ranges The SCR will work within a range for example 30%~80%



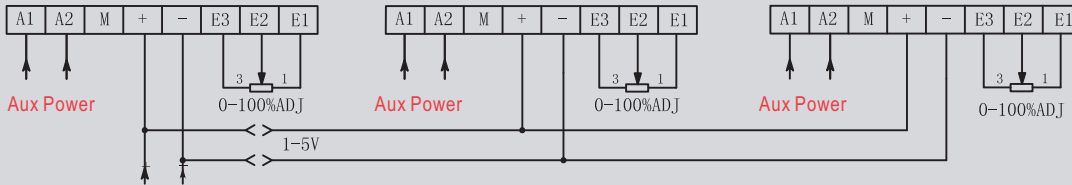
When maximum and minimum output set as the same value. SCR output be fixed, and will not respond to the input signal

Wiring instructions for different functions

(6) Analog input (mA, mV), several SCR units connected together, with one of the units output ratio adjustable(0%-100%)



(7) Analog input (mA, mV), several SCR units connected together, with one of at 4-20mA input, other units 1-5VDC input, maximum 4 SCR units can be connected, all units output ration adjustable

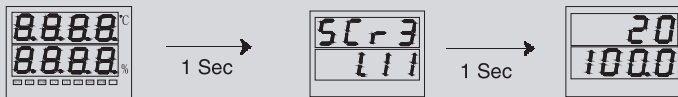


(8) Analog input (mA, mV), serial connect 2 SCR units together, 2 SCR units controlled by same signals maximum 2 SCR units can be connected, all units output ration adjustable

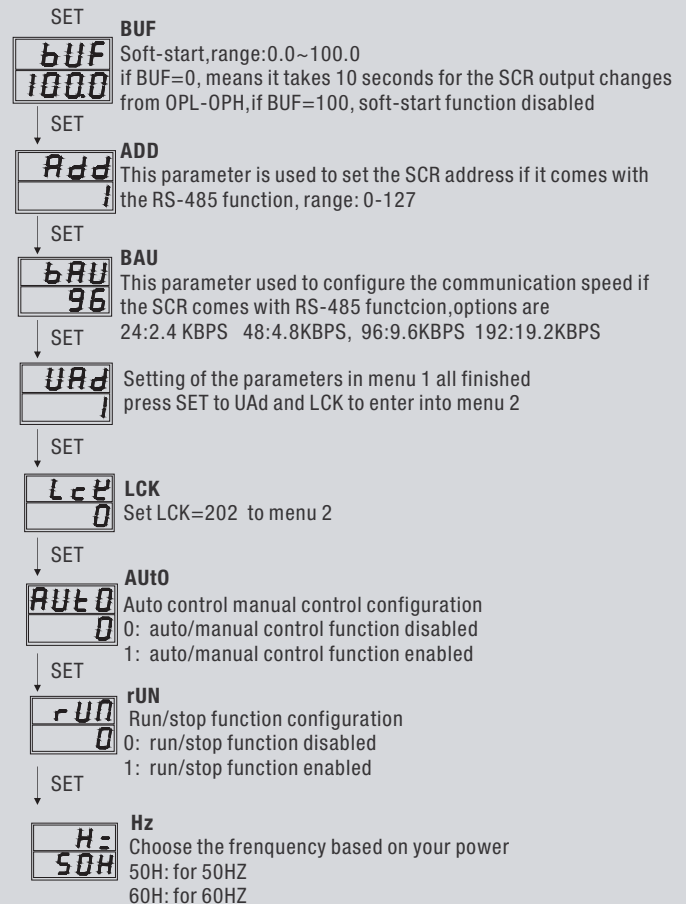
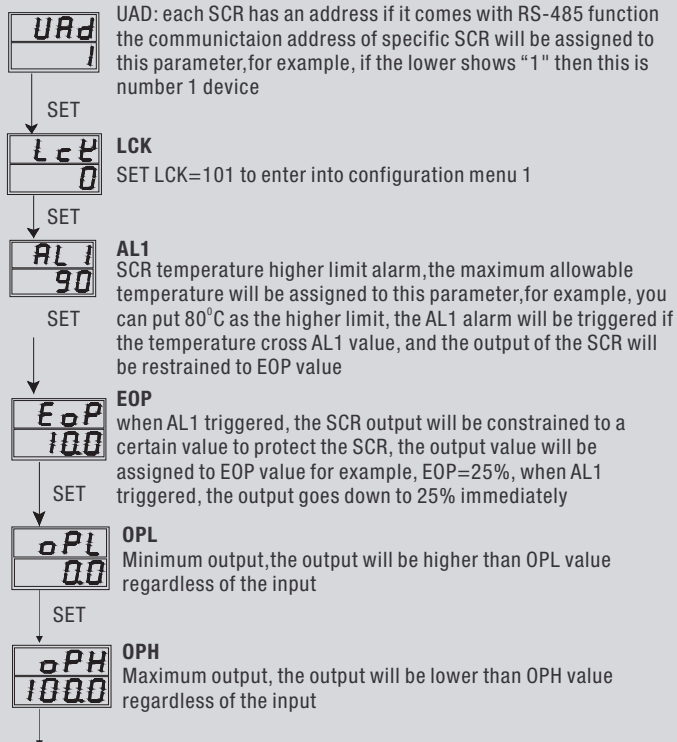


Setting and configuration

Power on



Press SET once to enter into configuration menu





Features:

- Potentiometer input solid state relay
 - 0-470K ohm, 0-500K ohm or 0-1000K ohm potentiometer
 - load amps, 10~120 amps
 - Load 24~380Vac
 - LED process indication
 - Panel mount
 - Continuous trigger mode
 - All models with the same physical size
 - Fast response and no noise
- Black housing
 - Terminal type
 - Compact size
 - 0-470 K ohm/0-500 K ohm for 220Vac load
 - 0-1000 K ohm for 380Vac load
 - Same item for both 220Vac/380Vac load by using different potentiometer

Technical Specifications

Ordering Information

MS-1-2-3-4

1: Type of solid state relay

1 Single phase voltage regulator

2: Control mode

VR Potentiometer input solid state relay

3: Load voltage

38 24~480Vac 50/60HZ

4: Load amps

10	10 amps
25	25 amps
40	40 amps
60	60 amps
80	80 amps
100	100 amps
120	120 amps

eg: MS-1VR3840, potentiometer input regulator, 40 amps
MS-1VR38100, potentiometer input regulator, 100 amps

Guidelines on the selection and usage of this voltage regulator

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, lamps etc.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 480Vac load type, this is suitable for multiple line voltage system including 220V/380V to maximum 480Vac
- 6) This item is only suitable for a resistive load application

Technical Specifications

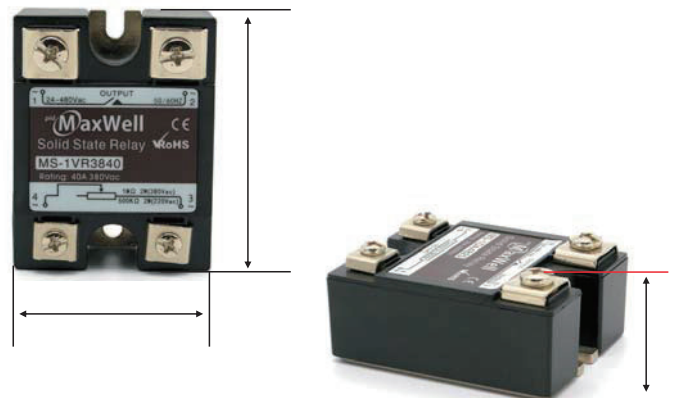
Electrical Specifications

Load voltage	24-480Vac
Control input	0-470 K ohm/0-500 Kohm/0-1000 Kohm
Off state leakage current	<12mA
Load options	10~120 amps
Dielectric strength	input,output/ base > 2500V rms
Isolation	input and output non-isolated

Mechanical and environmental specifications

Operating Temperature Range	-20 C~+80 C
Storage Temperature Range	-40 C~+100 C
Weight (g)	100g+/- 10g

Size and dimension



Certificates



Packing information

Individual box for each pcs
10 pcs in a secondary box
200 pcs per master carton

Accessories

The primary supporting unit for solid state relay is heatsinks, heatsinks has a lot of options in terms of mounting method, size and shape, below is a reference table to help you select the suitable heatsink for MS-1VR38XX series, another accessories would be potentiometer and knobs as well as the scale plate

ITEM NO	SIZE(mm)	Compatible SSR	Mounting method
MW-I-50	60x50x50	10A/25A	Panel mount or direct Din rail mount
MW-W-70	70x100x50	40A	Panel mount only
MW-W-100	100x100x50	60A	Panel mount only
MW-H-55	55x80x80	40A	Panel mount or Din rail mount
MW-T-80	80x80x70	80A/100A/120A	Panel mount or Din rail mount
MW-DE-50	50x94x80	80A/100A/120A	Panel mount or Din rail mount
MW-E-52	52x74x40	40A	Panel mount or Din rail mount
MW-DT-50	50x100x96	60A	Panel mount or direct Din rail mount

Images and size



Model: B504
0- 500 K
For 220Vac application



Model: B105
0- 1000 K
For 380Vac application



Model: WTH118-2W-B470K-20S
0- 470K
For 220Vac application

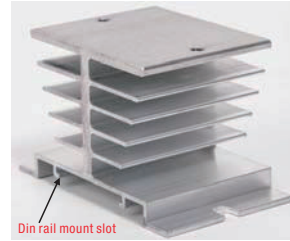


Model: WTH118-2W-B1000K-20S
0- 1000K
For 380Vac application



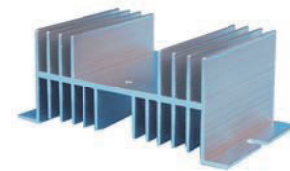
fixing screw

Model: RN99D-A03 AX
With fixing screw



Din rail mount slot

Model: MW-I-50
Size: 60mm*50mm*50mm
For 10 amps/25 amps SSR
Mounting method: Panel mount or din rail mount directly



MW-W-70 and MW-W-100 looks like the same only difference is the length

Model: MW-W-70
Size: 70mm*100mm*50mm
For 40 amps SSR
Mounting method: Panel mount

Model: MW-W-100
Size: 100mm*100mm*50mm
For 60 amps SSR
Mounting method: Panel mount



Model: MW-H-55
Size: 55mm*80mm*80mm
For 40 amps SSR
Mounting method: Panel mount or din rail mount with din rail adaptor



Model: MW-E-52
Size: 52mm*74mm*40mm
For 40 amps SSR
Mounting method: Panel mount or din rail mount with din rail adaptor



Din rail mount slot for direct din mount purpose

Model: MW-DT-50
Size: 50mm*100mm*96mm
For 60 amps SSR
Mounting method: Panel mount or din rail mount directly



Model: MW-T-80
Size: 80mm*80mm*70mm
For 80amps, 100amps, 120amps
Mounting method: Panel mount or din rail mount with din rail adaptor



Model: CLM-1
Din rail clamp
Can be attached to below model and convert the unit to din rail mount type
MW-H-55
MW-T-80
MW-E-52



Features:

- Analong input phase firing solid state relay
- 0-10Vdc or 4-20mA input, specify input when you order
- load amps, 10~120 amps
- Load voltage 24~380Vac
- Operation frequency 40~65HZ
- Panel mount
- All models with the same physical size
- Fast response and no noise
 - Black housing
 - Terminal type
 - Compact size
 - 0-10Vdc input or 4-20mA input
 - 220Vac load or 380Vac load optional

Technical Specifications

Ordering Information

MS-1-2-3-4

1: Type of solid state relay

1 Single phase solid state relay

2: Control mode

VD Analong input phase firing relay

3: Load voltage

22 24~280Vac 50/60HZ
38 24~380Vac 50/60HZ

4: Load amps

10 10 amps
25 25 amps
40 40 amps
60 60 amps
80 80 amps
100 100 amps
120 120 amps

5: Input configuration

B 0-10Vdc
C 4-20mA dc

eg: MS-1VD2240C, 4-20mA input, 40 amps 220Vac
MS-1VD3825B, 0-10Vdc input, 25 amps, 380Vac

Guidelines on the selection and usage of this voltage regulator

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, lamps etc.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SSR is 220Vac or 380Vac load type, This is suitable for 220Vac or 380Vac application
- 6) This item is mainly for resistive load, like heaters, lighting, or very small inductive loads like small fans

Technical Specifications

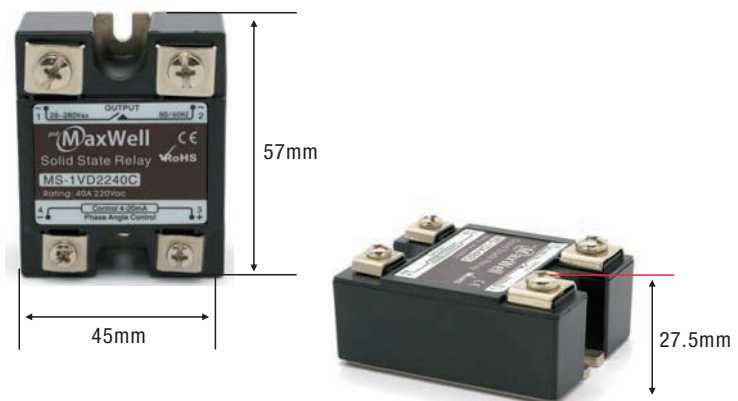
Electrical Specifications

Load voltage	24-280Vac or 24-380Vac
Control input	0-10Vdc or 4-20mA
Off state leakage current	<12mA
Load options	10~120 amps
Dielectric strength	input,output/ base > 2500V rms
Isolation	input and output non-isolated

Mechanical and environmental specifications

Operating Temperature Range	-20 C~+80 C
Storage Temperature Range	-40 C~+100 C
Weight (g)	100g+/- 10g

Size and dimension



Packing information

Individual box for each pcs
10 pcs in a secondary box
200 pcs per master carton



Features:

- Load voltage, single phase 220Vac/380Vac 50/60HZ
- Compatible with 0-5Vdc, 0-10Vdc, 4-20mA, potentiometer at the same time
- Load options, from 10~200 amps
- Buffer circuit are built inside the unit to protect surge on the SCR
- Input and output indicators available on the panel for process indication
- All model with the same physical sizes
- Phase angled firing mode
- Black fire retardant housing with resin seal
- The unit mainly used for resistive load

Technical Specifications

Ordering Information

MS-**1**-**2**-**3**-**4**

1: Type of solid state relay

1 Single phase input/output isolated SCR power regulator

2: Control mode

VD Single phase SCR power regulator works with all inputs, 0-10Vdc, 4-20mA, 0-5Vdc, potentiometer

3: Power source for SCR itself to work

220 220Vac load 50/60HZ
380 380Vac load 50/60HZ

*The input and output of this SCR is optical isolated, the load of this SCR is 24~380Vac, and to run this SCR, you need to have a separate power source, in 99% of situation, the source will be 220Vac, 380Vac also available in case you need this, above code is an option for you to choose the power source for the unit itself. this is not a choice on the load voltage, the load voltage is 24~380Vac, you don't have to specify when you order.

4: Load amps

10A 40 amps
25A 75 amps
40A 80 amps
60A 120 amps
80A 150 amps
100A 175 amps
120A 200 amps
200A 200 amps

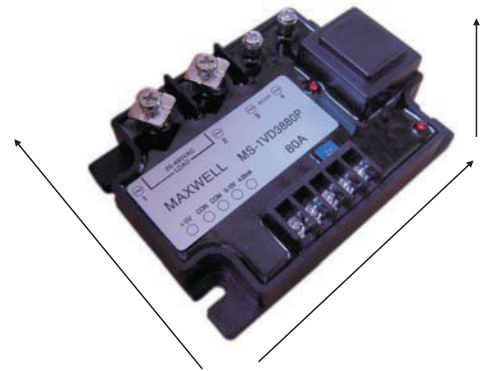
Remark: MS-1VD2240P, multipule input single phase SCR power regulator 40 amps, 220Vac source, load 24~380Vac

Note: Heatsink and cooling fans must be purchased separately

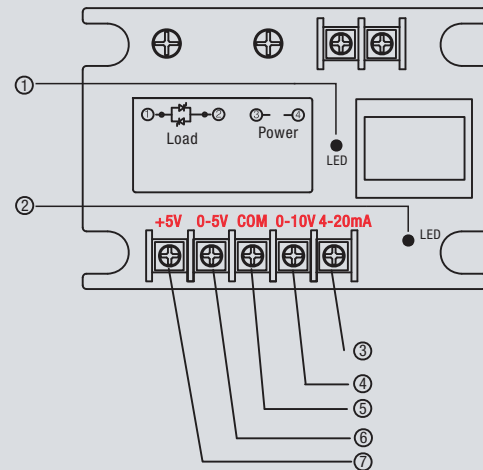
Guidelines on the selection and usage of this voltage regulator

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, lamps etc.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) Our SCR is 380Vac load type, this is suitable for multiple line voltage system including 220V/380V to maximum 380Vac
- 6) This item is suitable for resistive load or very small inductive load
- 7) The screw for the input terminals has to be fastened securely, otherwise extra heat will be generated and accumulated on the screw and result the damage on the SCR
- 8) Control cabinet should have sufficient air flow, which means air flow in and out

Size and dimensions

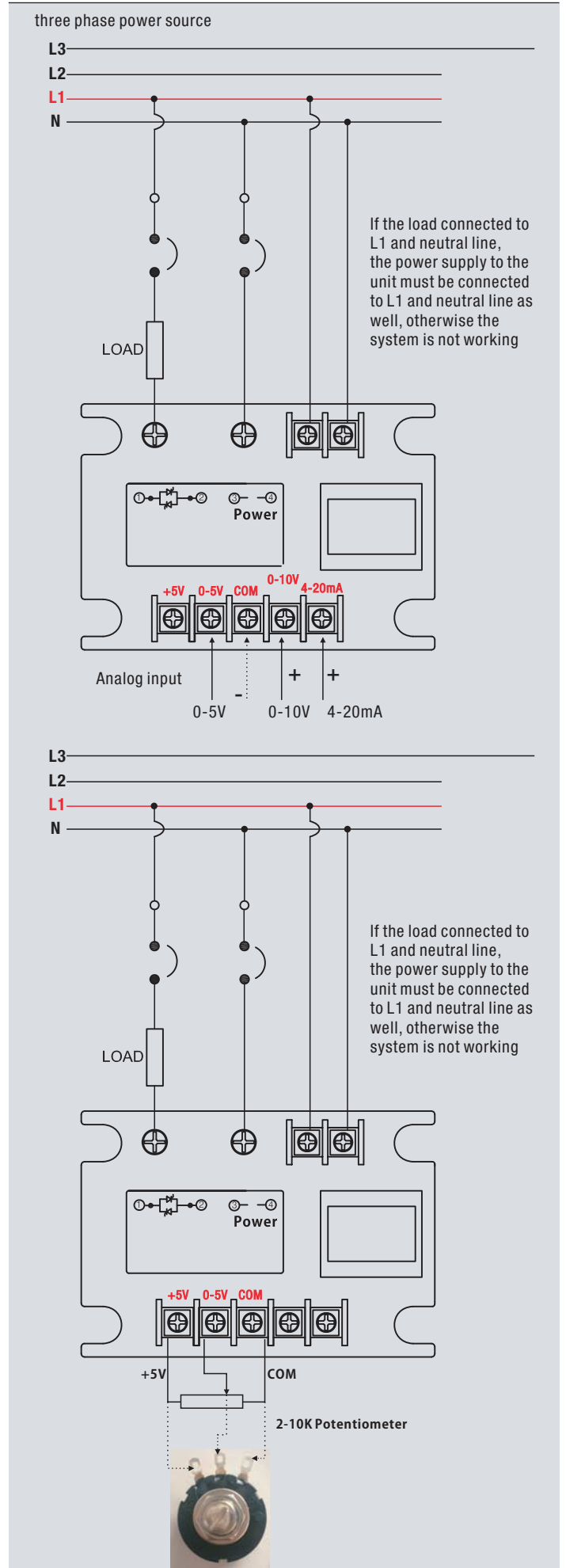
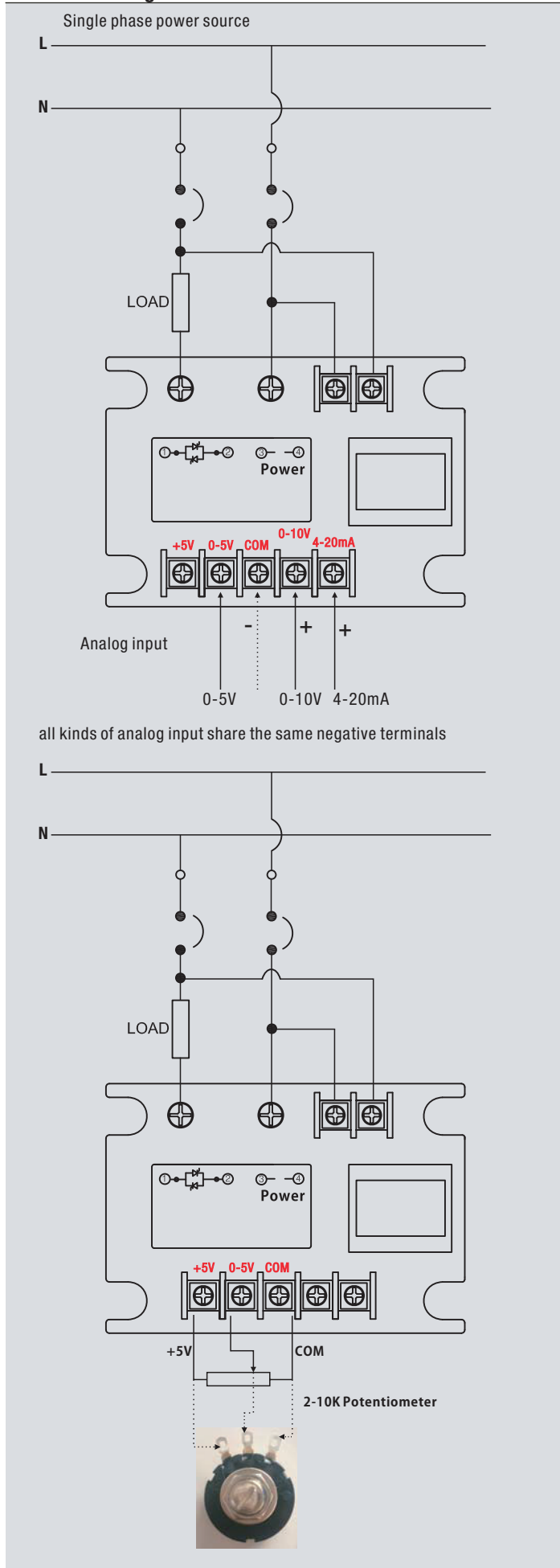


Panel description and indicator layout



- ① This is the indicator for input & output, the brightness of the indicator represents the input/output value, the indicators became brighter if the input/output increase, otherwise it gets darker when input/output decrease
- ② Power supply indication, this indicator will light on as long as you have 220Vac or 380Vac power supply, this indicator tells you if the 220Vac or 380Vac has been feeded to the unit or not
- ③ Positive terminals for 4-20mA input
- ④ Positive terminals for 0-10Vdc input
- ⑤ Negative terminals for 0-10V, 0-5V and 4-20mA
- ⑥ Positive terminals for 0-5Vdc input
- ⑦ Internal +5Vdc source for potentiometer input

Connection diagram





Features:

- Load voltage, single phase 24~380Vac(+/-10%) 50/60HZ
- Works with all kinds of input, 0-5Vdc, 0-10Vdc, 4-20mA, Potentiometer
- Load options, 40,75,80,120,150,175,200 amps
- Buffer circuit are built inside the unit to protect surge on the SCR
- Input, output, error indicators available on the panel for monitoring purpose
- All model with the same physical sizes
- Phase angled firing mode
- Black fire retardant housing with resin seal
- The unit mainly used for resistive load

Technical Specifications

Ordering Information

SCR1-**1**-**2**-**3**

1: Power source and load range

220	220Vac load 50/60HZ
380	380Vac load 50/60HZ

*The input and output of this SCR is optical isolated, the load of this SCR is 220Vac or 380Vac, and to run this SCR, you need to have a separate power source, if the load is 220Vac, then the power source for this unit itself will have to be 220Vac, if the load is 380Vac, then the power source for this unit itself have to be 380Vac.

2: Input signals

C	0-5Vdc, 0-10Vdc, 4-20mA, Potentiometer This model works with all kinds of inputs, different inputs assigned to different terminals
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3: Load amps

40A	40 amps
75A	75 amps
80A	80 amps
120A	120 amps
150A	150 amps
175A	175 amps
200A	200 amps

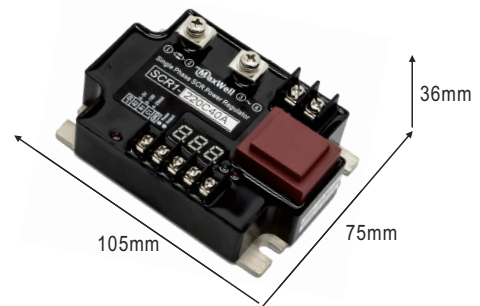
Remark: SCR1-220C120A, 120 amps multiple inputs, 220Vac source single phase SCR power regulators, 220Vac load

Note: You can order SCR only and purchase heatsink and cooling fans separately or we can sell complete kits with all parts already put together in our plant

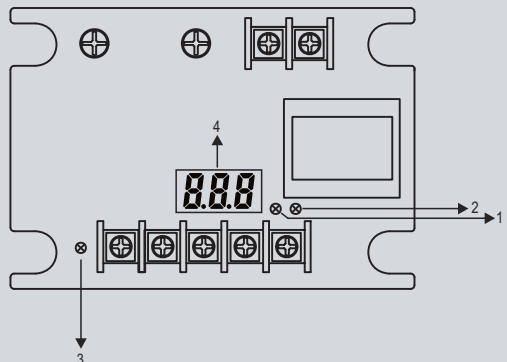
Guidelines on the selection and usage of this voltage regulator

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, lamps etc.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) The SCR is 220V/380Vac load type, please choose correct voltage based on your application
- 6) This item is suitable for resistive load or very small inductive load
- 7) The screw for the input terminals has to be fastened securely, otherwise extra heat will be generated and accumulated on the screw and result the damage on the SCR
- 8) Control cabinet should have sufficient air flow, which means air flow in and out

Size and dimensions

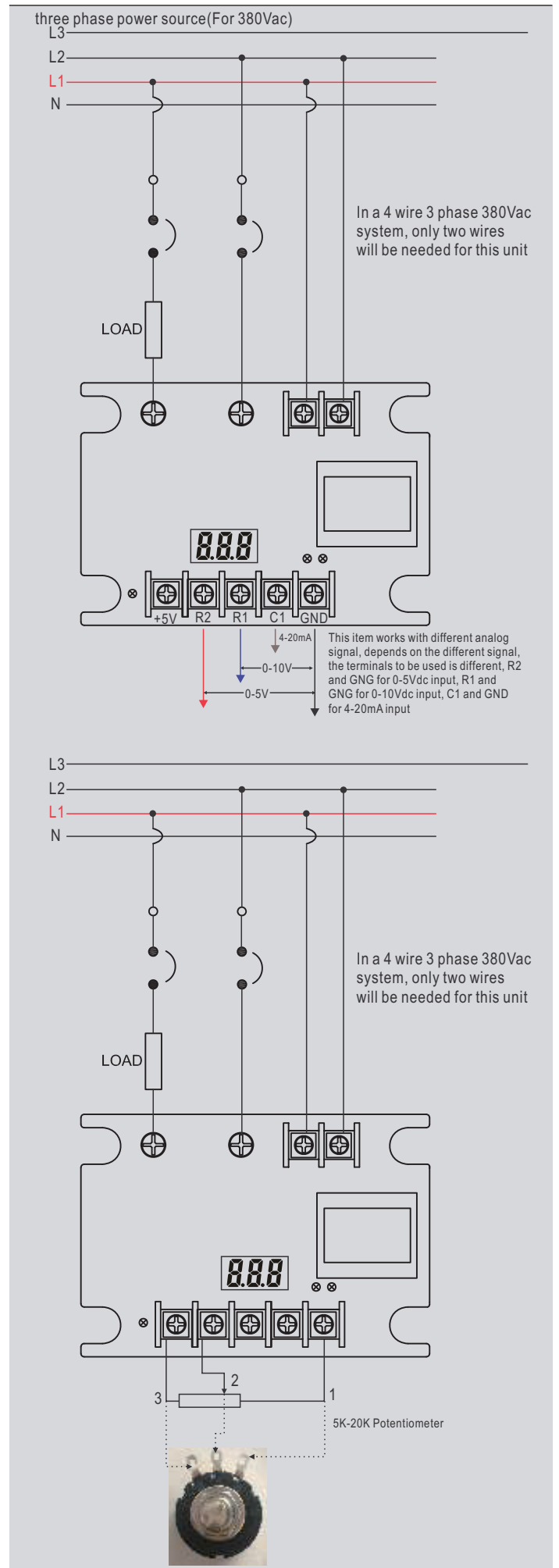
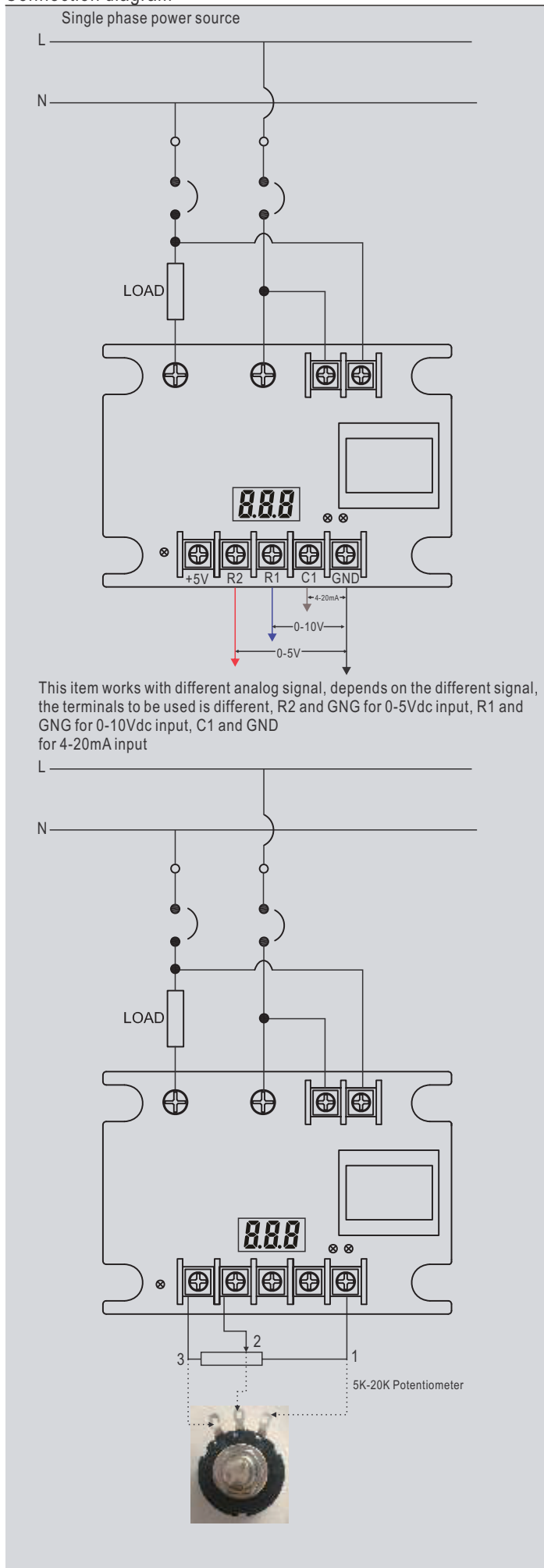


Panel description and indicator layout



- 1: Power supply indication, this indicator will light as long as you have 220Vac or 380Vac power supply feed to this SCR unit
- 2: Output indicator, this LED indicators will flash if output is activated, the frequency of the flashing indicates the output value, flash faster means the output is higher, flash in lower frequency means the output is lower
- 3: Over temperature indication, if temperature of the SCR increase and reach 90 degree, this indicator will light on.
- 4: Input and output digital display, the display at % format, for example, if the display is 10, means the input and output is 10%.

Connection diagram





Features:

- Load voltage, single phase 24~380Vac(+/-10%) 50/60HZ
- Input options, 0-5Vdc (potentiometer), 0-10Vdc, 4-20mA
- Load options, 40, 75, 80, 120, 150, 175, 200 amps
- Buffer circuit are built inside the unit to protect surge on the SCR
- Input and output indicators available on the panel for process indication
- All model with the same physical sizes
- Phase angled firing mode
- Black fire retardant housing with resin seal
- The unit mainly used for resistive load

Technical Specifications

Ordering Information

SCR-**1**-**2**-**3**

1: Power source and load range

220	220Vac load 50/60HZ
380	380Vac load 50/60HZ

*The input and output of this SCR is optical isolated, the load of this SCR is 220Vac or 380Vac, and to run this SCR, you need to have a separate power source, if the load is 220Vac, then the power source for this unit itself will have to be 220Vac, if the load is 380Vac, then the power source for this unit itself have to be 380Vac.

2: Input signals

C	4-20mA
B	0-10Vdc
A	0-5Vdc (potentiometer)

3: Load amps

40A	40 amps
75A	75 amps
80A	80 amps
120A	120 amps
150A	150 amps
175A	175 amps
200A	200 amps

Remark: SCR-220C120A, 120 amps 4-20mA input, 220Vac source single phase SCR power regulators

Note: You can order SCR only and purchase heatsink and cooling fans separately or we can sell complete kits with all parts already put together in our plant

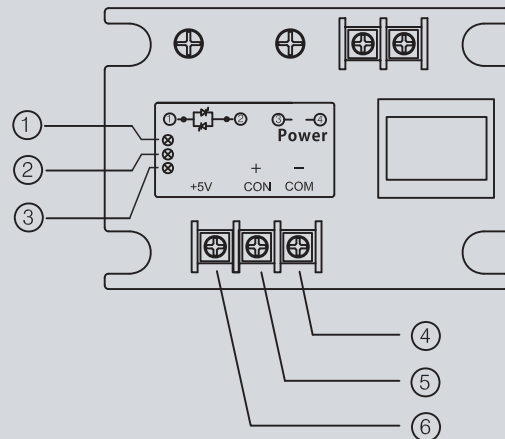
Guidelines on the selection and usage of this voltage regulator

- 1) Current rating, as a general rule consider using the relay at no more than 50% of its rated current for resistive load such as a heater, lamps etc.
- 2) Heatsinks must always be installed together with the SSR regardless of the load amps, natural convection cooling might be sufficient in some cases depends on the site situation, force air cooling must be taken into consideration under harsh conditions (contact our sales team for more info)
- 3) Fast fuse must be installed in the system to protect overload on the SSR
- 4) Silicon rubber pad or silicon compound must be applied to the bottom of the SSR to help the heat radiation
- 5) The SCR is 220V/380Vac load type, please choose correct voltage based on your application
- 6) This item is suitable for resistive load or very small inductive load
- 7) The screw for the input terminals has to be fastened securely, otherwise extra heat will be generated and accumulated on the screw and result the damage on the SCR
- 8) Control cabinet should have sufficient air flow, which means air flow in and out

Size and dimensions

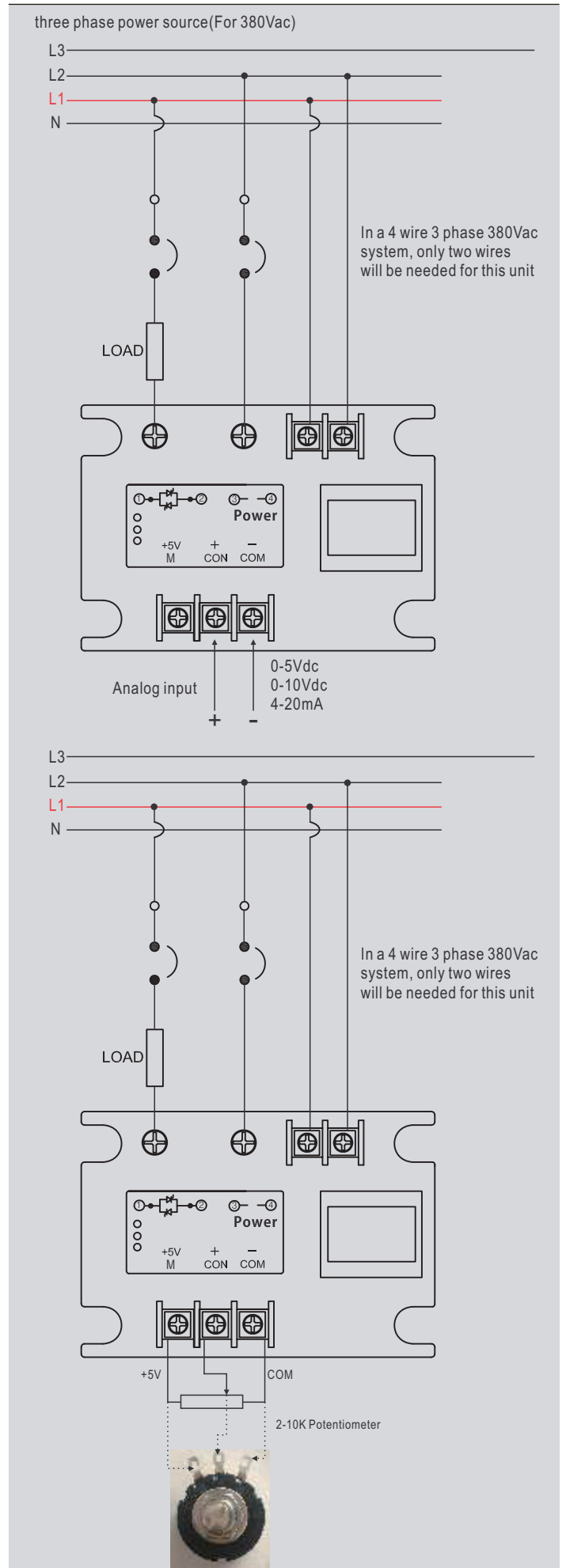
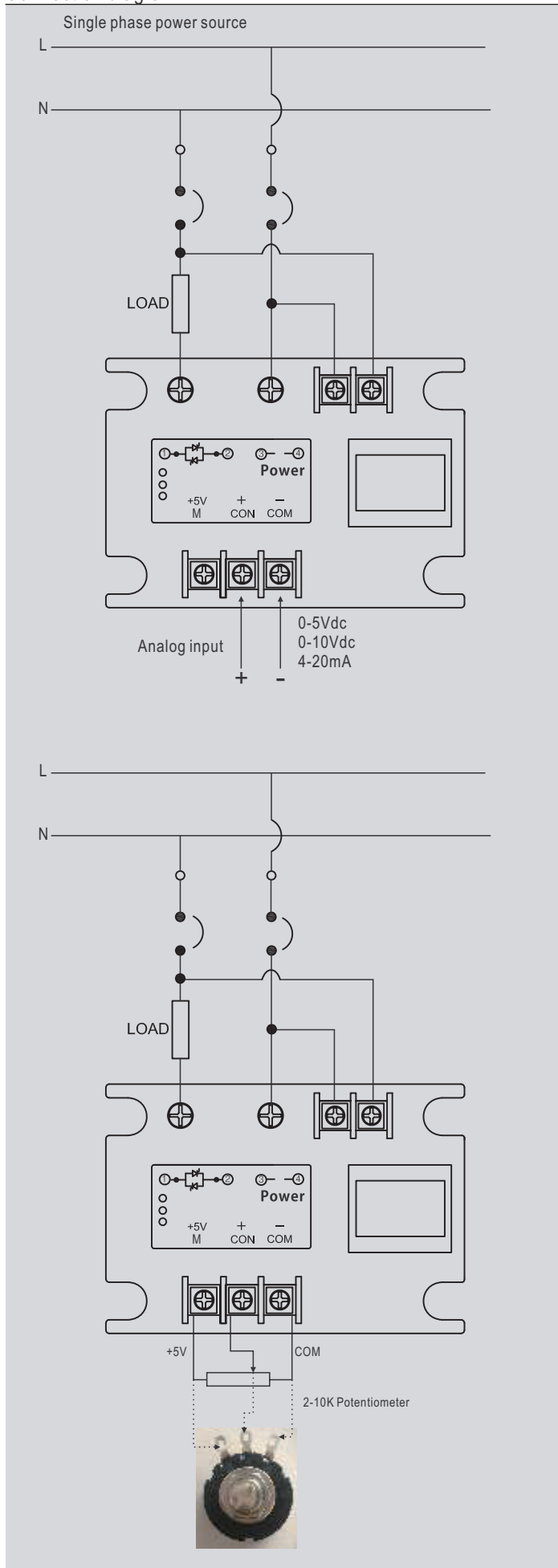


Panel description and indicator layout



- ① Power supply indication, this indicator will light on as long as you have 220Vac or 380Vac power supply, this indicator tells you if the 220Vac or 380Vac has been feeded to the unit or not
- ② This is input indicators, when you feed the input to the unit (4-20mA), this indicator will light on
- ③ This is the indicator for output, the brightness of the indicator represents the output value, the indicators became brighter if the if the output increase, otherwise it gets darker when output decrease
- ④ Negative terminals for analog input
- ⑤ Positive terminals for analog input
- ⑥ Internal +5V source which will be used if you have a potentiometer input

Connection diagram



TC-K1/TC-J1



Example: TC-K1-N-N-M6-2000-SS-GD
 Thermocouple type K
 Code: K1
 Without probe
 M6 screw
 2 meters lead wire
 stainless steel lead wire
 Grounded type

Screw-in type thermocouple K/J

Ordering Information(quick ordering code TC-K1 or TC-J1)

TC-K1, Thermocouple type K, code K1
 TC-J1, Thermocouple type J, code J1

1 2 3 4 5 6

1:Probe diameter

N Not applicable for this sensor

2:Probe length

N Not applicable for this sensor

3:Screw type

M6 M6 screw
 M8 M8 screw
 1/4BSP 4/1 BSP screw

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000 2000mm lead wire
 3000 3000mm lead wire
 5000 5000mm lead wire

5:Lead wire material

SS Stainless steel wire
 SILI Silicon wire
 FG Fiber glass insulation wire
 TF Teflon wire

6:Grounded or ungrounded type

GD Grounded type(standard one, also known as non-isolation type)
 UG Ungrounded type(also known as isolation type)

TC-K2/TC-J2



Example: TC-K2-5-100-M8-2000-SS-GD
 Thermocouple type K
 Code: K2
 Probe diameter: 5mm
 Probe length:100mm
 M8 screw
 2 meters lead wire
 stainless steel lead wire
 Grounded type

Probe type thermocouple K/J with process fittings

Ordering Information(quick ordering code TC-K2 or TC-J2)

TC-K2, Thermocouple type K, code K2
 TC-J2, Thermocouple type J, code J2

1 2 3 4 5 6

1:Probe diameter(mm),customizable,other size not listed below but also available

2 Probe diameter 2mm
 3 Probe diameter 3mm
 4 Probe diameter 4mm
 5 Probe diameter 5mm

2:Probe length(mm),customizable,other size not listed below but also available

50 Probe length 50mm
 100 Probe length 100mm
 150 Probe length 150mm
 200 Probe length 200mm

3:Screw process fittings type(other specs available, please discuss with our sales person)

M8 M8 screw
 1/2NPT 1/2 NPT
 M6 M6 screw

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000 2000mm lead wire
 3000 3000mm lead wire
 5000 5000mm lead wire

5:Lead wire material

SS Stainless steel wire
 SILI Silicon wire
 FG Fiber glass insulation wire
 TF Teflon wire

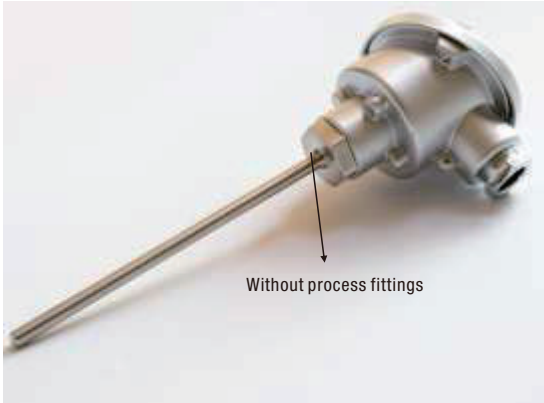
6:Grounded or ungrounded type

GD Grounded type(standard one, also known as non-isolation type)
 UG Ungrounded type(also known as isolation type)

TC-K3/TC-J3



Example: TC-K3-5-200-1/2NPT-N-N-GD-CB
 Thermocouple type K3 Process fittings: 1/2 NPT
 Code: K3 Without lead wire
 Probe diameter: 5mm Grounded type
 Probe length:200mm With connection box



Example: TC-K3-5-200-N-N-N-GD-CB
 Thermocouple type K3 Without process fittings
 Code: K3 Without lead wire
 Probe diameter: 5mm Grounded type
 Probe length:200mm With connection box

Thermocouple type K/J with connection box

Ordering Information(quick ordering code TC-K3 or TC-J3)

TC-K3, Thermocouple type K, code K3
 TC-J3, Thermocouple type J, code J3

1 2 3 4 5 6 7

- 1:**Probe diameter(mm),customizable,other size not listed below but also available

5	Probe diameter 5mm
6	Probe diameter 6mm
8	Probe diameter 8mm
10	Probe diameter 10mm
- 2:**Probe length(mm),customizable,other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm
- 3:**Screw process fittings type(other specs available, please discuss with our sales person)

N	Without Process fittings
1/2NPT	1/2 NPT
M16	M16 screw
- 4:**Lead wire length(Not applicable for this model)

N	Without lead wire
---	-------------------
- 5:**Lead wire material(Not applicable for this model)

N	Without lead wire
---	-------------------
- 6:**Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)
- 7:**With connection box

CB	Connection box
----	----------------

TC-K4/TC-J4



Example: TC-J4-3-100-N-2000-SS-GD
 Thermocouple type J4 Without process fittings
 Code: J4 2 meters stainless steel
 Probe diameter: 3mm lead wire
 Probe length:100mm Grounded type

Probe thermocouple K/J without screw fittings

Ordering Information(quick ordering code TC-K4 or TC-J4)

TC-K4, Thermocouple type K, code K4
 TC-J4, Thermocouple type J, code J4

1 2 3 4 5 6

- 1:**Probe diameter(mm),customizable,other size not listed below but also available

2	Probe diameter 2mm
3	Probe diameter 3mm
4	Probe diameter 4mm
5	Probe diameter 5mm
- 2:**Probe length(mm),customizable,other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm
- 3:**Screw process fittings

N	No screw fittings for this model
---	----------------------------------
- 4:**Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire
- 5:**Lead wire material

SS	Stainless steel wire
SILI	Silicon wire
FG	Fiber glass insulation wire
TF	Teflon wire
- 6:**Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

TC-K5/TC-J5

Ring Terminal Thermocouple Type K/J, bolt on sensor



Example: TC-J5-N-N-4-3000-TF-GD
 Thermocouple type J 4mm ring terminal
 Code: J5 With 3 meters lead wire
 Probe diameter: No probe Grounded type
 Probe length: No probe Teflon wire

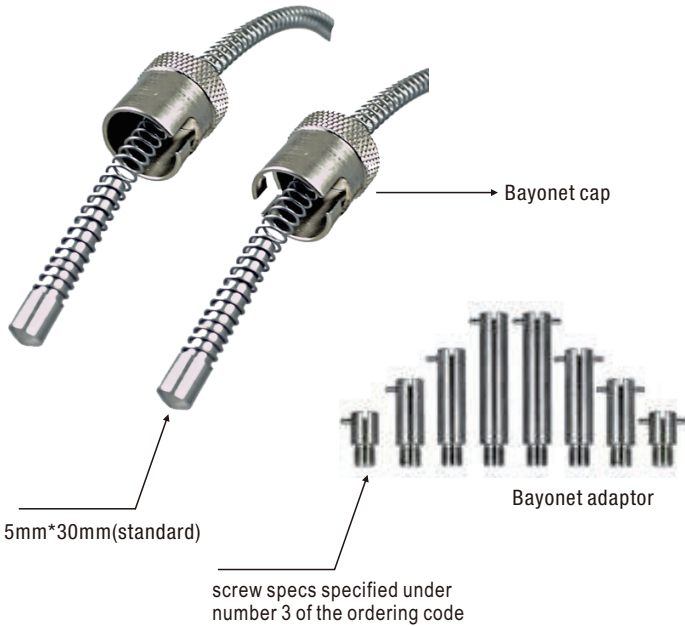
Ordering Information(quick ordering code TC-K5 or TC-J5)

TC-K5, Thermocouple type K, code K5
 TC-J5, Thermocouple type J, code J5

1	2	3	4	5	6
1:Probe diameter(not applicable for this model)					
N	No probe				
2:Probe length(not applicable for this model)					
N	No probe				
3:Inner size of the ring terminal					
4	4mm inner size				
5	5mm inner size				
6	6mm inner size				
4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want					
2000	2000mm lead wire				
3000	3000mm lead wire				
5000	5000mm lead wire				
5:Lead wire material					
SS	Stainless steel wire				
SILI	Silicon wire				
FG	Fiber glass insulation wire				
TF	Teflon wire				
6:Grounded or ungrounded type					
GD	Grounded type(standard one, also known as non-isolation type)				
UG	Ungrounded type(also known as isolation type)				

TC-K6/TC-J6

Spring loaded adjustable thermocouple type K/J



Example: TC-J6-5-30-M12-3000-SS-GD
 Thermocouple type J M12 Bayonet adaptor
 Code: J6 3 meters lead wire
 Probe diameter: 5mm Stainless steel lead wire
 Probe length: 30mm Grounded type

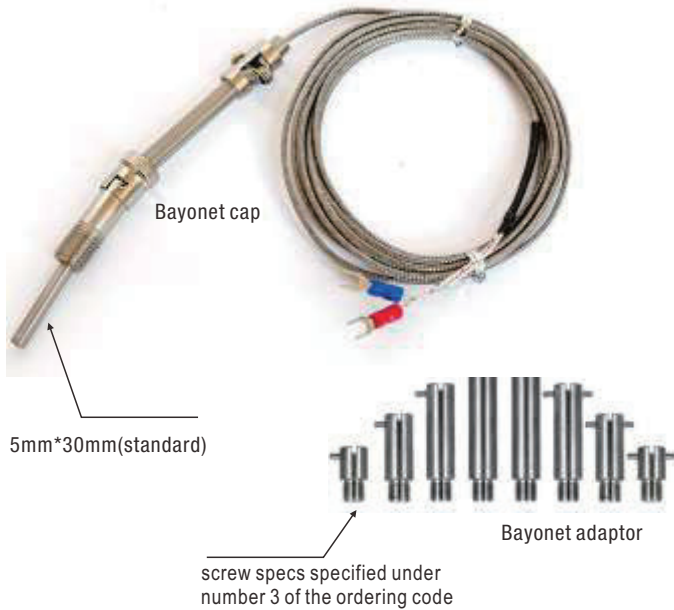
Ordering Information(quick ordering code TC-K6 or TC-J6)

TC-K6, Thermocouple type K, code K6
 TC-J6, Thermocouple type J, code J6

1	2	3	4	5	6
1:Probe diameter(mm),customizable,other size not listed below but also available					
4	Probe diameter 4mm				
5	Probe diameter 5mm				
8	Probe diameter 8mm				
2:Probe length(mm),customizable,other size not listed below but also available					
30	Probe length 30mm(popular size)				
50	Probe length 50mm				
3:Screw specs of the bayonet adaptors					
M12	M12 thread on the bayonet adaptors(popular one)				
1/8 NPT	1/8 NPT thread on the bayonet adaptors				
4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want					
2000	2000mm lead wire				
3000	3000mm lead wire				
5000	5000mm lead wire				
5:Lead wire material					
SS	Stainless steel wire				
SILI	Silicon wire				
FG	Fiber glass insulation wire				
TF	Teflon wire				
6:Grounded or ungrounded type					
GD	Grounded type(standard one, also known as non-isolation type)				
UG	Ungrounded type(also known as isolation type)				

TC-K7/TC-J7

This is a non-adjustable bayonet sensor with spring reinforcement, This item is similar to TC-K6, TC-J6, the difference is that you can not adjust the bayonet cap up or down along the spring for TC-K7 and TC-J7



Example: TC-J7-5-30-M12-3000-SS-GD
 Thermocouple type J M12 Bayonet adaptor
 Code: J7 3 meters lead wire
 Probe diameter: 5mm Stainless steel lead wire
 Probe length: 30mm Grounded type

Spring loaded non-adjustable bayonet sensor type K/J

Ordering Information(quick ordering code TC-K7 or TC-J7)

TC-K7, Thermocouple type K, code K7
 TC-J7, Thermocouple type J, code J7

1:Probe diameter(mm),customizable,other size not listed below but also available

4	Probe diameter 4mm
5	Probe diameter 5mm
8	Probe diameter 8mm

2:Probe length(mm),customizable,other size not listed below but also available

30	Probe length 30mm(popular size)
50	Probe length 50mm

3:Screw specs of the bayonet adaptors

M12	M12 thread on the bayonet adaptors(popular one)
1/8 NPT	1/8 NPT thread on the bayonet adaptors

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire

5:Lead wire material

SS	Stainless steel wire
SIL	Silicon wire
FG	Fiber glass insulation wire
TF	Teflon wire

6:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

TC-K8/TC-J8

Ceramic sheath for high temperature application.



Example: TC-K8-10-50-8-100-NNN-GD-CB
 Thermocouple type K
 Code: K8
 Probe diameter stainless steel part: 10mm
 Probe length stainless steel part : 50mm
 Probe diameter ceramic part: 8mm
 Probe length ceramic part : 100mm
 Grounded type
 With connection box

Ceramic sheath thermocouple with connection box

Ordering Information(quick ordering code TC-K8 or TC-J8)

TC-K8, Thermocouple type K, code K8
 TC-J8, Thermocouple type J, code J8

1:Probe diameter of the stainless steel part(mm)

4	Probe diameter 4mm
5	Probe diameter 5mm
8	Probe diameter 8mm

2:Probe length of the stainless steel part(mm)

30	Probe length 30mm
50	Probe length 50mm

3:Probe diameter of the ceramic part(mm)

4	Probe diameter 4mm
5	Probe diameter 5mm
8	Probe diameter 8mm

4:Probe length of the ceramic part(mm)

50	Probe length 50mm
100	Probe length 100mm

5:Screw fittings

N	No screw fittings
---	-------------------

6:Lead wire length

N	No lead wire
---	--------------

7:Lead wire material

N	No lead wire
---	--------------

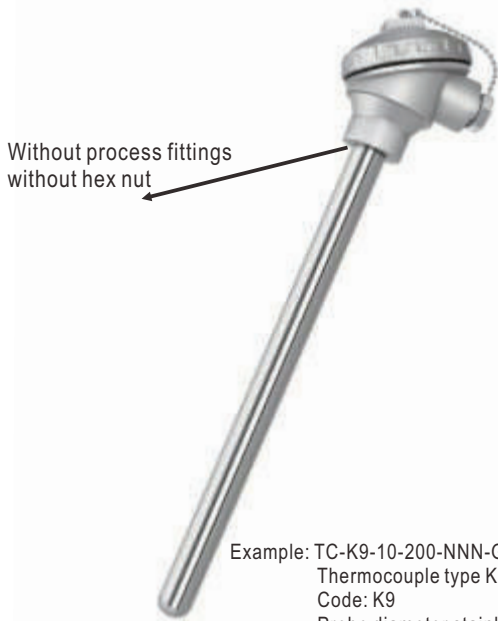
8:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

9:With connection box

CB	Connection box
----	----------------

TC-K9/TC-J9



Example: TC-K9-10-200-NNN-GD-CB
 Thermocouple type K
 Code: K9
 Probe diameter stainless steel part: 10mm
 Probe length stainless steel part : 200mm
 Grounded type
 With connection box

Thermocouple type K/J with connection box Without Hex nut, without screw fittings

Ordering Information(quick ordering code TC-K9 or TC-J9)

TC-K9, Thermocouple type K, code K9
 TC-J9, Thermocouple type J, code J9

1 2 3 4 5 6 7

1:Probe diameter(mm),customizable,other size not listed below but also available

5	Probe diameter 5mm
6	Probe diameter 6mm
8	Probe diameter 8mm
10	Probe diameter 10mm

2:Probe length(mm),customizable,other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm

3:Screw process fittings type

N	Without Process fittings
---	--------------------------

4:Lead wire length(Not applicable for this model)

N	Without lead wire
---	-------------------

5:Lead wire material(Not applicable for this model)

N	Without lead wire
---	-------------------

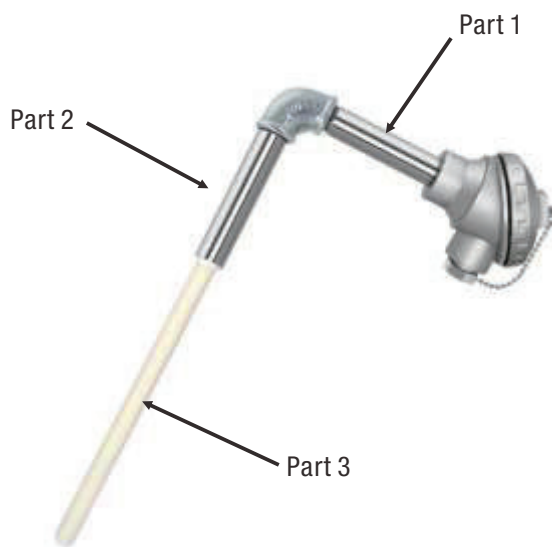
6:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

7:With connection box

CB	Connection box
----	----------------

TC-K10/TC-J10



Example: TC-K10-10-50-10-50-8-150-NNN-GD-CB
 Thermocouple type K
 Code: K10
 Part 1: 10mm diameter*50mm length
 Part 2: 10mm diameter*50mm length
 Ceramic: 8mm diameter*150mm length
 Grounded type
 With connection box

Thermocouple type K/J with connection box 90 degree angled, with ceramic sheath

Ordering Information(quick ordering code TC-K10 or TC-J10)

TC-K10, Thermocouple type K, code K10
 TC-J10, Thermocouple type J, code J10

1 2 3 4 5 6 7 8 9 10 11

1:Probe diameter(part 1)

8	Probe diameter 8mm
10	Probe diameter 10mm

2:Probe length(part 1)

50	Probe length 50mm
100	Probe length 100mm

3:Probe diameter(part 2)

8	Probe diameter 8mm
10	Probe diameter 10mm

4:Probe length(part 3)

50	Probe length 50mm
100	Probe length 100mm

5:Probe diameter of the ceramic part(Part 3)

4	Probe diameter 4mm
5	Probe diameter 5mm
8	Probe diameter 8mm

6:Probe length of the ceramic part(Part 3)

30	Probe length 30mm(popular size)
50	Probe length 50mm

7:Screw fittings

N	No screw fittings
---	-------------------

8:Lead wire length

N	No lead wire
---	--------------

9:Lead wire material

N	No lead wire
---	--------------

10:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

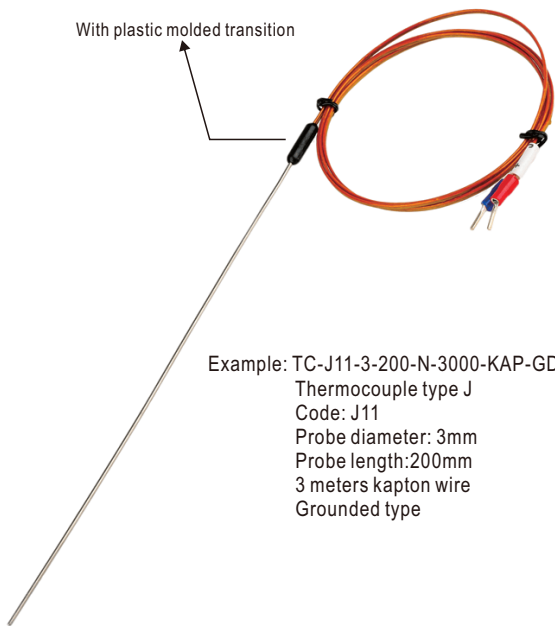
11:With connection box

CB	Connection box
----	----------------

TC-K11/TC-J11

Temperature sensor for hot runner system

These thermocouple are normally used in hot runner systems equipped with plastic molded transition



Example: TC-J11-3-200-N-3000-KAP-GD
 Thermocouple type J
 Code: J11
 Probe diameter: 3mm
 Probe length:200mm
 3 meters kapton wire
 Grounded type

Ordering Information(quick ordering code TC-K11 or TC-J11)

TC-K11, Thermocouple type K, code K11 - 1-2-3-4-5-6
 TC-J11, Thermocouple type J, code J11 - 1-2-3-4-5-6

1:Probe diameter(mm),customizable,other size not listed below but also available

2	Probe diameter 2mm
3	Probe diameter 3mm
4	Probe diameter 4mm

2:Probe length(mm),customizable,other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm

3:Screw process fittings type

N	Without Process fittings
---	--------------------------

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire

5:Lead wire material

SS	Stainless steel wire
KAP	Kapton wire
FG	Fiber glass insulation wire
TF	Teflon wire

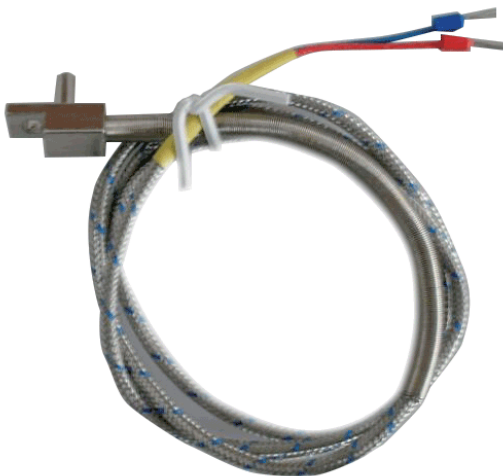
6:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

TC-K12/TC-J12

Temperature sensor for hot runner system

These thermocouple are normally used in hot runner systems



Example: TC-J12-N-N-N-3000-SS-GD
 Thermocouple type J
 Code: J12
 3 meters stainless steel wire
 Grounded type

Ordering Information(quick ordering code TC-K12 or TC-J12)

TC-K12, Thermocouple type K, code K12 - 1-2-3-4-5-6
 TC-J12, Thermocouple type J, code J12 - 1-2-3-4-5-6

1:Probe diameter

N	Not applicable
---	----------------

2:Probe length

N	Not applicable
---	----------------

3:Screw process fittings type

N	Without Process fittings
---	--------------------------

4:Lead wire length(unit:mm),lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire

5:Lead wire material

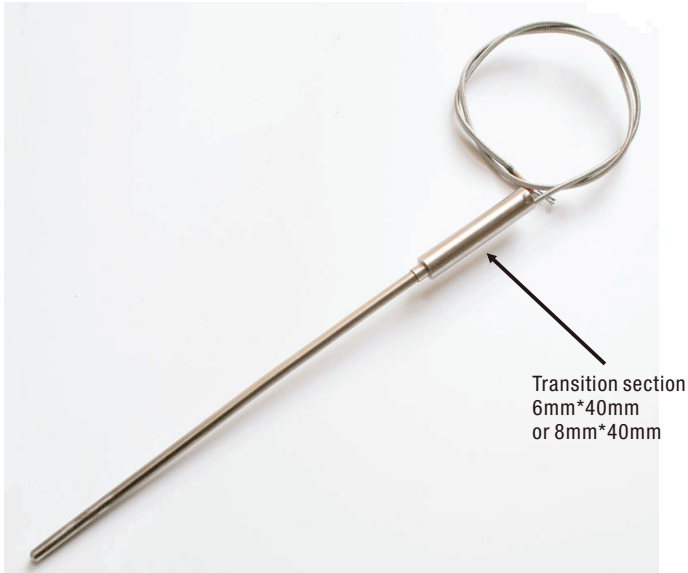
SS	Stainless steel wire
KAP	Kapton wire
FG	Fiber glass insulation wire
TF	Teflon wire

6:Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

TC-K13/TC-J13

Mineral insulated probe type K/J sensor



Example: TC-J13-3-200-6-40-3000-SS-GD
 Thermocouple type J
 Code: J13
 Probe diameter: 3mm
 Probe length: 200mm
 Transition section: 6mm*40mm
 3 meters stainless steel wire
 Grounded type

Ordering Information(quick ordering code TC-K13 or TC-J13)

TC-K13, Thermocouple type K, code K13
 TC-J13, Thermocouple type J, code J13

1: Probe diameter(mm), customizable, other size not listed below but also available

2	Probe diameter 2mm
3	Probe diameter 3mm
4	Probe diameter 4mm

2: Probe length(mm), customizable, other size not listed below but also available

50	Probe length 50mm
100	Probe length 100mm
150	Probe length 150mm
200	Probe length 200mm

3: Diameter of the metal transition section

6	6mm diameter
8	8mm diameter

4: Length of the metal transition section

40	Metal transition section length is 40mm
----	---

5: Lead wire length(unit:mm), lead wire length is customized, can be any length you want

2000	2000mm lead wire
3000	3000mm lead wire
5000	5000mm lead wire

6: Lead wire material

SS	Stainless steel wire
Sili	Silicon wire
FG	Fiber glass insulation wire
TF	Teflon wire

7: Grounded or ungrounded type

GD	Grounded type(standard one, also known as non-isolation type)
UG	Ungrounded type(also known as isolation type)

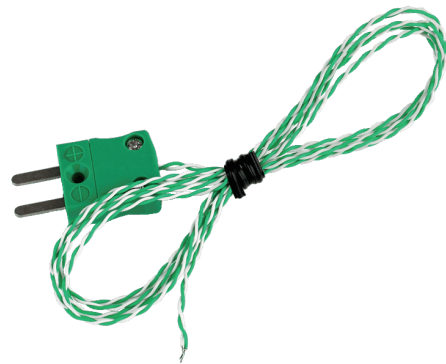
TC-K14/TC-J14

Bare tip temperature sensor type K/J

TC-K14-A
 TC-J14-A



TC-K14-B
 TC-J14-B



TC-K14-C
 TC-J14-C



TC-K14-D
 TC-J14-D



TC-K15/TC-J15

Thermocouple K, J with connection box with transition section, with process fittings



TC-K16/TC-J16

Thermocouple K, J with connection box with flange

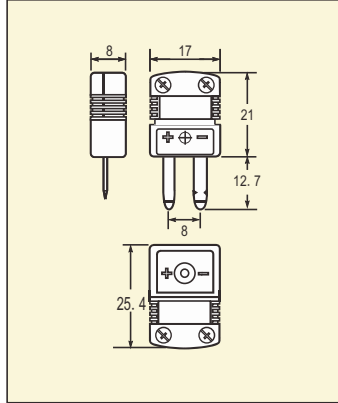


TC-K17/TC-J17

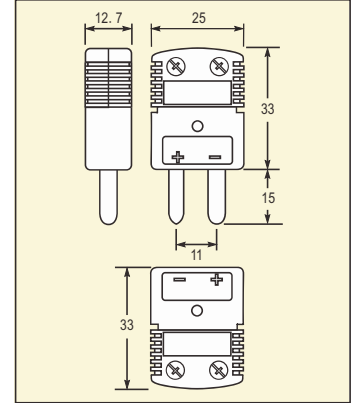
Thermocouple K, J with ceramic sheath



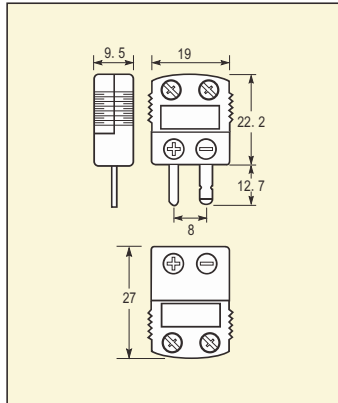
Mini quick connectors(For maximum 220°C)



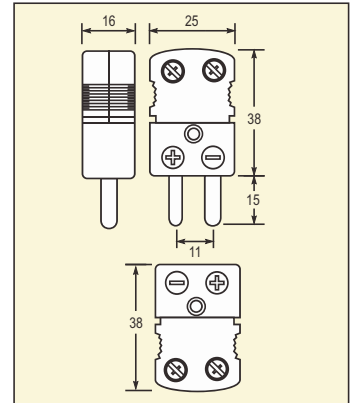
Standard quick connectors(For maximum 220°C)



Mini quick connectors, ceramic material(For maximum 650°C)

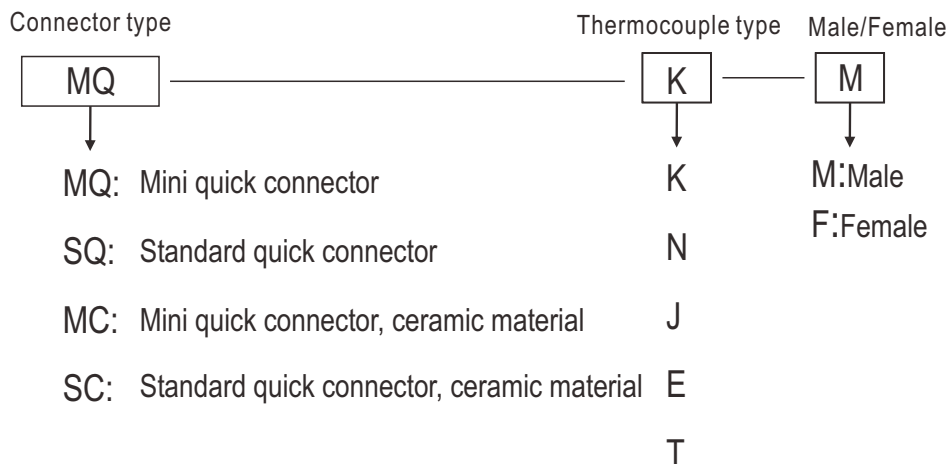


Standard quick connectors, ceramic material(For maximum 650°C)



These connectors are made of nylon, K type connector is yellow, connectors for other thermocouple looks exactly the same but with different color, below is the table.

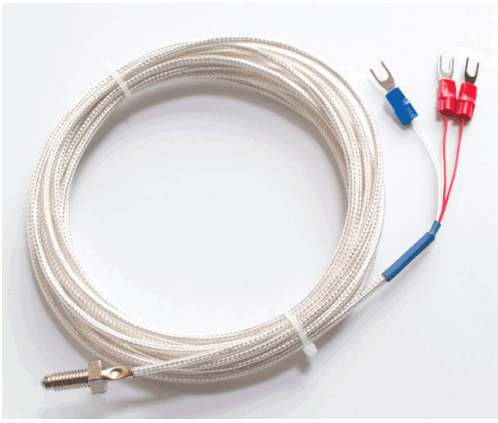
	K	J	E	T	N
Universal standards					
	Yellow	Black	Violet	Blue	Orange



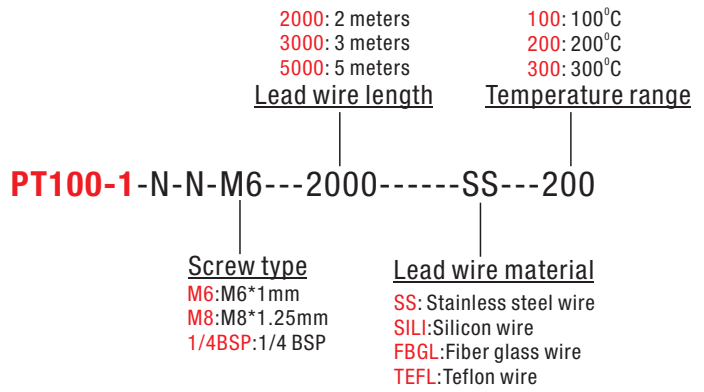
MQ-K-M: Mini quick connector for type K thermocouple, male

PT100-1

Screw-in type PT100



This is a most commonly used screw-in type PT100, standard version with M6 screw and 2 meters stainless steel cable



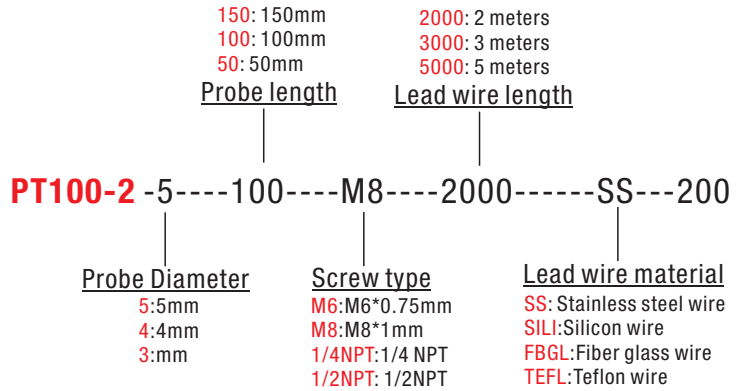
PT100-1-N-N-M6-2000-SS-200
Type: PT100-1
screw in type
2 meters lead wire
M6*0.75mm screw
Range: 200 C degree

PT100-2

Probe type PT100 with process fittings



This is a most commonly used probe PT100, standard version with M8 screw and 2 meters cable, standard model with range up to 300°C



PT100-2-5-100-M8-2000-SS-200
Type: PT100-2, probe type
Probe diameter and length: 5mm*100mm
M8*1mm screw
2 meters cable
Range: 200 C degree

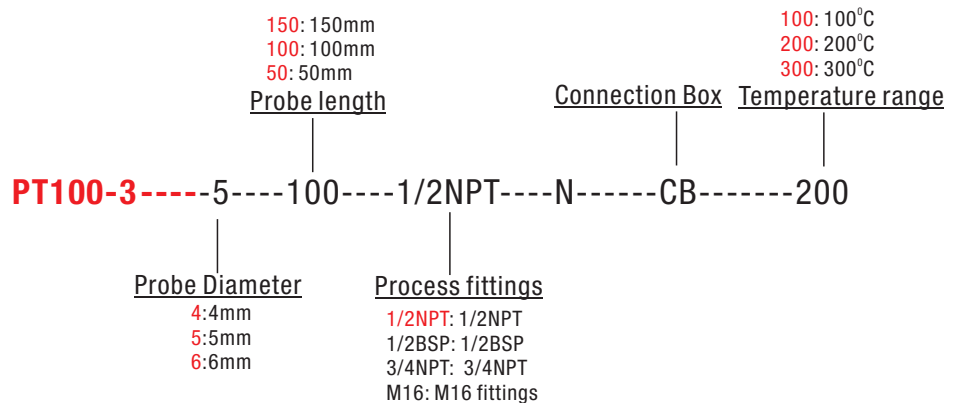
PT100-3

RTD with connection box and process fittings

Form B connection box



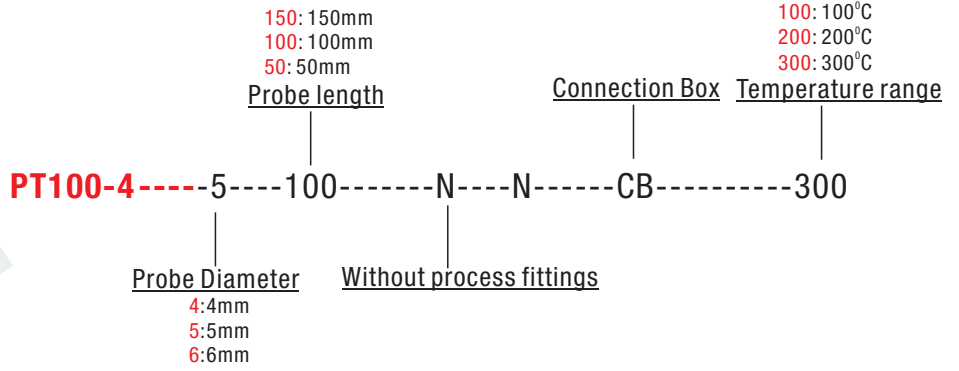
This is a popular PT100 with connection box, for harsh environments with process fittings, like 1/2 NPT etc



PT100-3-5-100-1/2NPT-N-CB-300
Type: PT100-3
Probe diameter and length: 5mm*100mm
Process fittings: 1/2NPT
No lead wire
Form B connection box
Range: maximum 300 C degree

PT100-4

RTD sensor with connection box without process fittings

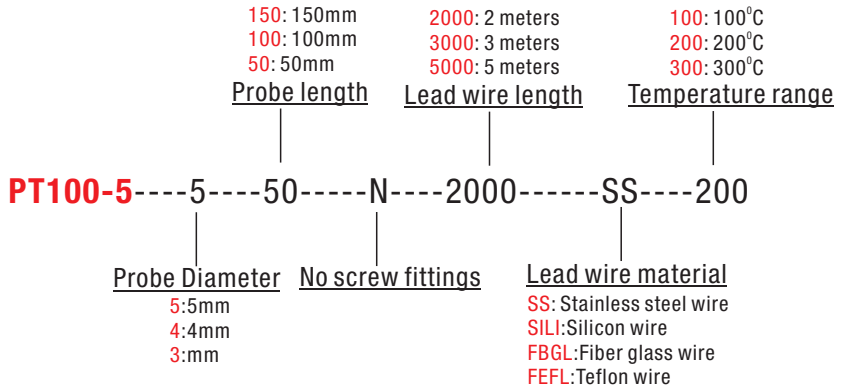


This item similar to the PT100-3 but without connection box

PT100-4-5-100-N-N-CB-300
 Type: PT100-4
 Probe diameter and length: 5mm*100mm
 without process fittings
 No lead wire
 with connection box
 Range: 300 C degree

PT100-5

Probe RTD sensors without screw fittings

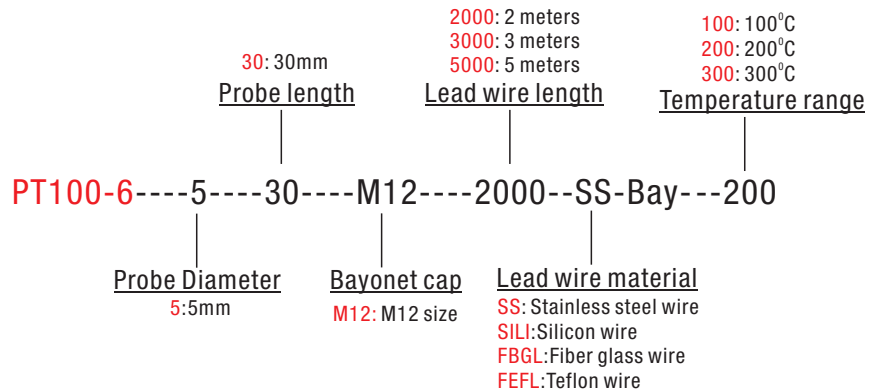
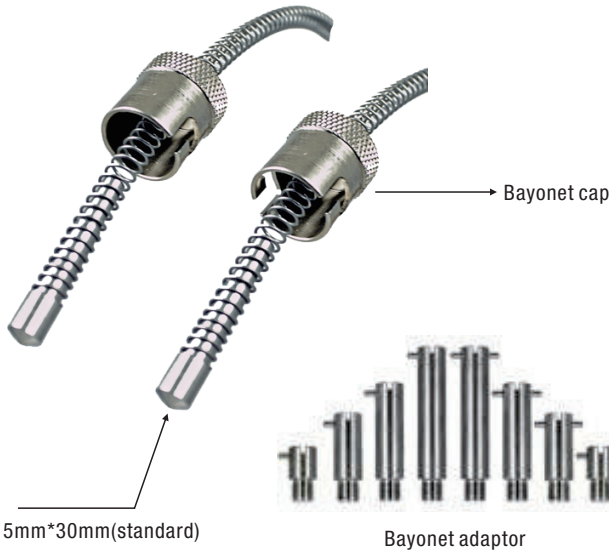


This is a typical sensors with a stainless steel tube, without screw fittings. water proof, sometimes used together with thermowell

PT100-5-5-50-N-2000-SS-200
 Type: PT100-5
 Probe diameter and length: 5mm*50mm
 without process fittings, 2 meter lead wire
 Stainless steel coat cable
 Range: 200 C degree

PT100-6

Spring loaded adjustable bayonet PT100



This is a very popular spring loaded bayonet sensor, standard version come with 5*30mm probe, M12 bayonet cap

PT100-6-5-30-M12-2000-SS-Bay-200
 Type: PT100-6 spring loaded bayonet sensor
 Probe diameter and length: 5mm*30mm
 without process fittings, 2 meter lead wire
 Stainless steel coat cable
 Range: 200 C degree

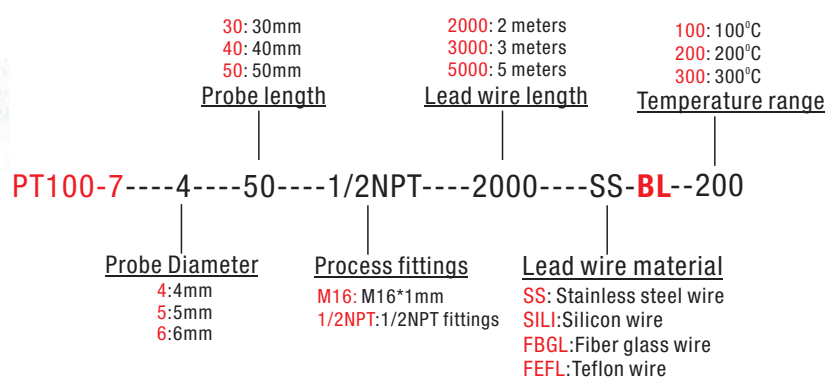
PT100-7

Probe type PT100 sensors with ball lock quick connector



NPT fittings or metric fittings

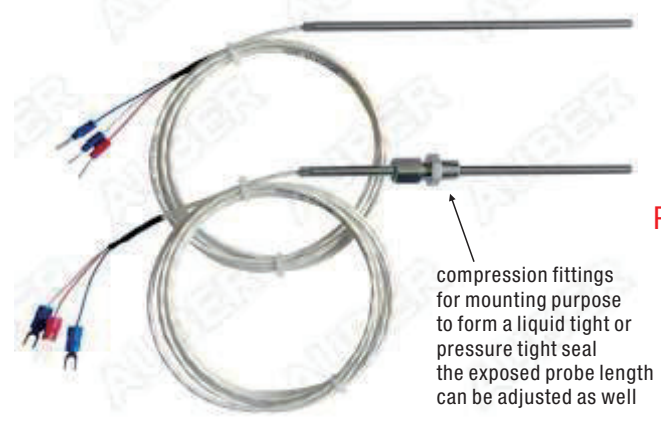
With ball lock quick connectors for easy and quick connection



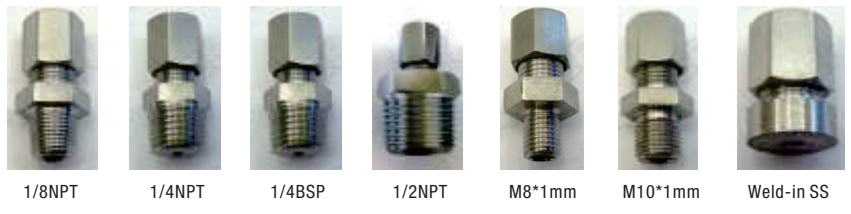
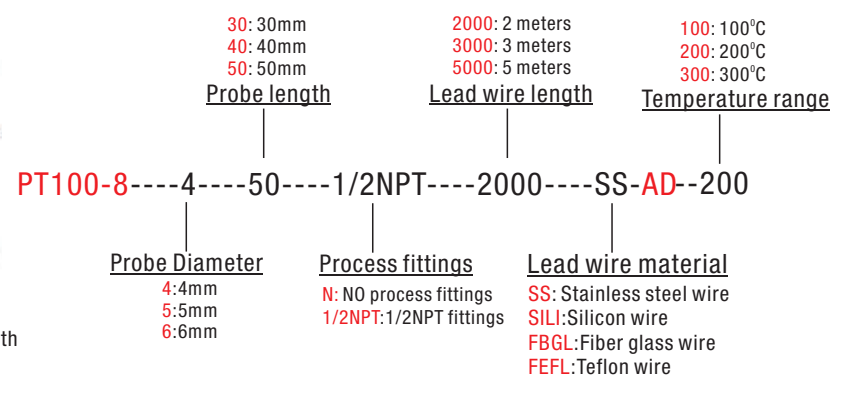
This is a very popular PT100 sensors with ball lock quick connection features. some of customer also asking for M12 heavy duty connector

PT100-8

Probe RTD sensors, adjustable length



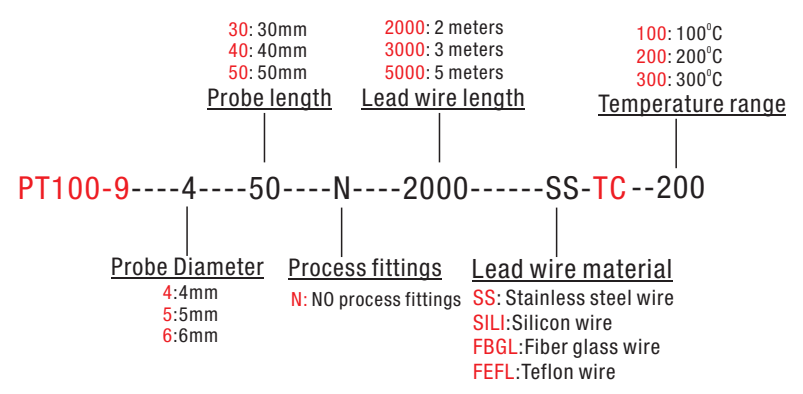
compression fittings for mounting purpose to form a liquid tight or pressure tight seal the exposed probe length can be adjusted as well



This RTD probe can be used for measuring the temperature of air or liquid. The probe is protected with 304 stainless steel. It is 3/16" (or 4.8 mm) in diameter. The cable is shielded with metal braid and covered with PTFE insulation. It is one of the best cable available for the RTD probe.... low noise, high strength and high temperature resistant.

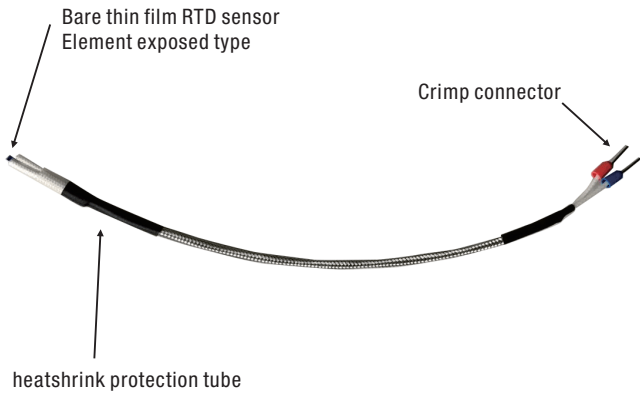
PT100-9

Tri-clamp liquid tight RTD sensors

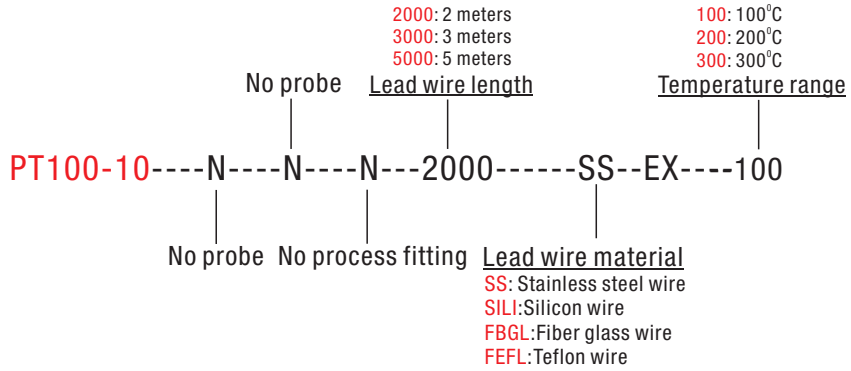


PT100-10

Bear element RTD sensors



This type of sensor has a very quick response to the temperature variables and crimp connectors was connected to the end, bare wire end also available

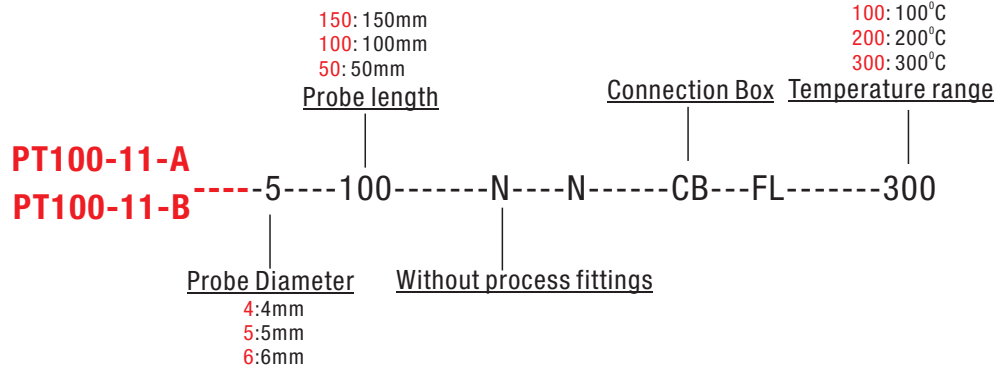
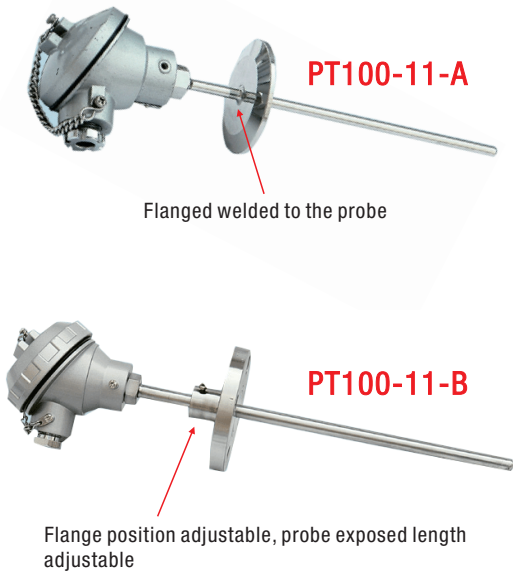


PT100-10-N-N-N-300-SS-EX-150

Type: PT100-10
Element exposed type
30cm lead wire length
Range: 150 degree

PT100-11

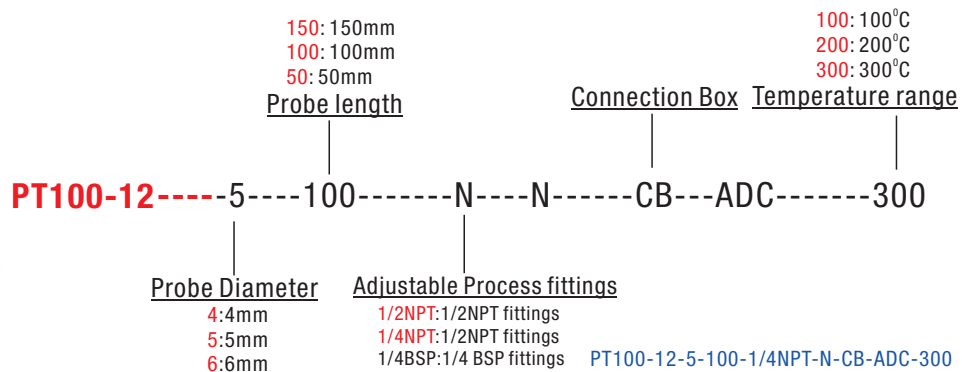
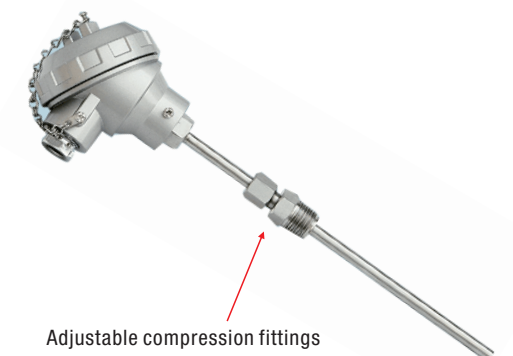
PT100 with mounting flange and connection box



PT100-11-A-5-100-N-N-CB-FL-300
Type: PT100-11-A, with fixed flange
Probe diameter and length: 5mm*100mm
without process fittings
No lead wire
with connection box
Range: 300 C degree

PT100-12

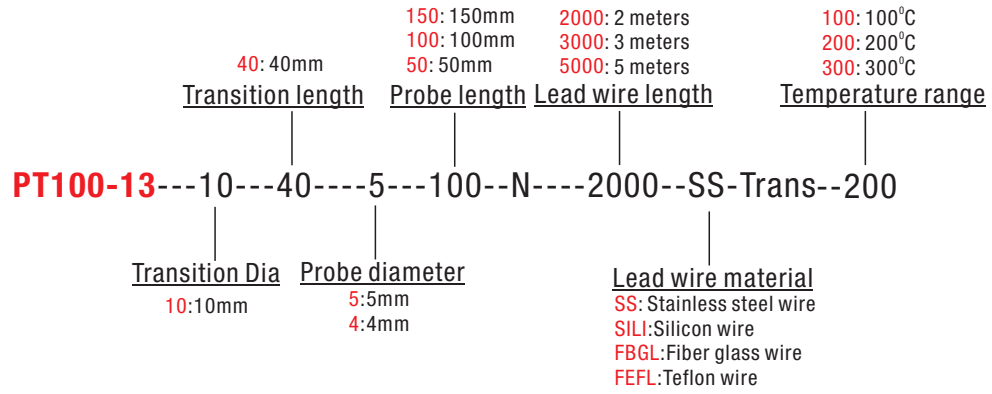
PT100 with adjustable compression fittings and connection box



PT100-12-5-100-1/4NPT-N-CB-ADC-300
Type: PT100-12, with adjustable fittings
Probe diameter and length: 5mm*100mm
1/2 NPT adjustable fittings
No lead wire
with connection box
Range: 300 C degree

PT100-13

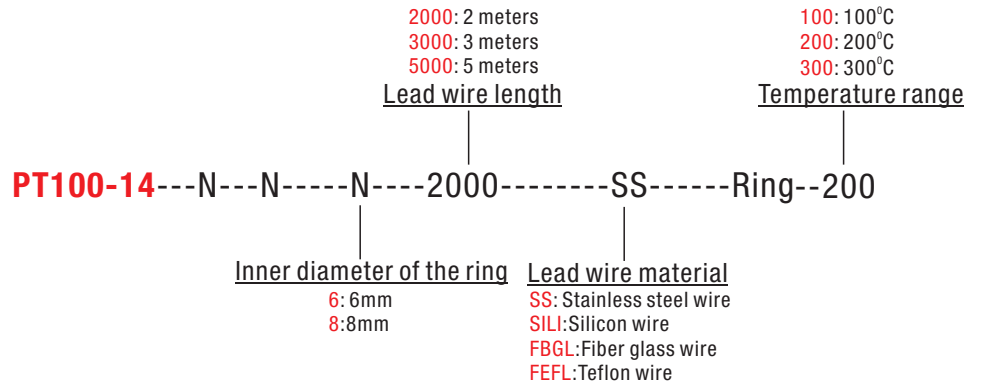
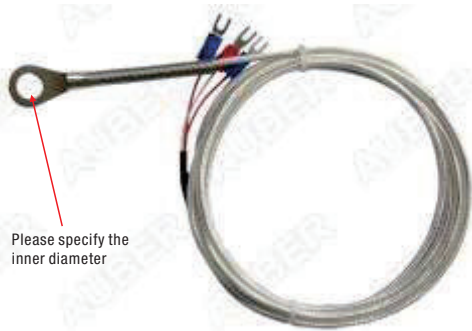
PT100 sensors with transition section



PT100-13-10-40-5-100-N-2000-SILI-Trans-200
 Type: PT100-13, with transition section
 10mm*40mm transition side
 Probe, 5mm*100mm
 2 meters silicon cable
 Range: 200 degree range

PT100-14

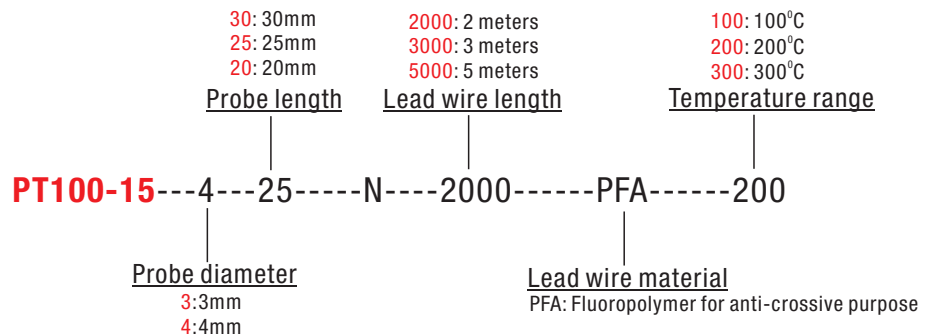
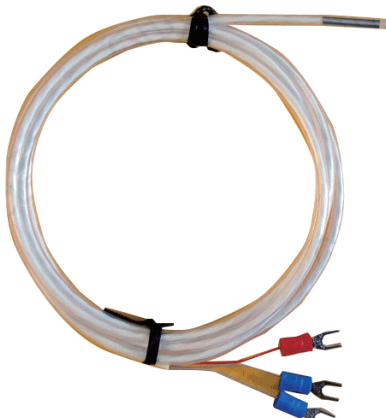
Bolt-on PT100 with ring terminals



PT100-14-N-N-6-2000-SS-Ring-120
 Type: PT100-14, Bolt on ring terminal sensor
 Ring inner diameter: 6mm
 2 meters stainless steel coat cable
 Range: 120 degree range

PT100-15

Fluoropolymer coated probe for corrosive solutions

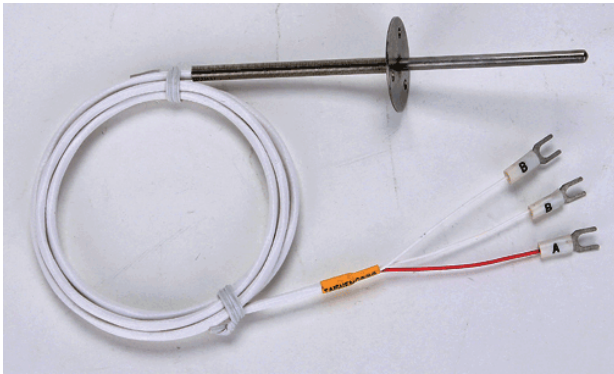


PT100-15-4-25-N-2000-PFA-200
 Type: PT100-14, Bolt on ring terminal sensor
 Ring inner diameter: 6mm
 2 meters stainless steel coat cable
 Range: 120 degree range

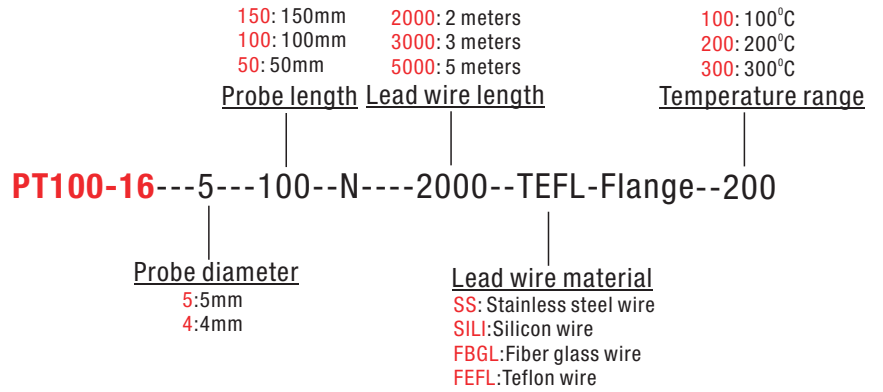
This PT100 RTD sensor is insulated with fluoropolymer (PFA) on both probe and wire. It is suitable for measuring temperature in corrosive solutions such as saline, strong acid, caustic solutions and in electroplating baths. Both the probe and the cable can be immersed for continuous operation. The probe and cable are flexible

PT100-16

Probe PT100 with a mounting bracket



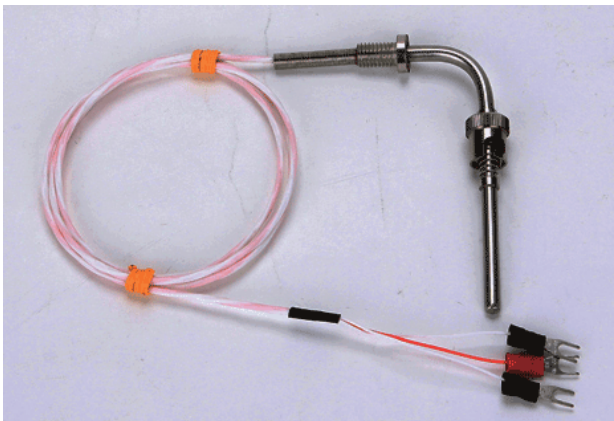
This PT100 is suitable for chimney, smoker and low temperature oven applications



PT100-16-5-100-N-2000-Tefl-flange-200
 Type: PT100-16, with round flange
 Probe, 5mm*100mm
 2 meters teflon cable
 Range: 200 degree range

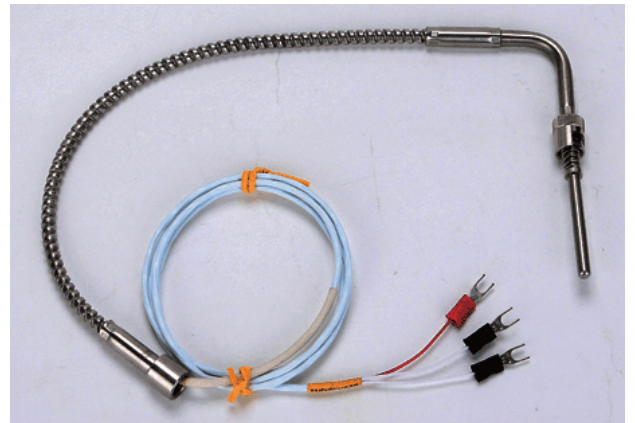
PT100-17-A/PT100-17-B

Bayonet 90 degree angled PT100



PT100-17-A

Angled PT100 with bayonet and screw fittings



PT100-17-B

Angled PT100 with bayonet


PT100 thin film element and lead wire





General Features:

- Universal input, support RTD:Pt100, Cu50, Cu100
Thermocouple:K,J,E,T,S,R,B,N,
PT1000 and WRe needs to be custom made
- 2 wires 4-20mA output
- Input configurable via **PC software** and **android smart phone**
- Built-in cold junction compensation
- Can be installed in Form B connection box
- High accuracy, 0.1% for RTD, 0.2% for TC
- USB cable for configuration purpose can draw power from PC directly
separate 24VDC power source is no need
- Surge protection, reverse connection protection

 The configuration can be done via software from PC or from android smart phone

Ordering Information

TT-210 (General version, input/output non-isolation)
You can configure the input and range using PC or android smart phone

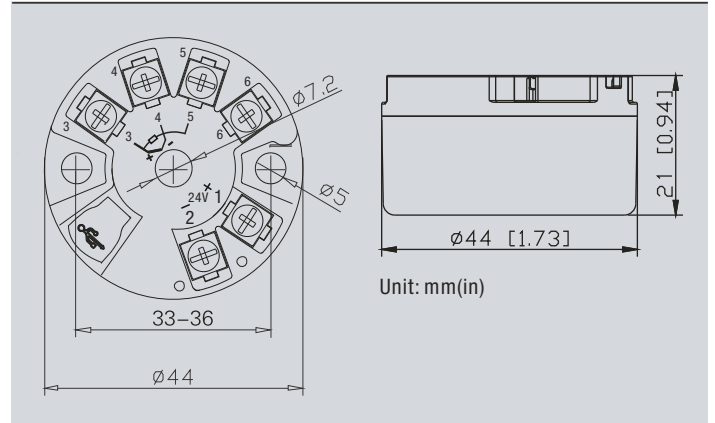
General Specifications

Item No	TT-210
Sensor type	PT100,Cu50,Cu100,K,J,E,T,S,R,B,N,PT1000 and WRe needs to be custom made
Cold end junction compensate range	-40°C~ + 80°C
Compensate accuracy	±1°C
Output	4-20mA
Load resistance	$RL \leq (Ue-12)/0.021$
Over range alarm value	IH=20.8mA, IL=20.8mA
Input break output current value	21mA
Power supply	12-35VDC
Accuracy(ambient 20°C)	0.1% F.S for RTD, 0.2% F.S for TC
Temperature drift	0.01% F.S/°C
Response time	1ms to 90% of maximum output
Input/output isolation strength	Non-isolation
Input/output impedance	Non-isolation
EMC standard	IEC 61326-1
Working temperature	-40°C~ + 80°C
Mounting screw	M4*2

Input signal and range

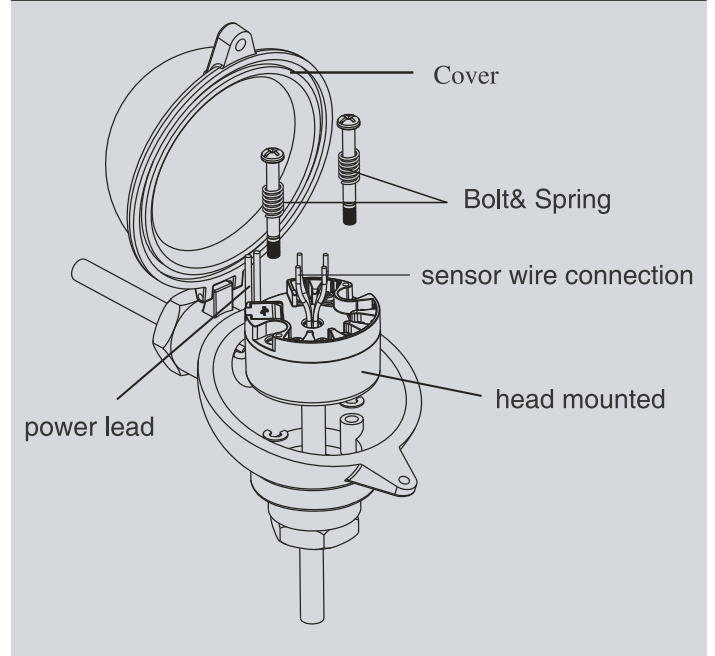
Sensor type	Specific sensor type	Measuring range	Minimum measuring range
RTD	Pt100	-200.0~850.0°C	10°C
	Cu50	-50.0~150.0°C	10°C
	Cu100	-50.0~150.0°C	10°C
TC	B	400~1800°C	500°C
	E	-100~1000°C	50°C
	J	-100~1200°C	50°C
	K	-180~1372°C	50°C
	N	-180~1300°C	50°C
	R	-50~1760°C	500°C
	S	-50~1760°C	500°C
Need to be custom made	T	-200~400°C	50°C
	Wre3-25	0~2315°C	500°C
	Wre5-26	0~2310°C	500°C
	Pt1000	-200.0~850.0°C	10°C

Dimension

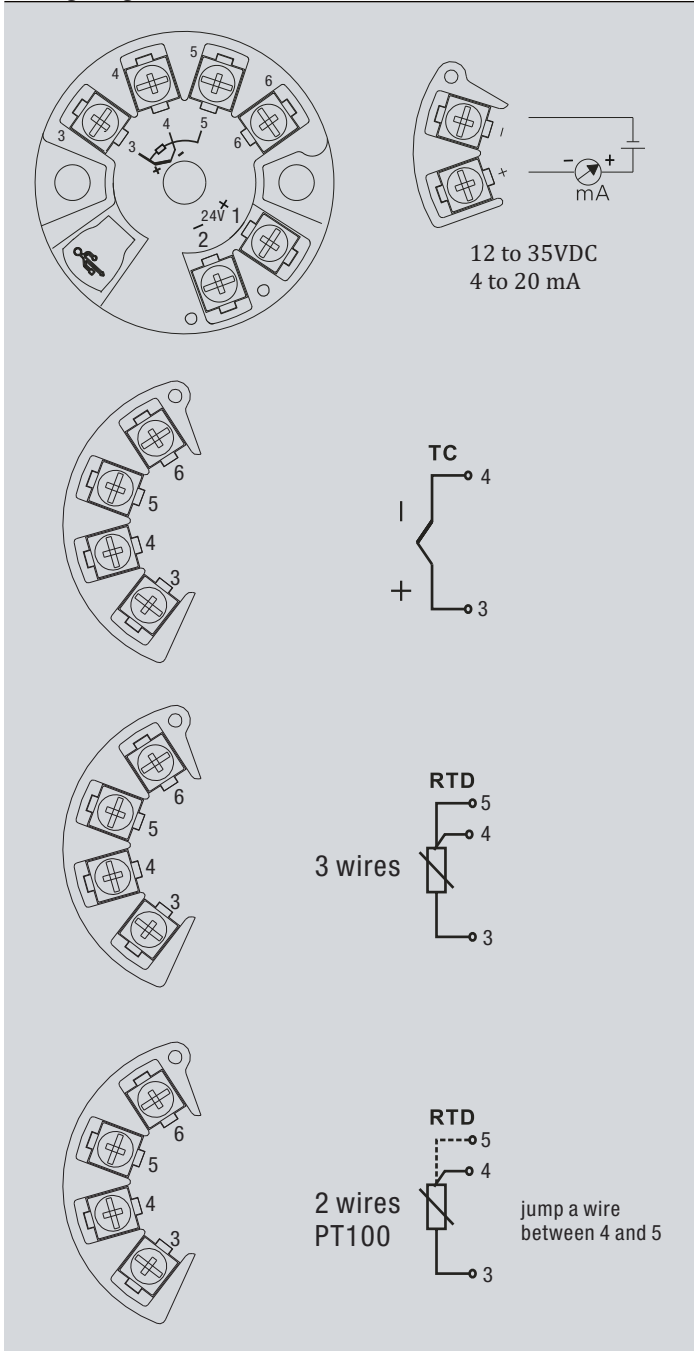


Technical Specifications

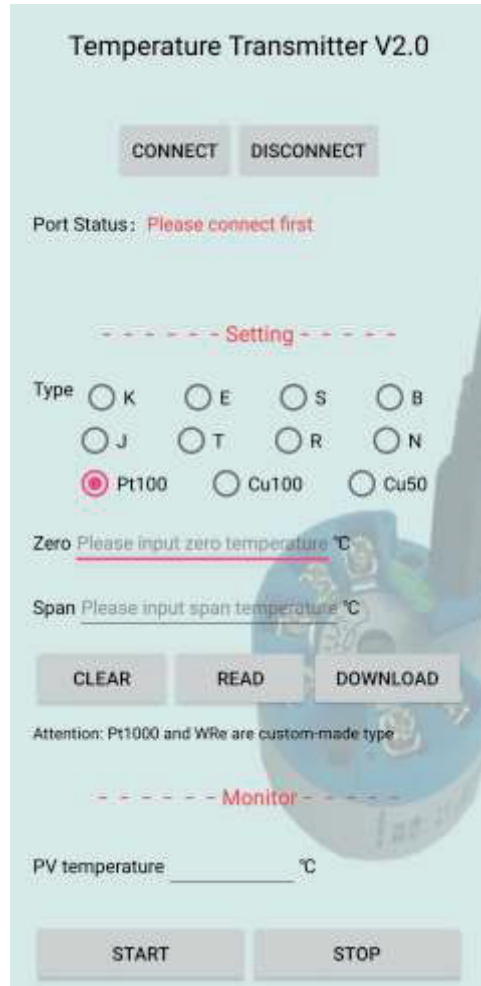
Installation guide



Wiring diagram



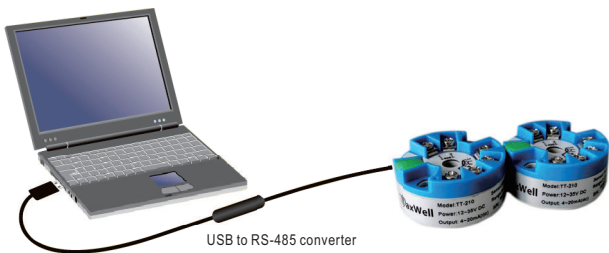
PC configuration software interface



Android OS system configuration software interface

Configuration guidelines

The configuration can be done via PC and android smart phone.



Connect the transmitter with PC using the programming cable provide by Maxwell, please noted that this is a custom made programming cable, do not use other cable otherwise the transmitter will be damaged. Please goes to our website and check our video tutorial on how to use our PC configuration software



General Features:

- Universal input, Support PT100, Cu50, B, E, J, K, N, R, S, T (TT-216, TT-217) PT100, Cu50, B, E, J, K, N, R, S, T, Wre3-25, Wre5-26 (TT-200)
- 2 wires 4-20mA output
- Input configurable via PC based software or handheld device
- Built-in cold junction compensation
- Can be installed in Form B connection box
- High accuracy
- We provide V8 USB cable for programming purpose (TT-200, TT-216) TT-217 connected with PC via USB to Hart modem

- TT-200, Input output non-isolation
- TT-216, Input output galvanically isolation
- TT-217, Input output galvanically isolation, with HART communication

Ordering Information

- TT-200 (General version, input/output non-isolation)
- TT-216 (Enhanced version, input/output galvanically isolated)
- TT-217 (With Hart communication, input/output galvanically isolated)

Technical Specifications

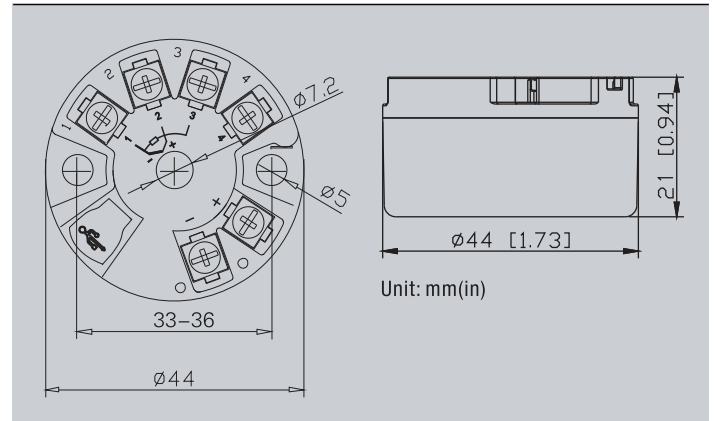
General Specifications

	TT-200	TT-216	TT-217
Sensor type	Pt100, Cu50, T, E, J, K, N, R, S, B Wre3-25, Wre5-26	Pt100, Cu50, T, E, J, K, N, R, S, B	Pt100, Cu50, T, E, J, K, N, R, S, B
Cold end junction compensate range	-40°C ~ +80°C	-40°C ~ +80°C	-40°C ~ +80°C
Compensate accuracy	±1°C	±1°C	±1°C
Output	4-20mA	4-20mA	4-20mA with Hart
Load resistance	$RL \leq (U_e - 12) / 0.021$	$RL \leq (U_e - 12) / 0.021$	$RL \leq (U_e - 12) / 0.021$
Over range alarm value	IH=21mA IL=3.9mA	IH=21mA IL=3.9mA	IH=21mA IL=3.9mA
Input break output current value	21mA	Configurable	Configurable
Power supply	12~40VDC	12~40VDC	12~40VDC
Accuracy (ambient 20°C)	0.1% F.S	0.1% F.S	0.1% F.S
Temperature drift	0.01% F.S/°C	0.0075% F.S/°C	0.0075% F.S/°C
Response time	1ms to 90% of maximum output	0.5ms to 90% of maximum output	0.5ms to 90% of maximum output
Input/output isolation strength	Non-isolation	1500VAC 1min	1500VAC 1min
Input/output impedance	Non-isolation	≥100MΩ 500V	≥100MΩ 500V
EMC standard	IEC 61326-1	IEC 61326-1	IEC 61326-1
Working temperature	-40°C ~ +80°C	-40°C ~ +80°C	-40°C ~ +80°C

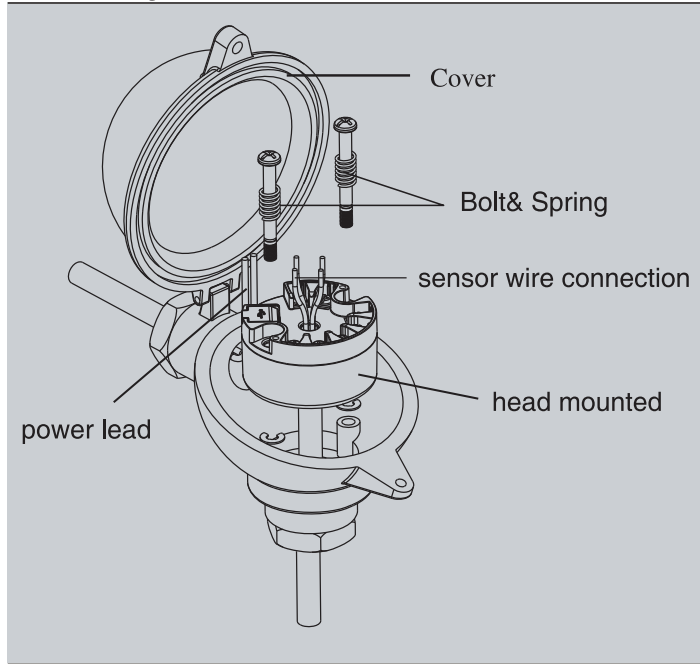
Input signal and range

Sensor type	Specific sensor type	Measuring range	Minimum measuring range
RTD	Pt100	-200.0 ~ 850.0°C	10°C
	Cu50	-50.0 ~ 150.0°C	10°C
TC	B	400 ~ 1800°C	500°C
	E	-100 ~ 1000°C	50°C
	J	-100 ~ 1200°C	50°C
	K	-180 ~ 1372°C	50°C
	N	-180 ~ 1300°C	50°C
	R	-50 ~ 1760°C	500°C
	S	-50 ~ 1760°C	500°C
	T	-200 ~ 400°C	50°C
	Wre3-25	0 ~ 2315°C	500°C
	Wre5-26	0 ~ 2310°C	500°C

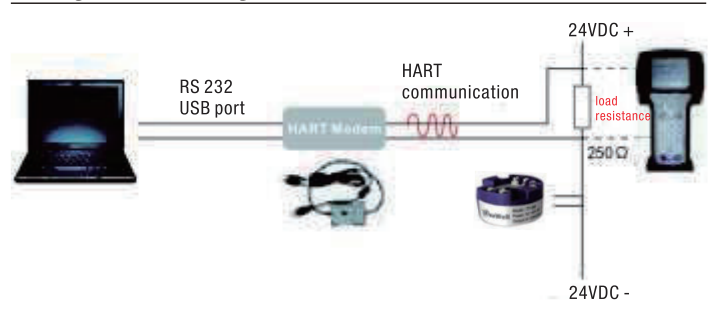
Dimension



Installation guide



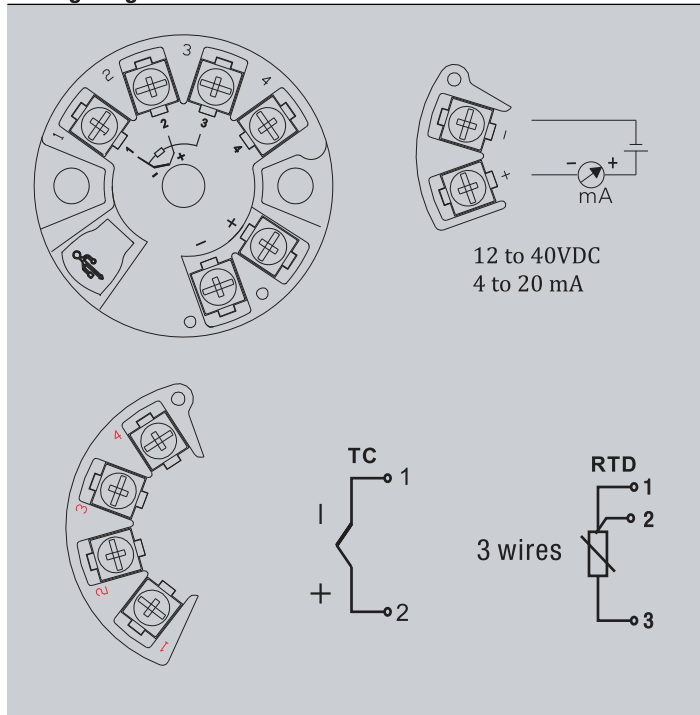
Configuration wiring details



Spare parts

V8 programming cable, bus powered cable, for TT-200 and TT-216
 SM100-C HART Modem, for TT-217
 HART 475 field configurator, for TT-217

Wiring diagram



SM100-C



HART 475 field configurator

General Features:

- Universal input, support RTD PT100,Cu50,Cu100, TC type T,E,J,K,N,R,S,B
- 2 wires 4-20mA output
- Input and range configurable via handheld device
- Built-in auto cold junction
- Standard DIN rail mount
- Very high accuracy
- Over range, input break detection and alarm



- TT-311, 1 input 1 output(4-20mA)
- TT-312, 2 input 2 outputs(4-20mA)
- TT-313, 2 inputs 2 outputs(4-20mA)

Ordering Information

- TT-311 1 input 1 output, 1 sensor can be connected, and 1 4-20mA output
- TT-312 1 input 2 outputs, 1 sensor can be connected, and 2 4-20mA output
- TT-313 2 inputs and 2 outputs, 2 sensors can be connected, 2 4-20mA output

Technical Specifications

General Specifications

	TT-311	TT-312	TT-313
Sensor type	Pt100,Cu50,Cu100,T,E,J K,N,R,S,B	Pt100,Cu50,Cu100,T,E,J K,N,R,S,B	Pt100,Cu50,Cu100,T,E,J K,N,R,S,B
Cold end junction compensate range	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C
Compensate accuracy	±1°C	±1°C	±1°C
Output	4-20mA	4-20mA	4-20mA with Hart
Load resistance	$RL \leq (U_e-12)/0.021$	$RL \leq (U_e-12)/0.021$	$RL \leq (U_e-12)/0.021$
Over range alarm value	IH=21mA IL=3.9mA	IH=21mA IL=3.9mA	IH=21mA IL=3.9mA
Input break output current value	21mA	21mA	21mA
Power supply	20~32VDC	20~32VDC	20~32VDC
Accuracy(ambient 20°C)	0.1% F.S	0.1% F.S	0.1% F.S
Temperature drift	0.01% F.S/°C	0.0075% F.S/°C	0.0075% F.S/°C
Response time	1ms to 90% of maximum output	0.5ms to 90% of maximum output	0.5ms to 90% of maximum output
Input/output isolation strength	1500VAC 1min	1500VAC 1min	1500VAC 1min
Input/output impedance	≥100MΩ 500V	≥100MΩ 500V	≥100MΩ 500V
EMC standard	IEC 61326-1	IEC 61326-1	IEC 61326-1
Working temperature	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C
Mounting	IEC 61326-1	IEC 61326-1	IEC 61326-1
Dimension	-20°C~+60°C	-20°C~+60°C	-20°C~+60°C

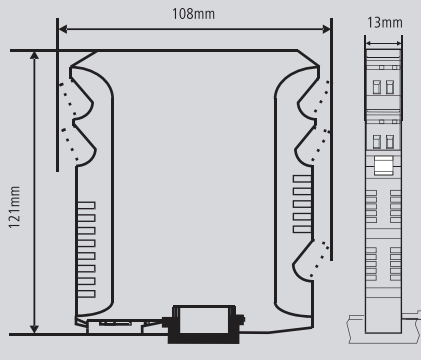
Input signal and range

Thermocouple

- B (400 ~ 1800°C)
- S (0 ~ 1600°C)
- K (0 ~ 1300°C)
- E (0 ~ 1000°C)
- T (-200.0 ~ 400.0°C)
- J (0 ~ 1200°C)
- R (0 ~ 1600°C)
- N (0 ~ 1300°C)

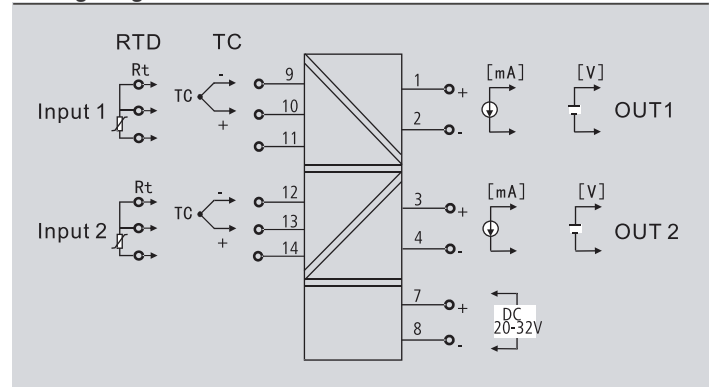
RTD

- Cu50 (-50.0 ~ 150.0°C)
- Cu100 (-50.0 ~ 150.0°C)
- Pt100 (-200.0 ~ 650.0°C)



Dimension

Wiring diagram



MAXWELL Product Catalog

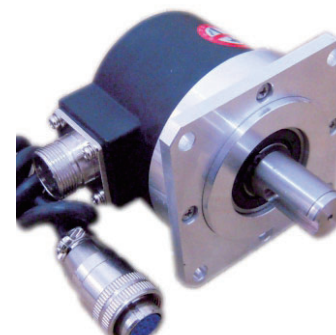
ISO9001:2008 CE



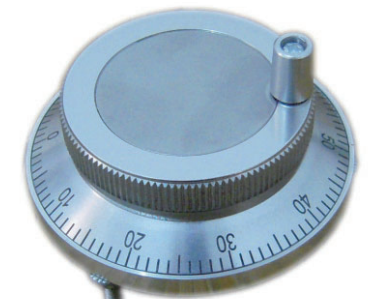
M50SA



M40SA



M68SA



SM60

- TEMPERATURE CONTROLLER
- SOLID STATE RELAY
- PROXIMITY SENSOR
- CAPACITIVE SENSOR
- **ROTARY ENCODER**
- TEMPERATURE SENSOR

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Fax: +86-592-6091734

WWW.MAXWELL-FA.COM

Incremental 38-mm-Dia. Rotary Encoder

MCT38A/MCT38B/MCT38C

2 or 4 phase type

General purpose Encoder with External Diameter of 38mm



- Incremental model 2 or 4 phase type
- External diameter of 38mm
- Resolution available for 300/360/400/600.
- Various output type
- Solid shaft with Dia at 6 mm

Ordering Information

MCT38A/MCT38B/MCT38C

1 2 3 4 5 6 7

Section 1: Basic model name

- MCT38A:** 38mm Rotary Encoder(Mounting type A)
MCT38B: 38mm Rotary Encoder(IP64)(Mounting type B)
MCT38C: 38mm Rotary Encoder(Mounting type C)

Refer to drawings for the difference between MCT38A/MCT38B/MCT38C

Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

Section 3: Resolution

- 360:** 360 ppr
600: 600 ppr

For 2 or 4 phase type, the option for resolution is limited to listed as above 300/360/400/600 PPR.other pulse is not available

Ratings and Specifications

- Power supply:** 8-30 VDC
Resolution: 300/360/400/600 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 4000 rpm
Shaft loading radial: 10N
Shaft loading thrust: 20N
Weight: Approx 0.2KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 1 x 10⁻³ N.m Maximum

Section 4: Output phase

- 2:** A B
4: A \bar{A} B \bar{B}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY,Phase 4**)
K: Push-Pull(**With inverted signal,Phase 4**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

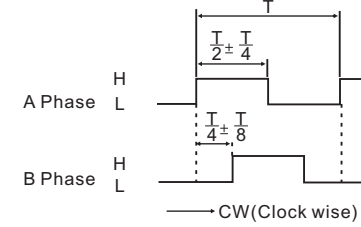
- G:** Side entry cable
E: Rear entry cable

▲ Standard cable length is 2M

Output circuits and wave forms

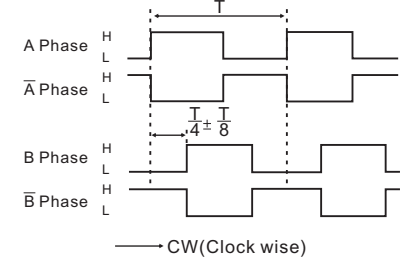
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

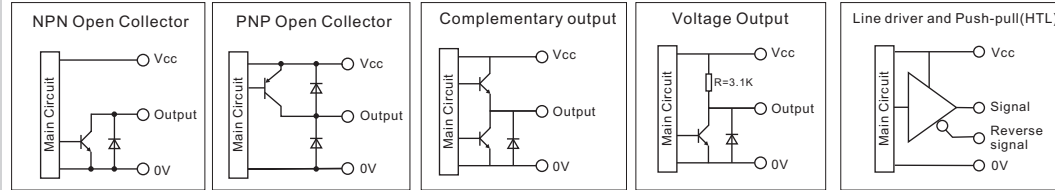


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

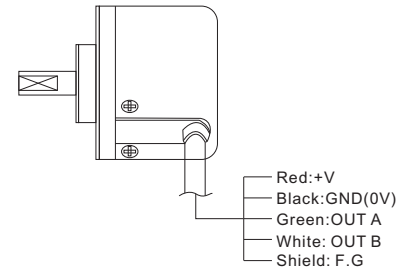


Output circuits

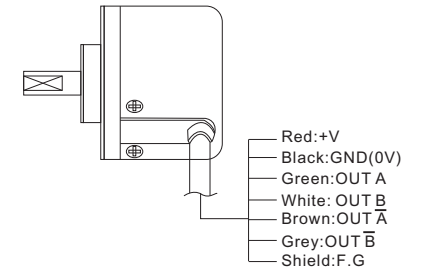


Wiring Details

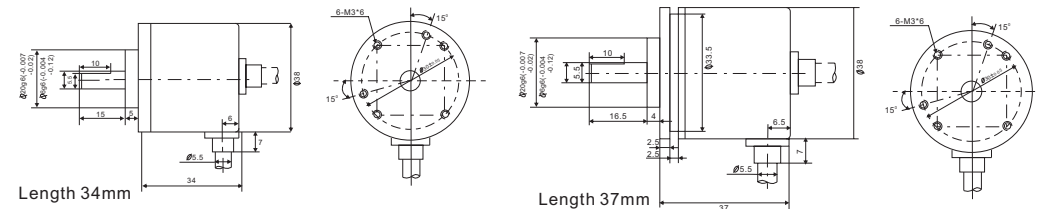
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)

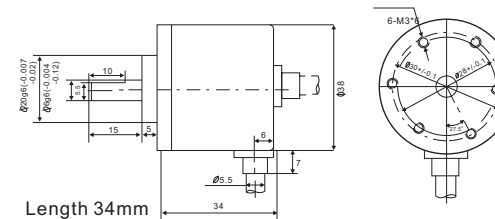


Mounting and Dimensions



MCT38A(Mounting Type A)

MCT38B(Mounting Type B)
IP64 protection



MCT38C(Mounting Type C)

Incremental 40-mm-Dia. Rotary Encoder

MCT40A/MCT40B

2 or 4 phase type

General purpose Encoder with External Diameter of 40mm



- Incremental model 2 or 4 phase type
- External diameter of 40mm
- Resolution available for 100/200/500/1000/1024.
- Various output type
- Solid shaft with Dia at 6 mm

Ordering Information

MCT40A/MCT40B-

□	□	□	□	□	□	
1	2	3	4	5	6	7

Section 1: Basic model name

MCT40A: 40mm Rotary Encoder(Mounting type A)
MCT40B: 40mm Rotary Encoder(Mounting type B)

Refer to drawings for the difference between MCT40A/MCT40B

Section 2: Shaft Size

6: Solid shaft with Dia at 6 mm

Section 3: Resolution

100: 100 ppr
200: 200 ppr
500: 500 ppr
1000: 1000 ppr
1024: 1024 ppr

For 2 or 4 phase type, the option for resolution is limited as above listed 100/200/500/1000/1024. other pulse is not available

Section 4: Output phase

2: A B
4: A \bar{A} B \bar{B}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver (**Power source 5VDC ONLY, Phase 4**)
K: Push-Pull (**With inverted signal, Phase 4**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

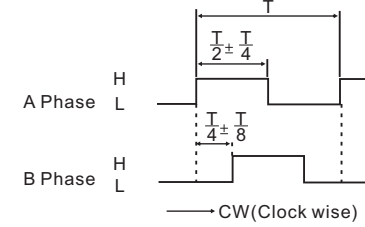
Ratings and Specifications

- Power supply:** 8-30 VDC
Resolution: 100/200/500/1000/1024 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 4000 rpm
Shaft loading radial: 10N
Shaft loading thrust: 20N
Weight: Approx 0.2KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 1 x 10⁻³ N.m Maximum

Output circuits and wave forms

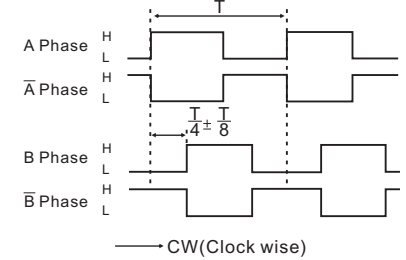
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

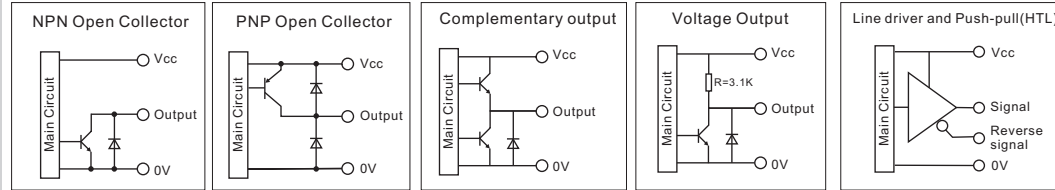


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

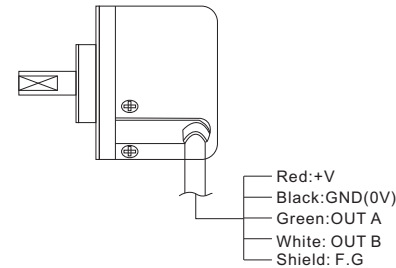


Output circuits

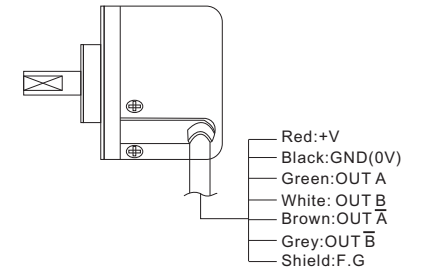


Wiring Details

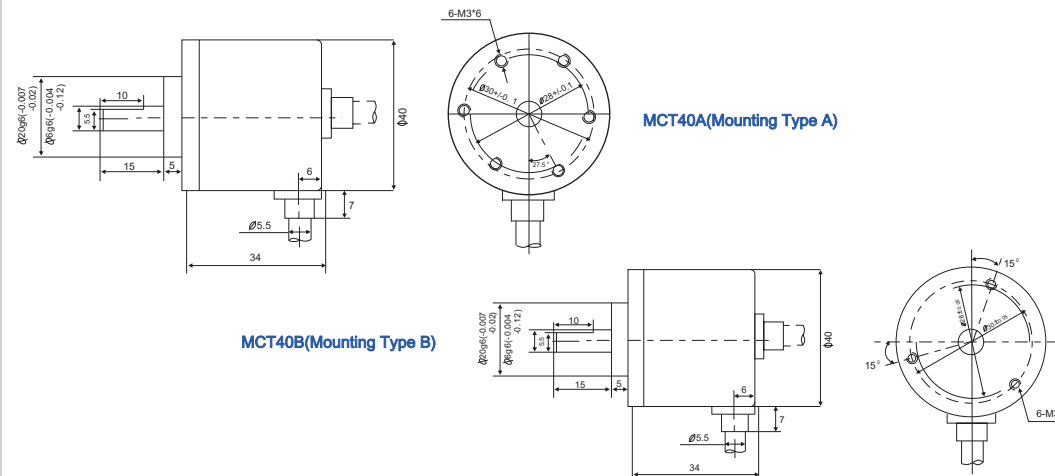
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



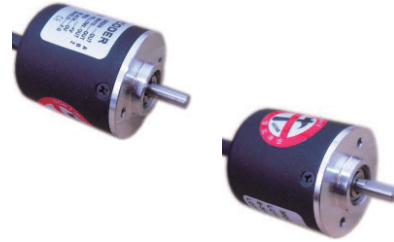
Incremental 30-mm-Dia. Rotary Encoder

M30SA

Ultra Small, Space saving

General purpose Encoder with External Diameter of 30mm

- Incremental model
- External diameter of 30mm
- Resolution up to 1200 ppr.
- Various output type
- Solid shaft with Dia at 4 mm



Ordering Information

M30SA-

1 2 3 4 5 6 7

Section 1: Basic model name

M30SA: 30mm Rotary Encoder(Mounting Type A)

Section 2: Shaft Size

4: Solid shaft with Dia at 4 mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 ...up to 1200

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY,6 phase**)
K: Push-Pull(**With inverted signal,6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

E: Rear Entry Cable
Cable Can Only Entry From the Rear
▲Standard cable length is 2M

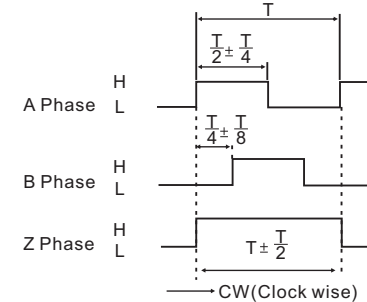
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-1200 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 4000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.16KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1 x 10⁻³ N.m Maximum

Output circuits and wave forms

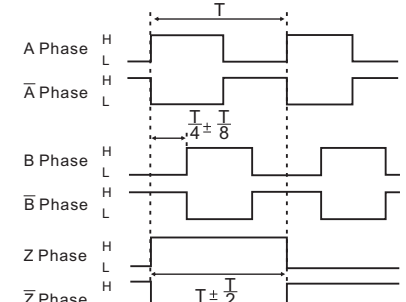
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



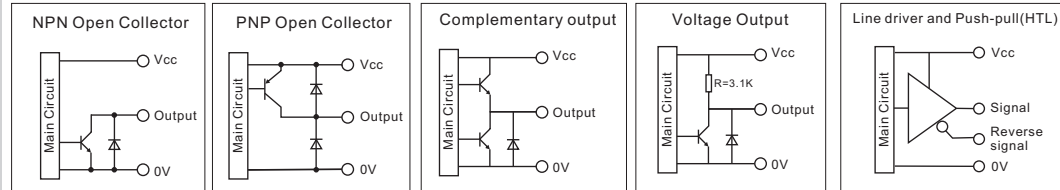
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



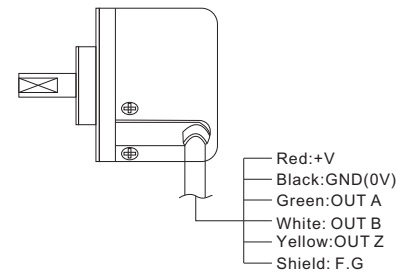
CW(Clock wise)

Output circuits

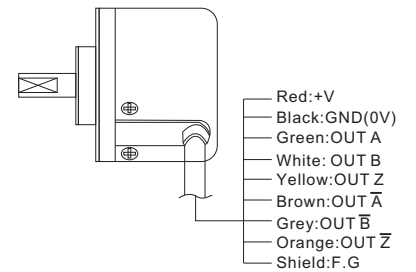


Wiring Details

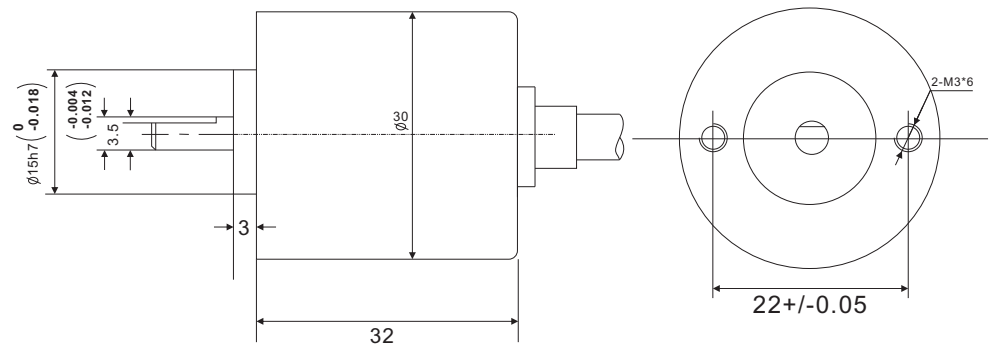
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



M30SA(Mounting Type A)

Incremental 38-mm-Dia. Rotary Encoder

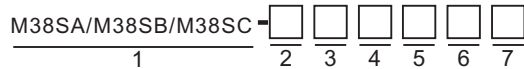
M38SA/M38SB/M38SC

General purpose Encoder with External Diameter of 38mm

- Incremental model
- External diameter of 38mm
- Resolution up to 3600 ppr.
- Various output type
- Solid shaft with Dia at 6 mm



Ordering Information



Section 1: Basic model name

- M38SA:** 38mm Rotary Encoder(Mounting Type A)
 - M38SB:** 38mm encoder(IP64)(Mounting Type B)
 - M38SC:** 38mm Rotary Encoder(Mounting Type C)
- Please refer to drawing for the difference between M38SA/M38SB/M38SC

Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

Section 3: Resolution

- 10: 10 ppr
- 20: 20 ppr

- 40 50 60 80 100 120 125 150
- 200 225 240 250 256 300 360 400 450
- 480 500 512 600 625 720 750 800 900
- 1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
- 6:** A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver (**Power source 5VDC ONLY, 6 phase**)
- K:** Push-Pull (**With inverted signal, 6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable
- E:** Rear entry cable

▲Standard cable length is 2M

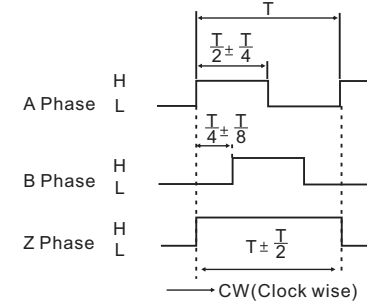
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-3600 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.2KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1.5 x 10⁻³ N.m Maximum

Output circuits and wave forms

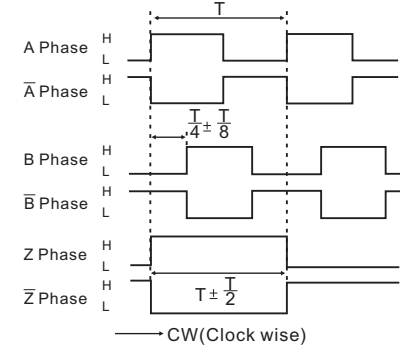
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

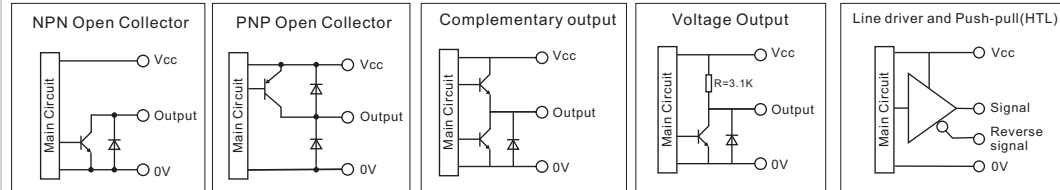


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

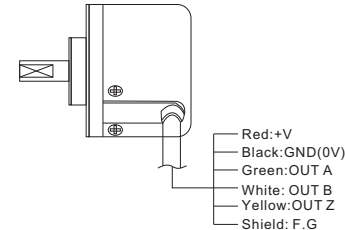


Output circuits

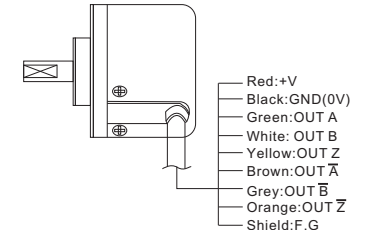


Wiring Details

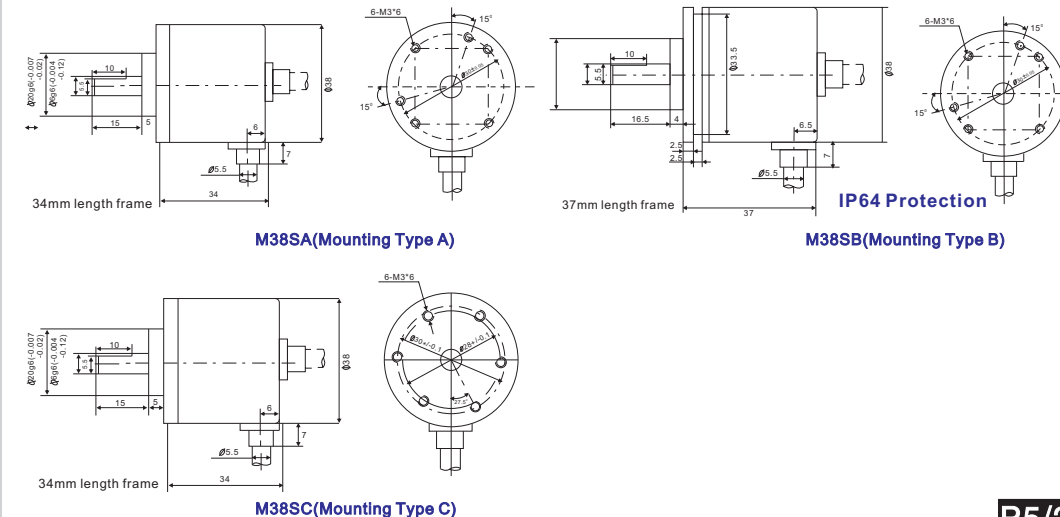
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



Incremental 40-mm-Dia. Rotary Encoder

M40SA/M40SB

General purpose Encoder with External Diameter of 40mm

- Incremental model
- External diameter of 40mm
- Resolution up to 3600 ppr.
- Various output type
- Solid shaft with Dia at 6 mm



Ordering Information

M40SA/M40SB

1	2	3	4	5	6	7
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Section 1: Basic model name

- M40SA:** 40mm Rotary Encoder(Mounting Type A)
- M40SB:** 40mm Rotary Encoder(Mounting Type B)
- Refer to drawings for the difference between M40SA/M40SB

Section 2: Shaft Size

- 6:** Solid shaft with Dia at 6 mm

Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40	50	60	80	100	120	125	150	
200	225	240	250	256	300	360	400	450
480	500	512	600	625	720	750	800	900
1000	1024	1080	1200	...up to 3600				

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
- 6:** A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY, 6 phase**)
- K:** Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable
- E:** Rear entry cable

▲Standard cable length is 2M

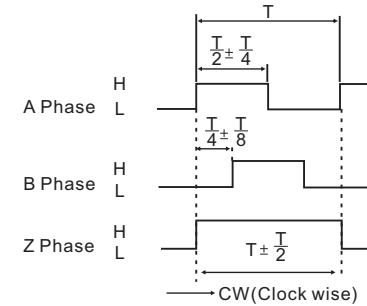
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-3600 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 10N
- Shaft loading thrust:** 20N
- Weight:** Approx 0.2KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 1.5 x 10⁻³ N.m Maximum

Output circuits and wave forms

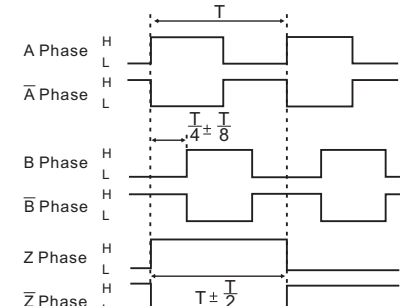
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



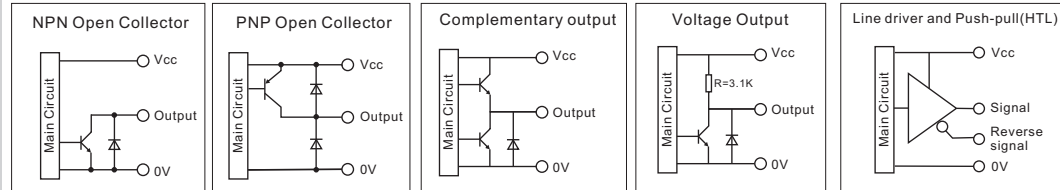
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



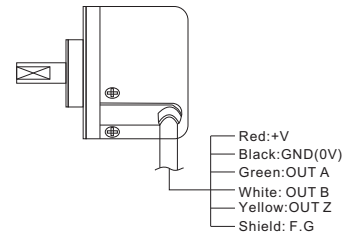
CW(Clock wise)

Output circuits

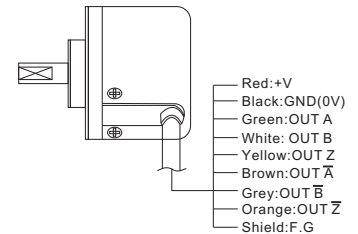


Wiring Details

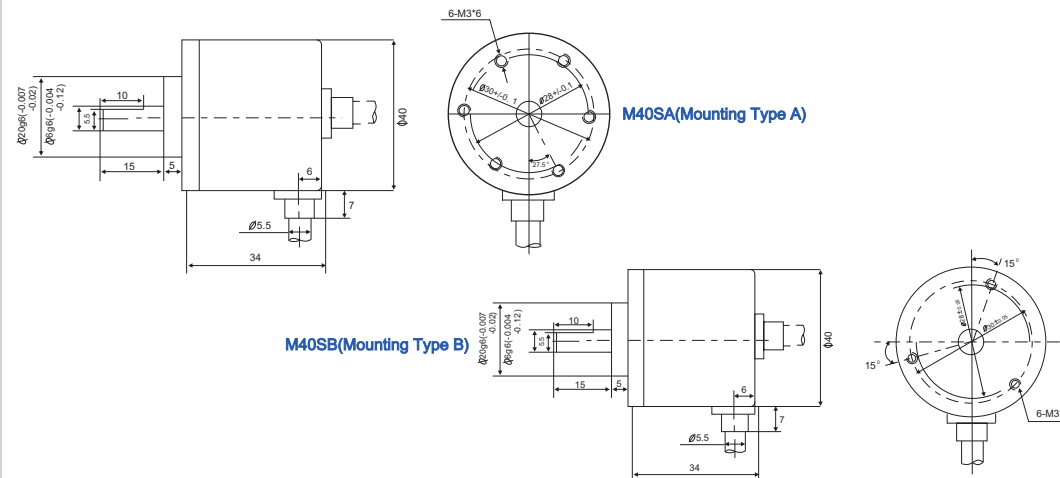
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



Incremental 50-mm-Dia. Rotary Encoder

M50SA

General purpose Encoder with External Diameter of 50mm

- Incremental model
- External diameter of 50mm
- Resolution up to 5000 ppr.
- Various output type
- Solid shaft with Dia at 8 mm



Ordering Information

M50SA

Section 1: Basic model name

M50SA: 50mm Rotary Encoder(Mounting Type A)

Section 2: Shaft Size

8: Solid shaft with Dia at 8 mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 5000

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
E: Rear entry cable

▲Standard cable length is 2M

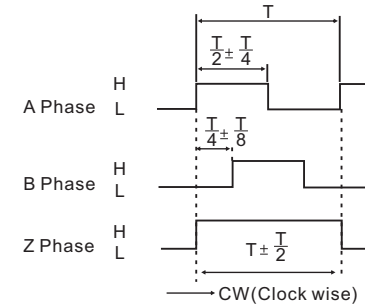
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 10N
Shaft loading thrust: 20N
Weight: Approx 0.25KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 1.5 x 10⁻³ N.m Maximum

Output circuits and wave forms

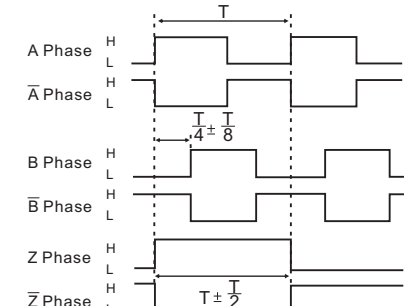
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



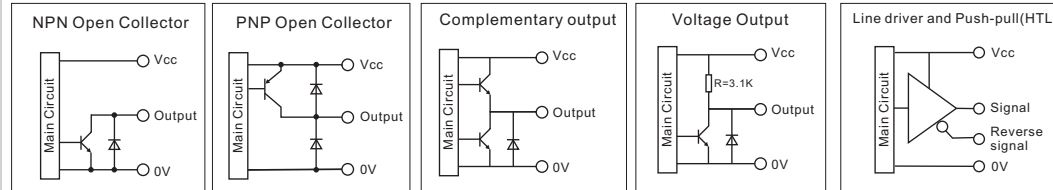
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



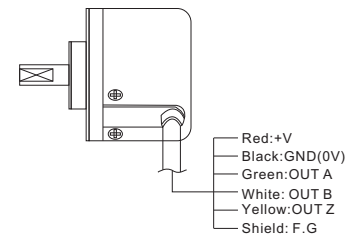
→ CW(Clock wise)

Output circuits

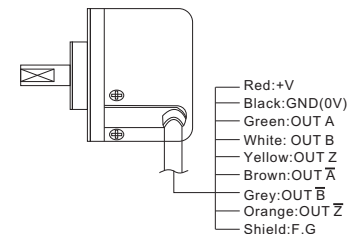


Wiring Details

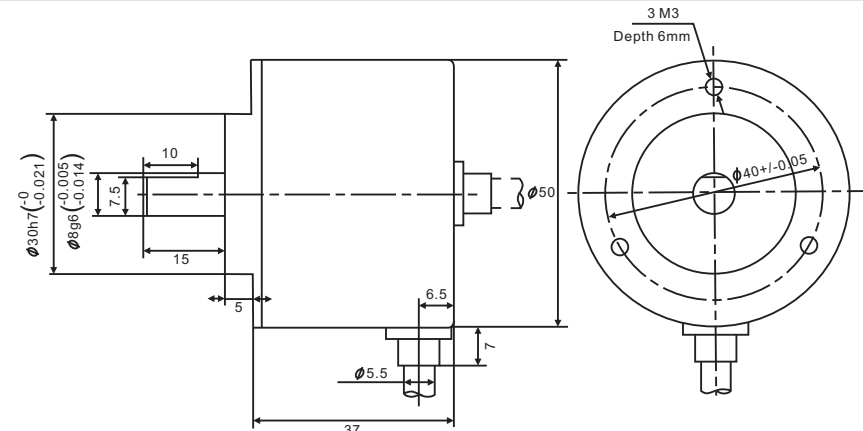
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



M50SA(Mounting Type A)

Incremental 58-mm-Dia. Rotary Encoder

M58SA/M58SB/M58SC/M58SD

General purpose encoder with external Diameter of 58mm



- Incremental model
- External diameter of 58mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 5/6/10 mm

Ordering Information

M58SA/M58SB/M58SC/M58SD

1 2 3 4 5 6 7

Section 1: Basic model name

- M58SA:** 58mm Rotary encoder (Mounting type A)
- M58SB:** 58mm Rotary encoder (Mounting type B)
- M58SC:** 58mm Rotary encoder (Mounting type C)
- M58SD:** 58mm Rotary encoder (Mounting type D)

Refer to drawings for the difference between M58SA/M58SB/M58SC/M58SD

Section 2: Shaft Size

- 5:** Solid shaft with Dia at 5 mm
- 6:** Solid shaft with Dia at 6 mm
- 10:** Solid shaft with Dia at 10 mm

Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
- 6:** A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY,6 phase**)
- K:** Push-Pull(**With inverted signal,6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable
- X:** Side entry plug

▲Standard cable length is 2M

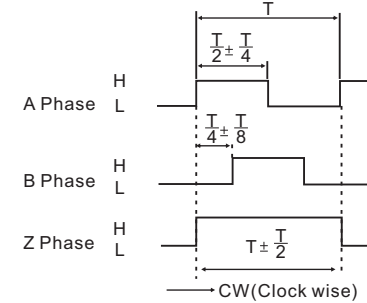
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-5400 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 30N
- Shaft loading thrust:** 40N
- Weight:** Approx 0.3KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 6 x 10⁻³ N.m Maximum

Output circuits and wave forms

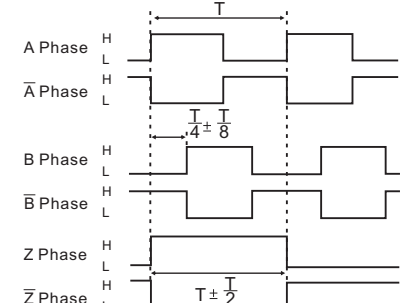
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



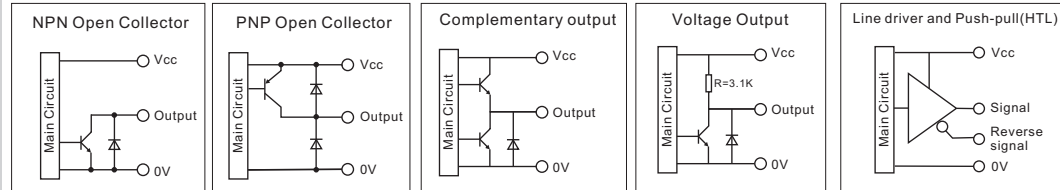
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



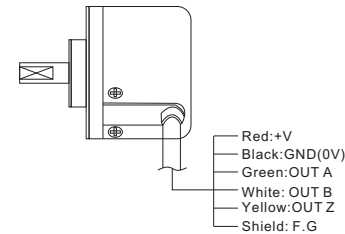
CW(Clock wise)

Output circuits

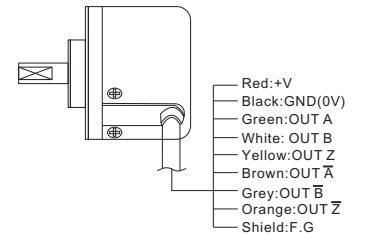


Wiring Details

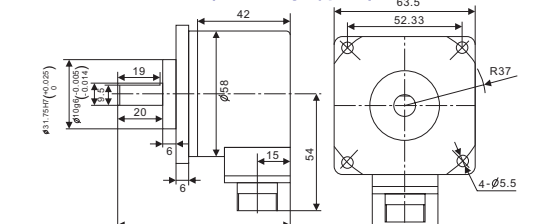
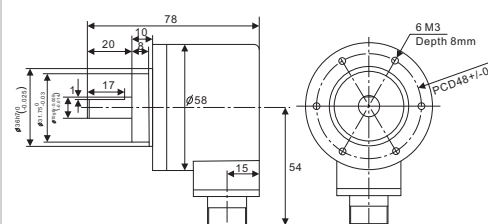
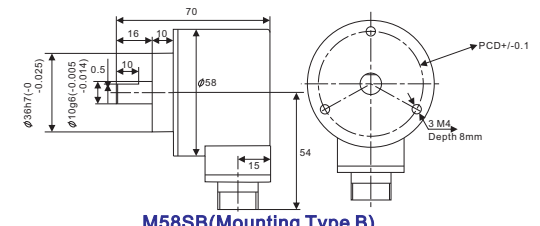
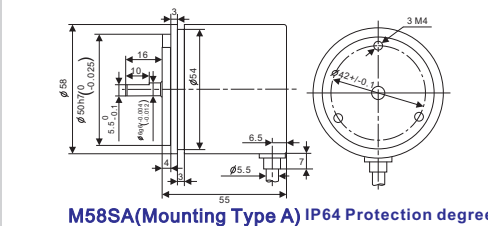
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions



Incremental 68-mm-Dia. Rotary Encoder

M68SA/M68SB

with mounting flange

General purpose encoder with external Diameter of 68mm



- Incremental model
- External diameter of 68mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 15 mm
- **With mounting flange**

Ordering Information

M68SA/M68SB-

1 2 3 4 5 6 7

Section 1: Basic model name

M68SA: 68mm Rotary Encoder(Shape A)
M68SB: 68mm Rotary Encoder(Shape B)

Refer to drawings for the difference between M68SA/M68SB

Section 2: Shaft Size

15: Solid shaft with Dia at 15 mm

Section 3: Resolution

10: 10 ppr
 20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry plug

▲Standard cable length is 2M

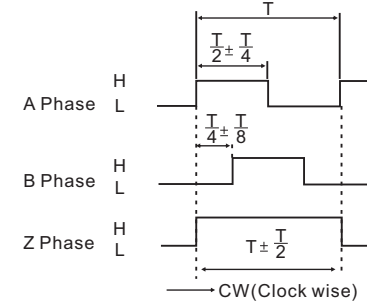
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 50N
Shaft loading thrust: 85N
Weight: Approx 0.6KG
Protection level: IP54(IP64 available on request)
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5 x 10⁻² N.m Maximum

Output circuits and wave forms

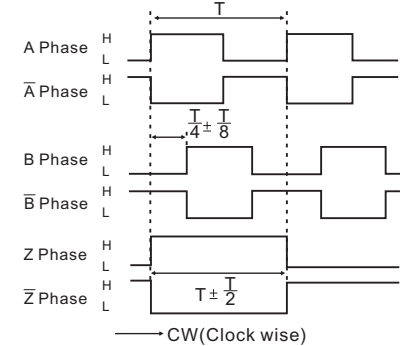
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



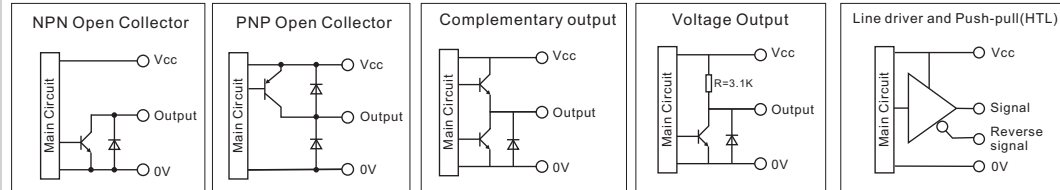
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



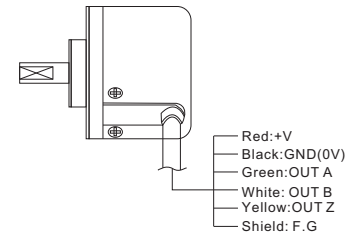
→ CW(Clock wise)

Output circuits

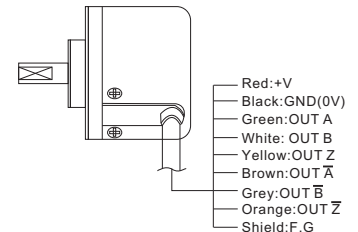


Wiring Details

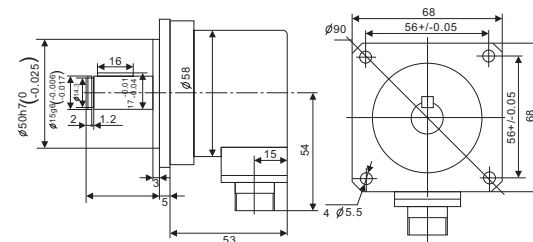
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)

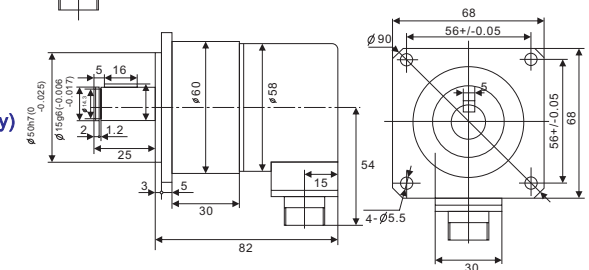


Mounting and Dimensions



M68SA(Shape A, Shorter encoder Body, popular)

M68SB(Shape B, Longer encoder body)



Incremental 70-mm-Dia. Rotary Encoder

M70SA

General purpose encoder with external Diameter of 70mm

- Incremental model
- External diameter of 70mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 8 mm



Ordering Information

M70SA -

1 2 3 4 5 6 7

Section 1: Basic model name

M70SA: 70mm Rotary Encoder(Mounting Type A)

Section 2: Shaft Size

8: Solid shaft with Dia at 8 mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry plug

▲ **Standard cable length is 2M**

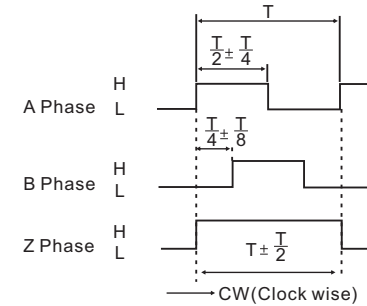
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 25N
Shaft loading thrust: 35N
Weight: Approx 0.38KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5 x 10⁻³ N.m Maximum

Output circuits and wave forms

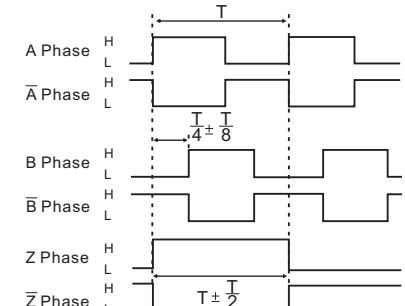
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



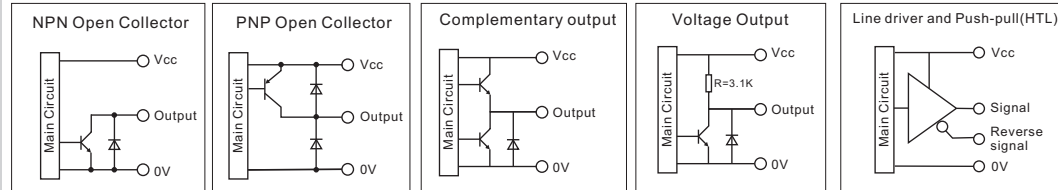
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



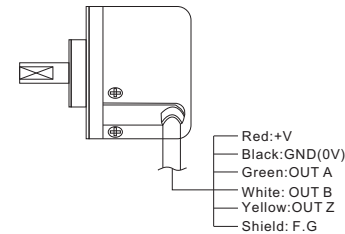
CW(Clock wise)

Output circuits

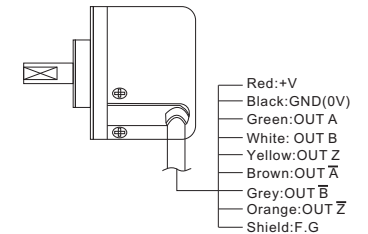


Wiring Details

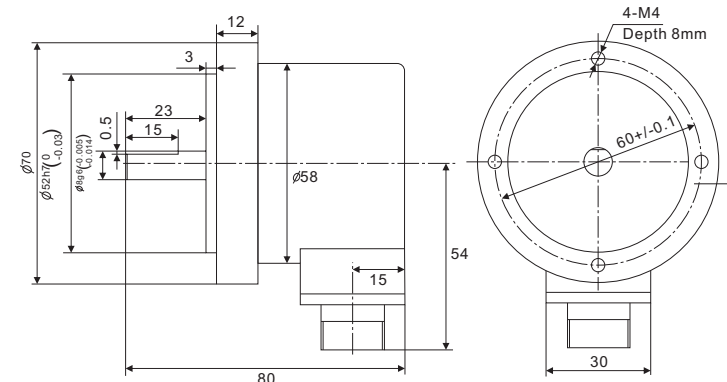
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



M70SA(Mounting Type A)

Incremental 78-mm-Dia. Rotary Encoder

M78SA/M78SB

General purpose encoder with external Diameter of 78mm

- Incremental model
- External diameter of 78mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 10 mm



Ordering Information

M78SA/M78SB-

1 2 3 4 5 6 7

Section 1: Basic Model Name

M78SA: 78mm Rotary Encoder(Mounting Type A)
M78SB: 78mm Rotary Encoder(Mounting Type B)

Refer to drawings for the difference between M78SA/M78SB

Section 2: Shaft Size

10: Solid shaft with Dia at 10 mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry plug

▲Standard cable length is 2M

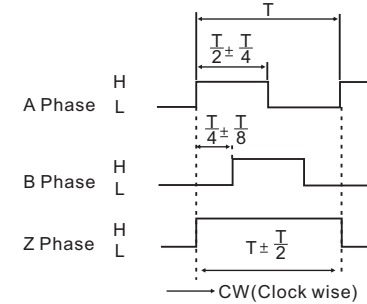
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 25N
Shaft loading thrust: 35N
Weight: Approx 0.42KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5 x 10⁻³ N.m Maximum

Output circuits and wave forms

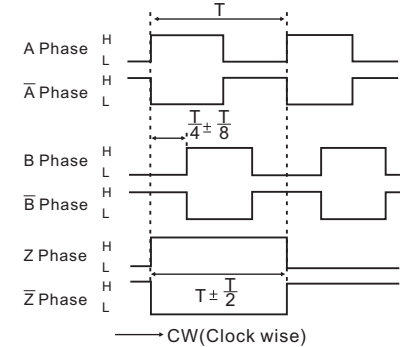
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

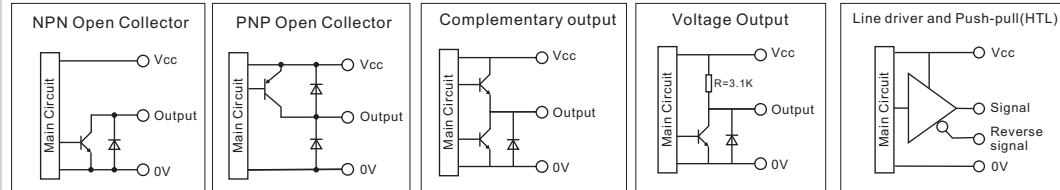


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

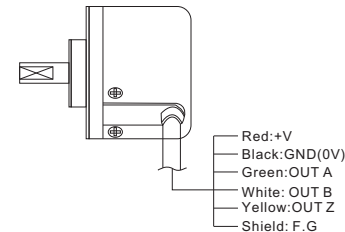


Output circuits

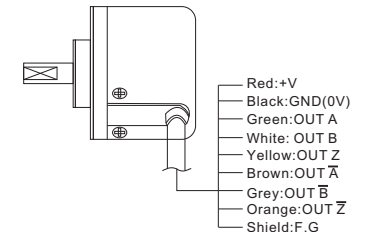


Wiring Details

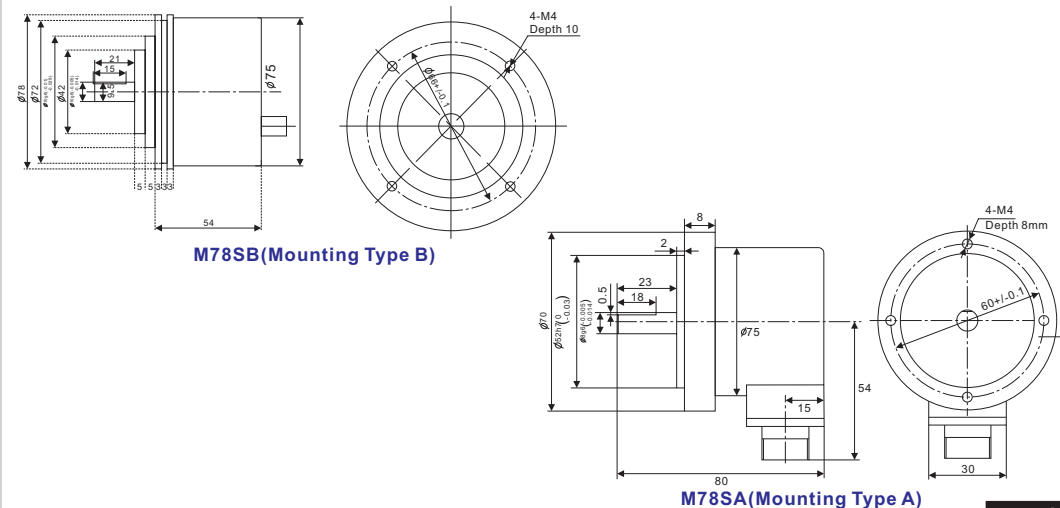
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions

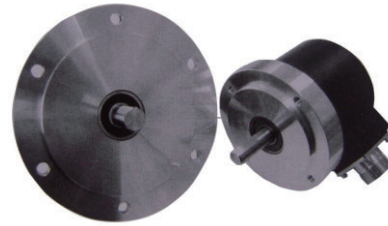


Incremental 115-mm-Dia. Rotary Encoder

M115SA

General purpose encoder with external Diameter of 115mm

- Incremental model
- External diameter of 115mm
- Resolution up to 5400 ppr.
- Various output type
- Solid shaft with Dia at 11 mm



Ordering Information

M115SA-

1 2 3 4 5 6 7

Section 1: Basic model name

M115SA: 115mm Rotary Encoder(Mounting Type A)

Section 2: Shaft Size

11: Solid shaft with Dia at 11 mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry plug

▲Standard cable length is 2M

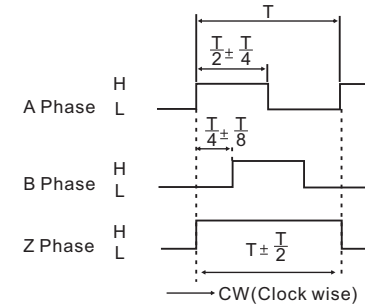
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 25N
Shaft loading thrust: 35N
Weight: Approx 0.65KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-200 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5 x 10⁻³ N.m Maximum

Output circuits and wave forms

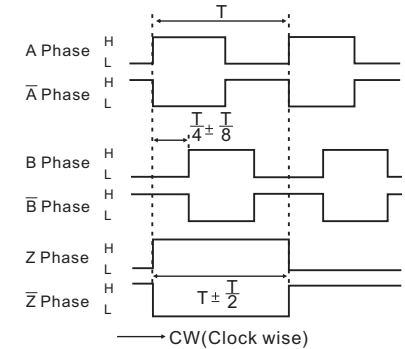
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

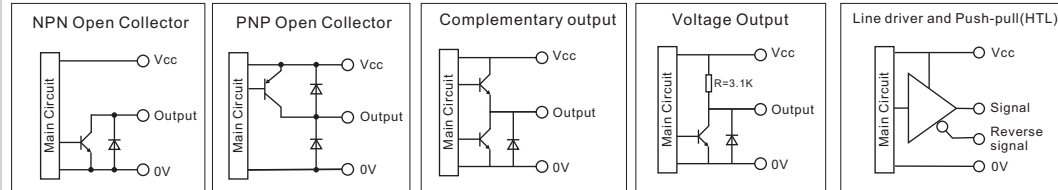


CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)

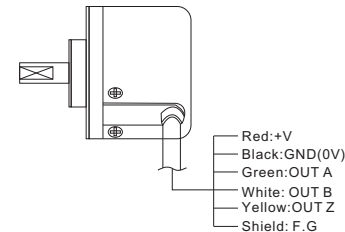


Output circuits

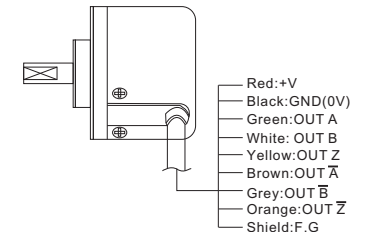


Wiring Details

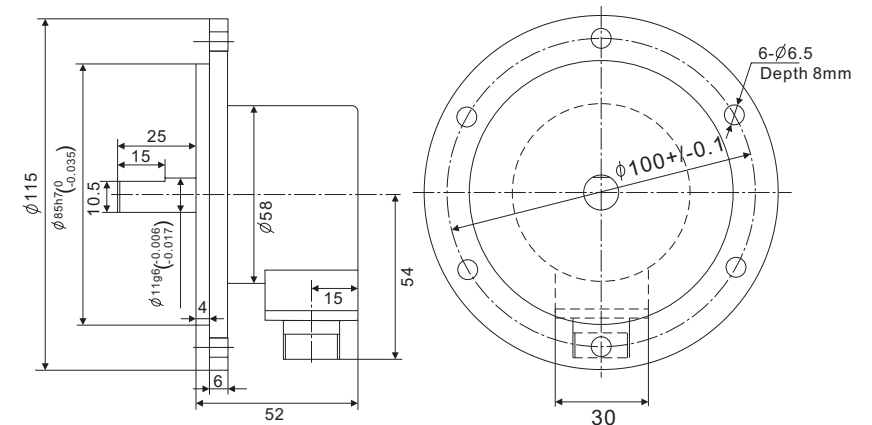
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions



M115SA(Mounting Type A)

Incremental 38 mm Dia. Rotary Encoder

M38H/M38HB

Hollow shaft type/Built-in type

General purpose Encoder with External Diameter of 38mm

- Incremental model
- External diameter of 38mm
- Resolution up to 3600 ppr.
- Various output type
- Hollow type and built-in type



Ordering Information

M38H/M38HB-

Section 1: Basic model name

- M38H:** 38mm Rotary Encoder(Hollow Shaft)
M38HB: 38mm Rotary Encoder(Semi-Hollow Shaft)
 Refer to drawings for the difference between M38H/M38HB

Section 2: Inner shaft size

- 5:** 5mm
6: 6mm
6.35: 6.35mm Standard bore size is 8mm
8: 8mm
10: 10mm
12: 12mm

Section 3: Resolution

- 10:** 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable

▲Standard cable length is 2M

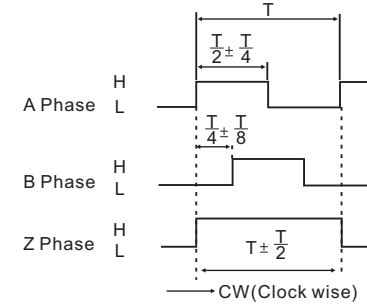
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 1-3600 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 4000 rpm
Shaft loading radial: 10N
Shaft loading thrust: 20N
Weight: Approx 0.2KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 1.5 x 10⁻³ N.m Maximum

Output circuits and wave forms

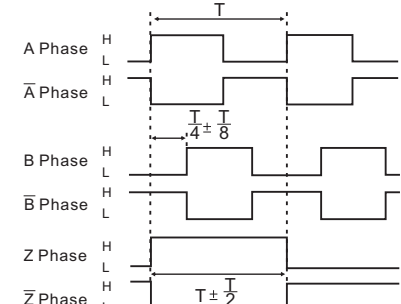
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



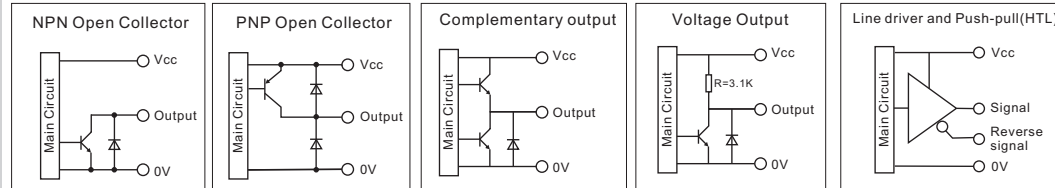
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



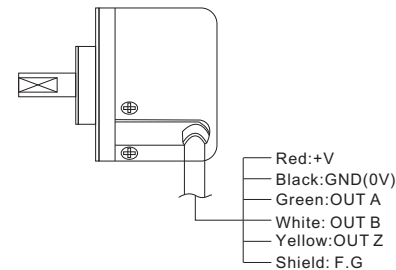
CW(Clock wise)

Output circuits

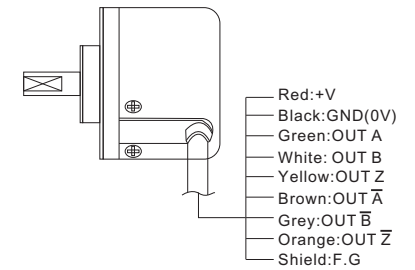


Wiring Details

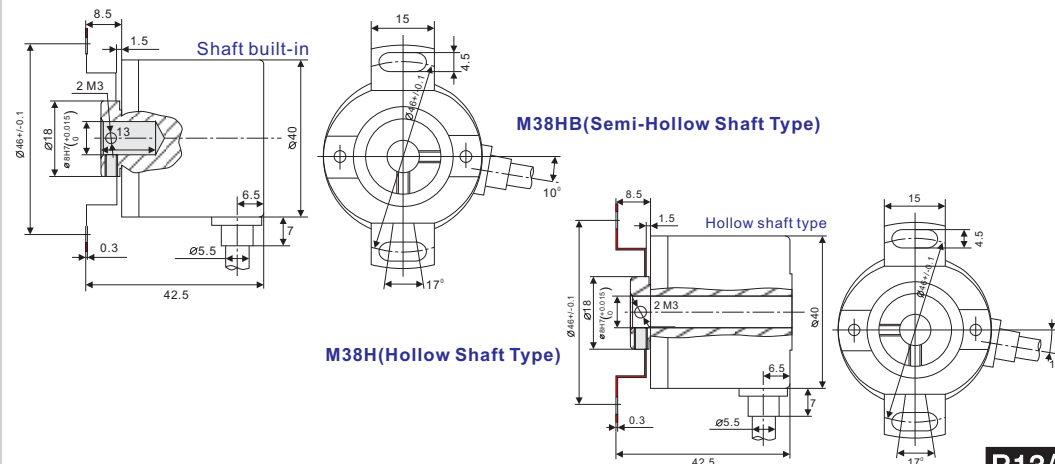
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions



Incremental 40 mm Dia. Rotary Encoder

M40H

Hollow shaft type

General purpose Encoder with External Diameter of 40mm

- Incremental model
- External diameter of 40mm
- Resolution up to 3600 ppr.
- Various output type
- Hollow type



Ordering Information

M40H-

1 2 3 4 5 6 7

Section 1: Basic model name

M40H: 40mm Rotary Encoder(Hollow Shaft)

Section 2: Inner shaft size

5: 5mm
6: 6mm
6.35: 6.35mm Standard size is 12mm
8: 8mm
10: 10mm
12: 12mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 3600

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY,6 phase**)
K: Push-Pull(**With inverted signal,6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable

▲Standard cable length is 2M

Ratings and Specifications

Power supply: 5 VDC / 8-30 VDC

Resolution: 1-3600 ppr

Current consumption: 100mA(Load disconnected)

Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)

Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)

Frequency: 100K HZ Frequency=RPM*Resolution/60

Maximum permissible speed: 4000 rpm

Shaft loading radial: 10N

Shaft loading thrust: 20N

Weight: Approx 0.2KG

Protection level: IP50

Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)

Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions

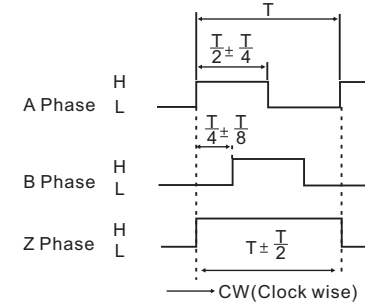
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions

Starting torque: 1.5 x 10⁻³ N.m Maximum

Output circuits and wave forms

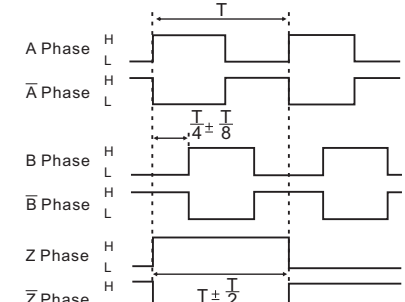
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



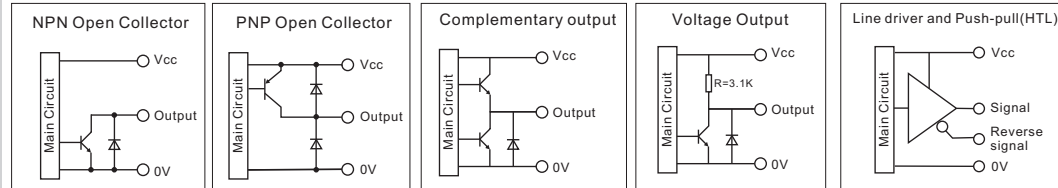
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



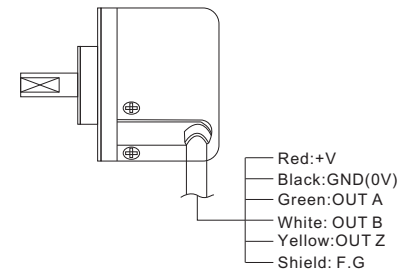
CW(Clock wise)

Output circuits

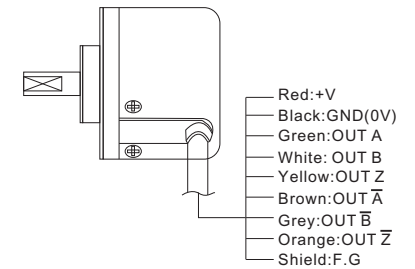


Wiring Details

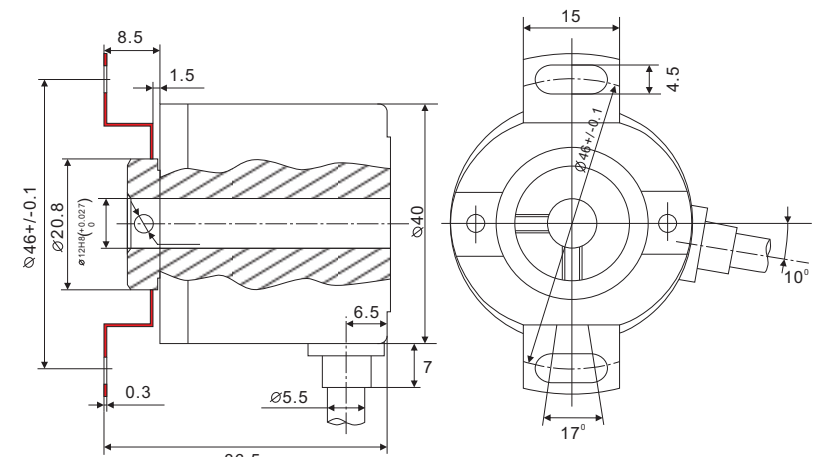
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions



M40H(Hollow Shaft Type)

Incremental 50 mm Dia. Rotary Encoder

M50H/M50HB

Hollow shaft type/Built-in type

General purpose Encoder with External Diameter of 50mm



- Incremental model
- External diameter of 50mm
- Resolution up to 5400 ppr.
- Various output type
- Hollow type and built-in type

Ordering Information

M50H/M50HB-

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Section 1: Basic model name

- M50H:** 50mm Rotary Encoder(Hollow Shaft)
- M50HB:** 50mm Rotary Encoder(Semi-Hollow Shaft)

Section 2: Inner shaft size

- 12:** 12mm
- 8:** 8mm
- 9.52:** 9.52mm
- 10:** 10mm

Section 3: Resolution

- 10:** 10 ppr
- 20:** 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
- 6:** A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
- N:** NPN Open collector
- P:** PNP Open collector
- V:** Voltage output
- L:** Line driver(**Power source 5VDC ONLY, 6 phase**)
- K:** Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
- 5:** 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable

▲Standard cable length is 2M

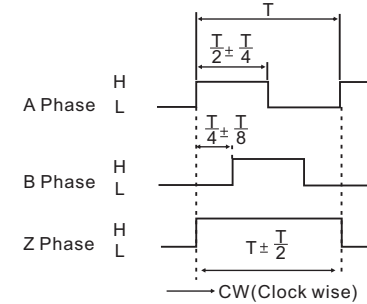
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-5400 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 6000 rpm
- Shaft loading radial:** 25N
- Shaft loading thrust:** 35N
- Weight:** Approx 0.25KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 5x 10⁻² N.m Maximum

Output circuits and wave forms

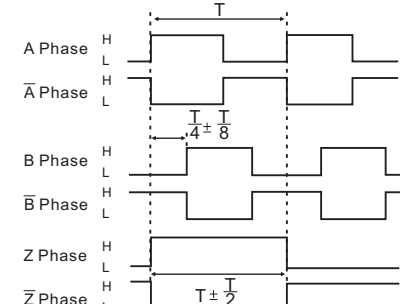
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



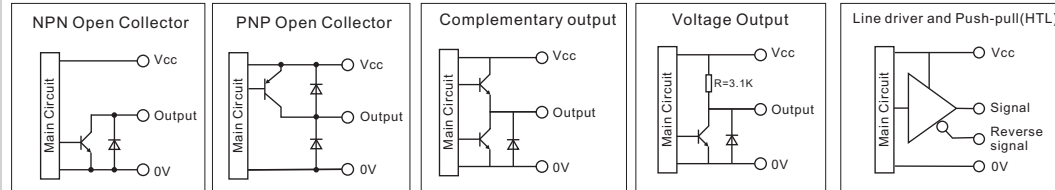
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



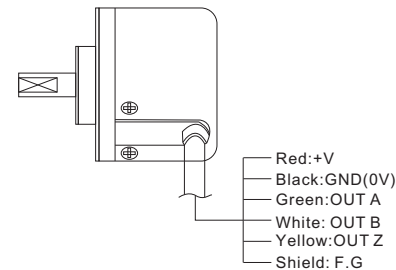
→ CW(Clock wise)

Output circuits

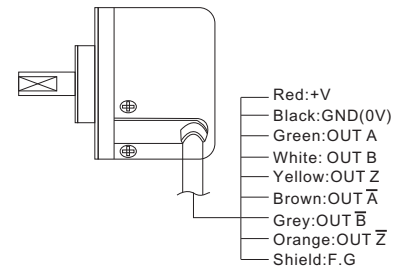


Wiring Details

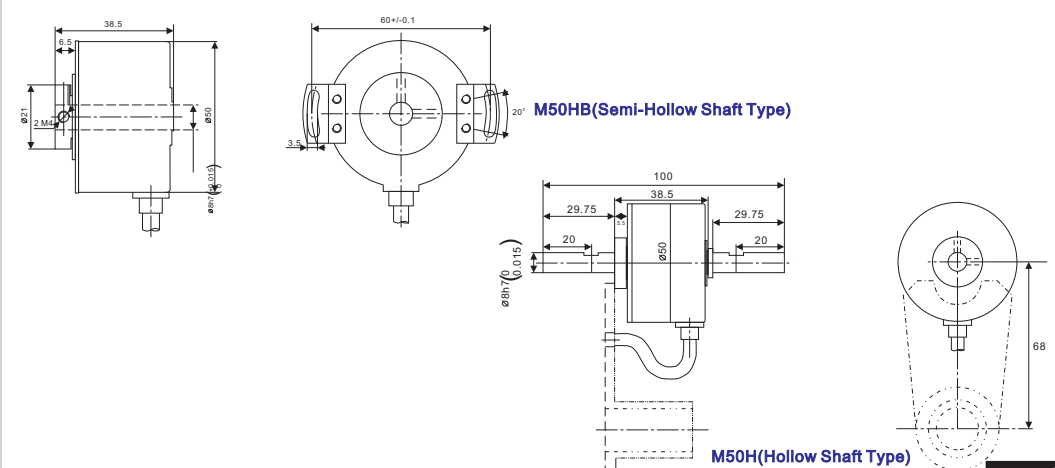
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



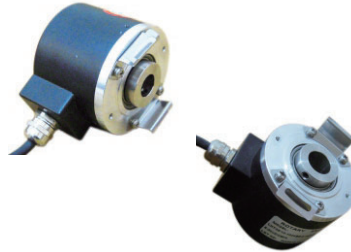
Incremental 58-mm-Dia. Rotary Encoder

M58H/M58HB

Hollow shaft type/Built-in Type

General purpose Encoder with External Diameter of 58mm

- Incremental model
- External diameter of 58mm
- Resolution up to 5400 ppr.
- Various output type
- Hollow shaft type and built-in type



Ordering Information

M58H/M58HB-

1 2 3 4 5 6 7

Section 1: Basic model name

- M58H:** 58mm Rotary Encoder(Hollow Shaft Type)
M58HB: 58mm Rotary Encoder(Semi-Hollow Shaft Type)

Section 2: Inner shaft size

- 6:** 6mm **12:** 12mm
8: 8mm **14:** 14mm
9.52: 9.52mm **15:** 15mm
10: 10mm

Section 3: Resolution

- 10:** 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 5400

Not indicated resolution is customizable

Section 4: Output phase

- 3:** A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

- T:** Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

- 30:** 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Side entry cable
X: Side entry plug
▲Standard cable length is 2M

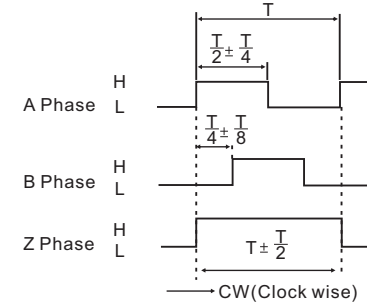
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-5400 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 6000 rpm
Shaft loading radial: 30N
Shaft loading thrust: 50N
Weight: Approx 0.36KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5x 10⁻² N.m Maximum

Output circuits and wave forms

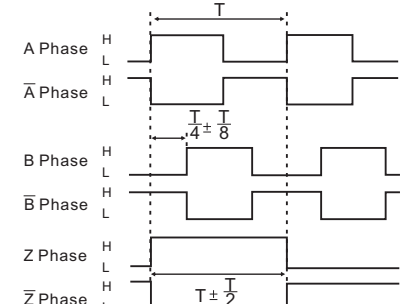
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



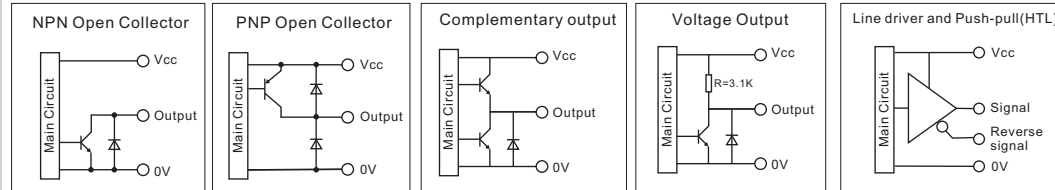
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



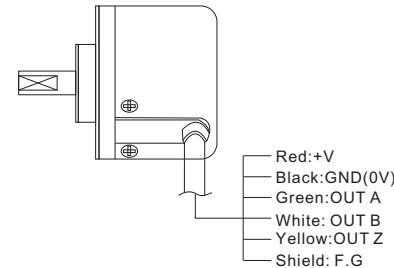
CW(Clock wise)

Output circuits

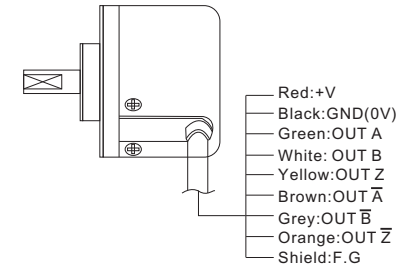


Wiring Details

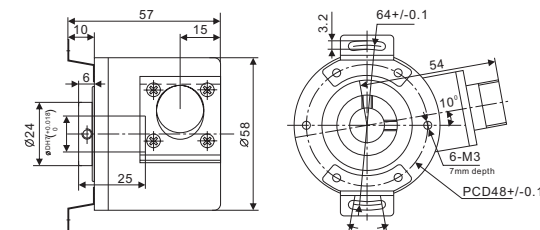
Complementary/Open collector(NPN/PNP)/Voltage output



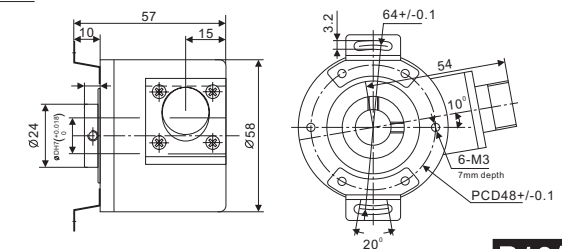
Line Driver/ Push-pull(HTL with reverse signal)



Mounting and Dimensions



M58HB(Semi Hollow Shaft Type)



M58H(Hollow Shaft Type)

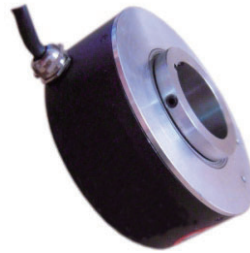
Incremental 80-mm-Dia. Rotary Encoder

M80H

Hollow shaft type

General purpose Encoder with External Diameter of 80mm

- Incremental model
- External diameter of 80mm
- Resolution up to 2500 ppr.
- Various output type
- Hollow shaft type



Ordering Information

M80H

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Section 1: Basic model name

M80H: 80mm Rotary Encoder(Hollow Shaft)

Section 2: Inner shaft size

- | | |
|------------|-------------|
| 25: | 25mm |
| 28: | 28mm |
| 30: | 30mm |
| 32: | 32mm |
| 35: | 35mm |

Section 3: Resolution

- | | |
|------------|--------|
| 10: | 10 ppr |
| 20: | 20 ppr |

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 2500

Not indicated resolution is customizable

Section 4: Output phase

- | | |
|-----------|-------------------------------------|
| 3: | A B Z |
| 6: | A \bar{A} B \bar{B} Z \bar{Z} |

Section 5: Output type

- | | |
|-----------|---|
| T: | Push-pull(also known as totem-pull) |
| N: | NPN Open collector |
| P: | PNP Open collector |
| V: | Voltage output |
| L: | Line driver(Power source 5VDC ONLY,6 phase) |
| K: | Push-Pull(With inverted signal,6 phase) |

Section 6: Power Supply

- | | |
|------------|------------------|
| 30: | 5-30 VDC(+/- 5%) |
| 5: | 5 VDC(+/- 5%) |

Section 7: Cable outgoing type

- | | |
|-----------|------------------|
| G: | Side entry cable |
|-----------|------------------|

▲ Standard cable length is 2M

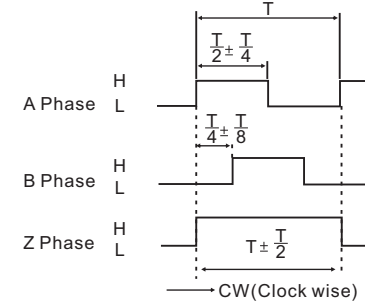
Ratings and Specifications

- Power supply: 5 VDC / 8-30 VDC
- Resolution: 5-2500 ppr
- Current consumption: 100mA(Load disconnected)
- Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency: 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed: 2500 rpm
- Shaft loading radial: 20N
- Shaft loading thrust: 40N
- Weight: Approx 0.5KG
- Protection level: IP50
- Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque: 5×10^{-2} N.m Maximum

Output circuits and wave forms

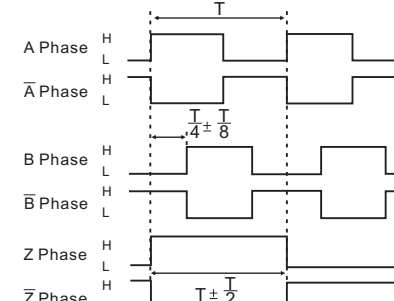
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



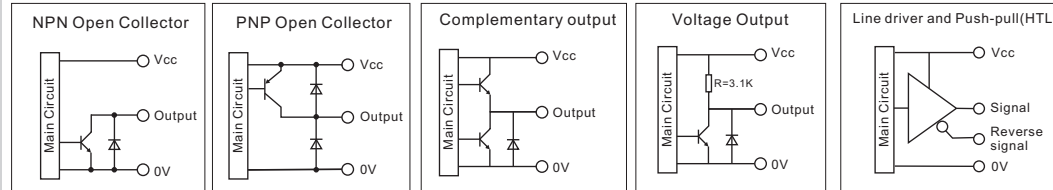
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



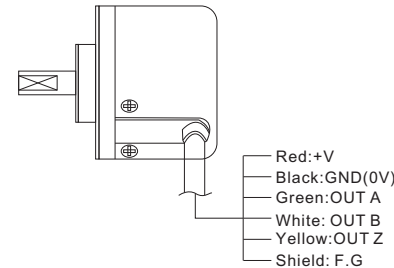
→ CW(Clock wise)

Output circuits

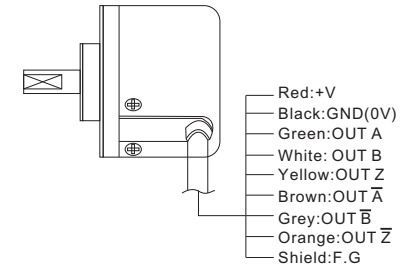


Wiring Details

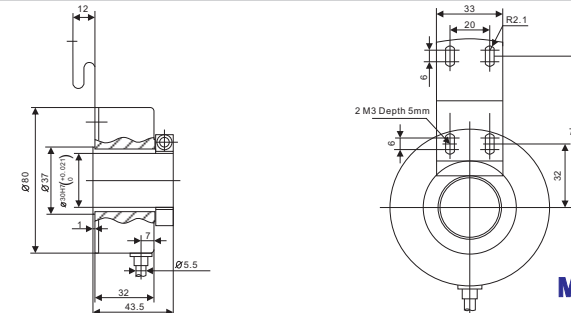
Complementary/Open collector(NPN/PNP)/Voltage output



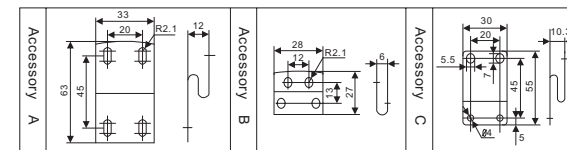
Line Driver/Push-pull(HTL with reverse signal)



Mounting and Dimensions



M80H(Hollow Shaft Type)



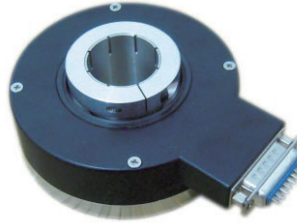
Incremental 100-mm-Dia. Rotary Encoder

M100H

Hollow shaft type

Encoder for elevators
External Diameter of 100mm

- Incremental model
- External diameter of 100mm
- Resolution up to 2500 ppr.
- Various output type
- Hollow shaft type
- D-Sub Connector available



Ordering Information

M100H-

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Section 1: Basic model name

M100H: 100mm Rotary Encoder(Hollow Shaft Type)

Section 2: Inner shaft size

35: 35mm
38: 38mm
40: 40mm
42: 42mm
45: 45mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
200 225 240 250 256 300 360 400 450
480 500 512 600 625 720 750 800 900
1000 1024 1080 1200...up to 2500

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry D-Sub Connector

▲ **Standard cable length is 2M**

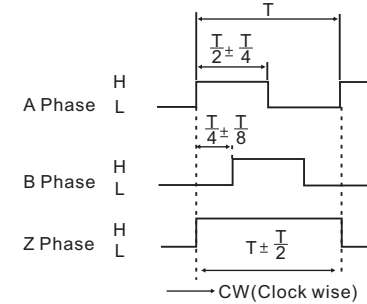
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-2500 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 2500 rpm
Shaft loading radial: 20N
Shaft loading thrust: 40N
Weight: Approx 0.5KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5x 10⁻² N.m Maximum

Output circuits and wave forms

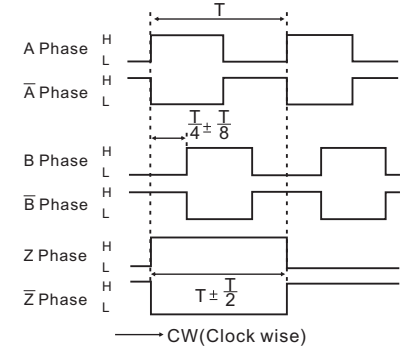
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



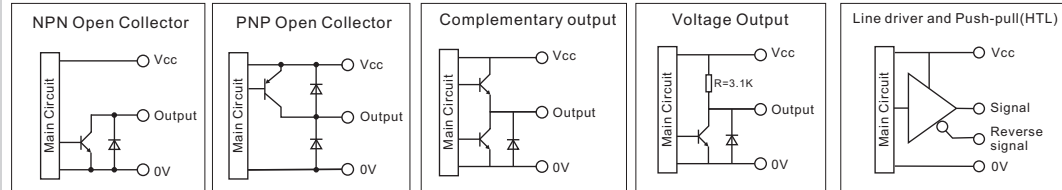
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



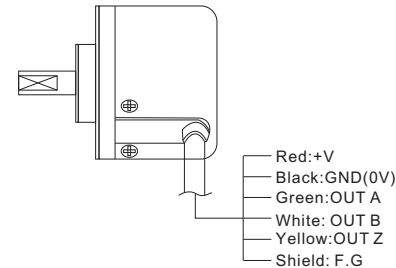
→ CW(Clock wise)

Output circuits

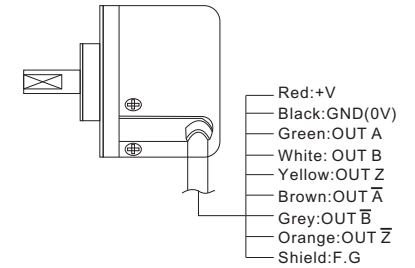


Wiring Details

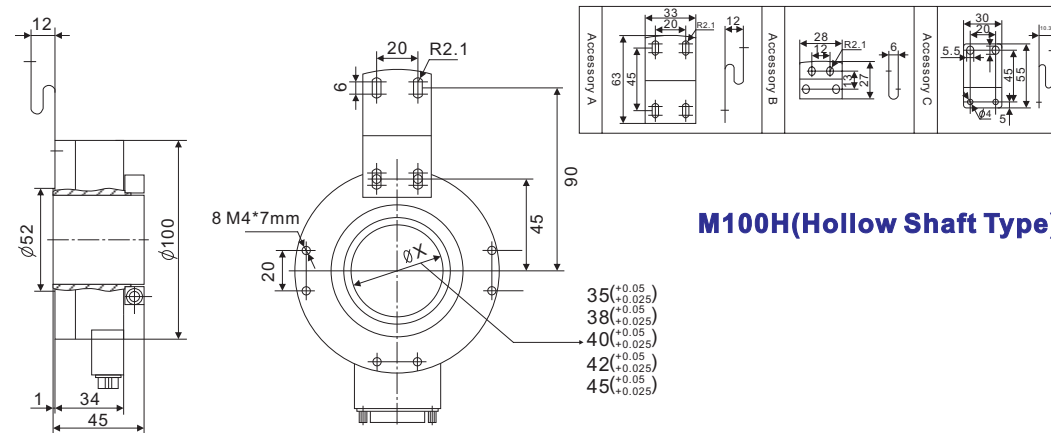
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/HTL with reverse signal



Mounting and Dimensions



M100H(Hollow Shaft Type)

Incremental 120-mm-Dia. Rotary Encoder

M120H

Hollow shaft type

External Diameter of 120mm

- Incremental model
- External diameter of 120mm
- Resolution up to 4096 ppr.
- Various output type
- Hollow shaft type
- D-Sub Connector available



Ordering Information

M120H-

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Section 1: Basic model name

M120H: 120mm Rotary Encoder(Hollow Shaft)

Section 2: Inner shaft size

50: 50mm
55: 55mm
60: 60mm
65: 65mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40	50	60	80	100	120	125	150	
200	225	240	250	256	300	360	400	450
480	500	512	600	625	720	750	800	900
1000	1024	1080	1200	...up to 4096				

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY, 6 phase**)
K: Push-Pull(**With inverted signal, 6 phase**)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry D-Sub Connector

▲ **Standard cable length is 2M**

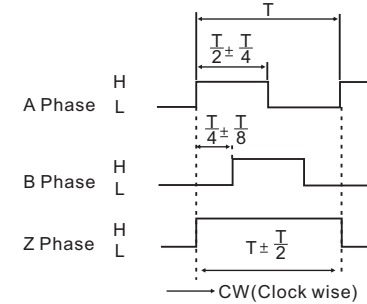
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
- Resolution:** 5-4096 ppr
- Current consumption:** 100mA(Load disconnected)
- Load current:** 50mA maximum per channel 20mA maximum per channel (Line driver output)
- Output type:** NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
- Frequency:** 100K HZ Frequency=RPM*Resolution/60
- Maximum permissible speed:** 3000 rpm
- Shaft loading radial:** 20N
- Shaft loading thrust:** 40N
- Weight:** Approx 0.65KG
- Protection level:** IP50
- Temperature:** operation(-10°C~+70°C), storage(-30°C~+85°C)
- Vibration resistance:** 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
- Shock resistance:** 980m/s, 6m/s 2 times each in X, Y, and Z directions
- Starting torque:** 5x 10⁻² N.m Maximum

Output circuits and wave forms

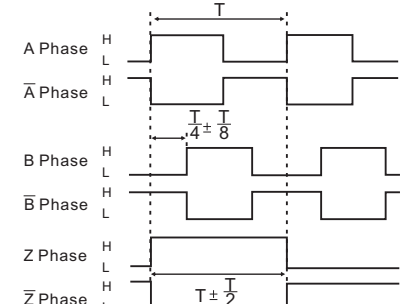
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



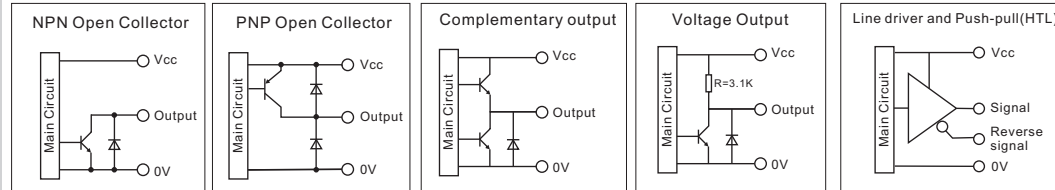
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



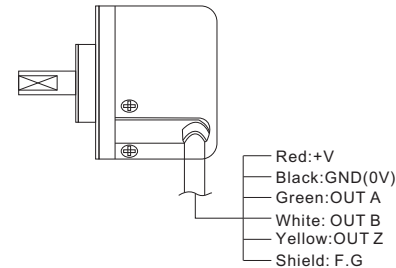
→ CW(Clock wise)

Output circuits

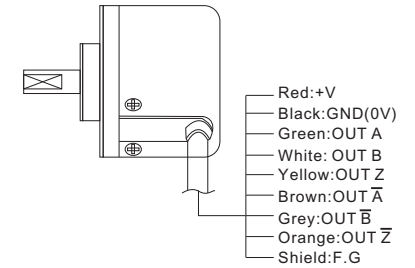


Wiring Details

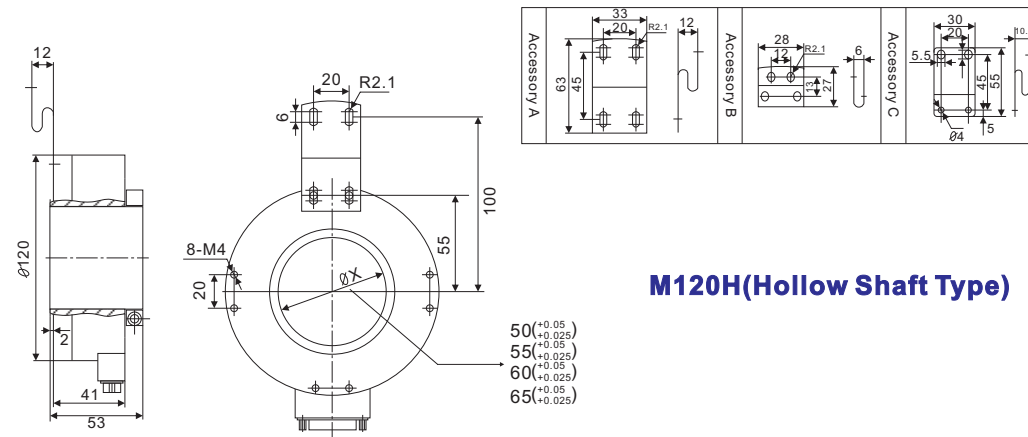
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/HTL with reverse signal



Mounting and Dimensions



M120H(Hollow Shaft Type)

Incremental 150-mm-Dia. Rotary Encoder

M150H

Hollow shaft type

External Diameter of 150mm



- Incremental model
- External diameter of 150mm
- Resolution up to 4096 ppr.
- Various output type
- Hollow shaft type

Ordering Information

M150H-□□□□□□□

1 2 3 4 5 6 7

Section 1: Basic model name

M150H: 150mm Rotary Encoder(Hollow Shaft)

Section 2: Inner shaft size

60: 60mm
65: 65mm
70: 70mm
75: 75mm

Section 3: Resolution

10: 10 ppr
20: 20 ppr

40 50 60 80 100 120 125 150
 200 225 240 250 256 300 360 400 450
 480 500 512 600 625 720 750 800 900
 1000 1024 1080 1200...up to 4096

Not indicated resolution is customizable

Section 4: Output phase

3: A B Z
6: A \bar{A} B \bar{B} Z Z \bar{Z}

Section 5: Output type

T: Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(Power source 5VDC ONLY, 6 phase)
K: Push-Pull(With inverted signal, 6 phase)

Section 6: Power Supply

30: 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

G: Side entry cable
X: Side entry D-Sub Connector

▲ Standard cable length is 2M

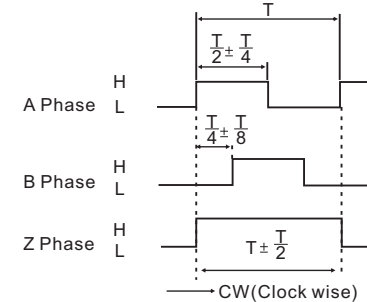
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 5-4096 ppr
Current consumption: 100mA(Load disconnected)
Load current: 50mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver/Push-Pull(HTL with reverse signal)
Frequency: 100K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 2000 rpm
Shaft loading radial: 20N
Shaft loading thrust: 40N
Weight: Approx 0.65KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-30°C~+85°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 980m/s, 6m/s 2 times each in X, Y, and Z directions
Starting torque: 5x 10⁻² N.m Maximum

Output circuits and wave forms

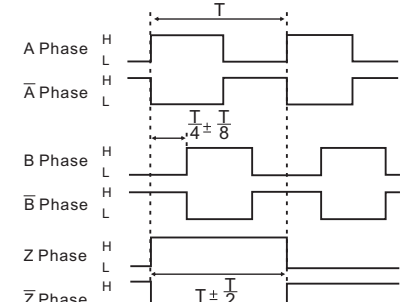
Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output



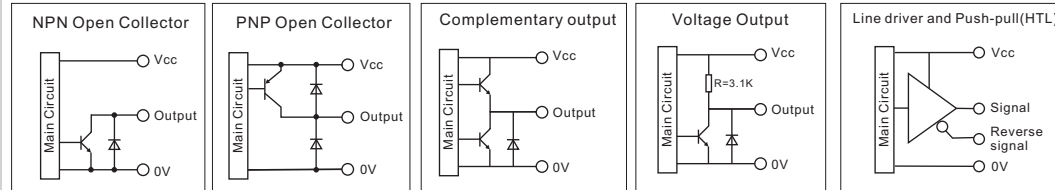
CW: As viewed from the shaft

Line Driver(RS422)/Push-pull(HTL with reverse signal)



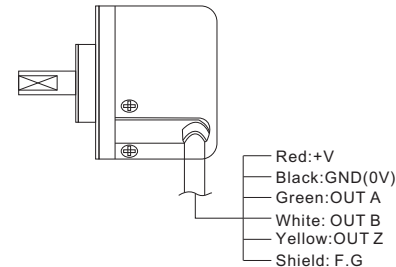
CW(Clock wise)

Output circuits

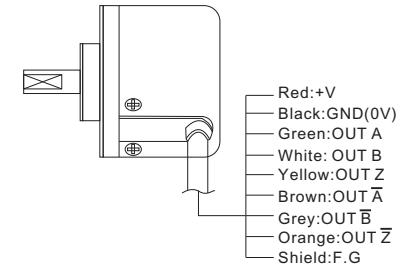


Wiring Details

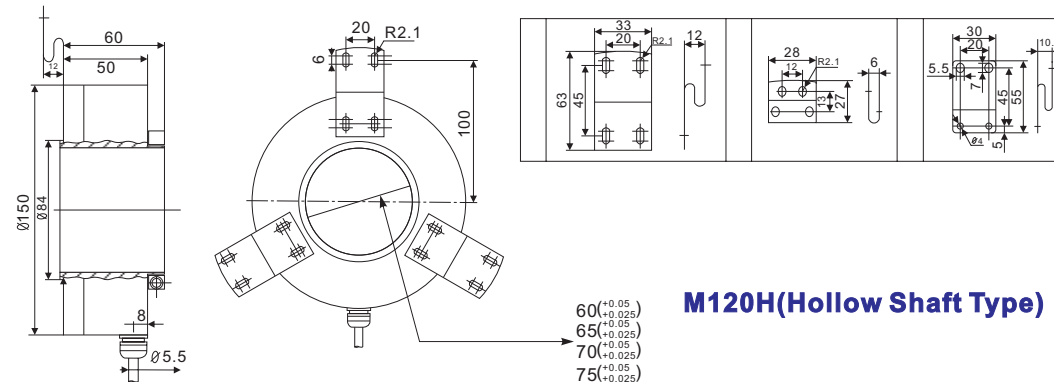
Complementary/Open collector(NPN/PNP)/Voltage output



Line Driver/HTL with reverse signal



Mounting and Dimensions



M120H(Hollow Shaft Type)

Incremental 60&80-mm-Dia. Manual Rotary Encoder

SM60/SM80

Manual handled type

External Diameter of 60mm&80mm

- Incremental model
- External diameter of 60mm&80mm, 25mm&28mm length
- Resolution available with 25/50/100 ppr.
- Various output type
- Connection terminal at the back
- Output phase A B



Ordering Information

SM60

1 2 3 4 5 6 7

Section 1: Basic model name

- SM60:** Manual handle encoder(60mm external Dia)
SM80: Manual handle encoder(60mm external Dia)

Section 2: Resolution

- 25:** 25 ppr
50: 50 ppr
100: 100 ppr

Section 3: Output phase

- 2:** A B
4: A \bar{A} B \bar{B}

Section 4: Output type

- T:** Push-pull(also known as totem-pull)
N: NPN Open collector
P: PNP Open collector
V: Voltage output
L: Line driver(**Power source 5VDC ONLY,6 phase**)

Section 5: Power Supply

- 30:** 5-30 VDC(+/- 5%)
5: 5 VDC(+/- 5%)

Section 7: Cable outgoing type

- G:** Connector at the back

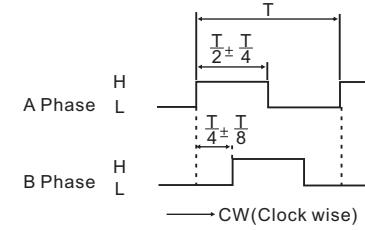
Ratings and Specifications

- Power supply:** 5 VDC / 8-30 VDC
Resolution: 25/50/100 ppr
Current consumption: 100mA(Load disconnected)
Load current: 30mA maximum per channel 20mA maximum per channel (Line driver output)
Output type: NPN/PNP open collector/Complementary/Voltage/Line Driver
Frequency: 20K HZ Frequency=RPM*Resolution/60
Maximum permissible speed: 600 rpm
Weight: Approx 0.3KG
Protection level: IP50
Temperature: operation(-10°C~+70°C), storage(-20°C~+70°C)
Vibration resistance: 50m/s, 10-65 HZ, 1 mm double amplitude for 2 hours each in X, Y, and Z directions
Shock resistance: 100m/s, 6m/s 2 times each in X, Y, and Z directions

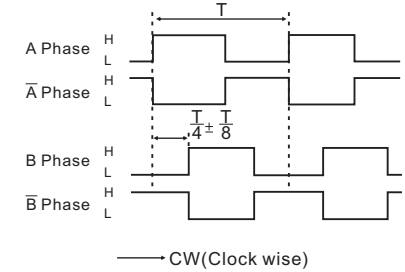
Output circuits and wave forms

Wave forms

Complementary/Open collector(NPN&PNP)/Voltage output

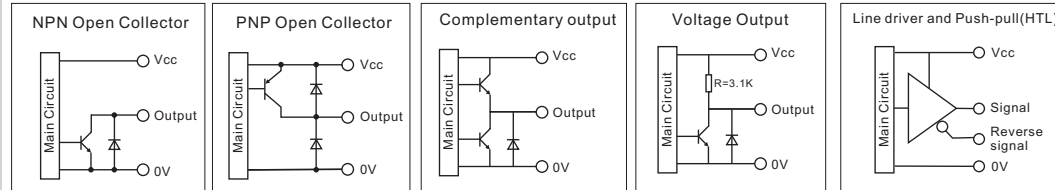


Line Driver(RS422)/Push-pull(HTL with reverse signal)

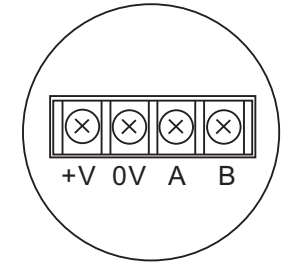
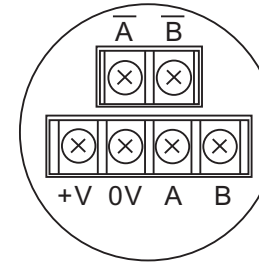


CW: As viewed from the shaft

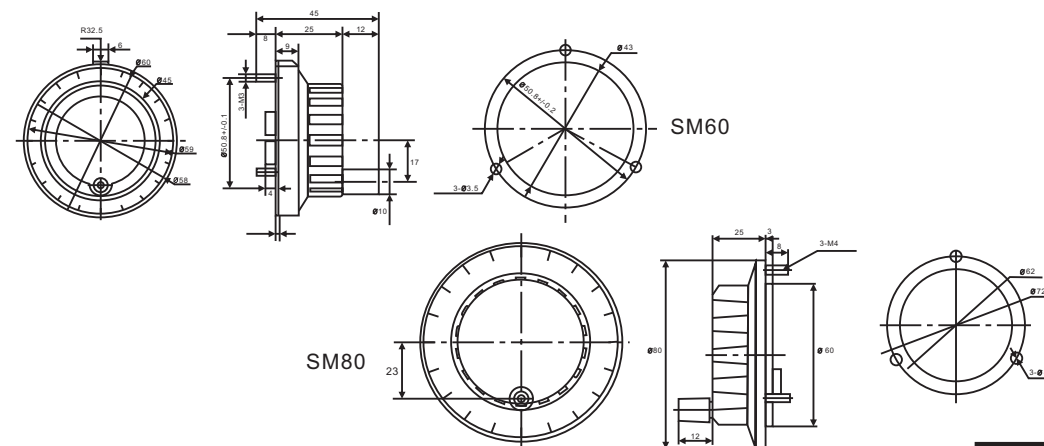
Output circuits



Wiring Details



Mounting and Dimensions



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www.maxwell-fa.com

max.liao@maxwell-fa.com

In case we didn't get your e-mail, please send your inquiry to our alternative mail 1298322983@qq.com

Thank you very much



Features:

- Dual display, 4 digits, 7 segments LED display
- 2 time intervals or 4 time intervals optional
- Maximum 4 outputs for 72mm*72mm and 96mm*96mm
- Maximum 2 outputs for 48mm*48mm
- Time unit: second, minute, hour
- Display format: 000, 00.0, 0.00
- Multiple timer trigger mode (auto run, manual trigger via switch)
- Configurable timer working pattern (sequence pattern or circular)
- Timer counting up or down configurable
- Output relay latching function
- Output relay pull-in/drop-out time configurable
- Optional features
 - RS485 Modbus RTU Communication
 - maximum 4 output relays for 96mm*96mm

Technical Specifications

Ordering Information

MWT100 (48mm*48mm)(Width*Height)	1 2 3 * 4 5
MWT700 (72mm*72mm)(Width*Height)	
MWT900 (96mm*96mm)(Width*Height)	

1: Power supply

96	85~265Vac 50/60HZ
24	24VDC/AC

2: Timer intervals

4	4 intervals
2	2 intervals

3: Output 1 [OP1]

N	Without output 1
R	Relay output
V	SSR Drive output

4: Output 2 [OP2]

N	Without output 2
R	Relay output
V	SSR Drive output

5: Output 3 [OP3] only available with MWT700 and MWT900

N	Without output 3
R	Relay output
V	SSR Drive output

6: Output 4 [OP4] only available with MWT700 and MWT900

N	Without output 4
R	Relay output
V	SSR Drive output

7: Communication

N	Without Communication
K	With Modbus RTU RS-485 communication

Example: MWT100-96-2-R-N-N-N-N
MWT100: size 48mm*96mm
96:Power supply 85~265Vac
2: 2 time intervals
R: OP1 output with relay
N: without OP2
N: without OP3
N: without OP4
N: without communication

Example: MWT100-96-4-R-R-N-N-N
MWT100: size 48mm*96mm
96:Power supply 85~265Vac
4: 2 time intervals
R: OP1 output with relay
R: OP2 output with relay
N: without OP3
N: without OP4
N: without communication

*Normally 2 intervals timer equipped with only 1 output

*Normally 4 intervals timer equipped with only 2 outputs

General Specifications

Electrical Specifications

Display	Dual 4 LED digits upper/lower display format
Timer intervals	2 intervals or 4 intervals
Number of outputs	maximum 4 outputs (relay or SSR drive)
Timer range	0.01 seconds to 999 hours
Timer output mode	On delay/off delay, relay status programmable
Timer triggering mode	Power on, front key pad, or via remote switch
Timer unit	Second, minute, hour
Timer reset mode	Auto reset or via remote switch
Timer counting mode	Counting up or down configurable
Power supply	85~265Vac or 24VDC/AC
Communication	RS-485 modbus RTU optional
Timer accuracy	<1 s/per day

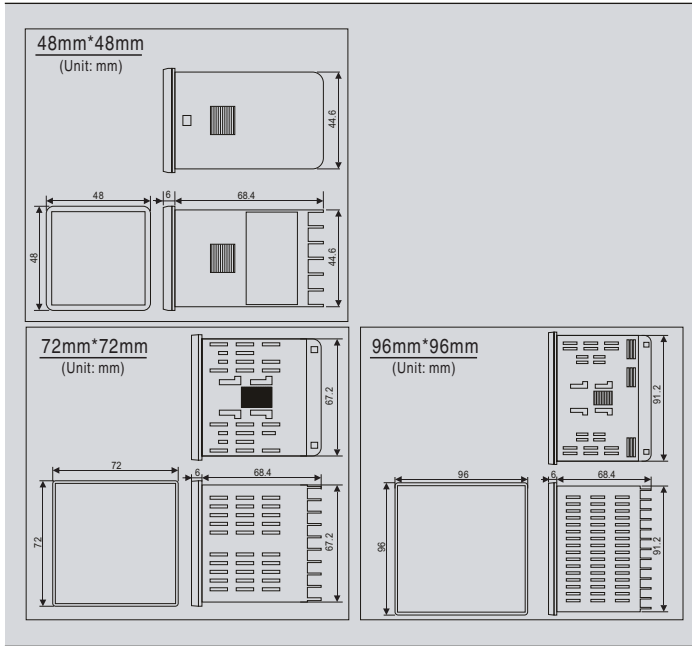
Mechanical Environmental Specifications

Size	48mm*48mm, 72mm*72mm, 96mm*96mm
Weight	0.17kg/ 0.27kg/0.27kg/0.35kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

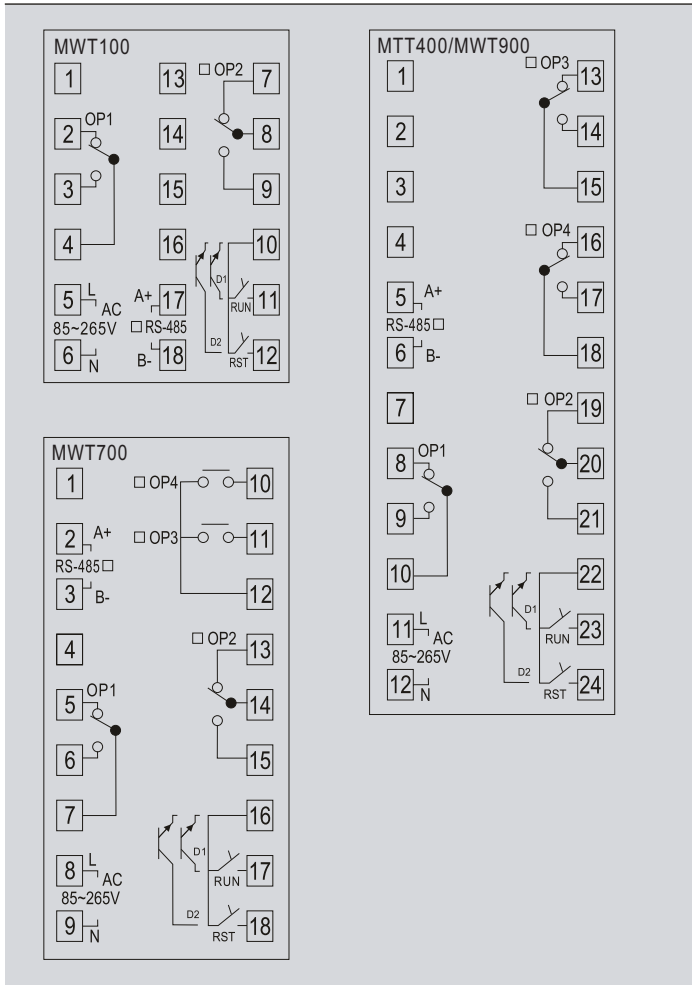
Some of the key features of this timer

This timer is very flexible when it comes down to the configuration of the relay. the relay can be programmed as pull-in or drop-out at any time during the process, below is a typical program that can be applied to a field application, to help understand our timer, below is an example with the model MWT100-96-4-R-R-N-N-N. 48mm*48mm timer with OP1 and OP2.
 #1 interval: 5 minutes
 #2 interval: 20 seconds
 #3 interval: 1 hour
 #4 interval: 30 seconds
 You can program the timer with 4 intervals, each interval with assigned time range as shown above, as soon as you trigger the timer from the key pad or via a remote switch, the timer enter into the first interval by 5 minutes the OP1 or OP2 can be programmed pull-in as soon as the timer kicks off, or OP1 and OP2 can be programmed as pull-in at the same time when the timer kicks off, or both of them will be at the initial drop-out status, after first interval is up. timer goes into #2 interval which is 20 seconds, the OP1 can be programmed as pull-in to trigger a buzzer or a pump etc. then the timer goes to next interval #3 for another 1 hour, when the #3 interval is up. the OP2 can be programmed as pull-in to trigger another device for 30 seconds as #4 interval.

Dimension and cutout sizes



Wiring diagram





Features:

- Dual display, 6 digits, 7 segments LCD display
- 4 time intervals/segments
- Maximum 2 outputs
- Timing unit: second, minute, hour
- Display format: 00.00.00 (Hour, Minute, Second)
- Multiple timer trigger mode (auto run, manual trigger via switch)
- Configurable timer working pattern (sequence pattern or circular)
- Timer counting up or down configurable
- Output relay latching function
- Output relay pull-in/drop-out time configurable
- Optional features
 - RS485 Modbus RTU Communication

Technical Specifications

Ordering Information

PTF100-BT5 (software version) 1 2 3 4 5 6 7

LCD display timer only available with 1 size 48mm*48mm software version is BT5, we might update the firmware without further notice

1: Power supply

B	85~265Vac 50/60HZ
D	24VDC/AC

2: Timer intervals

4	4 intervals
----------	-------------

3: Output 1 [OP1]

N	Without output 1
M	Relay output
R	SSR Drive output

4: Output 2 [OP2]

N	Without output 1
M	Relay output
R	SSR Drive output

5: Output 3 [OP3] not available with PFT100

N	Without output 1
M	Relay output
R	SSR Drive output

6: Output 4 [OP4] not available with PFT100

N	Without output 1
M	Relay output
R	SSR Drive output

7: Communication

N	Without Communication
5	With Modbus RTU RS-485 communication

Example: PTF100-BT5-B-4-M-M-NNN
 PTF100: size 48mm*96mm
B: Power supply 85~265Vac
4: 4 time intervals
M: OP1 output with relay
M: OP1 output with relay
N: without OP3
N: without OP4
N: without communication

General Specifications

Electrical Specifications

Display	Dual 4 LCD digits upper/lower display format
Timer intervals	4 time intervals
Number of outputs	maximum 2 outputs (relay output)
Timer range	0.01 seconds to 999 hours
Timer output mode	On delay/off delay, relay status programmable
Timer triggering mode	Power on, front key pad, or via remote switch
Timer unit	Second, minute, hour
Timer reset mode	Auto reset or via remote switch
Timer counting mode	Counting up or down configurable
Power supply	85~265Vac or 24VDC/AC
Communication	RS-485 modbus RTU optional
Timer accuracy	<1 s/per day

Mechanical Environmental Specifications

Size	48mm*48mm
Weight	0.17kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

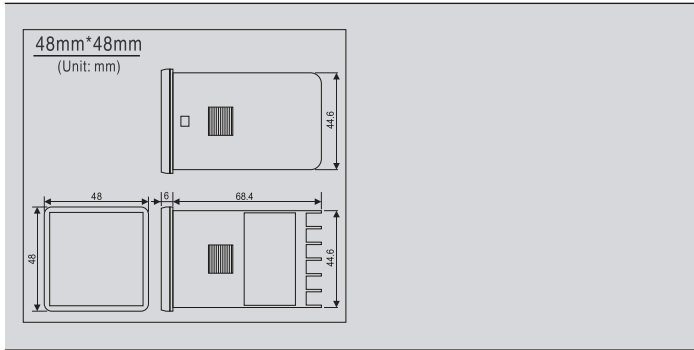
Some of the key features of this timer

This timer is very flexible when it comes down to the configuration of the relay. the relay can be programmed as pull-in or drop-out at any time during the process, below is a typical program that can be applied to a field application, to help understand our timer, below is an example with the model PTF100-B-4-M-M-N-N-N. 48mm*48mm timer with OP1 and OP2.

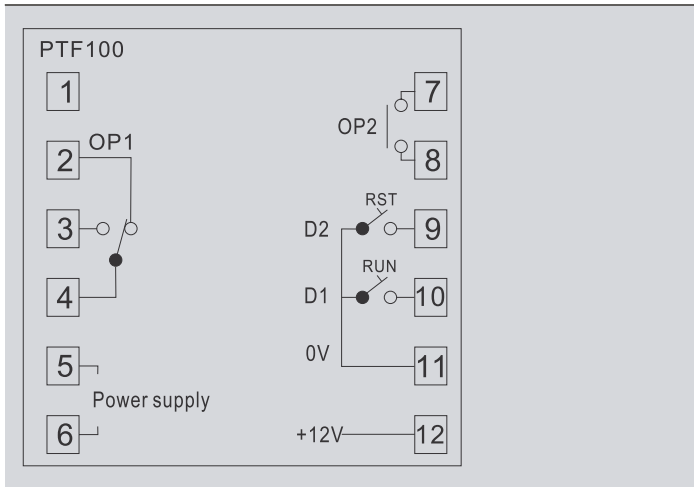
- #1 interval: 5 minutes
- #2 interval: 20 seconds
- #3 interval: 1 hour
- #4 interval: 30 seconds

You can program the timer with 4 intervals, each interval with assigned time range as shown above, as soon as you trigger the timer from the key pad or via a remote switch, the timer enters into the first interval by 5 minutes. the OP1 or OP2 can be programmed pull-in as soon as the timer kicks off, or OP1 and OP2 can be programmed as pull-in at the same time when the timer kicks off, or both of them will be at the initial drop-out status, after the first interval is up, the timer goes into #2 interval which is 20 seconds, the OP1 can be programmed as pull-in to trigger a buzzer or a pump etc. then the timer goes to the next interval #3 for another 1 hour, when the #3 interval is up, the OP2 can be programmed as pull-in to trigger another device for 30 seconds as #4 interval.

Dimension and cutout sizes



Wiring diagram





Features:

- Dual display, 4 digits, 7 segments LED display
- Relay output for timer(OP1)
- On delay timer
- Timer unit: second, minute, hour
- Timer triggering mode: Run automatically after power on, trigger by an external switch, trigger by master device
- Timing sequence: count down or count up configurable
- Relay output for counter(OP2)
- Counter input: NPN pulse/dry contact/ in correlation with timer
- Frequency: 1-5000HZ selectable
- Output mode for OP2: N/R/C/HN/EN/LN(refer to manual)
- OP2 output reset delay time range:0.01~99.9 seconds
- Memory retention: memory on/off configurable
- Reset mode: Auto reset, front plate reset, reset from master device such as HMI via RS-485

-RS485 Modbus RTU Communication optional

Technical Specifications

Ordering Information

CFT100 (48mm*48mm)(Width*Height) — **1** **2** **3**

CFT100 counter and timer 2 in 1 controller, standard model with one relay output for timer

1:Output for counter

N	No output for counter
2	OP2 relay output for counter

2:Power supply

B	85~265Vac 50/60HZ
D	DC 24V

3:Communication option

N	Without communication
M	With RS-485 communication

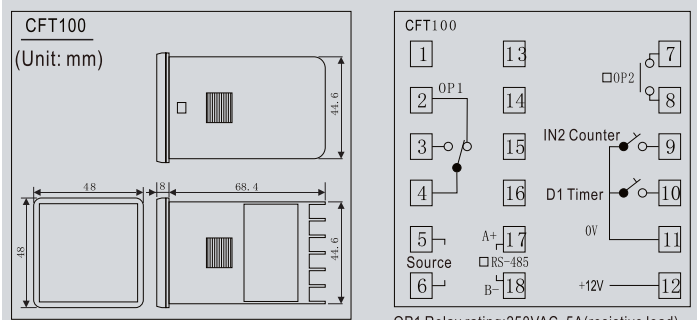
Example: CFT100-N-B-N(OP1 relay for timer output is a factory default)

- CFT100: size 48mm*48mm
- N:without OP2 output for counter
- B: 85~265Vac source
- N: Without RS-485 communication

Example: CFT100-2-B-N

- CFT100: size 48mm*48mm
- 2:with OP2 output for counter
- B: 85~265Vac source
- N: Without RS-485 communication

Size and wiring diagram



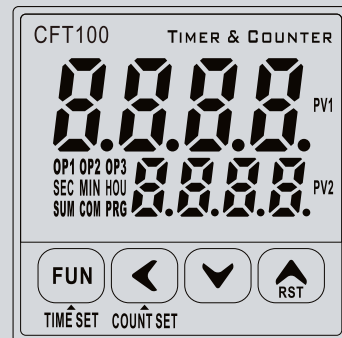
OP1 Relay rating:250VAC, 5A(resistive load)
OP2 Relay rating: 250VAC, 3A(resistive load)

Remark: OP1 relay output for timer, this is a standard feature comes with this device
Terminal 5 and 6 for power supply
Terminal 17 and 18 for RS-485 communication
Terminal 7 and 8 for OP2 output for counter(need to be specified when order with us)
Terminal 10 and 11 for an external switch for timer
Terminal 9 and 11 for counter input
Terminal 11 and 12 is auxiliary power supply for sensors such as proximity sensors

Some of the key features of this timer

This controller+timer is a turn-key solution for application where they need a timer and a counter, the timer has a relay output as standard package and counter is for display purpose in general, for some equipments, they have a counter and a timer deployed separately, CFT100 can replacement them with one unit only.

Panel layout and description



- PV1: Display window for timer(parameter notation)
- PV2: Display window for counter(parameter value)
- COM: RS-485 indicator
- OP1: Output indicator for timer output
- OP2: Output indicator for counter output
- OP3: N/A, reserved for other function
- SEC: Timer unit, seconds
- MIN: Timer unit, minutes
- HOU: Timer unit, hours
- SUM: Reserved
- COM: RS-485 communication indicator
- PRG: Reserved
- FUN: Setting key for counter, function key
- ◀ : setting key for counter, shift key
- ▼ : decrement key
- ▲ : increment key/manual reset key for counter

General Features:

- Dual LED four digits display, size 48mm*48mm
- Counting range -1999~9999, setting range 1-9999
- Dry contact input, NPN transistor input, Quadrature 90° input
- Input frequency from 1 to maximum 5000 Hz and configurable
- Normal counting/batch counting/totalizing counting
- Various reset mode and relay reset delay function
- 12VDC 100mA auxiliary power source for sensor
- Up or down counting mode selectable
- 85~265Vac source or 24VAC/DC source
- Power failure retention on/off configurable
- Decimal point display, no decimals to maximum 3 decimals
- Relay reset delay range 0.01 seconds~99.99 seconds
- Multiplier available for easy meter counting application
- Quadrature input for encoders
- Optional features
 - RS485 Modbus RTU Communication
 - OP2/OP3/OP4 output optional
 - 24VDC/AC source optional, standard source is 85~265Vac
 - 2 alarm options, 1 alarm is standard as OP1



Ordering Information

FT-48 (48mm*48mm)(width*height) - **1** **2** **3** **4** **5**

1:Function designation for AU1 terminals at the back

N	No functions for AU1 terminals
A	AU1 terminals will be used as RST and GATE(count holding) purpose
2	AU1 terminals will be used as SP2 output(OP2)
3	AU1 terminals will be used as BA1 batch count output(OP3)
4	AU1 terminals will be used as SU1 totalizing count output(OP4)

2:Function designation for AU2 terminals at the back

N	No functions for AU1 terminals AU2 terminals is not available with DC100, this is a reserved options for bigger size that will availalbe later
----------	---

3:Function designation for AU3 terminals at the back

N	No functions for AU1 terminals AU3 terminals is not available with DC100, this is a reserved options for bigger size that will availalbe later
----------	---

4:Power supply

B	85~265Vac 50/60HZ (standard option)
D	24VDC/AC

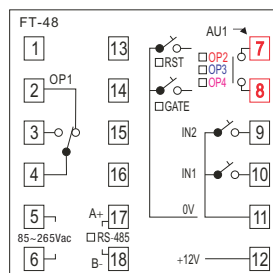
5:RS-485 communication option

N	Without communication function
M	RS-485 modbus communication

eg: FT-48-A-N-N-B-N, FT-48 counter, AU1 terminals used ad RESET and GATE function, power supply, 85~265Vac, without communication function

Please check wiring diagram and explicit information on the AU1 terminals to help you with the ordering on our counter, For FT-48, the terminal 7 and 8 also referred as AU1 terminals can be equipped as RST or GATE function, or a relay can be installed at terminal 7 and 8 as OP2 output for SP2 setting, or 7 and 8 as OP3 for batch count output, or 7 and 8 equipped as OP4 for totalizing count, you can't have them all because there is only 2 terminals, have to make a choice when order with us, the standard option is RST and GATE function

- A** AU1 terminals will be used as RST and GATE(count holding) purpose
- 2** AU1 terminals will be used as SP2 output(OP2)
- 3** AU1 terminals will be used as BA1 batch count output(OP3)
- 4** AU1 terminals will be used as SU1 totalizing count output(OP4)



Technical Specifications

General Specifications

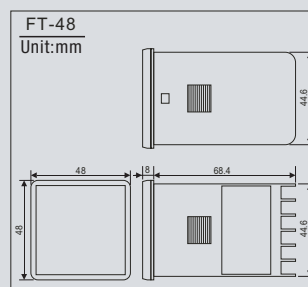
Electrical Specifications

Display	Dual line 4 digits LED display
Counting range	-1999~9999
Setting range	1-9999
Input type	Dry contact, NPN transistor, Quadrature 90°
Input frequency	From 1HZ to maximum 5000 HZ
Counting pattern	Normal pattern, batch, totalizing count
Relay reset delay	0.01S~99.99S
Auxiliary power	12VDC 100mA
Counting mode	Up or down counting
Power source	85~265Vac or 24VDC/AC
Power failure retention	with or without retention configurable
Decimal points	1 decimal to maximum 3 decimals
Communication	Modbus RS-485 RTU
Power consumption	12VA
Output relay rating(OP1)	5A/250Vac
Output relay rating(AU1)	3A/250Vac

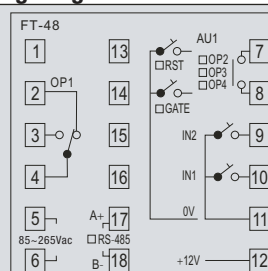
Mechanical Enviromental Specifications

Size	48mm*48mm, panel cutout 44.6mm*44.6mm
Weight	0.16 kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

Size and dimension



Wiring diagram



Depends on your selection, the terminal, 7 and 8 could be used as OP2 for SP2, 2 level setting or OP3 as batch count output relay or OP4 as batch count output relay



General Features:

- Dual LCD six digits display, size 48mm*48mm and 72mm*72mm
- Counting range -199999~999999, setting range 1-999999
- Dry contact input, NPN transistor input, Quadrature 90° input
- Input frequency from 1 to maximum 5000 Hz and configurable
- Normal counting/batch counting/totalizing counting
- Various reset mode and relay reset delay function
- 12VDC 100mA auxiliary power source for sensor
- Up or down counting mode selectable
- 85~265Vac source or 24VAC/DC source
- Power failure retention on/off configurable
- Decimal point display, no decimals to maximum 3 decimals
- Relay reset delay range 0.01 seconds~99.99 seconds
- Multiplier available for easy meter counting application
- Quadrature input for encoders
- Optional features
 - RS485 Modbus RTU Communication
 - OP2/OP3/OP4 output optional
 - 24VDC/AC source optional, standard source is 85~265Vac
 - 2 alarm options, 1 alarm is standard as OP1

Ordering Information

JS100 (48mm*48mm)(width*height)
JS700 (72mm*72mm)(width*height) 1 2 3 4 5

1:Function assigned to AU1 terminals at the back

N	No functions for AU1 terminals
A	AU1 terminals will be used as RST and GATE(count holding) purpose
2	AU1 terminals will be used as SP2 output(OP2)
3	AU1 terminals will be used as BA1 batch count output(OP3)
4	AU1 terminals will be used as SU1 totalizing count output(OP4)

2:Function assigned to AU2 terminals at the back

N	No functions for AU2 terminals
2	AU2 terminals will be used as SP2 output(OP2)
3	AU2 terminals will be used as BA1 batch count output(OP3)
4	AU2 terminals will be used as SU1 totalizing count output(OP4)

AU2 is only available with JS700

3:Function assigned to AU3 terminals at the back

N	No functions for AU3 terminals
2	AU3 terminals will be used as SP2 output(OP2)
3	AU3 terminals will be used as BA1 batch count output(OP3)
4	AU3 terminals will be used as SU1 totalizing count output(OP4)

AU3 is NOT available with both JS100 and JS700

4:Power supply

B	85~265Vac 50/60HZ (standard option)
D	24VDC/AC

5:RS-485 communication option

N	Without communication function
M	RS-485 modbus communication

eg: JS100-A-N-N-B-N, JS100 counter, AU1 terminals used as RESET and GATE function, power supply, 85~265Vac, without communication function. Please check wiring diagram and detailed information on the AU1 terminals to help you with the ordering on our counter, For JS100, the terminal 7 and 8 also referred as AU1 terminals can be equipped as RST or GATE function, or a relay can be installed at terminal 7 and 8 as OP2 output for SP2 setting, or 7 and 8 as OP3 for batch count output, or 7 and 8 equipped as OP4 for totalizing count, you can't have them all because there is only 2 terminals, have to make a choice when order with us, the standard option is RST and GATE function, JS700 can be made with both AU1 and AU2 terminals. AU2 can be assigned as OP2, OP3 OP4 output.

- A** AU1 terminals will be used as RST and GATE(count holding) purpose
- 2** AU1 terminals will be used as SP2 output(OP2)
- 3** AU1 terminals will be used as BA1 batch count output(OP3)
- 4** AU1 terminals will be used as SU1 totalizing count output(OP4)

Technical Specifications

General Specifications

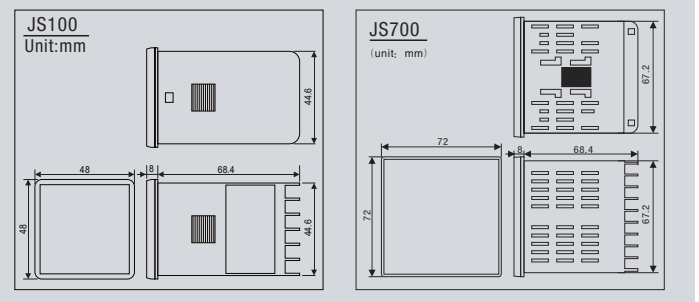
Electrical Specifications

Display	Dual line 6 digits LCD display
Counting range	-199999~999999
Setting range	1-999999
Input type	Dry contact, NPN transistor, Quadrature 90°
Input frequency	From 1HZ to maximum 5000 HZ
Counting pattern	Normal pattern, batch, totalizing count
Relay reset delay	0.01S~99.99S
Auxiliary power	12VDC 100mA
Counting mode	Up or down counting
Power source	85~265Vac or 24VDC/AC
Power failure retention	with or without retention configurable
Decimal points	1 decimal to maximum 3 decimals
Communication	Modbus RS-485 RTU
Power consumption	12VA
Output relay rating(OP1)	5A/250Vac
Output relay rating(AU1)	3A/250Vac

Mechanical Environmental Specifications

Size	48mm*48mm, 72mm*72mm
Weight	0.17kg/ 0.27kg
Operating temperature humidity	-10°C~+50°C 45%~85% RH

Size and dimension



Wiring diagram

