



## MICROPROCESSOR BASED PID TEMPERATURE CONTROLLER



# PRODUCT INTRODUCTION

## PRODUCT INTRODUCTION

The 73 series programmable temperature controller is FineTek's most high-end controller. Equipped with a 24 bit analog/ digital converter core processor and with FUZZY and improved PID calculation microprocessor, the controller is capable of fast and accurate performance with reliable results. Double row of 4 digit displays indicates Present Value and Set Value (except PT7310), enables user friendly readings and coupled with 3 button operation, makes operating the controller very convenient.

### High Sampling Rate, High Accuracy

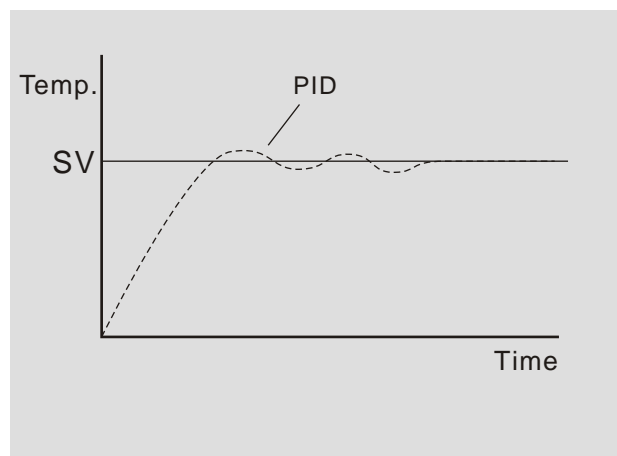
Sampling rate of 5 times per second (equivalent to 0.2sec per sampling) enables the controller to achieve high accuracy readings and accurate operations.

### PID + FUZZY Control

Addition of FUZZY technology to PID control enables the controller to use the shortest time required as well as the smallest transients in order to achieve stability at the set value required by the user.

### Auto-tuning

Artificial intelligence technology enables the controller to calculate the most efficient parameters to suit each and every application, thereby increasing the efficiency of the process to the maximum.



### Sensor Break Alarm:

If the temperature sensor malfunctions / breaks, an alarm figure will be displayed on the panel to notify users.



### Lock Protection for Control Parameters

Provides 3 levels of lock protection available should the user choose to lock the parameters in case of parameters change by accident.

### Heating / Cooling Bi-directional Control

Enables the user to select between both heating and cooling processes, reduces inconveniences of single direction control methodology and reduces inventory.

### Multi-inputs Function

Accepts 8 types of thermocouple inputs, DC voltage input and 2 types of RTD inputs. Convenience of use.

### Switching Power Supply

Accepts 85 ~ 265VAC, 50/60Hz power supply, able to prevent controller from being affected by interferences due to ripples in power supply.

### RS485 (Modbus) Communication:

Both RTU and ASCII communication modes for selection

# PRODUCT SPECIFICATIONS

## CONTROL FUNCTION

Control Method	ON/OFF , PID+Auto Tuning +Fuzzy , PID+Auto Tuning
Fraction Value	0~9999
Integral time	0~9999
Differential time	0~9999
Alarm / Output Hysteresis setting	0~9999
Sampling Interval	0.2s
Output Control Cycle	0.1~999.9s

## SIGNAL INPUT

Signal Input	Range	Accuracy	
Thermocouple	K	-200~1270°C	0.3% ±1digit
	J	-210~1200°C	0.3% ±1digit
	R	-50~1760°C	0.3% ±1digit
	S	-50~1760°C	0.3% ±1digit
	B	250~1820°C	±8°C ±1digit
	E	-200~1000°C	0.3% ±1digit
	N	-200~1300°C	0.3% ±1digit
RTD	T	-200~400°C	±2°C 1digit
	PT100	-200~850°C	0.3% ±1digit
	JPT100	-200~850°C	0.3% ±1digit
Direct Voltage	0~350mV	0.3% ±1digit	

\* R and S type accuracy ±19°C when range between 0 ~ 500°C

\* B type no guarantee on accuracy when range 0 ~ 400°C

## ALARM FUNCTION

Alarm Types	Absolute Value Alarm, Discrepancy Alarm, Area Alarm,
Set Value	0 ~ 99s
Alarm Output	SPST- ON, 5A-250VAC (Resistance Load) (PT-7320, 3A)
Action Method	Alarm Activation / De-Activation delay
Signal Output	Alarm Relay Output

## MAIN CONTROL OUTPUT

Specifications / Model	7310	7320	7330	7331	7340	7350
Relay	SPST-ON 5A/250Vac	SPST-ON 3A/250Vac	SPDT-ON 5A/250Vac	SPDT 5A/250Vac	SPST-ON 5A/250Vac	SPDT 5A/250Vac
Pulse Output (SSR)	0/12Vdc (NPN) , Max.20 mA					
Analog (Re-transmission)	4~20 mA					
	0~10Vdc Max.600Ω					

## 2nd CONTROL OUTPUT

Specifications / Model	7310	7320	7330	7331	7340	7350
Relay		SPST-ON 3A/250Vac	SPST-ON 5A/250Vac	SPST-ON 5A/250Vac	SPST-ON 5A/250Vac	SPST-ON 5A/250Vac
Pulse Output (SSR)	0/12Vdc (NPN) , Max.20 mA					
Analog (Re-transmission)	4~20 mA					
	0~10Vdc Max.600Ω					

# PRODUCT SPECIFICATIONS

## OTHER FUNCTIONS

<b>Temperature Sensor Break Detection</b>	Error Indication on display panel (Only PT-7320)
<b>Heater Feedback Irregularities Detection</b>	Alarm when no current or user- set current value are encountered
<b>Remote Setting</b>	Able to change SV set value
<b>Parameters Lock</b>	3 tier protection
<b>1<sup>st</sup> Tier</b>	Adjustable: Input signal, alarm setpoint, set values, control type (All parameters)
<b>2<sup>nd</sup> Tier</b>	Adjustable: alarm setpoint, set values, control type (Auto-tuning)
<b>3<sup>rd</sup> Tier</b>	Total lock of program

## STANDARD SPECIFICATIONS

<b>Power Supply</b>	85~265Vac,50/60Hz
<b>Power Consumption</b>	7VA
<b>Input Resistance</b>	> 1MΩ
<b>Input Compensation</b>	-1999~9999
<b>Digit Filter</b>	10~100 Times
<b>International Standard</b>	CE
<b>Settings Range</b>	-1999~9999

## DISPLAY CAPABILITIES

Digit Size \ Model	7310	7320	7330	7331	7340	7350
<b>Display</b>						
<b>PV (red)</b>	0.31"	0.36"	0.39"	0.36"	0.56"	0.56"
<b>SV (green)</b>		0.28"	0.28"	0.36"	0.36"	0.36"

## LED Indicators

Digit Size \ Model	7310	7320	7330	7331	7340	7350
<b>Display</b>						
<b>Control Output</b>	X 1	X 1	X 2	X 2	X 2	X 2
<b>Alarm Output</b>	X 1	X 1	X 2	X 2	X 2	X 2
<b>Celsius Display</b>	X 1				X 1	X 1
<b>Fahrenheit Display</b>	X 1				X 1	X 1

## BLACKOUT PROTECTION

<b>Memory Retention</b>	EEPROM
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## OPERATING & STORAGE ENVIRONMENT

<b>Operation Temperature</b>	0~50°C
<b>Operation Humidity</b>	20~85%RH
<b>Storage Temperature</b>	-20°~60°C

## STRUCTURE

<b>Installation</b>	Panel Mounted using 2 locking clips					
<b>Casing Material</b>	Plastic					
<b>Dimensions</b>	Refer to page 4 and 5					
<b>Colour</b>	Black					
<b>Protection Rating</b>	7310	7320	7330	7331	7340	7350
	IP-54	IP-65	IP-54	IP-54	IP-65	IP-65

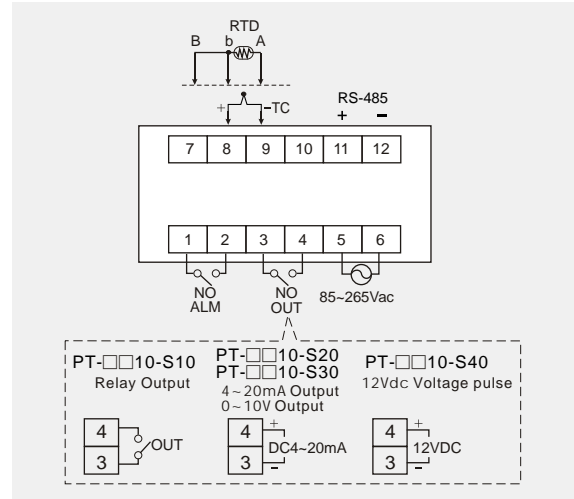
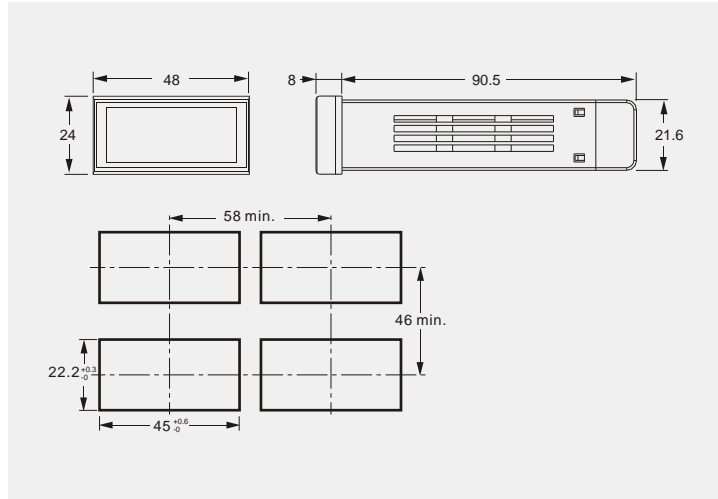
## COMMUNICATIONS

<b>Communication Interface</b>	RS-485
<b>Communication Protocol</b>	Modbus RTU or ASCII
<b>Data Format</b>	8 bits, Bit check: odd/even/none. Stop Bit: 1 or 2bits
<b>Communication Speed</b>	600 , 1200 , 2400 , 4800 , 9600 , 19200 , 38400 bps
<b>Address</b>	000~255

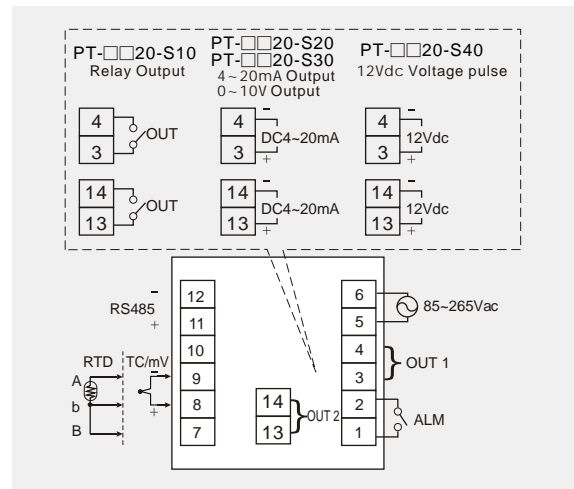
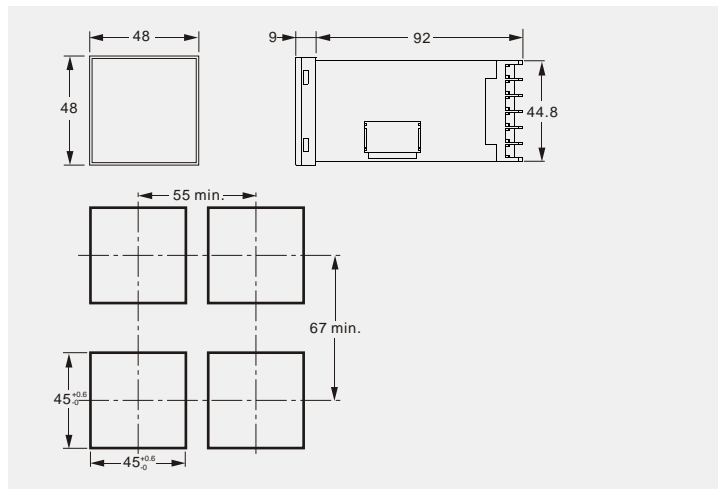
# DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

## DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

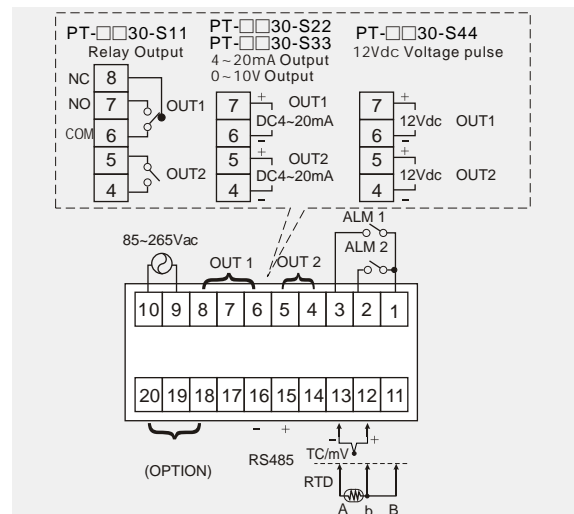
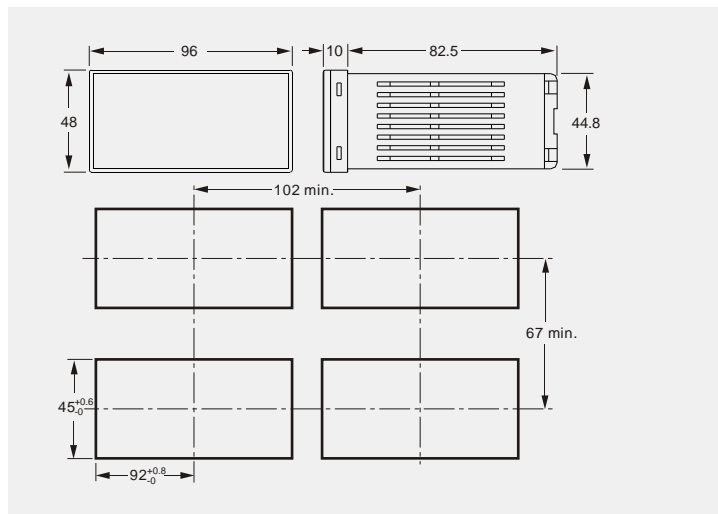
**P T-7310 : 48mm(H) x 24mm(W) x 98.5mm(D)**



**PT-7320 : 48mm(H) x 48mm(W) x 101mm(D)**



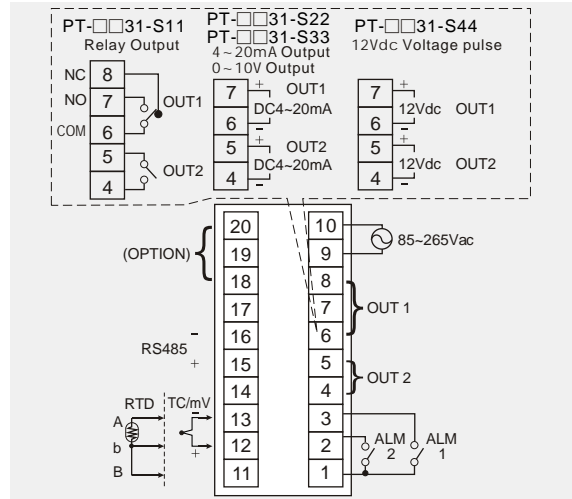
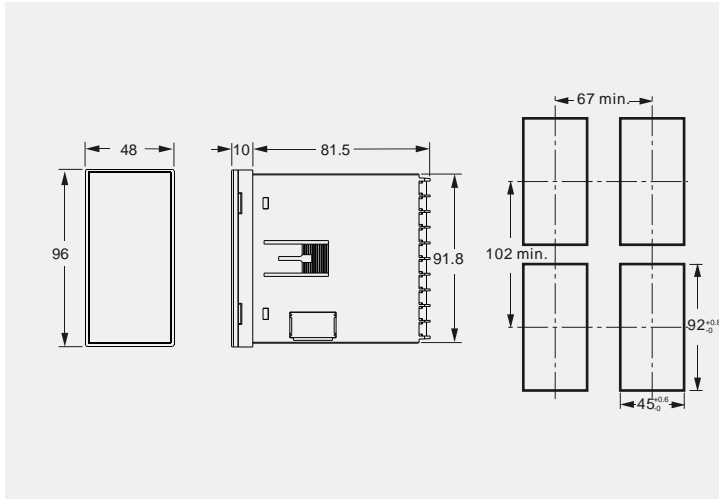
**PT-7330 : 96mm(H) x 48mm(W) x 92.5mm(D)**



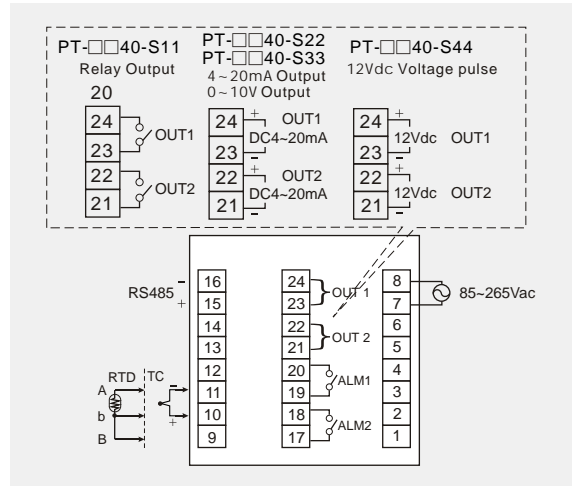
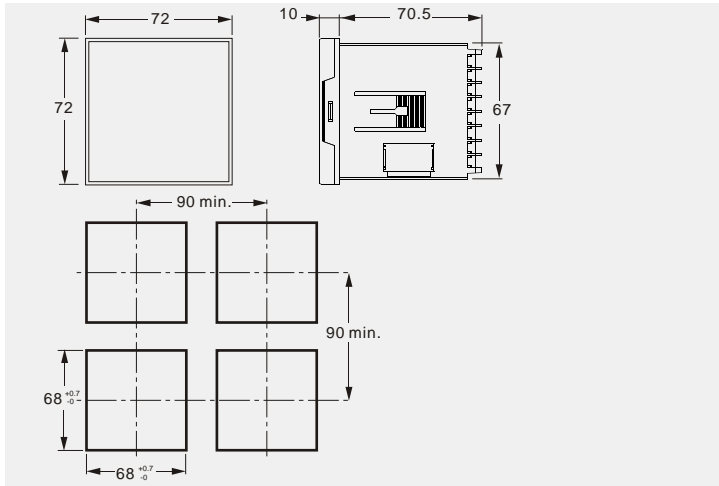
# DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

## DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

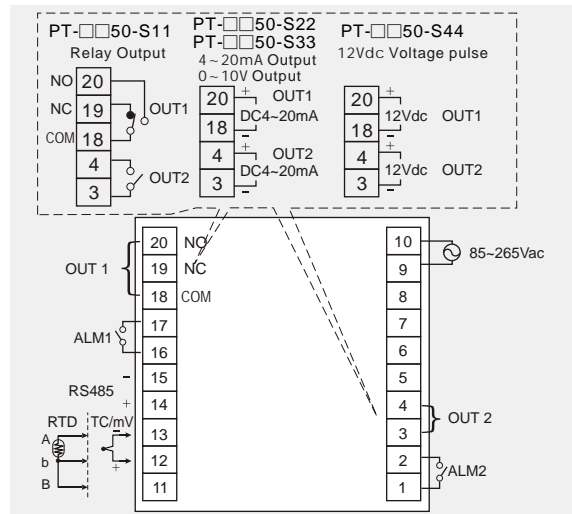
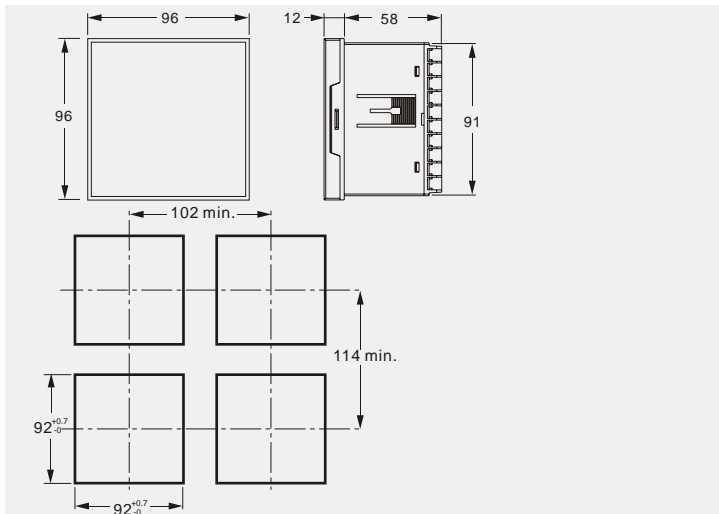
**PT-7331 : 48mm(H) x 96mm(W) x 91.5mm(D)**



**PT-7340 : 72mm(H) x 72mm(W) x 80.5mm(D)**



**PT-7350 : 96mm(H) x 96mm(W) x 70mm(D)**



# ORDERING INFORMATION

**P T - 7 3**   - **S**     -

<b>Dimension</b>	10---48x24 20---48x48 30---96x48	31---48x96 40---72x72 50---96x96	▲ ▲	▲	▲	▲	▲	▲	▲	▲
<b>Control Output (1)</b>	0---None 1---Relay Output 2---4~20mA Output	3---0~10Vdc Output 4---Voltage pulse (12Vdc)								
<b>Control Output (2)</b>	0---None 1---Relay Output 2---4~20mA Output ※PT-7310 only Output (1), code is "0"	3---0~10Vdc Output 4---Voltage pulse (12Vdc)								
<b>Alarm Output</b>	0---None 1---1 Set	2---2 Set (Only PT-7320, 7330, 7331, 7340, 7350)								
<b>Analog Retransmit</b>	0---None 1---4~20mA DC	2---0~10Vdc 3---0~10Vdc & 4~20mA DC								
<b>Communication</b>	0---None 1---RS485 2---8 Segment control	3---RS485+8 Segment control 4---Heater Break Detection (Only PT-7320)								

★ Please call for customized specifications

# PRODUCT INTRODUCTION

## PRODUCT INTRODUCTION

53 Series programmable temperature controller is FineTek's mid-range series of controllers. It uses a 12bit analog / digital converter core processor for fast performance and accurate readings to produce reliable and stable results. Dual rows of 3 digits LED display gives clear and simple readouts of present value and set value. Operation by 4 button platform lets user have ease of usage and user-friendly interface

### High Accuracy, High Sampling Rate

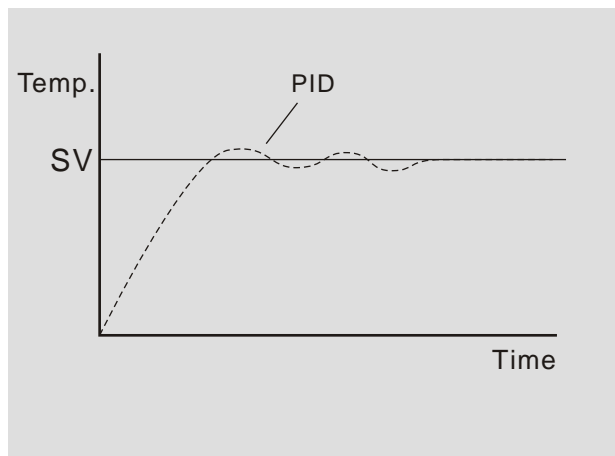
Sampling rate of 5 times per second (equivalent to 0.2sec per sampling) enables the controller to achieve high accuracy readings and accurate operations.

### PID Control

PID control provides fast and stable process control that minimizes the transition period and overshoot. Thereby, enhancing the effectiveness of the temperature control process.

### Digital Filter

Embedded digital filter function eliminates interference signals and stabilizes control.



### Sensor Break Alarm

If the temperature sensor malfunctions / breaks, an alarm figure will be displayed on the panel to notify users.



### Heating / Cooling Bi-directional Control

Enables the user to select between both heating and cooling processes, reduces inconveniences of single direction control methodology and reduces inventory

### Multi-inputs Function

Accept 2 types of thermocouple inputs and 1 type of RTD input. Convenience of usage.

### Switching Power Supply

Accepts 85 ~ 265VAC, 50/60Hz power supply, able to prevent controller from being affected by interferences due to ripples in power supply.



# PRODUCT SPECIFICATIONS

## CONTROL FUNCTION

Control Method	ON/OFF , PID
Fraction Value	0~999
Integral time	0~999
Differential time	0~999
Alarm / Output Hysteresis setting	0~999
Sampling Interval	0.2s

## SIGNAL INPUT

Signal Input		Range	Accuracy
Thermocouple	K	-99~999°C	0.5% ±1 digit
	J	-99~999°C	0.5% ±1 digit
RTD	PT100	-99~850°C	0.5% ±1 digit

## ALARM FUNCTION

Alarm Types	Absolute Value Alarm
Set Value	0 ~ 99s
Alarm Output	SPDT, 5A-250VAC (Resistance Load) (PT-5320, 3A)
Action Method	Alarm Activation / De-Activation delay
Signal Output	Alarm Relay Output

## MAIN CONTROL OUTPUT

Specifications \ Model	5320	5330	5331	5340	5350
Relay	SPST-ON 3A/250Vac	SPDT 5A/250Vac	SPDT 5A/250Vac	SPDT 5A/250Vac	SPDT 5A/250Vac
Pulse Output (SSR)	0/12Vdc (NPN) , Max.20 mA				
Analog (Re-transmission)	4~20 mA				
	0~10Vdc Max.600Ω				

# PRODUCT SPECIFICATIONS

## STANDARD SPECIFICATIONS

Power Supply	85~265Vac, 50/60Hz
Power Consumption	7VA
Input Resistance	> 1M $\Omega$
Input Compensation	-99~999 $^{\circ}$ C
Digit Filter	10~100 Times
International Standard	CE
Settings Range	-99~999 $^{\circ}$ C

## DISPLAY CAPABILITIES

Digit Size \ Model	5320	5330	5331	5340	5350
Display					
PV (red)	0.36"	0.39"	0.41"	0.56"	0.56"
SV (green)	0.28"	0.28"	0.36"	0.36"	0.36"

## LED Indicators

Digit Size \ Model	5320	5330	5331	5340	5350
Display					
Control Output	X 1	X 1	X 1	X 1	X 1
Alarm Output	X 2	X 2	X 2	X 2	X 2
Celsius Display	X 1	X 1	X 1	X 1	X 1
Fahrenheit Display	X 1	X 1	X 1	X 1	X 1

## BLACKOUT PROTECTION

Memory Retention	EEPROM
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## OPERATING & STORAGE ENVIRONMENT

Operation Temperature	0~50 $^{\circ}$ C
Operation Humidity	20~85%RH
Storage Temperature	-20 $^{\circ}$ ~60 $^{\circ}$ C

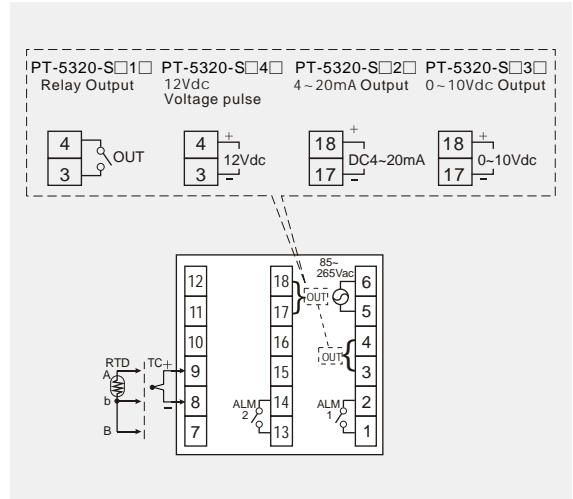
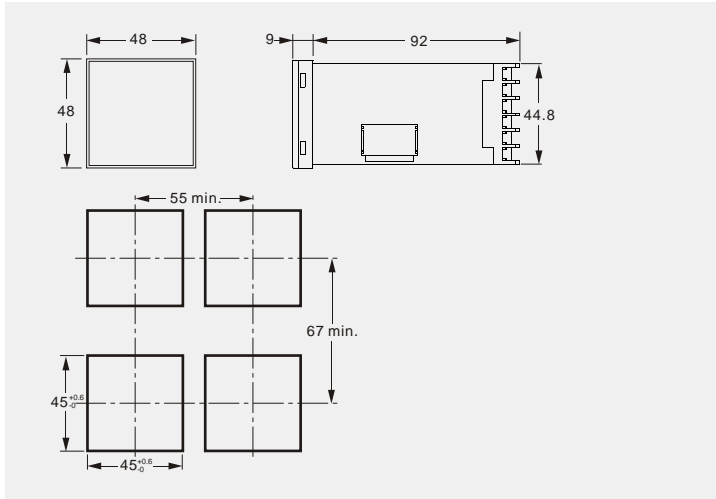
## STRUCTURE

Installation	Panel Mounted using 2 locking clips				
Casing Material	Plastic				
Dimensions	Refer to page 10 and 11				
Colour	Black				
Protection Rating	5320	5330	5331	5340	5350
	IP-65	IP-54	IP-54	IP-65	IP-65

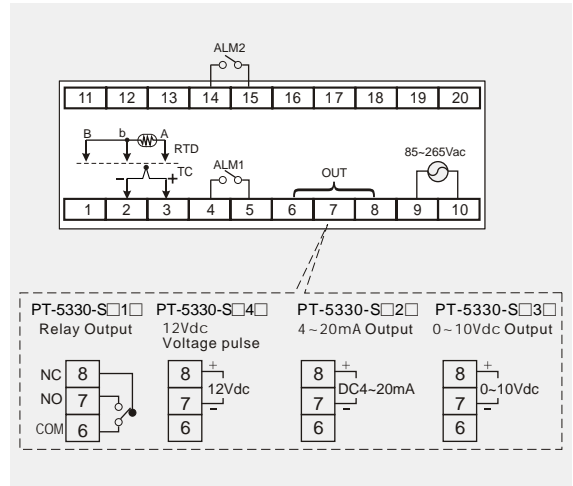
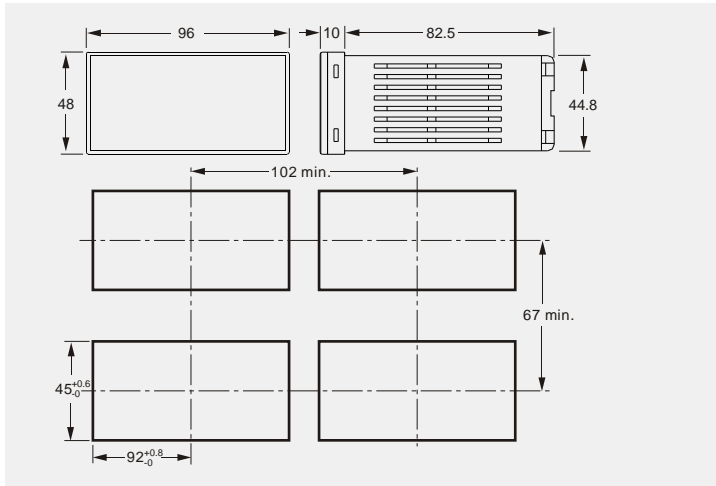
# DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

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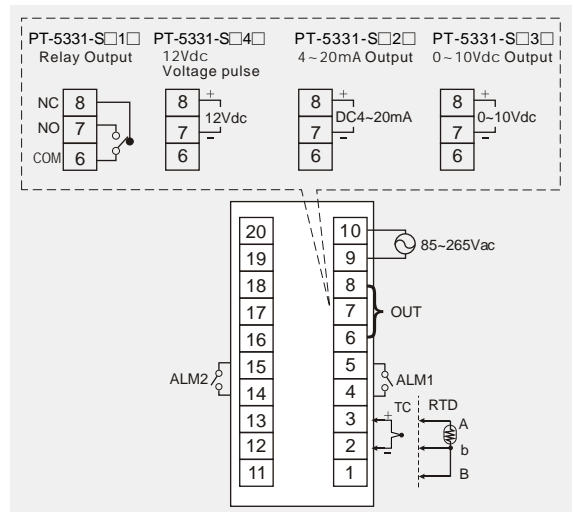
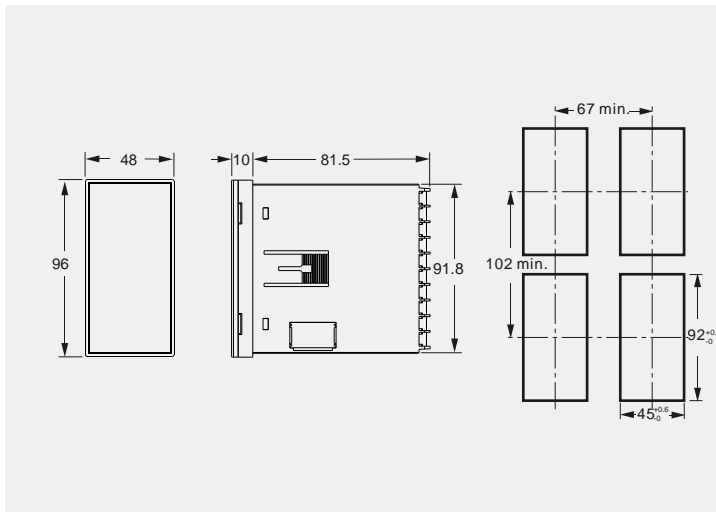
**PT-5320 : 48mm(H) x 48mm(W) x 101mm(D)**



**PT-5330 : 96mm(H) x 48mm(W) x 92.5mm(D)**



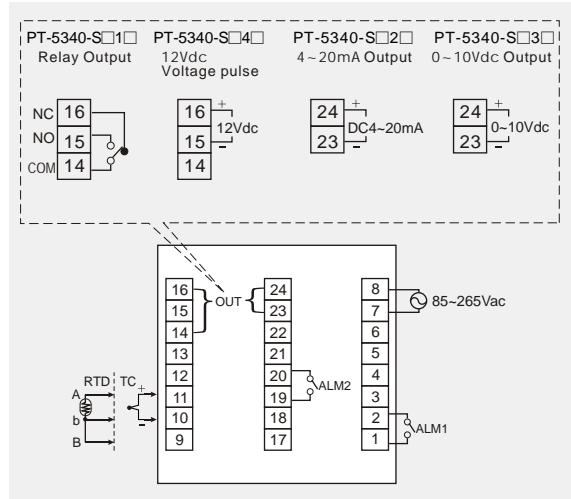
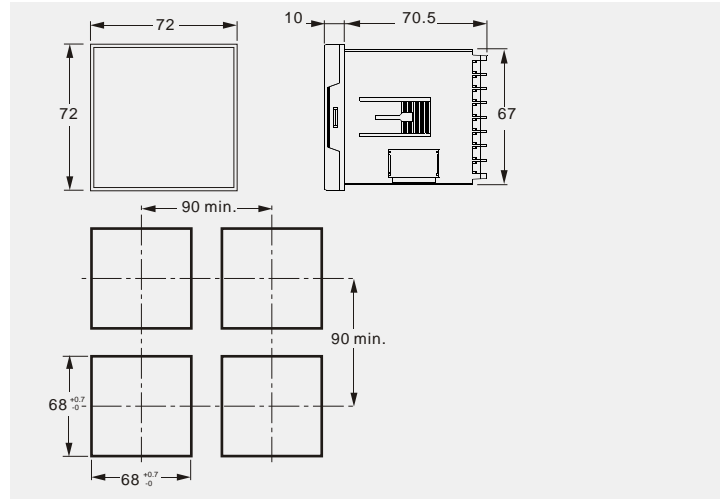
**PT-5331 : 48mm(H) x 96mm(W) x 91.5mm(D)**



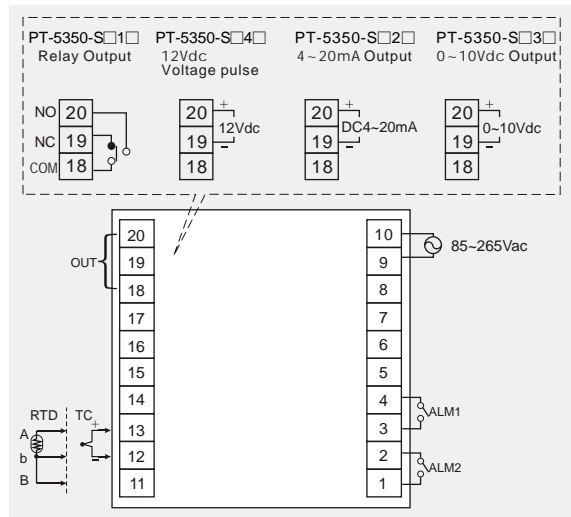
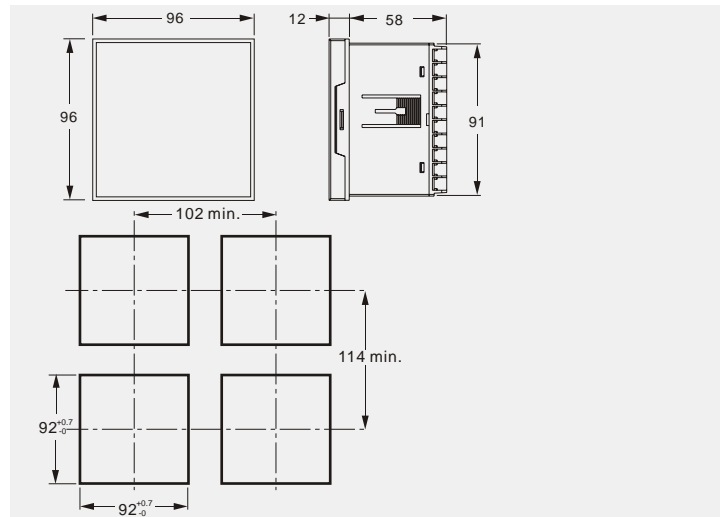
# DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

## DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

**PT-5340 : 72mm(H) x 72mm(W) x 80.5mm(D)**



**PT-5350 : 96mm(H) x 96mm(W) x 70mm(D)**



# ORDERING INFORMATION



PT-53   - S

Dimension	20---48x48	40---72x72	▲	▲	▲	▲	▲	▲
	30---96x48	50---96x96						
	31---48x96							
Input Signal	0---J Type		▲	▲	▲	▲	▲	▲
	1---K Type							
	2---PT100							
Control Output	0---None		▲	▲	▲	▲	▲	▲
	1---Relay Output							
	2---4~20mA Output							
	3---0~10Vdc Output							
Alarm Output	0---None		▲	▲	▲	▲	▲	▲
	1---1 Set							
	2---2 Set							
	3---3 Set							

★ Please call for customized specifications

## Microprocessor Bargraphic Display Scaling Meter

- Dual Channel, dual Bargraph and dual Analog output Capability
- Non-Linear Vessel Volume conversion/software
- Modularized Signal Input Support all process signals and ACV, ACA.....
- Modularized Option Output Support up to 8 Relays, 2 Analog outputs and RS485 interface.
- Inputs and Outputs are isolated
- ModBus Communication Protocol
- Wide Range Power Supply: 85~265Vac or 18~36Vdc
- IP-65 Class Front Panel



CE

## Microprocessor Based PID Temperature Controller

- Multi range input T/C, RTD
- PID or FUZZY control processes
- Wide power supply range: 85~265Vac
- RS-485 communication ModBus protocol
- Pass word protection function



CE

## Standard & Explosion Proof Designed Terminal Box



CE

## Microprocessor Power Quality Meter

- Monitoring RMS Voltage, Current, Frequency, Power Factor
- Monitoring Power Functions: Active Power (Watts), Reactive Power (vars), Apparent Power (VA)
- Monitoring Energy Functions: Active Energy (MWh), Reactive Energy( Mvarh), Apparent Energy (MVAh)
- Monitoring Demand Function: Power Demand
- Power Quality Harmonics: THD Voltage, THD Current Harmonic distortion
- Relay function for over-Voltage, Over-Current
- Voltage Pulse output function for power overload



CE

## Microprocessor Counter

- 6 Counting Mode
- Standard DIN 48 x 48 and 72 x 72 and 96 x 48 housing Memory Retention
- Counting pulse 10 KHz max
- Wide power supply range: 85 ~ 265Vac
- RS-485 communication ModBus protocol
- Sensor supply: 12 VDC 100mA
- 2 Relay output