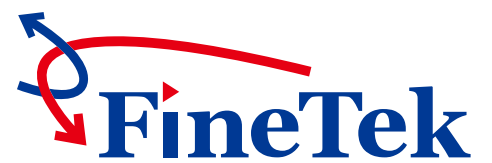




PID+Fuzzy Temperature Controller



www.fine-tek.com



PRODUCT INTRODUCTION

PRODUCT INTRODUCTION

The 76 series programmable temperature controller is FineTek's high-end controller. Equipped with a 14 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 PT7610), enables user friendly readings and coupled with 3 buttons operation, it makes operating the controller very convenient.

High Sampling Rate, High Accuracy

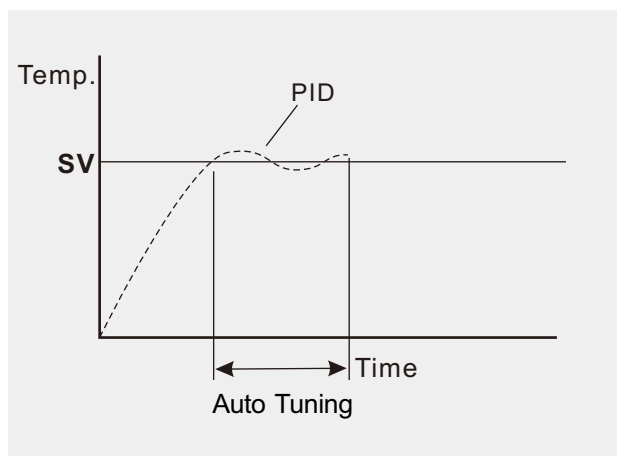
Sampling rate of 4 times per second (equivalent to 0.25sec per sampling) enables the controller to achieve high accuracy readings and accurate operations.

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.

Universal Input

Support the input signal of industry measurement, program setting through software, facility in installation and operation.

Switching Power Supply

Accepts 100 ~ 240VAC, 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, PID+Auto Tuning+Fuzzy
Fraction Value	0~9999
Integral time	0~9999
Differential time	0~9999
Alarm / Output Hysteresis setting	0~9999
Sampling Interval	0.25s
Output Control Cycle	0.1~999.9s

ALARM FUNCTION

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

SIGNAL INPUT

	Signal Input	Range	Accuracy
Thermocouple	K Type	-200~1370°C	±0.3% ± 1digit
	K Type	-128.0~500.0°C	±0.3% ± 1digit
	J Type	-200~1200°C	±0.3% ± 1digit
	J Type	-128.0~500.0°C	±0.3% ± 1digit
	T Type	-200~400°C	±0.3% ± 1digit
	T Type	-128.0~400.0°C	±0.3% ± 1digit
	E Type	-200~800°C	±0.3% ± 1digit
	R Type	0~1760°C	±0.3% ± 1digit
	S Type	0~1760°C	±0.3% ± 1digit
	B Type	0~1820°C	±0.3% ± 1digit
RTD	N Type	-200~1300°C	±0.3% ± 1digit
	PT Type	-200~850°C	±0.2% ± 1digit
	PT Type	-199.9~850.0°C	±0.2% ± 1digit
	JPT Type	-200~500°C	±0.2% ± 1digit
Direct Voltage	JPT Type	-199.9~500.0°C	±0.2% ± 1digit
	0~50mV	-1999~9999	±0.3% ± 1digit
	0~1V	-1999~9999	±0.3% ± 1digit
	0~5V	-1999~9999	±0.3% ± 1digit
	1~5V	-1999~9999	±0.3% ± 1digit
	0~10V	-1999~9999	±0.3% ± 1digit
Direct Current	2~10V	-1999~9999	±0.3% ± 1digit
	0~20mA	-1999~9999	±0.3% ± 1digit
	4~20mA	-1999~9999	±0.3% ± 1digit

⇒ Accuracy ±8°C for R and S in 0~500°C range

⇒ For 0~600°C range, it does not guarantee accuracy on B type.

MAIN CONTROL OUTPUT

Specifications / Model	7610	7620	7630	7631	7640	7650
Relay	SPST-ON 3A/250Vac	SPST-ON 3A/250Vac	SPDT 3A/250Vac	SPDT 3A/250Vac	SPST-ON 3A/250Vac	SPST-ON 3A/250Vac
Pulse Output (SSR)	0/12Vdc (NPN), Max.20 mA					
Analog (Re-transmission)	4~20 mA					
	0~10Vdc Min.600Ω					

2nd CONTROL OUTPUT

Specifications / Model	7610	7620	7630	7631	7640	7650
Relay		SPST-ON 3A/250Vac	SPST-ON 3A/250Vac	SPST-ON 3A/250Vac	SPST-ON 3A/250Vac	SPST-ON 3A/250Vac
Pulse Output (SSR)	0/12Vdc (NPN), Max.20 mA					
Analog (Re-transmission)	4~20 mA					
	0~10Vdc Min.600Ω					

PRODUCT SPECIFICATIONS

STANDARD SPECIFICATIONS

Power Supply	100~240Vac, 50/60Hz
Power Consumption	7VA
Input Resistance	>1MΩ
Input Compensation	-1999~9999
Digital Filter	1~50 Times
International Standard	CE
Settings Range	-1999~9999

DISPLAY

4 digit of 7 segment display, Accuracy $\pm 0.3\% \pm 1$ digit

Digit Size \ Model	7610	7620	7630	7631	7640	7650
Display						
PV (red)	0.31"	0.36"	0.39"	0.36"	0.56"	0.56"
SV (green)		0.28"	0.28"	0.36"	0.36"	0.36"

LED Indicators

Digit Size \ Model	7610	7620	7630	7631	7640	7650
Display						
Control Output	X 1	X 2	X 2	X 2	X 2	X 2
Alarm Output	X 1	X 1	X 2	X 2	X 2	X 2
Celsius Display	X 1	X 1			X 1	X 1
Fahrenheit Display	X 1				X 1	X 1

BREAKOUT PROTECTION

Memory Retention	EEPROM
------------------	--------

OPERATING & STORAGE ENVIRONMENT

Operation Temperature	0~50°C
Operation Humidity	20~85%RH
Storage Temperature	-20°~60°C

STRUCTURE

Installation	Panel Mounted using 2 locking clips					
Casing Material	Plastic					
Dimensions	Refer to page 10 and 11					
Colour	Black					
Protection Rating	7610	7620	7630	7631	7640	7650
	IP-54	IP-65	IP-54	IP-54	IP-65	IP-65

COMMUNICATIONS

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

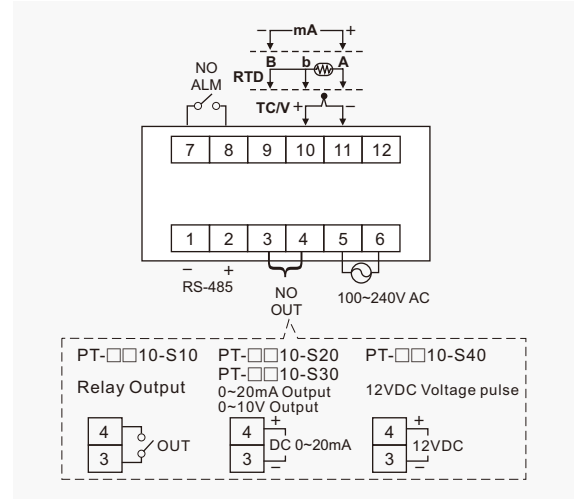
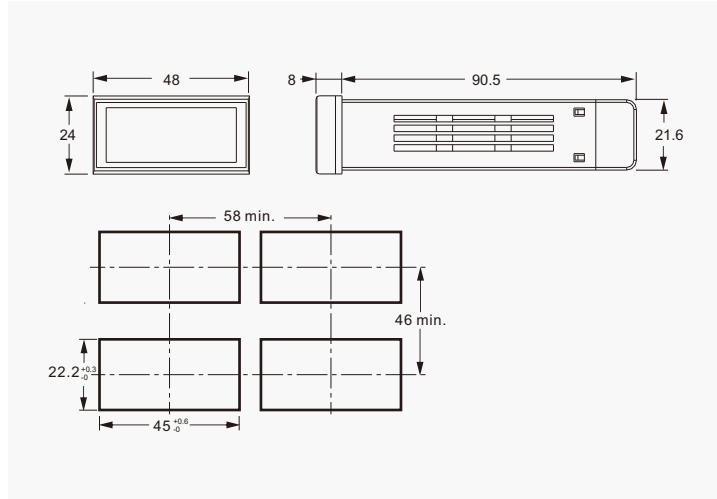
OTHER FUNCTIONS

Temperature Sensor Break Detection	Error display on panel
Parameters Lock	3 tier protection
1 st Tier	Adjustable: Input signal, alarm setpoint, set values, control type (All parameters)
2 nd Tier	Adjustable: alarm setpoint, set values, control type (Auto-tuning)
3 rd Tier	Fully lock

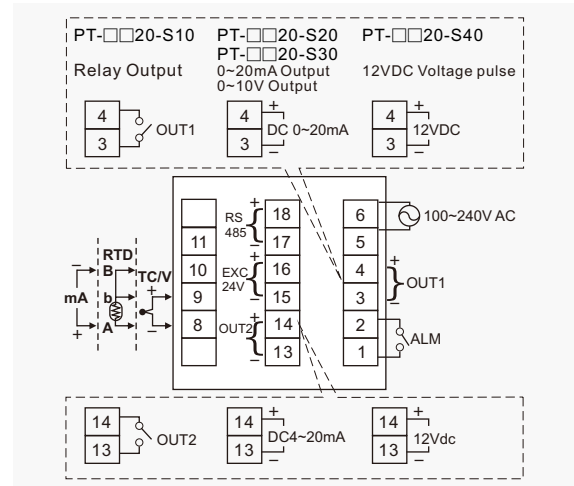
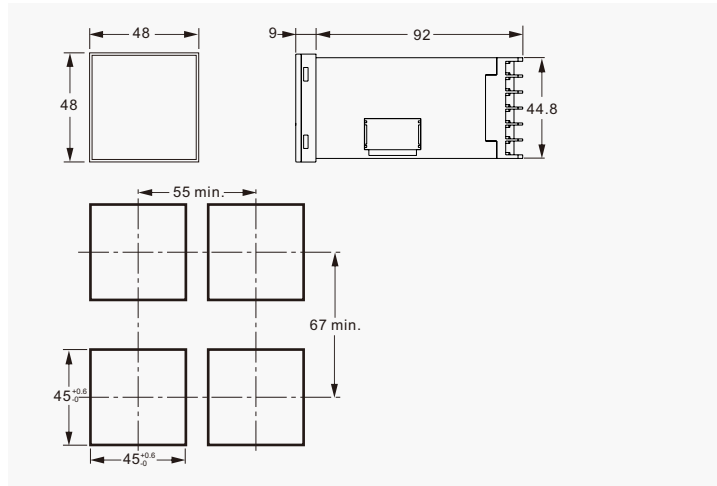
DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

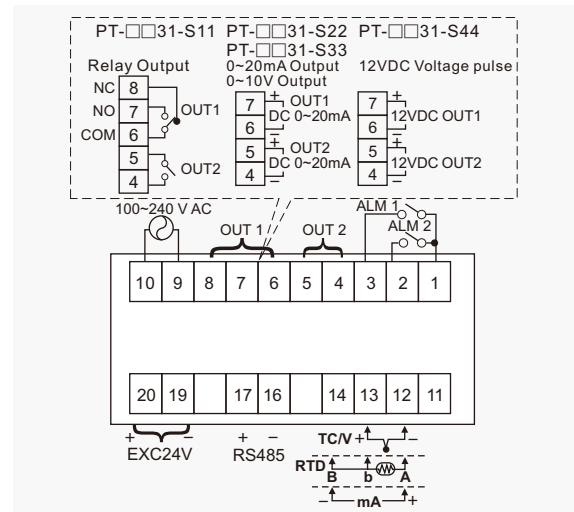
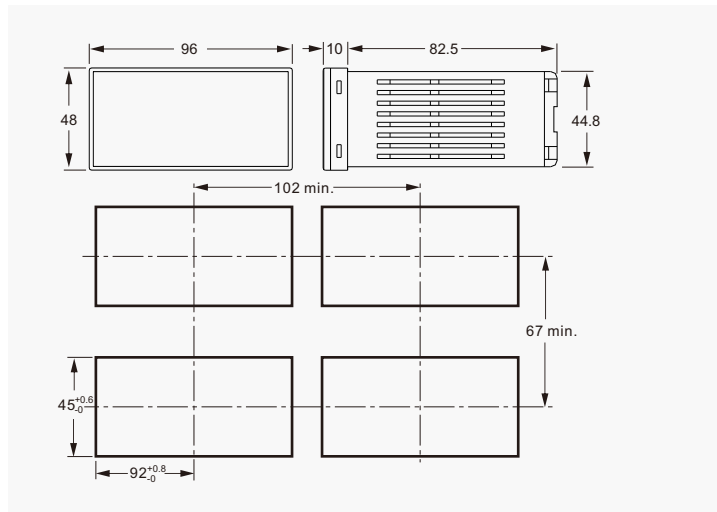
PT-7610:48mm(W) x 24mm(H) x 98.5mm(D)



PT-7620:48mm(W) x 48mm(H) x 101mm(D)



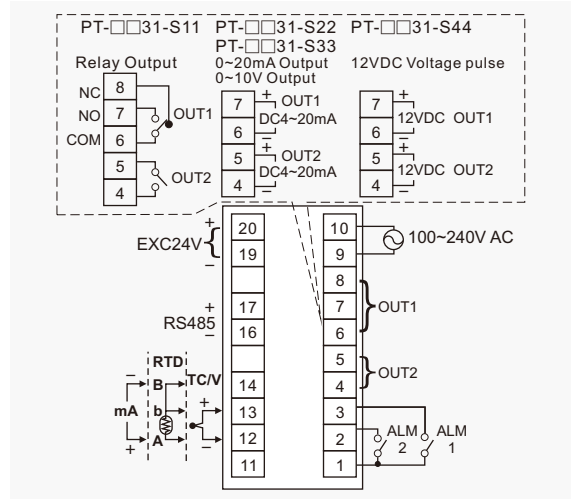
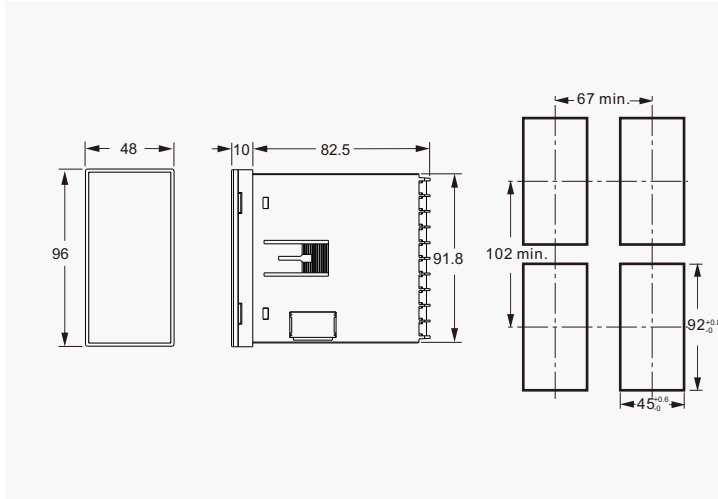
PT-7630:96mm(W) x 48mm(H) x 92.5mm(D)



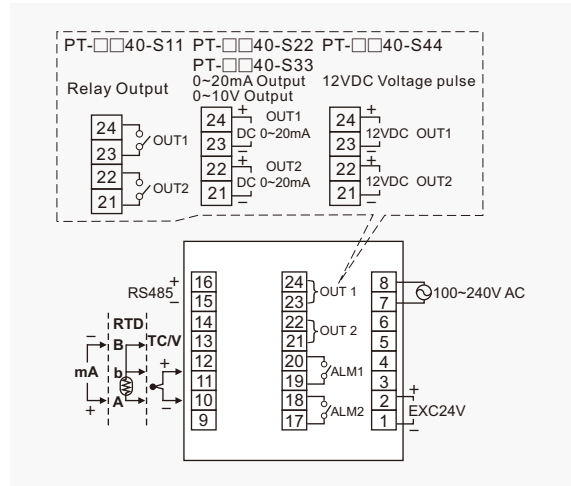
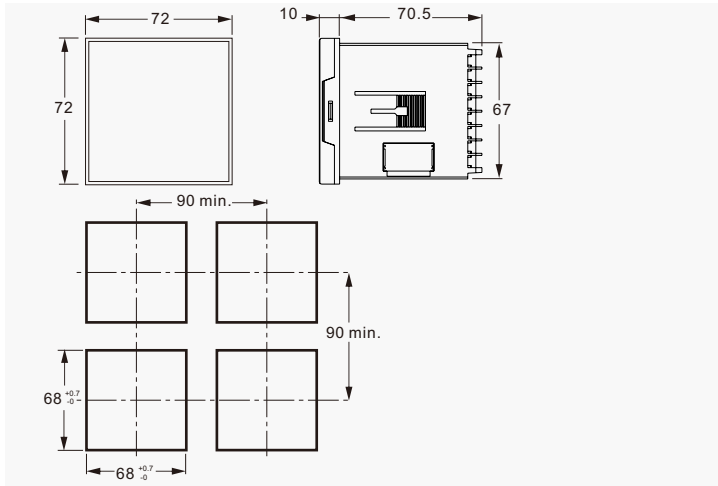
DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

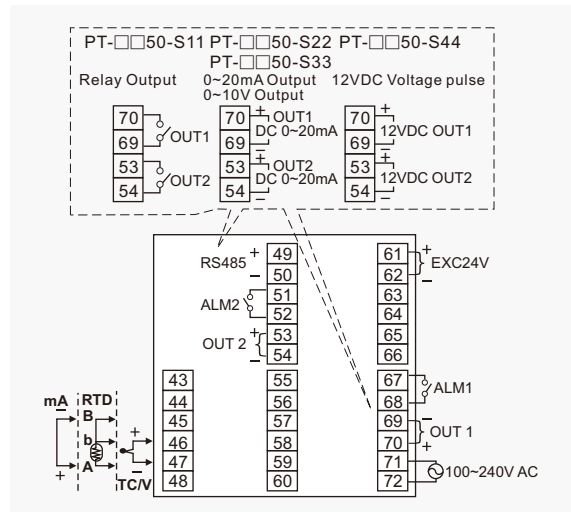
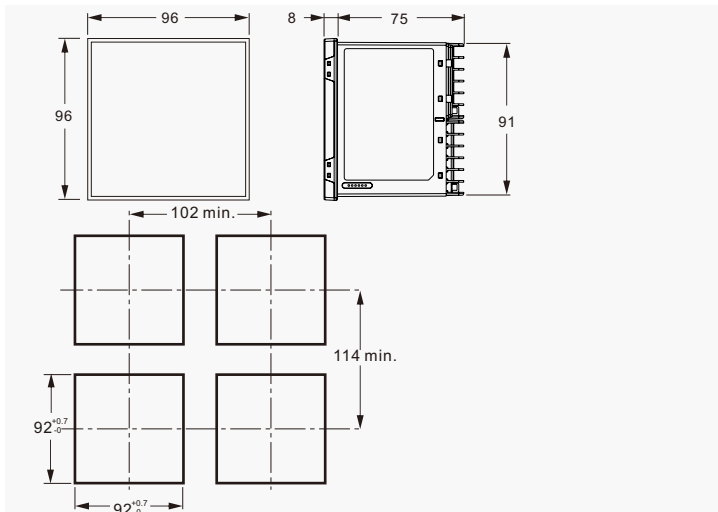
PT-7631:48mm(W) x 96mm(H) x 92.5mm(D)



PT-7640:72mm(W) x 72mm(H) x 80.5mm(D)



PT-7650:96mm(W) x 96mm(H) x 83mm(D)



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 provide reliable and stable results. Dual rows of 3 digits LED display gives clear and simple read outs of present value and set value. Operating by 4 buttons platform and user have ease of usage and user-friendly interface

High Accuracy, High Sampling Rate

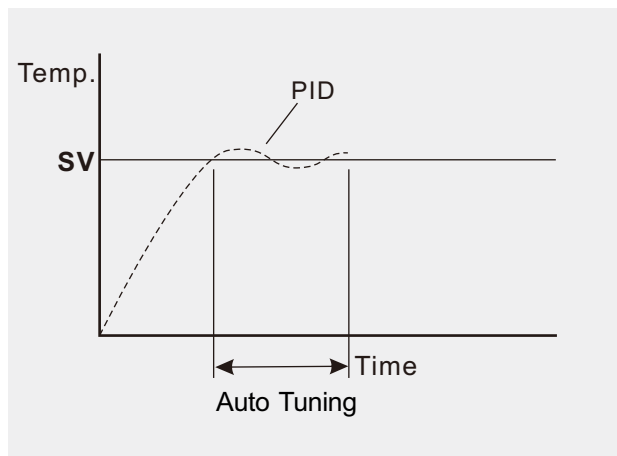
Sampling rate of 5 times per second (equivalent to 0.2sec per sampling) enables the controller to achieve high accuracy readings and accurate operations.

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.

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.



Digital Filter

Embedded digital filter function eliminates from interference signals to approach stabilizes control.



Sensor Break Alarm:

If the temperature sensor malfunction / break, 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 100 ~ 240VAC, 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°C
Sampling Interval	0.2s

SIGNAL INPUT

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

ALARM FUNCTION

Alarm Types	Absolute Value Alarm
Set Value	0~99s
Alarm Output	SPST, 3A-250Vac (Resistance Load)
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 Min.600Ω				

PRODUCT SPECIFICATIONS

STANDARD SPECIFICATIONS

Power Supply	100~240Vac, 50/60Hz
Power Consumption	7VA
Input Resistance	> 1MΩ
Input Compensation	-99~999°C
Digital Filter	10~100 Times
International Standard	CE
Settings Range	-99~999°C

DISPLAY

3 digit of 7 segment display, Accuracy $\pm 0.5\% \pm 1$ digit

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°C
Operation Humidity	20~85%RH
Storage Temperature	-20°~60°C

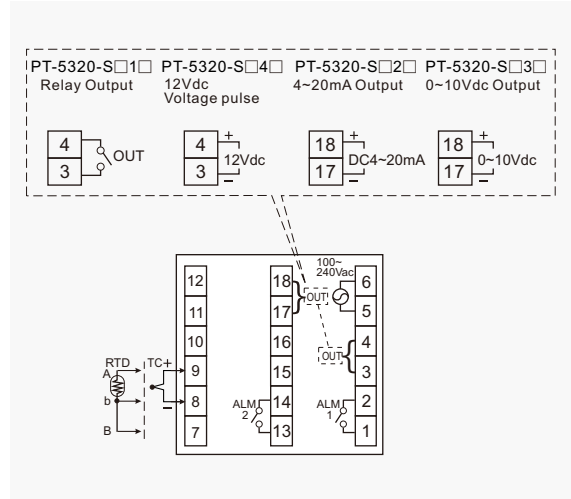
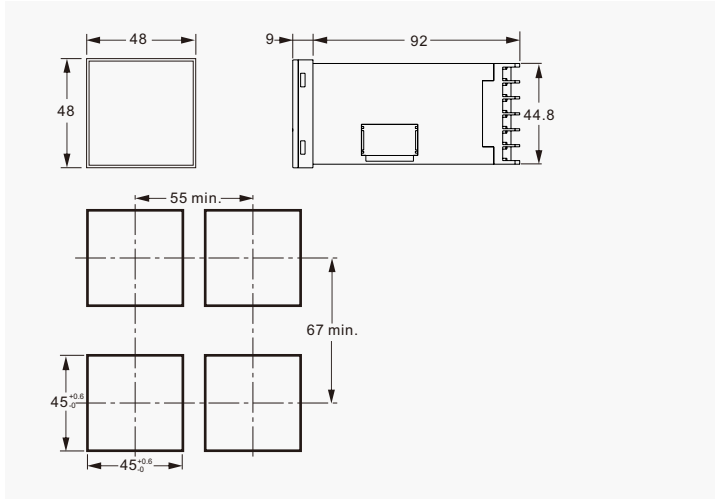
STRUCTURE

Installation	Panel mounted using 2 locking clips				
Casing Material	Plastic				
Dimensions	Refer to page 16 and 17				
Colour	Black				
Protection Rating	5320	5330	5331	5340	5350
	IP-65	IP-54	IP-54	IP-65	IP-65

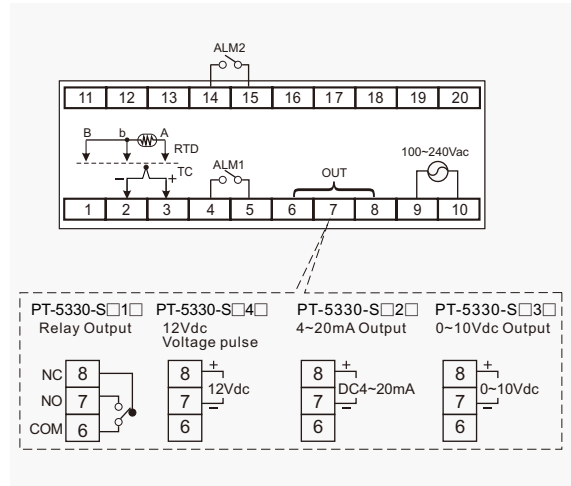
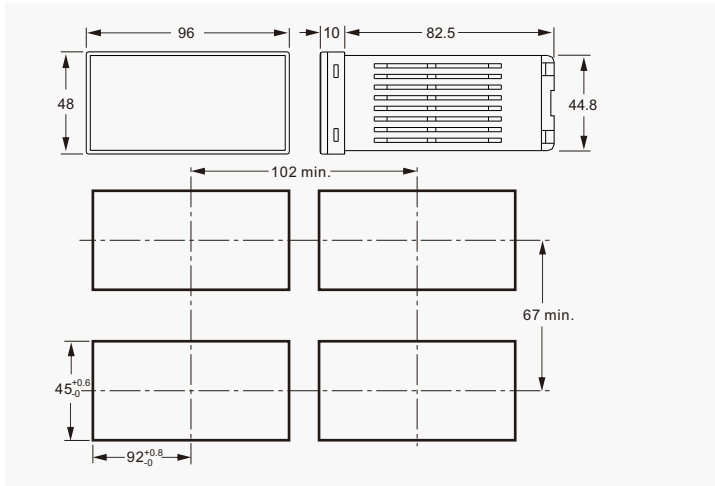
DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

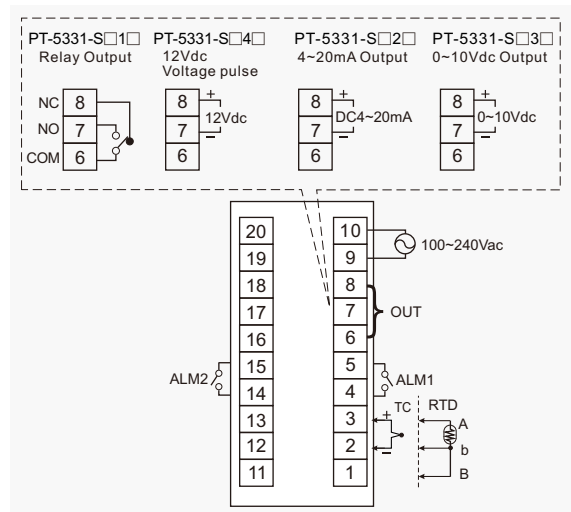
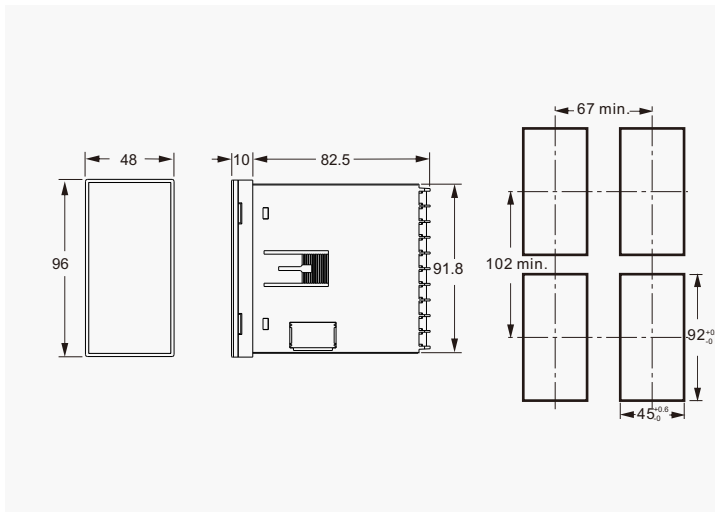
PT-5320:48mm(W) x 48mm(H) x 101mm(D)



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



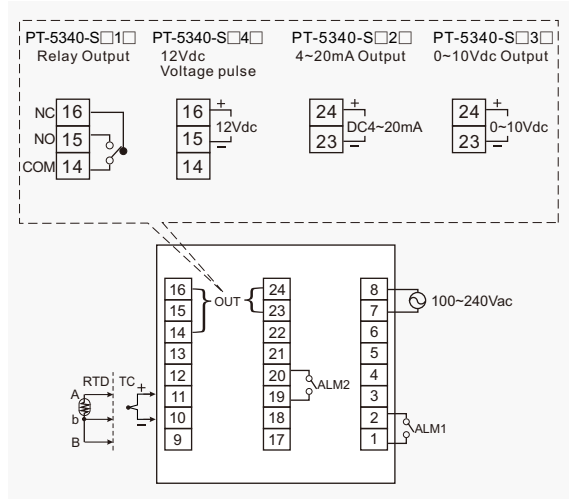
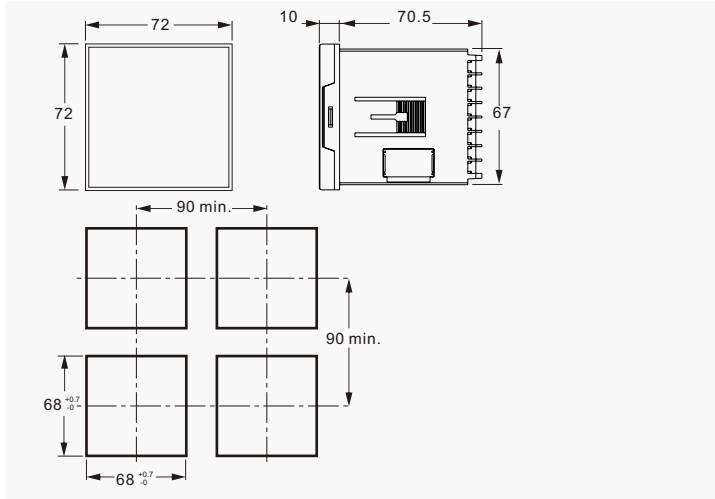
PT-5331:48mm(W) x 96mm(H) x 92.5mm(D)



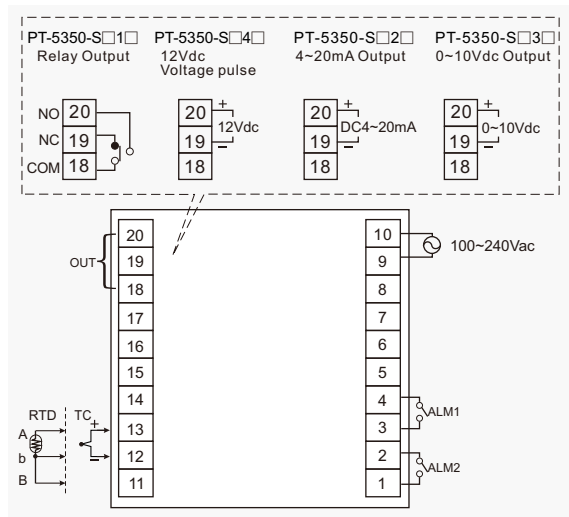
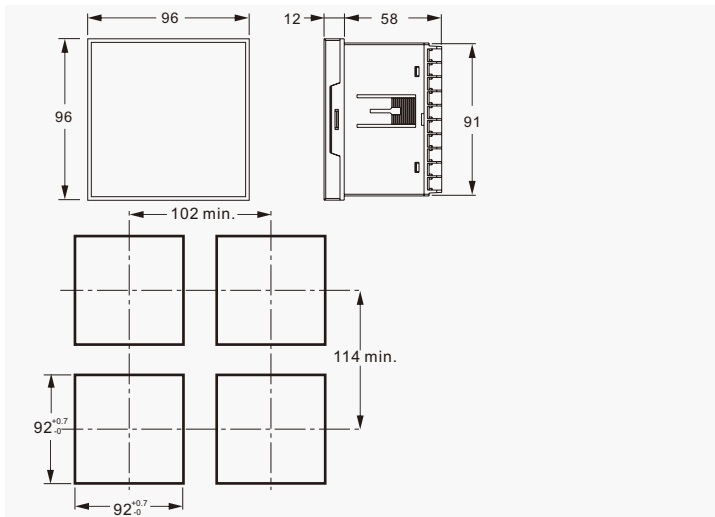
DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

DIMENSION / PANEL CUTOUT & WIRING DIAGRAM

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



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












ORDERING INFORMATION

P T - 5 3 - S -

Dimension	20---48x48	40---72x72	▲	▲					
	30---96x48	50---96x96							
	31---48x96								
Input Signal	0---J Type								
	1---K Type								
Control Output	2---PT100								
	0---None								
	1---Relay Output								
	2---4~20mA DC Output								
Alarm Output	3---0~10Vdc Output								
	4---Voltage pulse (12Vdc)for SSR drive								
	0---None								
Appendix	1---1 Set								
	2---2 Set								
Appendix	C --- Termindal protector								
	<input type="checkbox"/> --- None (Except 5350)								

★ Please call for customized specifications

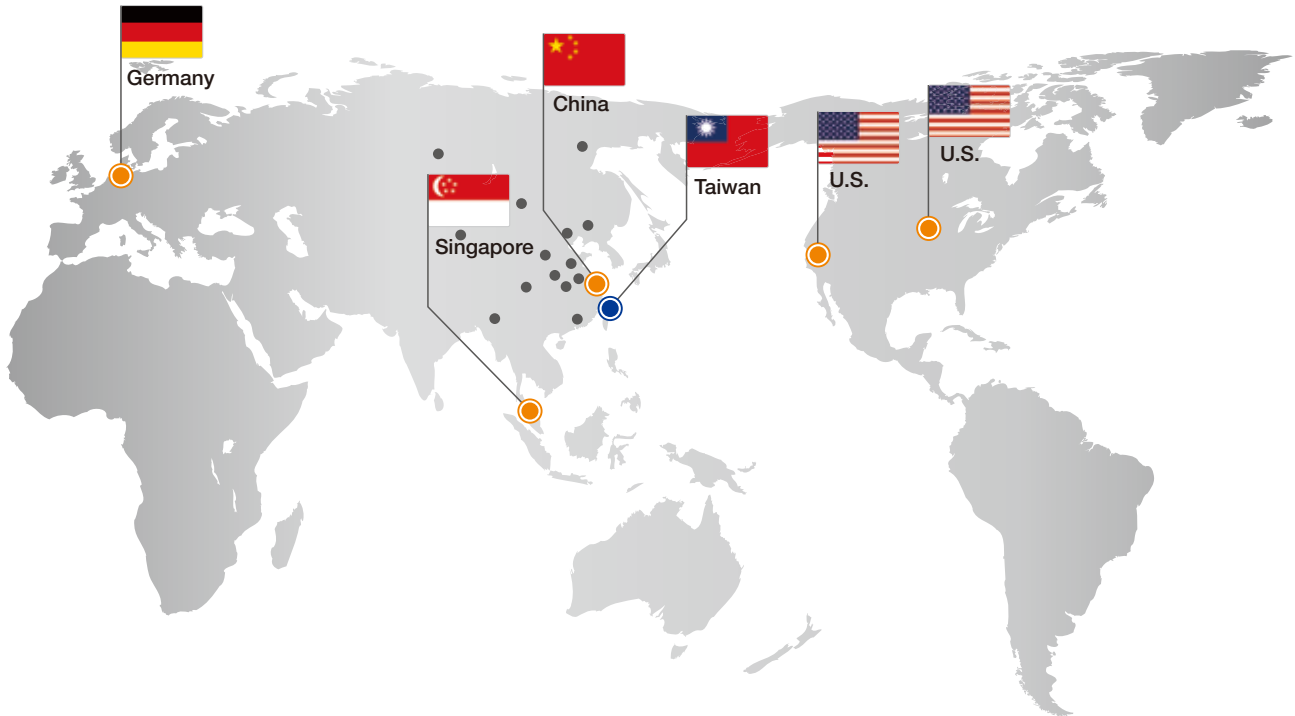
	PT-53XX	PT-76XX	
Model / Features			
Available Dimension DIN (mm)	1/16 DIN (48*48), 1/8 DIN (48*96), 1/8 DIN (96*48), 3/16 DIN (72*72), 1/4 DIN (96*96)	1/32 DIN (48*24), 1/16 DIN (48*48), 1/8 DIN (48*96), 1/8 DIN (96*48), 3/16 DIN (72*72), 1/4 DIN (96*96)	
Color	Black	Black	
Control Method	On/Off, PID+Auto Tuning+Fuzzy (A16)	On/Off, PID+Auto Tuning+Fuzzy	
Panel	 for confirmation or go info subdirectory	 for addition and mode change	
	 for hundred or abort from subdirectory or hot key for control setting	 for position shift	
	 for ten or hot key alarm 1 setting	 for confirmation	
	 for one or hot key alarm 2 setting		
PV Display	3 Digits in red color 0.36" for PT-5320, 0.39" for PT-5330, 0.41" for PT-5331, 0.56" for PT-5340, PT-5350	4 Digits in red color 0.31" for PT-7610, 0.36" for PT-7620, 0.39" for PT-7630, 0.36" for PT-7631, 0.56" for PT-7640 & PT-7650	
SV Display	3 Digits in green color 0.28" for PT-5320 & PT-5330, 0.36" for PT-5331 & PT-5340 & PT-5350	4 Digits in green color 0.28" for PT-7620 & PT-7630, 0.36" for PT-7631 & PT-7640 & PT-7650	
Power Supply	100 ~ 240 Vac	100 ~ 240 Vac	
Operation Temperature	0 ~ 50°C	0 ~ 50°C	
Storage Temperature	-20 ~ 60°C	-20 ~ 60°C	
Protection Rating	IP65 for PT-5320, PT-5340, PT-5350 IP54 for PT-5330, PT-5331	IP65 for PT-7620, PT-7640, PT-7650 IP54 for PT-7610, PT-7630, PT-7631	
Installation	Panel Mounted	Panel Mounted	
Memory Retention	EEPROM	EEPROM	
Signal Input	Thermocouple K, J, PT100, JPT100	Thermocouple K, J, R, S, B, E, N, T, PT100, JPT100, linear current, voltage	
Accuracy	0.5%FS ± 1 digit	0.3%FS ± 1 digit	
Input Compensation	-99 ~ 999°C	-1999 ~ 9999°C	

Model / Features	PT-53XX	PT-76XX	
Setting Range	-99 ~ 999°C	-1999 ~ 9999°C	
Digit Filter	30 times Fixed	1 ~ 50 times	
CONTROL FUNCTION			
Fraction Value	0 ~ 999	0 ~ 9999	
Integral Time	0 ~ 999	0 ~ 9999	
Differential Time	0 ~ 999	0 ~ 9999	
Alarm / Output Hysteresis setting	0 ~ 999	0 ~ 9999	
Sampling Interval	0.2 second	0.25 second	
Output Control Cycle	0 ~ 999 second	0.5 ~ 999.9 second	
ALARM FUNCTION			
Alarm Types	<p>Absolute Value Alarm, Deviation Alarm</p> <p>Alarm1 Mode:</p>	<p>Absolute Value Alarm, Deviation Alarm, Area Alarm</p>	
Delay Time	0 ~ 99 second	0 ~ 99 second	
Alarm Output	SPST-ON, 5A/ 250Vac (Resistance load) x 2 Max.	SPST-ON, 3A/ 250Vac (Resistance load) x 2 Max.	
Action Method	Direct / Reverse	Direct / Reverse	
CONTROL OUTPUT			
Main Control Output x 2 Max.	Relay Output (SPDT for PT-5330, PT-5331, PT-5350 OUT1) Pulse Output, Analog	Relay Output (SPDT for PT-7630, PT-7631 OUT1) Pulse Output, Analog (Re-transmission)	
Modulize Output	None	None	
Auxiliary Control Output x 2 Max.	None	None	



Model / Features	PT-53XX	PT-76XX	
OTHER FUNCTIONS			
Temperature Sensor Break detection	Yes	Yes	
Heater Feedback Irregularities Detection	No	No	
SV Remote Setting	No	No	
Parameters Lock	Password Protection	Yes	
Bar graph Display	No	No	
Ramp Soak Setting	No	No	
Event Function	No	No	
Communication Interface	No	RS485	
Communication Protocol	No	ModBus RTU or ASCII	
Approval	CE	CE, UL pending	

全球據點



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