

Temperature Controllers

- **Indicating Controllers** UT150/152/155/130
- **Heating & Cooling controllers** UT150/152/155/130
- **Motorized valve controllers** UT150/152/155
- **Program Controller** UP150
- **Limit Controller** UT150L

UT100
SERIES



A Complete Range of Temperature Controllers

Standard Controllers
ON/OFF, PID



UT150-□N

Heating & Cooling
Controllers



UT150-□□

Motorized Valve
Controllers



UT150-RR/Z

Limit
Controller



UT150L

Program
Controller



UP150

UT150 series 1/16DIN(48*48)



UT130-□N



UT130-□□

UT130 series 1/16DIN(48*48)



UT152-□N



UT152-□□



UT152-RR/Z

UT152 series 1/8DIN(48*96)



UT155-□N



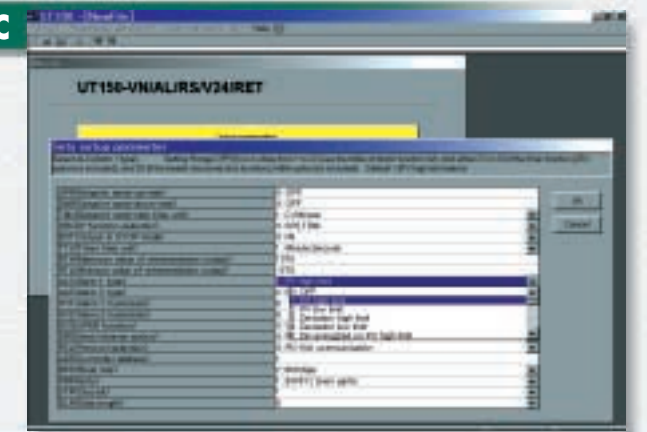
UT155-□□



UT155-RR/Z

UT155 series 1/4DIN(96*96)

ST100 Configuration Tool on PC

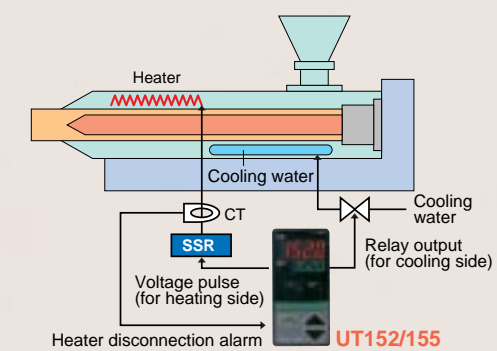


Typical Applications

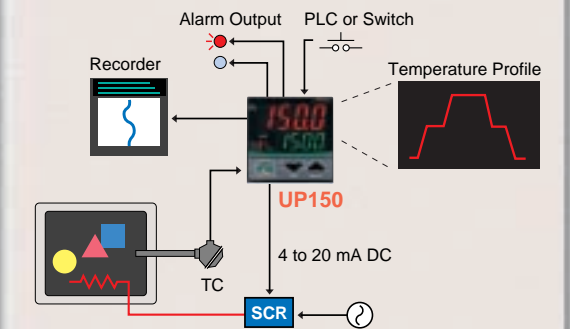
● Heating & Cooling Control

● Program Control

Injection Molding Machine



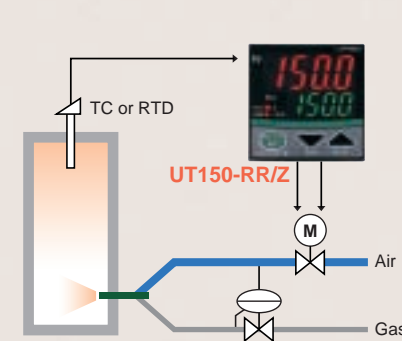
Simple Ceramic Oven



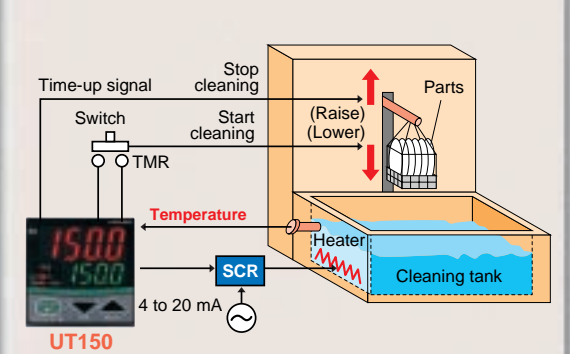
● Motorized Valve Drive Control

● PID control with Timer function

Small Furnace

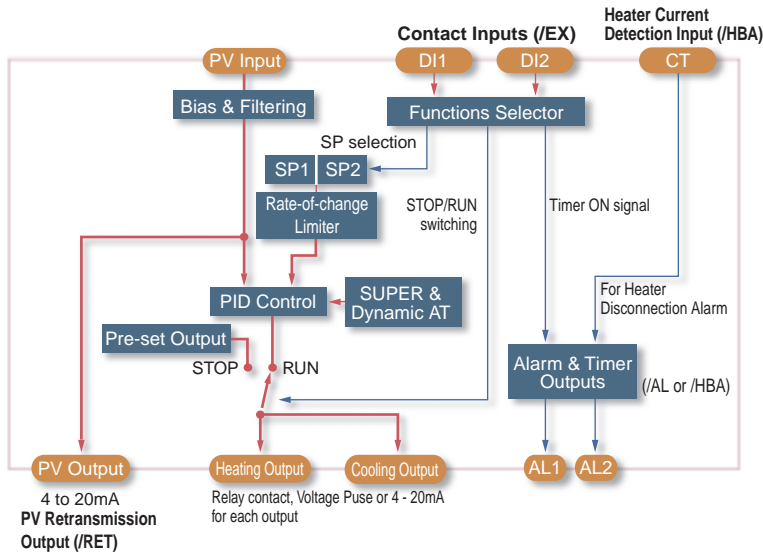


Cleaning Machine for Precision Parts



Function Block Diagram

Functional block diagram for Heating & Cooling type UT150/152/155 controller.



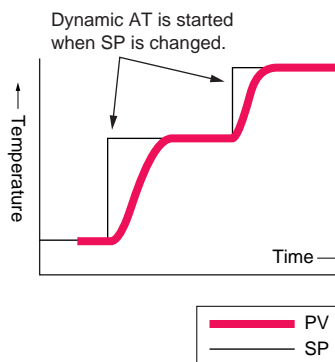
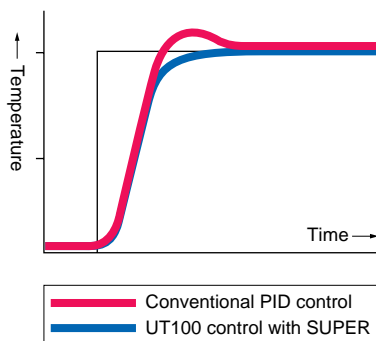
Keys and Displays



- 1 **SP2:**
"2" is illuminated when SP2 (Set point 2) is selected.
- 2 **AL1,AL2: Red**
Illuminates when Alarm is activated.
- 3 **OUT: Red**
Illuminates when Output is ON.
- 4 **SET/ENT key:**
Enter the setting data. Press 3sec to parameter setting.
- 5 **PV display: (Red)**
- 6 **SP display: (Green)**
- 7 **▲ : data increase key**
▼ : data decrease key

SUPER Function

SUPER control function suppresses overshooting. The field-proven SUPER function utilizes build-in operator experience and Fuzzy theory to deliver fine control and suppress overshooting.



Alarm Functions

25 types of Alarms are available. De-energized type and Waiting action are available.

- PV alarms: Low, High, High & Low within deviation
- Deviation alarms: Low, High, Low & High
- Heater Disconnection alarm
- Self check alarms: Fail, Error

Timer Function

Timer function is used to count the heating time for simple oven. Output status changes when the preset time has passed since a contact input turned on.

- Active or Passive function is available.
- Max. time span: 99min. 59sec.
- Start/Stop: One Digital Input

Two outputs from above alarms and a timer can be output.

RUN/STOP function

The control output is switched to Pre-set MV during STOP mode. RUN/STOP mode is selected by digital input. Pre-set MV can be set as 0% or 100%. In case of Heating & Cooling control, both Pre-set outputs are 0%.

Other Optional Functions

•SP switching:

A setpoint can be selected from two setpoints (SP1, SP2).

•PV Retransmission output:

PV signal is output as a 4 to 20mA signal

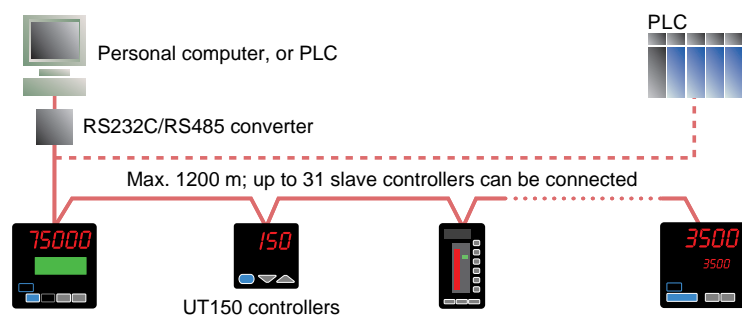
•24V power supply:

24V AC/DC power supply is also available.

Communication Function

Three protocols are available on RS485 communication port:

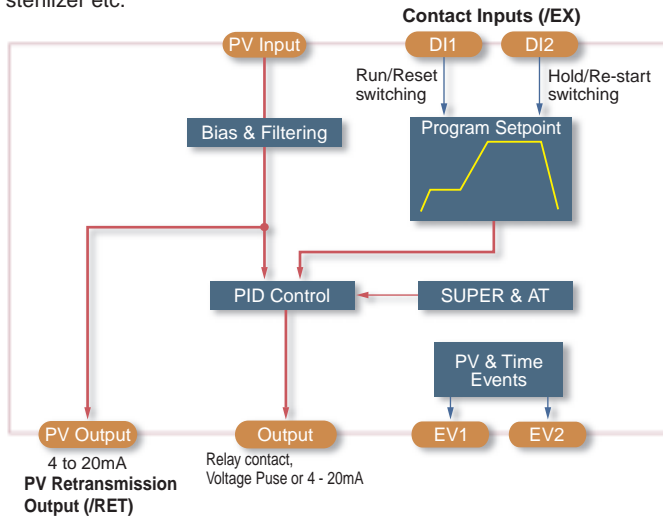
- MODBUS(RTU, ASCII)
- Yokogawa PC-link
- Yokogawa Ladder communication
- Number of controllers: Up to 31
- Max. distance: 1,200m
- Baud rate: 2400, 4800, or 9600 bps



UP150 Temperature Program Controller

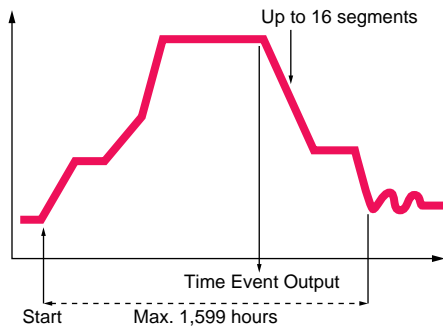
Temperature Controllers

Model UP150 is a simple program controller. UP150 is applicable to temperature program control for small oven, ceramic kilns, drying oven and sterilizer etc.



- 1 **SEG lamp**
Illuminates when the segment no. or remaining segment time is displayed on SP display.
- 2 **EV1, EV2 lamps**
- 3 **RUN lamp**
Illuminates while the operation mode is "RUN".
Flashing while the operation mode is "WAIT".
- 4 **HLD (hold) lamp**
Illuminates while the operation mode is "HOLD".
- 5 **SET/ENT key**
- 6 **PV display**
Indicates PV
- 7 **SP display**
Indicates SP (setpoint), segment no., remaining segment time and parameter values.
- 8 **Run key (or Data change key)**
Start (RUN) the program control.
- 9 **Reset key (or Data change key)**
Stop (RESET) the program control.

Temperature Program



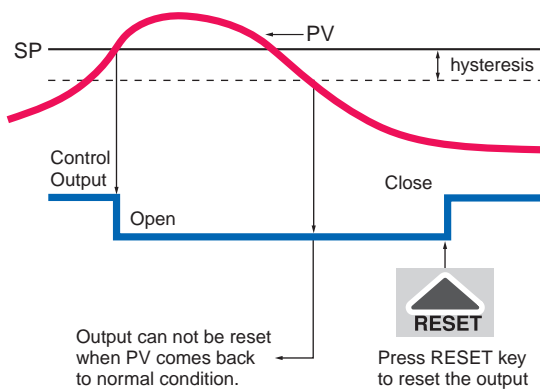
•Specifications for Program function

- Number of program pattern: One
- Number of program segments: 16 segments
- Program time span: Up to 1,599hours
- Accuracy of program time span: +/-2% of span
- Program operations: Wait, Hold, Advance
- Event outputs(standard feature): Two contact outputs
- Two contact inputs(option): For Run / Reset switching
For Hold / Restart (Cancel Hold) switching

UT150L Limit Controller

The UT150L Limit Controller (1/16 DIN size) is a FM approved instrument that can be configured either as a high limit or a low limit controller by a user. The UT150L features universal input, a timer to count the duration time if the setpoint is exceeded, and a register to retain the maximum temperature reached. The two alarm outputs, retransmission output, and communication function are available as optional features.

• High Limit action

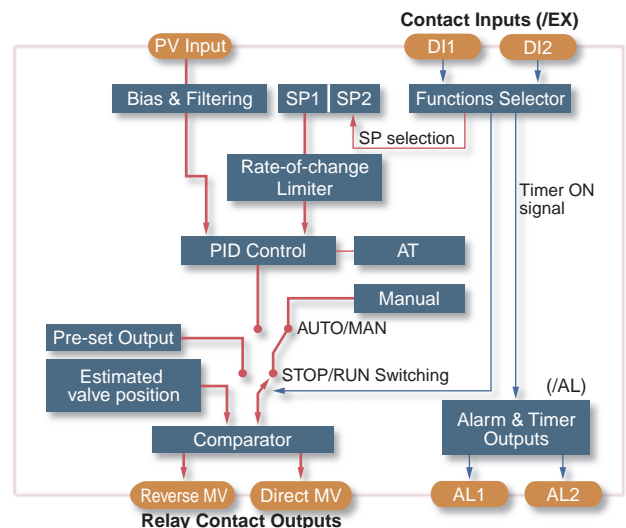


UT150/Z Motorized Valve Controller

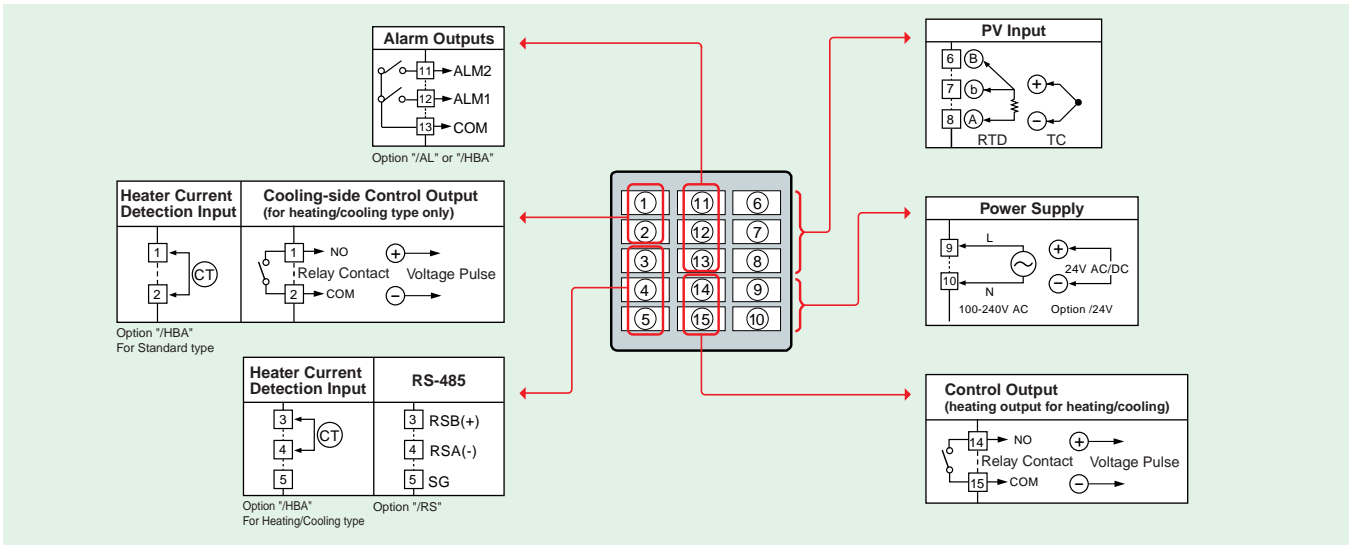
Model UT150/Z has two relay contact outputs to control a motorized valve or a motorized actuator. Model UT150/Z does not need the valve position feedback signal. This controller estimate the valve position automatically.

UT150/Z has MAN mode for moving the valve position manually. Non-linear control function is available to prolong the valve life.

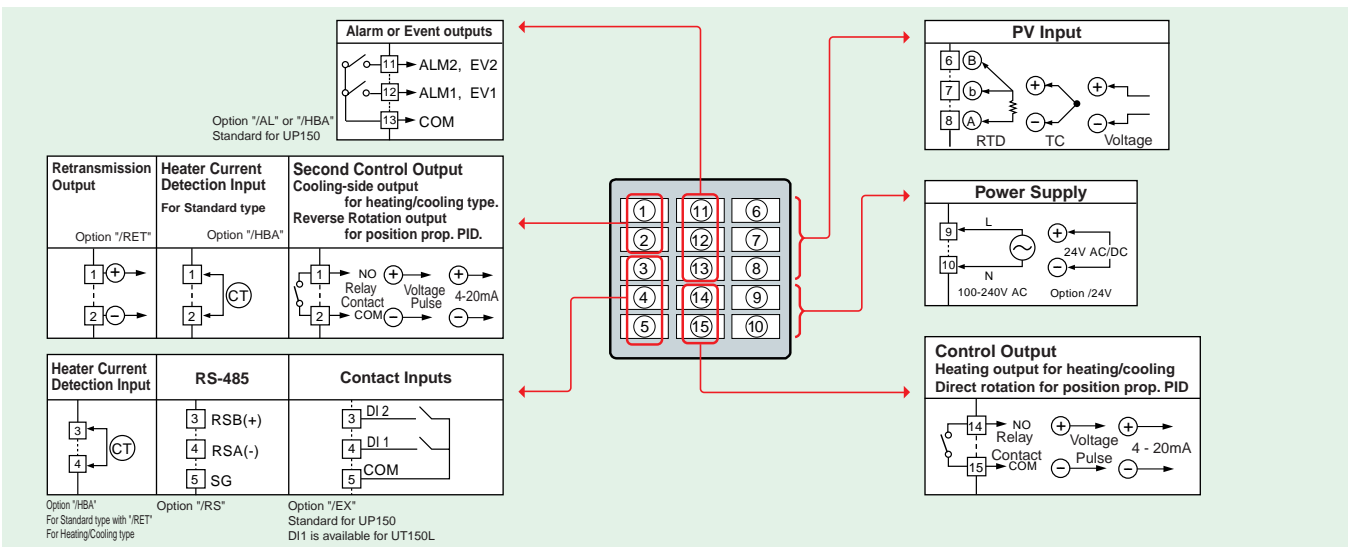
Function Block Diagram for Motorized Valve Controllers



UT130

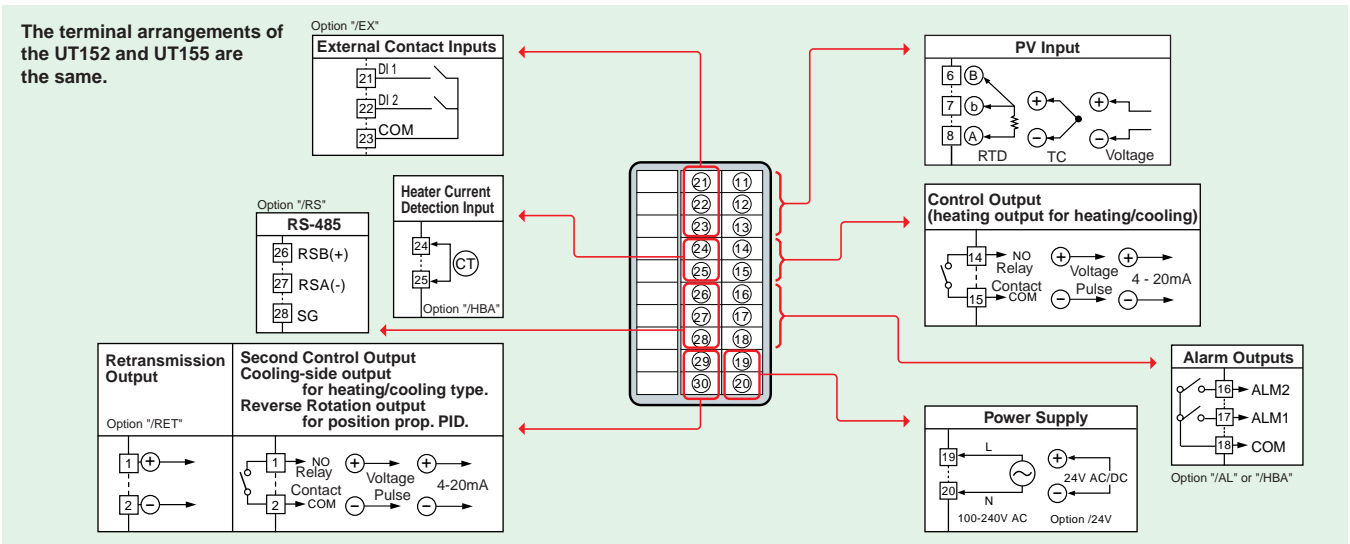


UT150, UT150-RR/Z, UT150L, UP150



UT152/155, UT152/155-RR/Z

The terminal arrangements of the UT152 and UT155 are the same.



Specification Table

(Visit our WEB site for more information <http://www.yokogwa.com/MCC/>)

	UT130	UT150, UT152, UT155	Motorized Valve control UT150, UT152, UT155	Program Control UP150	Limit Control UT150L
PV/SP Data display	3 digits	4 digits / 4 digits			
PV Input	1 Universal(TCs, RTDs)		1 Universal(TCs, RTDs, mV, V)		
Accuracy	1°C ± 1digit for RTDs, 2°C ± 1digit for TCs(except for B, R, S and under 0°C), 0.3% ± 1digit for mV and V				
Control scan period	500ms				
Number of Setpoints(SP)	1	2		N/A	1
Setpoint Program pattern	N/A(Not Available)			1	N/A
Segment of program pattern	N/A			16	N/A
Control type	ON/OFF, PID	ON/OFF, PID	Position Prop. PID	ON/OFF, PID	Limit Control
Super, Auto Tuning	SUPER, Dynamic AT		AT	SUPER, AT	N/A
Control Output	Relay or Voltage Pulse	Relay, Voltage Pulse or 4-20mA	Two Relays	Relay, Voltage Pulse or 4-20mA	Relay
Control Output for Cooling output	Relay or Voltage Pulse	Relay, Voltage Pulse or 4-20mA	N/A	N/A	N/A
PV retransmission output	N/A	1 point, 4-20mA	N/A	1 point, 4-20mA	
Contact Input	N/A	2 points for SP selection, RUN/STOP switching or Timer		2 points for Program operation	1 point for Reset
Timer	N/A	Up to 99hours 59min.		N/A	N/A
Alarm	25 types			PV and Time events	22 types
Heater disconnection alarm	1 point	1 point	N/A	N/A	N/A
Two contact outputs	Alarm, Heater disconnection	Alarm, Heater disconnection or Timer		PV & Time events	Alarms
Communication	RS485, Protocol(MODBUS, PC-link, Ladder)				
Power supply	100-240Vac(8VA), 24Vac/dc(3W)				100-240Vac(8VA)
Approvals	UL, CE, CSA				FM, UL, CE, CSA
Front Face protection	IP65	IP65 for UT150, IP55 for UT152/155		IP65	IP65
Size, (Height* Width* Depth mm)	48*48*100mm	UT150 = 48*48*100mm UT152 = 96*48*100mm UT155 = 96*96*100mm		48*48*100mm	
Ambient Temperature, R.H.	0 to 50°C, 20 to 90%(non condensing) For strage conditions -25 to 70°C 5 to 95%(non condensing)				

PV input Type and Ranges(key selectable)

● UT130 Input Ranges

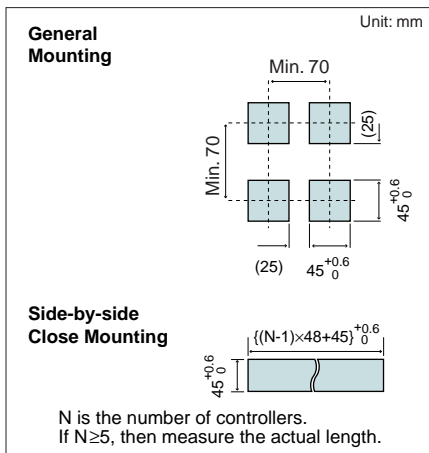
Input Type	Range(°C)	Range(°F)	
Thermocouple	K	-199 to 999°C	-199 to 999°F
		0 to 600°C	32 to 999°F
		0 to 400°C	32 to 750°F
		-199 to 200°C	-199 to 400°F
	J	-199 to 999°C	-199 to 999°F
	T	-199 to 850°C	-199 to 750°F
	E	-199 to 999°C	-199 to 999°F
RTD	Pt100	-199 to 900°C	-199 to 999°F
		-199 to 400°C	-199 to 750°F
		0 to 400°C	32 to 750°F
	JPt100	-199 to 500°C	-199 to 999°F
		-19.9 to 99.9°C	-199 to 999°F

● UT150/152/155/150L and UP150 Input Ranges

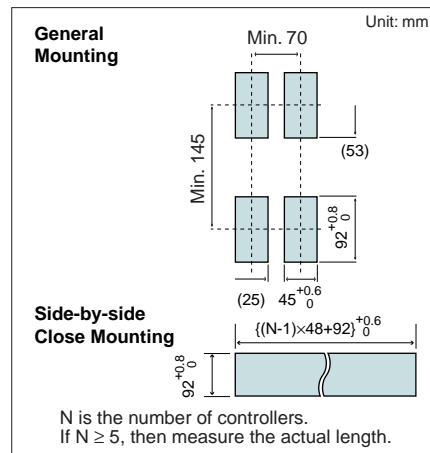
Input Type	Range(°C)	Range(°F)	
Thermocouple	K	-270 to 1370°C	-300 to 2500°F
		0.0 to 600.0°C	32.0 to 999.9°F
		0.0 to 400.0°C	32.0 to 750.0°F
		-199.9 to 200.0°C	-300.0 to 400.0°F
	J	-199.9 to 999.9°C	-300 to 2100°F
	T	-199.9 to 400.0°C	-300.0 to 750.0°F
	E	-199.9 to 999.9°C	-300.0 to 1800.0°F
	R	0 to 1700°C	32.0 to 3100°F
	S	0 to 1700°C	32.0 to 3100°F
	B	0 to 1800°C	32.0 to 3200°F
	N	-200 to 1300°C	-300 to 2400°F
	L	-199.9 to 900.0°C	-300 to 1600°F
	U	-199.9 to 400.0°C	-300 to 750°F
RTD	Pt100	0 to 1390°C	32.0 to 2500°F
		-199.9 to 850.0°C	-199.9 to 999.9°F
		0.0 to 400.0°C	32.0 to 750.0°F
	JPt100	-199.9 to 200.0°C	-300 to 400°F
	-19.9 to 99.9°C	-199.9 to 999.9°F	
DC voltage		0 to 100mV	0.0 to 100.0
		0 to 5 V	0.000 to 5.000
		1 to 5 V	1.000 to 5.000
		0 to 10 V	0.00 to 10.00

Panel Cutout Dimensions

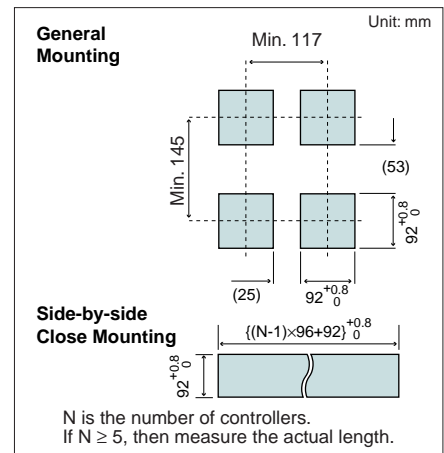
● UT130 and UT150



● UT152



● UT155



Model & Suffix codes

Note:

- One optional function can be selected from each option group A and B. Other optional functions can be selected freely.
- /HBA option includes all functions that /AL option has. /AL and /HBA can not be selected at same time.

● Model UT130 Standard Controller

Model	Suffix Code	Description
UT130		Controller 1/16DIN
Control Output	-RN -VN	Relay contact output Voltage Pulse output
Options	/AL /V24 /HBA /RS	Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm Communication function

● Model UT150 Standard Controller

Model	Suffix Code	Description
UT150		Controller 1/16DIN
Control Output	-RN -VN -AN	Relay contact output Voltage Pulse output 4-20mA output
Options	group A group B	/AL /V24 /HBA /RET /EX /RS
		Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm PV retransmission output Two contact inputs Communication function

● Model UT152/155 Standard Controllers

Model	Suffix Code	Description
UT152		Controller 1/8 DIN
UT155		Controller 1/4 DIN
Control Output	-RN -VN -AN	Relay contact output Voltage Pulse output 4-20mA output
Options	/AL /V24 /HBA /RET /EX /RS	Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm PV retransmission output Two contact inputs Communication function

● Model UT150 Motorized Valve Controller

Model	Suffix Code	Description
UT150		Controller 1/16DIN
Control Output	-RR	Relay contact outputs
Options	group A	/AL /V24 /EX /RS
	/Z	Position Proportional PID
		Alarm outputs (2 points) Power supply 24Vac/dc Two contact inputs Communication function

● Model UT152/155 Motorized Valve Controllers

Model	Suffix Code	Description
UT152		Controller 1/8DIN
UT155		Controller 1/8DIN
Control Output	-RR	Relay contact outputs
Options	/AL /V24 /EX /RS	Alarm outputs (2 points) Power supply 24Vac/dc Two contact inputs Communication function
	/Z	Position Proportional PID

● Model UT130 Heating & Cooling Controller

Model	Suffix Code	Description
UT130		Controller 1/16DIN
Heating Output	-R -V	Relay contact output Voltage Pulse output
Cooling Output	R V	Relay contact output Voltage Pulse output
Options	group A	/AL /V24 /HBA /RS
		Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm Communication function

● Model UT150 Heating & Cooling Controller

Model	Suffix Code	Description
UT150		Controller 1/16DIN
Heating Output	-R -V -A*	Relay contact output Voltage Pulse output 4-20mA output
Cooling Output	R V A	Relay contact output Voltage Pulse output 4-20mA output
Options	group A	/AL /V24 /HBA* /EX /RS
		Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm Two contact inputs Communication function

* HBA can not be selected when the heating control output is 4-20mA

● Model UT152/155 Heating & Cooling Controllers

Model	Suffix Code	Description
UT152		Controller 1/8DIN
UT155		Controller 1/8DIN
Heating Output	-R -V -A*	Relay contact output Voltage Pulse output 4-20mA output
Cooling Output	R V A	Relay contact output Voltage Pulse output 4-20mA output
Options	/AL /V24 /HBA* /EX /RS	Alarm outputs (2 points) Power supply 24Vac/dc Heater disconnection alarm Two contact inputs Communication function

* HBA can not be selected when the heating control output is 4-20mA

● Model UP150 Program Controller

Model	Suffix Code	Description
UP150		Program Controller 1/16DIN
Control Output	-RN -VN -AN	Relay contact output Voltage Pulse output 4-20mA output
Options	group A	/V24 /RET /EX /RS
		Power supply 24Vac/dc PV retransmission output Two contact inputs Communication function

● Model UT150L Limit Controller

Model	Suffix Code	Description
UT150L		Limit Controller 1/16DIN
Control Output	-RN	Relay contact output
Options	/AL /RET /EX /RS	Alarm outputs (2 points) PV retransmission output One contact input Communication function

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World Wide Web site at
<http://www.yokogawa.com/MCC>

⚠ NOTICE

- Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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