YOKOGAWA

Digital Indicating Controllers

SELECTION GUIDE

Indicating Controllers	UT130/150/321/351/420/450/520/551/750
Process Controller	US1000
Program Controllers	UP150/351/550/750
Indicators with Alarms	UM331/351
Manual Setters	UD310/320/351

LR67174C

FM APPROVED

Bulletin 05A01A01-01E

Distribué par :

HVS System
DISTRIBUTEUR CONSEIL DEPUIS 1985

2 rue René Laennec 51500 Taissy France
Fax: 03 26 85 19 08, Tel : 03 26 82 49 29

Email : hvssystem@hvssystem.com
Site web : www.hvssystem.com

A Complete Range of Exceptional Controllers

Select the One Suitable for Your Needs from YOKOGAWA Digital Indicating Controllers

96 × 96 (1/4DIN)

UP351 Active Display
Program Controller
with Active Color PV Display

UP550
Program Controller

UP750
Program Controller

UM351 Active Display
Indicator with Alarms
with Active Color PV Display

UT351 Ethernet Active Display
Indicating Controller
with Ethernet
& Active Color PV Display

UT450
Indicating Controller

UT551 Ethernet Active Display
Indicating Controller
with Ethernet
& Active Color PV Display

UT750
Indicating Controller

US1000
Process Controller
(72×144mm)

48 × 96 (1/8DIN)

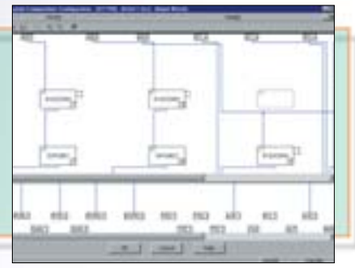
UM331 Active Display
Indicator with Alarms
with Active Color PV Display

UT321 Active Display
Indicating Controller
with Active Color PV Display

UT420
Indicating Controller

UT520
Indicating Controller

LL100,LL1100
Parameters Setting Tool



LL200,LL1200
Custom Computation
Building Tool

48 × 48 (1/16DIN)

UT130
Indicating Controller

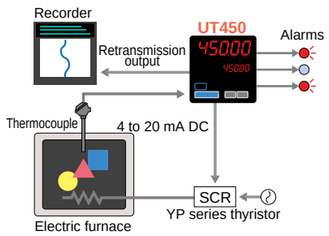
UT150
Indicating Controller

UP150
Program Controller

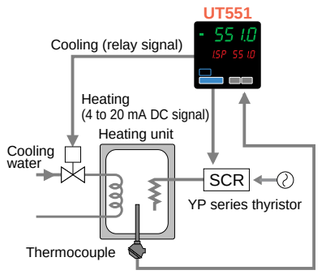
(Unit:mm)

For industrial furnace control

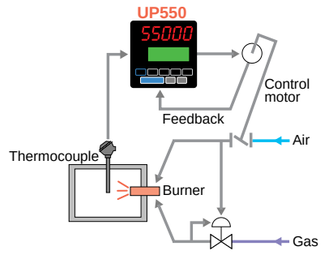
● Electric furnace



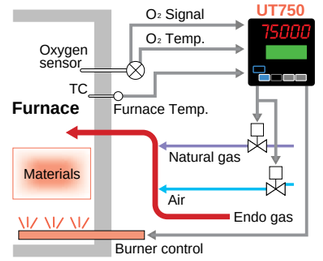
● Heating/cooling control



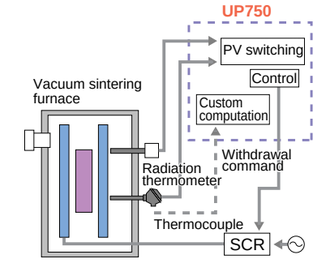
● Drive the control motor



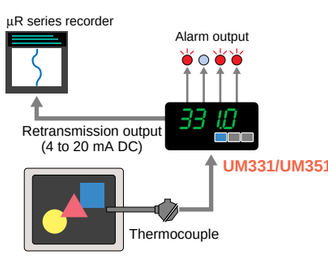
● Carbon Potential control



● Vacuum sintering furnace control

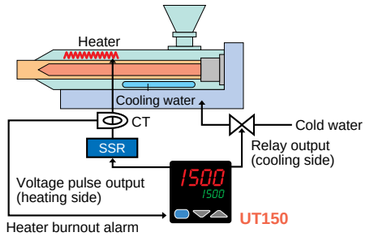


● Oven temperature monitor

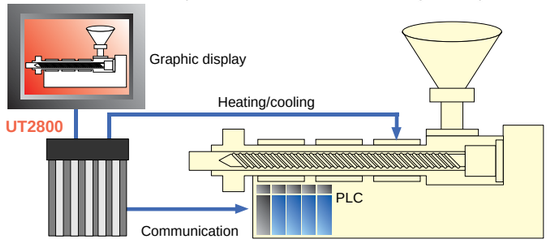


For plastics processing and forming

● Control of extruders

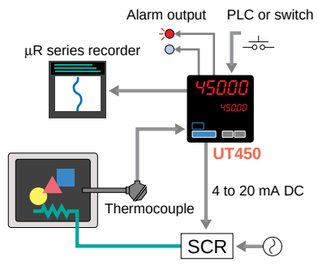


The UT2800 series is optimum for 3- to 4-zone heating/cooling control.

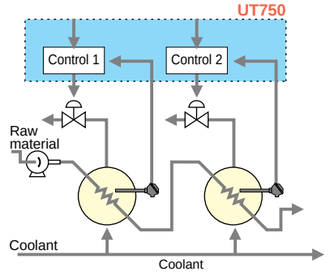


For environmental testing and control

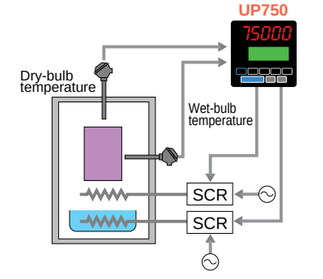
● External setpoints switching



● Dual-loop control

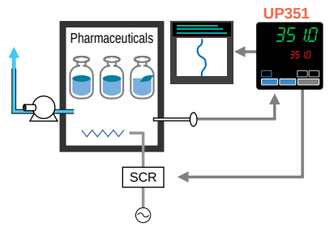


● Temperature and Humidity control

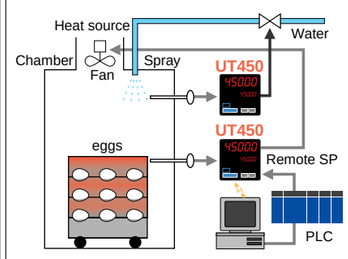


For food and pharmaceutical industries

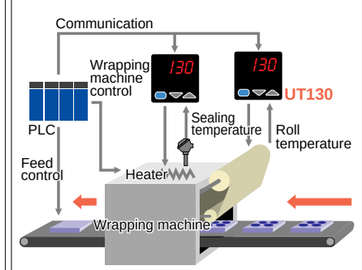
● Temperature control for sterilization



● Incubator control

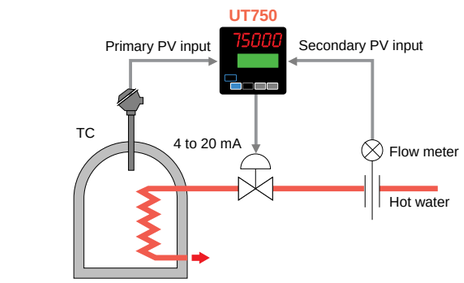


● Food wrapping machine

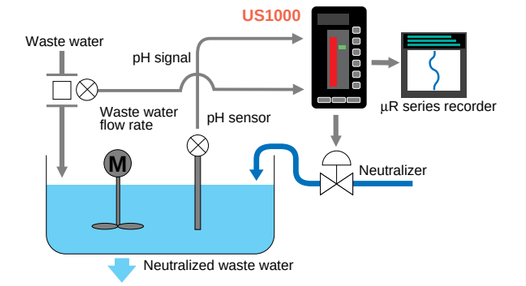


Optimum controllers for process control

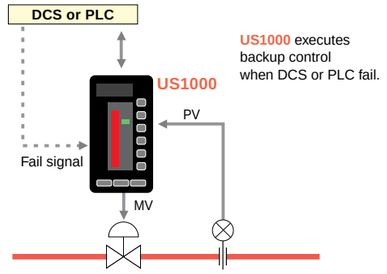
● Cascade control



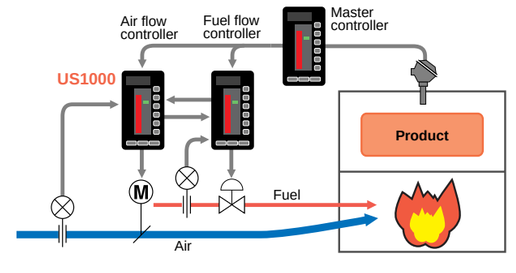
● Feed-forward control



● Backup control

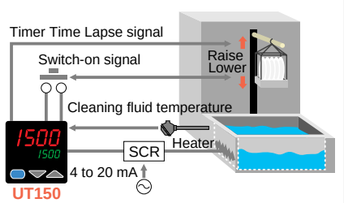


● Combustion control

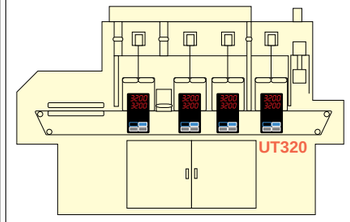


For electronics and semiconductor manufacturing

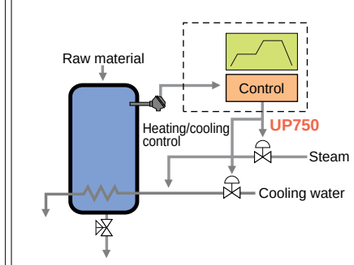
● Control of cleaning equipment



● Control of reflow furnaces



● Temperature control with high accuracy



Model UT551 & UT351 with Industrial Ethernet

Enhancing automation and process connectivity!

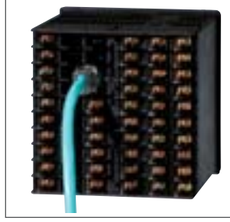
● Plug & Play Operation

● **ETHERNET-based architecture** allows new processes to be added as easily. –No need for extensive hardware to connect and run the application, because all information is managed on the server.

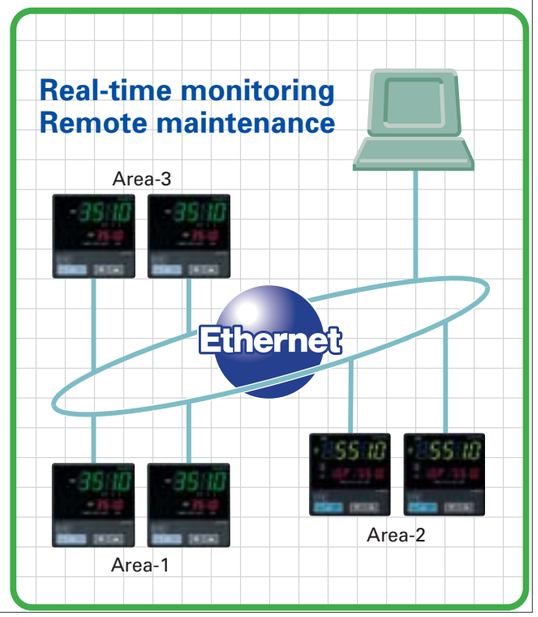
● Works with any **Modbus TCP/IP** compliant software. MODBUS function codes 03,06,08 & 16 are available.

● **Reduce labor cost in wiring and setup** of communications network.

● **Faster connection speed.**



Direct Connection to Ethernet
RJ45 connector-100Base-TX/
10Base-T



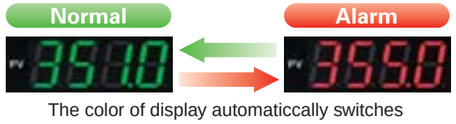
Controllers with Active Color PV Display

See the status of your process conditions *INSTANTLY!*

● **Alarm Status**
Active color display changes from **Green (normal)** to **Red (alarm)**

● **Deviation Status**
Color changes based on a PV deviation from SP

● **User-defined Color**
Choose between **Green** or **Red** display for constant readings



The color of display automaticcally switches
from **GREEN** to **RED** or **RED** to **GREEN**.


UT551
Controller


UT351
Controller


UT321
Controller


UP351
Program Controller


UM351
Indicator


UM331
Indicator

Universal Input/Output Easy-to-change input and output types

● Universal Input

● **Selectable among TC, RTD, mV and DC voltage.**
The type of input signal and input range can be changed at the customer side by some key operation or by using LL100 or LL1100 parameter setting tool.

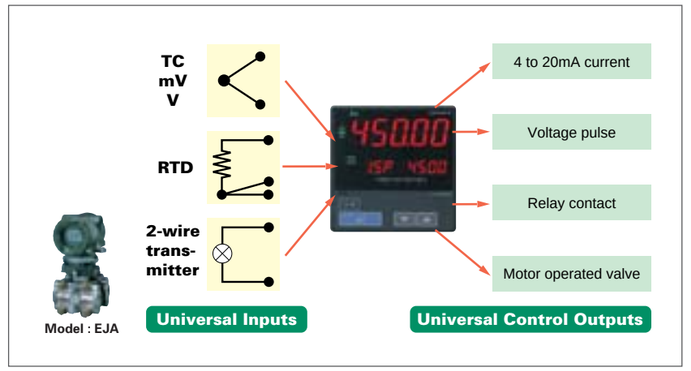
Thermocouple Type	: K, J, T, B, S, R, N, E, L, U, W, PL-2, PR20-40, W97Re3-W75Re25
RTD Type	: Pt100, JPt100
DC Voltage Input	: 0.4 to 2V, 1 to 5V, 0 to 2V, 0 to 10V, 0.00 to 1.25V(Note), -10 to 20mV, 0 to 100mV

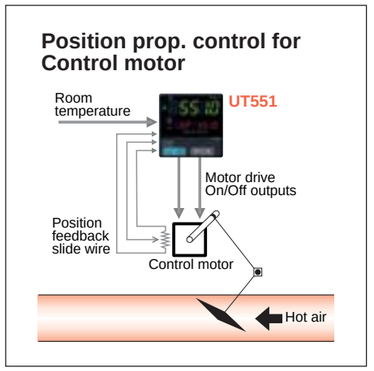
Note: For universal input 2 of UT420,UT450,UT520,UT550,UT750,UP550,UP750 and US1000 only.

● **0.1% Indication Accuracy.**

● **Models UT750, UP750 and US1000 have two universal inputs.**

● **Connectable up to two 2-wire transmitters simultaneously.**
All GREEN SERIES instruments have a 15V Loop Power Supply (15V LPS) for a transmitter.
Moreover, 24V LPS is also available simultaneously for some instruments as optional function. Model US1000 has two 24V LPS functions.
Applicable models for 24V LPS: UT321/351, UT450, UT550, UM331/351, US1000





● Universal Output

● **Selectable among Relay, Voltage Pulse and Current outputs.**
Relay output: ON/OFF control, Time-proportional PID control
Voltage Pulse output: Time-proportional PID control
Current output: Continuous PID control

● **Heating/Cooling Control has two sets of universal outputs.**
Any combinations with Relay, Pulse and Current outputs are available. There are some limitations to UT320/350 controllers.

● **Drive the Motorized Control Valve by using Position-Proportional PID.**
The position-proportional PID control function has two sets of relay outputs for direct / reverse rotation of motorized control valve.
The side wire input to feed back the valve position is also available.

Simple Operation Fewer key strokes during normal operation

● Simple Key Operation

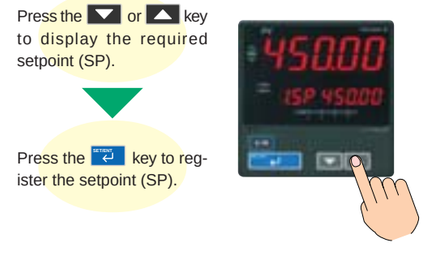
Setpoint (SP) can easily be changed: press the ▼ or ▲ key to display the required setpoint and then press the SET/ENT key to resister it.(See the figure on the right.)

For a programmable controller, display the pattern signal and press the RUN key to start the operation. Press the RESET key to stop the operation.

● Security Functions with Password

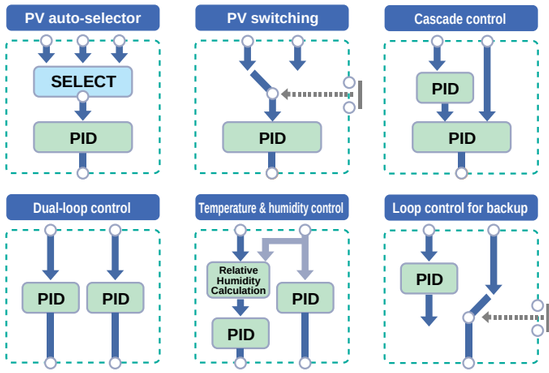
A password can be set to prevent accidental or deliberate change to the setup parameter settings of the controller.

Applicable models:All the models of GREEN Series (except for UT130,UT150,UT152 and UT155)



Powerful Control Functions Various functions for freely creating input/output-related computations

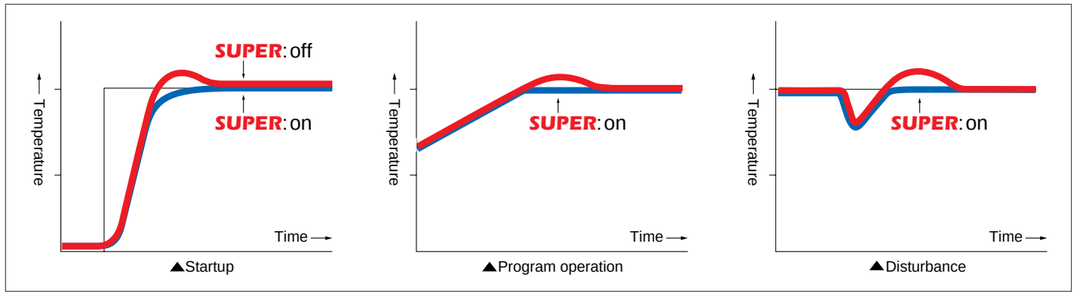
14 types of build-in Controller Functions



- Single-loop control
- Cascade primary-loop control
- Cascade secondary-loop control
- Cascade control
- Loop control for backup
- Loop control with PV switching
- Loop control with PV auto-selector
- Loop control with PV-hold function
- Dual-loop control
- Temperature & humidity control
- Cascade control with two universal inputs
- Loop control with PV switching and two universal inputs
- Loop control with PV auto-selector and two universal inputs
- Custom computation control

SUPER Function suppresses overshooting

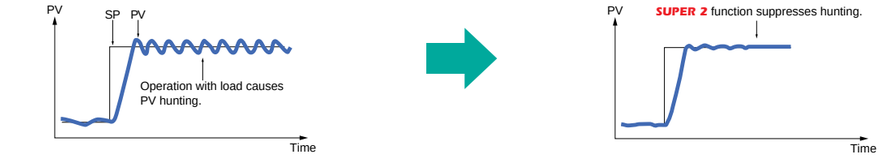
The field-proven **SUPER** function utilizes built-in operator experience and fuzzy theory to deliver fine control and suppress overshooting.



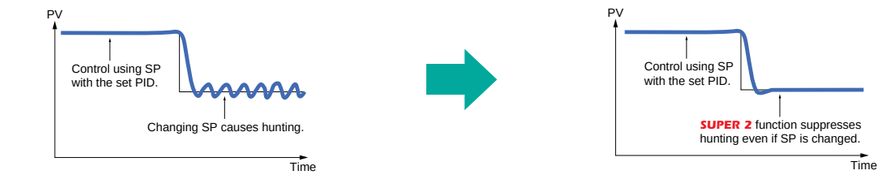
SUPER 2 Function suppresses hunting

The new **SUPER 2** function utilizes built-in operator experience and modern control theory to deliver fine control and suppress hunting.

Effect 1: For operation of empty furnace with the set PID



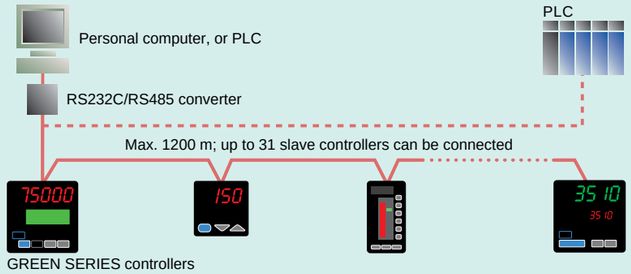
Effect 2: For changing SP



Communication Functions

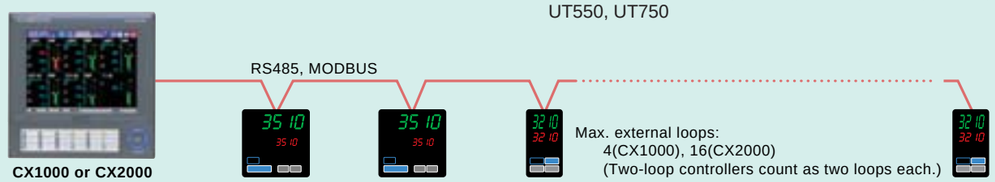
MODBUS Communication

A protocol used for communicating with a general-purpose personal computer and PLC.
Protocol: MODBUS RTU
MODBUS ASCII
Baud Rate: 600bps to 38.4kbps
(up to 9,600bps in case of MODBUS.)



CX communication

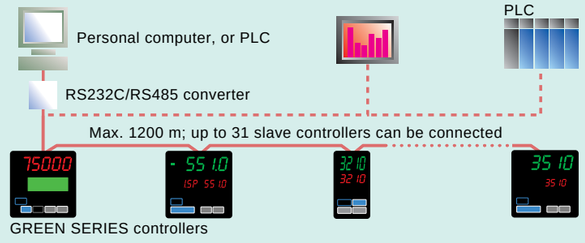
A CX1000/2000 lets you control external UT controllers with same ease as CX's embedded controls.
Connectable models : UT320, UT321, UT350, UT351, UT420, UT450, UT520, UT550, UT750



Personal Computer Link Communication

A protocol used for communicating with a general-purpose personal computer, or UT link module and serial communication module of PLC (FA-M3 range-free controller).

FA-M3 and a recorder can be connected in the same line.



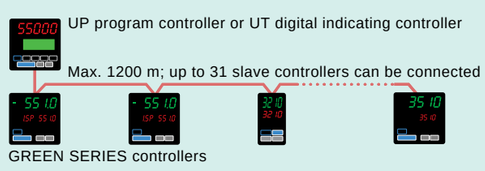
Ladder Communication

A protocol used for communicating with a PLC. Communication with a computer link unit of the MELSEC-A series (made by Mitsubishi Electric Corporation) is possible.

(✻) FA-M3 is the PLC made by Yokogawa.

Coordinated Operation

In coordinated operation, a UP program controller or UT digital indicating controller is used as a master controller and multiple UT digital indicating controllers as slave controllers. The slave controllers are operated in accordance with the actions of the master controller.



48×48(1/16DIN)Controllers

UT130/UT150/UP150

UT130/150 and UP150 Specification Table

	UT130	UT150	UP150
PV/SP Data display	3 digits	4 digits / 4 digits	
PV Input	1 universal input (TCs, RTDs)	1 universal input (TCs, RTDs, mV, V)	
Indication accuracy	±2℃ ±1digit for TC ±1℃ ±1digit for RTD	±2℃ ±1digit for TC ±1℃ ±1digit for RTD ±0.3%±1digit for mV/V input	
Control scan period	500ms		
Control loops and mode	1 loop, AUTO mode only		1 loop, RUN/RESET, HOLD/Cancel HOLD
Number of Setpoint (SP)	1	2	NA
Number of Program patterns/segments	NA		1 program pattern/16 segments
Control Algorithm	ON/OFF, Time-proportional PID, Heating & Cooling	ON/OFF, Time-proportional PID, Continuous PID, Heating & Cooling	ON/OFF, Time-proportional PID, Continuous PID
SUPER, Auto tuning	SUPER, Dynamic AT		SUPER
Control Outputs	Select from Relay or Voltage Pulse	Select from Relay, Voltage Pulse or 4 to 20mA	
PV Retransmission Output	Not available (NA)	1 point (4 to 20mA)	
Timer function	NA	Two timers (0 to 99min.59sec)	NA
Program time span	NA		0 second to 1,599 hour
Digital Inputs	NA	2 (sp1/sp2, RUN/STOP, Timer function)	2 (RUN/RESET, HOLD/Cancel HOLD)
Digital Outputs	2 (Alarm or Timer outputs)		2 (PV event and Time event)
RS485 Communication Protocols	Two-wire, MODBUS, PC-link, Ladder		
Approvals	General = UL, CE, CSA Front Protection= IP65		
Other specifications	Size=48*48*100mm, Power supply = 24VAC/DC or 90 to 264V AC, Power consumption=8VA		
Ambient T, Limits RH	0 to 50 , 20 to 90%		

Model and Suffix Codes

Model	Suffix Code		Description	Notes
UT130	- □ □		Temperature controller	Note 1: "/AL" cannot be specified when specifying "/HBA" . Note 2: "/HBA" and "/RS" cannot be specified at the same time when selecting heating/cooling type. Note 3: Sensor of heater burnout alarm is CTL-6-S or CTL-12-S36-8 (URD Co., Ltd., Japan) To be purchased separately
Output signal (for heating) Note 1	-R		Relay contact output (for time-proportional PID or on/off control)	
	-V		Voltage pulse output (for time-proportional PID)	
Output signal for cooling		N	No cooling output (Standard type)	
		R	Relay contact output (for time-proportional PID)	
		V	Voltage pulse output (for time-proportional PID)	
Options		/AL	Alarm outputs (2 points) Note 1	
		/HBA	Heater burnout alarm and 2 other alarm outputs (includes the functions of /AL) Notes 1, 2, 3	
	✻	/RS	Communication function Note 2	
		/V24	Power Supply 24VDC/24VAC	

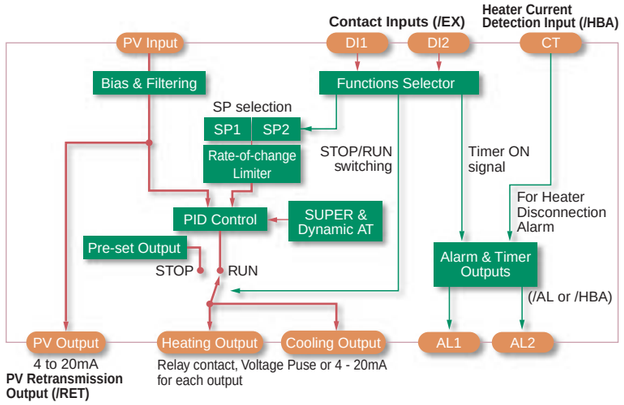
Model	Suffix Code		Description	Notes
UT150	- □ □		Temperature controller	Note 1: "/HBA" can not be specified when selecting."-A:4 to 20mA output". Note 2: "/AL" can not be specified when "/HBA" is specified. Note 3: "/HBA" and "/RET" cannot be specified at the same time when selecting standard type. Note 4: "/EX" and "/RS" cannot be specified at the same time when selecting standard type. Note 5: "/RET" cannot be specified when selecting heating/cooling type. Note 6: "/HBA","/EX" and "/RS" cannot be specified at the same time when selecting heating / cooling type. Note 7: Sensor of heater burnout alarm is CTL-6-S or CTL-12-S36-8 (URD Co., Ltd., Japan) To be purchased separately
Output signal (for heating) Note 1	-R		Relay contact output(for time-proportional PID or on/off control)	
	-V		Voltage pulse output (for time-proportional PID)	
	-A		4 to 20 mA output (for continuous PID) Note1	
Output signal for cooling		N	No cooling output (Standard type)	
		R	Relay contact output (for time-proportional PID control)	
		V	Voltage pulse output (for time-proportional PID)	
		A	4 to 20 mA output (for continuous PID)	
Options		/AL	Alarm outputs (2 points) Note 2	
		/HBA	Heater burnout alarm and 2 other alarm outputs (includes the functions of /AL) Notes 1, 2, 3, 6, 7	
		/EX	Switchover between SP1 and SP2, and starting of timer by external contacts Notes 4, 6	
		/RET	4 to 20 mA retransmission output of measured value (PV) Notes 3, 5	
	✻	/RS	Communication function Notes 4, 6	
		/V24	Power Supply 24VDC/24VAC	

Model	Suffix Code		Description	Notes
UP150	- □ □		Program Temperature controller	Note 1: /RS option and /EX option cannot be specified at the same time.
Output signal	-R		Relay contact output(for time-proportional PID or on/off control)	
	-V		Voltage pulse output (for time-proportional PID)	
	-A		4 to 20 mA output (for continuous PID)	
Fixed code		N	Always N	
Options		/EX	Two digital inputs for RUN/RESET and HOLD/CANCEL Note 1	
		/RET	4 to 20 mA retransmission output of measured value (PV)	
	✻	/RS	Communication function Notes 1	
		/V24	Power Supply 24VDC/24VAC	

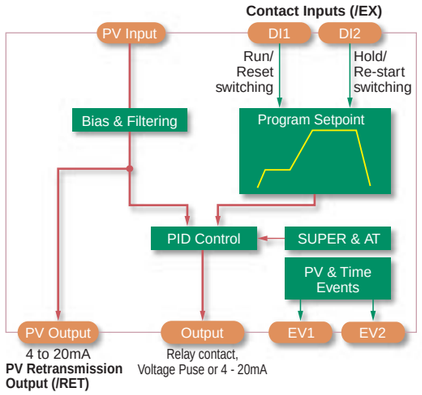
✻ When specifying the /RS option, be sure to order the required number of copies of Communication Functions User's Manual separeately.

UT150 Function Block Diagram

Functional block diagram for Heating & Cooling type UT150 controller.



UP150 Function Block Diagram



SUPER Function & Dynamic AT

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

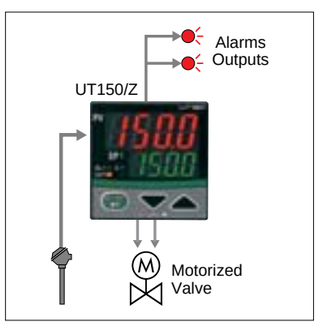
The Dynamic Auto Tune function of the UT130 and UT150 series assures stabel control. Whenever you change the setpoint(SP), the function automatically turns the PID parameters and updates them to the suitable setting.

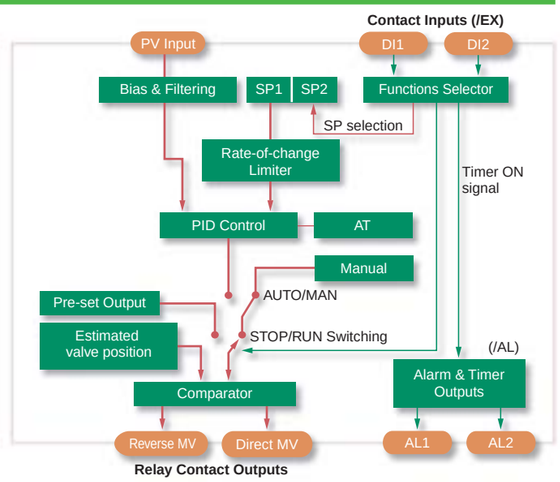
Temperature Program

Number of program pattern: One
Accuracy of program time span: +/-2% of span
Program operations: Wait, Hold, Advance

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 estimates 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.





48×96(1/8DIN)Controllers

UT321/UT420/UT520

Active color PV display:
The color of display automatically switches from Green to Red, or Red to Green.

Status indicator lamps:
Display alarm status(AL1, 2, 3), manual operation (MAN), and target setpoint No. (SP2, 3, 4)

Light loader interface:
Communication port for parameter setting by personal computer

SP display:
Displays target setpoint (SP), control output, valve opening, and parameter settings

Active Display

UT321/420/520 Specification Table

	UT321	UT420	UT520
PV/SP Data display	4 digits Active Color / 4 digits	5 digits / 5 digits	
PV Input	1 universal input (TCs, RTDs, mV, V)		
Indication accuracy	0.1% ±1digit		
Auxiliary Analog Input	Not Available	1 for remote SP	1 for remote SP or secondary PV
Control scan period	250ms	200ms	50, 100, 200ms
Control loops	1	1	1 or 2 (cascade)
Control modes	MAN/AUTO	MAN/AUTO/CAS, RUN/STOP	
Number of Setpoint(SP)	4	8	
Control Algorithm	ON/OFF, PID (Continuous, Time-proportional), Heating & Cooling,	ON/OFF, 3 position, PID (Continuous, Time-proportional), Heating & Cooling	
SUPER, Auto tuning	SUPER, SUPER2, AT		
Control Outputs(MV)	Select from Relay, Voltage Pulse or 4 to 20mA		
Auxiliary Analog Output (4 to 20mA) (※1)	1 point except for Heating/Cooling control (Cannot use with LPS15V)	1 point (Cannot use with LPS15V) 2 points when MV is relay output	
Loop Power Supply (LPS)	2 points, 15V and 24V(option)	1point, 15V	
Digital Inputs	2	2 or 4	2 or 4
Digital Outputs	3	3	3
RS485 Communication Protocols	Four-wire, MODBUS, PC-link, Ladder or Coordinated Operation.		
Approvals	General = UL, CE, CSA Front Protection = IP55		
Other specifications	Size=48(W)*96(H)*100(D)mm, Power supply =90 to 264V AC, Power consumption=max. 20VA		
Ambient T, Limits RH	0 to 50 , 20 to 90%RH		

(※1) Retransmission is available for PV, SP or MV.

Model and Suffix Codes

Model	Suffix Code		Description	Note
UT321			Digital indicating controller, with Active color PV display	Note: Sensor of heater burnout alarm is CTL-6-S or CTL-12-S36-8(URD Co.,Ltd., Japan) To be purchased separately
Type	-0		Standard type	
	-2		Heating/cooling type	
	-3		Standard type with 24V DC loop power supply	
Options		0	None	
		1	Communication functions, heater burnout alarm (2 points) Note	
		2	Heater burnout alarm (2 points) Note	

Model	Suffix Code		Description	Contact input/output available	
				Contact input	Contact output
UT420			Digital indicating controller		
Type	-0		Standard type		
Options		0	None	DI1, DI2	AL1, AL2, AL3
		7	Communication functions, remote input, 2 additional DIs	DI1, DI2,DI3, R/L	AL1, AL2, AL3
		8	Remote input, 2 additional DIs	DI1, DI2,DI3, R/L	AL1, AL2, AL3

Model	Suffix Code		Description	Contact input/output available	
				Contact input	Contact output
UT520			Digital indicating controller		
Type	-0		Standard type		
Options		0	None	DI1, DI2	DO1, DO2, DO3
		7	Communication functions, auxiliary analog(remote) input, 2 additional DIs	DI1, DI2,DI3, DI8	DO1, DO2, DO3
		8	Auxiliary analog(remote) input, 2 additional DIs	DI1, DI2,DI3, DI8	DO1, DO2, DO3

Model	Suffix Code		Description	Note
UT351			Digital indicating controller, with Active color PV display	Note: Sensor of heater burnout alarm is CTL-6-S or CTL-12-S36-8(URD Co.,Ltd., Japan) To be purchased separately
Type	-0		Standard type	
	-2		Heating/cooling type	
	-3		Standard type with 24V DC loop power supply	
Options		0	None	
		1	Communication functions, heater burnout alarm (2 points) Note	
		2	Heater burnout alarm (2 points) Note	
		A	Ethernet communication*	

*Ethernet option is not applicable with "-3" standard type with 24V DC loop power supply.

● Model UT320 and UT350 are also available.

96×96(1/4DIN)Controllers

UT351/UT450/UT551

Active color PV display

Ethernet Active Display

Ethernet Active Display

UT351/450/551 Specification Table

	UT351	UT450	UT551
PV/SP Data display	4 digits Active Color / 4 digits	5 digits / 5 digits	5 digits Active Color / 5 digits
PV Input	1 universal input (TCs, RTDs, mV, V)		
Indication accuracy	0.1% ±1digit		
Auxiliary Analog Input	Not Available	1 for remote SP	1 for remote SP or secondary PV
Control scan period	250ms	200ms	50, 100, 200ms
Control loops	1	1	1 or 2 (cascade)
Control modes	MAN/AUTO	MAN/AUTO/CAS, RUN/STOP	
Number of Setpoint(SP)	4	8	
Control Algorithm	ON/OFF, Time-proportional PID, Continuous PID, Heating & Cooling	ON/OFF, 3 position, Time-proportional PID, Continuous PID, Heating & Cooling	
SUPER, Auto tuning	SUPER, SUPER2, AT		
Control Outputs(MV)	Select from Relay, Voltage Pulse or 4 to 20mA		
Auxiliary Analog Output (4 to 20mA)	1 point except for Heating/Cooling control (Cannot use with LPS15V)	1 point (Cannot use with LPS15V) 2 points when MV is relay output	
Loop Power Supply (LPS)	2 points, 15V and 24V(option)		
Digital Inputs	2	2, 3, 6 or 7	2, 3, 7 or 8
Digital Outputs	3	3 or 4	3 or 7
Industrial Ethernet	Available	Not Available	Not Available
RS485 Communication Protocols	Four-wire, Protocol is MODBUS, PC-link, Ladder or Coordinated Operation.		
Approvals	General = UL, CE, CSA Front Protection = IP55		
Other specifications	Size=96(W)*96(H)*100(D)mm, Power supply =90 to 264V AC, Power consumption=max. 20VA		
Ambient T, Limits RH	0 to 50 ℃ , 20 to 90%RH		

Model and Suffix Codes

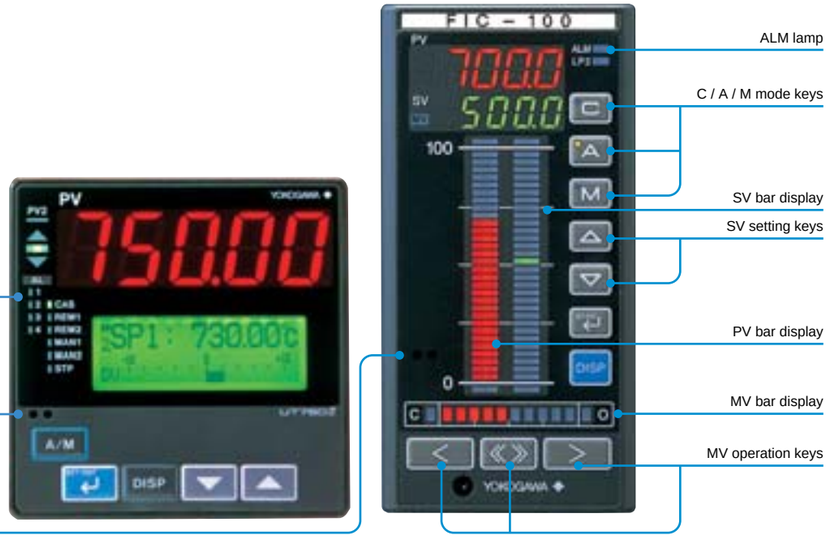
Model	Suffix Code		Description	Contact input/output available	
				Contact input	Contact output
UT450			Digital indicating controller		
Type	-0		Standard type		
	-1		Position-proportional type		
	-2		Heating/cooling type		
	-3		Standard type with 24V DC loop power supply		
	-4		Position-proportional type with 24V DC loop power supply		
Options		0	None	DI1, DI2	AL1, AL2, AL3
		1	Communication functions, remote input, 5 additional DIs, 1 additional Alarm	DI1 to DI6, R/L	AL1 to AL4
		2	Communication functions, remote input, 1 additional DI	DI1, DI2, R/L	AL1, AL2, AL3
		3	4 additional DIs, 1 additional Alarm	DI1 to DI6	AL1 to AL4
		4	Remote input, 1 additional DI	DI1, DI2, R/L	AL1, AL2, AL3

Model	Suffix Code		Description	Contact input/output available	
				Contact input	Contact output
UT551			Digital indicating controller		
Type	-0		Standard type		
	-1		Position-proportional type		
	-2		Heating/cooling type		
	-3		Standard type with 24V DC loop power supply		
	-4		Position-proportional type with 24V DC loop power supply		
Options		0	None	DI1, DI2	DO1, DO2, DO3
		1	Communication functions, auxiliary analog(remote) input, 6 additional DIs, 4 additional DOs	DI1 to DI8	DO1 to DO7
		2	Communication functions, auxiliary analog(remote) input, 1 additional DI	DI1, DI2, DI8	DO1, DO2, DO3
		3	5 additional DIs, 4 additional DOs	DI1 to DI7	DO1 to DO7
		4	Auxiliary analog(remote) input, 1 additional DI	DI1, DI2, DI8	DO1, DO2, DO3
		A	With Ethernet communication function	DI1, DI2	DO1, DO2, DO3
		B	With Ethernet communication function, auxiliary analog (remote) input. And 1 additional DI	DI1, DI2, DI8	DO1, DO2, DO3
		C	With Ethernet communication function, 5 additional DIs AND 4 additional DOs	DI1 to DI7	DO1 to DO7
		D	With Ethernet communication function, auxiliary analog (remote) input, 6 additional Dis and 4 additional DOs	DI1 to DI8	DO1 to DO7

● Model UT550 are also available.

Excellent Control, Multifunction Controllers

UT750/US1000



UT750, US1000 Specification Table

	UT750	US1000
PV/SP Data display	5 digits / 5 digits with LCD display	5 digits / 5 digits with Bar Graphs
PV Inputs	2 universal inputs (TCs, RTDs, mV, V)	
Indication accuracy	0.1% ±1digit	
Auxiliary Analog Input	1 point	
Control scan period	50, 100, 200, 500ms	
Control loops	1 or 2(cascade, dual)	
Number of Setpoint (SP)	8	
Control Algorithm	ON/OFF, 3 position, PID (Continuous, Time-proportional), Heating & Cooling, Position-proportional PID	
SUPER, Auto tuning	SUPER, SUPER2, AT	SUPER, AT
Custom Computation	Standard	Option
Control Outputs (MV)	Select from 2 sets of Relays, Voltage Pulses or 4 to 20mA	
Auxiliary Analog Output (4 to 20mA)	1 point, 2 points when MV is relay output	
Loop Power Supply	1 point of 15V (Cannot use with auxiliary analog output)	2 points of 24V
Digital Inputs	2 or 7	
Digital Outputs	3 or 7	
RS485 Communication Protocol	MODBUS, PC-link, Ladder, Coordinated Operation	MODBUS, PC-link
Front Protection	IP55	IP65
General Approvals	UL, CE, CSA	CE, CSA, FM-non incendive
Power Supply, Consumption	90 to 264 V AC, max. 20VA	90 to 264 V AC, max. 25VA
Size, weight	96(W)*96(H)*100(D)mm, 1kg	72(W)*144(H)*149(D)mm, 0.8kg
Ambient T, Limits RH	0 to 50 ℃, 20 to 90%RH	

Model and Suffix Codes

Model	Suffix Code	Description	Contact input/output available	
UT750		Digital indicating controller	Contact input	Contact output
Type	-0	Single-loop type		
	-1	Position-proportional type		
	-5	Dual-loop type		
Options	0	None	DI1 to DI7	DO1 to DO7
	1	Communication functions, auxiliary analog(remote) input	DI1 to DI7	DO1 to DO7

Model	Suffix Codes	Description	Analog input		Analog output				Contact	
			Universal	Voltage	*LPS	Current	Voltage	Relay	Input	Output
US1000		Process controller								
Type	-00	Basic type	1	1	1	1	1	0	2	3
	-11	Enhanced type(with custom computation)	2	1	2	2	1	2	7	7
	-21	Position-proportional type(with custom computation)	2	1	2	1	1	*2	7	7
Options	/A10	RS485 communication								

*LPS:Loop power supply for transmitter.
*The two contact points in the US1000-21 relay item are the relay output and feedback input.

Custom Computation for Sophisticated Control

Custom computation allows simple operation sequences and signal computations specific to the application to be specified, which the standard controller mode cannot deal with.
Input/output-related computations can be customized using 65 types of computation modules including arithmetical four-rule operations, logical operations, special calculations,etc.

Controllers Equip Custom Computation

Model UT750	**Indicating Controller**
Model US1000	**Process Controller, except US1000-00**
Model UP750	**Program Controller**

Block Diagram of Custom Computation

The custom computation is executed in INPUT Block and OUTPUT Block.
Max.number of custom computation modules:

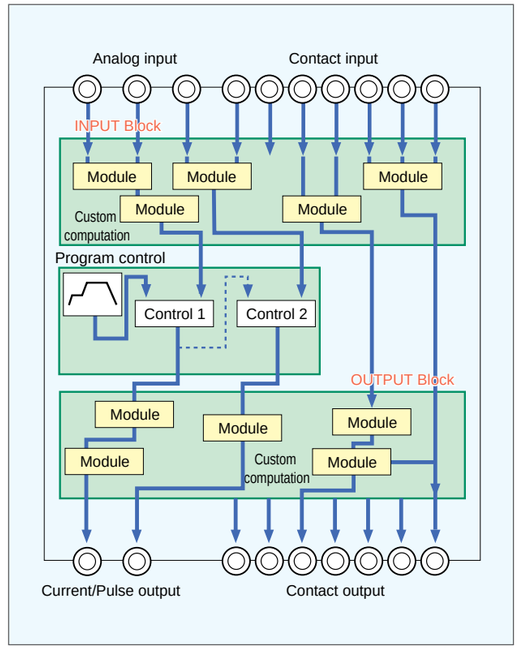
UT750,UP750	**50 modules for each Block**
US1000	**30 modules for each Block**

Computation Modules

Addition / subtraction / multiplication / division, Processing absolute value / reciprocal, Selecting maximum / minimum / average, Keeping maximum / minimum value, Keeping value, Rate of change limiter, Switch, Limiter, Constant, AND, OR, Exclusive OR, NOT, Latch, Comparison (=, <, >, ≤, ≥), Not equivalent, Within range, Sum, Timer, Ten-segment linearizer, Curve linearizer, Ratio, First order lag filter, Selection of PV from two inputs, Temperature and humidity calculation, Parameter setting.

Custom Display Function

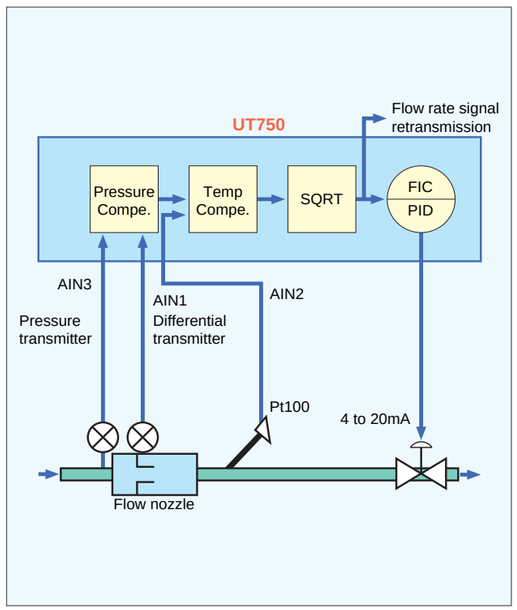
Data displayed on front panel, can be configured by using Custom Display Configuration Function.



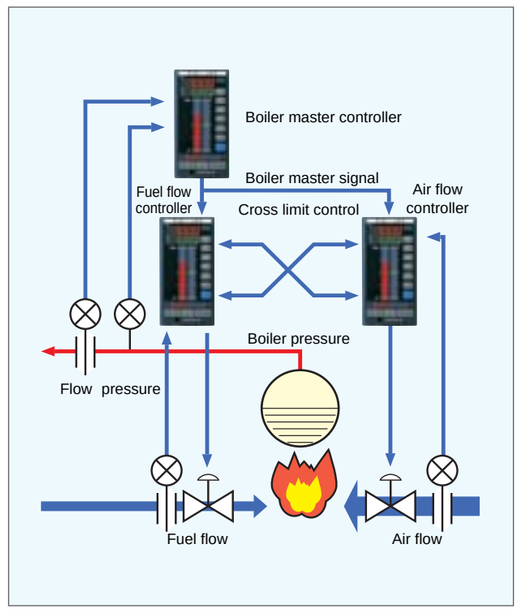
Example for UP750

Applications

Temperature & Pressure Compensation for Gas Flow



Boiler Conbustion Control



96×96(1/4DIN) Program Controllers

UP351/UP550/UP750

Active Display

UP351/550/750 Specification Table

	UP351	UP550	UP750
PV/SP Data display	4 digits Active Color / 4 digits	5 digits / 5 digits with LCD display	
PV Input	1 universal input (TCs, RTDs, mV, V)		2 universal inputs(TCs, RTDs, mV, V)
Indication accuracy	0.1% ±1digit		
Auxiliary Analog Input	Not Available (NA)	1 for secondary PV	
Control scan period	250ms	100, 200ms	100, 200, 500ms
Control loops	1	1 or 2(cascade)	1 or 2(cascade, dual)
Control modes	PRG/RESET, HOLD, ADVANCE	PRG/RESET, LOCAL, HOLD, ADVANCE	
Number of Program Patterns	2	30	300
Number of Segments/ Pattern	10	99	
Number of total Segments	20	300	3,000
Number of PID set	4	8	
Control Algorithm	ON/OFF, PID(Continuous, Time-proportional)	ON/OFF, 3 position, PID(Continuous, Time -proportional), Heating & Cooling, Position-proportional PID	ON/OFF, 3 position, PID(Continuous, Time-proportional), Heating & Cooling
SUPER, Auto tuning	SUPER, SUPER2, AT		
Custom Computation	NA		Standard
Control Outputs (MV)	Select from Relay, Voltage Pulse or 4 to 20mA		
Auxiliary Analog Output (4 to 20mA)	1 point	1 point, 2 points when MV is relay output	
Loop Power Supply (LPS)	1 point, 15V (Cannot use with auxiliary analog output)		
Digital Inputs	2	7 or 8	7
Digital Outputs	3	7	7
RS485 Communication Protocol	Four-wire, half-duplex Protocol is MODBUS, PC-link, Ladder or Coordinated Operation.		
Approvals	General = UL, CE, CSA Front Protection = IP55		
Other specifications	Size=96(W)*96(H)*100(D)mm, Power supply =90 to 264V AC, Power consumption=max. 20VA		
Ambient T, Limits RH	0 to 50 ℃, 20 to 90%RH		

Model and Suffix Codes

Model	Suffix Code		Description
UP351			Program controller, with Active color PV display
Type	-0		Standard type
Options		0	None
		1	Communication functions

Model	Suffix Code		Description	Contact input/output available	
UP550			Program controller	Contact input	Contact output
Type	-0		Standard type		
	-1		Position-proportional type		
	-2		Heating/cooling type		
Options		0	None	DI1 to DI7	DO1 to DO7
		1	Communication functions, auxiliary analog input, 1 additional DI	DI1 to DI8	DO1 to DO7

Model	Suffix Code		Description	Contact input/output available	
UP750			Program controller	Contact input	Contact output
Type	-0		Single-loop type		
	-5		Dual-loop type		
Options		0	None	DI1 to DI7	DO1 to DO7
		1	Communication functions, auxiliary analog input	DI1 to DI7	DO1 to DO7

● Model UP350 is also available.

Digital Indicators with Alarms

UM331/UM351

Active color PV display:
Displays measured input value (PV) and error code in error occurrence

Alarm indicator lamps (AL1 to AL4)

Parameter Setting display:
Displays parameter item and setpoint

Active Display

Active Display

UM331/351 Specification Table

	UM331	UM351
PV/Parameter Data display	4 digits Active Color / 4 digits	
PV Input	1 universal input (TCs, RTDs, mV, V)	
Indication accuracy	0.1% ±1digit	
Control scan period	250ms	
Analog Output (4 to 20mA)	1 point (Cannot use with LPS15V)	
Loop Power Supply (LPS)	2 points, 15V and 24V(option)	
Digital Inputs	1	
Digital Alarm Outputs	3	
RS485 Communication Protocols	Four-wire, MODBUS, PC-link, Ladder	
Approvals	General = UL, CE, CSA Front Protection = IP55	
Power Supply, Consumption	90 to 264 V AC, max. 20VA	
Size, weight	96(W)*48(H)*100(D)mm, 1kg	96(W)*96(H)*100(D)mm, 1kg
Ambient T, Limits RH	0 to 50 ℃, 20 to 90%RH	

Model and Suffix Codes

Model	Suffix Code		Description
UM331			Digital indicator with alarms, and with Active color PV display
Type	-0		Standard type
	-3		Standard type with 24V DC loop power supply
Options		0	None
		1	Communication functions, 1 additional alarm
		2	1 additional alarm

Model	Suffix Code		Description
UM351			Digital indicator with alarms, and with Active color PV display
Type	-0		Standard type
	-3		Standard type with 24V DC loop power supply
Options		0	None
		1	Communication functions, 1 additional alarm
		2	1 additional alarm

● Models UM330 and UM350 are also available.

Light Loader Enabling Exceptionally Simple Setting

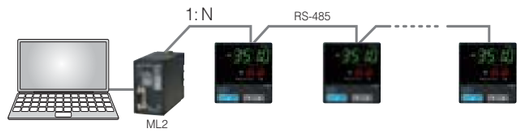
LL100/LL200
LL1100/LL1200

for US1000 only

Via Ethernet Communication Connector

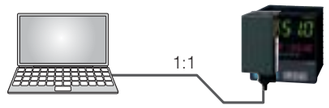
Via RS-485 Communication Terminals

ML2 recommended for RS-232C/RS-485 communication



Via Dedicated Adapter

Can be used while attached to the control panel.



LL100/LL1100 PC-based Parameters Setting Tool

Parameter setting functions

Parameters that determine controller functions can easily be set: controller model type, controller mode (single-loop control, cascade control, loop control with PV switching, etc.), universal input/output functions, setup parameters, program parameters, and others.

● **Program Pattern Setting Display(LL100)**

Multi-Monitoring Fanctions

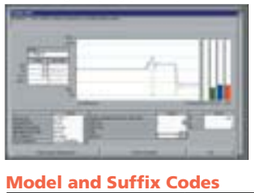
Measured values (PV), setting values (SP), and control output values (OUT) are displayed as trends (online display).
Colors can be applied to trends as desired.
Just connect an instrument: the software detects the model automatically (up to 16 loops).
Dedicated adapter/RS-485 Communication/ Ethernet Communication.

● **Multi-monitor Display**

Tuning function

Used to tune a controller's PID parameters. Displays measured input value, target setpoint, and control output value as a trend graph on a personal computer screen, allowing PID parameter modification, AUTO/MAN switching, control output modification in manual operation, etc.

● **Tuning display(LL100)**

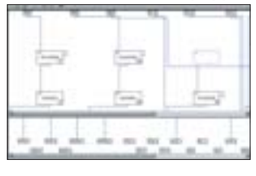


LL200/LL1200 PC-based Custom Computation Bulilding Tool

Custom computation functions

You can create custom computations by combining computation modules.

● **Module connection display(LL200)**



Model and Suffix Codes

Model	Suffix code	Description
LL100		LL100 PC-based parameters setting tool, except for UM330/350, UM331/351, US1000, UT100 Series
LL200		LL200 PC-based custom computation building tool (LL100 functions are included), for UT750, UP750
	- E10	English version (for Windows 98/2000 (Professional)/XP (Home Edition/Professional) and NT4.0)

Model	Suffix code	Description
LL1100		LL1100 PC-based parameters setting tool, for US1000
LL1200		LL1200 PC-based custom computation building tool (LL1100 functions are included), for US1000
	- E10	English version (for Windows 95/98/2000 (Professional)/XP (Home Edition/Professional) and NT4.0)

UD310/UD320/UD350 Manual Setting

The UD300 series manual setters have PV display, and transmit 4 to 20mA DC by manual operation. It can be used as a remote setter for digital indicating controllers like GREEN series controllers.

The SP (target setpoint) will be output in 3 seconds after the change.

The TC, RTD or Voltage input is possible as PV input.
When the PV display is not necessary, it can be disappeared.

The two alarm outputs and a PV retransmission output are provided as standard.

The front panel has a splash-proof and dust-proof design

UD310

UD320

UD350

Specifications

PV / SP display		4-digit PV / 4-digit SP
Input type		Universal inputs
	Thermocouple	K, J, T, E, R, S, B, N, L, U, Platinel 2
	RTD	Pt100, JPt100
	Voltage(mV, V)	0 to 100mV, 0 to 5V, 1 to 5V, 0 to 10V
Input accuracy	Thermocouple	±2℃±1digit
	RTD	±1℃±1digit
	Voltage(mV, V)	±0.3℃±1digit
Sampling period for PV		500ms
Number of manual setpoint (SP)		1
Manual setting output		4 to 20mA DC
PV Retransmission output, can be scaled		4 to 20mA DC
Alarm output	Number of outputs	2 relay contact, COM terminal is common
	Types	22 types
Power supply		100 to 240 VAC or 24VAC/DC(option)
Safety and EMC standard		CSA, CE and UL
Construction (from protection)		IP65 (UD310), IP55(UD320/UD350)
Dimensions and weight	UD310	48(W)×48(H)×100(depth from panel face)mm, approx. 200g
	UD320	48(W)×96(H)×100(depth from panel face)mm, approx. 300g
	UD330	96(W)×96(H)×100(depth from panel face)mm, approx. 400g

Model and Suffix Codes

Model	Suffix code	Description
UD310		UD310 Manual Setter: 4 to 20 mA DC output (48 × 48 × 100 mm)
UD320		UD320 Manual Setter: 4 to 20 mA DC output (48 × 96 × 100 mm)
UD350		UD350 Manual Setter: 4 to 20 mA DC output (96 × 96 × 100 mm)
Fixed code	-0	Always 0
Fixed code	0	Always 0
Option	/V24	Power Supply 24V DC / 24V AC

2 Alarm outputs and PV retransmission output in 4 to 20 mA built in as standard

Related Instruments

UT150L/350L Limit Controller

The UT150L and UT350L are an FM approved limit controllers that can be configured either as a high limit or a low limit controller by a user.
The limit controllers feature universal input, two alarm outputs, retransmission output, a timer to count the total time the setpoint is exceeded, and a register to retain the maximum temperature reached.
The RS485 communication interface is available optionally.

μR10000 Inteligent Industrial Recorder

μR10000 has carried over μR series high reliability and basic functions. The 101 × 16 full-dot matrix display allows it to monitor various on-site data.

- High reliability and high quality
  - Fully contact-less technology
  - High degree of integration using custom IC
  - Light weight (2.5 kg for 6 dot-model)
  - Dust and splash proof front
- Variety of line-up
  - 1 to 4 pen model, 6 dot model
- Variety of input types
  - Universal inputs
  - Many input sensors available (35 input types such as Pt50, PR20-40 etc)
- Superior ease-of-operation
  - VFD 101 ¥ 16 full dot matrix display
  - Versatile operation display
  - Easily navigable interactive setting
  - New chart cassette
  - White LED
- Analog record of computed result
  - (with computation option:/M1)
- Network function
  - Ethernet, RS422A/485 communication option

Specification

Recording width:	100 mm
Chart length:	16 m
Number of inputs	Pen model: 1-4 pens Dot model: 6 dot model
Input type:	±20 mV to ±50 V, 1-5 V range TC (R, S, B, K, E, J, T, N, W, L, U, WRe) RTD (Pt100, Jpt100) DC current (with external shunt register)
Measurement interval	Pen model: 125 ms/channel Dot model: 1 s/6 dot or 2.5 s/6 dot
Recording method	Pen model: Disposable fel + pen, plotter pen Dot model: 6 color wire dot
Recording period	Pen model: consecutive recording Dot model: max. 6 channel/10 sec
Display:	VFD 101 ¥ 16 full dot matrix display
Display types	Multiple displays digital, bar, flag, DI/DO display etc can be displayed. 15 display types can be selected from approx. 80 display types.
Alarm levels:	Up to 4 levels for each channel
Alarm type:	High and low limit, differential high and low limit, high and low rate-of-change, delay high and low
Optional specification:	Alarm output, RS422A/485 communication, Ethernet communication, Computation function, Expansion inputs, Remote input etc.
Dimension:	Approx. 144 (W) × 144 (H) × 220 (D) mm
Weight:	2.1 to 2.5 kg

DAQWORX

DAQWORX

DAQWORX is an integrated data acquisition software package that is highly scalable—it will respond flexibly to constant market changes. Combine DAQWORX with Yokogawa recorders, data acquisition stations and units, instrumentation, and measuring instruments to build a user-friendly, PC-based data acquisition system.

With its three classes of software components—Base, Add-on and Gate—DAQWORX will support changes to your system in response to future market demands. Leaving your existing data acquisition system unmodified, you can simply incorporate our recorders, data acquisition units, and high-value-added software to tailor your system for specific needs.

- Data Acquisition Components
  The "Base" software components require neither technical expertise nor programming, enabling you to easily set up hardware and start operating your data acquisition system as soon as possible.

- High-Value-Added Components
  The "Add-on" software components offer advanced functionssuch as customized windows, monitoring clients, multi-logging, and data acquisition trigger conditioning.

- Interface Components
  The "Gate" software components enable data acquisition using power measuring instruments and Modbus devices in combination with data acquisition units. With these components, you can quickly connect OPC servers and network cameras.
- DataBrowser
  Easily and quickly search files and display results in waveform
  – Display measured data of different interval and different models on the same time axis
  – Easy data comparison based on the first data or trigger point.

Software Component

Data Acquisition Components

DAQLOGGER:	General-purpose medium-speed (1 s max.) data acquisition supports to major data acquisition equipment models
DAQ32Plus:	High-speed (500 ms max.) data acquisition tool for use with DARWIN
MXLOGGER:	Ultra high-speed (10 ms max.) data acquisition tool for use with DAQMASTER
DAQEXPLORER:	Automatic data file acquisition tool for use with DAQSTATION and MobileCorder

High-Value-Added Components

AddObserver:	Graphical human-machine interface (HMI) for creating monitoring windows for the operator
AddMulti:	Acquires data through groups of channels on a group-by-group basis by combining various measurement conditions
AddTrigger:	Performs advanced data logging using a wide variety of trigger conditions

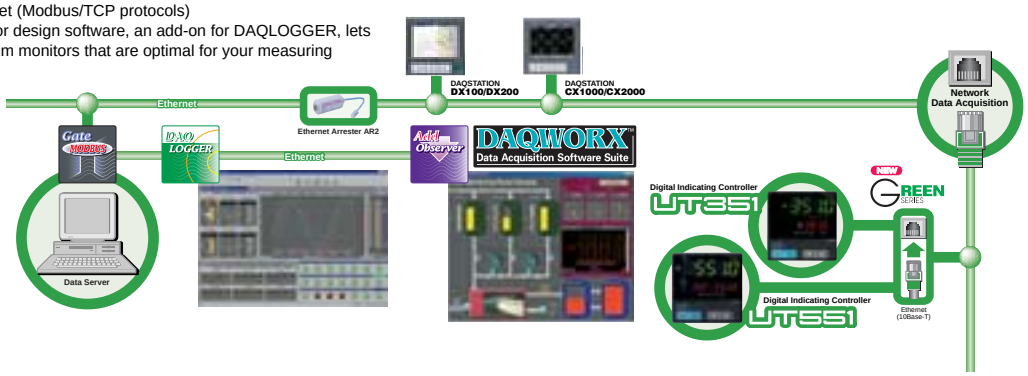
DAQLOGGER Client:
Networked remote monitoring client software for DAQLOGGER
DAQ32Plus Client:
Networked remote monitoring client software for DAQ32Plus
AddObserver Runtime:
Networked remote monitoring runtime software for AddObserver

Interface Components

GateEye:	An interface for distributing images from network cameras to DAQObserver
GateOPC:	An interface for data acquisition from OPC servers to DAQLOGGER
GateWT:	An interface for data acquisition from WT-series power meters to DAQLOGGER
GateDX-P:	An interface for data acquisition from DX100P/200P to DAQLOGGER
GateMODBUS:	An interface for data acquisition from MODBUS devices to DAQLOGGER
GateMX100:	An interface for data acquisition from MX100 to DAQLOGGER or Add-on software.
GateμR	An Interface for data acquisition from μR10000 to DAQLOGGER.
GateCONTROL	Temperature controller (Green/UT100) and JUXTA(VJ series) can be easily connected to DAQLOGGER.

<Example for Connection>

- GateModbus is a software interface for connecting devices that support the Modbus protocol with DAQLOGGER data logging software. Allows connection of controllers, power monitors, and signal conditioners to the network (Modbus/TCP) for a small scale instrumentation system that can be set up quickly.
- Reads the input and holding registers from up to 200 channels of various measuring instruments.
- Supports the Ethernet (Modbus/TCP protocols)
- AddObserver monitor design software, an add-on for DAQLOGGER, lets you create the custom monitors that are optimal for your measuring environment.



Distribué par :

HVS System
DISTRIBUTEUR CONSEIL DEPUIS 1985

2 rue René Laennec 51500 Taissy France
Fax: 03 26 85 19 08, Tel : 03 26 82 49 29

Email : hvssystem@hvssystem.com
Site web : www.hvssystem.com