Full Control at Your Finger Tips

UTAdvanced®

Digital Indicating Controllers
UT55A/UT52A/UT35A/UT32A

Program Controllers
UP55A/UP35A

Digital Indicator with Alarms
UM33A

Digital Indicating Controller
UT75A NEW   Please see Bulletin 05P01B41-01EN.

www.utadvanced.com

YOKOGAWA ◆

INTRODUCING THE

UTAdvanced ®

Balancing Simplicity and Power

The UTAdvanced was designed as a result of knowledge obtained in Yokogawa's fifty plus years of experience in the control market. Significant changes in the market are setting the tone for the future and Yokogawa will be leading the way meeting the challenging needs of the control segment. Balancing an easy to use controller with the power to handle your most challenging applications, that's the UTAdvanced.

*f*eatures

Advanced Control

PID Control — 8 Built-in Control Modes
— 8 Built-in Control Types

Ladder Sequence Control

Fuzzy Logic Control

Simplicity

Bright & Easy to Read Active Color LCD Display

Scrolling Text

Navigation Guide & Navigation Keys

Programmable Function Keys

User Settable Default Values

Multiple Language Support

Compact Design

Networking

Ethernet (Modbus/TCP)

RS-485 (Modbus/RTU, Peer to Peer, Coordinated Operation, PC-Link)

Open Network (PROFIBUS-DP, CC-Link, DeviceNet)

Reliability

3 Year Warranty *Note 1

RoHS/WEEE

NEMA4 *Note 2 **/IP66 Front Panel**

RCM marking

KC marking

Note 1 : The 3 year warranty extends 36 months after shipment from our factory.
Note 2 : Hose down test only.

CSA C22.2 61010-1
172608

UL61010-1

*a*dvanced Control

8 Built-in Control Modes

The control mode allows easily configuring settings and making changes with parameters.
- 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
- Control with PV-hold function

PV auto-selector

SELECT

PID

PV switching

PID

Cascade control

PID

PID

Loop control for backup

PID
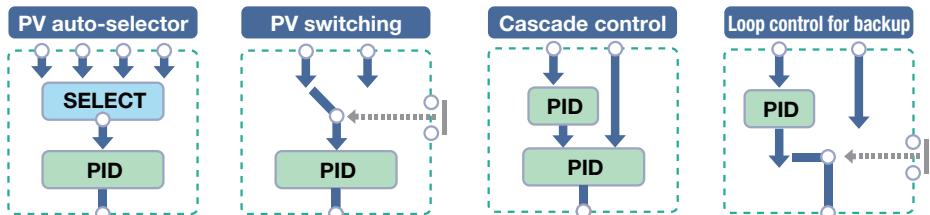
8 Built-in Control Types

- PID control
- ON/OFF control (1 point of hysteresis)
- ON/OFF control (2 points of hysteresis)
- Two-position, two-level control
- Heating/cooling control
- Sample PI control
- Batch PID control
- Feedforward control

Output(%)
100

Cooling-side output

Heating-side output

0

Dead band

Heating / cooling control

SP

PV

Integral action P+I

OUT

Output held

Output held

Control start point

Time

Sample PI control
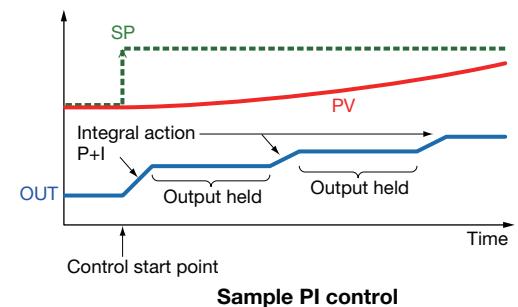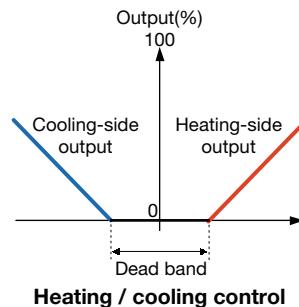
For the correspondence between the above control mode and control types for each model, please refer to the specifications of each model.

Ladder Sequence Control

With built-in ladder sequence control, the range of applications are dramatically increased. This feature is standard in all the UTAdvanced controllers (except UM33A). The ladder sequence control function can replace a small PLC required by the application. Sequence control and PID control can be performed simultaneously.
- Monitoring and control of external machinery
  Eg. Lamps, switches, timers
- Solve digital input / output logic functionality easily.
  Number of basic instruction types : 13 or more
  Number of application instruction types : 73 or more

Name	Symbol
Load	
Set	SET
Timer	TIM
Counter	CNT
Compare	>
Logic	& =
Data transfer	MOV
High selector	HSL
Temperature correction	TCMP1
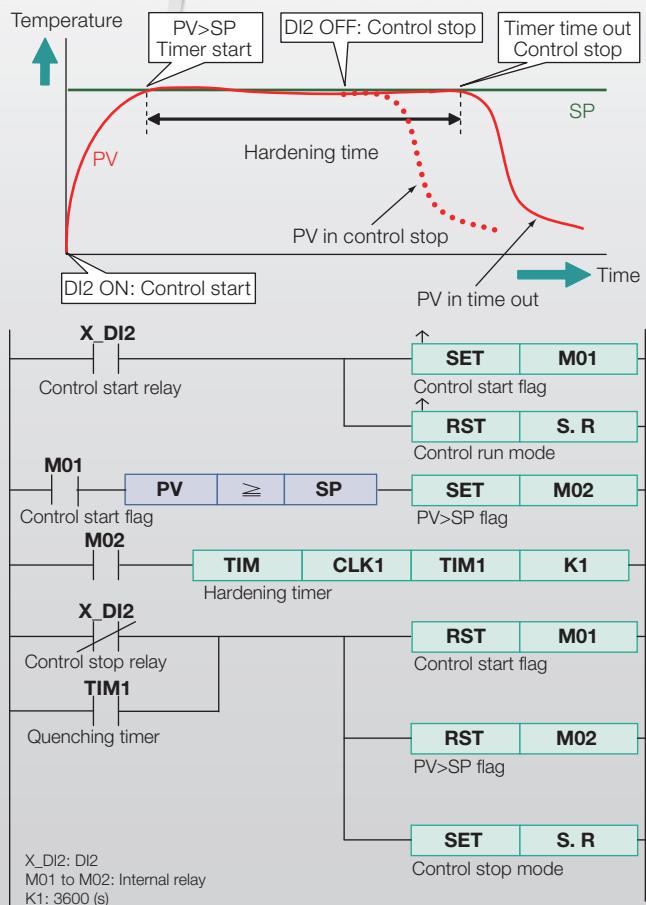
* LL50A Parameter Setting Software (sold separately) is required to build functions.

Temperature

PV>SP Timer start

DI2 OFF: Control stop

Timer time out Control stop

SP

Hardening time

PV

PV in control stop

DI2 ON: Control start

PV in time out

Time

X_DI2
Control start relay

SET   M01
Control start flag

RST   S. R
Control run mode

M01
Control start flag

PV ≧ SP

SET   M02
PV>SP flag

M02

TIM CLK1 TIM1 K1
Hardening timer

X_DI2
Control stop relay

RST   M01
Control start flag

TIM1
Quenching timer

RST   M02
PV>SP flag

SET   S. R
Control stop mode

X_DI2: DI2
M01 to M02: Internal relay
K1: 3600 (s)

Application Examples of Ladder Sequence Program

■ Alarm Sequence Control Circuits Can be Reduced

The ladder sequence program is built in the UTAdvanced as standard. The ladder sequence function enables monitoring and controlling peripheral devices such as relays, thus making it possible to reduce costs.

Conventional

Alarm action was built by a sequence control circuit (relay, timer, etc.) outside of the controller.

Alarm sequence control circuit

UTAdvanced

Alarm action is built by the ladder sequence program inside the UTAdvanced, thus making it possible to reduce costs.

Alarm ladder sequence program
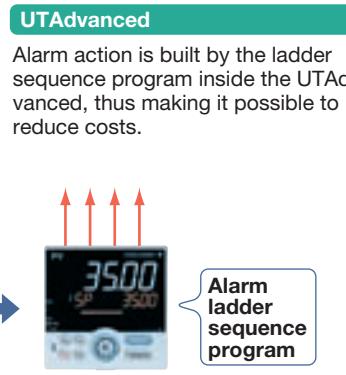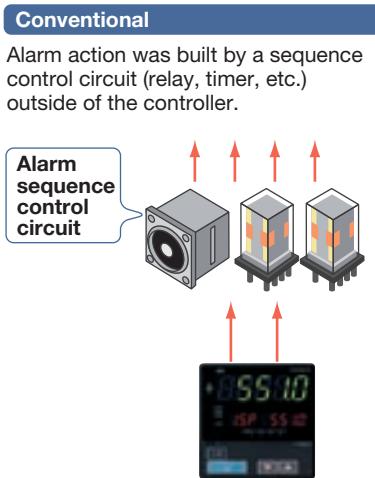
Cost down

Example: Alarm annunciator

Action explanation
- Lamp blinks when alarm occurs
- Lamp turns on by acknowledgment when alarm is on
- Lamp turns off by acknowledgment when alarm is off

Alarm acknowledgment by function key A/M

Time Chart

Alarm status (AL1.ST)   Alarm occurs   Alarm occurs

Lamp output   Blinks Turns off   Blinks Turns off

Acknowledgment button operation   Acknowledgment   Acknowledgment

Alarm Ladder Sequence Program

AL1.ST   SET M01

RST M01
Acknowledgment button

M01   1-sec flag   Lamp output

AL1.ST   M01
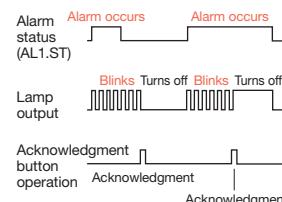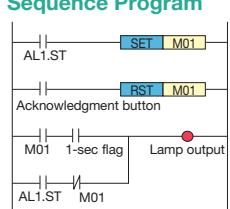
■ Host System Load is Reduced

Conventional

Action: Various types of analog data were captured into the host system (PLC, etc.) and calculated, and the results were processed by the field controller for control via a command.

Host system   Communication   PV   OUT

UTAdvanced

**Host system**   Communication   PV   OUT
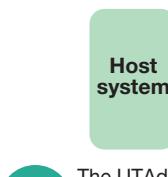
Merit The UTAdvanced with up to 4 analog inputs enables various types of analog data to be captured directly into the controller and calculated by the ladder program, thus reducing the system-building load of the host.

Fuzzy Logic

■ SUPER Function suppresses overshoot

The field-proven **SUPER** function utilizes a built-in operator experience and fuzzy theory to deliver fine control and suppress overshoot.
- When wishing to suppress overshoot
- When wishing to reduce the startup time
- When load changes are significant
- When setpoint is changed frequently

SUPER:off
SUPER:on
Temperature / Time → ▲Startup

SUPER:on
Temperature / Time → ▲Program operation

SUPER:on
Temperature / Time → ▲Disturbance
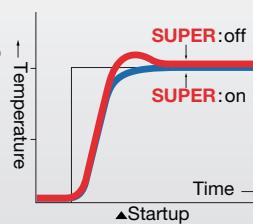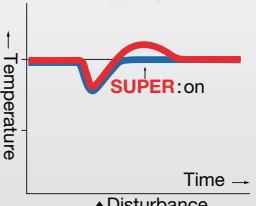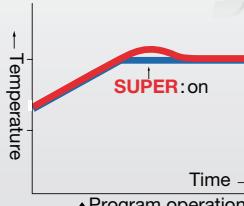
■ SUPER2 Function suppresses hunting

The new **SUPER2** function utilizes a built-in operator experience and modern control theory to deliver fine control and suppress hunting.

Effect 1 : Material change or load change with the same PID.

When **SUPER2** function is not used
PV   SP PV   Operation with load causes PV hunting   Time
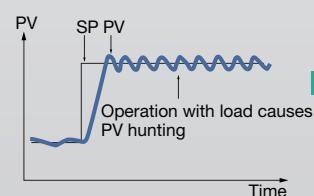
When **SUPER2** function is used
PV   Time

Effect 2 : Setpoint (SP) change with the same PID.
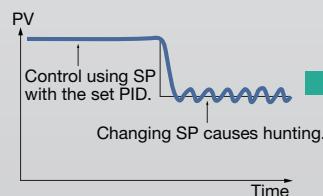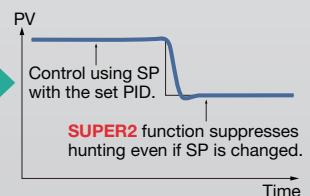
When **SUPER2** function is not used
PV   Control using SP with the set PID.   Changing SP causes hunting.   Time

When **SUPER2** function is used
PV   Control using SP with the set PID.   **SUPER2** function suppresses hunting even if SP is changed.   Time

*S*implicity

Bright & Easy to Read Active Color LCD Display

(Image of the UT55A)

Deviation indicator

Group display

Ladder operation indicator

Status indicator

PV display

DATA display

Bar graph display
(PV, SP, OUT, DV)

Event indicator
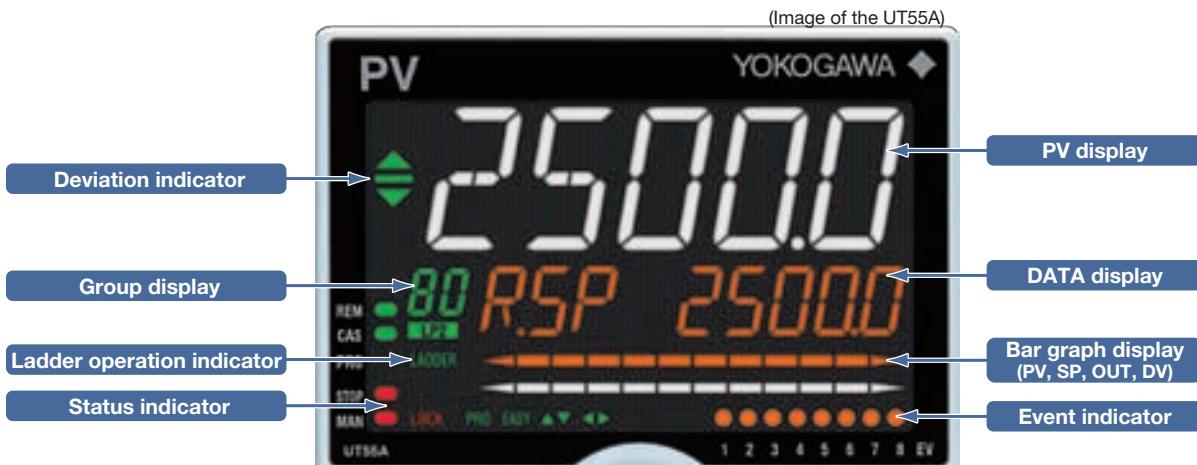
Optimal Display

The controller menus and layout are adjusted in accordance with the level (EASY, STD, PRO) of information required by the user. If simple temperature or level control is needed, then select the easy configuration. Very sophisticated applications are no problem for the UTAdvanced. Just select the PRO setting and make use of the additional functionality shown in this mode. Advanced applications can be programmed in the PRO setting and then changed back to the easy setting to lock out functions not required by operators.

Active Color LCD Display

With Yokogawa's active color display you can instantly tell, at a glance, the status of your process.
Alarm Status : Active color display changes from white (normal) to red (alarm).
Deviation Status : Color changes based on a PV deviation from SP.
User-defined Color : Choose between white or red display for constant readings.

Compact Design

The 65-mm depth of the controller reduces the constraints on installation location.

65mm
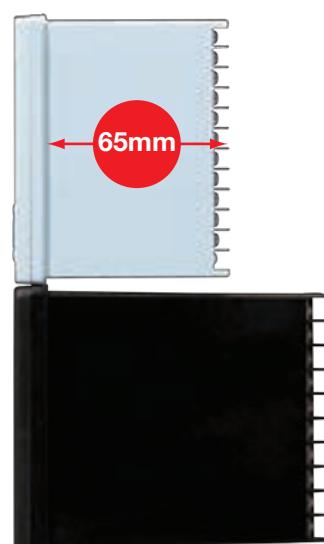
Versatile Color LCD Display

(Image of the UP55A)

Program monitor display
Group display (Program pattern number display)
Ladder operation indicator
Status indicator

PV display
Data display
Segment number
Bar graph display (Event, Alarm)
Event indicator
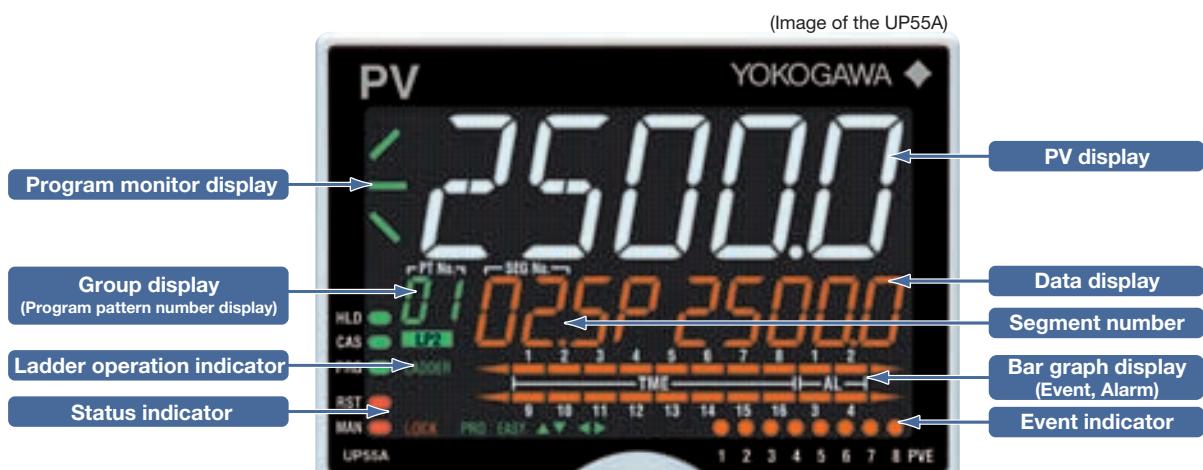
Operation Displays of the Program Controller

SP Display

Program Pattern Display

overview

Remaining Segment-time Display

Remaining Repetition Display

TSP Display

Program Pattern Display

Soak and ramp

Segment Number Display

* The same operation displays as those of the UT are also available.

Event Display

Alarm 1 to 4
PV event 1 to 8
Time event 1 to 16

Functions of the Program Controller

Fast-forwarding of program operation
Use this function when checking the program pattern setting. Only times of segments and time events can be faster.

Program pattern-2 retransmission
The controller can serve as a program pattern generator.
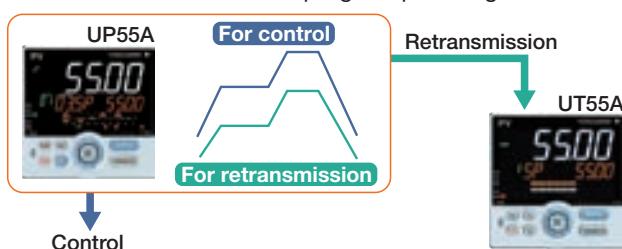
Synchronized program operation
If the progress of the operation of one unit is faster, the program operation can be forcibly stopped by digital input when switching between segments. Thus, synchronized program operation can be performed.

Progress of the operation is slower
Progress of operation is faster

Continue operation until both units are synchronized

Forcibly stop the operation by digital input

Continue the stoppage until both units are synchronized
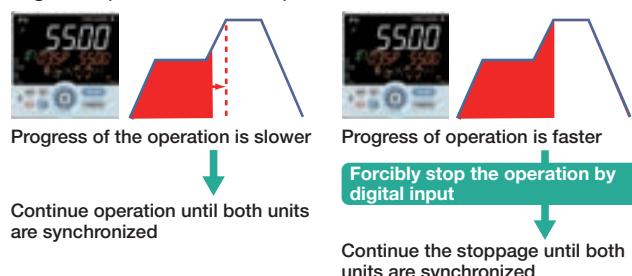
Simplicity

Easy Operation Map, Navigation Guide and Navigation Keys

Navigation Guide

▲▼ ◀▶

Operation Display ← DISPLAY key or DISP key

Hold down PARAMETER key or PARA key for 3 sec.

| Menu | ←→ | Menu | ←→ | Menu | ←→ | END |

◀▶ key   ◀▶ key

SET/ENTER key   PARAMETER key or PARA key

▲▼ key — Parameter ⋮ Parameter END

▲▼ key — Parameter ⋮ Parameter END

▲▼ key — Parameter ⋮ Parameter END

Menu Display and Parameter Setting Display are changed in a circular pattern.

SET/ENTER
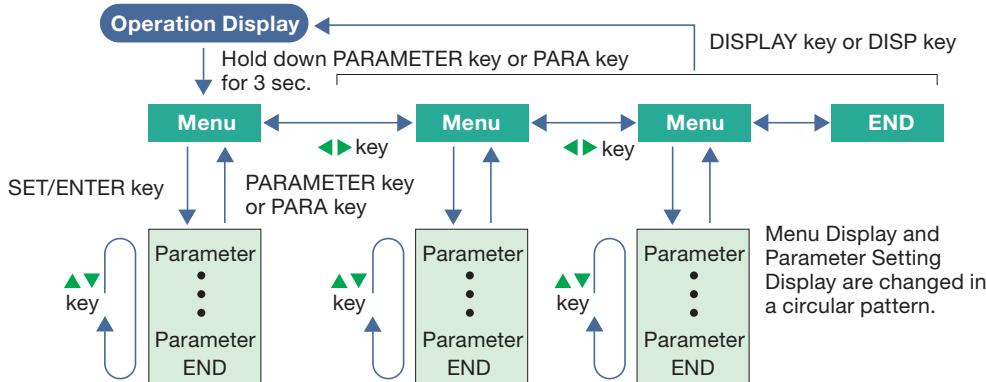
Navigation Keys

The parameter groups can be switched using ◀, ▶ keys.

The navigation keys is an intuitive method to navigate the controller's configuration menus and setting its various menus. Navigation arrows even tell you what button to push next.

Programmable Function Keys

Fn   F1
A/M F2

UT series

RUN   RST
MODE PTN

UP series
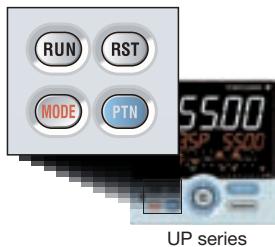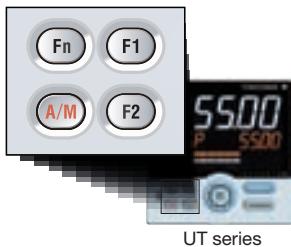
It is easy to assign frequently used functions, such as the operation mode switch, Run/Stop, program pattern selection, Remote/Local, alarm latch release, and PID parameter display. The function of an external switch can also be assigned to the front panel key in conjunction with a ladder sequence program.

Scrolling Text

TARGET SET POINT

The UTAdvanced is equipped with a scrolling text feature that fully lists the parameter being modified. There is no guessing what parameter you are looking at. It is possible to turn off scrolling text function.

Multiple Language Support

Example : TARGET SET POINT

| German | French | Spanish |
| Sollwert | Valeur de consigne | Punto de ajuste objetivo |
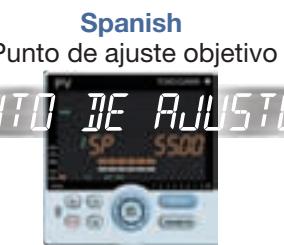
SOLLWERT

EUR DE CONSIGN

PUNTO DE AJUSTE

The UTAdvanced is fluent in multiple languages—English, Spanish, French, and German. The use of the UTAdvanced by local language operators is not an obstacle.

User Settable Default Values

Initialize — Factory Default
            User Default

Parameter values (SP, P, I, D, ALM1, etc.) configured by the user can be stored in the controller as the default values. LL50A Parameter Setting Software (sold separately) is required. Even if a parameter set value is accidentally changed, it can be restored to the original value with a simple operation.

𝒩 etworking

Communication Functions

A network function is built into the back panel of the controller to make wiring simple.

Ethernet

RS-485
Modbus (RTU/ASCII), Peer to Peer, Coordinated, PC-Link

Open Network
(PROFIBUS-DP, CC-Link, DeviceNet)

Modbus/TCP

Modbus TCP/IP, a protocol that allows the controller to connect to any Ethernet network and have the ability to exchange data with the computers or devices on that network.
• Allows control devices to be integrated into an application simply.
• Works with any Modbus TCP IP compliant software.
• Support for Modbus function codes 03, 06, 08 & 16.
• Gateway function allows RS-485 Modbus devices to communicate via Ethernet.
• Reduced labor costs in wiring and setup of a communications network.
• Physical layer : 10 BASE-T/100 BASE-TX
• Max. number of connection : 2

SMARTDAC+ GX

PLC

Ethernet

Ethernet-serial Gateway Function

RS-485
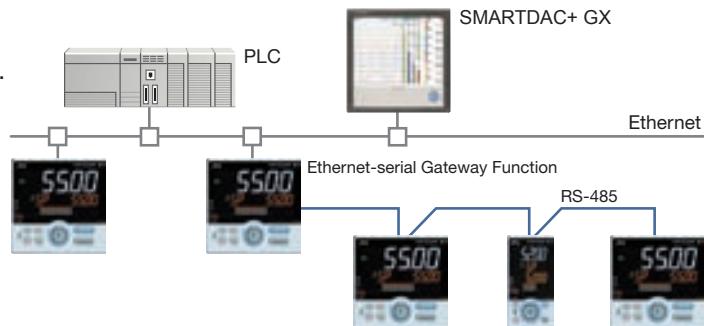
Modbus/RTU

The data of UTAdvanced (slave units) can be displayed and saved on the DXAdvanced using the Modbus RTU function.

Modbus master

SMARTDAC+ GX

RS-485

Power monitor PR300

Modbus slave units
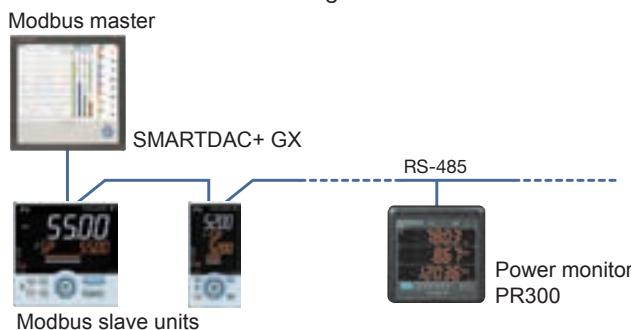
Coordinated Operation

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

UTAdvanced, UT/UP Series controller

RS-485

Up to 31 slave units
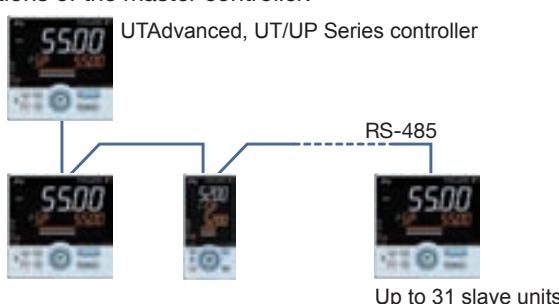
PC-Link

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

Peer to Peer

The use of the ladder sequence program makes it possible to exchange analog data and status data between communication-capable UTs.

Example: A UT in which an input error occurs sends a signal to another UT to enable that UT switch to MAN operation, thus shifting the whole system into a safe mode. In such a case, the safety mechanism can be built into the UT Advanced and is not required in the host system.

RS-485

1   2   4   15   32

Up to 4 master units, total 32 units
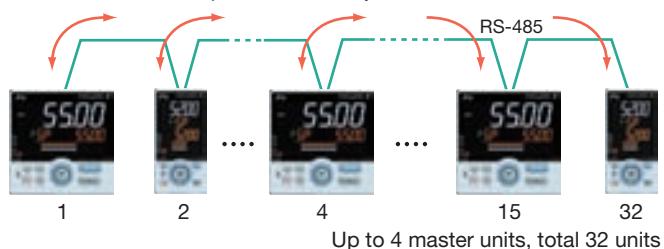
Open Network
(PROFIBUS-DP, CC-Link, DeviceNet)

Embedded open networks will provide direct connection to PLC's.
• Reads data from UTAdvanced
• Writes parameter setting value to UTAdvanced

PLC
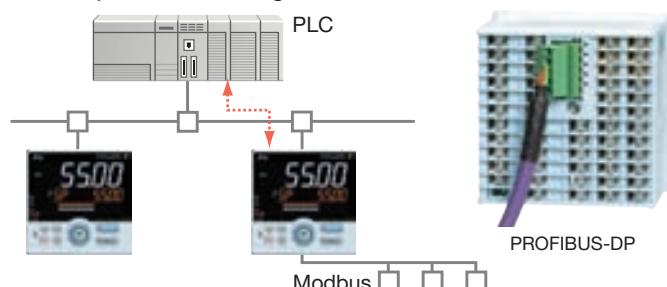
PROFIBUS-DP

Modbus

• FA-M3, Daqstation and DXAdvanced are registered trademark of Yokogawa Electric Corporation.
• Ethernet is a registered trademark of Xerox Corporation.
• Modbus is a registered trademark of AEG Schneider Automation Inc.
• PROFIBUS-DP is a registered trademark of PROFIBUS User Organization.
• CC-Link is a registered trademark of CC-Link Partner Association (CLPA.)
• DeviceNet is a registered trademark of Open DeviceNet Vender Association, Inc.

Digital Indicating Controller UT55A / UT52A / UT35A / UT32A

Model			UT55A	UT52A	UT35A	UT32A
Size	1/4 DIN		✔	—	✔	—
	1/8 DIN		—	✔	—	✔
	Depth from the panel surface (mm)		65	65	65	65
Control Scan Period	(msec)		Choice 50/100/200	Choice 50/100/200	200	200
Display Function	Number of PV Display Digits		5	5	5	5
	Active Color PV Display Function		✔	✔	✔	✔
	Guide Scroll Display Function		✔	✔	✔	✔
	Message Display Function		✔	✔	✔	✔
	Bar graph display (Number)		✔ (2)	✔ (2)	✔ (1)	✔ (1)
PV Input Indication Accuracy	(% of F.S.)		0.1	0.1	0.1	0.1
PV Input Type	TC		✔	✔	✔	✔
	RTD (3-wire)		✔	✔	✔	✔
	RTD (4-wire)		✔	✔	—	—
	mV, V		✔	✔	✔	✔
	mA		✔	✔	✔	✔
Number of Analog Inputs	Standard (Maximum)		1 (4)	1 (2)	1	1
Number of SPs (PIDs)	Maximum		8	8	4	4
Number of Control Modes	Maximum		8	8	1	1
Number of Control Types	Maximum		8	8	5	5
Control Output	Type	Relay Contact Output, Voltage pulse output, Current output	✔	✔	✔	✔
	Algorithm	ON/OFF	✔	✔	✔	✔
		PID (Continuance, Time Proportion)	✔	✔	✔	✔
		Position proportional	✔	✔	✔	✔
		Heating / cooling	✔	✔	✔	✔
Number of Analog Outputs	Standard (Maximum)		2 (3)	2 (3)	2	2
Number of Digital Inputs	Standard (Maximum)		3 (9)	3 (5)	2 (7)	2 (4)
Number of Alarms			8	8	4	4
Number of Digital Outputs	Standard (Maximum)		3 (18)	3 (5)	3 (8)	3 (5)
Communication	RS-485 communication (Maximum)		✔ (2)	✔ (1)	✔ (1)	✔ (1)
	Ethernet communication		✔	—	✔	—
	Open Network (CC-Link/PROFIBUS-DP /DeviceNet)		✔	—	✔	—
Various Function	Quick Setting Function		✔	✔	✔	✔
	Split Computation Output Function		✔	✔	—	—
	Ratio and Square Root Extraction Function		✔	✔	—	—
	Remote SP Function		✔	✔	—	—
	24 V DC Loop Power Supply Function		✔	✔	✔	✔
	Heater Break Alarm Function		✔ (Standard type)	✔ (Standard type)	✔ (Standard type or Heating/cooling type)	✔ (Standard type or Heating/cooling type)
Ladder Sequence Function	(Number of max. steps)		✔ (500)	✔ (500)	✔ (300)	✔ (300)
Other Specifications	Power Supply	AC100 V to 240 V	✔	✔	✔	✔
		AC/DC 24 V	✔	✔	✔	✔
	Dust and waterproof Level of Front Panel		NEMA4*1 (IP56)	NEMA4*1 (IP56)	NEMA4*1 (IP56)	NEMA4*1 (IP56)
	Configuration Tool	Via Light-loader Communication	✔	✔	✔	✔
		Via Maintenance Port Communication	✔	✔	✔	✔
		Via RS-485/Ethernet communication	✔ / ✔	✔ / —	✔ / ✔	✔ / —

The table above includes specifications of the standard models only.

* 1: Hose down test only.

Input Range

Input type	
TC	K, J, T, B, S, R, N, E, L, U, W PL-2, PR20-40, W97Re3-W75Re25
RTD	JPt100, Pt100
DC Voltage	0.4 to 2.0 V, 1.0 to 5.0 V, 0.0 to 2.0 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV
DC Current	4 to 20 mA, 0 to 20 mA

Model			UP55A	UP35A	UM33A
Size	1/4 DIN		✔	✔	—
	1/8 DIN		—	—	✔
	Depth from the panel surface (mm)		65	65	65
Control Scan Period	(msec)		Choice 100/200	200	Choice 50/100/200
Display Function	Number of PV Display Digits		5	5	5
	Active Color PV Display Function		✔	✔	✔
	Guide Scroll Display Function		✔	✔	✔
	Message Display Function		✔	✔	✔
	Bar graph display (Number)		✔ (2)	✔ (1)	—
PV Input Indication Accuracy	(% of F.S.)		0.1	0.1	0.1
PV Input Type	TC		✔	✔	✔
	RTD (3-wire)		✔	✔	✔
	RTD (4-wire)		✔	—	—
	mV, V		✔	✔	✔
	mA		✔	✔	✔
Number of Analog Inputs	Standard (Maximum)		1 (4)	1	1
Number of SPs (PIDs)	Fixed		8	4	—
Number of Control Modes	Maximum		5	1	—
Number of Control Types	Maximum		4	4	—
Control Output	Type	Relay Contact Output, Voltage pulse output, Current output	✔	✔	—
	Algorithm	ON/OFF	✔	✔	—
		PID (Continuance, Time Proportion)	✔	✔	—
		Position proportional	✔	✔	—
		Heating / cooling	✔	✔	—
Number of Analog Outputs	Standard (Maximum)		2 (3)	2	1
Number of Digital Inputs	Standard (Maximum)		8 (9)	3 (8)	2
Number of Program Patterns	Standard (Maximum)		30	2 (4)	—
Number of Programs Number of Segments per Pattern	Standard (Maximum)		300 99	20 (40) 20 (40)	—
Number of PV Events	(Per segment)		8	2	—
Number of Time Events	(Per segment)		16	4	—
Number of Alarms	Maximum		8	2	8
Number of Digital Outputs	Standard (Maximum)		8 (18)	3 (8)	3 (9)
Communication	RS-485 communication (Maximum)		✔ (2)	✔ (1)	✔ (1)
	Ethernet communication		✔	✔	—
	Open Network (CC-Link/PROFIBUS-DP /DeviceNet)		✔	✔	—
Various Function	Quick Setting Function		✔	✔	✔
	Split Computation Output Function		✔	—	✔
	Ratio and Square Root Extraction Function		✔	—	✔ *2
	Remote SP Function		✔	—	✔
	24 V DC Loop Power Supply Function		—	—	✔
	Heater Break Alarm Function		✔ (Standard type)	✔ (Standard type)	—
Ladder Sequence Function	(Number of max. steps)		✔ (500)	✔ (300)	—
Other Specifications	Power Supply	AC100 V to 240 V	✔	✔	✔
		AC/DC 24 V	✔	✔	✔
	Dust and waterproof Level of Front Panel		NEMA4*1 (IP56)	NEMA4*1 (IP56)	NEMA4*1 (IP56)
	Configuration Tool	Via Light-loader Communication	✔	✔	✔
		Via Maintenance Port Communication	✔	✔	✔
		Via RS-485/Ethernet communication	✔ / ✔	✔ / ✔	✔ / —

The table above includes specifications of the standard models only.

* 1: Hose down test only.
* 2: Square root extraction available

Digital Indicating Controller UT55A / UT52A (Standard model)

Main Features

- Up to 4 analog inputs available
- 3 alarm independent common terminals available as standard
- Ladder sequence programs can be built
- Simple operation
- Up to 18 DOs (combinations available)
- Multiple language operation manual (Japanese, English, German, French, Spanish, Chinese, and Korean) available. Please specify the desired language when ordering.

External Dimensions

UT52A   UT55A   Unit : mm

48   96

96   96

11   65   Bracket   Terminal Cover
20
91.6   94.6   105.2

Bracket
1–10mm (Panel thickness)
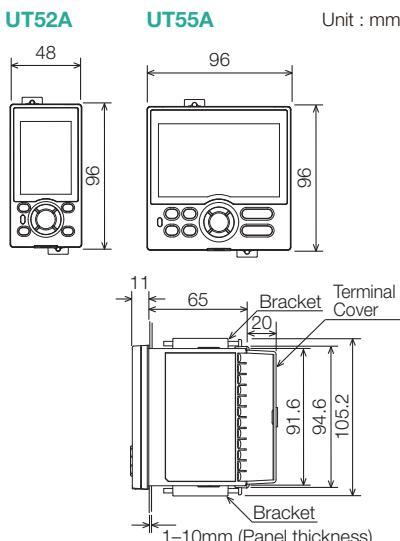
Model and Suffix Codes

Model	Suffix code	Optional suffix code	Description
UT55A			Digital Indicating Controller (provided with retransmission output or 15 V DC loop power supply, 3 DIs, and 3 DOs) (Power supply: 100-240 V AC)
Basic control	-0		Standard type
	-1		Position proportional type
	-2		Heating / cooling type
Functions (* 1)	0		None
	1		Remote (1 additional aux. analog) input, 6 additional DIs, 5 additional DOs, and RS-485 communication (Max.19.2 kbps, 2-wire / 4-wire) (* 2)
	2		Remote (1 additional aux. analog) input, 1 additional DI, and RS-485 communication (Max.19.2 kpbs, 2-wire / 4-wire) (* 2)
	3		5 additional DIs and 5 additional DOs
	4		Remote (1 additional aux. analog) input and 1 additional DI
	5		Remote (1 additional aux. analog) input, 6 additional DIs, and 5 additional DOs
	6		5 additional DIs and 15 additional DOs
	7		3 additional aux. analog inputs and 3 additional DIs
Open networks	0		None
	1		RS-485 communication (Max.38.4 kbps, 2-wire / 4-wire)
	2		Ethernet communication (with serial gateway function)
	3		CC-Link communication (with Modbus master function)
	4		PROFIBUS-DP communication (with Modbus master function)
	5		DeviceNet communication (with Modbus master function)
Display language (* 7)	-1		English
	-2		German
	-3		French
	-4		Spanish
Case color	0		White (Light gray)
	1		Black (Light charcoal gray)
	-00		Always "-00"
Options		/DR	Additional direct input (TC and 3-wire / 4-wire RTD) and DC current to Remote (1 additional aux. analog) input, 1 DI to be deleted (* 3)
		/LP	24 V DC loop power supply (* 4)
		/HA	Heater break alarm (* 5)
		/DC	Power supply 24 V AC / DC
		/CT	Coating (* 6)

* 1: When "1" or "6" is specified for the Functions code, only "0" can be specified for the Open networks code.
* 2: When the /LP option is specified, the RS-485 communication is 2-wire system.
* 3: When any of "1," "2," "4," "5," or "7" is specified for the Functions code, the /DR option can be specified.
* 4: /LP option can be specified in the combination of Functions code (any of "0", "2", "3" or "4") and Open networks code (any of "0" or "1"). Additionally, /LP option can be specified in the combination of Functions code "1" and Open networks code "0".
* 5: When "-0" is specified for the Basic control code, the / HA option can be specified.
* 6: When the /CT option is specified, the UT55A does not conform to the safety standards (UL and CSA) and CE marking.
* 7: English, German, French, and Spanish can be displayed as the guide display.

Model	Suffix code	Optional suffix code	Description
UT52A			Digital Indicating Controller (provided with retransmission output or 15 V DC loop power supply, 3 DIs, and 3 DOs) (Power supply: 100-240 V AC)
Basic control	-0		Standard type
	-1		Position proportional type
	-2		Heating / cooling type
Functions	0		None
	1		Remote (1 additional aux. analog) input, 1 additional DI, and RS-485 communication (Max. 38.4 kbps, 2-wire)
	2		Remote (1 additional aux. analog) input and 1 additional DI
	3		2 additional DIs and 2 additional DOs
Open networks	0		None
Display language (* 5)	-1		English
	-2		German
	-3		French
	-4		Spanish
Case color	0		White (Light gray)
	1		Black (Light charcoal gray)
	-00		Always "-00"
Options		/DR	Additional direct input (TC and 3-wire / 4-wire RTD) and DC current to Remote (1 additional aux. analog) input, 1 DI to be deleted. (* 1)
		/LP	24 V DC loop power supply (* 2)
		/HA	Heater break alarm (* 3)
		/DC	Power supply 24 V AC / DC
		/CT	Coating (* 4)

* 1: When "2" is specified for the Functions code, the /DR option can be specified.
* 2: When "-0" or "-1" is specified for the Basic control code, the /LP option can be specified.
  When "0" is specified for the Functions code, the /LP option can be specified.
* 3: When "-0" is specified for the Basic control code, the /HA option can be specified.
* 4: When the /CT option is specified, the UT52A does not conform to the safety standards (UL and CSA) and CE marking.
* 5: English, German, French, and Spanish can be displayed as the guide display.

## Popular Universal I/O and Auto-Tuning Function Available

■ Universal Input

Select from TC, RTD, mV / DC voltage and DC current.
(Direct connection : No shunt resistor required)
The input type and range is user selectable via the front panel or by using the LL50A parameter setting software.
- **0.1% Indication Accuracy**
- **Connect up to two 2-wire transmitters simultaneously**
All instruments have a 15 V Loop Power Supply (15 V LPS) for a transmitter.
In addition, a 24 V LPS is also available simultaneously for some instruments as optional function.
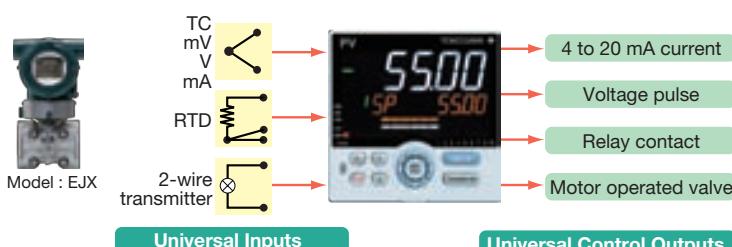
Thermocouple Type	K, J, T, B, S, R, N, E, L, U, W, PL-2, PR20-40, W97Re3-W75Re25
RTD Type	Pt100, JPt100
DC Voltage Input	0.4 to 2V, 1 to 5V, 0 to 2V, 0 to 10V, -10 to 20mV, 0 to 100mV
DC Current Input	4 to 20mA, 0 to 20mA

TC
mV
V
mA
→ 4 to 20 mA current
→ Voltage pulse
RTD
→ Relay contact
2-wire transmitter
→ Motor operated valve

Model : EJX

Universal Inputs   **Universal Control Outputs**

Position proportional control for Control motor

Room temperature   UT52A

Position feedback slide wire   Motor drive On/Off outputs

Control motor

Hot air

Main Features

- 4 target setpoints (PID numbers) available as standard
- 3 alarm independent common terminals available as standard
- Ladder sequence programs can be built
- Simple operation
- Up to 8 DOs (combinations available)
- Multiple language operation manual (Japanese, English, German, French, Spanish, Chinese, and Korean) available. Please specify the desired language when ordering.

External Dimensions

UT32A **UT35A**   Unit : mm

48

96

96

96

11

65   Bracket

91.6 94.6 105.2

Bracket

1–10mm (Panel thickness)

Model and Suffix Codes

Model	Suffix code		Optional suffix code	Description
UT35A				Digital Indicating Controller (provided with retransmission output or 15 V DC loop power supply, 2 DIs, and 3 DOs) (Power supply: 100-240 V AC)
Basic control	-0			Standard type
	-1			Position proportional type
	-2			Heating / cooling type
Functions		0		None
		1		2 additional DIs and 2 additional DOs
		2		5 additional DIs and 5 additional DOs
Open networks		0		None
		1		RS-485 communication (Max.38.4 kbps, 2-wire / 4-wire)
		2		Ethernet communication (with serial gateway function)
		3		CC-Link communication (with Modbus master function)
		4		PROFIBUS-DP communication (with Modbus master function)
		5		DeviceNet communication (with Modbus master function)
Display language (*1)		-1		English
		-2		German
		-3		French
		-4		Spanish
Case color		0		White (Light gray)
		1		Black (Light charcoal gray)
		-00		Always "-00"
Options			/LP	24 V DC loop power supply (* 2)
			/HA	Heater break alarm (* 3)
			/DC	Power supply 24 V AC / DC
			/CT	Coating (* 4)

* 1: English, German, French, and Spanish can be displayed as the guide display.
* 2: The /LP option can be specified in combination with function code "0" or "1" and open network code "0" or "1".
* 3: The /HA option can be specified when basic control code is "-0" or "-2".
* 4: When the /CT option is specified, the UT35A does not conform to the safety standards (UL and CSA) and CE marking.

Model	Suffix code		Optional suffix code	Description
UT32A				Digital Indicating Controller (provided with retransmission output or 15 V DC loop power supply, 2 DIs, and 3 DOs) (Power supply: 100-240 V AC)
Basic control	-0			Standard type
	-1			Position proportional type
	-2			Heating / cooling type
Functions		0		None
		1		RS-485 communication (Max.38.4 kbps, 2-wire / 4-wire) (* 2)
		2		2 additional DIs and 2 additional DOs
Open networks		0		None
Display language (*1)		-1		English
		-2		German
		-3		French
		-4		Spanish
Case color		0		White (Light gray)
		1		Black (Light charcoal gray)
		-00		Always "-00"
Options			/LP	24 V DC loop power supply (* 2)
			/HA	Heater break alarm (* 3)
			/DC	Power supply 24 V AC / DC
			/CT	Coating (* 4)

* 1: English, German, French, and Spanish can be displayed as the guide display.
* 2: The /LP option can be specified in combination with basic control code "-0" or "-1" and function code "0" or "1." Futhermore, when the function code is "1," the RS-485 communication is 2-wire system.
* 3: The /HA option can be specified when basic control code is "-0" or "-2".
* 4: When the /CT option is specified, the UT32A does not conform to the safety standards (UL and CSA) and CE marking.

Sold separately (Accessory)

Model Name	Model	Note
Terminal Cover	UTAP001	For UT55A/UT35A/UP55A/UP35A
	UTAP002	For UT52A/UT32A/UM33A
User's Manual (CD-ROM)	UTAP003	Contains all manuals.

■ Universal Output

User selectable for 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 of Relay, Pulse and Current outputs are available.

Drive a 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 slide wire input to feed back the valve position is also available.

■ Auto-Tuning (AT) Function

The following conditions can be set in order to increase the accuracy of calculating PID constants using AT .
1) Two types of algorithms to calculate PID constants are available for selection.
   Normal: Fast-rising PID constant
   Stable: Slow-rising PID constant
2) High and low output limits can be set individually for control output values during AT runtime.

Program Controller UP55A (Standard model)

Main Features

- Up to 30 program patterns
- 8 PV events, 16 time events, and 8 alarms can be monitored simultaneously
- Ladder sequence programs can be built
- Simple operation
- Up to 9 DIs and 18 DOs (combinations available)
- Multiple language operation manual (Japanese, English, German, French, Spanish, Chinese, and Korean) available.
  Please specify the desired language when ordering.

External Dimensions

UP55A   Unit : mm

1–10mm (Panel thickness)
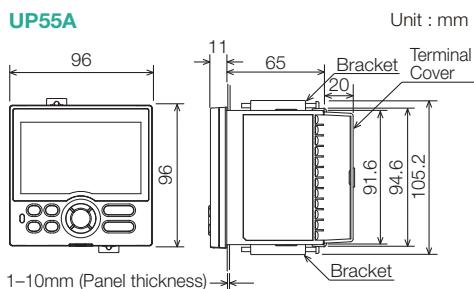
Model and Suffix Codes

Model	Suffix code	Optional suffix code	Description
UP55A			Program Controller (provided with retransmission output or 15 V DC loop power supply, 8 DIs, and 8 DOs) (Power supply: 100-240 V AC) 30 program patterns / 300 program segments (Max. 99 segments per pattern)
Basic control	-0		Standard type
	-1		Position proportional type
	-2		Heating/cooling type
Functions (*1)	0		None
	1		Remote (1 additional aux. analog) input, 1 additional DI
	2		RS-485 communication (Max.19.2 kpbs, 2-wire/4-wire)
	3		10 additional DOs
	4		3 additional aux. analog inputs, 2 DIs and 5 DOs to be deleted
Open networks	0		None
	1		RS-485 communication (Max.38.4 kbps, 2-wire/4-wire)
	2		Ethernet communication (with serial gateway function)
	3		CC-Link communication (with Modbus master function)
	4		PROFIBUS-DP communication (with Modbus master function)
	5		DeviceNet communication (with Modbus master function)
Display language (*2)	-1		English
	-2		German
	-3		French
	-4		Spanish
Case color	0		White (Light gray)
	1		Black (Light charcoal gray)
Fixed code		-00	Always "-00"
Optional suffix codes		/DR	Additional direct input (TC and 3-wire/4-wire RTD) and current input to Remote (1 additional aux. analog) input, 1 DI to be deleted (*3)
		/HA	Heater break alarm (*4)
		/DC	Power supply 24 V AC/DC
		/CT	Coating (*5)

* 1: When "3" is specified for the Function code, only "0" can be specified for the Open network code.
* 2: English, German, French, and Spanish can be displayed as the guide display.
* 3: When any of "1" or "4" is specified for the Function code, the /DR option can be specified.
* 4: When "-0" is specified for the Basic control code, the /HA option can be specified.
* 5: When the /CT option is specified, the UP55A does not conform to the safety standards (UL and CSA) and CE marking.

Program Controller UP35A (Standard model)

Main Features

- Up to 4 program patterns
- 2 PV events, 4 time events, and 2 alarms can be monitored simultaneously.
- Ladder sequence programs can be built
- Simple operation
- Up to 8 DIs and 8 DOs (combinations available)
- Multiple language operation manual (Japanese, English, German, French, Spanish, Chinese, and Korean) available.
  Please specify the desired language when ordering.

External Dimensions

UP35A   Unit : mm

1–10mm (Panel thickness)
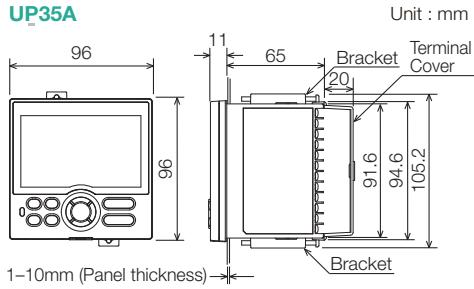
Model and Suffix Codes

Model	Suffix code	Optional suffix code	Description
UP35A			Program Controller (provided with retransmission output or 15 V DC loop power supply, 3 DIs, and 3 DOs) (Power supply: 100-240 V AC) 2 program patterns/20 program segments (Max. 20 segments per pattern)
Basic control	-0		Standard type
	-1		Position proportional type
	-2		Heating/cooling type
Functions	0		None
	1		5 additional DIs, 5 additional DOs
Open networks	0		None
	1		RS-485 communication (Max.38.4 kbps, 2-wire/4-wire)
	2		Ethernet communication (with serial gateway function)
	3		CC-Link communication (with Modbus master function)
	4		PROFIBUS-DP communication (with Modbus master function)
	5		DeviceNet communication (with Modbus master function)
Display language (*1)	-1		English
	-2		German
	-3		French
	-4		Spanish
Case color	0		White (Light gray)
	1		Black (Light charcoal gray)
Fixed code		-00	Always "-00"
Optional suffix codes		/AP	2 additional patterns/20 additional segments
		/HA	Heater break alarm (*2)
		/DC	Power supply 24 V AC/DC
		/CT	Coating (*3)

* 1: English, German, French, and Spanish can be displayed as the guide display.
* 2: The /HA option can be specified when the Basic control code is "-0" or "-2."
* 3: When the /CT option is specified, the UP35A does not conform to the safety standards (UL and CSA) and CE marking.

# Digital Indicator with Alarms UM33A (Standard model)

Main Features

- Up to 9 alarm outputs (including one Fail)
- Input correction function (PV bias, polygonal line approximation, polygonal line bias)
- 24 VDC sensor power supply available
- Simple operation
- Multiple language operation manual (Japanese, English, German, French, Spanish, Chinese, and Korean) available.
  Please specify the desired language when ordering.

External Dimensions

UM33A

Unit : mm

105.2
94.6
91.6
Terminal cover
20
Bracket
65
Bracket
11
1 to 10 (panel thickness)
96
48
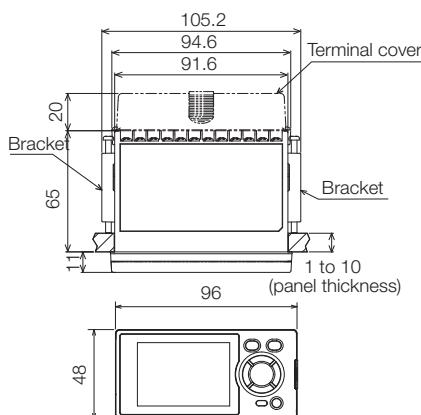
Model and Suffix Codes

Model	Suffix code		Optional suffix code	Description
UM33A				Digital Indicator with Alarms (provided with retransmission output or 15 V DC loop power supply, 2 DIs, and 3 DOs) (Power supply: 100-240 V AC)
Basic control	-0			Standard type
Functions		0		None
		1		1 additional DO (c-contact relay), RS-485 communication (Max. 38.4 kbps, 2-wire/4-wire)
		2		1 additional DO (c-contact relay)
		3		6 additional DOs (c-contact relay; 1 point and open collector; 5 points)
Open networks		0		None
Display language (*1)			-1	English
			-2	German
			-3	French
			-4	Spanish
Case color			0	White (Light gray)
			1	Black (Light charcoal gray)
Optional suffix codes			/LP	24 V DC loop power supply (*2)
			/DC	Power supply 24 V AC/DC
			/CT	Coating (*3)

* 1: English, German, French, and Spanish can be displayed as the guide display.
* 2: The /LP option can be specified only when the code for Function is "0", "1" or "2" Additionally, the RS-485 communication for "1" of the Function code is 2-wire system.
* 3: When the /CT option is specified, the UM33A does not conform to the safety standards (UL and CSA) and CE marking.

Other Convenient Functions Available

■ Parameter Setting

LL50A Parameter Setting Software (sold separately) allows for easily setting parameters.

To USB terminal

Dedicated cable

LL50A Parameter Setting Software
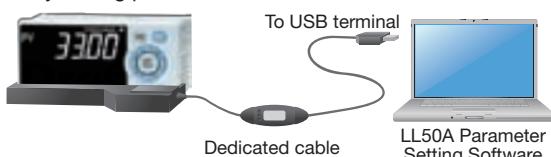
■ Quick Setting Function

Minimum parameters necessary for operation can be set.

■ Security Function

The password function can prevent inadvertent changes to the parameter settings. If a password is set, the password is required when moving to the Setup Parameter Setting Display. When the password is verified, can be changed to the Setup Parameter Setting Display.

■ Message Function

Using the message function and turning the contact input on/off, the message registered beforehand can be displayed on PV display by interrupt.
The message is registered using LL50A Parameter Setting Software.
The messages are limited to 20 alphanumeric characters. A maximum of four messages can be registered.
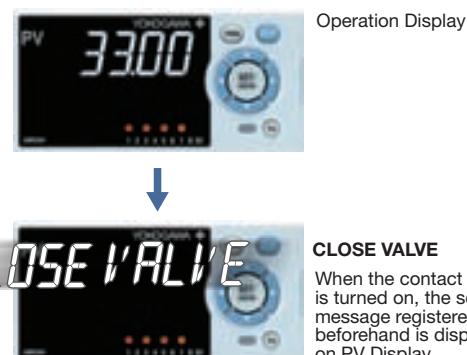
Operation Display

CLOSE VALVE

When the contact input is turned on, the scrolling message registered beforehand is displayed on PV Display.

*C*onfiguration Tool

LL50A Parameters Setting Software

### Parameter Setting/Program Pattern Creating Function

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 and others. It also allows you to create program patterns.
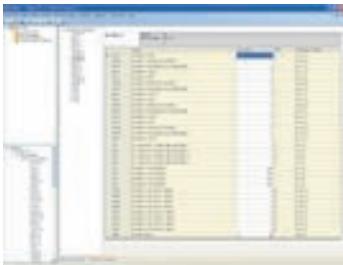
Parameters setting display

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.
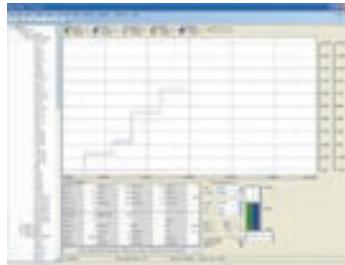
Tuning display

Ladder Building Functions

Ladder sequence programs can be created and ladder programs can be monitored.
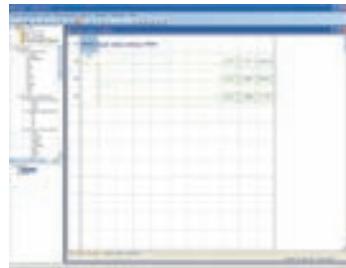
Ladder programs building display

Network Profile Creating Function

Can be used to create an electronic device data sheet for Open Network.

Via Bus Powered USB Cable

Can be set parameters while no power supply to controller.

Via Ethernet Communication Connector

Ethernet

RS-485
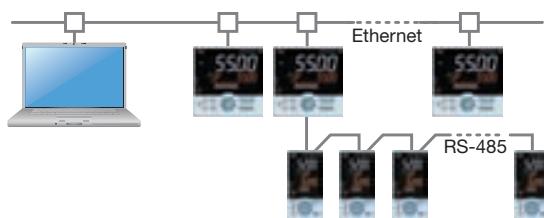
Via Dedicated Adapter

Can be used while attached to the control panel.

- Applicable Controllers : UT75A, UT55A
  UT52A, UT35A
  UT32A, UP55A
  UP35A, UM33A
- Applicable OS : Windows XP / Vista
  Windows 7 Professional (32-bit and 64-bit versions)
  Windows 8 Pro (32-bit and 64-bit versions) (Desktop type)
- Communication method : USB 1.1

Via RS-485 Communication Terminals

RS-232C

RS-485

ML2

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

Model and Suffix Code

Model	Suffix code	Description
LL50A	-00	Parameters Setting Software

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A parameter conversion tool that enables GREEN series parameter data to be used with the LL50A is available and downloadable from the website below.
https://y-link.yokogawa.com

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