IM 05F01D12-01E

Models UM351 / UM331 Digital Indicator with Alarms with Active Color PV Display **User's Manual Installation**





3rd Edition: Sep 30, 2004

Yokogawa Electric Corporation

This manual describes installation, wiring, and other tasks required to make the indicator ready for operation

Contents

- 1. Safety Precautions
- 2. Model and Suffix Codes
- 3. How to Install
- 4. How to Connect Wires
- 5. Hardware Specifications
- 6. Terminal Wiring Diagrams

Introduction

Thank you for purchasing the UM351/UM331 digital indicator with alarms

The indicator is shipped from the factory with 4 hardcopy user's manuals (A2 and A3 size). The 3 user's manuals in hardcopy format describe the operating procedures required for basic use.

It is recommended that you refer to these user's manuals to understand [1] installation, [2] initial settings, and [3] operating

■ How to Use the Manuals

| Purpose | Manual Title | Description | Media |
|---|--|---|-----------------------------------|
| Setup | Installation | Describes the tasks (installation, wiring, and others) required to make the indicator ready for operations. | A2-size paper (Front and back) |
| Basic operation | Initial Settings | Describes examples of setting PV input types, and alarm types. Making settings described herein allows you to carry out basic monitoring. | A2-size paper (Front) |
| Operating procedures and troubleshooting | Operations | Describes examples of setting alarm setpoints, as well as key operation necessary to run the indicator | (Back) |
| Brief operation and setpoint recording | Parameters | Contains the parameter map used as a guideline for setting parameters and lists of parameters for recording user settings. | A2-size paper (Front and back) |
| Basic operation of Active Color PV Display | Setting / explanation of Active Color PV Display | Describes the setting/explanation of Active Color PV Display. | A3-size paper, back and front |

1. Safety Precautions

The following symbol is indicated on the indicator to ensure safe use.



This symbol on the indicator indicates that the operator must refer to an explanation in the user's manual in order to avoid the risk of injury or death of personnel or damage to the instrument. The manual describes how the operator should exercise special care to avoid electric shock or other dangers that may result in injury or loss of life.

The following symbols are used in the hardcopy user's manuals.



Indicates that operating the hardware or software in a particular manner may damage it or result in a system failure.



Draws attention to information that is essential for understanding the operation and/or features of the indicator.

■ Exemption from Responsibility

Make sure that all of the precautions are strictly adhered to. Yokogawa Electric Corporation assumes no liability for any damage resulting from use of the instrument in contradiction to the precautions.

Also, Yokogawa Electric Corporation assumes no liability to any party for any loss or damage, direct or indirect, caused by the use or any unpredictable defect of the instrument.

Regarding Protection, Safety, and Prohibition Against Unauthorized Modification

(1) In order to protect the product and the system controlled by it against damage and ensure its safe use, make certain that all of the instructions and precautions relating to safety contained in this document are strictly adhered to. Yokogawa does not guarantee safety if products are not handled according to these instructions.

(2) Modification of the product is strictly prohibited.

2. Model and Suffix Codes

Before using the indicator, check that the model and suffix codes match your order

| Model Suffix Code | | | Description | | | | |
|----------------------|----|---|--|--|--|--|--|
| UM351 | | | igital indicator with Alarms (provided with retransmission output and 19 | | | | |
| UM331 | | | V DC loop power supply as standard) | | | | |
| 0 | | | Standard type with three alarms | | | | |
| Туре | -3 | | Standard type with three alarms (with 24V DC loop power supply) | | | | |
| | _ | 0 | None | | | | |
| Optional functions 1 | | 1 | With communication and additional alarm-4 | | | | |
| | | 2 | With additional alarm-4 | | | | |

.... 1 (A3 size)

Check that the following items are provided

- Digital indicator with alarms (of ordered model): · Brackets (mounting hardware): · Unit label: User's Manuals: .3 (A2 size)
- User's Manuals "Setting/Explanation of Active Color PV Display":
- User's Manual (Reference) (CD-ROM Version) (only for indicators with optional communication functions):

3. How to Install



- To install the indicator, select a location where (1) no one may accidentally touch the terminals
- (2) mechanical vibrations are minimal,
- (3) corrosive gas is minimal,
- (4) temperature can be maintained at about 23°C and the fluctuation is minimal, (5) no direct radiant heat is present,
- (6) no magnetic disturbances are caused, (7) no wind blows against the terminal board (reference junction compensation
- element).
- (8) no water is splashed. (9) no flammable materials are around,

Never place the indicator directly on flammable items or equipment.

If the indicator has to be installed close to flammable items or equipment, be sure to provide shielding panels all around the indicator, at least 150mm away from every side; the panels should be made of either 1.43mm-thick metal-plated steel plates or 1.6mm-thick uncoated steel plates.

150mm

150mm



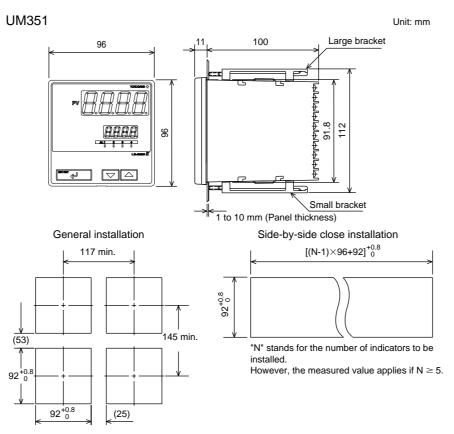
₩ NOTE

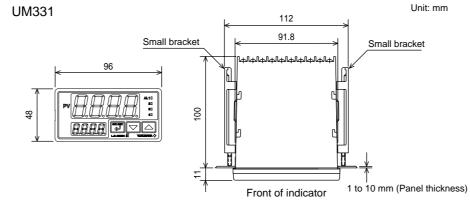
Never touch the opening at the bottom of the case. It is to be used in the factory at shipping

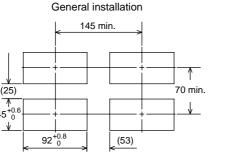
Installation Position

Install the indicator at an angle within 30° from horizontal with Front panel the front panel facing upward. Do not install it facing down-Must not ward. The position of right and left sides should be horizontal. exceed 30° Rear of indicator

■ External Dimensions and Panel Cutout Dimensions





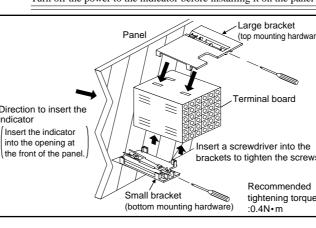


■ How to Install



CAUTION

Turn off the power to the indicator before installing it on the panel because there is a possibility of electric shock



After opening the mounting hole on the panel, follow the procedures below to install the indicator:

- Insert the indicator into the opening from the front of the panel so that the terminal board on the rear is at the far
- Set the brackets in place on the top and bottom of the indicator as shown in the figure on the left, then tighten the screws of the brackets. Take care not to over-

Note: Right and left mounting for UM331.

4. How to Connect Wires



! CAUTION

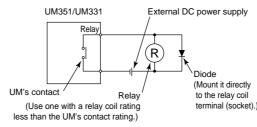
- 1) Before carrying out wiring, turn off the power to the indicator and check that the cables to be connected are not alive with a tester or the like because there is a possibility of electric shock.
- 2) For the protection and safe use of the indicator, be sure to place a circuit breaker (conforms with IEC60947, 5A, 100V or 220V AC) near the indicator where the breaker can easily be operated. In addition, be sure to indicated that it is the instrument to cut the power supply of the indicator.
- Wiring must be carried out by personnel who have basic electrical knowledge and practical experience.

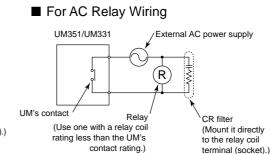


M NOTE

- 1) Provide power from a single-phase instrument power supply. If there is a lot of noise in the power line, insert an insulating transformer into the primary side of the line and use a line filter (recommended part: ZAC2205-00U from TDK) on the secondary side. As a countermeasures against noise, do not place the primary and secondary power cables close to each other.
- 2) For thermocouple input, use shielded compensating lead wires for wiring. For RTD input, use shielded wires that have low conductor resistance and cause no significant differences in resistance between the three wires. The cables to be used for wiring, terminal specifications, and recommended parts are as shown below.
- 3) Alarm output relays have a life of 100,000 times that of the resistance load, use auxiliary relays to turn on/off
- 4) The use of inductance (L) loads such as auxiliary relays, motors and solenoid valves causes malfunction or relay failure; always insert a CR filter for use with alternating current or a diode for use with direct current, as a spark-removal surge suppression circuit, into the line in parallel with the load.
- 5) When there is possibility of being struck by external lightening surge, use the arrester to protect the instrument.

■ For DC Relay Wiring





Cable Specifications and Recommended Cables

| Purpose | Name and Manufacturer |
|--|--|
| Power supply, grounding, relay contact outputs | 600 V PVC insulated wires, JIS C 3307, 0.9 to 2.0 mm ² |
| Thermocouple | Shielded compensating lead wires, JIS C 1610, \(\subseteq X\)-\(\subseteq \) (See Yokogawa Electric's GS 6B1U1-E.) |
| RTD | Shielded wires (three conductors), UL2482 (Hitachi Cable) |
| Other signals | Shielded wires |

Recommended Terminal Lugs

| 1 | Applicable wire size | | Tightening torque |
|---|-----------------------------|----|-------------------|
| | 0.3 to 1.65 mm ² | | 0.8 N⋅m or less |
| | 3.7mm¢ | or | 3.7mm¢ |

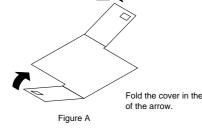
Terminal Covers(Optional parts)

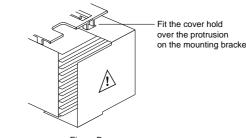
| Target Model | Part Number | Sales Unit |
|--------------|-------------|------------|
| UM351 | T9115YD | 1 |
| UM331 | T9115YE | 1 |

1. Before attaching the terminal cover, bend the side with the groove inward as shown in Fig. A. Be careful not to bend it backwards. This not only marks it harder to attach the cover but will also weaken its hold.

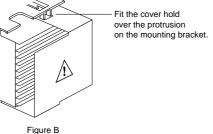
2. Fit the holes on the top and bottom (or left and right) of the terminal cover the projections on the brackets (Fig. B) and lock in place. The figure right shows the attachment of a terminal cover to UM indicator.

Note: Right and left mounting for UM331.





Fold the cover in the direction



Construction, Installation, and Wiring

- Construction: Only the front panel is dust-proof and drip-proof
- (protection class IP55) For side-by-side close installation the indicator loses its
- dust-proof and drip-proof protection.
- · Material: ABS resin and polycarbonate · Case color: Black
- Weight: About 1 kg or less

5. Hardware Specifications

Input type: Universal input system. The input type can be

Burnout detection: Functions at TC, RTD, standard signal

For standard signal, burnout is determined to have occurred

Upscale, downscale, and off can be specified.

Input bias current: 0.05 µA (for TC or RTD b-terminal)

Allowable signal source resistance: 250 Ω or less for

Input resistance: 1 M Ω or more for thermocouple or mV input

Effects of signal source resistance: $0.1 \mu V/\Omega$ or less

Effects of signal source resistance: About 0.01%/100 Ω

However, 10 Ω /wire for a maximum range of -150.0 to

• Allowable input voltage: $\pm 10 \text{ V DC}$ for thermocouple, mV, or

• Noise rejection ratio: 40 dB (50/60 Hz or more in normal mode

• Reference junction compensation error: ±1.0°C (15 to 35°C) ±1.5°C (0 to 15°C, 35 to 50°C)

Applicable standards: JIS, IEC, DIN (ITS-90) for thermocouples

(15 V DC: terminals @-@; 24 V DC: terminals @-@)

and transmitter converts a current signal into a voltage

signal, which is then read via the PV input terminal

loop power supply) 0 to 40°C if the 24V DC loop power supply of Model

A resistor (10 to 250 Ω) connected between the indicator

Supply voltage: 14.5 to 18.0 V DC, max. 21 mA (provided

with a protection circuit against a field short-circuit); 21.6

to 28.0 V DC, max. 30 mA (only for models with 24 V DC

Either the retransmission output or the loop power supply can be

Output accuracy: ±0.3% of span under standard operating

Purpose: Resetting of PV peak and bottom values

· Input contact rating: 12 V DC. 10 mA or more

resistance of 20 k Ω or more as "off."

· Minimum status detection hold time: About 1 second

• Purpose: Alarm output, FAIL output, and others

DC, 1 A; 1a (FAIL output; 1b)

Display Specifications

· Status indicating lamps: LEDs

/!\ CAUTION

Safety and EMC Standards

CSA1010, approved by UL508.

exceed 100 µA when "off."

Contact Outputs

Number of outputs: 4 (Max).

conditions (23 \pm 2°C, 55 \pm 10% RH, power frequency of

Input type: Non-voltage contact or transistor open collector input

resistance of 1 $k\Omega$ or less is determined as "on" and contact

For transistor open collector input, input voltage of 2 V or

less is determined as "on" and leakage current must not

· On/off determination: For non-voltage contact input, contact

• Relay contact rating for Alarm 1 to 3: 240 V AC, 1 A, or 30 V

4-digit, 7-segment green or red LED display,

Safety: Compliant with IEC/EN61010-1: 2001, approved by

Pollution degree: 2 (IEC/EN61010, CSA1010) Measurement category : I (CAT. I : IEC/EN61010)

terminals), 300V AC max.(across ground)

Rated transient overvoltage: 1500V (Note)

• Relay contact rating for Alarm 4: 250 V AC, 3 A, or 30 V DC, 3

A (resistance load) 3 terminals (NC, NO, Common); 1c

character height of 20 mm (for both UM351 and UM331)

Installation category: CAT. II (IEC/EN61010, CSA1010)

Rated measurement input voltage: 10V DC max.(across

Note: It is a value on the safety standard which is assumed

by IEC/EN61010-1 in measurement category I, and is not

This equipment has Measurement category I, there-

within measurement categories II, III and IV.

the value which guarantees an apparatus performance.

fore do not use the equipment for me

120 dB (50/60 Hz) or more in common mode

Maximum 150 Ω /wire: Conductor resistance between three

Measurement current (RTD): About 0.13 mA

About 1 $M\Omega$ for DC voltage input

 $2 k\Omega$ or less for DC voltage input

· Allowable wiring resistance: for RTD input

Wire resistance effect: $\pm 0.1^{\circ} C$ /10 Ω

±20 V DC for DC voltage input

thermocouple or mV input

wires should be equal

Loop Power Supply

UM331 is used

Retransmission Output

used with terminals 16-17.

• Number of outputs: 1 (terminals (6-17))

Outnuts the PV value

Output signal: 4-20 mA DC

• Load resistance: 600 Ω or less

50/60 Hz)

Contact Inputs

Number of inputs: 1

RTD input

PV Input Signals

Sampling period: 250 ms

(0.4 to 2 V or 1 to 5 V)

if it is 0.1 V or less

Number of inputs: 1 (terminals ①-②-③)

- UM351 -96 (W) \times 96 (H) \times 100 (depth from panel face)

 - UM331 $-96(W) \times 48 (H) \times 100 (depth from panel face)$
- Installation: Panel-mounting type. With top and bottom (or right and left) mounting hardware (1 each)
- · Panel cutout dimensions: UM351 $-92^{+0.8}_{0}$ (W) $\times 92^{+0.8}_{0}$ (H) mm
- UM331 $-92^{+0.6}_{0}$ (W) $\times 45^{+0.8}_{0}$ (H) mm Installation position: Up to 30° upward facing
- (not designed for facing downward) · Wiring: M3.5 screw terminals (for signal wiring and power,
- ground wiring as well)

Power Supply Specifications

- Power supply: Rated voltage of 100 to 240 V AC (\pm 10%), 50/60 Hz
- Power consumption: Max. 20 VA (8.0 W max.)
- Internal fuse rating: 250 V AC, 1.6A time-lug fuse
- Data backup: Non-volatile memory (can be written to up to
- 100,000 times)
- · Withstanding voltage
- Between primary terminals* and secondary terminals** At least 1500 V AC for 1 minute Between primary terminals* and grounding terminal
- At least 1500 V AC for 1 minute Between grounding terminal and secondary terminals**
 At least 1500 V AC for 1 minute
- Between secondary terminals** At least 500 V AC for 1 minute * Primary terminals indicate power terminals and relay
- output terminals ** Secondary terminals indicate analog I/O signal, and contact input terminals Insulation resistance: 20 M Ω or more at 500 V DC between
- power terminals and grounding terminal - Grounding: Class D grounding (grounding resistance of 100 Ω or less)

Signal Isolations

- PV input terminals: Isolated from other input/output terminals Not isolated from internal circuit.
- 15 V DC loop power supply terminals: Not isolated from 4-20 mA analog output, Isolated from other input/output terminals and internal circuit.
- 24 V DC loop power supply terminals: Isolated from 4-20 mA analog output terminals, other input/output terminals and
- internal circuit. • 4-20 mA analog output terminals (for retransmission): Not isolated from 15 V DC loop power supply. Isolated from
- other input/output terminals and internal circuit. · Contact input terminals: Not isolated from communication terminals. Isolated from other input/output terminals and
- internal circuit.
- · Relay contact output terminals: Not isolated between relay contact output terminals. Isolated from other input/output terminals and internal circuit.
- · RS-485 communication terminals: Not isolated from contact input terminals. Isolated from other input/output terminals and internal circuit.
- Power terminals: Isolated from other input/output terminals and
- internal circuit • Grounding terminals: Isolated from other input/output terminals

Environmental Conditions

and internal circuit.

Normal operating condi Ambient temperature: 0 to 50°C (40°C or less for side-by-side close installation)

0 to 40°C if the 24V DC loop power supply of Model UM331 is used

Temperature change rate: 10°C/h or less Ambient humidity: 20 to 90% RH (no condensation allowed) Magnetic field: 400 A/m or less Continuous vibration at 5 to 14 Hz: Full amplitude of 1.2 mm or

Continuous vibration at 14 to 150 Hz: 4.9 m/s2 or less

Short-period vibration: 14.7 m/s², 15 seconds or less Shock: 147 m/s² or less, 11 ms Installation height: Height above sea level of 2000 m or less

 Setpoint display: 4-digit, 7-segment, red LEDs, character height of 9.3 mm (for both UM351 and UM331) Warm-up time: 30 minutes or more after power on · Transportation and storage condition

Temperature: -25 to 70°C Temperature change rate: 20°C/h or less Humidity: 5 to 95% RH (no condensation allowed)

of F.S./°C, whichever is larger

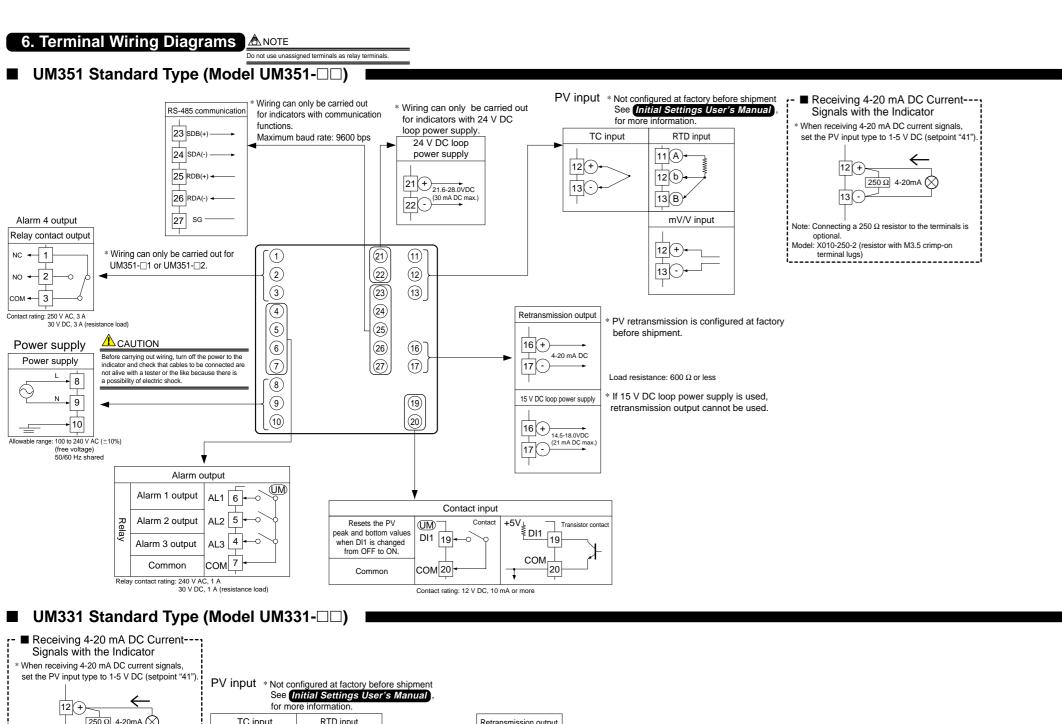
 Effects of changes in operating conditions - Effects from changes in ambient temperatur - On voltage or thermocouple input, $\pm 1~\mu V/^{\circ}C$ or $\pm 0.01\%$

- On RTD input, ±0.05°C /°C (ambient temperature) or less - On analog output, ±0.05% of F.S./°C or less

- On analog input, \pm 1 $\mu V/10~V$ or \pm 0.01% of F.S. /10 V, whichever is larger - On analog output, ±0.05% of F.S./ 10 V or less

• EMC standards: Complies with EN61326. The instrument continues to operate at a measurin accuracy of within $\pm 20\%$ of the range during tests

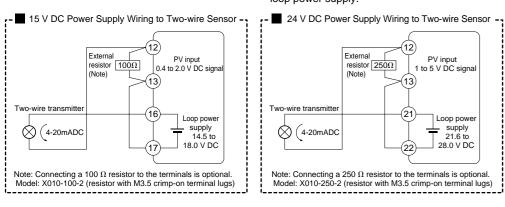
IM 05F01D12-01E (1)



■ UM331 Standard Type (Model UM331-□□) ■ r- ■ Receiving 4-20 mA DC Current-250 Ω 4-20mA RTD input TC input Retransmission output * PV retransmission is configured at factory 11 A before shipment. 16 + 4-20 mA DC 12+ 12 b Note: Connecting a 250 Ω resistor to the terminals is 13 optional.

Model: X010-250-2 (resistor with M3.5 crimp-on Load resistance: 600 Ω or less 13(B) terminal lugs) mV/V input * If 15 V DC loop power supply is used, 15 V DC loop power supply retransmission output cannot be used. 12+-16 + 14.5-18.0VDC (21 mA DC max.) 13 -* Wiring can only be carried out Resets the PV peak and bottom values for indicators with 24 V DC DI1 19 DI1 19 loop power supply. when DI1 is changed 24 V DC loop power supply COM COM 20 ← 20 21.6-28.0VDC + 21 16 17 11 (12 (13) 21.6-28.0VDC | (30 mA DC max.) RS-485 communication * Wiring can only be carried out for indicators with communication (21) (22) (23) (24) (25) (26) (27) functions. Maximum baud rate: 9600 bps Alarm 4 output 24 SDA(-) — 1 2 3 4 5 6 7 8 9 10 Relay contact output * Wiring can only be carried out for UM331-□1 or UM331-□2. 25 RDB(+) ◀ NC + 1 NO + 2 COM + 3 27 SG -Power supply Contact rating: 250 V AC, 3 A 30 V DC, 3 A (re Power supply Alarm output Alarm 1 output AL1 6 **CAUTION** Before carrying out wiring, turn off the power to the indicator and check that cables to be Alarm 2 output | AL2 5 connected are not alive with a tester or the like Alarm 3 output AL3 4 COM 7 ← Common

* Wiring can only be carried out for indicators with 24 V DC loop power supply.



IM 05F01D12-01E (2)

Models UM351 / UM331 Digital Indicator with Alarms with Active Color PV Display **User's Manual Initial Settings**

IM 05F01D12-02E

YOKOGAWA •

3rd Edition: Sep 30, 2004

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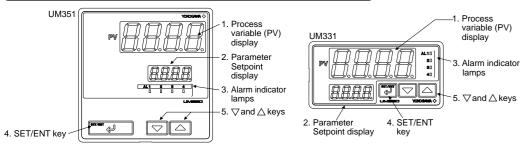
Yokogawa Electric Corporation

This manual describes examples of setting the types of PV input and alarm. Carrying out settings described herein allows you to perform basic monitoring. Refer to examples of various settings to understand how to set parameters required. Refer to "1. Parameter Map" in Parameters User's Manual for an easy to understand explanation of setting various parameters. If you cannot remember how to carry out an operation during setting, press the [mss] key for more than 3 seconds. This brings you to the display (operating display) that appears at power-on.

Contents

- 1. Names and Functions of Front Panel Parts
- 2. Setting PV Input Type (Setting First at Power-on)
- Changing PV Input Type
- 4. Changing Alarm Type
- 5. Setting Hysteresis in Alarm Setpoint

1. Names and Functions of Front Panel Parts



| | Name of Part | Function |
|----|-------------------------------|---|
| 1. | Process variable (PV) display | Displays a PV value during operation. Displays a parameter symbol when you set a parameter. Displays an error code in red if the indicator fails. |
| 2. | Parameter setpoint display | Displays the setpoint of a parameter when it is configured. |
| 3. | Alarm indicator lamps | If any of alarms 1 to 4 occurs, the respective alarm indicator lamp (AL1 to AL4) is lit (in orange). |
| 4. | SET/ENT SET/ENT key | Used to switch or register a parameter. Pressing the key for more than 3 seconds allows you to switch between the operating display and the menu for operating parameter setting display alternately. |
| 5. | ∇and △ keys | Used to change numerical values. On setting displays for various parameters, you can change parameters, setpoint. Pressing the ∇ key decreases a numerical value, while pressing the \triangle key causes it to increase. You can hold down a key to gradually increase the speed of change. |

The following explanation of operation for the UM351's panel, shown in the figure, is the same as that of the UM331's

IMPORTANT

The indicator automatically returns to the display at the time of power-on (i.e., Operating display) if no key is operated for at least one minute.

2. Setting PV Input Type (Setting First at Power-on)

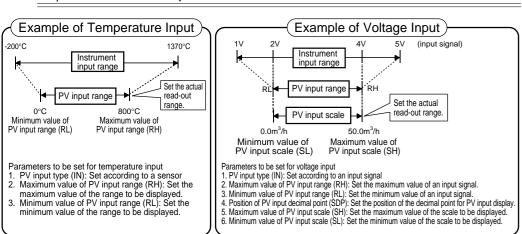
MOTE

· The indicator displays the operating display when the power is turned on. However, if PV input type has not been set, "IN" appears. In this case, first use the A key to

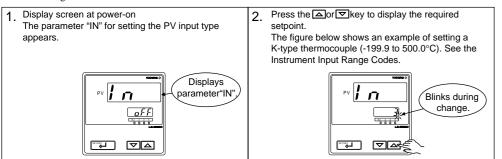
display the input range code to use, then press the key M NOTE to register it. Then, set the maximum value (RH) and minimum If the display is as shown on the lef value (RL) of the PV input range (for voltage input, set the press the key to show the range code for the PV input type yo maximum value (SH) and minimum value (SL) of the PV input use. Then, register the range code setting by pressing the key.

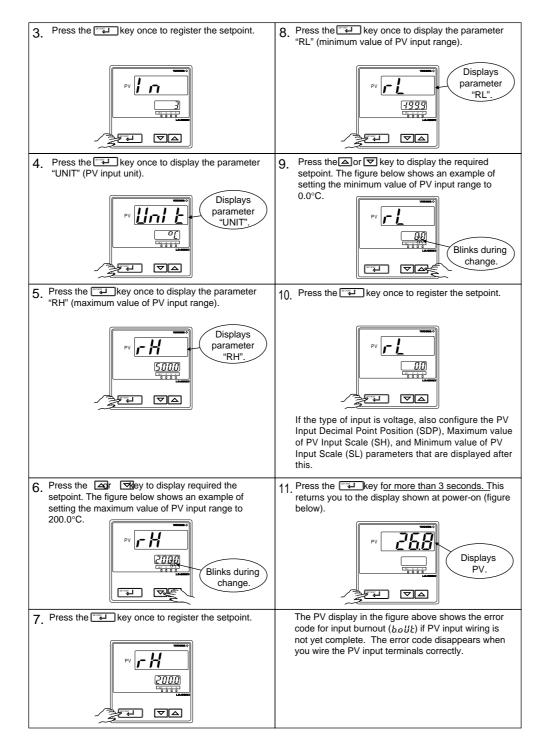
· The indicator is configured to the initial value of each parameter at the factory before shipment First check the initial values shown in 2. Lists of Parameters, in Parameters User's Manual and change

parameter values as necessary.



The following operating procedure describes an example of setting a K-type thermocouple (-199.9°C to 500.0°C) and a measurement range of 0.0°C to 200.0°C.





■ Instrument Input Range Codes

Select the unit from the UNIT parameter

| | | | † | | | | |
|----------------------------------|--------------------|--------------------------------|--|--|--|--|--|
| Input | Туре | Instrument Input Range Code | Instrument Input Range | Measurement Accuracy | | | |
| nspecified | | OFF | Set the data item PV Ir type undefined. | nput Type "IN" to the OFF option to leave the PV input | | | |
| | | 1 | -200 to 1370°C -300 to 2500°F | | | | |
| | к | 2 | -199.9 to 999.9°C 0 to 2300°F | | | | |
| | | 3 | -199.9 to 500.0°C | ±0.1% of instrument range ±1 digit for temperatures equal to or higher than 0°C | | | |
| | J | 4 | -199.9 to 999.9°F -199.9 to 999.9°C | ±0.2% of instrument range ±1 digit for temperatures below 0°C | | | |
| | | 5 | -300 to 2300°F -199.9 to 400.0°C | Delow 0 0 | | | |
| | Т | 6 | -300 to 750°F 0.0 to 400.0°C | | | | |
| | | | -199.9 to 750.0°F | ±0.15% of instrument range ±1 digit for temperatures | | | |
| | В | 7 | 0 to 1800°C 32 to 3300°F | equal to or higher than 400°C ±5% of instrument range ±1 digit for temperatures below 400°C | | | |
| | s | 8 | 0 to 1700°C 32 to 3100°F | ±0.15% of instrument range ±1 digit | | | |
| ermocouple - ! - ! ! | R | 9 | 0 to 1700°C 32 to 3100°F | | | | |
| | N | 10 | -200 to 1300°C -300 to 2400°F | ±0.1% of instrument range ±1 digit ±0.25% of instrument range ±1 digit for temperatures below 0°C | | | |
| | E | 11 | -199.9 to 999.9°C -300 to 1800°F | | | | |
| | L(DIN) | 12 | -199.9 to 900.0°C -300 to 1300°F | ±0.1% of instrument range ±1 digit for temperatures equal to or higher than 0°C | | | |
| | U(DIN) | 13 | -199.9 to 400.0°C -300 to 750°F | ±0.2% of instrument range ±1 digit for temperatures below 0°C | | | |
| | O(DIIV) | 14 | 0.0 to 400.0°C -199.9 to 750.0°F | | | | |
| | w | 15 | 0 to 2300°C 32 to 4200°F | ±0.2% of instrument range ±1 digit | | | |
| | Platinel 2 | 16 | 0 to 1390°C 32 to 2500°F | ±0.1% of instrument range ±1 digit | | | |
| | PR20-40 | 17 | 0 to 1900°C 32 to 3400°F | ±0.5% of instrument range ±1 digit for temperatures equal to or higher than 800°C No guarantee of accuracy for temperatures below 800°C | | | |
| | W97Re3- W75Re25 | 18 | 0 to 2000°C 32 to 3600°F | ±0.2% of instrument range ±1 digit | | | |
| | | 30 | -199.9 to 500.0°C -199.9 to 999.9°F | ±0.1% of instrument range ±1 digit (Note1) (Note2) | | | |
| | JPt100 | 31 | -150.0 to 150.0°C -199.9 to 300.0°F | ±0.2% of instrument range ±1 digit (Note1) | | | |
| D | | 35 | -199.9 to 850.0°C -300 to 1560°F | | | | |
| | Pt100 | 36 | -199.9 to 500.0°C -199.9 to 999.9°F | ±0.1% of instrument range ±1 digit (Note1) (Note2) | | | |
| | | 37 | -150.0 to 150.0°C -199.9 to 300.0°F | ±0.2% of instrument range ±1 digit (Note1) | | | |
| ındard | 0.4 to 2 V | 40 | 0.400 to 2.000 V | | | | |
| ndard nal | 1 to 5 V | 41 | 1.000 to 5.000 V | 1 | | | |
| iui | 0 to 2 V | 50 | | ±0.1% of instrument range ±1 digit (Note) | | | |
| | | | 0.000 to 2.000 V | The read-out range can be scaled between -1999 and | | | |
| voltage | 0 to 10 V | 51 | 0.00 to 10.00 V | 9999. | | | |
| 3 - | -10 to 20 mV | 55 | -10.00 to 20.00 mV | 1 | | | |
| | 0 to 100 mV | 56 | 0.0 to 100.0 mV | | | | |

Performance in the standard condition (at 23±2°C, 55±10%RH, and 50/60Hz power frequency. Note1: The accuracy is ± 0.3 °C of instrument range ± 1 digit for a temperature range from 0°C to 100°C

Note2: The accuracy is ±0.5°C of instrument range ±1 digit for a temperature ranges from -100°C to 0°C and 100°C to 200°C.

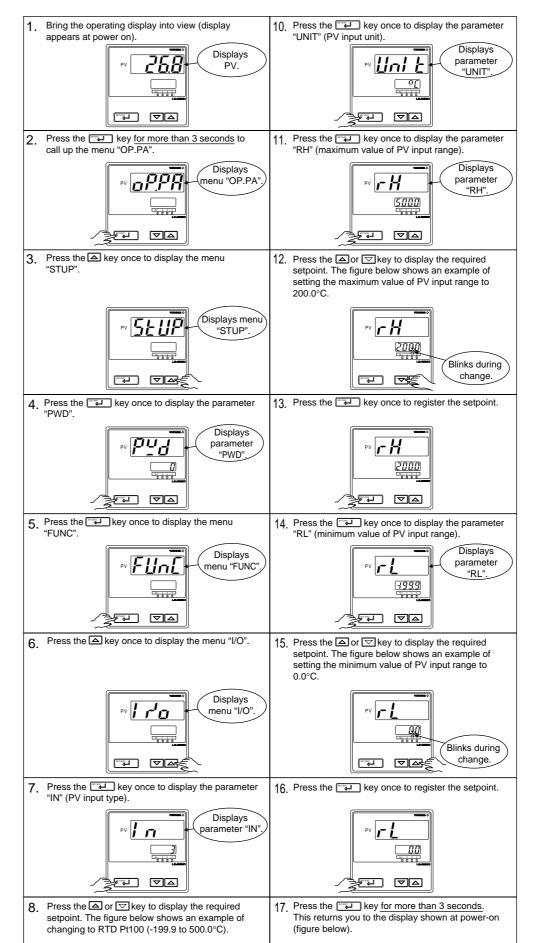
To receive a 4-20 mA DC signal, select a standard signal of 1 to 5 V DC and connect it to a 250Ω resistor. This resistor is optional. Model: X010-250-2 (resistor with M3.5 crimp-on terminal lugs)

NOTE

The indicator may automatically initialize the registered operating parameter setpoints if any change is made to the data item PV Input Type (IN), Maximum Value of PV Input Range (RH), Minimum Value of PV Input Range (RL), PV Input Decimal Point Position (SDP), Maximum Value of PV Input Scale (SH) or Minimum Value of PV Input Scale (SL). After a change has been made to any of these data items, be sure to verify the registered operating parameter setpoints to ensure that they are correct. If any data item has been changed to its default, set it to a required value.

3. Changing PV Input Type

The following operating procedure describes an example of changing PV input terminal the setting of K-type thermocouple (-199.9 to 500.0°C) to RTD Pt100 | Thermocouple/mV/V input. . (12)-(13) RTD input. (-199.9 to 500.0°C) and a measurement range of 0.0 to 200.0°C. . 10-12-13



Blinks during

9. Press the key once to register the setpoint.

v|i n

Displays

displayed after patameter RL.

* If the type of input is voltage, also configure the

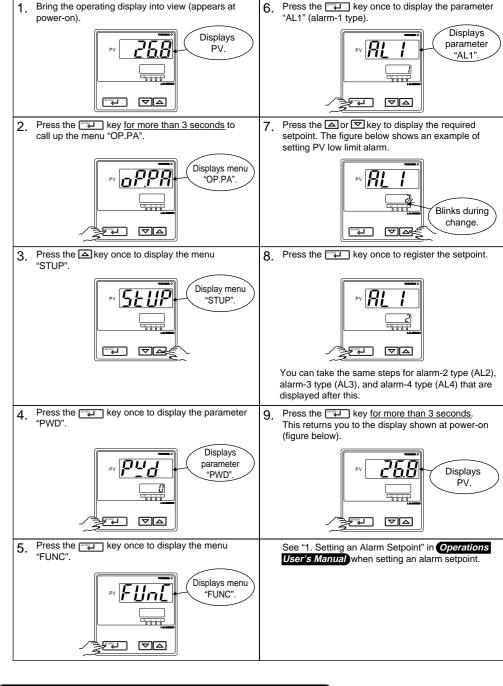
PV Input Decimal Point Position (SDP), Maximum

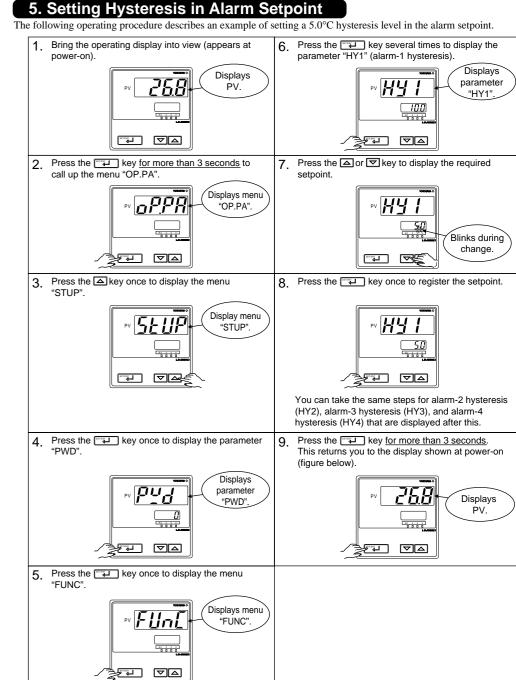
value of PV Input Scale (SH), and Minimum value of PV Input Scale (SL) parameters that are

4. Changing Alarm Type

The following operating procedure describes an example of changing Alarm output terminals alarm-1 (factory-set value: PV high limit alarm) to PV low limit alarm. When you have changed alarm type, the alarm setpoint will be initial-

Alarm-1 (terminal numbers 6-7)...PV high limit alarm Alarm-2 (terminal numbers (5)-(7)).....PV low limit alarm Alarm-3 (terminal numbers 4)-(7))......PV high limit alarm Alarm-4 (terminal numbers ①-②-③).....PV low limit alarm





IM 05F01D12-02E (1)

Models UM351 / UM331 Digital Indicator with Alarms with Active Color PV Display User's Manual Operations



IM 05F01D12-02E



3rd Edition: Sep 30, 2004

This manual describes key entries for operating the indicator. If you cannot remember how to carry out an operation during setting, press the key for more than 3 seconds. This brings you to the display (operating display) that appears at

Contents

- 1. Setting Alarm Setpoints
- 2. Troubleshooting

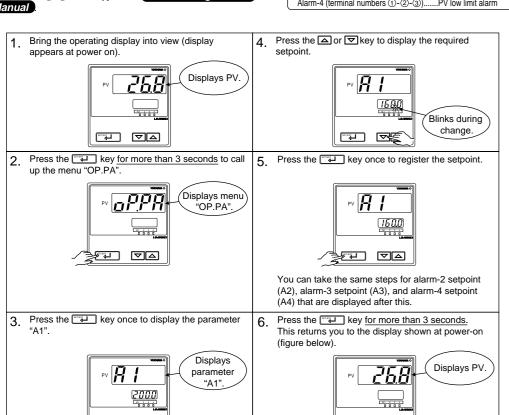


Do not use the instrument genarating strong magnetic field such as radio equipment and the like near the indicator. This may cause the fluctuation of the PV value.

1. Setting Alarm Setpoints

The following operating procedure describes an example of setting a value of 160.0 in the alarm 1 setpoint parameter. Before setting the alarm setpoint, check the alarm type. To change the alarm type, see "4. Changing Alarm Type" in **Initial Settings User's**Manual

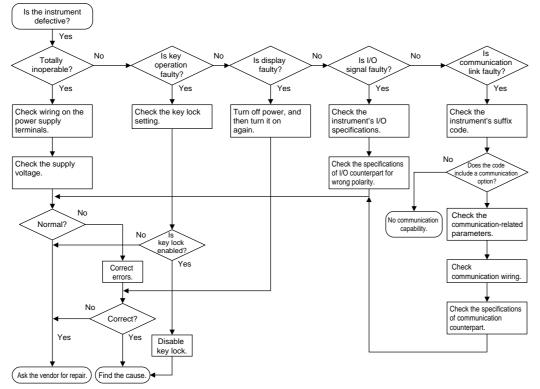
| Alarm output terminals | Factory-set defaults |
|---------------------------------------|----------------------|
| Alarm-1 (terminal numbers 6-7) | PV high limit alarm |
| Alarm-2 (terminal numbers ⑤-⑦) | PV low limit alarm |
| Alarm-3 (terminal numbers 4-7) | PV high limit alarm |
| Alarm-4 (terminal numbers 1)-(2)-(3), | PV low limit alarm |



2. Troubleshooting

■ Troubleshooting Flow

If the operating display does not appear after turning on the indicator's power, try to solve the problem by following the procedure below. If the problem seems to be complex, contact the vendor from which you purchased the instrument.



IMPORTANT

Take note of the parameter settings when asking the vendor for repair.

■ Errors at Power On

The following table shows errors that may be detected by the fault diagnosis function when the power is turned on.

| Error indication (on PV display unit) | Description of error | PV | Control output | Alarm output | Retransmission output | Communi- cation | Remedy |
|---------------------------------------|--------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|--------------------|--|
| <i>E [] [] []</i> (E000) | Faulty RAM | None | | | 0% or less | Ctonnod | |
| E [] [] (E001) | Faulty ROM | None | 0% or less or OFF | OFF | 0% or less | Stopped | Faulty |
| <i>E002</i> (E002) | System data error | 0% | 0.0 | | 0% | | Contact us |
| PV decimal point blinks. | Faulty calibration value | Normal action (out of accuracy) | Normal action | for repair. |
| E 400 (E400) | Parameter error | 0% | Preset value | OFF | 0% | | Check and set the parameters, as they have been set to the limited values. |

■ Possible Errors during Operation

The following shows possible errors occurring during operations.

| Error indication (on PV display unit) | Description of error | PV | Control output | Alarm output | Retransmis- sion output | | Remedy |
|---|--|---|----------------------|-----------------|----------------------------|---------------|--|
| Displays "RJC" and PV alternately | RJC error | Measured with RJC=OFF | Normal action | Normal action | Normal action | Normal action | Faulty Contact us for repair. |
| PV value blinks. | EEPROM error | Normal action | Normal action | Normal action | Normal action | Normal action | Faulty Contact us for repair. |
| <i>E ∃ΩΩ</i> (E300) | A/DC error | 105% | Preset value | Normal action | Normal action | Normal action | • |
| b.o.ll \cdot (B.OUT) | PV burnout error | Dependent on the BSL parameter Up-scale: 105% Down-scale: -5% | Preset value | Normal action | Normal action | Normal action | Check wires and sensor. |
| ຜູ້ທ _າ (OVER) or - ຜູ້ທາ (-OVER) | Excessive PV Out of -5 to 105% | -5% or 105% | Normal action | Normal action | Normal action | Normal action | Check process. |
| SP decimal pont blinks (on setpoint display unit). | Faulty communi- cation line | Normal action | Normal action | Normal action | Normal action | Normal action | Check wires and communication parameters, and make resetting. Recovery at normal receipt |
| All indications off | Runaway (due to defective power or noise) | None | 0% or less or OFF | OFF | 0% or less | Stopped | Faulty if power off/on does not reset start the unit. Contact us for repair. |
| All indications off | Power off | None | 0% | OFF | 0% | Stopped | Check for abnormal power. |

■ If a Power Failure Occurs during Operation

 Momentary power failures shorter than 20 ms The indicator is not affected at all and continues normal operation.

Momentary power failures of 20 ms or longer

- The alarm function of the indicator continues to work normally. (Alarms with the stand-by feature temporarily return to their stand-by state, however.)
- Setting parameters that have already been configured retain their settings.

IM 05F01D12-02E (2)

IM 05F01D12-03E

Models UM351 / UM331 Digital Indicator with Alarms with Active Color PV Display User's Manual Parameters





3rd Edition: Sep 30, 2004

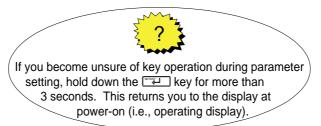
Yokogawa Electric Corporation

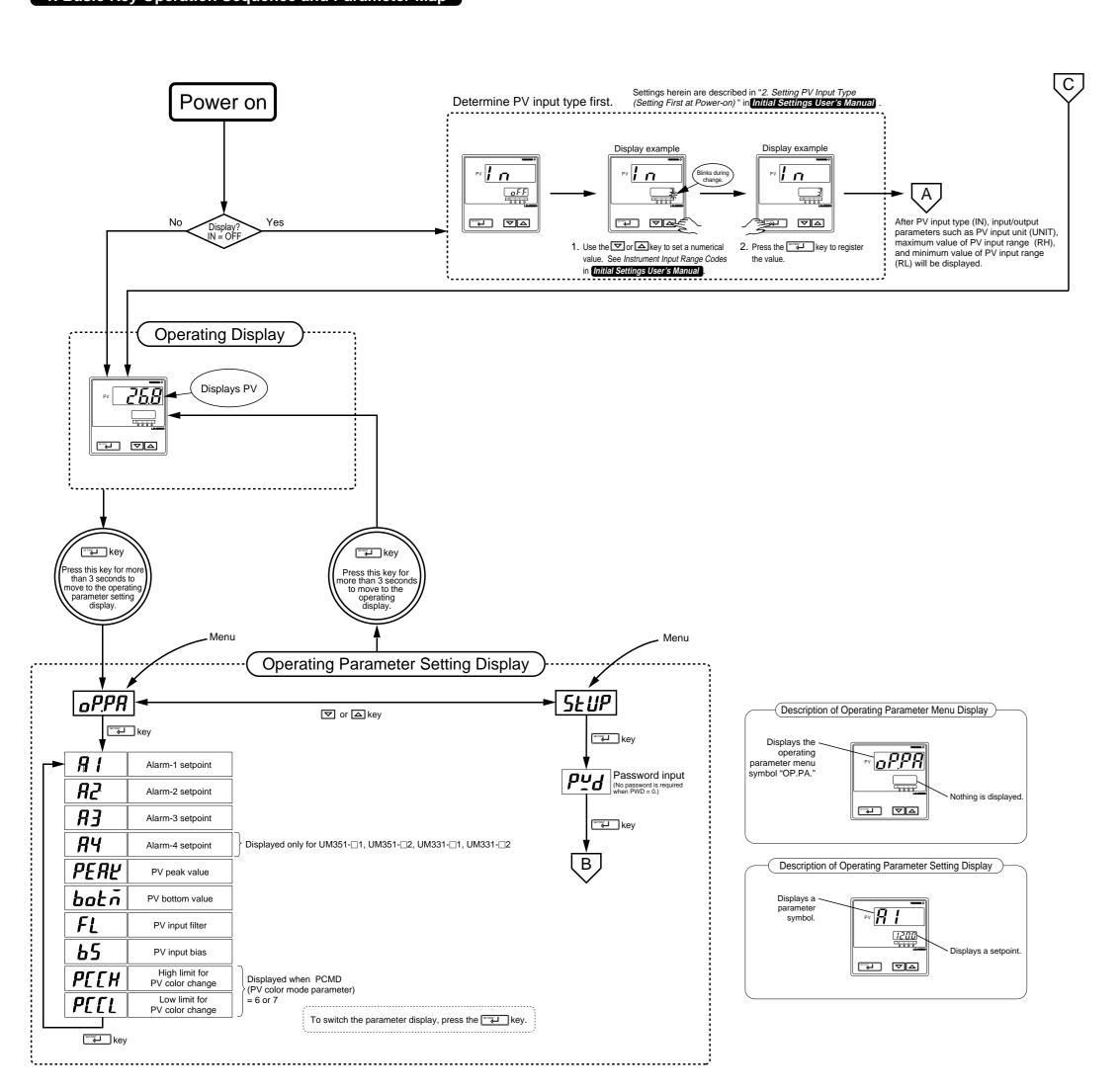
This manual contains a parameter map as a guideline for setting parameters, and lists of parameters for recording User

Contents

1. Basic Key Operation Sequence and Parameter Map 2. Lists of Parameters

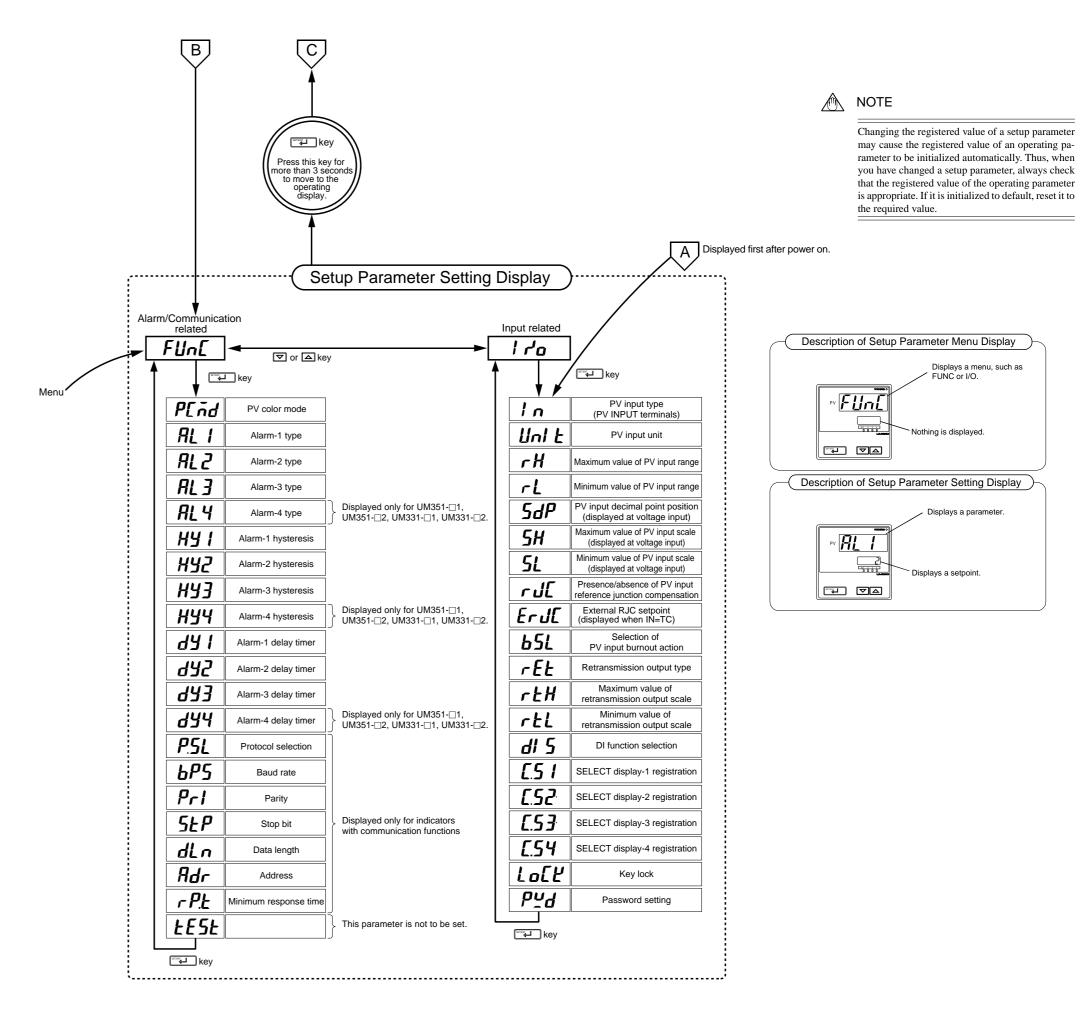
1. Basic Key Operation Sequence and Parameter Map





Basic Key Operation Sequence

- 1. Setting display can be switched (moved) using the key.
- 2. A numerical value is changed by
- (1) Using the ☑ or △ key to change a displayed value (decimal point blinking) and (2) Pressing the key to register it.
- 3. Pressing the key on an operating display (for more than 3 seconds) brings you to the operating parameter setting display.
- 4. Pressing the wey on the operating parameter setting display (for more than 3 seconds) returns you to the operating display.
- 5. Pressing the Levy on the setup parameter setting display (for more than 3 seconds) returns you to the operating display. You cannot return to the operating parameter setting display from the setup parameter setting display.



IM 05F01D12-03E (1)

2. Lists of Parameters

* Parameters relating to PV should all be set in real numbers. For example, use temperature values to define alarm setpoints for temperature input.

■ Operating Parameters

| • | | | | | |
|---------------------|----------------------------------|---|-----------|--|--------------|
| Parameter Symbol | Name of Parameter | Setting Range and Description | | Initial Value | User setting |
| A 1 | Alarm 1-setpoint | PV alarm: -100.0 to 100.0% of PV input rang | je | PV high limit alarm: 100.0% of | |
| R2 | Alarm 2-setpoint | | | PV input range PV low limit alarm: | |
| A3 | Alarm 3-setpoint | | | 0.0% of PV input range | |
| A4 | Alarm 4-setpoint | | | | |
| PERL' | PV peak value | Displays the maximum value of PV input during This parameter is not to be set. | g operati | on. | |
| botō (BOTM) | PV bottom value | Displays the minimum value of PV input during This parameter is not to be set. | operation | on. | |
| FL | PV input filter | OFF, 1 to 120 second Used when the PV input fluctuates. | | OFF | |
| 65 (BS) | PV input bias | -100.0% to 100.0% of PV input range span Used to correct the PV input value. | | 0.0% of PV input range span | |
| P[[H | High limit for PV color change | When PCMD (PV color mode parameter) = 6 or 7: -100.0 to 100.0 % of PV input range | | PCMD = 6 or 7 : = 100.0%, = 0.0 % | |
| P [[L | Low limit for PV color change | | | | |

| meter mbol | Name of Parameter | Setting Range and Description | Initial | Value | User setti |
|--------------------------|--|---|-----------|-----------|------------|
| nd (MD) | PV color mode | 0: Fixed in green 1: Fixed in red 2: Link to alarm 1 (Alarm OFF:green, Alarm ON:red) 3: Link to alarm 1 (Alarm OFF:red, Alarm ON:green) 4: Link to alarm 1 and 2 (Alarm OFF:green, Alarm OFF:green) 5: Link to alarm 1 and 2 (Alarm ON:red, Alarm OFF:green) 6: PV limit (Within PV range:green, Out of PV range:green) 7: PV limit (Within PV range:red, Out of PV range:green) | en) d) | | |
| | Alarm-1 type | OFF 1: PV high limit (energized, no stand-by action) | 1 | | |
| | Alarm-2 type | 2: PV low limit (energized, no stand-by action) 9: PV high limit (de-energized, no stand-by action) 10: PV low limit (de-energized, no stand-by action) | 2 | | |
| AL2) AL3) | Alarm-3 type | 11: PV high limit (energized, stand-by action) 12: PV low limit (energized, stand-by action) 19: PV high limit (de-energized, stand-by action) 20: PV low limit (de-energized, stand-by action) | 1 | | |
| AL4) | Alarm-4 type | 21: Fault diagnosis output Turns on in case of input burnout, A/D converter failure, or reference junction compensation (RJC) failure. 22: FAIL output Turns off in case of program failure, ROM failure, RAM failure, or power failure. This output is on during normal operation. If it turns off, the retransmission output is set to 0%, the alarm output is set to OFF, and the indicator stops. See "List of Alarm Types" on the right side of this | 2 | | |
| | Alarm 1 hyatarasia | manual for details on how these Alarm Type parameters behave. 0.0 to 100.0% of PV input range span | 0.5% of | f DV | |
| リー ゴY1) ロコ | Alarm-1 hysteresis Alarm-2 hysteresis | Hysteresis can be set in the alarm setpoint. Setting hysteresis prevents relays from | | inge span | |
| JE HY2) リブ | Alarm-3 hysteresis | chattering. Hysteresis setting for PV high limit alarm Output † Point of on-off action | | | |
| 1Y3) | Alarm-4 hysteresis | Output Point of on-off action (Alarm setpoint) On | | | |
| HY4) | | Off Hysteresis PV value | | | |
| Y 1 | Alarm-1 delay timer | An alarm is output when the delay timer expires after the alarm setpoint is reached. 0.00 to 99.59 (min, sec.) (enabled when alarm-1 type "AL1" is 1, 2, 9, 10, 11, 12, 19, and 20) Alarm setpoint Delay timer Delay timer Delay timer Time | 0.00 | | |
| 47 0Y2) | Alarm-2 delay timer | 0.00 to 99.59 (min, sec.) (enabled when alarm- 2 type "AL2" is 1, 2, 9, 10, 11, 12, 19, and 20) | | | |
| 3 3 (1) | Alarm-3 delay timer | 0.00 to 99.59 (min, sec.) (enabled when alarm- 3 type "AL3" is 1, 2, 9, 10, 11, 12, 19, and 20) | | | |
| 44 0Y4) | Alarm-4 delay timer | 0.00 to 99.59 (min, sec.) (enabled when alarm- 4 type "AL4" is 1, 2, 9, 10, 11, 12, 19, and 20) | | | |
| 5 <u>L</u> | Protocol selection | 0: PC link communication 1: PC link communication (with sum check) 2: Ladder communication 7: MODBUS (ASCII) 8: MODBUS (RTU) | 0 | | |
| P5 | Baud rate | 0: 600, 1: 1200, 2: 2400, 3: 4800, 4: 9600 (bps) | 4 | | |
| r j PRI) | Parity | 0: None 1: Even 2: Odd | 1 | | |
| P | Stop bit | 1, 2 | 1 | | |
| LN) | Data length | 7, 8 Fixed at 7, when the P.SL parameter is set to MODBUS (ASCII). Fixed at 8, when the P.SL parameter is set to MODBUS (RTU) or Ladder Communication. | 8 | | |
| dr DR) | Address | 1 to 99 However, the maximum number of stations connectable is 31. | 1 | | |
| D<u>L</u> P.T) | Minimum response time | 0 to 10 (× 10 ms) | 0 | | |

* The "User Setting" column in the table below is provided for the customer to record setpoints.

Input-/Output-related Parameters

| Parameter | | | | |
|------------------------|--|---|--|--------------|
| Symbol | Name of Parameter | Setting Range and Description | Initial Value | User Setting |
| (IN) | PV input type (PV INPUT terminals) ①-②-③ terminals | OFF, 1 to 18, 30, 31, 35 to 37, 40, 41, 50, 51, 55, 56 See Instrument Input Range Codes in <i>Initial Settings User's Manual</i> . | OFF | |
| Unit E | PV input unit | °C: degree Celsius °F: Fahrenheit | °C | |
| r H | Max. value of PV input range | Set the PV input range, however RL < RH -Temperature input Set the range of temperature that is actually indicated Voltage input | Max. value of instrument input range | |
| r L | Min. value of PV input range | Set the range of a voltage signal that is applied. The scale across which the voltage signal is actually indicated should be set using the parameters Maximum Value of PV Input Scale (SH) and Minimum Value of PV Input Scale (SL). | Min. value of instrument input range | |
| Sop) | PV input decimal point position (displayed at voltage input) | 0 to 3 Set the position of the decimal point of voltage- mode PV input. 0: No decimal place 1: One decimal place 2, 3: Two, three decimal places | 1 | |
| 5H _(SH) | Max. value of PV input scale (displayed at voltage input) Min. value of PV input scale | -1999 to 9999, however SL < SH Set the read-out scale of voltage-mode PV input. | 0.0 | |
| 65L | (displayed at voltage input) Selection of PV input burnout action | OFF 1: Up scale 2: Down scale | 1 | |
| r JIE | Presence/absence of PV input reference junction compensation | OFF, ON | ON | |
| Eru [(ERJC) | External RJC setpoint | -50.0 to 50.0 °C -58.0 to 122.0 °F | 0.0 °C 32.0 °F | |
| r E Ł | Retransmission output type | 1: PV 4: Loop power supply for sensor (15 V) | 1 | |
| r Ł H | Max. value of retransmission output scale | RET=1: RTL + 1 digit to 100.0% of PV input range | 100.0% of PV input range | |
| r Ł L | Min. value of retransmission output scale | RET=1: 0.0% of PV input range to RTH - 1 digit | 0.0% of PV input range | |
| d! 5 | DI function selection | OFF: The external contact input is disabled. 1: Resets the values of the PEAK and BOTM operating parameters to an off-to-on transition of the DI1 input. | 1 | |
| (C.S1) | SELECT display-1 registration SELECT display-2 | OFF, 201 to 1015 For example, registering "231" for C.S1 allows you to change alarm-1 setpoint in operating display. | OFF | |
| ί. <u>)</u> (c.§2) | registration SELECT display-3 | Numbers for registering alarm SP parameter for operating display: Alarm-1 setpoint: 231 Alarm-2 setpoint: 232 | | |
| (C.S3) | registration SELECT display-4 | Alarm-3 setpoint: 233 Alarm-4 setpoint: 234 | | |
| (C.S4) | registration | OFF: No key lock | OFF | |
| Lole (LOCK) | Key lock | OFF: No key lock 1: Change to any parameter prohibited Prohibits any operating parameter or setup parameter from being changed. The setpoint of the LOCK parameter itself can be changed, however. 2: Change to and display of operating parameters prohibited Turns off the display for setting operating parameters, thus prohibiting any change to the parameter settings. (Press the SET/ENT key for more than 3 seconds to show the password check display.) | OFF | |
| Pud (PWD) | Password setting | 0: Password not set 1 to 9999 | 0 | |

■ List of Alarm Types

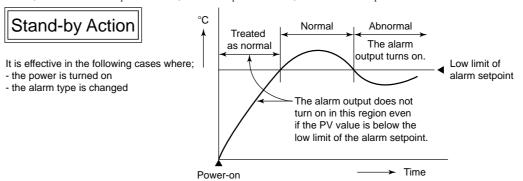
The table below shows the alarm types and alarm actions.

In the table, codes 1, 2, 9, and 10 are not provided with stand-by actions, while codes 11, 12, 19, and 20 are provided with stand-by actions.

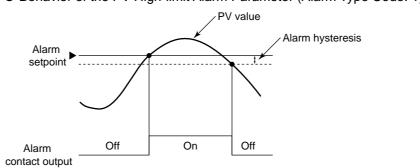
| Alarm type | Alarm action | Alarm type code | | | Alarm action | Alarm type code | |
|--------------------|--|---|--|----------------------------------|--|---|--|
| | "Open/close" shows status of relay contact, and "lit" and "unlit" shows status of lamp | Contact closes if alarm occurs | Contact opens if alarm occurs | Alarm type | "Open/close" shows status of relay contact, and "lit" and "unlit" shows status of lamp | Contact closes if alarm occurs | Contact opens if alarm occurs |
| No alarm | | 0 | FF | Hysteresis | | / | 9 |
| PV high limit | Open (unlit) Closed (lit) | 1 | | De-energized on PV high limit | Closed | | 19 |
| PV low limit | Closed (lit) Alarm setpoint PV | 2 | | De-energized on PV low limit | Open (lit) Closed (unlit) Alarm setpoint PV | | 10 |
| Fault diagnosis of | output (Note1) | 21 | | FAIL output (Not | e2) | | 22 |

Note1: Fault diagnosis output

Turns off in case of program failure, ROM failure, RAM failure, or power failure. This output is on during normal operation. If it turns off, the retransmission output is set to 0%, the alarm output is set to OFF, and the indicator stops.

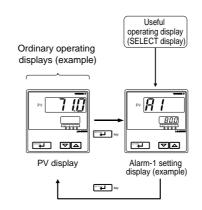


Behavior of the PV High-limit Alarm Parameter (Alarm Type Code: 1)



■ Useful Operating Display (SELECT Display)

Registering frequently changed parameters in the SELECT display after ordinary operating displays will allow you to change settings easily. A maximum of four displays can be registered.



Setting method:

Set the parameter numbers (D register numbers) you wish to register for setup parameters C.S1 to C.S4.

For any registration number other than those above, see User's Manual (Reference) (CD-ROM version).

Numbers for Registration with SELECT Display

| Operating Parameter | Registration Number | Setup Parameter | Registration Number |
|-----------------------|---------------------|--------------------|---------------------|
| Alarm-1 setpoint (A1) | 231 | Alarm-1 hysteresis | 919 |
| Alarm-2 setpoint (A2) | 232 | Alarm-2 hysteresis | 920 |
| Alarm-3 setpoint (A3) | 233 | Alarm-3 hysteresis | 921 |
| Alarm-4 setpoint (A4) | 234 | Alarm-4 hysteresis | 922 |
| Bias (BS) | 243 | | |
| Filter (FL) | 244 |] | |

Turns on in case of input burnout, A/D converter failure, or reference junction compensation (RJC) failure.

Note2: FAIL output

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Models UM351 / UM331
Digital Indicator with Alarms
with Active Color PV Display
User's Manual Setting/Expl

User's Manual Setting/Explanation of Active Color PV Dislay

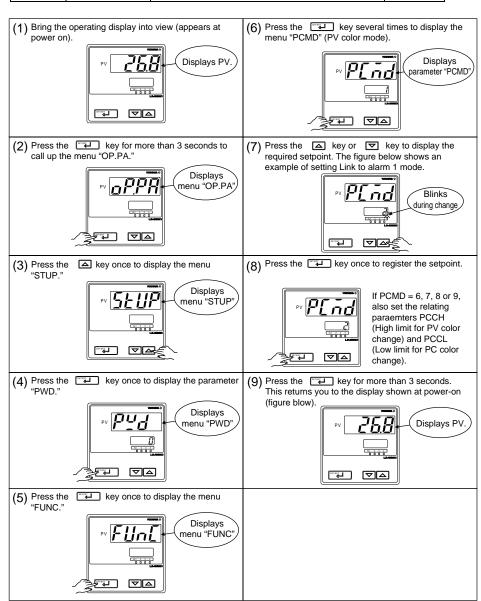
This manual describes the PV display color changing function "Active Color PV Display."

Carry out settings according to the following procedures after referring to "Functions of Active Color PV Display" on the back of this manual. Use "Parameter Map" of Parameters User's Manual to understand the required parameters. If you cannot remember how to carry out an operation during setting, press the wey for more than 3 seconds. This brings you to the display (operating display) that appears at power-on. The UT321 is identical to the UM351/UM331 in items of front panel operation.

■ Setting the PV display color changing function "Active Color PV Display"

The following operating procedure describes an example of changing PV color mode (factory-set default: Fixed in red mode) to Link to alarm 1 mode.

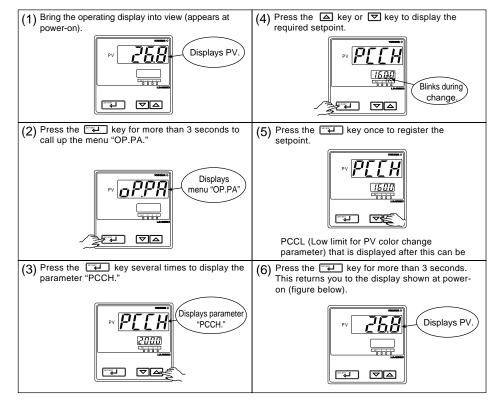
| Parameter Symbol | Name of Parameter | Setting Range | Initial Value |
|---------------------|----------------------|--|---------------|
| PEnd | PV color mode | 0 : Fixed in green 1 : Fixed in red 2 : Link to alarm 1 (Alarm OFF:green, Alarm ON: red) 3 : Link to alarm 1 (Alarm OFF:red, Alarm ON:green) 4 : Link to alarm 1 and 2 (Alarm OFF:green, Alarm ON:red) 5 : Link to alarm 1 and 2 (Alarm OFF:red, Alarm ON:green) 6 : PV limit (Within PV range:green, Out of range:red) 7 : PV limit (Within PV range:red, Out of range:green) | 1 |



■ Setting the High Limit and Low limit for PV Color change

The following operating procedure describes an example of changing PV display color by linking to PV. Set High limit and Low limit for PV color change. Setting for both of High limit and Low limit is required.

| Parameter Symbol | Name of Parameter | Setting Range | Initial Value |
|---------------------|--------------------------------|--|---|
| PELH | High limit for PV color change | When PCMC (PV color mode parameter) = 6 or 7: -100.0 to 100.0 % of PV input range. | When PCMD = 6 or 7: PCCH:100.0 %, PCCL:0.0 % |
| PELL | Low limit for PV color change | | |





IM 05F01D12-04E 3rd Edition : Sep. 30, 2004

■ Functions of Active Color PV Display

This part describes the functions of "Active Color PV Display." PV display color is changed by the following four actions.

PV display is selectable from red-to-green or green-to-red changing action, or fixed color.

Link to alarm 1 mode (when PCMD = 2, 3) (Setting example-1)

Link to alarm 1 and 2 mode (when PCMD = 4, 5) is the same. When either of the alarms occurs, the display color is changed.

PV limit mode (when PCMD = 6, 7) (Setting example-2)

Fixed color mode (when PCMD = 0, 1) (Setting example-3)

Setting Example-1: Link to Alarm

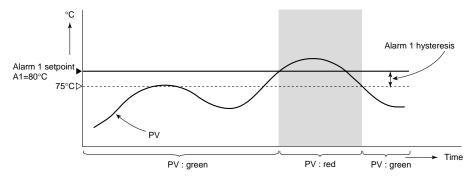
Works linked to alarm 1. Set "PV high limit alarm" for alarm 1 type, and "80°C" for alarm 1 setpoint. If PCMD (PV color mode parameter) = 2, PV display color is changed from green to red when PV input value exceeds alarm 1 setpoint.

The red-to-green changing action is selectable Setting parameters

PCMD (PV color mode parameter) = 2 AL1 (Alarm 1 type parameter) = 1

A1 (Alarm 1 setpoint parameter) = 80°C

HY1 (Alarm 1 hysteresis parameter) = 5°C



Setting Example-2: Link to PV

Set high limit "70°C" for PCCH, and low limit "20°C" for PCCL. PV display color is changed from green to red when PV input value is out of the range.

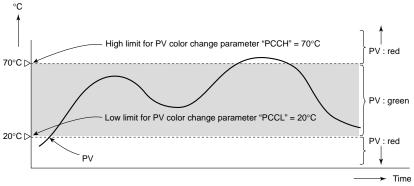
The red-to-green changing action is selectable.

Setting parameters

PCMD (PV color mode parameter) = 6

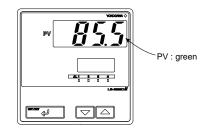
PCCH (High limit for PV color change parameter) = 70°C PCCL (Low limit for PV color change parameter) = 7°C
Hysteresis fixed to 0.25% is inserted where PV display color is changed.

In the example blow, where changed from red to green.



Setting Example-3: Fixed in Red or Green

Set the PV display color or Fixed in green mode, Setting of Fixed to red mode is also possible. Setting parameter
PCMD (PV color mode parameter) = 0



■ External RJC

External RJC is not a compensation function built in a indicator but a compensation function working outside the indicator.

External RJC is used when input is thermocouple, and RJC=OFF.

Using External RJC makes the accuracy of RJC higher and shortens the compensating wire.

| Parameter Symbol | Name of Parameter | Setting Range | Initial Value |
|---------------------|-----------------------|---|-----------------|
| ErJ[| External RJC setpoint | -50.0 to 50.0°C, -58.0 to 122.0°F For thermocouple input, temperature compensation value outside the indicator can be set. Available only when RJC=OFF. | 0.0°C 32.0°F |

