

General Specifications

Model UP351
Program Controller
with Active Color PV Display



GS 05E01D12-01E

General

Model UP351 Program Controller is a precision controller provided with two program profiles and universal input/output. For easy operation, it has a large PV display with the PV display color changing function "Active Color PV Display", two program operation keys, and a program reset key. For excellent control, auto-tuning and PID control with the overshoot suppressing function "SUPER" are available, and a retransmission output and 15 V DC loop power supply are also provided as standard.

Main Features

- Extra-large digital display allows the indicated values to be read even from a long distance. LEDs of 20mm height are used for the PV display.
- The PV display color changing function "Active Color PV Display" is provided. PV display color is changed from green to red and vice versa when a PV event occurs or deviation becomes large. The color also can be fixed in green or red.
- It can store two program pattern types. Programmed operation can be started by using the two program operation keys on the front panel and terminated by using the reset key.
- Universal input and output allow simple setting of the input type (thermocouple, RTD, or mV), PV input range and type of control output (4 to 20 mA current, voltage pulse, or relay contact) from the front panel.
- Parameters or program pattern can easily be set using a personal computer.
(“Parameter setting tool (model LL100)” sold separately is required.)
- Various communication functions are provided. Communication is possible with personal computer, programmable logic controller, and other controllers.

Functional Specifications

Program Setting Function

“Program setting” allows the controller’s target setpoint to increase or decrease along the program pattern versus time. The instrument, provided with two program patterns, can be operated by using the front panel key or through the external contact. One program pattern consists of 10 broken lines (program segments). If the two program patterns are combined, a program pattern of up to 20 segments can be created. The length of each segment can be specified by the segment time. Users can also configure the number of repeats, and the event outputs, etc.

- Number of program patterns: 2
- Number of segments per pattern: 10
- Number of program repeat: Unlimited repeats
- Segment time: 0 min 0 s to 99 min 59 s, or
0 h 0 min to 99 h 59 min

UP351



Indication in green or red color

UP351E

“E” indicates the model with expanded functions.

Starting/stopping (resetting) a program pattern:

A program pattern can be started or stopped (reset) by key operation.

Temporarily stopping (holding) a program pattern:

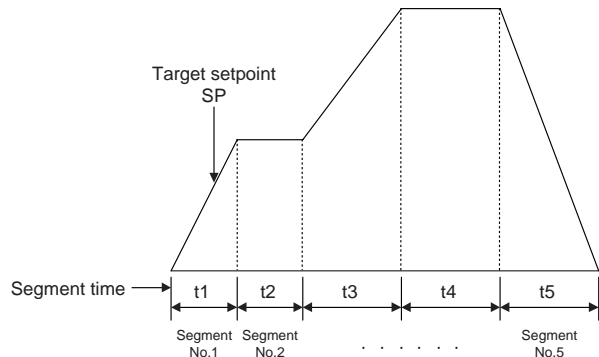
A program pattern can be temporarily stopped (hold) by key operation or through the contact input.

Skipping (advancing) the segment of a program:

Available through key operation.

Switching between program patterns:

Available through key operation or external contact.

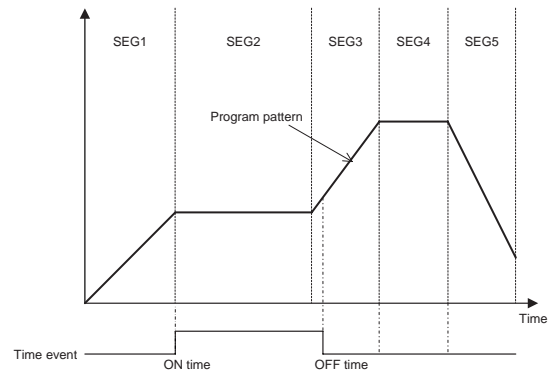
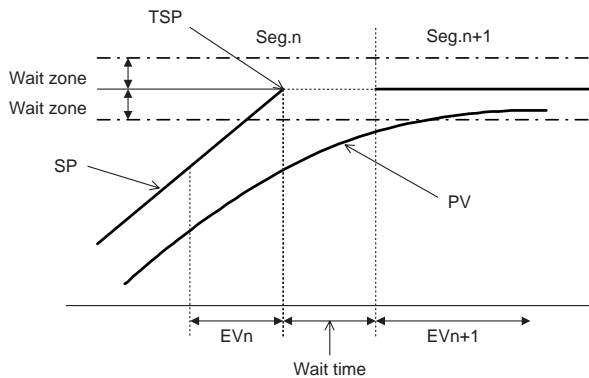


Wait Function

The function to delay the progress of a program pattern if the PV has not reached the target setpoint (SP). The wait zone is the deviation band of acceptable PV response is determined, and the wait time is the time to wait for the PV to reach the wait zone. If the PV reaches the wait zone within a certain time (the wait time), then the program will advance to the next segment. If it does not reach the wait zone after the wait time has elapsed, then the program will eventually advance to the next segment.

Wait time: 0 min 1 s to 99 min 59 s, or
0 h 1 min to 99 h 59 min

Wait zone: OFF, 0.0 to 10.0 % of PV input range span



Program Setting Function and PID Parameter Switching

PID parameter switching in accordance with the progress of the program pattern is available.

Zone PID: PID parameter selection according to the value of the PV is available. Reference point (setpoint for PID parameter switching) or reference deviation is used for switching.

Reference point method:

Up to two points can be set to divide the PV range up to three zones, and this selects the PID parameter set (PID 1 to 3) according to zone.

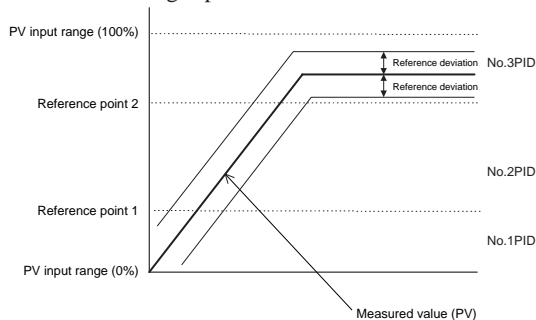
Reference point = PV input range (0%) ≤ Reference point 1 ≤ Reference point 2 ≤ PV input range (100%)

Reference point hysteresis = Fixed to 0.5% of the PV input range span

Reference deviation method:

Switches the group of PID parameters (PID 4) depending on whether the control deviation is within or over the reference preset amount. This takes priority over the reference point method.

Reference deviation = OFF, 0.1 to 100.0% of PV input range span



Time Event: 1 point

A time event may be set throughout the program pattern progress, by and uses a status lamp or a contact output.

Number of time events: 1 point for each program pattern

Time event setting points: These output time events according to the elapsed time from the program start.

Time event setting range (ON and OFF): 0 min 1 s to 99 min 59 s, or 0 h 1 min to 99 h 59 min

Time event display: 1 point (TME)

Time event contact output: 1

PV Event: 2 point

A PV event is a PV/deviation alarm function which is configured in accordance with the program pattern. The alarm status is indicated by the event LED on the front of the instrument panel.

Number of PV events:

2 points maximum per program pattern

PV event LEDs:

2 points (PVE1 and PVE2)

PV event types:

PV high limit, PV low limit, Deviation high limit, Deviation low limit, De-energized on deviation high limit, De-energized on deviation low limit, Deviation high and low limits, High and low limits within deviation, De-energized on PV high limit, De-energized on PV low limit

PV event setting ranges:

PV alarm: -100.0 to 100% of PV input range

Deviation alarm: -100.0 to 100% of PV input range span

Alarm hysteresis: 0.0 to 100.0% of PV input range span

Control Computation Functions

Control computation:

Select from the following types of control strategies:

Continuous PID control, time proportional PID control, Relay ON/OFF control

Control cycle time: 250 ms

Number of PID parameter sets: 4

Auto-tuning: Available as standard. If auto-tuning is enabled, the PID constant is set automatically. (Limit cycle method)

“SUPER” function: This suppresses overshooting caused by the sudden change of the target setpoint or disturbance.

“SUPER2” function: This stabilizes the state of control that is unstable due to hunting, etc. without requiring any change in PID constants, when the load and/or gain varies greatly, or when there is a difference between the characteristics of temperature zones.

Control Parameters Setting Range

Proportional band: 0.1 to 999.9%

Integral time: 1 to 6000 s, or OFF (for Manual Reset)

Derivative time: 1 to 6000 s, or OFF

Manual reset value: -5.0 to 105.0% of output range (functions when integral time is off)

ON/OFF control hysteresis: 0.0 to 100.0% of PV input range span

Direct/Reverse action:

Defining the direction of an increase/decrease in output corresponding to a positive or negative deviation is available.

Anti-reset windup:

When the output of the controller is limited, this stops normal integration to suppress over-integration; instead, it performs anti-reset windup computation.

Control output cycle time: 1 to 1000 s

Preset output value: -5.0 to 105.0% of output range

Output tracking:

Selecting output with bump or without bump is available by changing the PID control mode.

Output limiter:

High limit: Low limit to 105.0% of output range
Low limit: -5.0% of output range to high limit

● Signal Computation Functions

PV input configuration:

Bias addition (-100.0 to 100.0% of PV input range span), first-order lag filter (time constant: off, 1 to 120 s)

Contact input function:

Program pattern switching operation, program operation hold mode switching, display key-lock parameter enabled/disabled switching
For program pattern operation, select from the dual-pattern switching operation and single-pattern operation.

- If the single-pattern operation is selected, program operation hold mode switching can also be used.

- If the dual-pattern switching operation is selected, program operation hold mode switching cannot be used.

If displaying key-lock parameter enabled/disabled switching is used, switching between the single-pattern operation and dual-pattern switching operation is not available.

● Display and Operation Functions

PV display: 4-digit digital display for engineering data

Setpoint display:

Various types of data, including setpoint (SP), are available selectively on 4-digit digital display.

Status indicator lamps:

2 PV event (alarm) LEDs: PVE1 and PVE2

1 time event LED: TME

2 program operation number LEDs: PRG1 and PRG2

1 program operation hold LED: HLD (lights up during hold mode)

PV display color changing function “Active Color PV Display” :

(Factory-set default : Fixed in red mode)

This function automatically changes PV display color by the action described below. Green-to-red or red-to-green changing action is selectable.

Link to PV event 1 mode :

PV event OFF : green, PV event ON : red

Setting of PV event OFF : red, PV event ON : green is possible.

Link to PV events 1 and 2 mode :

PV events 1 and 2 OFF : green, PV events 1 and 2 ON : red

Setting of PV events 1 and 2 OFF : red, PV events 1 and 2 ON : green is possible.

SP deviation mode :

Within the preset SP deviation : green,

Out of the preset SP deviation : red

Setting of Within the preset SP deviation : red, Out of the preset SP deviation : green is possible.

Deviation band is changeable using a parameter. The setting of either high limit deviation or low limit deviation is also possible.

PV limit mode :

Within the preset PV range : green,

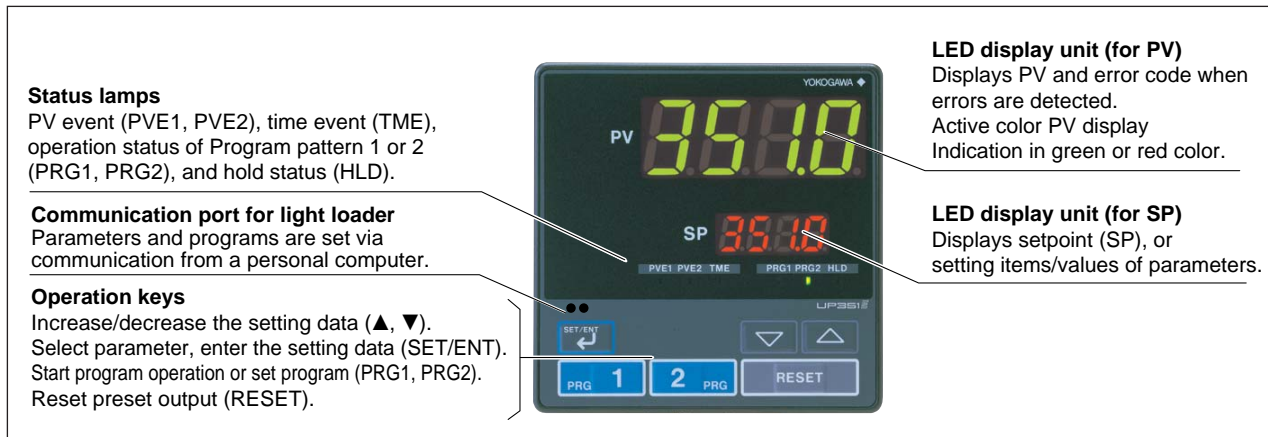
Out of the preset PV range : red

Setting of Within the preset PV range : red, Out of the preset PV range : green is possible.

The range (high limit and low limit) is changeable using a parameter.

Fixed color mode :

PV display color is fixed in green or red.



Operation key:

▲, ▼ keys: Increase or decrease setpoints and various parameters.

SET/ENT key: Sets setpoint data, and calls or selects various parameters.

PRG1 and PRG2: Program operation control keys

RESET: Program operation stop and reset key

SELECT display:

Allows selection and registration of frequently changed parameters from the operating parameters during operation. For example, if the bias parameter is registered in the SELECT display, the setpoint can easily be displayed during operation.

Security function:

Operation can be inhibited by a password.

● Communication Functions (Optional Function)

The communication function, provided with the instrument, allows connection to personal computer, programmable logic controller, and other GREEN series controllers.

Communication protocol:

Computer link communication:

Communication protocol with a personal computer

Ladder communication:

Communication protocol with programmable logic controller

MODBUS communication:

Communication protocol with a personal computer or PLC.

Coordinated operation:

Communication protocol for coordinated operation with two or more GREEN series controllers. The UP351 can be connected as a master station.

Communication interface:

Communication protocol:

Computer link, ladder communication, MODBUS or coordinated operation

Standards: EIA RS-485

Maximum number of connectable controllers: 31 GREEN series controllers

Maximum communication distance: 1,200 m

Communication method:

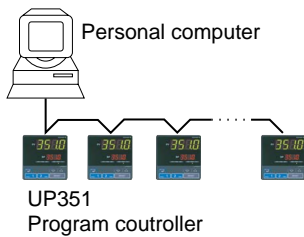
Two-wire half duplex or four-wire half duplex, start-stop synchronization system, non-procedural

Communication rate:

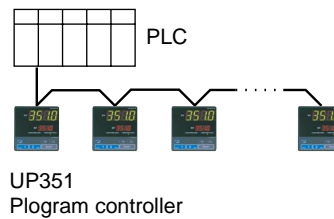
600, 1200, 2400, 4800, or 9600 bps

Sample structures of communication systems

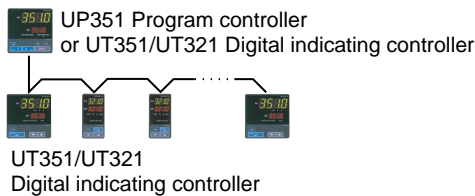
(1) Computer link communication/MODBUS communication



(2) Ladder communication



(3) Coordinated operation



■ Hardware Specifications

PV Input Signal

Number of input points: 1

Input system:

The type of input and instrument range can be specified using the table of PV input shown below by key operation or communication.

Sampling period: 250 ms

Input type, instrument range and measurement accuracy:

Refer to the table below.

Burnout detection:

Functions at thermocouple (TC), RTD or standard signal of 0.4 to 2 V or 1 to 5 V. Upscale, downscale, and off can be specified. For standard signal, set to burnout at 0.1 V or less.

Input bias current: 0.05 μA for TC and RTD b-terminal

Measurement current(RTD): About 0.13 mA

Input resistance:

1 MΩ or more for TC or mV input
About 1 MΩ for DC voltage input

Allowable signal source resistance:

250 Ω or less for TC or mV input

Effects of signal source resistance:

0.1 μV/Ω or less

2 kΩ or less for DC voltage input

Effects of signal source resistance:

About 0.01%/100 Ω

Allowable wiring resistance:

Max. 150 Ω/wire (resistance in each of three wires must be equal) for RTD input

However, max. 10 Ω/wire for the range of

-150.0 to 150.0°C.

Wiring resistance effect: ±0.1°C/10 Ω

Allowable input voltage:

±10 V DC for TC, mV or RTD input

±20 V DC for DC voltage input

Noise rejection ratio:

Normal mode 40 dB (50/60 Hz) or more

Common mode 120 dB (50/60 Hz) or more

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, or DIN (ITS-90) for TC and RTD

Response time: 2 second or less, 63% (10 - 90%)

(The time required for transmission output to reach 63% of the maximum excursion when PV abruptly changes from 10% to 90%)

Input type		Input range code	Instrument range (°C)	Instrument range (°F)	Measurement accuracy*1
Unspecified(when shipped from the factory)		OFF	Set the data item PV input Type"IN" to the OFF option to leave the PV input type undefined.		
Thermocouple	K	1	-200 to 1370°C	-300 to 2500°F	±0.1% of instrument range ±1 digit for temperatures equal to or higher than 0 °C, ±0.2% of instrument range ±1 digit for temperatures below 0 °C
		2	-199.9 to 999.9°C	0 to 2300°F	
		3	-199.9 to 500.0°C	-199.9 to 999.9°F	
	J	4	-199.9 to 999.9°C	-300 to 2300°F	
	T	5	-199.9 to 400.0°C	-300 to 750°F	
		6	0.0 to 400.0°C	-199.9 to 750.0°F	
	B	7	0 to 1800°C	32 to 3300°F	±0.15% of instrument range ±1 digit for temperatures 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
	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 temperature below 0 °C
	E	11	-199.9 to 999.9°C	-300 to 1800°F	±0.1% of instrument range ±1 digit for temperatures equal to or higher than 0°C
	L (DIN)	12	-199.9 to 900.0°C	-300 to 1300°F	
	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
		14	0.0 to 400.0°C	-199.9 to 750.0°F	
W (DIN)	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	
RTD	JPt100	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 (Note 1) (Note 2)
	31	-150.0 to 150.0°C	-199.9 to 300.0°F	±0.2% of instrument range ±1 digit (Note 1)	
	Pt100	35	-199.9 to 850.0°C	-300 to 1560°F	±0.1% of instrument range ±1 digit (Note 1) (Note 2)
		36	-199.9 to 500.0°C	-199.9 to 999.9°F	
37	-150.0 to 150.0°C	-199.9 to 300.0°F	±0.2% of instrument range ±1 digit (Note 1)		
Standard signal	0.4 to 2 V	40	0.400 to 2.000	Scaling is enable in the following 4 range.	±0.1% of instrument range ±1 digit The read-out range can be scaled between -1999 and 9999.
	1 to 5 V	41	1.000 to 5.000		
DC voltage	0 to 2 V	50	0.000 to 2.000	-1999 to 9999	
	0 to 10 V	51	0.00 to 10.00	-199.9 to 999.9	
	-10 to 20 mV	55	-10.00 to 20.00	-19.99 to 99.99	
	0 to 100 mV	56	0.0 to 100.0	-1.999 to 9.999	

*1: Performance in the standard operating conditon (at 23°C ±2°C, 55±10%RH, and 50/60Hz power frequency)

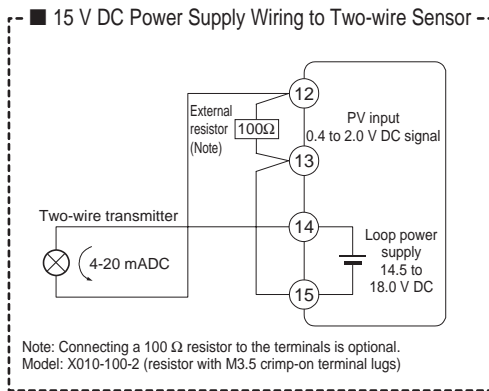
Note 1: The accuracy is ±0.3°C of instrument range ±1 digit for a temperature range from 0 to 100°C.

Note 2: The accuracy is ±0.5°C of instrument range ± 1 digit for a temperature range from -100 to 0°C and 100 to 200°C.

15 V DC Loop Power Supply for Sensor

Supplies power to a two-wire transmitter. A resistor (10 to 250 Ω) connected between the controller and the transmitter converts a current signal into a voltage signal, which is then read by the PV input terminal.

Supply voltage: 14.5 to 18.0 V DC
 Maximum supply current : About 21 mA (with a protection circuit for a field short-circuit)



Retransmission Output

Any of PV, target setpoint, or control output is output. Can also be used for 15 V DC loop power supply.

Number of output points: 1
 Output signal: 4 to 20 mA DC
 Load resistance: 600 Ω or less
 Output accuracy: ±0.3% of span
 Performance in the standard operating conditions (at 23± 2°C, 55± 10% RH, and 50/60 Hz power frequency)

Control Outputs

The control output is of a universal scheme and can be selected from the following types of outputs.

- Current output**
 - Number of output points: 1 (selected between voltage pulse output)
 - Output signal: 4 to 20 mA
 - Load resistance: 600 Ω or less
 - Output accuracy: ±0.3% of span
 - Performance in the standard operating conditions (at 23± 2°C, 55± 10% RH, and 50/60 Hz power frequency)
- Voltage pulse output**
 - Number of output points: 1 (selected between current output)
 - Output signal:
 - ON voltage=12 V DC or more (load resistance; 600 Ω or more, current at short-circuit ; about 30 mA)
 - OFF voltage=0.1 V DC or less
 - Resolution: 10 ms
- Relay contact output**
 - Number of output points: 1
 - Output signal:
 - At three terminals of NC, NO and Common, transfer-contact
 - Contact rating:
 - 250V AC, 3A or 30V DC, 3A (resistance load)
 - Resolution: 10 ms

Contact Inputs

Usage: Program pattern selection, program operation hold mode switching, display key lock parameter enabled/disabled switching

Number of input points: 2
 Input type: Non-voltage contact input or transistor open collector input
 Input contact rating: 12 V DC, 10 mA or more
 On/off detection:

- For non-voltage contact input,
 - ON=contact resistance; 1 kΩ or less,
 - OFF=contact resistance; 20 kΩ or more.
- For transistor open collector input,
 - ON=2 V or less,
 - OFF=leak current; 100 μA or less.

 Minimum retention time for status detection:
 About 1 s

Contact Outputs

Usage: Event output
 Number of relay contact output points: 3
 Relay contact rating:

- 240 V AC, 1A, or 30 V DC, 1A, a-contact

Display Unit Specifications

PV display: 4-digit, 7-segment green/red LED; each digit 20 mm in height
 Setpoint display:

- 4-digit, 7-segment red LED; each digit 9.3 mm in height

 Status indicator lamps: LEDs

Conformance to Safety and EMC Standards

Safety: Compliant with IEC/EN61010-1: 2001, approved by CSA1010, approved by UL508.
 Installation category : CAT. II (IEC/EN61010, CSA1010) Pollution degree : 2 (IEC/EN61010, CSA1010)
 Measurement category : I (CAT. I : IEC/EN61010)
 Rated measurement input voltage : 10V DC max.(across terminals), 300V AC max.(across ground)
 Rated transient overvoltage : 1500V (Note)
 Note : It is a value on the safety standard which is assumed by IEC/EN61010-1 in measurement category I, and is not the value which guarantees an apparatus performance.
 EMC standards: Complies with EN61326
 During test, the controller continues to operate with the measurement accuracy within ±20% of the range.

Construction, Mounting, and Wiring

Construction: Dust-proof and Drip-proof front panel conforming to IP55.
 For side-by-side close installation, the controller loses its dust-proof and drip-proof protection.
 Material: ABS resin and polycarbonate
 Case color: Black
 Weight: About 1 kg or less
 External dimensions:

- 96 (W) × 96 (H) × 100 (depth from the front panel) (mm)

 Mounting: Direct panel mounting; mounting bracket, one each for upper and lower mounting.
 Panel cutout dimensions:

- 92^{+0.8}₀ (W) × 92^{+0.8}₀ (H) (mm)

Mounting attitude:

Up to 30 degrees above the horizontal. No downward tilting allowed.

Wiring: M3.5 (ISO 3.5 mm) screw terminals (signal wiring and power/grounding wiring as well)

● Power Supply and Isolation Specifications

Power Supply Specifications

Power supply: Voltage rating at 100 to 240 V AC ($\pm 10\%$), 50/60 Hz

Power consumption: Max. 20 VA (Max. 8.0 W)

Internal fuse rating: 250 V AC, 1.6 A time-lag fuse

Memory back-up: Non-volatile memory (service life about 100,000 times of writings)

Withstanding voltage:

1500 V AC for 1 minute between primary and secondary terminals

1500 V AC for 1 minute between primary and grounding terminals

1500V AC for 1 minute between grounding and secondary terminals

500V AC for 1 minute between two secondary terminals

(Primary terminals: Power supply and relay output terminals
Secondary terminals: Analog input/output signal terminals, voltage pulse output terminals, and contact input terminals)

Isolation resistance:

Between power supply terminal and grounding terminal, 500 V DC 20 M Ω or more

Grounding: Class D grounding (Class 3 grounding) (grounding resistance of 100 Ω or less)

Isolation Specifications

PV input terminals:

Isolated from other input/output terminals.
Not isolated from internal circuit.

Control output (current or voltage pulse output) and retransmission terminals:

Not isolated between control output and retransmission output terminals mutually.
Isolated from other input/output terminals and internal circuit.

Relay contact control output terminals:

Isolated from other input/output terminals and internal circuits.

Contact input terminals:

Not isolated from other contact input terminals mutually, and from communication terminals. Isolated from other input/output terminals and internal circuit.

Relay contact event 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, grounding and internal terminals.

Power supply terminals:

Isolated from other input/output and grounding terminals, and internal circuit.

Grounding terminals:

Isolated from other input/output and power supply terminals, and internal circuit.

● Environmental Conditions

Normal operating conditions:

Ambient temperature: 0 to 50°C (40°C or less when mounted side by side)

Ambient temperature change limit: 10°C/h or less

Ambient humidity: 20 to 90% RH (no condensation)

Magnetic field: 400 A/m or less

Continuous vibration (5 to 14 Hz):

Peak-to-peak amplitude of 1.2 mm or less

Continuous vibration (14 to 150 Hz):

4.9 m/s² or less

Short-period vibration: 14.7 m/s², 15 s or less

Shock: 147 m/s² or less, 11 ms

Installation altitude:

2,000 m or less above sea level

Warm-up time: 30 minutes or more after power on

Transportation and storage conditions:

Temperature: -25 to 70°C

Temperature change limit: 20°C/h or less

Humidity: 5 to 95% RH (no condensation)

Effects of operating conditions

Effect of ambient temperature:

For voltage or TC input:

Equal or less than whichever is greater,
 $\pm 1 \mu\text{V}/^\circ\text{C}$ or $\pm 0.01\%$ of F.S./ $^\circ\text{C}$.

For RTD input:

$\pm 0.05^\circ\text{C}/^\circ\text{C}$ (ambient temperature) or less

For analog output:

$\pm 0.05\%$ of F.S./ $^\circ\text{C}$ or less

Effect of power supply fluctuation (within rated voltage):

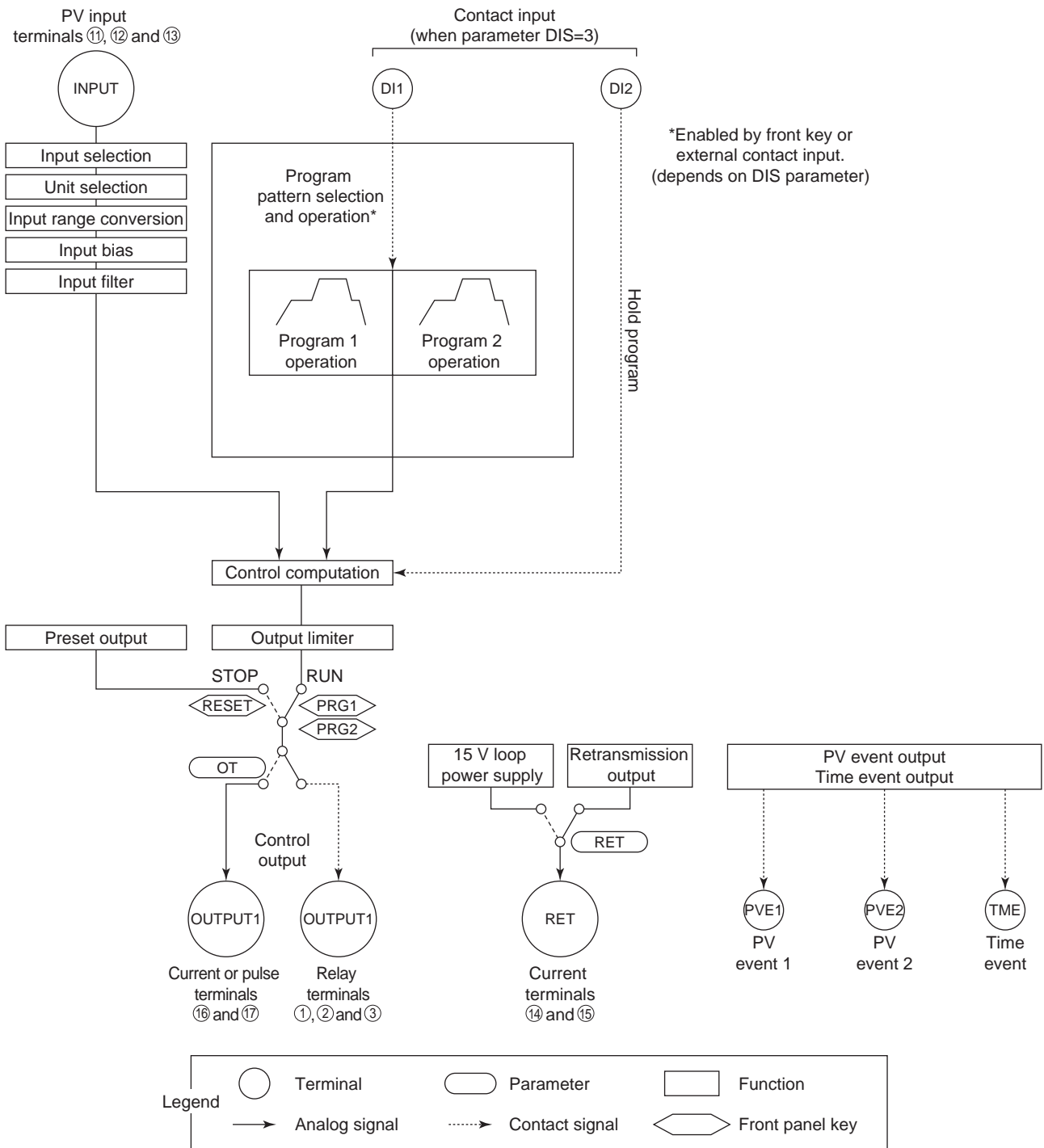
For analog input:

Equal or less than whichever is greater,
 $\pm 1 \mu\text{V}/10 \text{ V}$ or $\pm 0.01\%$ of F.S./10 V.

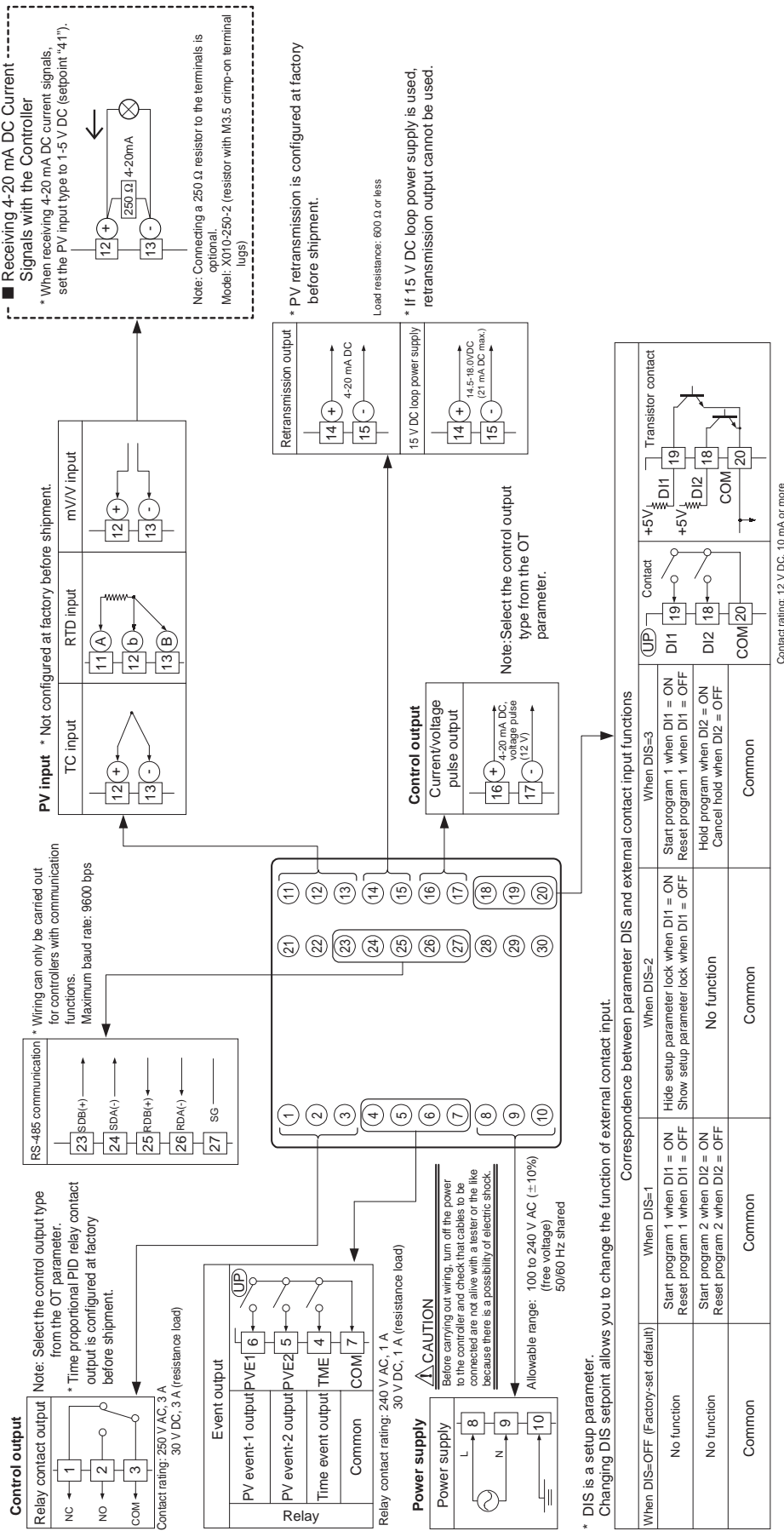
For analog output:

$\pm 0.05\%$ of F.S./10 V or less

Function Block Diagram for Standard Type



Terminal Arrangements for Standard Type



* DIS is a setup parameter.
 Changing DIS seipoint allows you to change the function of external contact input.

Correspondence between parameter DIS and external contact input functions	
When DIS=OFF (Factory-set default)	When DIS=1
No function	Start program 1 when DI1 = ON Reset program 1 when DI1 = OFF
No function	Start program 2 when DI2 = ON Reset program 2 when DI2 = OFF
Common	Common
When DIS=2	When DIS=3
Hide setup parameter lock when DI1 = ON Show setup parameter lock when DI1 = OFF	Start program 1 when DI1 = ON Reset program 1 when DI1 = OFF
No function	Hold program when DI2 = ON Cancel hold when DI2 = OFF
Common	Common

* OT is a setup parameter.
 You can change the settings of the parameter OT to change the control output types.

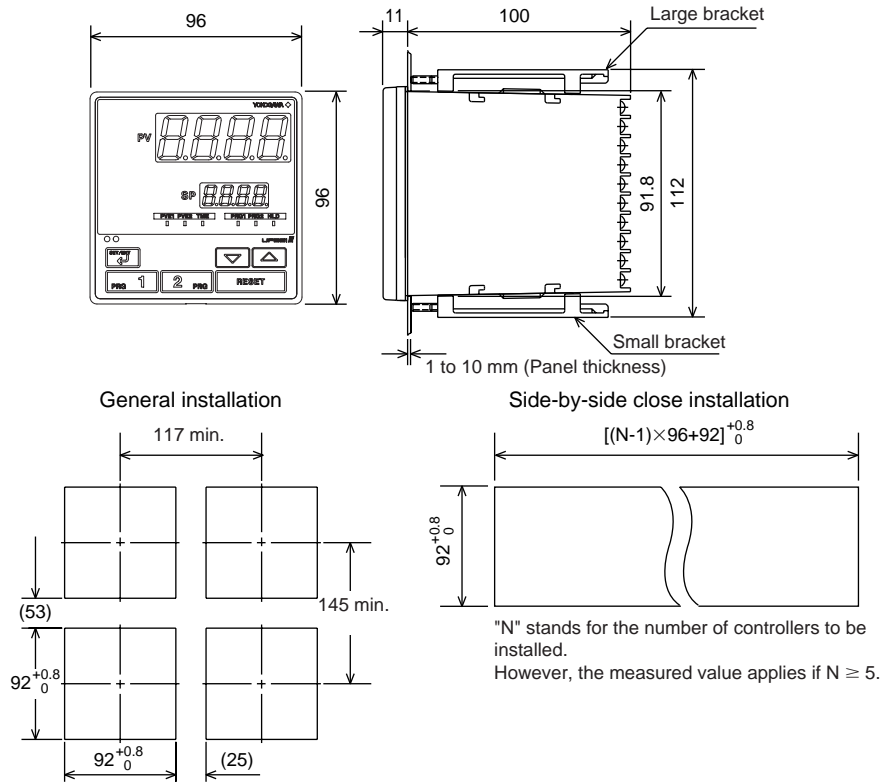
Correspondence between parameter OT and control output types	
OT=0 (factory-set default)	OT=1
Time proportional control Relay output (terminals ①, ② and ③)	Time proportional control Voltage pulse output (terminals ⑥ and ⑦)
OT=2	OT=3
Current output (terminals ⑩ and ⑪)	Relay output control (terminals ①, ② and ③)

Contact rating: 12 V DC, 10 mA or more

External Dimensions and Panel Cutout Dimension

UP351

Unit: mm



Normal Allowable Deviation=± (Value of JIS B 0401-1999 tolerance grade IT18) /2

Model and Suffix Codes

Model	Suffix Code	Description
UP351		Program controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0	Standard type
Optional functions	0	None
	1	With communication

Standard accessories: Brackets (mounting hardware), unit label, User's Manuals, and User's Manual (reference) (CD-ROM version).

Terminal cover (optional part) is provided.

Items to be Specified when Ordering

Model and suffix codes, necessary/unnecessary of User's Manual or QIC.