



บริษัท เอดีดี เฟอร์เนส จำกัด

ADD FURNACE CO.,LTD.

44 ซอยบรมราชชนนี 70 ถนนบรมราชชนนี แขวงศาลาธรรมสพน์ เขตทวีวัฒนา กรุงเทพฯ 10170

โทร: 02-888-3472 โทร: ออกแบบ:08-08-170-170 แฟกซ์: 02-888-3258

https://www.add-furnace.com E-mail: [sales@add-furnace.com](mailto:sales@add-furnace.com)

Shimaden, Temperature and Humidity Control Specialists

|                 |                    |
|-----------------|--------------------|
| °C              | <b>Series FP23</b> |
| %RH             |                    |
| <b>SHIMADEN</b> |                    |

# PROGRAMMABLE CONTROLLER



CE approved UL applied

## BASIC FEATURES

- 2-channel controller (Basic type: 1-channel controller)
- Independent 2-loop / 2-input operation control
- High accuracy  $\pm (0.1\% FS + 1 \text{ digit})$
- High Sampling Cycle 0.1 sec.
- High resolution 1/ 1000 °C display achieved  
\*Only for R.T.D. input (scale: 0.000~30.000 °C)
- Programmable Max. 400 steps (400 steps x 1 pattern to 20 steps x 20 patterns)
- Auto-Tuning PID / Expert PID
- Max. 10 Zone PID control available
- Independent Universal-Input
- User Friendly Operation (Menu Driven: 4 Lines LCD Display)
- Easy Setting & Maintenance via Infrared COM port on the front panel
- Interface RS-232C/RS-485 (MODBUS / Shimaden)
- The front dust/splash-proof IP66
- Universal Power Supply (100~240V AC  $\pm 10\%$ )
- Sensor power supply



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# COPING WITH ADVANCED PROCESS CONTROL

Temperature °C, Pressure MPa, Flowrate m<sup>3</sup>/s, etc.

Two types of programs can be executed at the same time.

High-performance programmable controller

## FP23 Series



Number of program patterns:

**Max. 20**

Number of program steps:

**Max. 400**

**High accuracy:**

± (0.1% FS+1 digit)

**High sampling cycle:**

**100 msec.**

(100 msec. even at 2-loop specification)

### Universal-Input

- Thermocouple
- R.T.D.
- DC voltage
- DC current



All of them are acceptable.



- \* Individual setting is allowed for each channel at 2-loop specification.
- \* Current input is executed through externally attached shunt resistor with 250Ω.

### Easy setup through infra-red communication

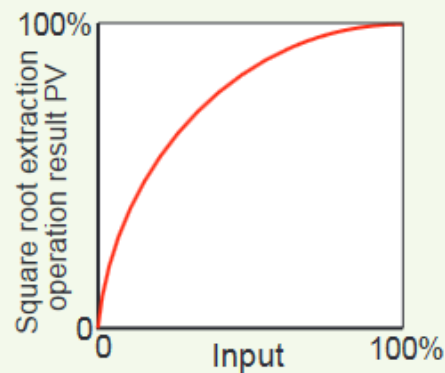
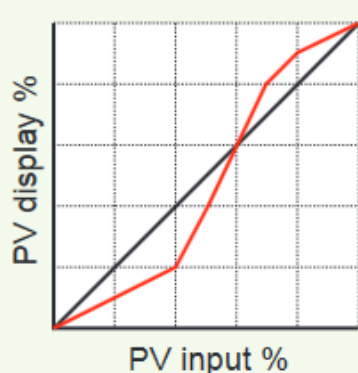


- Easy setting thanks to dedicated setup program
- Reading and writing of various parameters are possible.
- Saving and reading to files are possible.

### 10-segment linear approximation and square root extraction operation functions

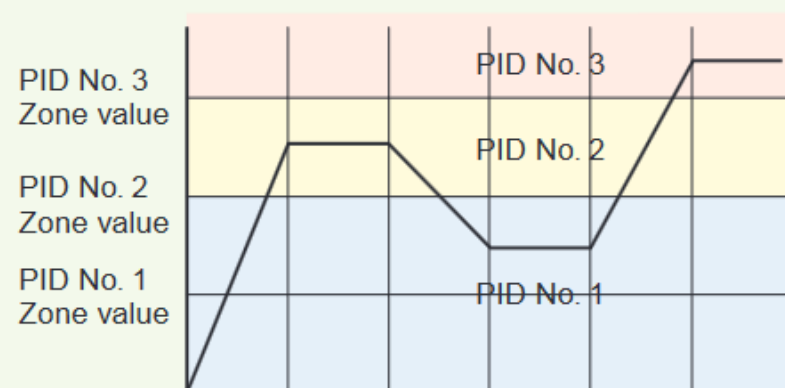
Linearising nonlinear signal input  
Number of approximation point:  
Max. 11

Linearisation of signals with square characteristic such as flow rate



### Multiple PID

- Selectable from 10 PID Nos. for each step
- Control by zone PID is also available (Max. 10 zones).





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# EASY READABILITY AND USABILITY ARE RADICALLY PURSUED.

## Excellent visibility thanks to the large LED with 5 digits x 2 lines and LCD with 128 x 32 dots

### ■PV Display Panel

- Measured value (PV) display
- CH2PV is indicated when CH2 lamp is illuminated.
- Error message display

### ■SV Display Panel

- Target value (SV) display
- CH2SV is indicated when CH2 lamp is illuminated.
- CH2PV is indicated when PV2 lamp is illuminated.
- Error message display

### ■LCD Display Panel

- Pattern / Step No. display
- Output display (numerical value and bar graph)
- Channel display
- Various setting parameters display

### ■Status Lamp Display Panel

- RUN: Program on standby: Flashing  
Program in execution: ON
- HLD: Program suspended: ON
- MAN: Manual operation (MAN) in execution: Flashing
- FIX: During FIX mode: ON
- EV1~3: Event output being on: ON
- DO1~5: External control output being on: ON
- EXT: When start pattern No. by DI is selected: ON
- COM: In communication mode: ON
- AT: Auto tuning in execution: Flashing
- OUT 1, 2: Control output monitor lamp

### ■Infra-red Communication Display Panel

- Infra-red communication through dedicated adaptor
- Receptacle/illuminator

### ■Key Switch Display Panel

- DISP : Return to the basic screen  
: Switching to display mode
- GRP : Go to screen group
- SCRN : Go to any screen within the group
- [Circular arrow] : Selection of editing and setting parameters
- [Left/Right/Up/Down arrows] : Increase/decrease of numeric value and scaling factor
- ENT : Registration of numeric value and/or data
- STEP : Switching of step No.
- PTN : Switching of pattern No.



## EASY PARAMETER SETTING THANKS TO THE INTERACTIVE MODE THROUGH 4 LINE LCD DISPLAY

## DISPLAY MODE CORRESPONDING TO EACH SPECIFICATION

### ◆ Independent 2-loop control



- CH1...PV
- CH2...PV
- CH1...PTN No. STEP No. SV
- CH2...PTN No. STEP No. SV

### ◆ 2-input operation control



- Operation result PV
- SV
- Input 1
- Input 2

### ◆ Positioning proportional control (servo output)



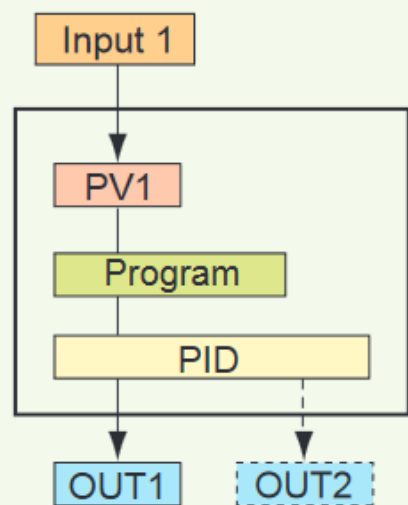
- PV
- SV
- Opening



# COPING WITH MULTIFARIOUS

## 1 Loop / 2 Loop Control

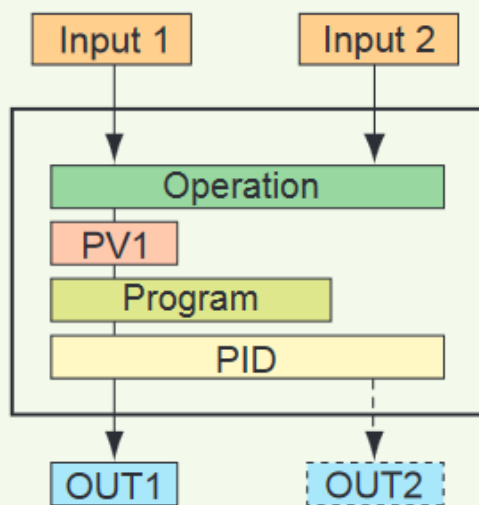
### 1-input control



\* 1 output (for heating/cooling control) may also be provided.

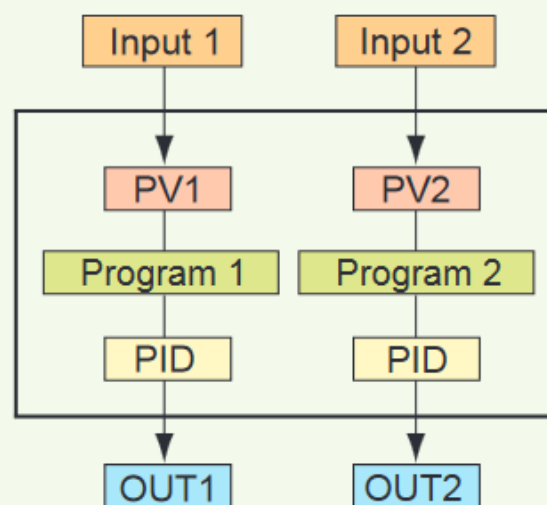
### 2-input operation control

(max. value, min. value, deviation value, average value)



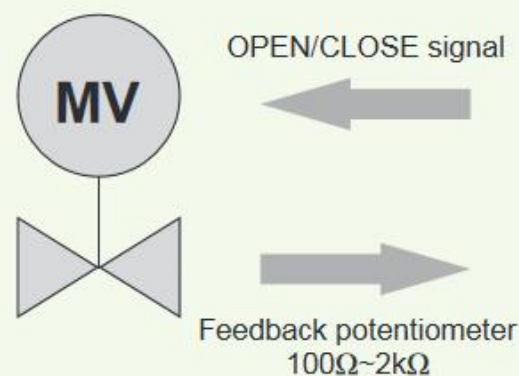
\* 2 outputs (for heating/cooling control) may also be provided.

### Independent 2-loop control

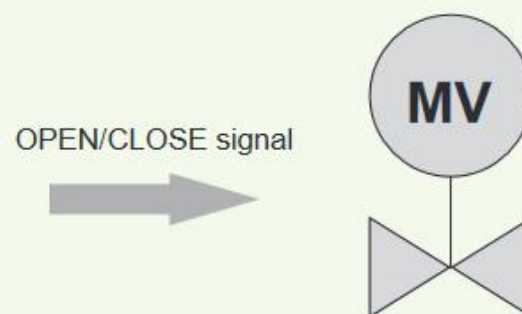


## Servo Output Specification (Control motor/motor valve control)

### With feedback potentiometer



### Without feedback potentiometer



\* Proportional control may be executed both with and without feedback potentiometer.

## Easily Connectable with External Equipment such as PLC thanks to Abundant Number of Input/Output Points

### External Control Input (DI): Max. 10

- Execution/stop of program control
- Stop of program control
- Suspension of program control
- Postponement of program step
- FIX mode
- Manual control operation
- Logical operation input
- Selection of start pattern No.



### Event Output: 3 External Control Output: Max. 13

27 alarm actions, various status output and logical operation output

### Sensor power supply 24V DC

### Analog Output: Max. 2

Externally output PV, SV, deviation value, output value, limit value for each channel by means of analog signal

### Communication function

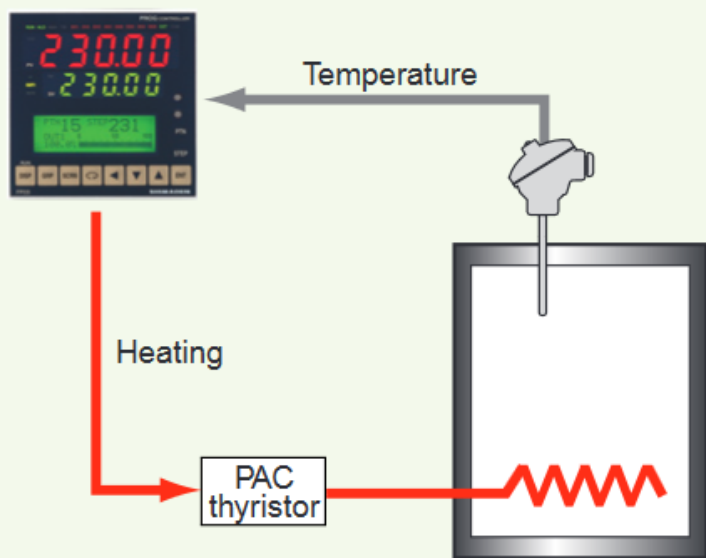
Both Shimaden standard protocol and MODBUS (RTU/ASCII) communication protocol are equipped.



# APPLICATIONS

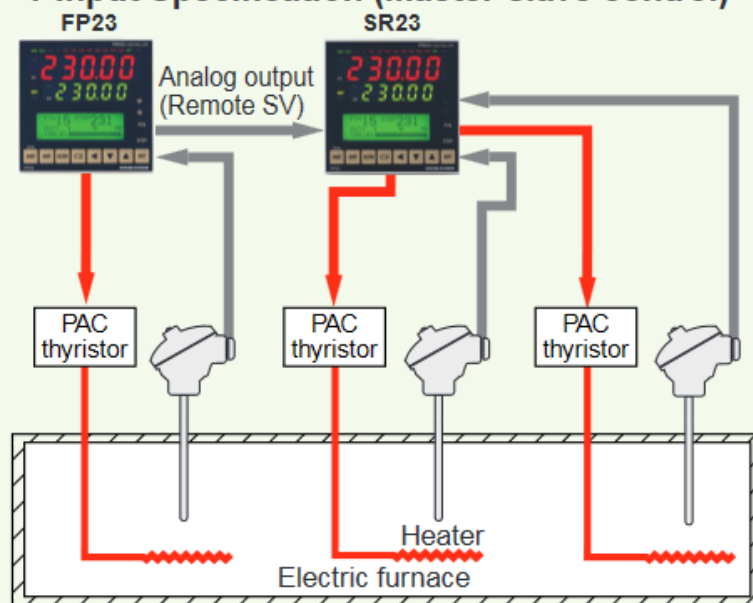
## Heating Control

### 1-input Specification



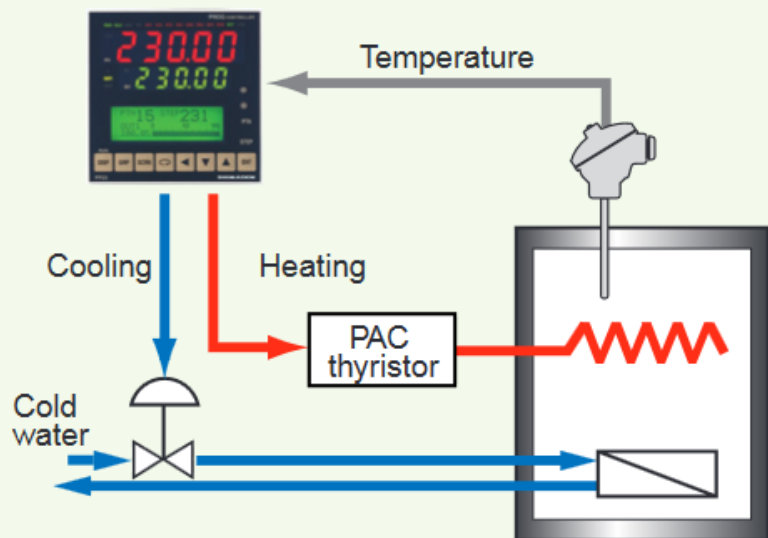
## 3-Zone Program Temperature Control of Electric Furnace

### 1-input Specification (Master-slave control)



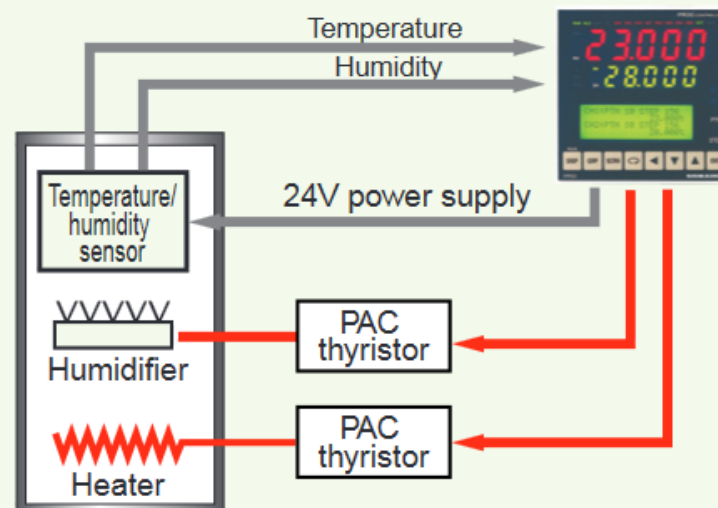
## Heating/Cooling Control

### 1-input Specification



## Constant-temperature/constant-humidity control

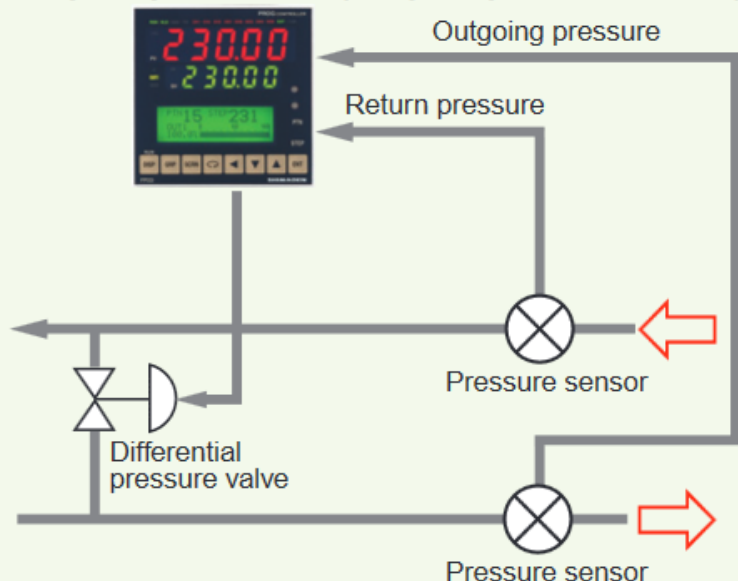
### 2-input Specification (Independent 2-loop control)



\* Cooling (dehumidifying) may be achievable by using event output as well.

## Differential Pressure Control

### 2-input Specification (2-input operation control)



## Widely Coping with Various Usages

- Semiconductor manufacturing equipment
- Electrical/electronic parts/components manufacturing-related equipment
- Various industrial furnaces
- Vacuum heating furnaces
- Environmental test equipment
- Food processing machines
- Plastic processing/molding machines
- Sterilization/pasteurization equipment for pharmaceuticals



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# 1-input Specification

Series FP23

## • 1-output control

### Ordering Information

| ITEM   | CODE     |   | Specifications   |
|--|----------|---|--|
| SERIES   | FP23-    |   | 96 × 96 DIN size, high-performance programmable controller                 |
| BASIC FUNCTIONS                                  | SS       |   | Universal-input, 1-input/1-output control, 3 event outputs                 |
| CONTROL OUTPUT 1                                 | Y        |   | Contact 1c, contact rating: 240V AC 2.5A/resistive load, 1A/inductive load |
|  | I        |   | Current 4 ~ 20mA DC, Load resistance: max. 600Ω                            |
|  | P        |   | SSR drive voltage output 12V±1.5V DC, Load current: max. 30mA              |
|  | V        |   | Voltage 0 ~ 10V DC, Load current: max. 2mA                                 |
| CONTROL OUTPUT 2                                 | N-       |   | None   |
| HEATER BREAK ALARM (FOR SINGLE-PHASE)            | 00       |   | None   |
|  | 31       |   | Heater break alarm* (heater current 30A with CT)                           |
|  | 32       |   | Heater break alarm* (heater current 50A with CT)                           |
| ANALOG OUTPUT 1                                  | 0        |   | None   |
|  | 3        |   | 0 ~ 10mV DC, Output resistance: 10Ω  |
|  | 4        |   | 4 ~ 20mA DC, Load resistance: max. 300Ω                                    |
|  | 6        |   | 0 ~ 10V DC, Load current: max. 2mA   |
| ANALOG OUTPUT 2/ SENSOR POWER SUPPLY             | 0        |   | None   |
|  | 3        |   | 0 ~ 10mV DC, Output resistance: 10Ω  |
|  | 4        |   | 4 ~ 20mA DC, Load resistance: max. 300Ω                                    |
|  | 6        |   | 0 ~ 10V DC, Load current: max. 2mA   |
| EXTERNAL INPUT/ OUTPUT CONTROL SIGNAL (DI/DO) *1 | standard | 0 | DI 4 points, DO 5 points (start pattern No. switching not available)       |
|  |          | 1 | DI 10 points, DO 9 points (start pattern No. switching available)          |
|  |          | 2 | DI 10 points, DO 13 points (start pattern No. switching available)         |
| COMMUNICATION FUNCTION                           |          | 0 | None   |
|  |          | 5 | RS-485   |
|  |          | 7 | RS-232C  |
| REMARKS  | A        |   | Without  |
|  | 9        |   | With   |

\*1 When switching the start pattern No. by DI, 10 points of DI (CODE 1 or 2) are required.

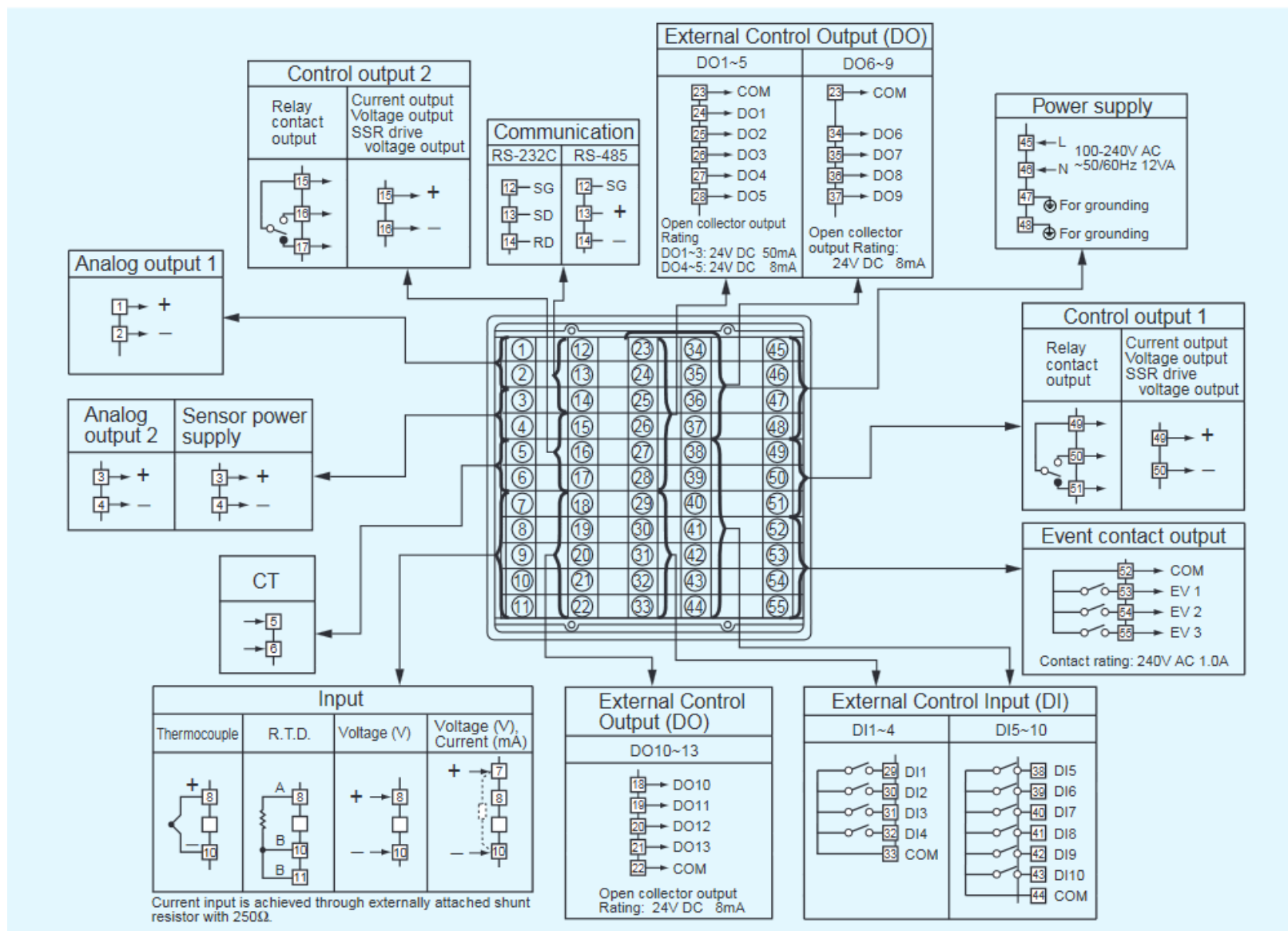
### Optional Accessories

| Name                            | Model  | Description   |
|---------------------------------|--------|---|
| Infra-red Communication Adapter | S5004  | USB connector cable (2m), Setup Software (CD-ROM)                     |
| Shunt Resistor                  | QCS002 | 250Ω ±0.1%, external input resistance at current input                |
| Relay Unit                      | AP2MC  | Converts open collector output to contact output. 2 circuits built-in |

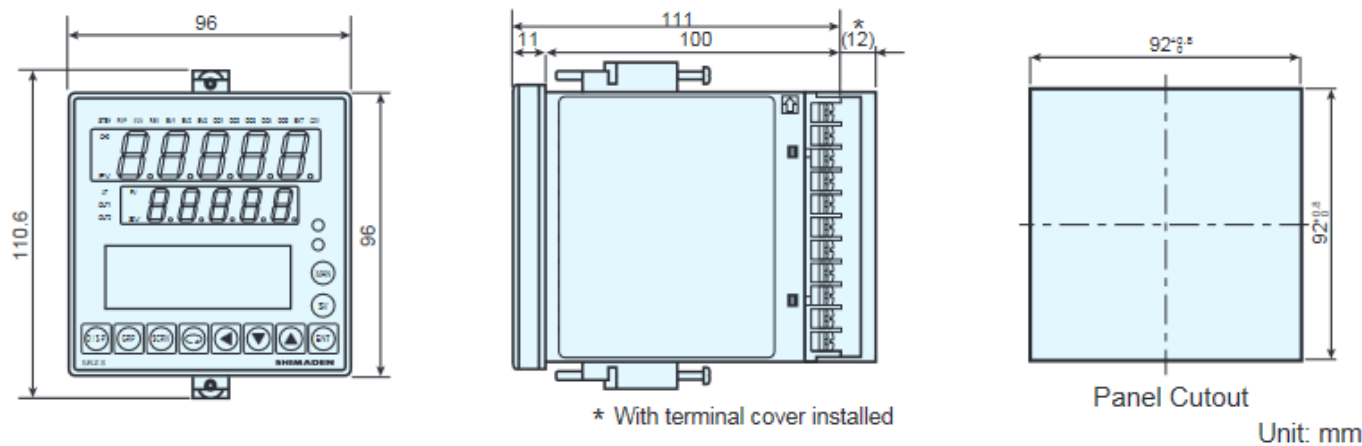


# Terminal arrangemen

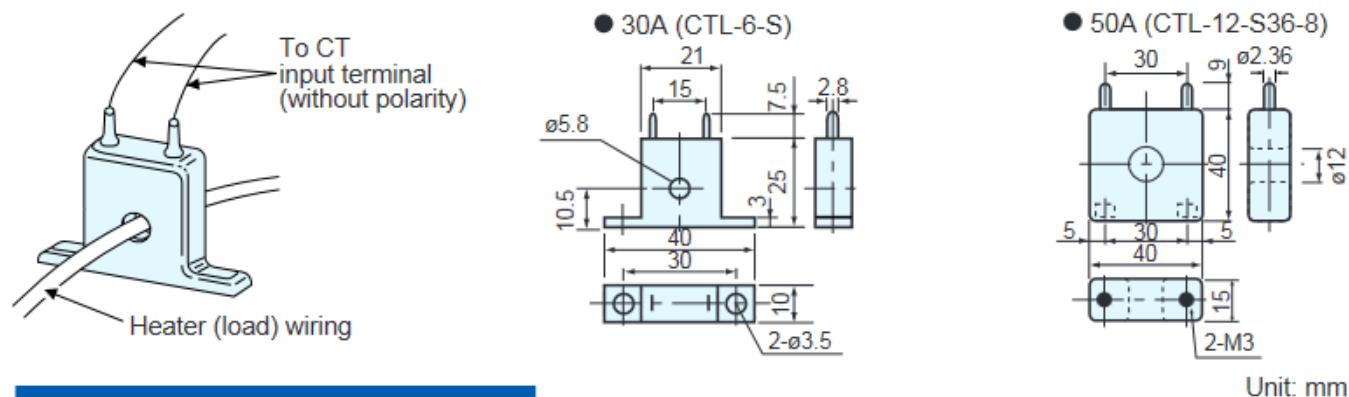
# Series FP23



## External Dimensions & Panel Cutout



## Accessories Required for Heater Break Alarm Function



## Optional Accessories

Relay Unit Model AP2MC  
(Converts open collector output to contact output. 2 circuits built-in)



Infra-red Communication Adapter Model S5004 with USB connector cable





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# 1-input Specification

Series FP23

- 2-output control (Heating/cooling control)

## Ordering Information

| ITEM   | CODE     |    | Specifications   |
|--|----------|----|--|
| SERIES   | FP23-    |    | 96 x 96 DIN size, high-performance programmable controller                 |
| BASIC FUNCTIONS                                  | SD       |    | Universal-input, 1-input/2-output control, 3 event outputs                 |
| CONTROL OUTPUT 1                                 |          | Y  | Contact 1c, contact rating: 240V AC 2.5A/resistive load, 1A/inductive load |
|  |          | I  | Current 4 ~ 20mA DC, Load resistance: max. 600Ω                            |
|  |          | P  | SSR drive voltage output 12V±1.5V DC, Load current: max. 30mA              |
|  |          | V  | Voltage 0 ~ 10V DC, Load current: max. 2mA                                 |
| CONTROL OUTPUT 2                                 |          | Y- | Contact 1c, contact rating: 240V AC 2.5A/resistive load, 1A/inductive load |
|  |          | I- | Current 4 ~ 20mA DC, Load resistance: max. 600Ω                            |
|  |          | P- | SSR drive voltage output 12V±1.5V DC, Load current: max. 30mA              |
|  |          | V- | Voltage 0 ~ 10V DC, Load current: max. 2mA                                 |
| HEATER BREAK ALARM (FOR SINGLE-PHASE) *1         |          | 00 | None   |
|  |          | 31 | Heater break alarm* (heater current 30A with CT)                           |
|  |          | 32 | Heater break alarm* (heater current 50A with CT)                           |
| ANALOG OUTPUT 1                                  |          | 0  | None   |
|  |          | 3  | 0 ~ 10mV DC, Output resistance: 10Ω  |
|  |          | 4  | 4 ~ 20mA DC, Load resistance: max. 300Ω                                    |
|  |          | 6  | 0 ~ 10V DC, Load current: max. 2mA   |
| ANALOG OUTPUT 2/ SENSOR POWER SUPPLY             |          | 0  | None   |
|  |          | 3  | 0 ~ 10mV DC, Output resistance: 10Ω  |
|  |          | 4  | 4 ~ 20mA DC, Load resistance: max. 300Ω                                    |
|  |          | 6  | 0 ~ 10V DC, Load current: max. 2mA   |
|  |          | 8  | Sensor power supply 24V DC 25mA  |
| EXTERNAL INPUT /OUTPUT CONTROL SIGNAL (DI/DO) *2 | standard | 0  | DI 4 points, DO 5 points (start pattern No. switching not available)       |
|  |          | 1  | DI 10 points, DO 9 points (start pattern No. switching available)          |
|  |          | 2  | DI 10 points, DO 13 points (start pattern No. switching available)         |
| COMMUNICATION FUNCTION                           |          | 0  | None   |
|  |          | 5  | RS-485   |
|  |          | 7  | RS-232C  |
| REMARKS  |          | A  | Without  |
|  |          | 9  | With   |

\*1 In a 2-output specification, the heater break alarm is used by either of Control Output 1 or 2.

\*2 When switching the SV No. by DI, 10 points of DI (CODE 1 or 2) are required.

## Optional Accessories

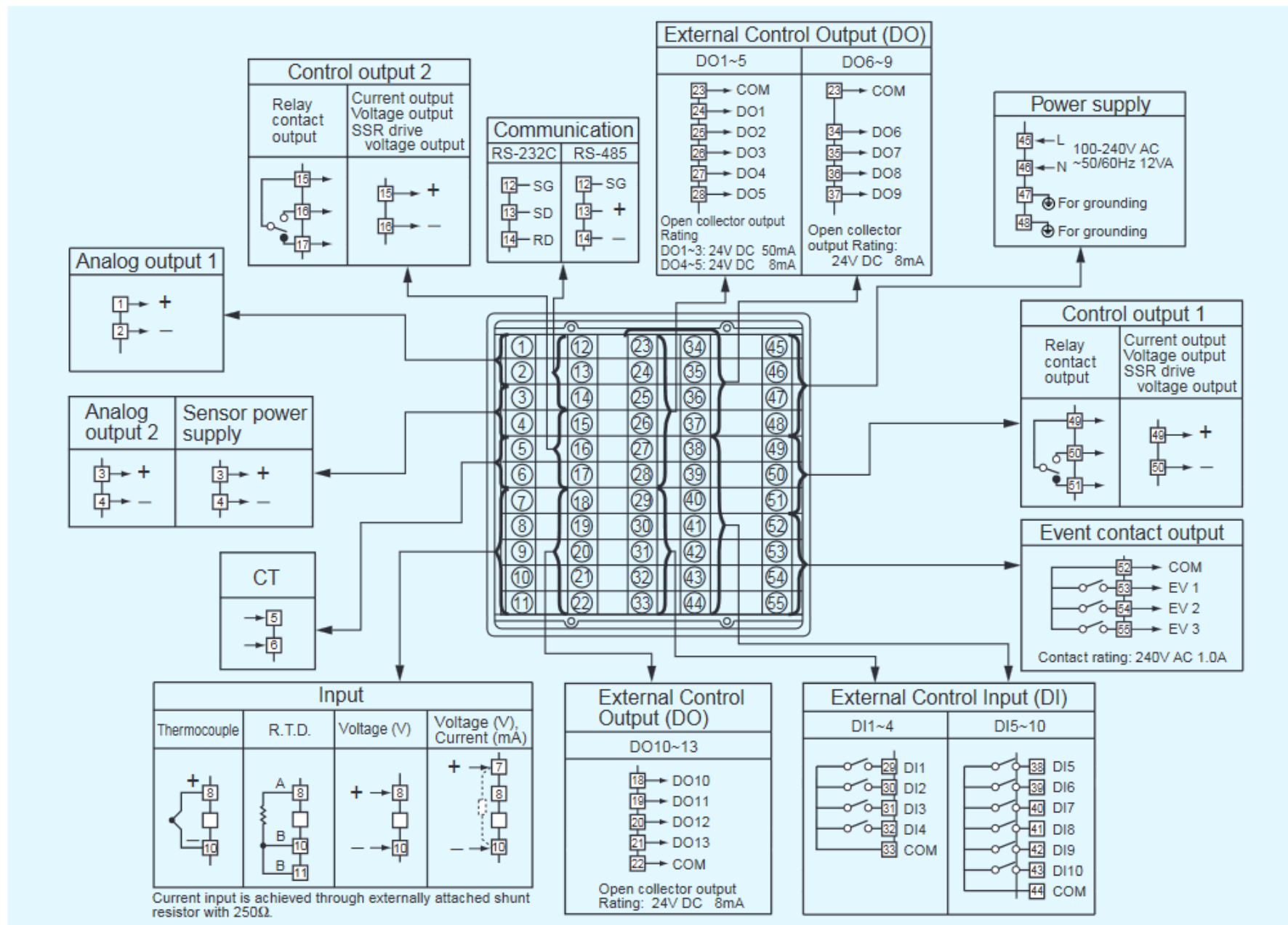
| Name                            | Model  | Description   |
|---------------------------------|--------|---|
| Infra-red Communication Adapter | S5004  | USB connector cable (2m), Setup Software (CD-ROM)                     |
| Shunt Resistor                  | QCS002 | 250Ω ±0.1%, external input resistance at current input                |
| Relay Unit                      | AP2MC  | Converts open collector output to contact output. 2 circuits built-in |



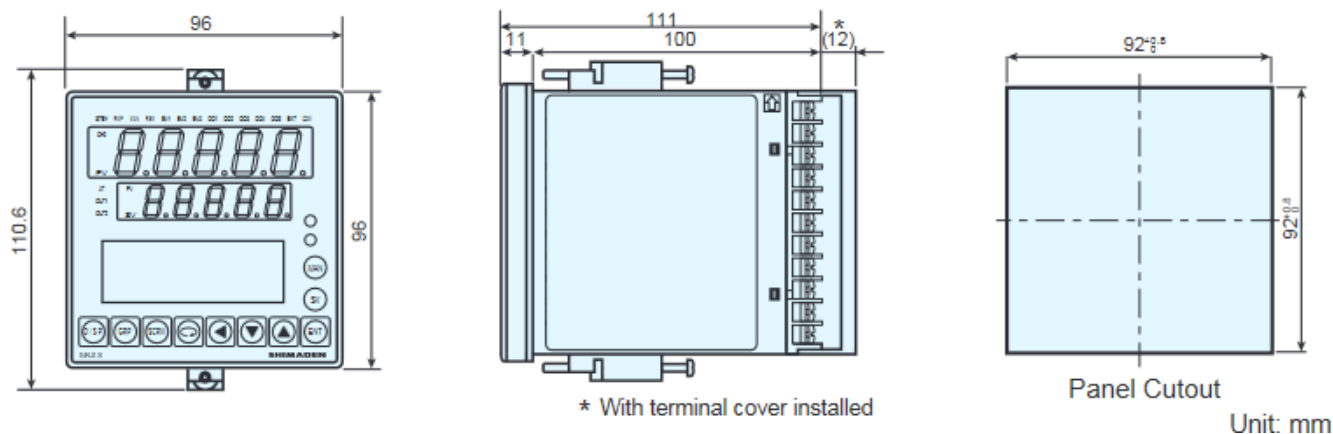


Terminal arrangement

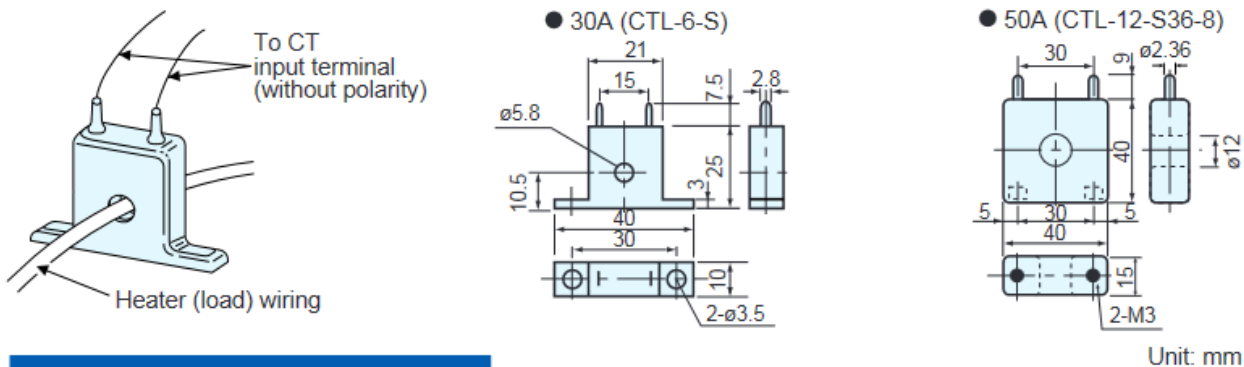
Series FP23



External Dimensions & Panel Cutout



Accessories Required for Heater Break Alarm Function



Optional Accessories

Relay Unit Model AP2MC (Converts open collector output to contact output. 2 circuits built-in)



Infra-red Communication Adapter Model S5004 with USB connector cable





## 2-input Specification

Series FP23

- 2-input/2-output control (independent 2-loop control)
- 2-input operation/1-output control (1-loop control by max. value, min. value, average value, deviation value operation)
- 2-input operation/2-output control (1-loop heating/cooling control by max. value, min. value, average value, deviation value operation)

### Ordering Information

| ITEM  | CODE     |   | Specifications   |   |
|---|----------|---|--|---|
| SERIES  | FP23-    |   | 96 × 96 DIN size, high-performance digital controller                      |   |
| BASIC FUNCTIONS *1                              | DL       |   | Universal-input, independent 2-loop control, 3 event outputs               |   |
|   | DS       |   | Universal-input, 2-input operation/1-output control, 3 event outputs *2    |   |
|   | DD       |   | Universal-input, 2-input operation/2-output control, 3 event outputs       |   |
| CONTROL OUTPUT 1 *2                             | Y        |   | Contact 1c, contact rating: 240V AC 2.5A/resistive load, 1A/inductive load |   |
|   | I        |   | Current 4 ~ 20mA DC, Load resistance: max. 600Ω                            |   |
|   | P        |   | SSR drive voltage output 12V±1.5V DC, Load current: max. 30mA              |   |
|   | V        |   | Voltage 0 ~ 10V DC, Load current: max. 2mA                                 |   |
| CONTROL OUTPUT 2                                | Y-       |   | Contact 1c, contact rating: 240V AC 2.5A/resistive load, 1A/inductive load |   |
|   | I-       |   | Current 4 ~ 20mA DC, Load resistance: max. 600Ω                            |   |
|   | P-       |   | SSR drive voltage 12V±1.5V DC, Load current: max. 30mA                     |   |
|   | V-       |   | Voltage 0 ~ 10V DC, Load current: max. 2mA                                 |   |
| HEATER BREAK ALARM (FOR SINGLE-PHASE) *3        | 00       |   | None   |   |
|   | 31       |   | Heater break alarm (heater current 30A with CT)                            | Selectable only when Control Output 1 or 2 is Y or P                  |
|   | 32       |   | Heater break alarm (heater current 50A with CT)                            |   |
| ANALOG OUTPUT 1                                 | 0        |   | None   |   |
|   | 3        |   | 0 ~ 10mV DC, Output resistance: 10Ω  |   |
|   | 4        |   | 4 ~ 20mA DC, Load resistance: max.300Ω                                     |   |
|   | 6        |   | 0 ~ 10V DC, Load current: max. 2mA   |   |
| ANALOG OUTPUT 2/<br>SENSOR POWER SUPPLY         | 0        |   | None   |   |
|   | 3        |   | 0 ~ 10mV DC, Output resistance: 10Ω  |   |
|   | 4        |   | 4 ~ 20mA DC, Load resistance: max.300Ω                                     |   |
|   | 6        |   | 0 ~ 10V DC, Load current: max. 2mA   |   |
|   | 8        |   | Sensor power supply 24V DC 25mA  |   |
| EXTERNAL INPUT/OUTPUT CONTROL SIGNAL (DI/DO) *4 | standard | 0 | DI 4 points, DO 5 points (start pattern No. switching not available)       |   |
|   |          | 1 | DI 10 points, DO 9 points (start pattern No. switching available)          |   |
| COMMUNICATION FUNCTION                          | 0        |   | None   |   |
|   | 5        |   | RS-485   | Shimaden standard protocol/MODBUS (RTU/ASCII) communication protocol7 |
|   | 7        |   | RS-232C  |   |
| REMARKS   | A        |   | Without  |   |
|   | 9        |   | With   |   |

\*1 Independent 2-loop control, 2-input operation/1-output control and 2-input operation/2-output control are all supported in the 2-output specification. This controller is shipped with the function selected at BASIC FUNCTION set.

\*2 In a 2-input operation/1-output control specification, output for control is output to Control Output 1. Select the same specification as Control Output 2 for Control Output 1.

\*3 In a 2-output specification, the heater break alarm is used by either of Control Output 1 or 2.

\*4 When switching the start pattern No. by DI, 10 points of DI (CODE 1) are required.

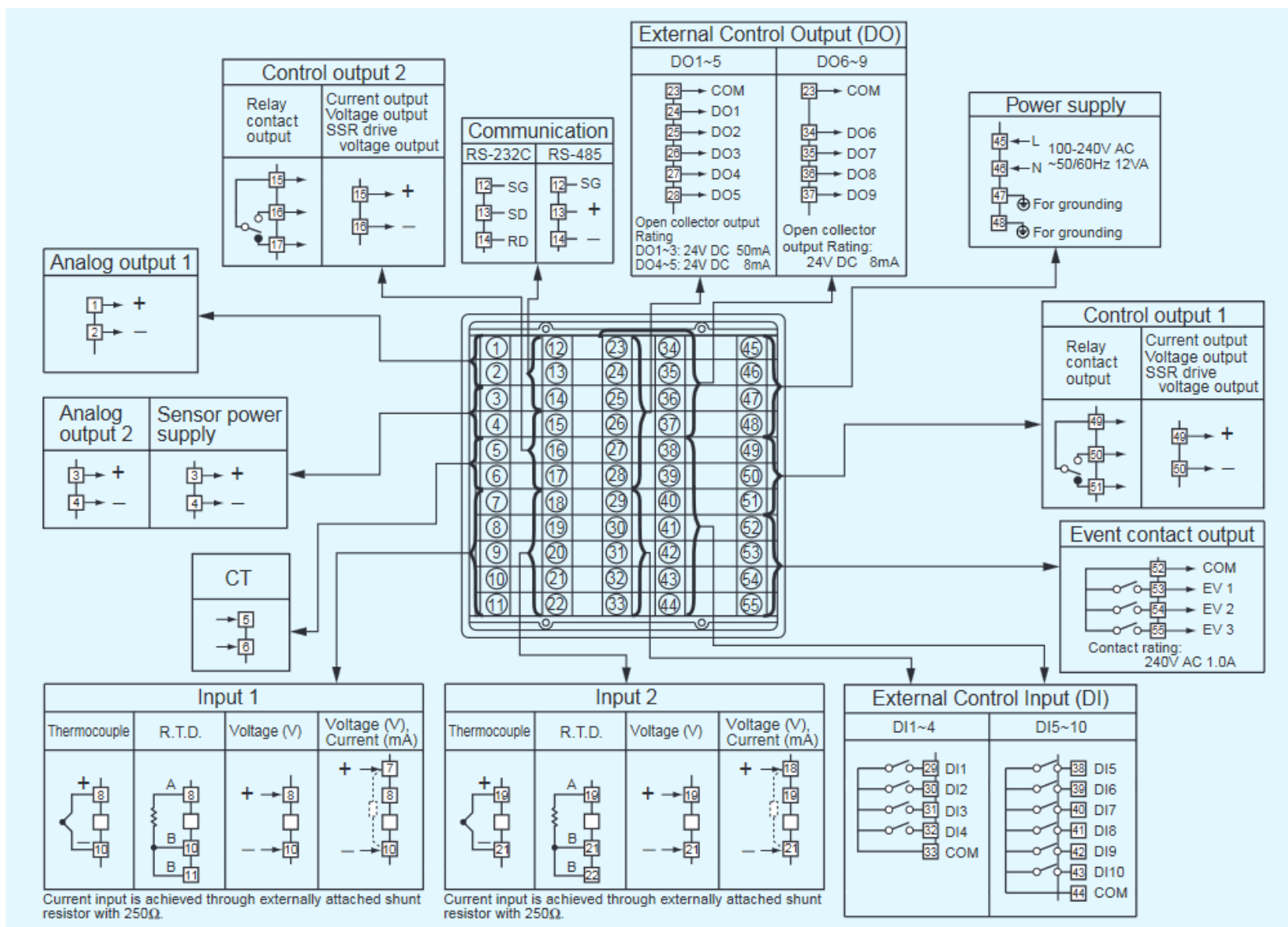
### Optional Accessories

| Name                            | Model  | Description   |
|---------------------------------|--------|---|
| Infra-red Communication Adapter | S5004  | USB connector cable (2m), Setup Software (CD-ROM)                     |
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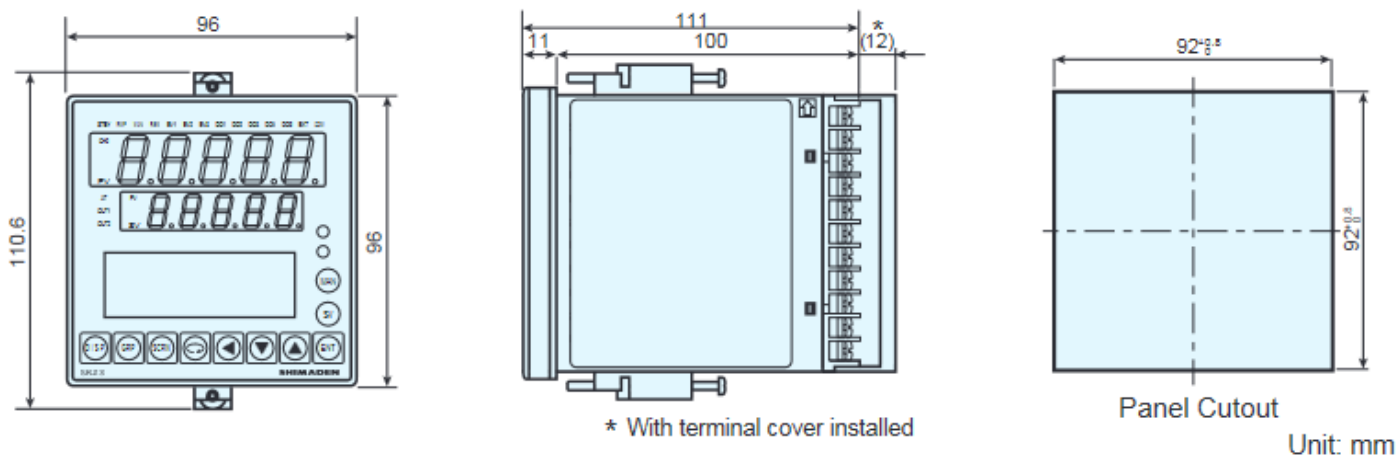


# Terminal arrangement

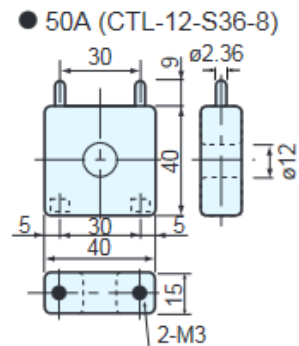
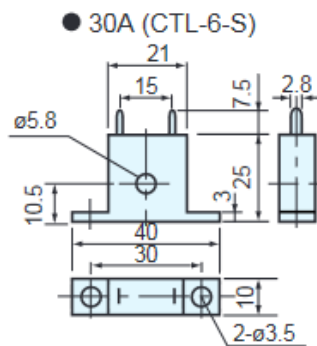
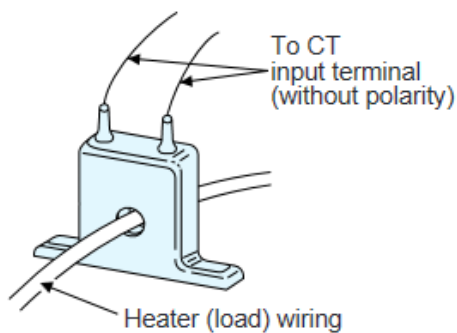
# Series FP23



## External Dimensions & Panel Cutout



## Accessories Required for Heater Break Alarm Function



Unit: mm

## Optional Accessories

Relay Unit Model AP2MC (Converts open collector output to contact output. 2 circuits built-in)



Infra-red Communication Adapter Model S5004 with USB connector cable





**MEASURING RANGE CODES**

**Series FP23**

| Input type   |                       | Code | Measuring range |                    |                  |
|--------------|-----------------------|------|-----------------|--------------------|------------------|
| Thermocouple | B                     | 01   | *1              | 0.0 ~ 1800.0°C     |                  |
|              | R                     | 02   |                 | 0.0 ~ 1700.0°C     |                  |
|              | S                     | 03   |                 | 0.0 ~ 1700.0°C     |                  |
|              | K                     | 04   |                 |                    | -100.0 ~ 400.0°C |
|              |                       | 05   |                 |                    | 0.0 ~ 400.0°C    |
|              |                       | 06   |                 |                    | 0.0 ~ 800.0°C    |
|              |                       | 07   |                 |                    | 0.0 ~ 1370.0°C   |
|              |                       | 08   | *2              |                    | -200.0 ~ 200.0°C |
|              | E                     | 09   |                 |                    | 0.0 ~ 700.0°C    |
|              | J                     | 10   |                 |                    | 0.0 ~ 600.0°C    |
|              | T                     | 11   | *2              |                    | -200.0 ~ 200.0°C |
|              | N                     | 12   |                 |                    | 0.0 ~ 1300.0°C   |
|              | PL II                 | 13   |                 |                    | 0.0 ~ 1300.0°C   |
|              | PR40-20               | 14   | *3              |                    | 0.0 ~ 1800.0°C   |
|              | WRe5-26               | 15   |                 |                    | 0.0 ~ 2300.0°C   |
|              | U                     | 16   |                 |                    | -200.0 ~ 200.0°C |
|              | L                     | 17   |                 |                    | 0.0 ~ 600.0°C    |
|              | K                     | 18   | *4              |                    | 10.0 ~ 350.0°C   |
|              | Gold and Iron/Chromel | 19   | *5              |                    | 0.0 ~ 350.0°C    |
| R.T.D.       | Pt100<br>JPt100       | Pt   | JPt             |                    |                  |
|              |                       | 31   | 45              | *6                 | -200.0 ~ 600.0°C |
|              | 32                    | 46   |                 | -100.00 ~ 100.00°C |                  |
|              | 33                    | 47   |                 | -100.0 ~ 300.0°C   |                  |
|              | 34                    | 48   |                 | -60.00 ~ 40.00°C   |                  |
|              | 35                    | 49   |                 | -50.00 ~ 50.00°C   |                  |
|              | 36                    | 50   |                 | -40.00 ~ 60.00°C   |                  |
|              | 37                    | 51   |                 | -20.00 ~ 80.0°C    |                  |
|              | 38                    | 52   | *7              | 0.000 ~ 30.000°C   |                  |
|              | 39                    | 53   |                 | 0.00 ~ 50.00°C     |                  |
|              | 40                    | 54   |                 | 0.00 ~ 100.00°C    |                  |
|              | 41                    | 55   |                 | 0.00 ~ 200.00°C    |                  |
|              | 42                    | 56   | *8              | 0.0 ~ 300.00°C     |                  |
|              | 43                    | 57   |                 | 0.00 ~ 300.00°C    |                  |
|              | 44                    | 58   |                 | 0.0 ~ 500.0°C      |                  |

| Input type   |              | Code | Measuring range |  |
|--------------|--------------|------|-----------------|--|
| Voltage (mV) | -10 ~ 10mV   | 71   |                 | Initial value: 0.0~100.0<br>Measuring range may be arbitrarily set within following range by scaling function.   |
|              | 0 ~ 10mV     | 72   |                 |  |
|              | 0 ~ 20mV     | 73   |                 |  |
|              | 0 ~ 50mV     | 74   |                 |  |
|              | 10 ~ 50mV    | 75   |                 |  |
|              | 0 ~ 100mV    | 76   |                 |  |
|              | -100 ~ 100mV | 77   |                 |  |
| Voltage (V)  | -1 ~ 1V      | 81   |                 | Scaling range: -19999~30000 counts<br>Span: 10~30000 counts<br>Lower limit value < Higher limit value<br>Decimal alignment: None,<br>decimal positions: 1, 2, 3 or 4 |
|              | 0 ~ 1V       | 82   |                 |  |
|              | 0 ~ 2V       | 83   |                 |  |
|              | 0 ~ 5V       | 84   |                 |  |
|              | 1 ~ 5V       | 85   |                 |  |
|              | 0 ~ 10V      | 86   |                 |  |
|              | -10 ~ 10V    | 87   |                 |  |
| Current (mA) | 0 ~ 20mA     | 84   |                 | *If you use this with current input, please attach external shunt resistor with 250Ω.  |
|              | 4 ~ 20mA     | 85   |                 |  |

Note: Minimal decimal is selectable.

Note:

- \*1. Thermocouple B: Accuracy not guaranteed for temperatures below 400 °C
- \*2. Thermocouple K, T: Accuracy = ± (0.5% FS+1 digit) for -100 °C or lower temperature
- \*3. Thermocouple PR40-20: Accuracy = ± (0.3% FS +1 °C)
- \*4. Thermocouple K: 10.0~30.0 K: Accuracy = ± (0.75% FS +1 K)  
30.0~70.0 K: Accuracy = ± (0.30% FS +1 K)  
70.0~350.0 K: Accuracy = ± (0.25% FS +1 K)
- \*5. Thermocouple Gold and Iron/Chromel: Accuracy = ± (0.25% FS +1 K)
- \*6. For JPt100, set to -200.0~500.0 °C.
- \*7. When exceeding higher limit at 30.000 °C, indicated as scaleover.
- \*8. When exceeding higher limit at 300.00 °C, indicated as scaleover.

Note: Unless otherwise specified, the measuring range will be set as listed below during the shipment from the factory

| Input        | Standard/Rating | Measuring range |
|--------------|-----------------|-----------------|
| Thermocouple | JIS K           | 0.0~800.0 °C    |

**Warning**

•The SR23 series is designed for the control of temperature, humidity and other physical values of general industrial equipment. (It is not to be used for any control purpose when a serious potential effect may result on human life or safety.)

**Caution**

• If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble