

**EC5700R****Digital Indicating Controller****OUTLINE**

Model EC5700R Digital Indicating Controller has a large-sized display excellent in visibility. Since it is a light guide system, it is clear also outdoors. And dial setting is fulfilled easy operation. In addition, self-tuning is equipped standardly. PID, gapped PID or heat/cool control are available as control functions. As described above, the EC5700R 1/8DIN controller is applicable to a broad use.

**FEATURES**

- Extra-large digital display
- Auto-Tuning, Self-Tuning provided as standard
- Full Multi-Input (Thermocouple, RTD, voltage or current)
- High-speed control cycle of 50ms
- Scaling Range of -19999 to 19999
- Multi- Output (Selective)
- 4 Alarm Output
- RS-232C,RS- 422A (RS-485)Communication Interface
- Easy Replace from EC5700A

**SPECIFICATIONS**

**Input range:** Full multi-range, refer to Range table  
**Display:** 7-segment LED, process variable(PV)/ green, set point(SP) & output/ orange  
**Sampling Rate:** 50ms  
**Scaling:** -19999 to 19999 with mV, V & mA ranges  
**Set point:** Front panel (local) or remote (optional)  
**Set point bias:**  $\pm 20\%$  available with remote set point  
**Set point tracking:** Remote to local  
**Set point limiter:** 0~100% with TC & RTD input ranges  
**Multi set point:** Up to 8 set points  
**Sensor correction:**  $\pm 100^{\circ}\text{C}$  with TC & RTD input ranges  
**Set point ramping:** 0.01 ~ 650.0 unit/min. Unit  $^{\circ}\text{C}$  or %  
**Control:** PID, gapped PID, PD, 3-position (dual output) or ON/OFF  
**Proportional band:** 0.1 ~ 999.9%  
**Integral (reset):** 0.01 ~ 99.99 min.  
**Derivative (rate):** 0 ~ 20.00 min.  
**Manual reset:** 0 ~ 100%, PD control mode only  
**Dead band:**  $\pm (0 \sim 0.500)$ , heat/cool control mode  
**Hysteresis:** 0.00 ~ 20.00% , ON/OFF control mode  
**PID adjustment:** Independent on each set point  
**Programmed PID:** 8 PID parameters can be selected automatically to optional remote set point  
**PID tuning:** Selectable Auto tuning or Self tuning  
**Output:** Selectable output from among  
 Relay; a-contact, 250VAC, 3A resistive load  
 SSR Drive; 15VDC, 20mA max.  
 Current; 4 ~ 20mA/600 $\Omega$  or 0 ~ 5mA/2k $\Omega$

**Dual output:** Any combination from among relay, SSR drive and current output  
**Auto/Manual:** Balance less bump less transfer  
**Output limiter:** 0 ~ 100%  
**Direct/Reverse:** Selectable, reverse in Dual output model  
**Cycle time:** 1 ~ 120 sec., relay and SSR drive output  
**RUN/STOP:** Controller enable/disabled  
**Preset manual:** 0 ~ 100%, available when controller disabled  
**Alarm:** 4 set point process variable or deviation alarm  
 Alarm set point: Process variable alarm, 0 ~ 100% of range, deviation alarm,  $\pm 100\%$  of range  
 Hysteresis: 0 ~ 100% adjustable within the range  
 Alarm on delay timer: 0 ~ 600 sec.  
**Nos. of output relays:** 4 relays, driven from among each alarm and controller status(2 relays are optional)  
**Relay rating:** a-contact, 250VAC 0.5A, resistive load, One side contact are common.  
**Status Output:** AUTO/MAN, RUN/STOP, Watchdog timer & Reach at set point (available on set point ramping)  
**Digital input:** 4 input for set point selection, PID parameter selection, AUTO/MAN switching, Remote /Local switching, or RUN/STOP switching, Non-voltage contact input 15VDC 1mA  
**Memory backup:** Non-volatile RAM(Fe-RAM)

**Interface:** 300 ~ 9600 bps, ZE7101A0111 and ZE7101B0409 allow direct connection of RS-232C and RS-422A (RS-485) to the controller respectively

**Power Supply:** Voltage rating at 100 to 240 VAC, 50/60Hz

**Power consumption:** Approx. 6VA/100VAC, 10VA/200VAC

**Mass:** Approx. 450g

**Operating temperature range:** -10 ~ 55°C

## PERFORMANCE

**Accuracy:**  $\pm (0.1\% + 1 \text{ digit})$  max., refer to Range Accuracy Table

**Source impedance effects:** Approx.  $0.13\mu\text{V}/\Omega$  at TC & mV ranges, RTD lead wire  $5\Omega$  max.

**Input impedance:** Approx.  $250\Omega/4 \sim 20\text{mA}$ , Approx.  $500\text{k}\Omega/\text{Volt}$  input

**CMRR:** 140dB min.

**NMRR:** 60dB min.

## OPTION

**Analog retransmission:** 0 ~ 20mA or 4 ~ 20 mA selectable for process variable, set point or output, accuracy  $\pm 0.25\%$ , resolution 0.05% max., load  $600\Omega$  max.

**Isolated remote set point:** 1 ~ 5 VDC or 0 ~ 5VDC, Approx.  $500\text{k}\Omega$  input impedance

## RANGE AND ACCURACY TABLE

| INPUT               | CODE     | ACCURACY                           | REMARKS                                      |
|---------------------|----------|------------------------------------|--|
| B                   | b *1     |                                    | *1   |
| R                   | r1 *2    |                                    | 0 ~ 400°C $\pm 4\%$                          |
| R                   | r2 *2    |                                    | 400 ~ 800°C $\pm (0.15\% + 1 \text{ digit})$ |
| S                   | S *2     |                                    |  |
| K                   | k1       |                                    | *2   |
| K                   | k2       | $\pm (0.1\% + 1 \text{ digit})$ ,  | 0 ~ 200°C $\pm (0.15\% + 1 \text{ digit})$   |
| K                   | k3       | $\pm (0.15\% + 1 \text{ digit})$ , |  |
| E                   | E        | with in -200 to 0°C                | *3   |
| J                   | J1       |                                    | -270 ~ 200°C $\pm (1\% + 1 \text{ digit})$   |
| J                   | J2       |                                    |  |
| T                   | t *3     |                                    |  |
| WRe <sub>5-26</sub> | C        |                                    |  |
| N                   | n        |                                    | *4   |
| PLII                | PL       |                                    | 0 ~ 20K $\pm (0.5\% + 1 \text{ digit})$      |
| U                   | U        |                                    | 20 ~ 50K $\pm (0.3\% + 1 \text{ digit})$     |
| L                   | L        |                                    | *5   |
| Au-Fe               | AUFE *4  | $\pm (0.2\% + 1 \text{ digit})$    | 0 ~ 300°C $\pm (1.5\% + 1 \text{ digit})$    |
| PR <sub>40-20</sub> | Pr *5    |                                    | 300 ~ 800°C $\pm (0.8\% + 1 \text{ digit})$  |
| Pt100               | Pt0 JPt0 | $\pm (0.1\% + 1 \text{ digit})$    |  |
| JPt100              | Pt1 JPt1 |                                    |  |
|                     | Pt2 JPt2 | $\pm (0.15\% + 1 \text{ digit})$   |  |

Reference-junction compensation error:

$\pm 1^\circ\text{C}$  (15 ~ 35°C)

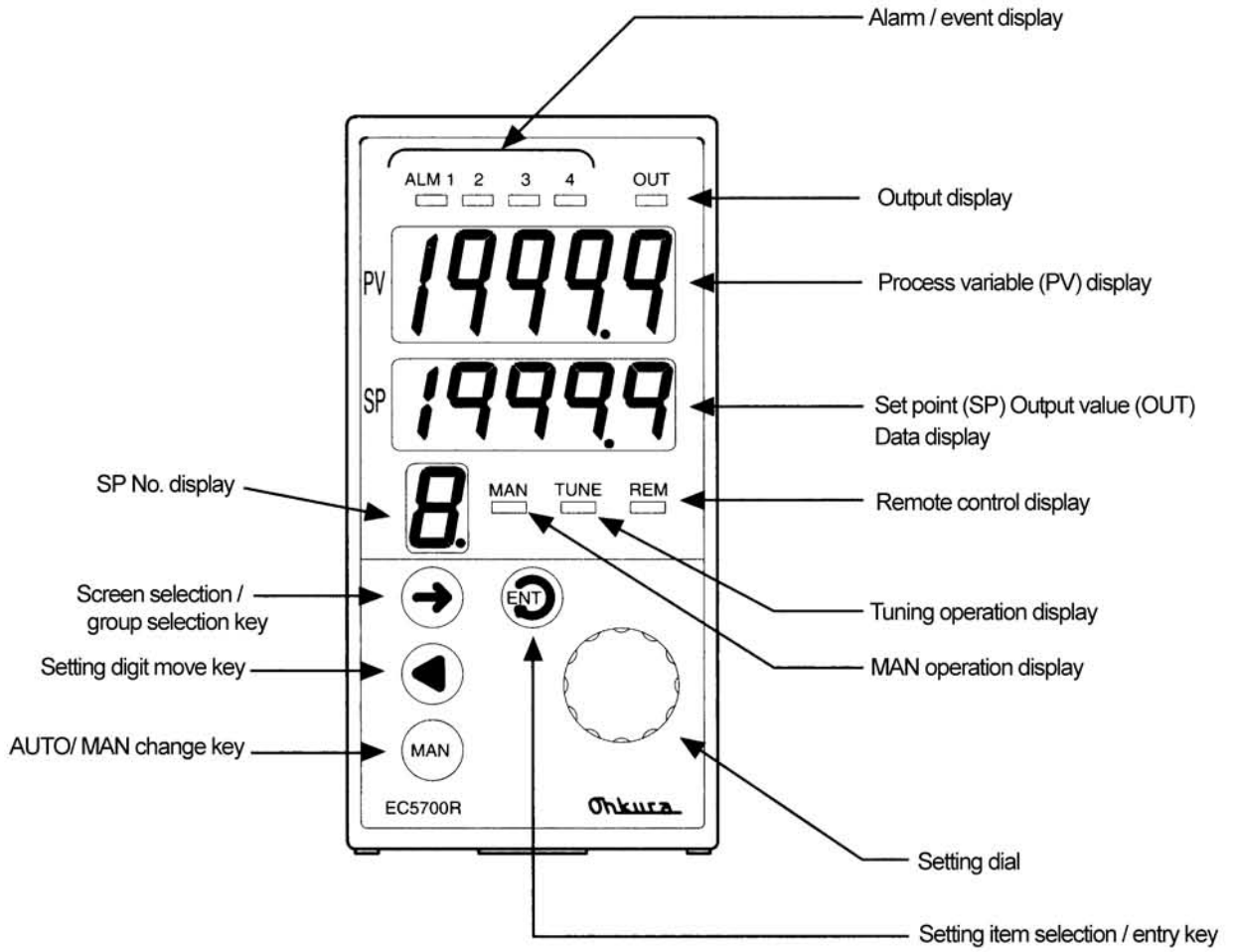
$\pm 1.5^\circ\text{C}$  (0 ~ 15°C, 35 ~ 55°C)

$\pm 2^\circ\text{C}$  (-10 ~ 0°C)

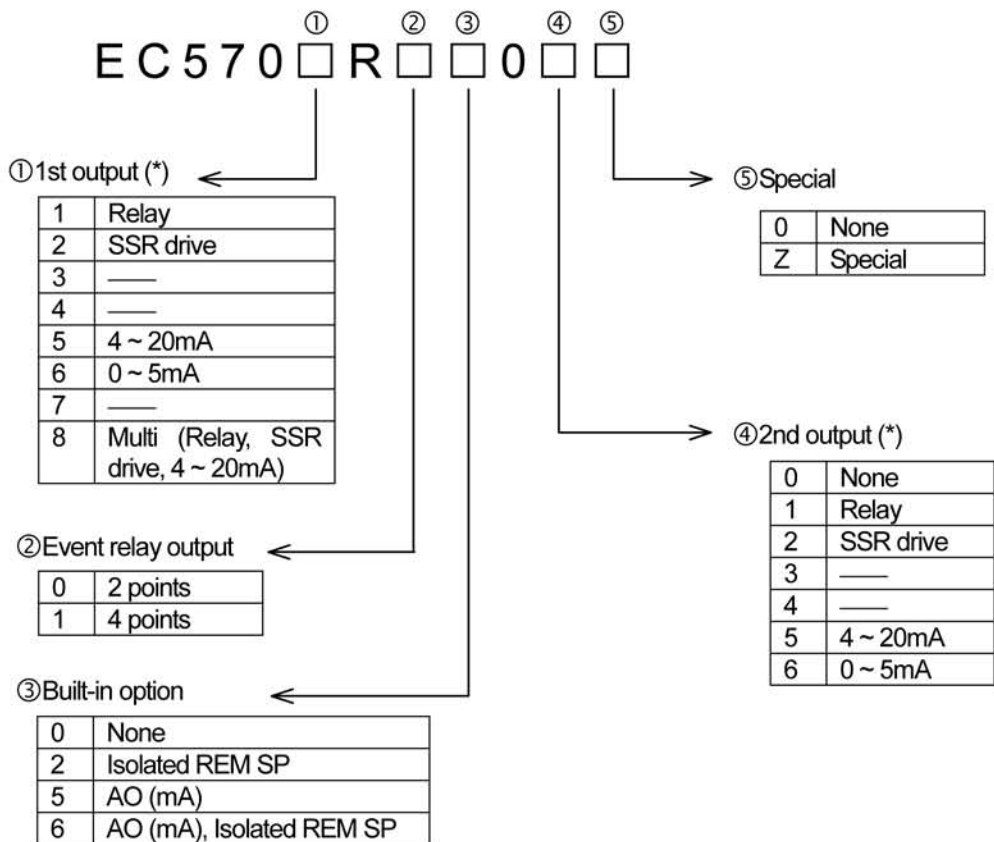
## RANGE TABLE

| INPUT    | CODE | RANGE              |
|----------|------|--------------------|
| B        | b    | 0.0 ~ 1820.0°C     |
| R        | r1   | 0.0 ~ 1760.0°C     |
| R        | r2   | 0.0 ~ 1200.0°C     |
| S        | S    | 0.0 ~ 1760.0°C     |
| K        | k1   | -200.0 ~ 1370.0°C  |
| K        | k2   | 0.0 ~ 600.0°C      |
| K        | k3   | -200.0 ~ 700.0°C   |
| E        | E    | -200.0 ~ 900.0°C   |
| J        | J1   | -200.0 ~ 400.0°C   |
| J        | J2   | -270.0 ~ 400.0°C   |
| T        | t    | 0.0 ~ 2320°C       |
| W Re5-26 | C    | 0.0 ~ 1300.0°C     |
| N        | n    | 0.0 ~ 1880.0°C     |
| PR40-20  | Pr   | 0.0 ~ 1390.0°C     |
| PLII     | PL   | -200.0 ~ 400.0°C   |
| U        | U    | 0.0 ~ 300.0K       |
| L        | L    | 0.0 ~ 10.0mV       |
| Au-Fe    | AUFE | 0.0 ~ 20.0mV       |
| mV       | 10   | 0.0 ~ 50.0mV       |
| mV       | 20   | 1.0 ~ 5.0V         |
| mV       | 50   | 0.0 ~ 5.0V         |
| V        | 1-5  | 0.0 ~ 10.0V        |
| V        | 0-5  | 4.0 ~ 20.0mA       |
| V        | 0-10 |                    |
| mA       | mA   |                    |
| Pt100    | Pt0  | -200.0 ~ 850.0°C   |
| Pt100    | Pt1  | -200.0 ~ 300.0°C   |
| Pt100    | Pt2  | -150.00 ~ 150.00°C |
| JPt100   | JPt0 | -200.0 ~ 650.0°C   |
| JPt100   | JPt1 | -200.0 ~ 300.0°C   |
| JPt100   | JPt2 | -150.00 ~ 150.00°C |

# PART NAMES AND FUNCTIONS



# MODEL CODE NUMBER



\*Designating 1st output, 2nd output

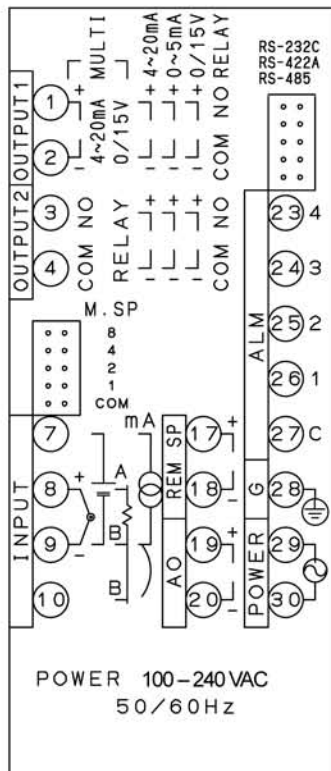
| Output type           | 1st output           | 2nd output           |
|-----------------------|----------------------|----------------------|
| Single output multi   | 8                    | 0                    |
| Single output 0 ~ 5mA | 6                    | 0                    |
| Dual output           | One of 1, 2, 5 and 6 | One of 1, 2, 5 and 6 |

# DEFAULT SETTINGS

Default setting at the shipment from the factory.

|                 | Function                          | Initial value                             |
|-----------------|-----------------------------------|---|
| Display / Input | Input range, scale                | k1, -200.0 ~ 1370.0°C                     |
|                 | PV abnormal high limit value      | 1401.4°C                                  |
|                 | PV abnormal low limit value       | -231.4°C                                  |
|                 | Key lock                          | OFF                                       |
|                 | Sensor correction                 | 0.0°C                                     |
|                 | First order lag filter            | 0 seconds                                 |
|                 | Number of moving average          | 8 times                                   |
| Control         | Control mode                      | PID control                               |
|                 | Direct / reverse action           | Reverse action                            |
|                 | Preset output                     | OFF                                       |
|                 | PV start                          | OFF                                       |
| Alarm           | Alarm1                            | Deviation High limit alarm : 1570.0°C     |
|                 | Alarm2                            | Deviation Low limit alarm : -1570.0°C     |
|                 | Alarm3 (only display at standard) | Deviation absolute value alarm : 1570.0°C |
|                 | Alarm4 (only display at standard) | Fail output                               |
|                 | Pause alarm                       | OFF                                       |
|                 | Hysteresis width                  | 0°C                                       |
|                 | ON delay timer                    | 0 seconds                                 |
| Digital input   | DI assignment                     | All points SP/PID change                  |
|                 | DI function                       | SP change                                 |
| communication   | Communication select              | Original                                  |
|                 | Transmission speed                | 9600bps                                   |
|                 | Address                           | 0   |

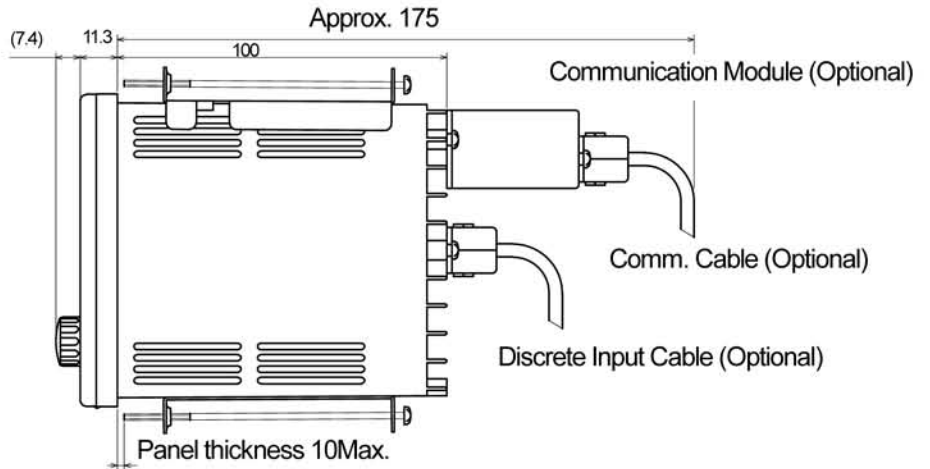
# TERMINAL CONFIGURATION



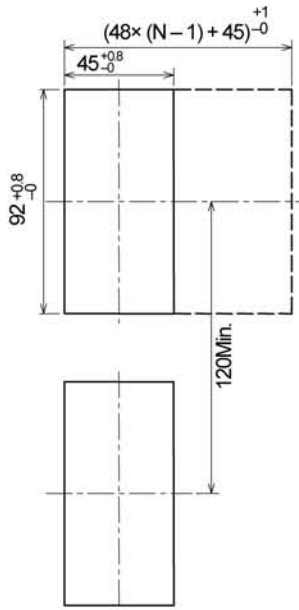
Some terminals do not function according as the model.

## DIMENSIONS

(Unit: mm)



## PANEL CUTOUT



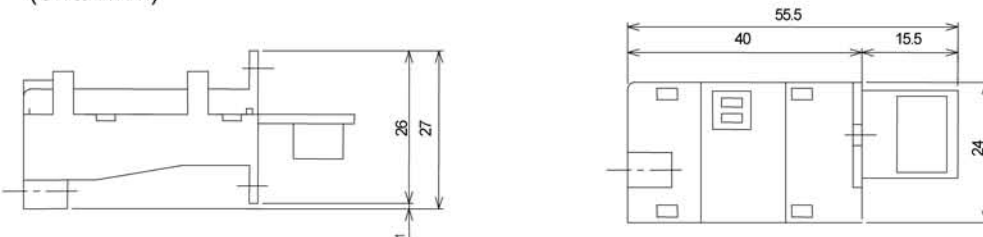
When mounting N units

## PERIPHERAL UNIT

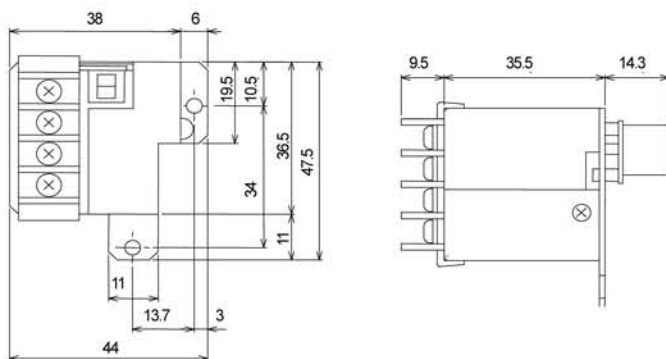
### ●Communication module

| Item | Type           | Model       | Remarks   |
|------|----------------|-------------|---|
| 1    | RS-232C        | ZE7101A0111 |   |
| 2    | RS-422A/RS-485 | ZE7101B0409 | Terminal block type<br>Up to 31 sets can be connected to Host |

RS-232C Module  
(Units : mm)



RS-422A/RS-485 Module  
(Units : mm)



●Communication Cable

- RS-232C : Model : HMSU2255B02 Cable for EC5700R use, Length 2m with D-sub connector (male)
- RS-422A : Model : WMSU0075A01
- RS-485 : Model : WMSU0075A02

●Multi-Set point Selector

Model : ZE3301

Output: Binary and decimal code

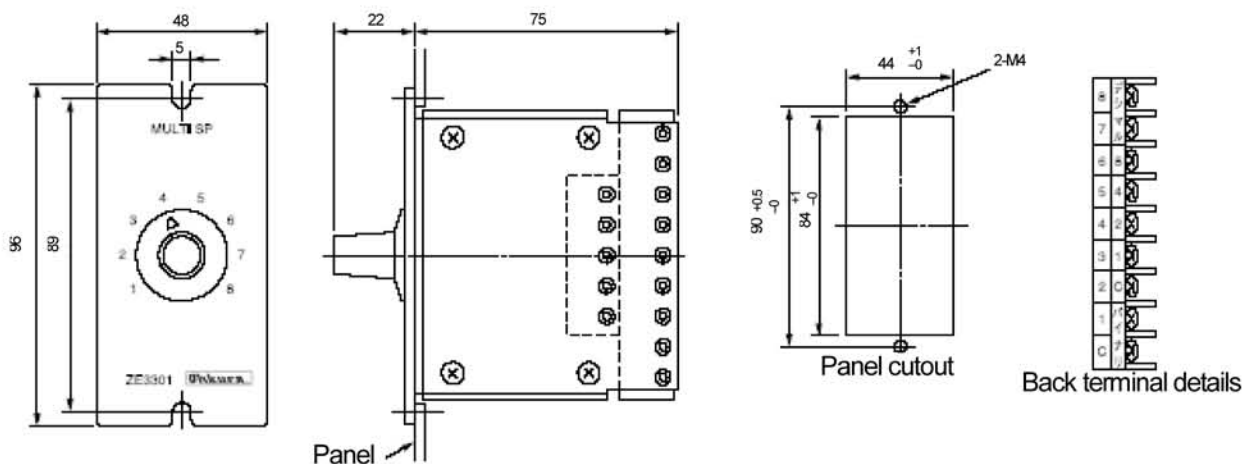
Binary for EC5700R multi set point input

Decimal for customer instrument

Output contact rating: 30VDC, 1A, 1VA max.

Cable: HMSU2695A01, 1m

HMSU2695A02, 5m



●External Resistor

Model : HMSU3081A02

Resistance : 250Ω ± 0.1%

 **CAUTION**

Do not install this device before consulting instruction manual

Specifications are subject to change without notice.

For further information, a quotation or a demonstration please contact to:

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