

# EC5500R

# Digital Indicating Controller

## OUTLINE

Model EC5500R 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 as a standard. PID, gapped PID, heat/cool control or servo PID are available as control functions. As described above, the EC5500R 1/4DIN 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)
- Scaling Range of -1999 to 9999
- Multi- Output (Selective)
- 4 Alarm Output
- RS-232C, RS-422A (RS-485) Communication Interface
- Easy Replace from EC5500S



## 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:** 250ms

**Scaling:** -1999 to 9999 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:**  $\pm (0\sim0.500)$ , 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 $\Omega$

**Servo drive output:** Option

**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, ZE7101A0110 and ZE7101B0408 allow direct connection of RS-232C and RS-422A (RS-485) to the controller respectively

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

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

**Mass:** Approx. 500g

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

### PERFORMANCE

**Accuracy:**  $\pm (0.25\% + 1 \text{ digit})$  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.  $250\Omega/4\text{-}20\text{mA}$ , 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

**ARCNET® :** Token passing LAN, 2.5Mbps, 20 nodes/network, 255 nodes max.

### RANGE AND ACCURACY TABLE

INPUT	CODE	ACCURACY	REMARKS
B	b *1		*1
R	r1 *2		0 ~ 400°C $\pm 5\%$
R	r2 *2		400 ~ 800°C $\pm (0.35\% + 1 \text{ digit})$
S	S *2		
K	k1		*2
K	k2	$\pm (0.25\% + 1 \text{ digit})$ ,	0 ~ 200 °C $\pm (0.35\% + 1 \text{ digit})$
K	k3	$\pm (0.3\% + 1 \text{ digit})$ ,	
E	E	with in -200 to 0°C	*3
J	J1		0 ~ 20K $\pm (0.8\% + 1 \text{ digit})$
J	J2		20 ~ 50K $\pm (0.5\% + 1 \text{ digit})$
T	t		*4
WRe <sub>5-26</sub>	C		0 ~ 300°C $\pm (2\% + 1 \text{ digit})$
N	n		300 ~ 800°C $\pm (0.8\% + 1 \text{ digit})$
PLII	PL		
U	U		
L	L		
Au-Fe	AUFE *3	$\pm (0.5\% + 1 \text{ digit})$	
PR <sub>40-20</sub>	Pr *4		
Pt100	Pt0 JPt0	$\pm (0.25\% + 1 \text{ digit})$	
JPt100	Pt1 JPt1		
	Pt2 JPt2	$\pm (0.35\% + 1 \text{ digit})$	

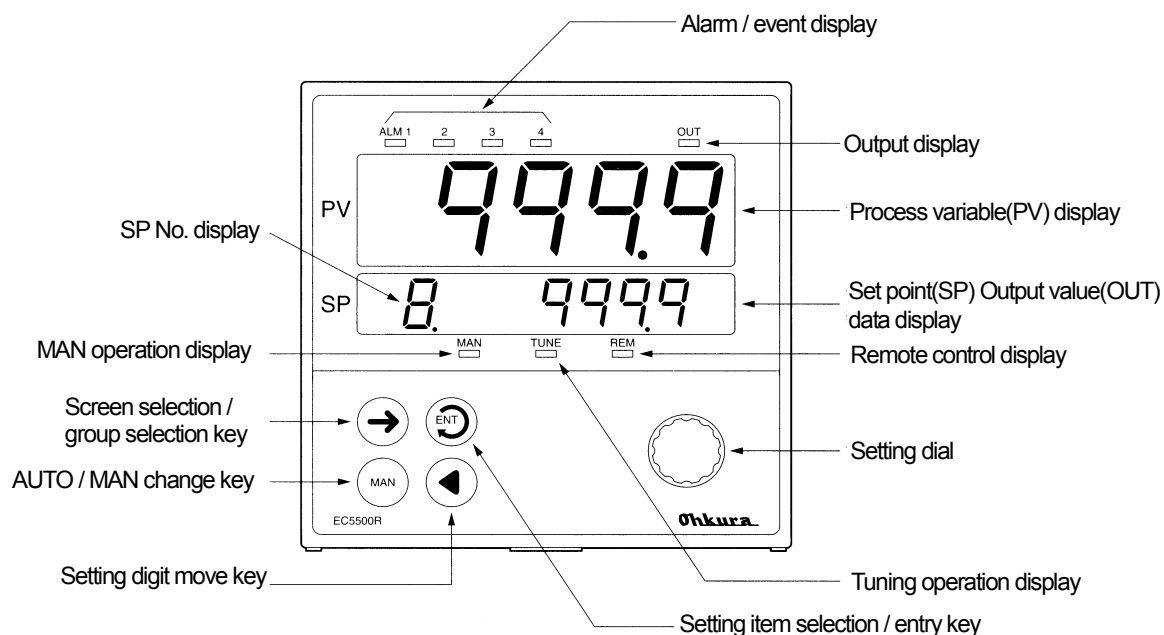
Reference-junction compensation error:

- $\pm 1^\circ\text{C}$  (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 ~ 1820°C
R	r1	0 ~ 1760°C
R	r2	0 ~ 1200°C
S	S	0 ~ 1760°C
K	k1	-200 ~ 1370°C
K	k2	0.0 ~ 600.0°C
K	k3	-199.9 ~ 300.0°C
E	E	-199.9 ~ 700.0°C
J	J1	-199.9 ~ 900.0°C
J	J2	-199.9 ~ 400.0°C
T	t	-199.9 ~ 400.0°C
W Re5-26	C	0 ~ 2320°C
N	n	0 ~ 1300°C
PR40-20	Pr	0 ~ 1880°C
PLII	PL	0 ~ 1390°C
U	U	-199.9 ~ 400.0°C
L	L	-199.9 ~ 900.0°C
Au-Fe	AUFE	0.0 ~ 300.0K
mV	10	0.0 ~ $\pm 10.0\text{mV}$
mV	20	0.0 ~ 20.0mV
mV	50	0.0 ~ 50.0mV
V	1-5	1.0 ~ 5.0V
V	0-5	0.0 ~ 5.0V
V	0-10	0.0 ~ 10.0V
mA	mA	4.0 ~ 20.0mA
Pt100	Pt0	-199.9 ~ 850.0°C
Pt100	Pt1	-199.9 ~ 300.0°C
Pt100	Pt2	-150.0 ~ 150.0°C
JPt100	JPt0	-199.9 ~ 650.0°C
JPt100	JPt1	-199.9 ~ 300.0°C
JPt100	JPt2	-150.0 ~ 150.0°C

## PART NAMES AND FUNCTIONS



## MODEL CODE NUMBER

EC550 <sup>①</sup> ☐ R <sup>②</sup> ☐ <sup>③</sup> ☐ <sup>④</sup> ☐ <sup>⑤</sup> ☐ <sup>⑥</sup> ☐

① 1st output (\*)

1	Relay
2	SSR drive
3	—
4	—
5	4 ~ 20mA
6	0 ~ 5mA
7	—
8	Multi (Relay, SSR drive, 4 ~ 20mA)

② Event relay output

0	2 points
1	4 points

③ Built-in option

0	None
2	Isolated REM SP
5	AO (mA)
6	AO (mA), Isolated REM SP

④ Expanded option(\*)

0	None
1	ARCNET®
2	Servo drive
3	ARCNET®, Servo drive

⑥ Special

0	None
Z	Special

⑤ 2nd output(\*)

0	None
1	Relay
2	SSR drive
3	—
4	—
5	4 ~ 20mA
6	0 ~ 5mA

\*Designating 1st output, 2nd output and servo drive

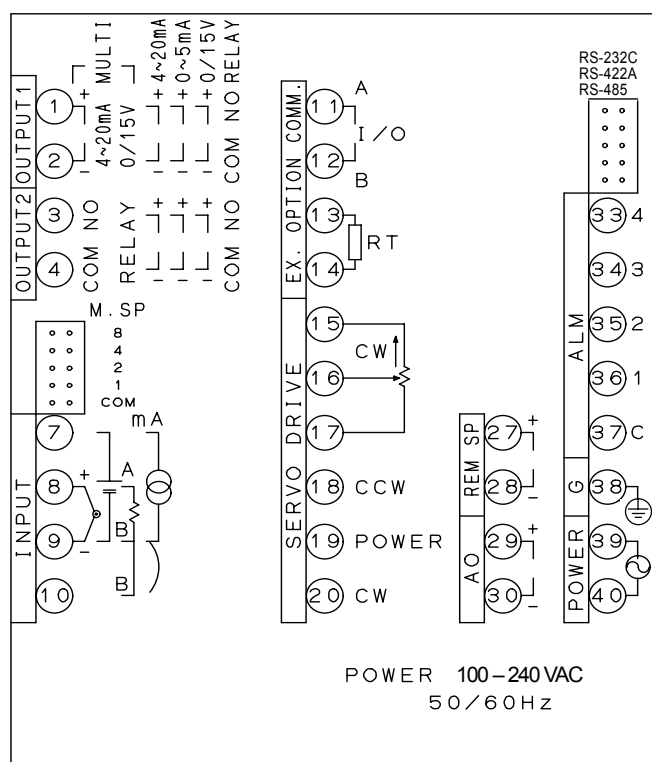
Output type	1st output	2nd output
Single output multi	8	0
Single output 0 ~ 5mA	6	0
Dual output	One of 1, 2, 5 and 6	One of 1, 2, 5 and 6
Servo drive	8	0

## DEFAULT SETTINGS

Default setting at the shipment from the factory.

	Function	Initial value
Display / Input	Input range, scale	k1, -200 ~ 1370°C
	PV abnormal high limit value	1401°C
	PV abnormal low limit value	-231°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°C
	Alarm2	Deviation Low limit alarm :-1570°C
	Alarm3 (only display at standard)	Deviation absolute value alarm :1570°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

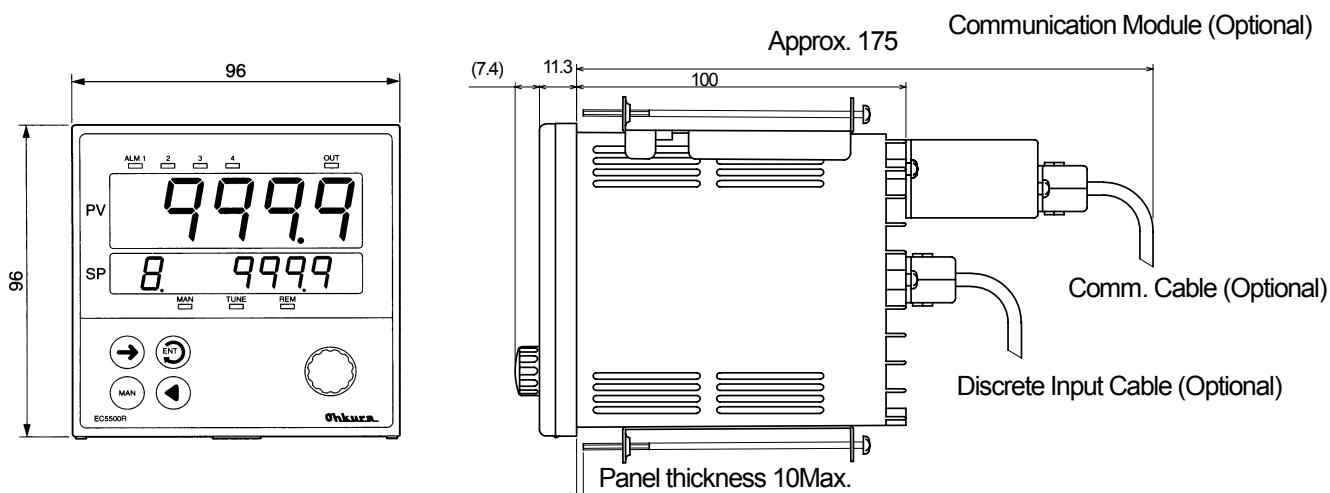
## TERMINAL CONFIGURATION



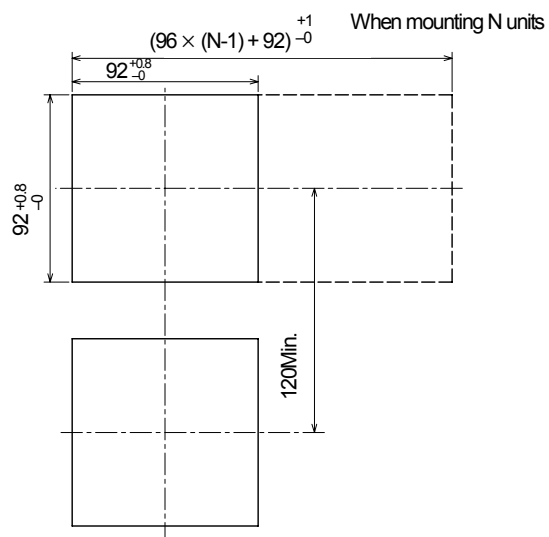
Some terminals do not function according as the model.

## DIMENSIONS

(Unit: mm)



## PANEL CUTOUT

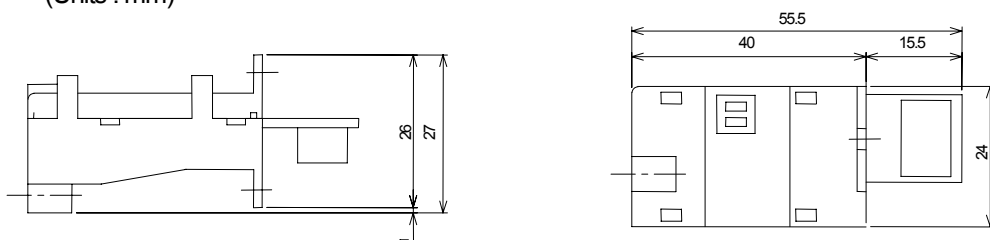


## PERIPHERAL UNIT

### ●Communication module

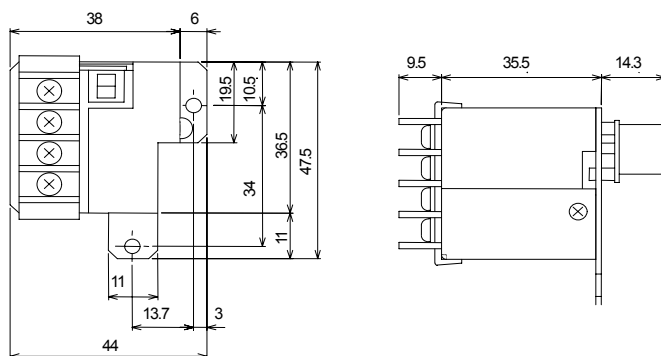
Item	Type	Model	Remarks
1	RS-232C	ZE7101A0110	
2	RS-422A/RS-485	ZE7101B0408	Terminal block type Up to 31 sets can be connected to Host

RS-232C Module  
(Units : mm)



## RS-422A/RS-485 Module

(Units : mm)



### ●Communication Cable

RS-232C : Model : HMSU2255B02 Cable for EC5500R use, Length 2m with D-Sub connector (male)  
 RS-422A : Model : WMSU0075A01  
 RS-485 : Model : WMSU0075A02

### ●Heater Monitoring Unit (Use for expanded option ARCNET®)

Model : ZE7201

### ●Multi-Set point Selector

Model : ZE3301

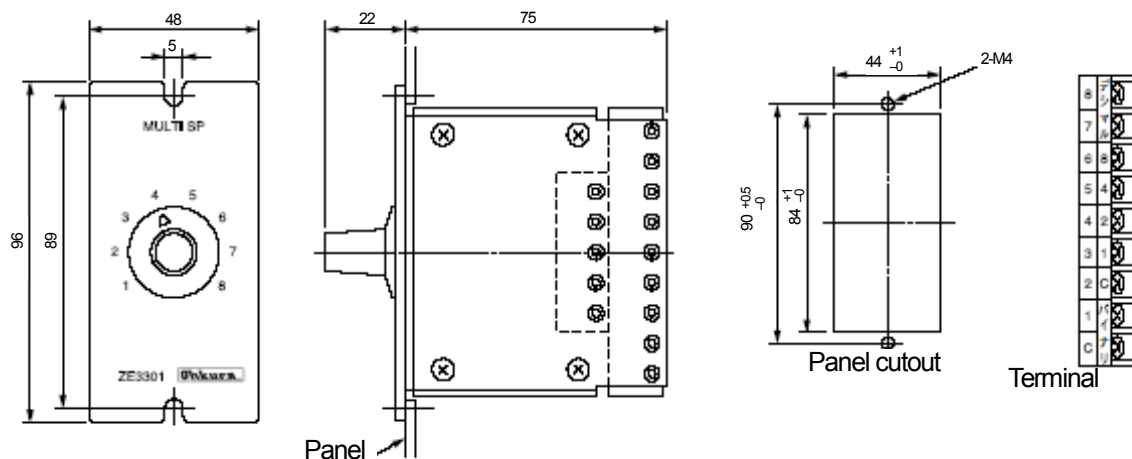
Output: Binary and decimal code

Binary for EC5500R 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%

\*ARCNET® is the registered trademark of the U.S. DATA POINT.