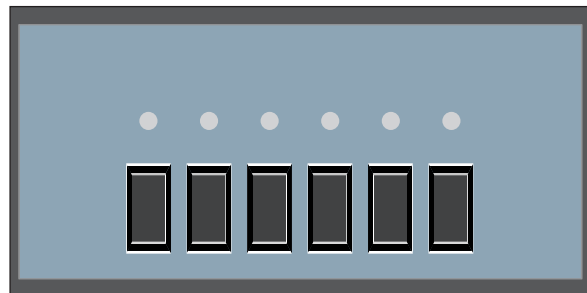
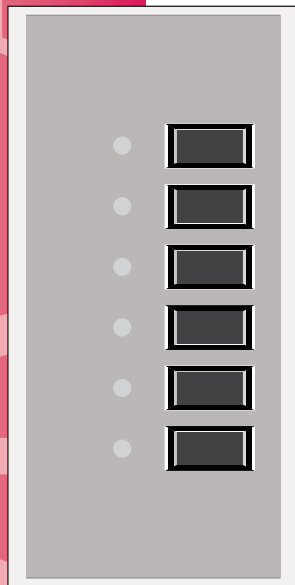


# INDICATOR



## AE500 DIGITAL INDICATOR



# AE500

## DIGITAL INDICATOR



- ★ Easy-to-see large size LED
- ★ 4 points of alarm can be added
- ★ Optional digital communications

### Specifications

#### ★ Input

- (1) Input : a) Thermocouple: K, J, E, T, R, S, B, N(JIS/IEC), U, L(DIN), PLII(NBS), W5Re/W26Re(ASM)  
\*Input impedance : Approx. 1MΩ  
b) RTD : Pt100(JIS/IEC), JPt100(JIS)  
c) Voltage input: 0 to 5V DC, 1 to 5V DC  
d) Current input: 0 to 20mA DC, 4 to 20mA DC  
\*A resistor of 250Ω is to be connected externally.
- (2) Sampling cycle : 0.5 sec.
- (3) Influence of external resistance: Approx. 0.2μV/Ω (Thermocouple)
- (4) Influence of input lead : Approx. 0.01%/Ω of reading but up to 10Ω per wire maximum
- (5) Action at input break : a) Thermocouple: Up scale  
b) RTD : Up scale  
c) Voltage, current input : Down scale  
\* Alarm output is ON.  
\* When "0 to 5V DC" and "0 to 20mA DC" input, value around zero.
- (6) Action at input short circuit: Down scale (RTD)  
\* Alarm output is ON.
- (7) PV bias : a) -1999 to 9999°C (Temperature)  
b) - span to + span (Voltage, current input)

#### ★ Digital communications (option)

- (1) Communication method : RS-485 (2 wire)  
(2) Synchronous method : Start/stop synchronous type  
(3) Communication speed : 2400bps, 4800bps, 9600bps, 19200bps  
(4) Bit format : Start bit : 1  
Data bit : 7 or 8  
Parity bit : "with" or "without", even or odd in case of "with" parity  
Stop bit : 1 or 2  
(5) Maximum connection : 31 (Address can be set from 0 to 99.)

#### ★ Analog output (option)

- (1) Number of output : 1 point  
(2) Output signal : 0 to 20mA DC, 4 to 20mA DC (Load resistance : less than 600Ω)  
(3) Output scaling : Available for high and low limit.  
(4) Output resolution : More than 10bit  
\* This option is not available when alarm 3 is specified.

#### ★ Dustproof and waterproof (option)

- Dustproof and waterproof protection : IP65  
\* Dustproof and waterproof are effective only to the front direction when installed on a panel.  
\* Dustproof and waterproof are not effective when indicators are closely mounted.

#### ★ General specifications

- (1) Supply voltage : a) AC type : 85 to 264V AC (50/60Hz common)  
(Including supply voltage variation) (Rating : 100 to 240V AC)  
b) 24V AC type : 21.6 to 26.4V AC (50/60Hz common)  
(Including supply voltage variation) (Rating : 24V AC)  
c) 24V DC type : 21.6 to 26.4V DC  
(Including supply voltage variation) (Rating : 24V DC)
- (2) Power consumption : a) AC type : Maximum 7VA at 100V  
Maximum 10VA at 240V  
b) 24V AC type : Maximum 5VA  
c) 24V DC type : Maximum 160mA
- (3) Effect of power failure : Not affected by power failure less than 20 msec., otherwise reset to the initial status.
- (4) Memory backup : Backed up non-volatile memory. (Data retaining period : Approx. 10 years)
- (5) Ambient temperature : 0 to 50°C (32 to 122°F)
- (6) Ambient humidity : 45 to 85% RH
- (7) Weight and external dimensions : Approx. 250g, 48(H) x 96(W) x 100(D) mm (1/8 DIN)
- (8) Operating environment : Free from corrosive and flammable gas and dust.
- (9) Other conditions : Free from external noise, vibration, shock and exposure to direct sunlight.

#### ★ Performance

- (1) Measuring accuracy : a) ±(0.3% of display value + 1 digit) or ± 2°C  
whichever is larger (Thermocouple)  
\*Accuracy is not guaranteed between 0 and 399°C (0 and 800°F) for type R, S, and B input.  
\*Accuracy is not guaranteed between -199.9 and 100.0°C (-328 and 212°F) for type T, U input.  
b) ±(0.3% of display value + 1 digit) or ± 0.8°C  
whichever is larger (RTD)  
c) ±(0.3% of display value + 1 digit) (Voltage, current input)
- (2) Insulation resistance : More than 20MΩ (500V DC) between measured terminals and ground  
More than 20MΩ (500V DC) between power terminals and ground
- (3) Withstand voltage : 1000V AC for one minute between measured terminals and ground  
1500V AC for one minute between power terminals and ground

#### ★ Alarm function (option)

- (1) Number of output : 4 points  
(2) Alarm action : Process High, Low  
\* Hold action can be programmed.
- (3) Alarm differential gap : 0 to 100°C or 0.0 to 100.0°C (Temperature input)  
0.0 to 10.0% (Voltage, current input)
- (4) Alarm output : Alarm 1, 2 : Relay output, Form A contact 250V AC 1A (Resistive load)  
Alarm 3, 4 : Relay output, Form A contact 250V AC 3A (Resistive load)

#### ★ LED drive power supply for SP400/SP500 (option)

- (1) Output : 12V DC, +1V, -2V  
(2) Number of link : Max. 2 with the TF and 1 without TF. (TF: Transfer switch type)  
\* This option is not available when alarm 4 output is specified.



# ★ AE500 Model and Suffix Code

Specifications	Model and Suffix Code									
Model	AE500 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/> * <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> /Y									
Input and Range	See Input and Range Code Table <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>									
Power Supply	100 to 240V AC 24V AC/DC <input type="checkbox"/> 3 <input type="checkbox"/> 4									
Alarm 1	Not supplied See Alarm Code Table <input type="checkbox"/> N									
Alarm 2	Not supplied See Alarm Code Table <input type="checkbox"/> N									
Alarm 3 / Analog output	Not supplied See Alarm Code Table 0 to 20mA DC <input type="checkbox"/> N 4 to 20mA DC <input type="checkbox"/> 7 <input type="checkbox"/> 8									
Alarm 4 / LED drive power supply for SP400/SP500	Not supplied See Alarm Code Table LED drive power supply for SP400/SP500 <input type="checkbox"/> N <input type="checkbox"/> P									
Digital communications	Not supplied RS-485 <input type="checkbox"/> N <input type="checkbox"/> 5									
Waterproof and dustproof	Not supplied Waterproof and dustproof <input type="checkbox"/> N <input type="checkbox"/> 1									
Body color	Black White <input type="checkbox"/> A <input type="checkbox"/> N									
Instrument version	Version symbol <input type="checkbox"/> Y									

## ★ Alarm Code Table

Code	Specifications
H	Process High
J	Process Low
K	Process High with hold
L	Process Low with hold

## ★ Accessory

Name	Model code
Shunt resistor for DC current input	KD100-55

## ★ Input and Range Code Table

### Thermocouple input

Input	Code	Range
K (JIS/IEC)	K 01	0 to 200°C
	K 02	0 to 400°C
	K 03	0 to 600°C
	K 04	0 to 800°C
	K 05	0 to 1000°C
	K 06	0 to 1200°C
	K 07	0 to 1372°C
	K 13	0 to 100°C
	K 14	0 to 300°C
	K 17	0 to 450°C
	K 20	0 to 500°C
	K A1	0 to 800°F
	K A2	0 to 1600°F
	K A3	0 to 2502°F
K A9	20 to 70°F	
J (JIS/IEC)	J 01	0 to 200°C
	J 02	0 to 400°C
	J 03	0 to 600°C
	J 04	0 to 800°C
	J 05	0 to 1000°C
	J 06	0 to 1200°C
	J 10	0 to 450°C
	J A1	0 to 800°F
	J A2	0 to 1600°F
	J A3	0 to 2192°F
R #1 (JIS/IEC)	R 01	0 to 1600°C
	R 02	0 to 1769°C
	R 04	0 to 1350°C
	R A1	0 to 3200°F
R A2	0 to 3216°F	
S #1 (JIS/IEC)	S 01	0 to 1600°C
	S 02	0 to 1769°C
	S A1	0 to 3200°F
S A2	0 to 3216°F	
B #1 (JIS/IEC)	B 01	400 to 1800°C
	B 02	0 to 1820°C
	B A1	800 to 3200°F
B A2	0 to 3308°F	

Input	Code	Range
E (JIS/IEC)	E 01	0 to 800°C
	E 02	0 to 1000°C
	E A1	0 to 1600°F
E A2	E A2	0 to 1832°F
	N 01	0 to 1200°C
	N 02	0 to 1300°C
N (JIS/IEC)	N A1	0 to 2300°F
	N A2	0 to 2372°F
	T #2 (JIS/IEC)	T 01
T 02		-199.9 to 100.0°C
T 03		-100.0 to 200.0°C
T 04		0.0 to 350.0°C
T A1		-199.9 to 752.0°F
T A2		-100.0 to 200.0°F
T A3		-100.0 to 400.0°F
T A4		0.0 to 450.0°F
T A5		0.0 to 752.0°F
W5Re/W26Re (ASTM)		W 01
	W 02	0 to 2320°C
	W A1	0 to 4000°F
PLII (NBS)	A 01	0 to 1300°C
	A 02	0 to 1390°C
	A 03	0 to 1200°C
A A1	A A1	0 to 2400°F
	A A2	0 to 2534°F
	U #2 (DIN)	U 01
U 02		-199.9 to 100.0°C
U 03		0.0 to 400.0°C
U A1	U A1	-199.9 to 999.9°F
	U A2	-100.0 to 200.0°F
	U A3	0.0 to 999.9°F
L (DIN)	L 01	0 to 400°C
	L 02	0 to 800°C
	L A1	0 to 800°F
L A2	0 to 1600°F	

### RTD input

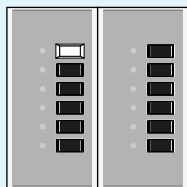
Input	Code	Range
Pt100 (JIS/IEC)	D 01	-199.9 to 649.0°C
	D 02	-199.9 to 200.0°C
	D 03	-100.0 to 50.0°C
	D 04	-100.0 to 100.0°C
	D 05	-100.0 to 200.0°C
	D 06	0.0 to 50.0°C
	D 07	0.0 to 100.0°C
	D 08	0.0 to 200.0°C
	D 09	0.0 to 300.0°C
	D 10	0.0 to 500.0°C
JPt100 (JIS)	D A1	-199.9 to 999.9°F
	D A2	-199.9 to 400.0°F
	D A3	-199.9 to 200.0°F
	D A4	-100.0 to 100.0°F
	D A5	-100.0 to 300.0°F
	D A6	0.0 to 100.0°F
	D A7	0.0 to 200.0°F
	D A8	0.0 to 400.0°F
	D A9	0.0 to 500.0°F
	P 01	-199.9 to 649.0°C
P 02	-199.9 to 200.0°C	
P 03	-100.0 to 50.0°C	
P 04	-100.0 to 100.0°C	
P 05	-100.0 to 200.0°C	
P 06	0.0 to 50.0°C	
P 07	0.0 to 100.0°C	
P 08	0.0 to 200.0°C	
P 09	0.0 to 300.0°C	
P 10	0.0 to 500.0°C	

### Voltage / Current DC input

Input	Code	Range
0 to 5V DC	4 : 01	0.0 to 100.0%
1 to 5V DC	6 : 01	0.0 to 100.0%
0 to 20mA DC	7 : 01	0.0 to 100.0% #3
4 to 20mA DC	8 : 01	0.0 to 100.0% #3

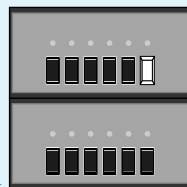
#1 : Accuracy is not guaranteed between 0 and 399°C (0 and 799°F).  
 #2 : Accuracy is not guaranteed between -199.9 and -100.0°C (-199.9 and -158.0°F).  
 #3 : A 250Ω resistor is externally connected at the input terminals.

## ★ SP400/SP500 input selector unit



# SP400

# SP500



### ◆ Input

Input type : Thermocouple K,J,E,T,R,S,B,N(JIS/IEC)  
 RTD Pt100(JIS/IEC),JPt100(JIS)  
 Voltage,current inputs 0 to 5V DC, 1 to 5V DC, 0 to 20mA DC, 4 to 20mA DC  
 Number of inputs: 6 points  
 5 points : Transfer switch type  
 Link method : Serial connecting transfer switch type  
 \*Maximum 3 units with the TF type and 1 unit non-TF type  
 Display : LED lights by the power supply from the indicator(AE500 option : 12V DC).

### ◆ Switch function

Switch life : 30 thousand operations (at 70mm/sec.)  
 Contact resistance: 15mΩ(initially), and less than 40Ω after 30 thousand operations.  
 Switching timing: Non-shooting.  
 Switching force : Less than 800g, within ± 30% of initial value after 30 thousand operations.

### ◆ General specifications

Weight : Approx.??g  
 Ambient temperature: 0 to 50°C [32 to 122°F]  
 Ambient humidity: 45 to 85% RH  
 Operating atmosphere: Free from corrosive and flammable gases and dust.  
 Other operating conditions : Free from external noise, vibration, shock and direct sunlight.

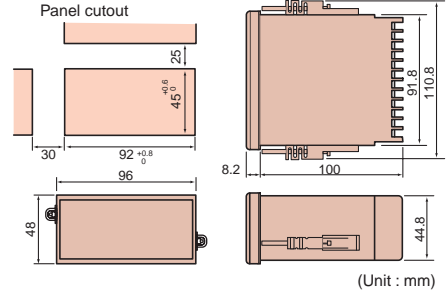
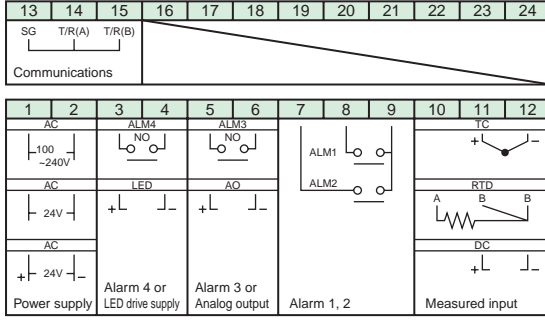
### ★ SP400/SP500 Model and Suffix Code

Specifications	Model and Suffix Code	
Model	SP400 SP500	
Input	Thermocouple : K Thermocouple : J Thermocouple : R Thermocouple : S Thermocouple : B Thermocouple : E Thermocouple : T Thermocouple : N RTD input Voltage/Current DC input	K J R S B E T N D V
Transfer switch	Not supplied With transfer switch	N T
Body color	Black White	A N

# ★ Rear terminals and External dimensions

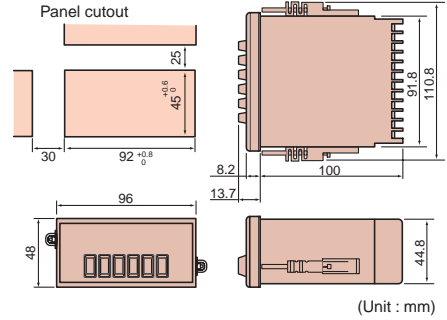
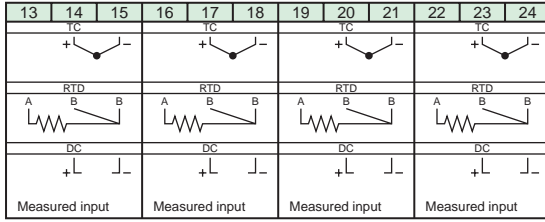
## AE500

13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12

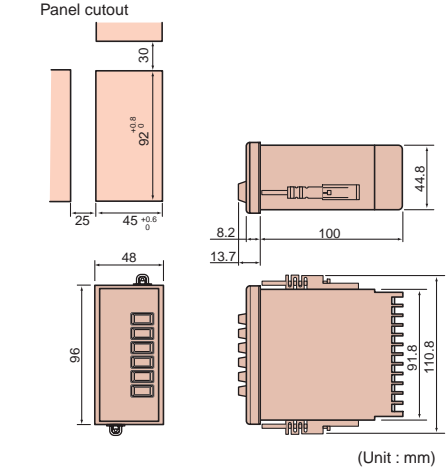
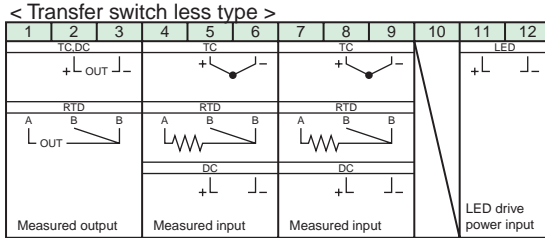


## SP400 / SP500

13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12

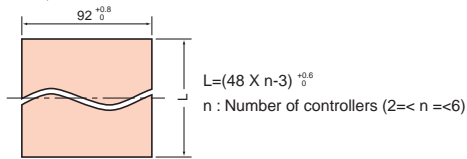


1	25	13
2	26	14
3	27	15
4	28	16
5	29	17
6	30	18
7	31	19
8	32	20
9	33	21
10	34	22
11	35	23
12	36	24

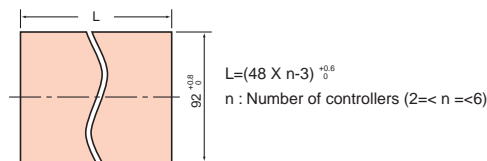


### Panel cutout for closely contacted mounting

#### AE500, SP500



#### SP400



- Before operating this product, read the instruction manual carefully to avoid incorrect operation.
- This product is intended for use with industrial machines, medical equipment test and measuring equipment. It is not designed for use with medical equipment.
- If it is possible that an accident may occur as a result of the failure of the product or some other abnormality, an appropriate independent protection device must be installed.
- When installing this product, avoid the following:
  - \* Direct exposure to sunlight.

- \* The ambient temperature is lower than 0°C degrees or higher than 50°C
- \* In areas subject to high humidity, Ambient humidity should not be lower than 45% or higher than 85%RH
- \* Direct contact with water.
- \* Corrosive environments.
- \* Hazardous areas containing explosive or flammable gases.
- \* Vibration or shock.
- \* Areas subject to electrical noise caused by inductive interference, static electricity or magnetic fields.

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