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Temperature Sensor
E52

CSM_E52_DS_E_21_5

A Wide Variety of High-precision Temperature Sensors

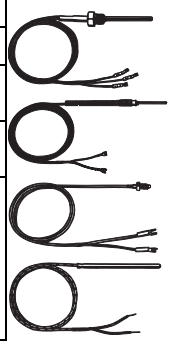
- Previous models with M3 screw connections have been joined by new models with ferrules to help reduce wiring work.
- A Temperature Sensor for Packaging Machines that accurately measures seal temperature has been added.
- The type, shape, length, and terminal shape can be selected to match the temperature to be measured, location, and environment.

⚠ Refer to *Safety Precautions for All Temperature Controllers.*

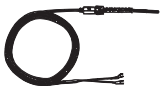
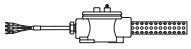
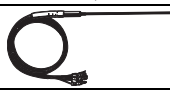
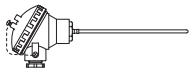
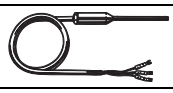
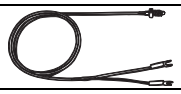
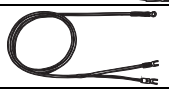
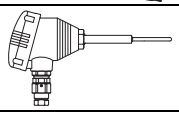
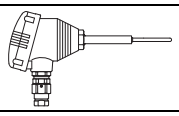
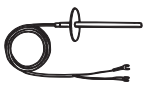
Ordering Information

■ List of Models (Temperature Sensors)

Classification	Description	Model and appearance	Temperature range (See note 3.)	Element type	Conductor type	Class	Protective tubing material	Terminal type	Page
General-purpose Models	Sheathed platinum resistance thermometer	E52-P□AY	–196°C to 450°C	Pt100	3-conductor system	B	SUS316	Exposed lead wires	5
		E52-P□C-N	–196°C to 450°C				ASTM316L	Enclosed terminals	6
		E52-P□B-N						Exposed terminals	
	Standard platinum resistance thermometer	E52-P□C-N	0°C to 450°C				SUS316	Enclosed terminals	7
	Sheathed thermocouple	E52-CA□AY E52-IC□AY	0°C to 900°C	K (CA) J (IC)	Non-grounded type	2 (0.75)	ASTM316L	Exposed lead wires	9 to 12
		E52-CA□B-N E52-IC□B-N						Exposed terminals	13
		E52-CA□C-N E52-IC□C-N						Enclosed terminals	
	Standard thermocouple	E52-CA□B-N E52-IC□B-N					SUS316	Exposed terminals	14
		E52-CA□C-N E52-IC□C-N						Enclosed terminals	15
		E52-PR□C-N	0°C to 1,400°C	R (PR)		2 (0.25)	JIS ceramic JIS special ceramic	Enclosed terminals	16
Low-cost Models	Low-cost platinum resistance thermometer	E52-P10AEY	0°C to 250°C	Pt100	3-conductor system	B	SUS316	Exposed lead wires	17
		E52-P6DY	–50°C to 250°C				SUS304		
		E52-P6FY							
	Low-cost thermocouple	E52-CA□ASY E52-IC□ASY	0°C to 400°C	K (CA) J (IC)	Non-grounded type	2 (0.75)			18
		E52-CA1DY E52-IC1DY			Grounded type				19
		E52-CA6F-N E52-CA6F-N-25 E52-IC6F-N E52-CA6D-N E52-CA6D-N-25 E52-IC6D-N							20
		E52-CA10AE-N E52-IC10AE-N			Non-grounded type				



Note: 1. Exclusive models are provided on the following page.
2. These tables provide general specifications only. Be sure to read the detailed specifications and precautions before use.
3. The temperature range varies with the material, thickness, construction, and element type of the protective tubing.

Classification	Description	Model and appearance	Temperature range (See note 3.)	Element type	Conductor type	Class	Protective tubing material	Terminal type	Page
Exclusive Models	Bayonet spring for molding machines	E52-CA2GVY E52-IC2GVY 	0°C to 350°C	K (CA) J (IC)	Grounded type	2 (0.75)	SUS304	Exposed lead wires	22
	Crimping terminals	E52-CA1GTY E52-IC1GTY 	0°C to 300°C				---		
	Used for measuring surface temperatures	E52-P2GSY 	–50°C to 250°C	Pt100	3-conductor system	B	SUS304		23
	Used for room temperature measurement	E52-P10GRY 	–50°C to 60°C						
	Double-element model	E52-CA20AY-7 	0°C to 900°C	K (CA)	Two non-grounded types	2 (0.75)	ASTM316L		28
		E52-P20AY-7 	–196°C to 250°C	Pt100	Two 3-conductor systems	B			
		E52-P20C-N-7 	–200°C to 450°C					Enclosed terminals	29
	Waterproof model	E52-P10GPY 	0°C to 70°C		3-conductor system		SUS304	Exposed lead wires	23
		E52-P5AY-40 	–50°C to 180°C				Fluororesin tubing		25
	Corrosion-resistant model	E52-P20AY-1 	–80°C to 180°C						
		E52-CA20AY-1 	0°C to 180°C	K (CA)	Non-grounded type	2 (0.75)			
	Silicone-covered lead wires	E52-CA1DY-40 	0°C to 300°C		Grounded type		SUS304		30
		E52-CA1GTY-14 	0°C to 200°C				---		
	Explosion-proof model	E52-P□□C-N-6 	---	Pt100	3-conductor system	B	ASTM316L	Enclosed terminals	26
		E52-CA□□C-N-6 	---	K (CA)	Non-grounded type	2 (0.75)			
Special models for packaging machines	Sheathed thermocouple	E52-CA□AY D=1 S□ 	0°C to 650°C	K (CA)	Grounded type	2 (0.75)	ASTM316L	Exposed lead wires	31 to 33
Thermistors		E52-THE5A E52-THE6F E52-THE6D 	–50°C to 300°C	Thermistor	Element-interchangeable thermistor	1	SUS304	Exposed lead wires	35

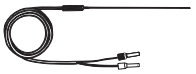
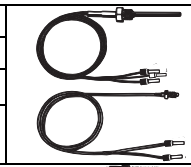
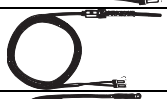
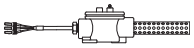
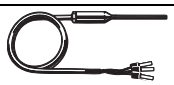
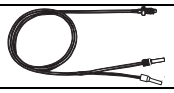
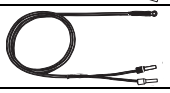
Note: 1. General-purpose models and low-cost models are provided on the previous page.

2. These tables provide general specifications only. Be sure to read the detailed specifications and precautions before use.

3. The temperature range varies with the material, thickness, construction, and element type of the protective tubing.

Use the temperature sensors with ferrule from the list on the next page.

■ List of Models (Temperature Sensors with ferrule)

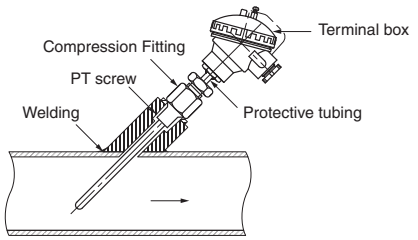
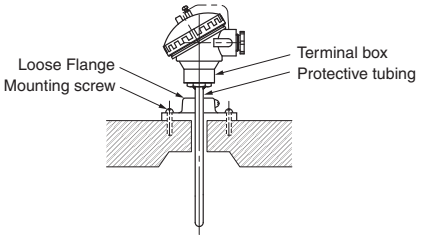
Classification	Description	Model and appearance	Temperature range (See note 3.)	Element type	Conductor type	Class	Protective tubing material	Terminal type	Page
General-purpose Models	Sheathed platinum resistance thermometer	E52-P□AF 	–196°C to 450°C	Pt100	3-conductor system	B	SUS316	Exposed lead wires	37
	Sheathed thermocouple	E52-CA□AF 	0°C to 900°C	K (CA)	Non-grounded type	2 (0.75)	ASTM316L		39 to 40
Low-cost Models	Low-cost platinum resistance thermometer	E52-P10AEF 	0°C to 250°C	Pt100	3-conductor system	B	SUS316		41
		E52-P6DF	–50°C to 250°C				SUS304		
		E52-P6FF							
	Low-cost thermocouple	E52-CA1DF	0°C to 400°C	K (CA)	Grounded type	2 (0.75)			42
Exclusive Models	Bayonet spring for molding machines	E52-CA2GVF 	0°C to 350°C	K (CA)	Grounded type	2 (0.75)	SUS304		43
	Crimping terminals	E52-CA1GTF 	0°C to 300°C				---		
	Used for measuring surface temperatures	E52-P2GSF 	–50°C to 250°C	Pt100	3-conductor system	B	SUS304		
	Used for room temperature measurement	E52-P10GRF 	–50°C to 60°C						44
	Waterproof model	E52-P10GPF 	0°C to 70°C						
		E52-P5AF-40	–50°C to 180°C				Fluororesin tubing		45
	Silicone-covered lead wires	E52-CA1DF-40 	0°C to 300°C	K (CA)	Grounded type	2 (0.75)	SUS304		46
		E52-CA1GTF-14 	0°C to 200°C				---		
Special models for packaging machines	Sheathed thermocouple	E52-CA□AF D=1 S□ 	0°C to 650°C	K (CA)	Grounded type	2 (0.75)	ASTM316L		47 to 48

Note: 1. These tables provide general specifications only. Be sure to read the detailed specifications and precautions before use.

2. The temperature range varies with the material, thickness, construction, and element type of the protective tubing.

■ Accessories

It is recommended that the following accessories be used for mounting Temperature Sensors.

Accessory	Temperature range	Mounting example	Page
Compression Fitting	600°C max.	Mounting with Compression Fitting  **Note:** The Compression Fitting is not of airtight construction. Do not use the Compression Fitting for applications in which the exposure of the sensing object will cause problems.	49
Loose Flange	400°C max.	Mounting with Loose Flange  **Note: 1.** Use the Loose Flange in normal atmospheric pressure. The Loose Flange is not of airtight construction. **2.** Use the Loose Flange at 400°C max. **3.** Do not apply the Loose Flange to protective tubing diameters other than the applicable ones.	

General-purpose Models

■ Model Number Legend

The type of resistance thermometer, protective tubing length, and lead length can be specified as shown below.

Platinum Resistance Thermometers

E52-□□□ D=□□□M
1 2 3 4 5 6

1. Element type

P: Pt100

2. Protective tubing length (L)

Specify the length in centimeters within the following range:
Unit (cm)

E52-□□AY

Diameter (D)	Length (L)
3.2	7 to 100
4.8	10 to 600
6.4	13 to 1,300

E52-□□B-N

Diameter (D)	Length (L)
8	20 to 100

E52-□□C-N

Diameter (D)	Length (L)
3.2	12 to 100
4.8	15 to 600
6.4	18 to 1,300
8	21 to 100
10	26 to 100

3. Terminal

AY: Exposed lead wires (Y-type crimp terminal for M3.5)
B-N: Exposed terminals
C-N: Enclosed terminals

4. Diameter

3.2: 3.2-mm dia. (Protective tubing construction: Sheathed)
E52-□□AY and E52-□□C-N only
4.8: 4.8-mm dia. (Protective tubing construction: Sheathed)
E52-□□AY and E52-□□C-N only
6.4: 6.4-mm dia. (Protective tubing construction: Sheathed)
E52-□□AY and E52-□□C-N only
8: 8-mm dia. (Protective tubing construction: Sheathed)
E52-□□B-N and E52-□□C-N only
10: 10-mm dia. (Protective tubing construction: Standard)
E52-□□C-N only

5. Heat resistance

Code	Temperature range	Lead type
---	–20°C to 70°C Sleeve: 0°C to 70°C	Vinyl-covered
NETU	0°C to 180°C Sleeve: 0°C to 100°C	Glass-wool-covered, externally shielded with stainless

Specify for E52-□□AY model only.

6. Lead length (M)

Specify the length in meters within the following range for the E52-□□AY only:
Range: 0.5, 1 to 100 m

Examples

Element: Pt100, protective tubing length: 420 mm, exposed leads, protective tubing dia.: 4.8 mm, heat resistive, lead length: 10 m
E52-P42AY D=4.8 NETU 10M

■ Sheathed Platinum Resistance Thermometers

Refer to *Model Number Legend* above for the Pt100.

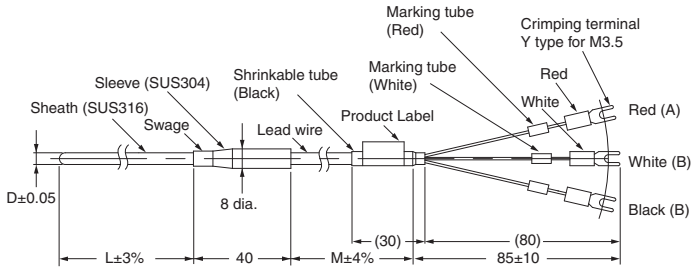
Specifications

Element type	Pt100
Class	JIS class B
Sheath material	SUS316 (E52-P□AY) ASTM316L (E52-P□B-N, E52-P□C-N)
Sheath outer diameter	3.2 dia., 4.8 dia., 6.4 dia., 8 dia
Conductor type	3-conductor system
Temperature range	–196°C to 450°C (in dry air)

Exposed-lead Models

E52-P□AY

Dimensions



Unit (mm)

D	d	ℓ
3.2 dia.	8	40
4.8 dia.	8	40
6.4 dia.	8	40

Lead Wire

- Standard (–20°C to 70°C):
  Fully vinyl-covered with twelve 0.18-dia conductors (0.3 mm thick) and 4.8 mm in outer dia. The sleeve resists a temperature range between 0°C and 70°C.
- Heat Resistive (0°C to 180°C):
  Fully glass-wool-covered with thirty 0.12-dia. conductors (0.3 mm thick) externally shielded with stainless steel, 4 mm in outer dia. The sleeve resists a temperature range between 0°C and 100°C.
- Lead Wire Length (M): 1, 2, 4, or 8 m

Model Information

Custom-made models are available on request. Refer to page 4 for details.

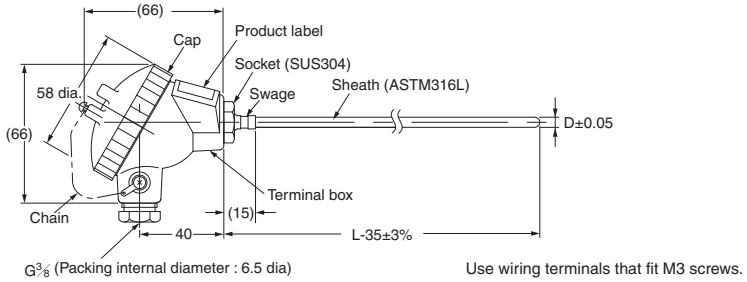
Terminal type	Protective tubing diameter D (mm)	Protective tubing length L (cm)	Lead wire type	Lead wire length M (m)			
				1	2	4	8
				Model			
Exposed-lead Models	3.2 dia.	15	Standard	E52-P15AY D=3.2 1M	E52-P15AY D=3.2 2M	E52-P15AY D=3.2 4M	E52-P15AY D=3.2 8M
			Heat resistive	E52-P15AY D=3.2 NETU 1M	E52-P15AY D=3.2 NETU 2M	E52-P15AY D=3.2 NETU 4M	E52-P15AY D=3.2 NETU 8M
		20	Standard	E52-P20AY D=3.2 1M	E52-P20AY D=3.2 2M	E52-P20AY D=3.2 4M	E52-P20AY D=3.2 8M
			Heat resistive	E52-P20AY D=3.2 NETU 1M	E52-P20AY D=3.2 NETU 2M	E52-P20AY D=3.2 NETU 4M	E52-P20AY D=3.2 NETU 8M
		35	Standard	E52-P35AY D=3.2 1M	E52-P35AY D=3.2 2M	E52-P35AY D=3.2 4M	E52-P35AY D=3.2 8M
			Heat resistive	E52-P35AY D=3.2 NETU 1M	E52-P35AY D=3.2 NETU 2M	E52-P35AY D=3.2 NETU 4M	E52-P35AY D=3.2 NETU 8M
	4.8 dia.	20	Standard	E52-P20AY D=4.8 1M	E52-P20AY D=4.8 2M	E52-P20AY D=4.8 4M	E52-P20AY D=4.8 8M
			Heat resistive	E52-P20AY D=4.8 NETU 1M	E52-P20AY D=4.8 NETU 2M	E52-P20AY D=4.8 NETU 4M	E52-P20AY D=4.8 NETU 8M
		35	Standard	E52-P35AY D=4.8 1M	E52-P35AY D=4.8 2M	E52-P35AY D=4.8 4M	E52-P35AY D=4.8 8M
			Heat resistive	E52-P35AY D=4.8 NETU 1M	E52-P35AY D=4.8 NETU 2M	E52-P35AY D=4.8 NETU 4M	E52-P35AY D=4.8 NETU 8M
		50	Standard	E52-P50AY D=4.8 1M	E52-P50AY D=4.8 2M	E52-P50AY D=4.8 4M	E52-P50AY D=4.8 8M
			Heat resistive	E52-P50AY D=4.8 NETU 1M	E52-P50AY D=4.8 NETU 2M	E52-P50AY D=4.8 NETU 4M	E52-P50AY D=4.8 NETU 8M
	6.4 dia.	20	Standard	E52-P20AY D=6.4 1M	E52-P20AY D=6.4 2M	E52-P20AY D=6.4 4M	E52-P20AY D=6.4 8M
			Heat resistive	E52-P20AY D=6.4 NETU 1M	E52-P20AY D=6.4 NETU 2M	E52-P20AY D=6.4 NETU 4M	E52-P20AY D=6.4 NETU 8M
		35	Standard	E52-P35AY D=6.4 1M	E52-P35AY D=6.4 2M	E52-P35AY D=6.4 4M	E52-P35AY D=6.4 8M
			Heat resistive	E52-P35AY D=6.4 NETU 1M	E52-P35AY D=6.4 NETU 2M	E52-P35AY D=6.4 NETU 4M	E52-P35AY D=6.4 NETU 8M
		50	Standard	E52-P50AY D=6.4 1M	E52-P50AY D=6.4 2M	E52-P50AY D=6.4 4M	E52-P50AY D=6.4 8M
			Heat resistive	E52-P50AY D=6.4 NETU 1M	E52-P50AY D=6.4 NETU 2M	E52-P50AY D=6.4 NETU 4M	E52-P50AY D=6.4 NETU 8M

Enclosed-terminal Models

E52-P□C-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Terminal box: The permissible temperature is 0°C to 90°C.

Note: 1. The terminals in the cap indicate polarity (A, B, b).

2. The length L is in centimeters, but "35" is 35 millimeters.
Therefore, for the E52-P35C-N: L = 35 (cm), the sheath length L – 35 = 350 – 35 = 315 mm.

Model Information

Custom-made models are available on request. Refer to page 4 for details.

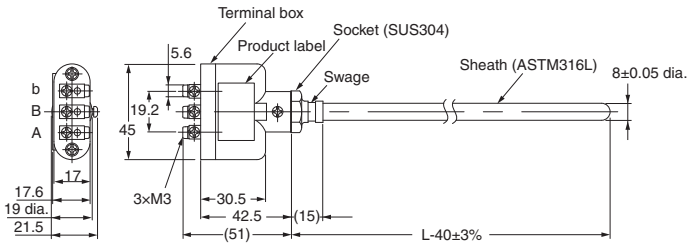
Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)			
		3.2 dia.	4.8 dia.	6.4 dia.	8 dia.
		Model			
Enclosed-terminal Models	20	E52-P20C-N D=3.2	E52-P20C-N D=4.8	E52-P20C-N D=6.4	E52-P20C-N D=8
	35	E52-P35C-N D=3.2	E52-P35C-N D=4.8	E52-P35C-N D=6.4	E52-P35C-N D=8
	50	E52-P50C-N D=3.2	E52-P50C-N D=4.8	E52-P50C-N D=6.4	E52-P50C-N D=8
	75	---	E52-P75C-N D=4.8	E52-P75C-N D=6.4	---

Exposed-terminal Models

E52-P□B-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Terminal box: The permissible temperature is 0°C to 100°C.

Model Information

Custom-made models are available on request. Refer to page 4 for details

Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)
		8 dia.
		Model
Exposed-terminal Models	20	E52-P20B-N D=8
	35	E52-P35B-N D=8
	50	E52-P50B-N D=8

Note: The length L is in centimeters, but "40" is 40 millimeters.
Therefore, for the E52-P35B-N: L = 35 (cm), the sheath length L – 40 = 350 – 40 = 310 mm.

■ Standard Platinum Resistance Thermometers

Refer to *Model Number Legend* on page 4 for the Pt100.

Specifications

Element type	Pt100
Class	JIS class B
Protective tubing material	SUS316
Conductor type	3-conductor system
Temperature range	0°C to 450°C (in dry air)

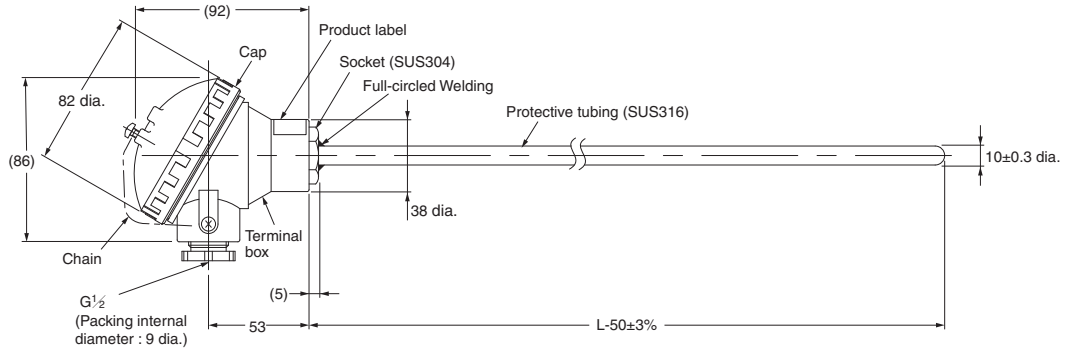
Note: 1. Use the sheathed platinum resistance thermometer if condensation is likely to result.

Enclosed-terminal Models

E52-P□C-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Note: 1. The length L is in centimeters, but "50" is 50 millimeters.
Therefore, for the E52-P75C-N: L = 75 (cm), the protective tubing length L − 50 = 750 − 50 = 700 mm.

Terminal box: The permissible temperature is 0°C to 90°C.

Note: The terminals in the cap indicate polarity (A, B, B).

Model Information

Custom-made models are available on request. Refer to page 4 for details.

Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)
		10 dia.
		Model
Enclosed-terminal Models	35	E52-P35C-N D=10
	50	E52-P50C-N D=10
	75	E52-P75C-N D=10
	100	E52-P100C-N D=10

■ Model Number Legend

The type of resistance thermometer, protective tubing length, and lead length can be specified as shown below.

Thermocouples

E52-□□□ D=□□□M□
1 2 3 4 5 6 7

1. Element type

CA: K
IC: J
PR: R

2. Protective tubing length (L)

Specify the length in centimeters in the following range: Unit (cm)

E52-□□AY (Exposed-lead Model)

Diameter (D)	Length (L)
1	2 to 200
1.6	3 to 500
3.2	5 to 2,000
4.8	8 to 2,300
6.4	10 to 1,200
8	12 to 1,000

E52-□□B-N and E52-□□C-N (except E52-PR□C-N)

Diameter (D)	Length (L)
3.2	11 to 2,000
4.8	14 to 2,300
6.4	16 to 1,200
8.0	18 to 1,000
10	21 to 126
12	24 to 126
15	29 to 156
22	39 to 206

E52-PR□C-N

Diameter (D)	Length (L)
15	50, 75, 100

3. Terminal

AY: Exposed lead wires (Y-type crimp terminal for M3.5) (element type: K, J)
B-N: Exposed terminals (element type: K, J)
C-N: Enclosed terminals (element type: K, J, R)

4. Diameter

Specify the protective tubing material according to the table.

Code	Diameter (D)	Protective tubing construction	Protective tubing material
1	1 mm	Sheathed	ASTM316L
1.6	1.6 mm	Sheathed	ASTM316L
3.2	3.2 mm	Sheathed	ASTM316L
4.8	4.8 mm	Sheathed	ASTM316L
6.4	6.4 mm	Sheathed	ASTM316L
8	8 mm	Sheathed	ASTM316L
10	10 mm	Standard	SUS316, SUS310S
12	12 mm	Standard	SUS316, SUS310S
15	15 mm	Standard	SUS316, SUS310S
			PT1, PT0 (E52-PR)
22	22 mm	Standard	SUS316, SUS310S

5. Heat resistance

Specify this item for the exposed-lead models only.

Code	Temperature range	Lead type
---	–20°C to 70°C Sleeve: 0°C to 70°C	Vinyl-covered
NETU	0°C to 150°C Sleeve: 0°C to 100°C	Glass-wool-covered with external shield of stainless

6. Lead length (M)

Specify the length in meters in the following range for the E52-□□AY only.

Range: 1 to 100 m

7. Protective tubing material

Code	Protective tubing material	Element type
---	ASTM316L	K, J
SUS310S	SUS310S	K, D = 10 to 22
PT1	JIS ceramic Cat.1	R
PT0	JIS special ceramic	R

Examples

Element: K; protective tubing length: 420 mm, exposed leads, protective tubing dia.: 4.8 mm, heat resistive, lead length: 10 m
E52-CA42AY D=4.8 NETU 10M

Element: J; protective tubing length: 360 mm, enclosed terminals, protective tubing dia.: 3.2
E52-IC36C-N D=3.2

■ Sheathed Thermocouples

Specifications

Element type	K (CA), J(IC)
Class	JIS class 2 (0.75)
Thermal contact	Non-grounded type
Sheath material	CA: ASTM316L
	IC: ASTM316L

Permissible Temperature in Dry Air

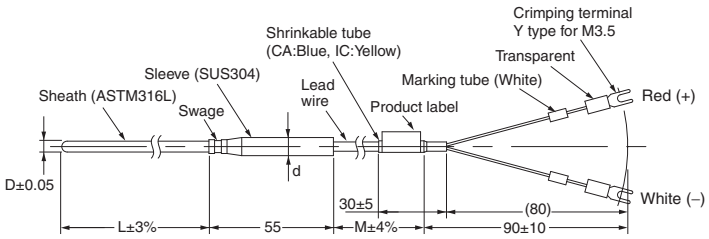
D	Element wire	
	K (CA) ASTM316L	J (IC) ASTM316L
1 dia.	650°C	450°C
1.6 dia.	650°C	450°C
3.2 dia.	750°C	650°C
4.8 dia.	800°C	750°C
6.4 dia.	800°C	750°C
8.0 dia.	900°C	750°C

Note: For details on the permissible temperature, refer to page D-5 of Introduction of Temperature Controllers (Cat. No. H900).

Exposed-lead Models

E52-CA□AY

Dimensions



Unit (mm)

D	d	ℓ
1 dia.	8	55
1.6 dia.	8	55
3.2 dia.	8	55
4.8 dia.	8	55
6.4 dia.	11	55
8 dia.	11	55

Permissible Temperature in Dry Air

D	Element wire
	K (CA) ASTM316L
1 dia.	650°C
1.6 dia.	650°C
3.2 dia.	750°C
4.8 dia.	800°C
6.4 dia.	800°C
8.0 dia.	900°C

Note: 1. Lead Wire (Compensating Conductor)
- Standard (–20°C to 70°C):
  Fully vinyl-covered with seven 0.3-dia. conductors (0.5 mm thick) and external dimensions of 2.4 × 4.1.
- Heat Resistive (0°C to 150°C):
  Fully glass-wool-covered with seven 0.3-dia. conductors (0.5 mm thick) with external shield of stainless steel and external dimensions of 2.8 × 4.6
  The heat-resistive lead wires cannot be used in locations exposed to water or other liquids.
- Lead Wire Length (M): 1, 2, 4, or 8 m

2. The sleeve resists temperatures ranging between –20°C and 70°C for standard models and 0°C and 100°C for heat-resistive models.

K (CA) Model Information (E52-CA□AY)

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details.

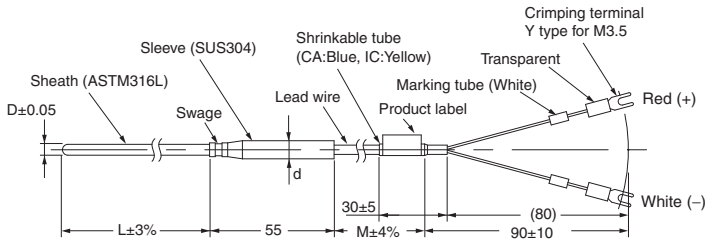
Terminal type	Protective tubing diameter D (mm)	Protective tubing length L (cm)	Lead wire type	Lead wire length M (m)			
				1	2	4	8
				Model			
Exposed-lead Models	1 dia.	15	Standard	E52-CA15AY D=1 1M	E52-CA15AY D=1 2M	E52-CA15AY D=1 4M	E52-CA15AY D=1 8M
			Heat resistive	E52-CA15AY D=1 NETU 1M	E52-CA15AY D=1 NETU 2M	E52-CA15AY D=1 NETU 4M	E52-CA15AY D=1 NETU 8M
		20	Standard	E52-CA20AY D=1 1M	E52-CA20AY D=1 2M	E52-CA20AY D=1 4M	E52-CA20AY D=1 8M
			Heat resistive	E52-CA20AY D=1 NETU 1M	E52-CA20AY D=1 NETU 2M	E52-CA20AY D=1 NETU 4M	E52-CA20AY D=1 NETU 8M
		35	Standard	E52-CA35AY D=1 1M	E52-CA35AY D=1 2M	E52-CA35AY D=1 4M	E52-CA35AY D=1 8M
			Heat resistive	E52-CA35AY D=1 NETU 1M	E52-CA35AY D=1 NETU 2M	E52-CA35AY D=1 NETU 4M	E52-CA35AY D=1 NETU 8M

Terminal type	Protective tubing diameter D (mm)	Protective tubing length L (cm)	Lead wire type	Lead wire length M (m)			
				1	2	4	8
				Model			
Exposed-lead Models	1.6 dia.	15	Standard	E52-CA15AY D=1.6 1M	E52-CA15AY D=1.6 2M	E52-CA15AY D=1.6 4M	E52-CA15AY D=1.6 8M
			Heat resistive	E52-CA15AY D=1.6 NETU 1M	E52-CA15AY D=1.6 NETU 2M	E52-CA15AY D=1.6 NETU 4M	E52-CA15AY D=1.6 NETU 8M
		20	Standard	E52-CA20AY D=1.6 1M	E52-CA20AY D=1.6 2M	E52-CA20AY D=1.6 4M	E52-CA20AY D=1.6 8M
			Heat resistive	E52-CA20AY D=1.6 NETU 1M	E52-CA20AY D=1.6 NETU 2M	E52-CA20AY D=1.6 NETU 4M	E52-CA20AY D=1.6 NETU 8M
		35	Standard	E52-CA35AY D=1.6 1M	E52-CA35AY D=1.6 2M	E52-CA35AY D=1.6 4M	E52-CA35AY D=1.6 8M
			Heat resistive	E52-CA35AY D=1.6 NETU 1M	E52-CA35AY D=1.6 NETU 2M	E52-CA35AY D=1.6 NETU 4M	E52-CA35AY D=1.6 NETU 8M
	3.2 dia.	15	Standard	E52-CA15AY D=3.2 1M	E52-CA15AY D=3.2 2M	E52-CA15AY D=3.2 4M	E52-CA15AY D=3.2 8M
			Heat resistive	E52-CA15AY D=3.2 NETU 1M	E52-CA15AY D=3.2 NETU 2M	E52-CA15AY D=3.2 NETU 4M	E52-CA15AY D=3.2 NETU 8M
		20	Standard	E52-CA20AY D=3.2 1M	E52-CA20AY D=3.2 2M	E52-CA20AY D=3.2 4M	E52-CA20AY D=3.2 8M
			Heat resistive	E52-CA20AY D=3.2 NETU 1M	E52-CA20AY D=3.2 NETU 2M	E52-CA20AY D=3.2 NETU 4M	E52-CA20AY D=3.2 NETU 8M
		35	Standard	E52-CA35AY D=3.2 1M	E52-CA35AY D=3.2 2M	E52-CA35AY D=3.2 4M	E52-CA35AY D=3.2 8M
			Heat resistive	E52-CA35AY D=3.2 NETU 1M	E52-CA35AY D=3.2 NETU 2M	E52-CA35AY D=3.2 NETU 4M	E52-CA35AY D=3.2 NETU 8M
		50	Standard	E52-CA50AY D=3.2 1M	E52-CA50AY D=3.2 2M	E52-CA50AY D=3.2 4M	E52-CA50AY D=3.2 8M
			Heat resistive	E52-CA50AY D=3.2 NETU 1M	E52-CA50AY D=3.2 NETU 2M	E52-CA50AY D=3.2 NETU 4M	E52-CA50AY D=3.2 NETU 8M
	4.8 dia.	20	Standard	E52-CA20AY D=4.8 1M	E52-CA20AY D=4.8 2M	E52-CA20AY D=4.8 4M	E52-CA20AY D=4.8 8M
			Heat resistive	E52-CA20AY D=4.8 NETU 1M	E52-CA20AY D=4.8 NETU 2M	E52-CA20AY D=4.8 NETU 4M	E52-CA20AY D=4.8 NETU 8M
		35	Standard	E52-CA35AY D=4.8 1M	E52-CA35AY D=4.8 2M	E52-CA35AY D=4.8 4M	E52-CA35AY D=4.8 8M
			Heat resistive	E52-CA35AY D=4.8 NETU 1M	E52-CA35AY D=4.8 NETU 2M	E52-CA35AY D=4.8 NETU 4M	E52-CA35AY D=4.8 NETU 8M
		50	Standard	E52-CA50AY D=4.8 1M	E52-CA50AY D=4.8 2M	E52-CA50AY D=4.8 4M	E52-CA50AY D=4.8 8M
			Heat resistive	E52-CA50AY D=4.8 NETU 1M	E52-CA50AY D=4.8 NETU 2M	E52-CA50AY D=4.8 NETU 4M	E52-CA50AY D=4.8 NETU 8M
	6.4 dia.	20	Standard	E52-CA20AY D=6.4 1M	E52-CA20AY D=6.4 2M	E52-CA20AY D=6.4 4M	E52-CA20AY D=6.4 8M
			Heat resistive	E52-CA20AY D=6.4 NETU 1M	E52-CA20AY D=6.4 NETU 2M	E52-CA20AY D=6.4 NETU 4M	E52-CA20AY D=6.4 NETU 8M
		35	Standard	E52-CA35AY D=6.4 1M	E52-CA35AY D=6.4 2M	E52-CA35AY D=6.4 4M	E52-CA35AY D=6.4 8M
			Heat resistive	E52-CA35AY D=6.4 NETU 1M	E52-CA35AY D=6.4 NETU 2M	E52-CA35AY D=6.4 NETU 4M	E52-CA35AY D=6.4 NETU 8M
		50	Standard	E52-CA50AY D=6.4 1M	E52-CA50AY D=6.4 2M	E52-CA50AY D=6.4 4M	E52-CA50AY D=6.4 8M
			Heat resistive	E52-CA50AY D=6.4 NETU 1M	E52-CA50AY D=6.4 NETU 2M	E52-CA50AY D=6.4 NETU 4M	E52-CA50AY D=6.4 NETU 8M
	8 dia.	20	Standard	E52-CA20AY D=8 1M	E52-CA20AY D=8 2M	E52-CA20AY D=8 4M	E52-CA20AY D=8 8M
			Heat resistive	E52-CA20AY D=8 NETU 1M	E52-CA20AY D=8 NETU 2M	E52-CA20AY D=8 NETU 4M	E52-CA20AY D=8 NETU 8M
		35	Standard	E52-CA35AY D=8 1M	E52-CA35AY D=8 2M	E52-CA35AY D=8 4M	E52-CA35AY D=8 8M
			Heat resistive	E52-CA35AY D=8 NETU 1M	E52-CA35AY D=8 NETU 2M	E52-CA35AY D=8 NETU 4M	E52-CA35AY D=8 NETU 8M
		50	Standard	E52-CA50AY D=8 1M	E52-CA50AY D=8 2M	E52-CA50AY D=8 4M	E52-CA50AY D=8 8M
			Heat resistive	E52-CA50AY D=8 NETU 1M	E52-CA50AY D=8 NETU 2M	E52-CA50AY D=8 NETU 4M	E52-CA50AY D=8 NETU 8M

Exposed-lead Models

E52-IC□AY

Dimensions



Unit (mm)

D	d	ℓ
1 dia.	8	55
1.6 dia.	8	55
3.2 dia.	8	55
4.8 dia.	8	55
6.4 dia.	11	55
8 dia.	11	55

Permissible Temperature in Dry Air

D	Element wire
	J (IC) ASTM316L
1 dia.	450°C
1.6 dia.	450°C
3.2 dia.	650°C
4.8 dia.	750°C
6.4 dia.	750°C
8.0 dia.	750°C

Note: 1. Lead Wire (Compensating Conductor)
- Standard (–20°C to 70°C):
  Fully vinyl-covered with seven 0.3-dia. conductors (0.5 mm thick) and external dimensions of 2.4 × 4.1.
- Heat Resistive (0°C to 150°C):
  Fully glass-wool-covered with seven 0.3-dia. conductors (0.5 mm thick) with external shield of stainless steel and external dimensions of 2.8 × 4.6
  The heat-resistive lead wires cannot be used in locations exposed to water or other liquids.
- Lead Wire Length (M): 1, 2, 4, or 8 m

2. The sleeve resists temperatures ranging between –20°C and 70°C for standard models and 0°C and 100°C for heat-resistive models.

J (IC) Model Information (E52-IC□AY)

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details

Terminal type	Protective tubing diameter D (mm)	Protective tubing length L (cm)	Lead wire type	Lead wire length M (m)		
				1	2	4
				Model		
Exposed-lead Models	1 dia.	15	Standard	E52-IC15AY D=1 1M	E52-IC15AY D=1 2M	E52-IC15AY D=1 4M
			Heat resistive	E52-IC15AY D=1 NETU 1M	E52-IC15AY D=1 NETU 2M	E52-IC15AY D=1 NETU 4M
		20	Standard	E52-IC20AY D=1 1M	E52-IC20AY D=1 2M	E52-IC20AY D=1 4M
			Heat resistive	E52-IC20AY D=1 NETU 1M	E52-IC20AY D=1 NETU 2M	E52-IC20AY D=1 NETU 4M
		35	Standard	E52-IC35AY D=1 1M	E52-IC35AY D=1 2M	E52-IC35AY D=1 4M
			Heat resistive	E52-IC35AY D=1 NETU 1M	E52-IC35AY D=1 NETU 2M	E52-IC35AY D=1 NETU 4M
	1.6 dia.	15	Standard	E52-IC15AY D=1.6 1M	E52-IC15AY D=1.6 2M	E52-IC15AY D=1.6 4M
			Heat resistive	E52-IC15AY D=1.6 NETU 1M	E52-IC15AY D=1.6 NETU 2M	E52-IC15AY D=1.6 NETU 4M
		20	Standard	E52-IC20AY D=1.6 1M	E52-IC20AY D=1.6 2M	E52-IC20AY D=1.6 4M
			Heat resistive	E52-IC20AY D=1.6 NETU 1M	E52-IC20AY D=1.6 NETU 2M	E52-IC20AY D=1.6 NETU 4M
		35	Standard	E52-IC35AY D=1.6 1M	E52-IC35AY D=1.6 2M	E52-IC35AY D=1.6 4M
			Heat resistive	E52-IC35AY D=1.6 NETU 1M	E52-IC35AY D=1.6 NETU 2M	E52-IC35AY D=1.6 NETU 4M

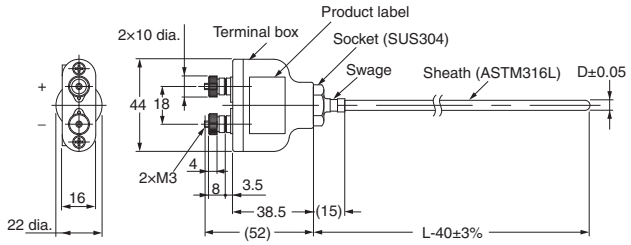
Terminal type	Protective tubing diameter D (mm)	Protective tubing length L (cm)	Lead wire type	Lead wire length M (m)		
				1	2	4
				Model		
Exposed-lead Models	3.2 dia.	15	Standard	E52-IC15AY D=3.2 1M	E52-IC15AY D=3.2 2M	E52-IC15AY D=3.2 4M
			Heat resistive	E52-IC15AY D=3.2 NETU 1M	E52-IC15AY D=3.2 NETU 2M	E52-IC15AY D=3.2 NETU 4M
		20	Standard	E52-IC20AY D=3.2 1M	E52-IC20AY D=3.2 2M	E52-IC20AY D=3.2 4M
			Heat resistive	E52-IC20AY D=3.2 NETU 1M	E52-IC20AY D=3.2 NETU 2M	E52-IC20AY D=3.2 NETU 4M
		35	Standard	E52-IC35AY D=3.2 1M	E52-IC35AY D=3.2 2M	E52-IC35AY D=3.2 4M
			Heat resistive	E52-IC35AY D=3.2 NETU 1M	E52-IC35AY D=3.2 NETU 2M	E52-IC35AY D=3.2 NETU 4M
		50	Standard	E52-IC50AY D=3.2 1M	E52-IC50AY D=3.2 2M	E52-IC50AY D=3.2 4M
			Heat resistive	E52-IC50AY D=3.2 NETU 1M	E52-IC50AY D=3.2 NETU 2M	E52-IC50AY D=3.2 NETU 4M
	4.8 dia.	20	Standard	E52-IC20AY D=4.8 1M	E52-IC20AY D=4.8 2M	E52-IC20AY D=4.8 4M
			Heat resistive	E52-IC20AY D=4.8 NETU 1M	E52-IC20AY D=4.8 NETU 2M	E52-IC20AY D=4.8 NETU 4M
		35	Standard	E52-IC35AY D=4.8 1M	E52-IC35AY D=4.8 2M	E52-IC35AY D=4.8 4M
			Heat resistive	E52-IC35AY D=4.8 NETU 1M	E52-IC35AY D=4.8 NETU 2M	E52-IC35AY D=4.8 NETU 4M
		50	Standard	E52-IC50AY D=4.8 1M	E52-IC50AY D=4.8 2M	E52-IC50AY D=4.8 4M
			Heat resistive	E52-IC50AY D=4.8 NETU 1M	E52-IC50AY D=4.8 NETU 2M	E52-IC50AY D=4.8 NETU 4M
	6.4 dia.	20	Standard	E52-IC20AY D=6.4 1M	E52-IC20AY D=6.4 2M	E52-IC20AY D=6.4 4M
			Heat resistive	E52-IC20AY D=6.4 NETU 1M	E52-IC20AY D=6.4 NETU 2M	E52-IC20AY D=6.4 NETU 4M
		35	Standard	E52-IC35AY D=6.4 1M	E52-IC35AY D=6.4 2M	E52-IC35AY D=6.4 4M
			Heat resistive	E52-IC35AY D=6.4 NETU 1M	E52-IC35AY D=6.4 NETU 2M	E52-IC35AY D=6.4 NETU 4M
		50	Standard	E52-IC50AY D=6.4 1M	E52-IC50AY D=6.4 2M	E52-IC50AY D=6.4 4M
			Heat resistive	E52-IC50AY D=6.4 NETU 1M	E52-IC50AY D=6.4 NETU 2M	E52-IC50AY D=6.4 NETU 4M
	8 dia.	20	Standard	E52-IC20AY D=8 1M	E52-IC20AY D=8 2M	E52-IC20AY D=8 4M
			Heat resistive	E52-IC20AY D=8 NETU 1M	E52-IC20AY D=8 NETU 2M	E52-IC20AY D=8 NETU 4M
		35	Standard	E52-IC35AY D=8 1M	E52-IC35AY D=8 2M	E52-IC35AY D=8 4M
			Heat resistive	E52-IC35AY D=8 NETU 1M	E52-IC35AY D=8 NETU 2M	E52-IC35AY D=8 NETU 4M
		50	Standard	E52-IC50AY D=8 1M	E52-IC50AY D=8 2M	E52-IC50AY D=8 4M
			Heat resistive	E52-IC50AY D=8 NETU 1M	E52-IC50AY D=8 NETU 2M	E52-IC50AY D=8 NETU 4M

Exposed-terminal Models

E52-CA□B-N
E52-IC□B-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Permissible Temperature in Dry Air

D	Element wire	
	K (CA) ASTM316L	J (IC) ASTM316L
3.2 dia.	750°C	650°C
4.8 dia.	800°C	750°C
6.4 dia.	800°C	750°C
8.0 dia.	900°C	750°C

Terminal box: The permissible temperature is 0°C to 100°C.

Note: The length L is in centimeters, but "40" is 40 millimeters.
Therefore, for the E52-CA50B-N: L = 50 (cm), the sheath length L – 40 = 500 – 40 = 460 mm.

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details.

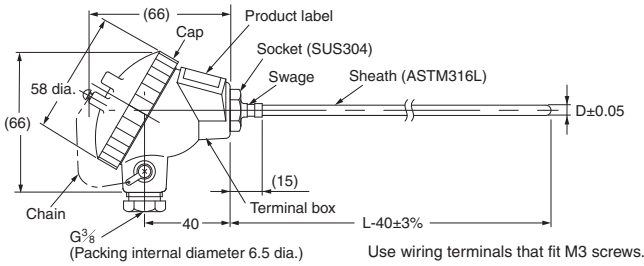
Element type	Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)			
			3.2 dia.	4.8 dia.	6.4 dia.	8 dia.
			Model			
K (CA)	Exposed-terminal Models	20	E52-CA20B-N D=3.2	E52-CA20B-N D=4.8	E52-CA20B-N D=6.4	---
		35	E52-CA35B-N D=3.2	E52-CA35B-N D=4.8	E52-CA35B-N D=6.4	E52-CA35B-N D=8
		50	E52-CA50B-N D=3.2	E52-CA50B-N D=4.8	E52-CA50B-N D=6.4	E52-CA50B-N D=8
		75	---	E52-CA75B-N D=4.8	E52-CA75B-N D=6.4	E52-CA75B-N D=8
J (IC)	Exposed-terminal Models	20	E52-IC20B-N D=3.2	E52-IC20B-N D=4.8	E52-IC20B-N D=6.4	---
		35	E52-IC35B-N D=3.2	E52-IC35B-N D=4.8	E52-IC35B-N D=6.4	E52-IC35B-N D=8
		50	E52-IC50B-N D=3.2	E52-IC50B-N D=4.8	E52-IC50B-N D=6.4	E52-IC50B-N D=8
		75	---	E52-IC75B-N D=4.8	E52-IC75B-N D=6.4	E52-IC75B-N D=8

Enclosed-terminal Models

E52-CA□C-N
E52-IC□C-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Permissible Temperature in Dry Air

D	Element wire	
	K (CA) ASTM316L	J (IC) ASTM316L
3.2 dia.	750°C	650°C
4.8 dia.	800°C	750°C
6.4 dia.	800°C	750°C
8.0 dia.	900°C	750°C

Terminal box: The permissible temperature is 0°C to 90°C.

Note: The terminals in the cap indicate polarity (+ or –).

Note: The length L is in centimeters, but "40" is 40 millimeters.
Therefore, for the E52-CA35C-N: L = 35 (cm), the sheath length L – 40 = 350 – 40 = 310 mm.

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details.

Element type	Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)			
			3.2 dia.	4.8 dia.	6.4 dia.	8 dia.
			Model			
K (CA)	Enclosed-terminal Models	20	E52-CA20C-N D=3.2	E52-CA20C-N D=4.8	E52-CA20C-N D=6.4	---
		35	E52-CA35C-N D=3.2	E52-CA35C-N D=4.8	E52-CA35C-N D=6.4	E52-CA35C-N D=8
		50	E52-CA50C-N D=3.2	E52-CA50C-N D=4.8	E52-CA50C-N D=6.4	E52-CA50C-N D=8
		75	---	E52-CA75C-N D=4.8	E52-CA75C-N D=6.4	E52-CA75C-N D=8
J (IC)	Enclosed-terminal Models	20	E52-IC20C-N D=3.2	E52-IC20C-N D=4.8	E52-IC20C-N D=6.4	---
		35	E52-IC35C-N D=3.2	E52-IC35C-N D=4.8	E52-IC35C-N D=6.4	E52-IC35C-N D=8
		50	E52-IC50C-N D=3.2	E52-IC50C-N D=4.8	E52-IC50C-N D=6.4	E52-IC50C-N D=8
		75	---	E52-IC75C-N D=4.8	E52-IC75C-N D=6.4	E52-IC75C-N D=8

■ Standard Thermocouples

Specifications

Element wire	K (CA), J(IC), R(PR)	
Class	K (CA), J (IC) JIS class 2 (0.75)	
	R(PR), JIS class 2 (0.25)	
Protective tubing material	K (CA)	SUS316
	J (IC)	SUS316
	R (See note.)	JIS ceramic cat. 1 (PT1)
		JIS special ceramic (PT0)
Thermal contact	Non-grounded type	

Note: Specify PT1 or PT0 if the element is R.

Permissible Temperature in Dry Air (See note.)

D	Element wire	
	K (CA) SUS316	J (IC) SUS316
10 dia.	750°C	450°C
12 dia.	850°C	500°C
15 dia.	900°C	550°C
22 dia.	900°C	600°C

Note: For details on the permissible temperature, refer to *Technical Guide for Temperature Sensors*.

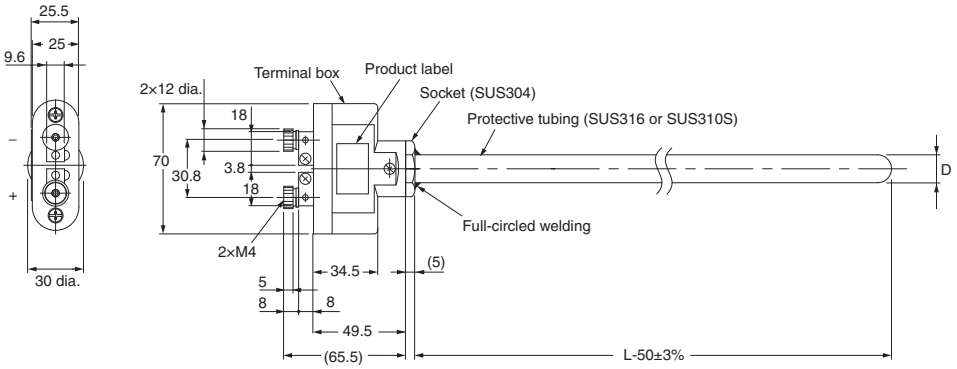
D	Element wire
	R
15 dia.	0°C to 1,400°C

Exposed-terminal Models

E52-CA□B-N
E52-IC□B-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Terminal box: The permissible temperature is 0°C to 100°C.

Note: The length L is in centimeters, but "50" is 50 millimeters.
Therefore, for the E52-CA75B-N: L = 75 (cm), the protective tubing length L − 50 = 750 − 50 = 700 mm.

Permissible Temperature in Dry Air

D	Element wire	
	K (CA) SUS316	J (IC) SUS316
10 dia.	750°C	450°C
12 dia.	850°C	500°C
15 dia.	850°C	550°C
22 dia.	900°C	600°C

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details.

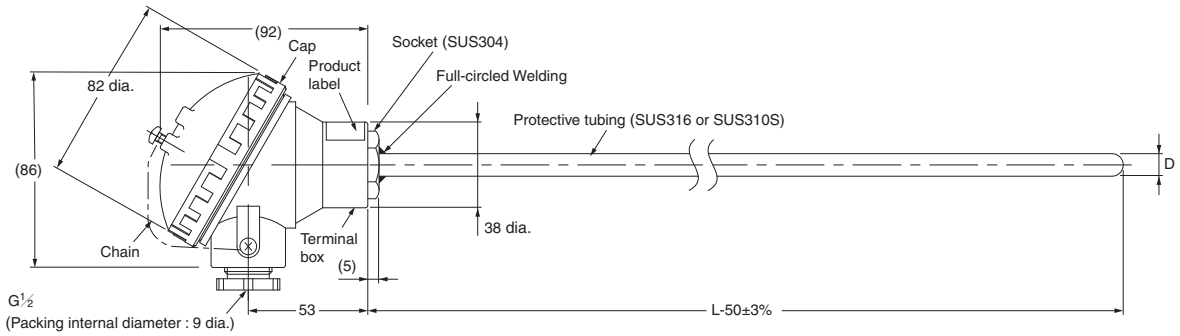
Element type	Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)			
			10 dia.	12 dia.	15 dia.	22 dia.
			Model			
K (CA)	Exposed-terminal Models	35	E52-CA35B-N D=10	E52-CA35B-N D=12	E52-CA35B-N D=15	---
		50	E52-CA50B-N D=10	E52-CA50B-N D=12	E52-CA50B-N D=15	E52-CA50B-N D=22
		75	E52-CA75B-N D=10	E52-CA75B-N D=12	E52-CA75B-N D=15	E52-CA75B-N D=22
		100	E52-CA100B-N D=10	E52-CA100B-N D=12	E52-CA100B-N D=15	E52-CA100B-N D=22
J (IC)	Exposed-terminal Models	35	E52-IC35B-N D=10	E52-IC35B-N D=12	E52-IC35B-N D=15	---
		50	E52-IC50B-N D=10	E52-IC50B-N D=12	E52-IC50B-N D=15	E52-IC50B-N D=22
		75	E52-IC75B-N D=10	E52-IC75B-N D=12	E52-IC75B-N D=15	E52-IC75B-N D=22
		100	E52-IC100B-N D=10	E52-IC100B-N D=12	E52-IC100B-N D=15	E52-IC100B-N D=22

Enclosed-terminal Models

E52-CA□C-N
E52-IC□C-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Note: The length L is in centimeters, but "50" is 50 millimeters.
Therefore, for the E52-CA50C-N: L = 50 (cm), the protective tubing length L − 50 = 500 − 50 = 450 mm.

Permissible Temperature in Dry Air

D	Element wire	
	K (CA) SUS316	J (IC) SUS316
10 dia.	0 to 750°C	0 to 450°C
12 dia.	0 to 850°C	0 to 500°C
15 dia.	0 to 850°C	0 to 550°C
22 dia.	0 to 900°C	0 to 600°C

Terminal box: The permissible temperature is 0°C to 90°C.

Note: The terminals in the cap indicate polarity (+ or –).

Model Information

Custom-made models are available on request. Refer to *Model Number Legend* on page 8 for details

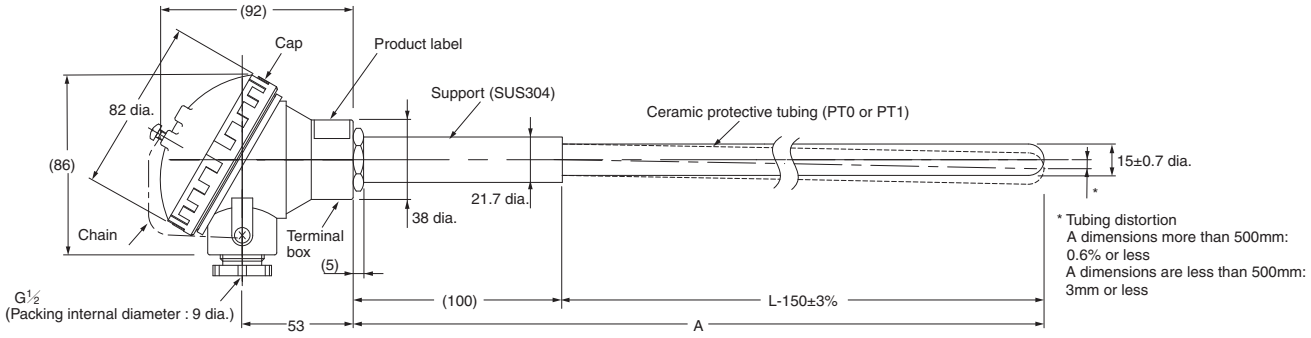
Element type	Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)			
			10 dia.	12 dia.	15 dia.	22 dia.
			Model			
K (CA)	Enclosed-terminal Models	35	E52-CA35C-N D=10	E52-CA35C-N D=12	E52-CA35C-N D=15	---
		50	E52-CA50C-N D=10	E52-CA50C-N D=12	E52-CA50C-N D=15	E52-CA50C-N D=22
		75	E52-CA75C-N D=10	E52-CA75C-N D=12	E52-CA75C-N D=15	E52-CA75C-N D=22
		100	E52-CA100C-N D=10	E52-CA100C-N D=12	E52-CA100C-N D=15	E52-CA100C-N D=22
J (IC)	Enclosed-terminal Models	35	E52-IC35C-N D=10	E52-IC35C-N D=12	E52-IC35C-N D=15	---
		50	E52-IC50C-N D=10	E52-IC50C-N D=12	E52-IC50C-N D=15	E52-IC50C-N D=22
		75	E52-IC75C-N D=10	E52-IC75C-N D=12	E52-IC75C-N D=15	---
		100	E52-IC100C-N D=10	E52-IC100C-N D=12	E52-IC100C-N D=15	---

Enclosed-terminal Models (High-temperature Use)

E52-PR□C-N

Dimensions

Dimensions are given in millimeters, except for the length (L), which is provided in centimeters.



Use wiring terminals that fit M4 screws.

Permissible Temperature in Dry Air

D	Element wire
	R
15 dia.	0°C to 1,400°C

Terminal box: The permissible temperature is 0°C to 90°C.

Note: The terminals in the cap indicate polarity (+ or –).

Note: The length L is in centimeters, but "150" is 150 millimeters.
Therefore, for the E52-PR75C-N: L = 75 (cm), the protective tubing length L – 150 = 750 – 150 = 600 mm.

Model Information

Element type	Terminal type	Protective tubing length L (cm)	Protective tubing diameter D (mm)
			15 dia.
			Model
R (See note 1.)	Enclosed-terminal Models	50	E52-PR50C-N D=15 PT1
		75	E52-PR75C-N D=15 PT1
		100	E52-PR100C-N D=15 PT1
R (See note 2.)	Enclosed-terminal Models	50	E52-PR50C-N D=15 PT0
		75	E52-PR75C-N D=15 PT0
		100	E52-PR100C-N D=15 PT0

Standard	Protective tubing material	Permissible temperature in dry air
Note 1: JIS ceramic Cat.1 (PT1)	Mullite, high alumina, etc.	1,500°C (See note.)
Note 2: JIS special ceramic (PT0)	Recrystallized alumina, fused alumina, etc.	1,600°C (See note.)

Note: The permissible temperature given for the protective tubing is higher than 1,400°C, but the permissible temperature of the thermocouple element wire is only 1,400°C. Therefore, the protective tubing of the E52-PR□C-N can withstand high temperatures momentarily to the levels given in the table as exceptions, but the element wire will deteriorate quickly if the thermocouple is used regularly at temperatures that exceed the permissible temperature for the element wire.

Low-cost Models

■ Low-cost Platinum Resistance Thermometers

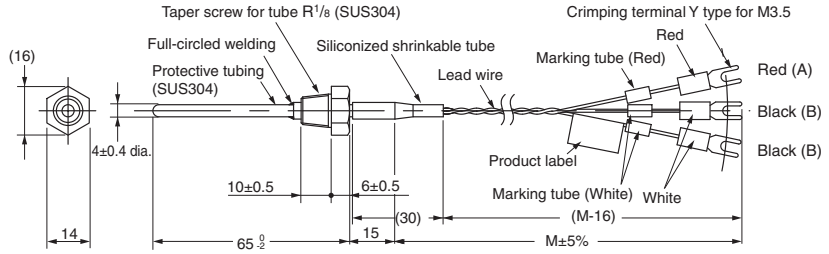
Exposed-lead Models with Screws

Specifications

Element type	Pt100
Conductor type	3-conductor system
Class	Class B
Protective tubing material	SUS304
Sensor length	30 mm
Max. detectable temperature	250°C
Temperature range	–50°C to 250°C
Lead wire	Fluororesin-covered wire (PFA) with 1.0 outer dia. 7/0.18 –50°C to 150°C

E52-P6DY

Dimensions



Note: The protective tubing is of pipe construction, which must not be bent.

Lead wire length (m)	Model
1	E52-P6DY 1M
2	E52-P6DY 2M
4	E52-P6DY 4M

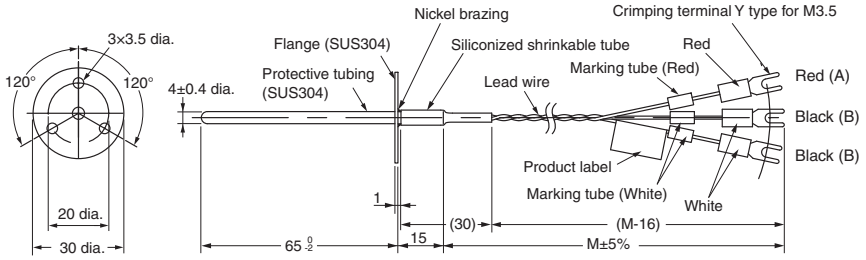
Exposed-lead Models with Flange

Specifications

Element wire	Pt100
Conductor type	3-conductor system
Class	Class B
Protective tubing material	SUS304
Sensor length	30 mm
Max. detectable temperature	250°C
Temperature range	–50°C to 250°C
Lead wire	Fluororesin-covered wire (PFA) with 1.0 outer dia. 7/0.18 –50°C to 150°C

E52-P6FY

Dimensions



Note: The protective tubing is of pipe construction, which must not be bent.

Lead wire length (m)	Model
1	E52-P6FY 1M
2	E52-P6FY 2M
4	E52-P6FY 4M

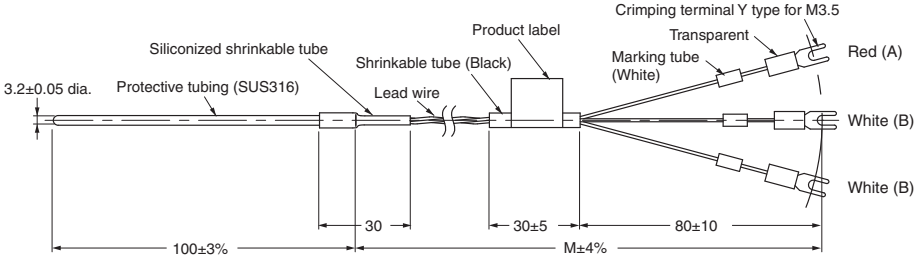
Exposed-lead Models

Specifications

Element type	Pt100
Conductor type	3-conductor system
Class	Class B
Protective tubing material	SUS316
Max. detectable temperature	250°C
Temperature range	0°C to 250°C
Lead wire	Fluororesin-covered wire (PFA) with 1.0 outer dia. 7/0.18 –50°C to 150°C

E52-P10AEY

Dimensions



Note: 1. The protective tubing is of pipe construction, which must not be bent.

2. A Compression Fitting (PT□) cannot be used for mounting.

Lead wire length (m)	Model
1	E52-P10AEY 1M
2	E52-P10AEY 2M
4	E52-P10AEY 4M

■ Low-cost Thermocouples

Exposed-lead Models with Spring

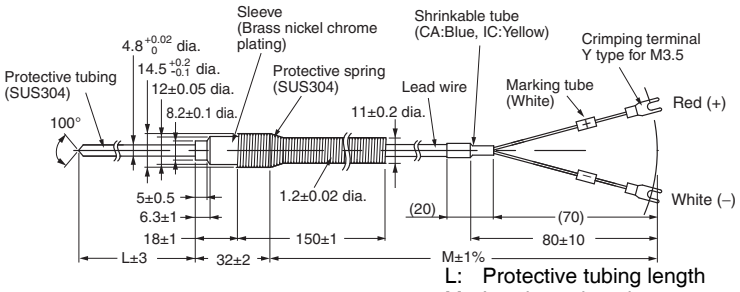
Specifications

Element type	K (CA), J (IC)
Element dia.	0.65 mm (single wire)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Non-grounded type
Temperature range	0°C to 400°C: K (CA) 0°C to 350°C: J (IC)
Lead wire	Fully glass-wool-covered compensating cable and external dimensions of approx. 5.1 x 3.0 4/0.65 0°C to 180°C

Note: The sleeve resists temperatures ranging between 0°C and 100°C.

E52-CA□ASY, E52-IC□ASY

Dimensions



L: Protective tubing length
M: Lead wire length

Note: The protective tubing is of pipe construction, which must not be bent.

Protective tubing length (mm)	Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
		Model	
65	1	E52-CA6ASY 1M	E52-IC6ASY 1M
	2	E52-CA6ASY 2M	E52-IC6ASY 2M
	4	E52-CA6ASY 4M	E52-IC6ASY 4M
100	1	E52-CA10ASY 1M	E52-IC10ASY 1M
	2	E52-CA10ASY 2M	E52-IC10ASY 2M
	4	E52-CA10ASY 4M	E52-IC10ASY 4M
150	1	E52-CA15ASY 1M	E52-IC15ASY 1M
	2	E52-CA15ASY 2M	E52-IC15ASY 2M
	4	E52-CA15ASY 4M	E52-IC15ASY 4M
200	1	E52-CA20ASY 1M	E52-IC20ASY 1M
	2	E52-CA20ASY 2M	E52-IC20ASY 2M
	4	E52-CA20ASY 4M	E52-IC20ASY 4M

Exposed-lead Models with Screw

Specifications

Element type	K (CA), J (IC)
Element dia.	0.65 mm (single wire)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 400°C: K (CA) 0°C to 350°C: J (IC)
Lead wire	Fully glass-wool-covered with external copper shield and external dimensions of approx. 3.1 x 2.0 1/0.65 0°C to 180°C
Terminal shape	Y-type crimp terminal for M3.5

Note: 1. The thermocouple is a single wire from the tip to the terminal.

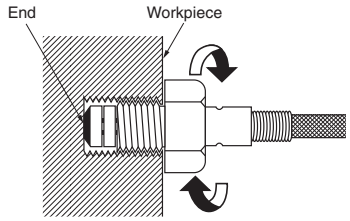
2. Specify the type of screw (i.e., M6, M8, or W1/4) when ordering.

3. The thermocouple is not of airtight construction.

4. OMRON recommends that the tip of the thermocouple is touching the sensing object.

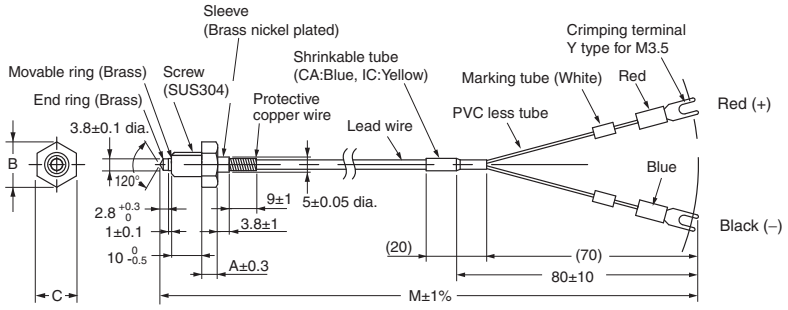
Installation Example

Cut a thread into the workpiece, and screw in the thermocouple while pushing in so that the tip makes complete contact.

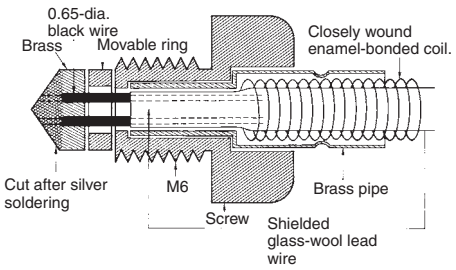


E52-CA1DY, E52-IC1DY

Dimensions



Internal Construction (E52-CA1DY)



Lead wire length (m)	Screw		
	W1/4 (P=1.27)	M6 (P=1.0)	M8 (P=1.25)
A (mm)	4.3	4	5.3
B (mm)	11.5	11.5	15
C (mm)	10	10	13

Note: E52-CA1DY with the same shape and multiple element wires are also available (E52-CA1DY-40). Refer to page 30 for details.

Protective tubing length (mm)	Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
		Model	
M6 screw	1	E52-CA1DY M6 1M	E52-IC1DY M6 1M
	2	E52-CA1DY M6 2M	E52-IC1DY M6 2M
	4	E52-CA1DY M6 4M	E52-IC1DY M6 4M
M8 screw	1	E52-CA1DY M8 1M	E52-IC1DY M8 1M
	2	E52-CA1DY M8 2M	E52-IC1DY M8 2M
	4	E52-CA1DY M8 4M	E52-IC1DY M8 4M
W1/4 screw	1	E52-CA1DY W1/4 1M	E52-IC1DY W1/4 1M
	2	E52-CA1DY W1/4 2M	E52-IC1DY W1/4 2M
	4	E52-CA1DY W1/4 4M	E52-IC1DY W1/4 4M

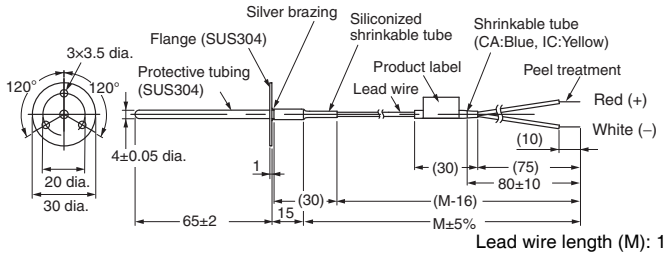
Exposed-lead Models with Flange

Specifications

Element type	K (CA), J (IC)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 350°C: K (CA) 0°C to 350°C: J (IC)
Lead wire	Fluororesin-covered thermocouple wire (PFA) with external dimensions of 1.6 x 1.0 1/0.32 0°C to 150°C

E52-CA6F-N, E52-IC6F-N

Dimensions



Lead wire length (M): 1, 2, or 4 m

Note: 1. The thermocouple is a single wire from the tip to the terminal.
2. The protective tubing is of pipe construction, which must not be bent.
3. Do not use in locations subject to excessive vibration and shock. Doing so may cause disconnection.

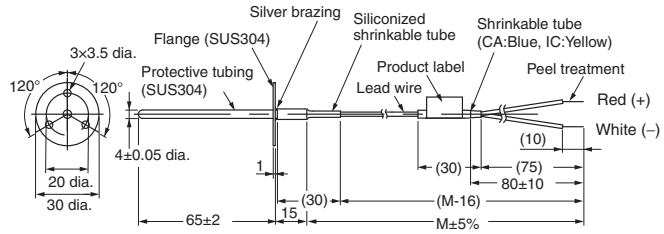
Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
	Model	
1	E52-CA6F-N 1M	E52-IC6F-N 1M
2	E52-CA6F-N 2M	E52-IC6F-N 2M
4	E52-CA6F-N 4M	E52-IC6F-N 4M

Specifications

Element type	K (CA)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 350°C: K (CA)
Lead wire	Fluororesin-covered thermocouple wire (PFA) with external dimensions of 2.5 x 1.5 1/0.65 0°C to 150°C

E52-CA6F-N-25

Dimensions



Lead wire length (M): 1, 2, or 4 m

Note: 1. The thermocouple is a single wire from the tip to the terminal.
2. The protective tubing is of pipe construction, which must not be bent.

Lead wire length (m)	Element type: K (CA)
	Model
1	E52-CA6F-N-25 1M
2	E52-CA6F-N-25 2M
4	E52-CA6F-N-25 4M

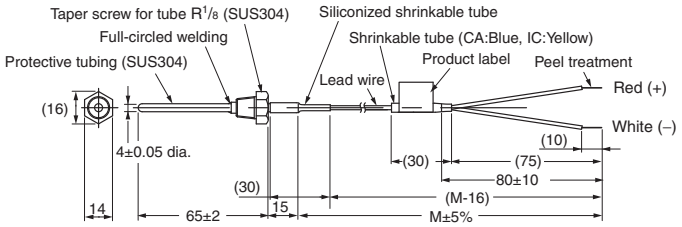
Exposed-lead Models with Screws

Specifications

Element type	K (CA), J (IC)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 350°C: K (CA) 0°C to 350°C: J (IC)
Lead wire	Fluororesin-covered thermocouple wire (PFA) with external dimensions of 1.6 x 1.0 1/0.3 0°C to 150°C

E52-CA6D-N, E52-IC6D-N

Dimensions



Lead wire length (M): 1, 2, or 4 m

Note: 1. The thermocouple is a single wire from the tip to the terminal.
2. The protective tubing is of pipe construction, which must not be bent.
3. Do not use in locations subject to excessive vibration and shock. Doing so may cause disconnection.

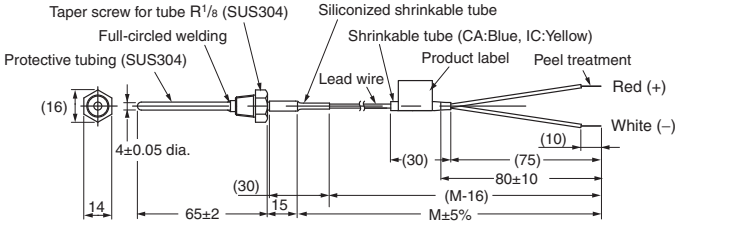
Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
	Model	
1	E52-CA6D-N 1M	E52-IC6D-N 1M
2	E52-CA6D-N 2M	E52-IC6D-N 2M
4	E52-CA6D-N 4M	E52-IC6D-N 4M

Specifications

Element type	K (CA)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 350°C: K (CA)
Lead wire	Fluororesin-covered thermocouple wire (PFA) with external dimensions of 2.5 x 1.5 1/0.65 0°C to 150°C

E52-CA6D-N-25

Dimensions



Lead wire length (M): 1, 2, or 4 m

Note: 1. The thermocouple is a single wire from the tip to the terminal.
2. The protective tubing is of pipe construction, which must not be bent.

Lead wire length (m)	Element type: K (CA)
	Model
1	E52-CA6D-N-25 D4.0 1M
2	E52-CA6D-N-25 D4.0 2M
4	E52-CA6D-N-25 D4.0 4M

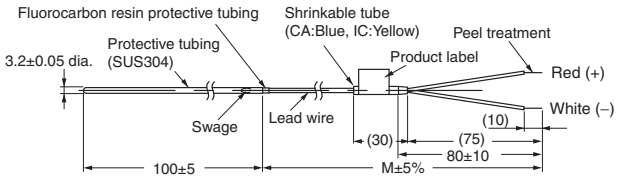
Exposed-lead Models

Specifications

Element type	K (CA), J (IC)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Non-grounded type
Temperature range	0°C to 350°C: K (CA) 0°C to 200°C: J (IC)
Lead wire	Fluororesin-covered thermocouple wire (PFA) with external dimensions of 1.6 x 1.0 1/0.32 0°C to 180°C

E52-CA10AE-N, E52-IC10AE-N

Dimensions



Note: 1. The thermocouple is a single wire from the tip to the terminal.
2. Lead wire length M: 1, 2, or 4 m
3. The protective tubing is of pipe construction, which must not be bent.
4. The thermocouple cannot be mounted using a PT□ Compression Fitting.

Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
	Model	
1	E52-CA10AE-N 1M	E52-IC10AE-N 1M
2	E52-CA10AE-N 2M	E52-IC10AE-N 2M
4	E52-CA10AE-N 4M	E52-IC10AE-N 4M

Exclusive Models

■ Thermocouples

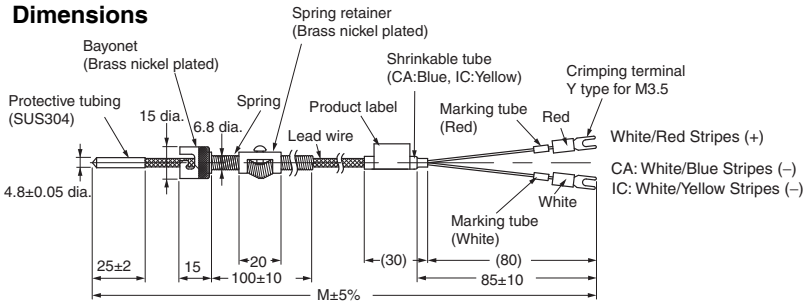
Thermocouples for Molding Machines

Specifications

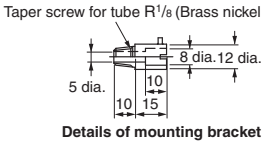
Element type	K (CA), J (IC)
Element diameter	1.0 mm (single wire)
Class	Class 2 (0.75)
Protective tubing material	SUS304
Thermal contact	Grounded type
Temperature range	0°C to 350°C
Lead wire	Glass-covered stainless steel shielded thermocouple wire with 4 dia. 1/1.0 0°C to 180°C

E52-CA2GVY, E52-IC2GVY

Dimensions



Lead wire length (M): 1 or 2 m



Details of mounting bracket

Note: The Adapter is included with the Thermocouple.
If it is lost or damaged, you can order a replacement with the following model number.
Adapter: Y92F-S1

Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
	Model	
1	E52-CA2GVY 1M	E52-IC2GVY 1M
2	E52-CA2GVY 2M	E52-IC2GVY 2M

Thermocouples with Crimp Terminal

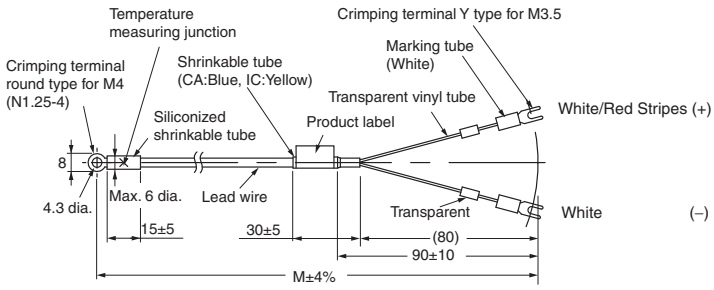
Specifications

Element type	K (CA), J (IC)
Element diameter	0.65 mm (single wire)
Class	Class 2 (0.75)
Thermal contact	Grounded type
Temperature range	0°C to 300°C
Lead wire	Glass-covered stainless steel shielded thermocouple wire with 4 dia. 1/1.0 0°C to 150°C
Terminal shape	Y-type crimp terminal for M3.5

Note: The E52-CA1GTY is also available with double elements. Refer to page 30 for details.

E52-CA1GTY, E52-IC1GTY

Dimensions



Lead wire length (M): 1 or 2 m

Lead wire length (m)	Element type: K (CA)	Element type: J (IC)
	Model	
1	E52-CA1GTY 1M	E52-IC1GTY 1M
2	E52-CA1GTY 2M	E52-IC1GTY 2M

■ Platinum Resistance Thermometers

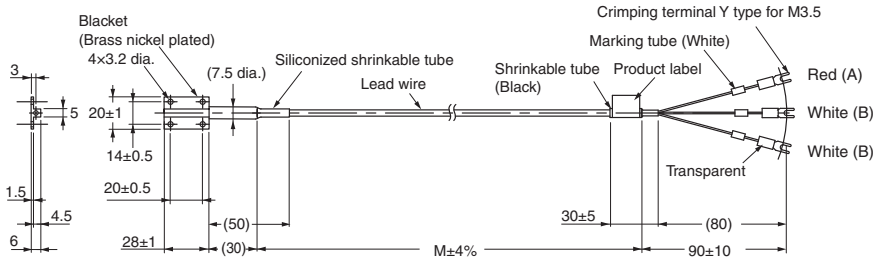
Platinum Resistance Thermometers for Surface Temperature Measurement

Specifications

Element type	Pt100
Class	Class B
Protective tubing material	SUS304 With brass-nickel-plated bracket
Conductor type	3-conductor system
Temperature range	–50°C to 250°C
Lead wire	Silicone-covered 3-conductor cable and approx. 3.9 dia. 30/0.08 –50°C to 150°C

E52-P2GSY

Dimensions



Lead wire length (M): 1 or 2 m

Lead wire length (m)	Model
1	E52-P2GSY 1M
2	E52-P2GSY 2M

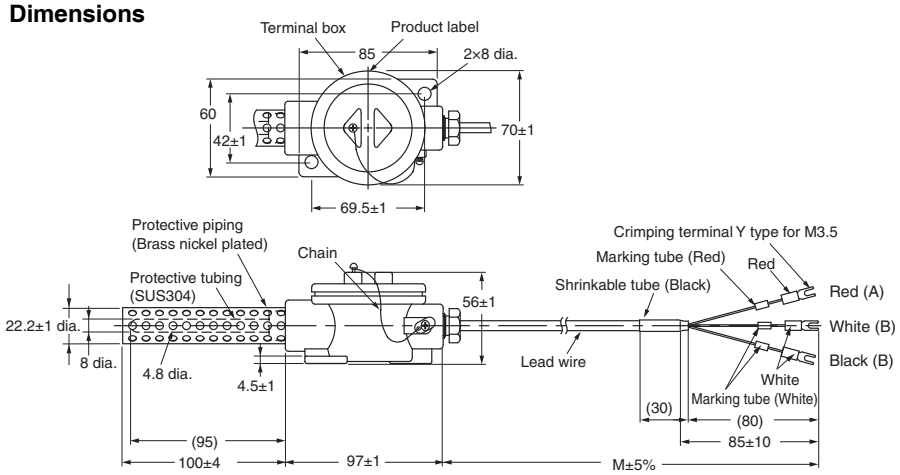
Platinum Resistance Thermometers for Room Temperature Measurement

Specifications

Element type	Pt100
Class	Class B
Protective tubing material	SUS304
Conductor type	3-conductor system
Temperature range	–50°C to 60°C
Lead wire	Vinyl-covered 3-conductor cable with 6.1 dia. 20/0.18 –25°C to 60°C

E52-P10GRY

Dimensions



Lead wire length (m)	Model
2	E52-P10GRY 2M

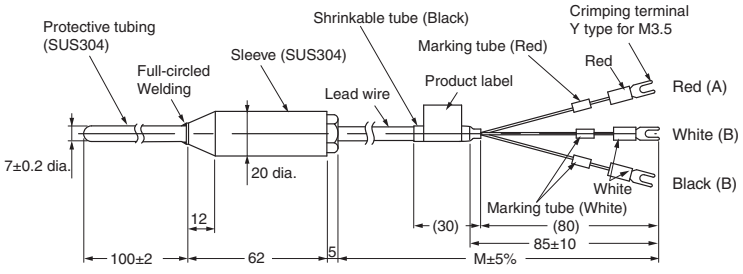
Waterproof Platinum Resistance Thermometers

Specifications

Element wire	Pt100
Class	Class B
Protective tubing material	SUS304
Conductor type	3-conductor system
Temperature range	0°C to 70°C (underwater) –20°C to 70°C (in the air)
Lead wire	Vinyl-covered 3-conductor cable with 6.1 dia. 12/0.18 –25°C to 60°C
Resistive pressure	981 kps

E52-P10GPY

Dimensions



Lead wire length (M): 1 or 2 m

Note: The lead wires are vinyl-covered, and cannot be used underwater. Use the E52-P5AY-40 if waterproof lead wires are required for use underwater. Refer to page 25 for details.

Lead wire length (m)	Model
2	E52-P10GPY 2M
4	E52-P10GPY 4M

Corrosion-resistant Models with Fluororesin-covered Protective Tubing

■ Thermocouples

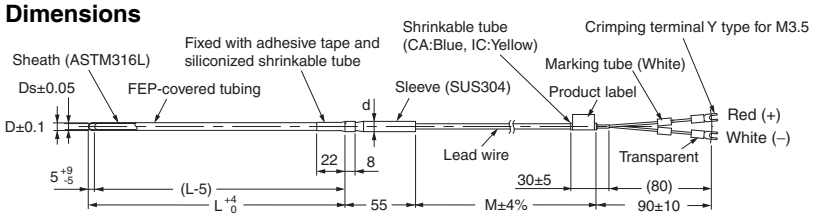
Exposed-lead Models

Specifications

Element type	K (CA)
Class	Class 2 (0.75)
Protective tubing material	ASTM316L with Fluororesin-covered (FEP) tube
Thermal contact	Non-grounded type
Temperature range	0°C to 180°C
Lead wire	Vinyl-covered: –20°C to 70°C

E52-CA20AY-1

Dimensions



Model	Protective tubing length L (cm)	Protective tubing diameter	Sleeve diameter (mm) Sleeve length (mm)	tube thickness (mm)	Lead wire length (m)
E52-CA20AY-1 D=4.6 2M	20	D = 4.6	d = 8	0.7	0.5
E52-CA20AY-1 D=6 2M		D = 6.0	ℓ = 55	0.6	
E52-CA20AY-1 D=8 2M		D = 8.0	d = 11 ℓ = 55	0.8	

■ Platinum Measurement

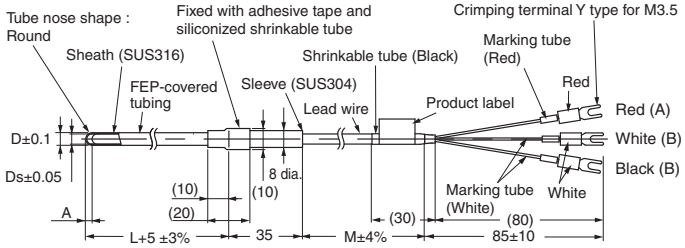
Exposed-lead Models

Specifications

Element type	Pt100
Class	Class B
Protective tubing material	SUS316 with Fluororesin-covered (FEP) tube
Conductor type	3-conductor system
Temperature range	–80°C to 180°C
Lead wire	Vinyl-covered: –20°C to 70°C

E52-P20AY-1

Dimensions



Model	Protective tubing length L (cm)	Protective tubing diameter	Sleeve diameter (mm)	Coating thickness (mm)	Lead wire length (m)
E52-P20AY-1 D=4.6 2M	20	D = 4.6	d = 8	0.7	2
E52-P20AY-1 D=6 2M		D = 6.0	d = 8	0.6	
E52-P20AY-1 D=8 2M		D = 8.0	d = 8	0.8	

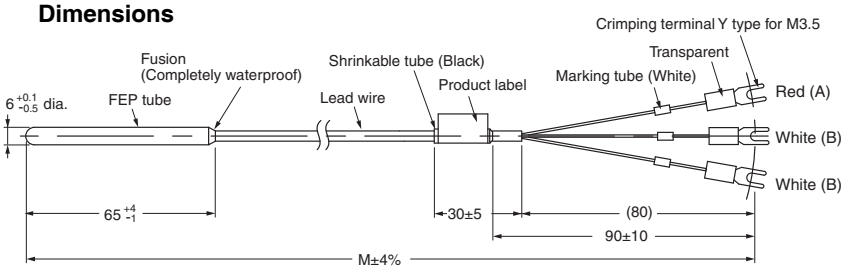
FEP-molded Models (Completely Waterproof)

Specifications

Element type	Pt100
Class	Class B
Protective tubing material	Fluororesin (FEP) tube (element / fluororesin mold (FEP))
Conductor type	3-conductor system
Temperature range	−50°C to 180°C
Lead wire	Fluororesin (FEP) cover (with outer cover): −50°C to 180°C

E52-P5AY-40

Dimensions



Model	Lead wire length (m)
E52-P5AY-40 2M	2
E52-P5AY-40 4M	4
E52-P5AY-40 6M	6
E52-P5AY-40 8M	8