
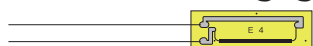
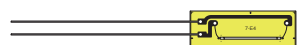


Gages for Ultra-small Strain Measurement (KSPH & KSPLB)

Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)				Remarks											
		Gage (Grid)		Base													
		Length	Width	Length	Width												
<div>●KSPH Series High-output Semiconductor Strain Gages</div> <div>The KSPH series gages have high resistance, thereby making high excitation voltage applicable to obtain high output voltage.</div> <div>Uniaxial 2000Ω gage</div> <div>Resistance: 2000 Ω</div> <div>Gage factor: Approx. 170</div> <div></div> <div>Applicable Adhesives</div> <table><tr><th></th><th>Operating Temp. after Curing the Adhesive</th></tr><tr><td>CC-33A</td><td>-50 to 120°C</td></tr><tr><td>CC-36</td><td>-30 to 100°C</td></tr></table> <table><tr><td>KSPH-4-2K-E4</td><td>4</td><td>0.73</td><td>11</td><td>4</td></tr></table>								Operating Temp. after Curing the Adhesive	CC-33A	-50 to 120°C	CC-36	-30 to 100°C	KSPH-4-2K-E4	4	0.73	11	4
	Operating Temp. after Curing the Adhesive																
CC-33A	-50 to 120°C																
CC-36	-30 to 100°C																
KSPH-4-2K-E4	4	0.73	11	4													
<div>Uniaxial 10000Ω gage</div> <div>Resistance: 10000 Ω</div> <div>Gage factor: Approx. 170</div> <div></div> <div>KSPH-9-10K-E4</div> <div>9</div> <div>0.58</div> <div>16</div> <div>5</div>																	
Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)				Remarks											
		Gage (Grid)		Base													
		Length	Width	Length	Width												
<div>●KSPLB Ultra Linear Semiconductor Strain Gage</div> <div>The KSPLB gage features a superior linearity of resistance change against strain in a comparatively wide range, thereby making it suitable as a sensing element of transducers.</div> <div>Uniaxial 60Ω gage</div> <div>Resistance: 60 Ω</div> <div>Gage factor: Approx. 90</div> <div></div> <div>Applicable Adhesives</div> <table><tr><th></th><th>Operating Temp. after Curing the Adhesive</th></tr><tr><td>CC-33A</td><td>-50 to 120°C</td></tr><tr><td>EP-340</td><td>-50 to 150°C</td></tr></table> <table><tr><td>KSPLB-7-60-E4</td><td>7</td><td>0.28</td><td>14</td><td>5</td></tr></table>								Operating Temp. after Curing the Adhesive	CC-33A	-50 to 120°C	EP-340	-50 to 150°C	KSPLB-7-60-E4	7	0.28	14	5
	Operating Temp. after Curing the Adhesive																
CC-33A	-50 to 120°C																
EP-340	-50 to 150°C																
KSPLB-7-60-E4	7	0.28	14	5													

4 gages/pkg unless otherwise specified.

Encapsulated Gages

●Encapsulated Gages

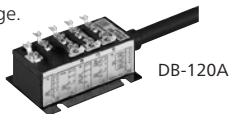
■MI cable length codes and optional accessories

E.g.
 1) KHCS-10-120-G12-11 C5M
 for KHCS with 5 m long MI cable.
 2) KHCS-10-120-G12-11 C2MV
 for KHCS with 2 m long MI cable and a bridge adapter pre-attached.

Optional Accessories

■Bridge box DB-120A/L

Connect KHCV or KCW to form the Wheatstone bridge.



●DB-120A

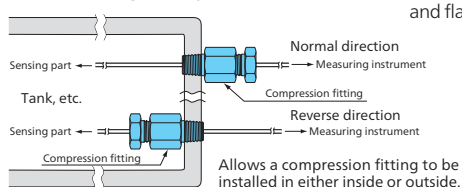
Cable: Chloroprene-coated 5 m long, terminated with a connector (NDIS4102 (7 pins)).
 Dimensions: 60 x 42 x 25 mm
 Weight: Approx. 600 g (Including cable)

●DB-120L (Compact plug-in type)

Cable: Removable type 5 m long, terminated with a connector (NDIS4102 (7 pins)).
 Dimensions: 60 x 20 x 20 mm
 Weight: Approx. 60 g (Excluding cable)

■Compression fitting

For fixing MI cables.
 When ordering, specify it.

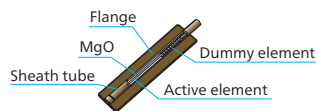


Hermetically sealed weldable strain gages consist of sensing part and cable.

When ordering, specify the model together with code of the desired MI cable length, suffixed with a space in between. The suffix may include codes of the optional bridge adapter and compression fitting (see table below.) In all case, the length of soft cable is 50 cm. (For extension, contact us.)

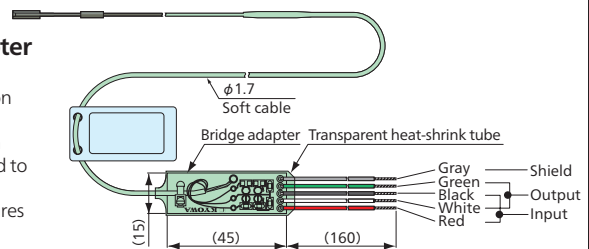
MI cable length	Code of MI cable length	Bridge adapter A	Compression fitting B	A & B
1 m	C1M	C1MV	C1MF	C1MFV
2 m (Std.)	C2M	C2MV	C2MF	C2MFV
3 m	C3M	C3MV	C3MF	C3MFV
4 m	C4M	C4MV	C4MF	C4MFV
5 m	C5M	C5MV	C5MF	C5MFV
6 m	C6M	C6MV	C6MF	C6MFV
8 m	C8M	C8MV	C8MF	C8MFV
10 m	C10M	C10MV	C10MF	C10MFV

■Sensing part (2-element)



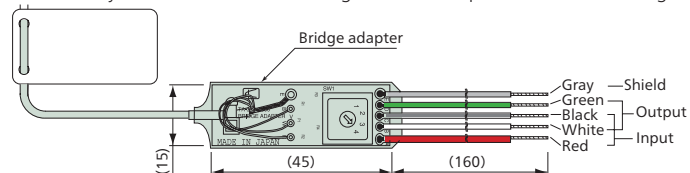
■Half bridge adapter

Equipped with optimum temperature compensation resistors for the operating temperature range. When delivered, it is pre-attached to the soft cable to prevent erroneous wiring and ensures labor saving.



■Quarter bridge adapter








A dedicated adapter to the KHCV, enables easy selection of the cutoff frequencies (1.6, 7.23, 16 Hz, and flat) as well as easy connection to the measuring instrument to prevent erroneous wiring.



Outline
 Lead-wire cable
 General
 Waterproof
 Concrete
 Composite material
 PCB
 Plastics
 Ultra-small strain
 High temp.
 Low temp.
 High elongation
 Non-magnetoresistive
 Hydrogen gas
 Bending
 With protector
 Embedded
 Crack
 Adhesive
 Coating agent
 Custom-designed

Encapsulated Gages (KHCX, KHCV, KHCR, KHCS, KHCM, and KHC)

The specifications on this page are the reference values and may be changed on operating conditions.

Patterns, Gage Resistance, Gage Factor	Models	Dimensions (mm)			Remarks
		Gage length	Flange		
			Length	Width	
950°C (Static/dynamic) ●KHCX Encapsulated Gage Uniaxial, 2-element, temperature-compensation type 	Resistance: 120Ω Gage factor (950°C): Approx. 1.5 Material: Inconel 600 (NCF 600) Recommended amplifier: UCAM-550A, CDV Installation Method and Operating Temperature Spot welding, -196 to 950°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHCX-10-120-G13-11 C2MV	10	20	3	Min. radius of curvature R75
	KHCX-10-120-G13-13 C2MV				
800°C (Dynamic) ●KHCV Encapsulated Gage Uniaxial, 1-element 	Resistance: 120Ω Gage factor (800°C): Approx. 1.2 Material: Inconel 600 (NCF 600) Installation Method and Operating Temperature Spot welding, 25 to 800°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHCV-5-120-G17 C2MV	5	10	3	Min. radius of curvature R15
750°C (Static/dynamic) ●KHCR Encapsulated Gage Uniaxial, 2-element, temperature-compensation type 	Resistance: 120Ω Gage factor (750°C): Approx. 1.2 Material: Inconel 600 (NCF 600) Installation Method and Operating Temperature Spot welding, 25 to 750°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHCR-5-120-G16-11 C2MV	5	10	3	Min. radius of curvature R15
	KHCR-5-120-G16-13 C2MV				
	KHCR-5-120-G16-16 C2MV				
750°C (Static/dynamic) ●KHCS Encapsulated Gages Uniaxial, 2-element, temperature-compensation type 	Resistance: 120Ω Gage factor (750°C): Approx. 1.8 Material: Inconel 600 (NCF 600) Installation Method and Operating Temperature Spot welding, -196 to 750°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHCS-10-120-G12-11 C2MV	10	20	3	Min. radius of curvature R20
	KHCS-10-120-G12-13 C2MV				
	KHCS-10-120-G12-16 C2MV				
650°C (Static/dynamic) ●KHCM Encapsulated Gages Uniaxial, 2-element, temperature-compensation type Resistance: 120Ω Gage factor (650°C): Approx. 1.8 for gage length 10 mm Approx. 1.4 for gage length 5 mm Material: Inconel 600 (NCF 600) 	Installation Method and Operating Temperature Spot welding, -196 to 650°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHCM-10-120-G15-(11, 13, 16) C2MV	10	20	3	Min. radius of curvature R20
	KHCM-5-120-G15-(11, 13, 16) C2MV	5	10	3	Min. radius of curvature R15
550°C (Dynamic) 500°C (Static) ●KHC Encapsulated Gage Uniaxial, 2-element, temperature-compensation type Resistance: 120 Ω Gage factor (500°C): Approx. 1.75 for gage length 20 mm Approx. 1.5 for gage length 10 mm Material: Inconel 600 (NCF 600) 	Installation Method and Operating Temperature Spot welding, -196 to 550°C The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHC-20-120-G8-(11, 13, 16) C2MV	20	30	4	Min. radius of curvature R25
	KHC-10-120-G8-(11, 13, 16) C2MV	10	16.5	4	Min. radius of curvature R20
Uniaxial, 2-element, temperature-compensation type Resistance: 120 Ω Gage factor (500°C): Approx. 1.75 for gage length 20 mm Approx. 1.5 for gage length 10 mm Material: SUS 321 	The following models are delivered with MI cable 2 m long and soft cable 0.5 m long pre-attached.				
	KHC-20-120-G9-(11, 13, 16) C2MV	20	30	5	Min. radius of curvature R25
	KHC-10-120-G9-(11, 13, 16) C2MV	10	16.5	5	Min. radius of curvature R20

1 gage/ pkg



Strain Gages

Outline

Lead-wire cable

General

Waterproof

Concrete

Composite material
PCB
Plastics

Ultra-small strain
High temp.
Low temp.

High elongation

Non-magneto
resistive

Hydrogen gas
Bending

With protector
Embedded

Crack

Adhesive
Coating agent

Custom-
designed