

● Gage Factor	Approx. 2.0
● Applicable Linear Expansion Coefficients ( $\times 10^{-6}/^{\circ}\text{C}$ )	13
● Self-temperature-compensation Range	-30 to 120°C

**Applicable Adhesives and Operating Temperature Ranges**

CC-33A: -196 to 120°C  
 CC-36: -30 to 100°C  
 PC-600: -196 to 150°C

## Foil Strain Gages for Printed Boards

PCB are used for varieties of products including cellular phones, car navigation systems and digital cameras. The gages are the self-temperature-compensation gages (SELCOM gages) for evaluating them.

- Dimensions of gage base (bondable space to mounted components and narrow parts) 1.2 mm long by 1.1 mm wide (uniaxial), 2.5 mm long by 2.5 mm wide (Biaxial or triaxial)
- Linear expansion coefficient of  $13 \times 10^{-6}/^{\circ}\text{C}$ , suitable for component-mounted board
- Self-temperature-compensation range is made as wide as -30 to 120°C to satisfy thermal cyclic tests of PCB.

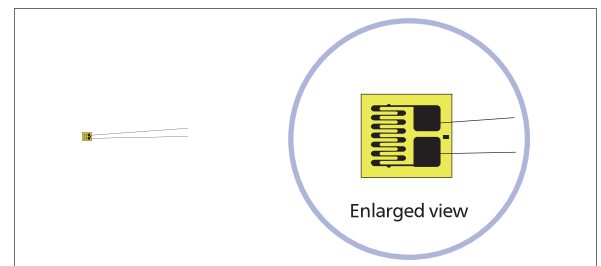
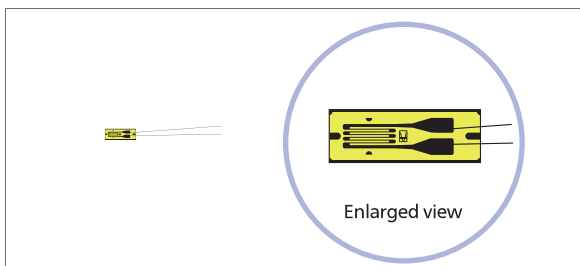
### Types, lengths and codes of lead-wire cables pre-attached to KFRS gages

Type	2 polyester-coated copper wires		3 polyester-coated copper wires		Vinyl-coated flat 2-wire cable		Vinyl-coated flat 3-wire cable		Mid-temperature 2-wire cable	Mid-temperature 3-wire cable
	C1, D34, D35	C1, D34, D35	C1, D34, D35	C1, D34, D35	C1	D34, D35	C1	D34, D35	C1, D34, D35	C1, D34, D35
Length										
10 cm	N10C2	N10C3								
30 cm	N30C2	N30C3	L30C2R	L30C2S	L30C3R	L30C3S	L30C2			R30C3
1 m	N1M2	N1M3	L1M2R	L1M2S	L1M3R	L1M3S	R1M2			R1M3
3 m			L3M2R	L3M2S	L3M3R	L3M3S	R3M2			R3M3
5 m			L5M2R	L5M2S	L5M3R	L5M3S	R5M2			R5M3
Operating temp.	-196 to 150°C				-10 to 80°C				-100 to 150°C	
Remarks	Twisted for $\geq 50$ cm				L-6		L-7		L-11*	L-12*

\* For type R of lead-wire cable with glass-cloth tape, see page 23.

\*\* For other lead-wire cable lengths, contact us.

## KFRS ● Uniaxial



Models	<b>KFRS-1-120-C1-13</b>
Pattern	<b>Uniaxial</b>
Base	4 × 1.4 mm
Gage (Grid)	1 × 0.65 mm
Resistance	120 Ω
Pieces per Pack	10

Models	<b>KFRS-02-120-C1-13</b>
Pattern	<b>Uniaxial</b>
Base	1.2 × 1.1 mm
Gage (Grid)	0.2 × 0.8 mm
Resistance	120 Ω
Pieces per Pack	10

When ordering, specify the model number as follows.

**KFRS-□-120-C1-13 □** Lead-wire Cable Code

(e.g.)

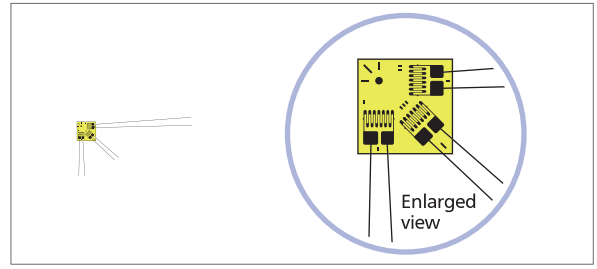
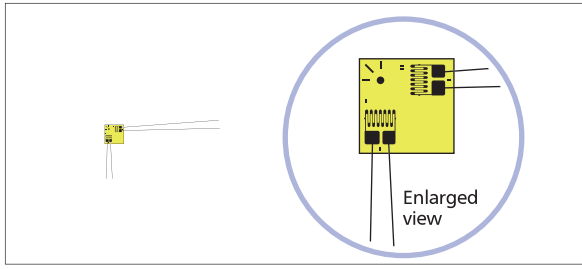
**KFRS-1-120-C1-13 L1M3R**

\*Values in □ and lead-wire cable code cannot be arbitrarily combined.

Lead-wire Cable Type and Shape	Oprg. Temp.	Length	Code
Vinyl-coated flat 3-wire cable L-7 (L-10 for 6 m or longer)	-10 to 80°C	1 m	<b>L1M3R:L1M3S</b>
		3 m	<b>L3M3R:L3M3S</b>
		5 m	<b>L5M3R:L5M3S</b>
Vinyl-coated flat 2-wire cable L-6 (L-9 for 6 m or longer)	-10 to 80°C	1 m	<b>L1M2R:L1M2S</b>
		3 m	<b>L3M2R:L3M2S</b>
		5 m	<b>L5M2R:L5M2S</b>
Mid-temperature 3-wire cable L-12	-100 to 150°C	1 m	<b>R1M3</b>
		3 m	<b>R3M3</b>
		5 m	<b>R5M3</b>
Mid-temperature 2-wire cable L-11	-100 to 150°C	1 m	<b>R1M2</b>
		3 m	<b>R3M2</b>
		5 m	<b>R5M2</b>
3 polyester-coated copper wires	-196 to 150°C	10 cm	<b>N10C3</b>
		30 cm	<b>N30C3</b>
2 polyester-coated copper wires	-196 to 150°C	10 cm	<b>N10C2</b>
		30 cm	<b>N30C2</b>
Silver-covered copper wires	-196 to 150°C	25 mm	

\*Gage (Grid): Length × Width

# KFRS ● Biaxial, Triaxial



Models	<b>KFRS-02-120-D34-13</b>
Pattern	<b>Biaxial, 0°/90° plane arrangement</b>
Base	2.5 × 2.5 mm
Gage (Grid)	0.2 × 0.8 mm
Resistance	120 Ω
Pieces per Pack	5

Models	<b>KFRS-02-120-D35-13</b>
Pattern	<b>Triaxial, 0°/90°/45° plane arrangement</b>
Base	2.5 × 2.5 mm
Gage (Grid)	0.2 × 0.8 mm
Resistance	120 Ω
Pieces per Pack	5

When ordering, specify the model number as follows.

**KFRS-02-120-□-13** Lead-wire Cable Code

(e.g.)

KFRS-02-120-D35-13 L1M3R

\*Values in □ and lead-wire cable code cannot be arbitrarily combined.

Lead-wire Cable Type and Shape	Oprg. Temp.	Length	Code
Vinyl-coated flat 3-wire cable L-7 (L-10 for 6 m or longer) 	-10 to 80°C	1 m	L1M3R;L1M3S
		3 m	L3M3R;L3M3S
		5 m	L5M3R;L5M3S
Vinyl-coated flat 2-wire cable L-6 (L-9 for 6 m or longer) 	-10 to 80°C	1 m	L1M2R;L1M2S
		3 m	L3M2R;L3M2S
		5 m	L5M2R;L5M2S
Mid-temperature 3-wire cable L-12 	-100 to 150°C	1 m	R1M3
		3 m	R3M3
		5 m	R5M3
Mid-temperature 2-wire cable L-11 	-100 to 150°C	1 m	R1M2
		3 m	R3M2
		5 m	R5M2
3 polyester-coated copper wires 	-196 to 200°C	10 cm	N10C3
		30 cm	N30C3
2 polyester-coated copper wires 	-196 to 200°C	10 cm	N10C2
		30 cm	N30C2
Silver-covered copper wires 	-196 to 150°C	25 mm	

\*Gage (Grid): Length × Width