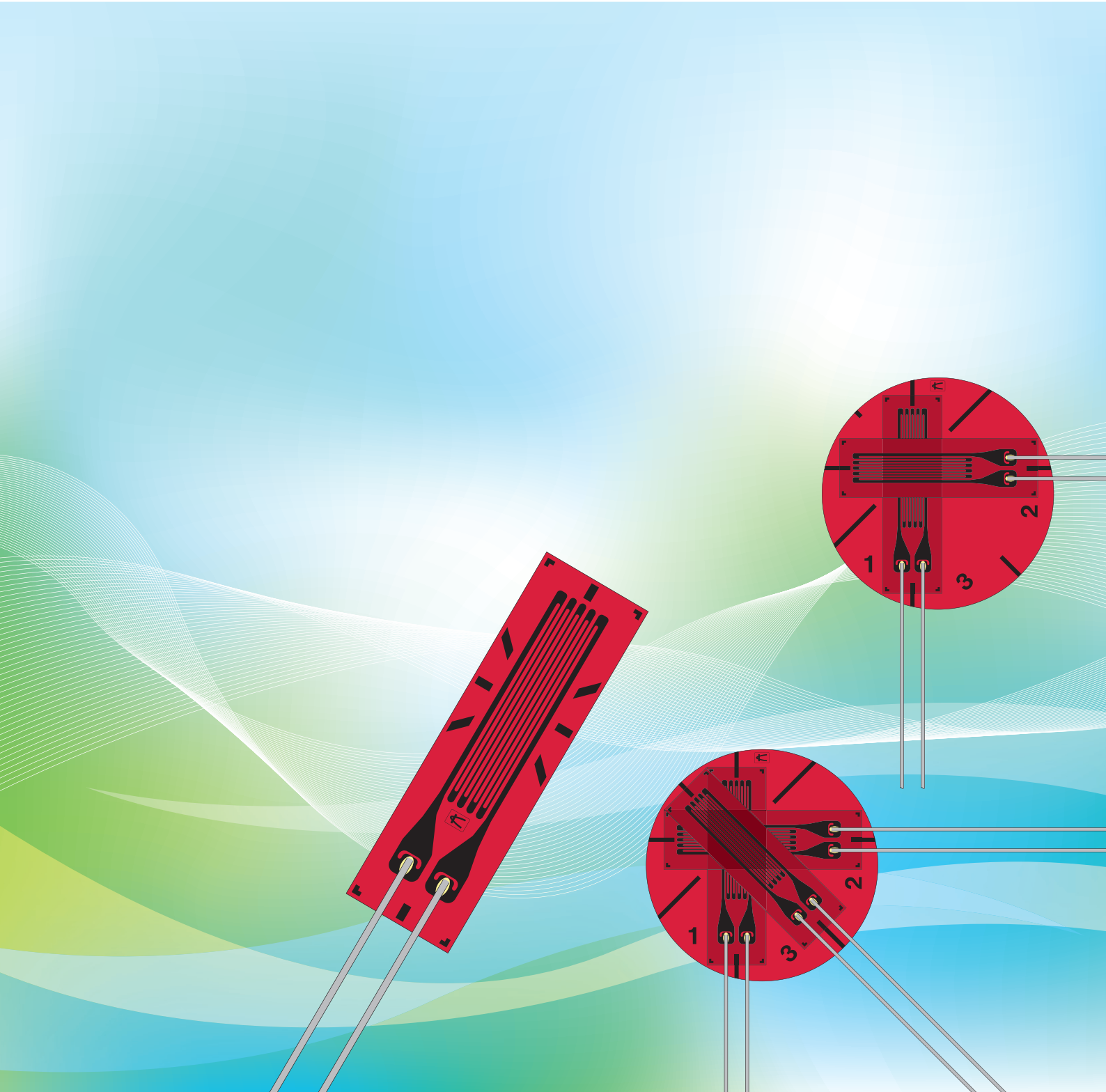
Move into the future with reliable measurements

KYOWA

General-purpose Foil Strain Gages

KFGS Series



KFGS

New strain gages with the world highest level performance

Point 1 CE compliant

- All models are RoHS compliant

Point 2 Improved Quality

- Excellent long-term stability, repeatability and reliability

Point 3 Improving for gluing work

- Modification of center marks
- Brighter and more transparent
- Improved flexibility

Point 4 New package

- Every gage packaged separately
- Substantial information on package

CE

General-purpose Foil Strain Gages

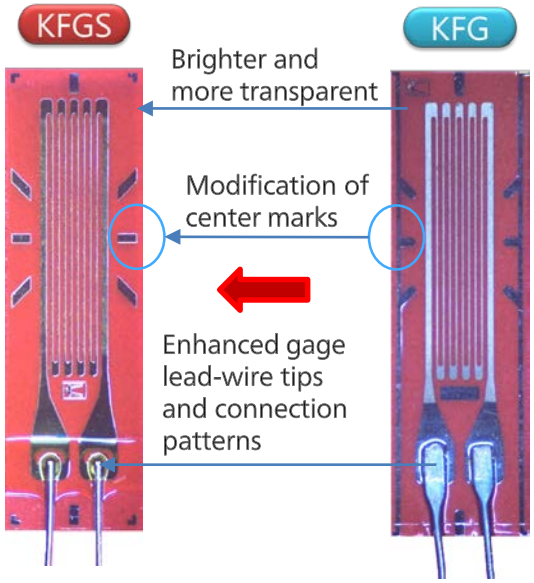
KFGS series NEW

New strain gages with the world highest level performance

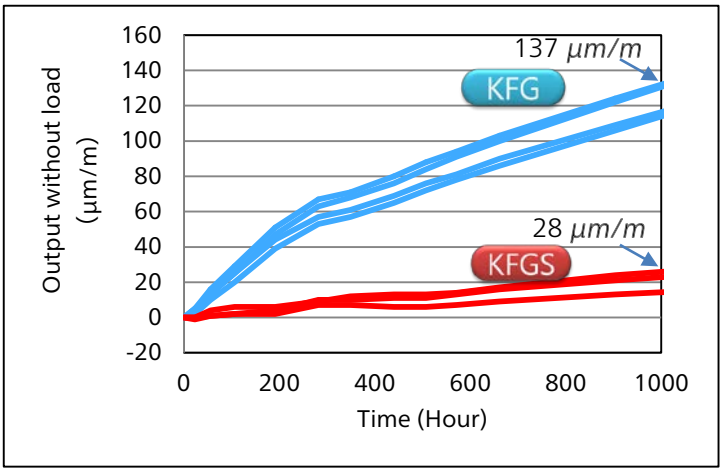
- CE compliant
  - All models are RoHS compliant
- Improving for affixing work
  - Modification of center marks
  - Brighter and more transparent
  - Improved flexibility
- Improved quality
  - Excellent long-term stability, repeatability, and reliability
- New package
  - Every gage packaged separately
  - Substantial information on package

What's new?

Improved Pattern

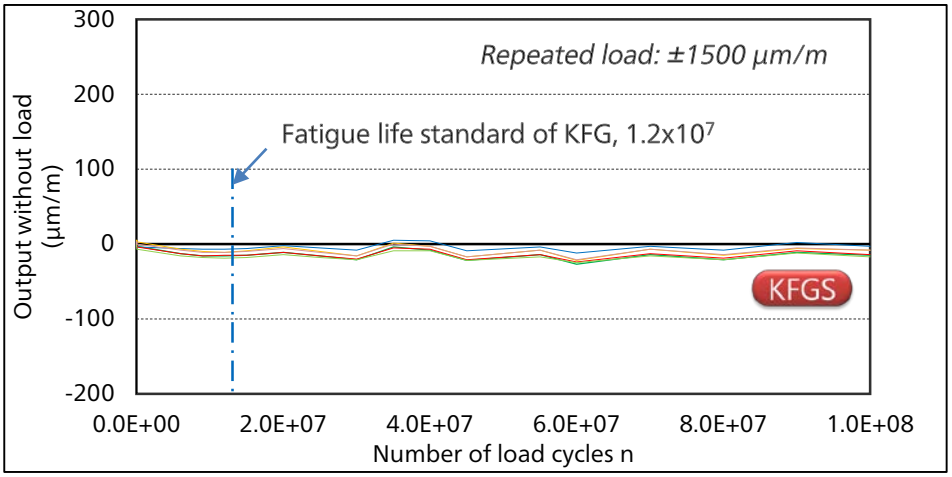


Excellent long-term stability

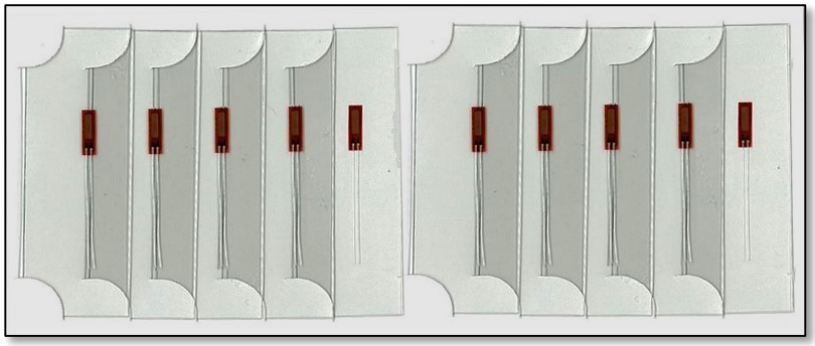


Accelerated test under 85ºC and 85%RH, equivalent to 20 years long test under normal testing environment.

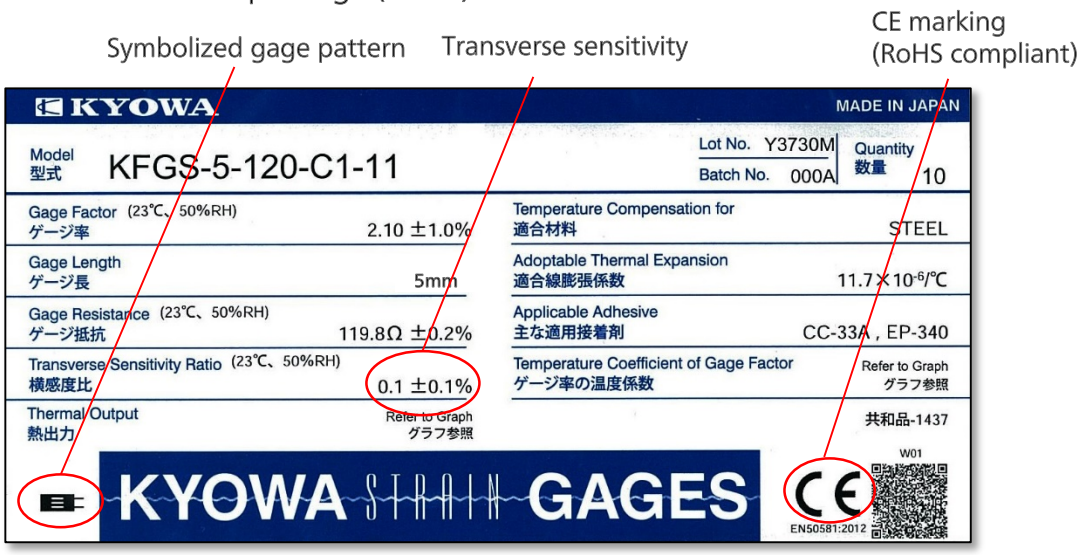
Excellent repeatability and reliability



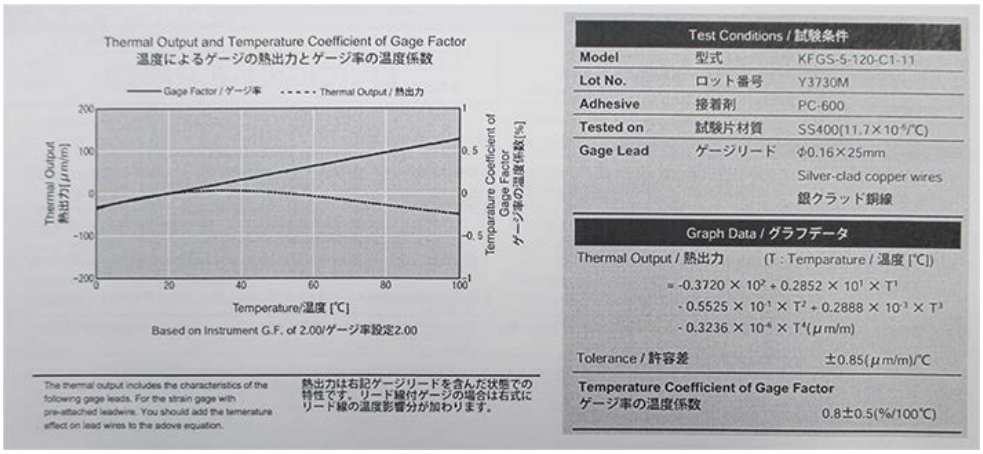
Individual packing for every single gage



Product information on package (Front)



Product information on package (Rear)



Kyowa Electronic Instruments Co.,Ltd.

Overseas Department:
3-5-1, Chofugaoka, Chofu, Tokyo 182-8520 Japan
TEL: +81-42-489-7220 FAX: +81-42-488-1122
E-mail: overseas@kyowa-ei.co.jp
Web: http://www.kyowa-ei.com/

Manufacture's Representative

⚠ Safety Precautions

Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.

JQA-0821
JQA-EM4824

• Specifications are subject to change without notice for improvement.

A strain gage detects a minute dimensional change (Strain) as an electric signal. By measuring strain with the gage bonded to a material or structure, the strength or safety can be known. Thus, the strain gages are used in various industries including machinery, automobile, electric, civil engineering, medical, and food.
The strain gage are also adopted as sensing elements of force, pressure, acceleration, vibration, displacement, and torque transducers for various purposes including measurement and control of production lines.
Kyowa produced the first Japanese-made strain gage in 1951, and based on the abundant experience and technology accumulated for these years, the company manufactures a variety of high-performance, environmentally friendly strain gages.

■Principle of Strain Gages

If external tensile force or compressive force increases or decreases the resistance proportionally increases or decreases. Suppose that original resistance R changes by ΔR because of strain ε, the following equation can be set up.

$$\frac{\Delta R}{R} = Ks \cdot \varepsilon$$

Where, Ks is a gage factor, expressing the sensitivity coefficient of strain gages. General purpose strain gages use copper-nickel or nickel-chrome alloy for the resistive elements, and the gage factor provided by these alloys is approximately 2.

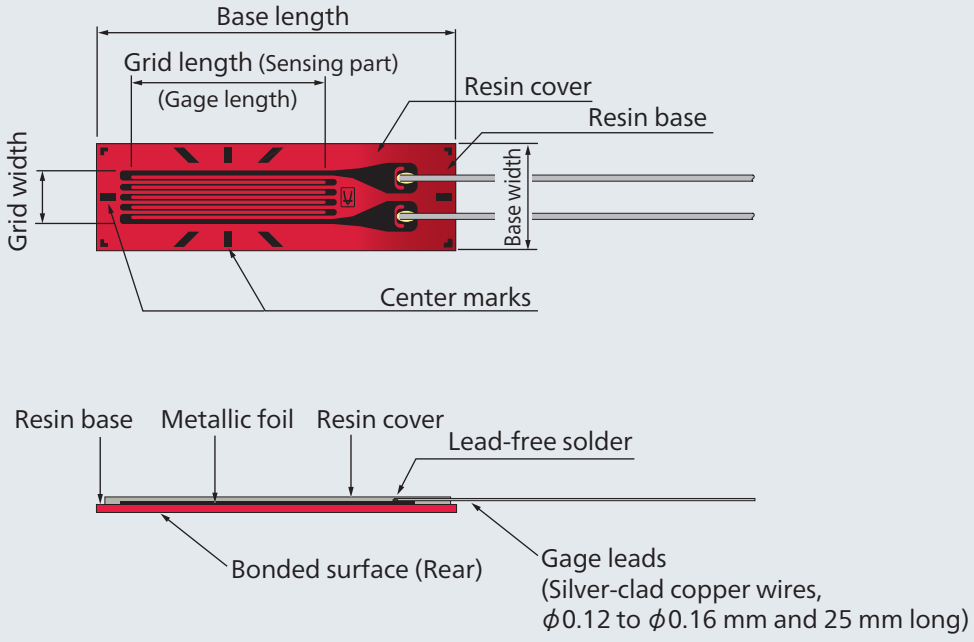
■Types of Strain Gages

Types of strain gages are classified into foil strain gage, wire strain gage, and semiconductor strain gage, etc.

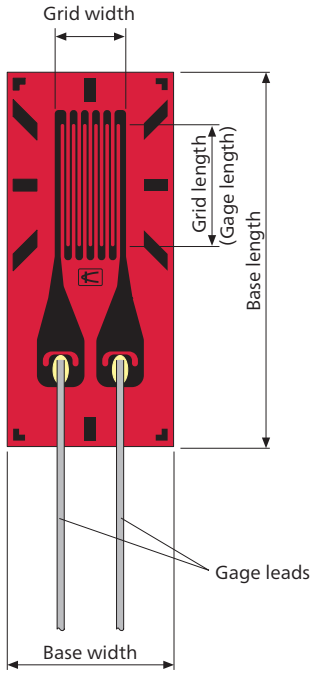
■Structure of a Foil Strain Gage

The foil strain gage has metal foil on the electric insulator of the thin resin, and gage leads attached, as shown in Fig. 1 below.
The strain gage is bonded to the measuring object with a dedicated adhesive. Strain occurring on the measuring site is transferred to the strain sensing element via adhesive and the resin base. For accurate measurement, the strain gage and adhesive should be compatible with the measuring material and operating conditions such as temperature, etc.

Fig. 1 Structure of a foil strain gage



●General-purpose Foil Strain Gages KFGS



The KFGS series gages use polyimide resin for the base part that is approx. 13 µm thick. It ensures excellent flexibility. The outstanding moisture proof enables the KFGS gages to operate in outdoor measurement effectively. Unless directly exposed to water drop, no coating treatment is required.

Applicable Adhesives and Operating Temperature Range after Curing

CC-33A: -196 to 120°C (–10 to 80°C with vinyl-coated cable attached)
CC-35: -30 to 120°C (–10 to 80°C with vinyl-coated cable attached)
CC-36: -30 to 100°C (–10 to 80°C with vinyl-coated cable attached)
EP-340: -55 to 150°C (–10 to 80°C with vinyl-coated cable attached)
PC-600: -196 to 150°C (–10 to 80°C with vinyl-coated cable attached)

Notes on pre-attached lead-wire cables

- ●Standard color of the 2-wire cable pre-attached to uniaxial gages is red (R). If desired, a white, green, yellow or black cable can be pre-attached.
- ●Standard 3-wire cable pre-attached to uniaxial gages has red stripes. If desired, the red stripes can be changed to blue or yellow stripes.
- ●In the case of a triaxial gage, 2-wire cables are color-coded with red, white and green stripes for 0°, 90° and 45°, respectively and 3-wire cables, with red, yellow and blue stripes for 0°, 90° and 45°, respectively. The letter code is S in common.

■Types, lengths and codes of lead-wire cables pre-attached to KFGS series gages

Types / Length	Polyester coated 2-wire copper cables	Polyester coated 3-wire copper cables	Vinyl-coated flat 2-wire cables		Vinyl-coated flat 3-wire cables		Mid-temperature 2-wire cables	Mid-temperature 3-wire cable
	C1,C2,C3, C15,C16,D1, D2,D3,D4,D6, D9,D16,D17, D19,D28,D31	C1,C2,C3, C15,C16, D1,D4,D9, D16,D17,D19, D28,D31	C1,C2,C3, C15,C16, D9,D19	D1,D4, D16,D17, D28, D39	C1,C2,C3, C15,C16, D2,D9,D19, D31	D1,D4, D16,D17, D28, D39	C1,C2,C3, C15,C16, D1,D4,D9, D16,D17,D19, D28,D39	C1,C2,C3, C15,C16, D1,D2,D4,D9, D16,D17,D19, D28,D31,D39
15 cm	N15C2	N15C3	——	——	——	——	——	——
30 cm	N30C2	N30C3	——	——	——	——	——	——
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 ≥50 cm (Exceptions exist)		L-6, L-9 for ≥6 m		L-7, L-10 for ≥6 m		L-11	L-12

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

When ordering, suffix the lead-wire cable code to the model number with a space in between.

E.g.

KFGS-5-120-C1-11 N15C3 for the gage with a polyester-coated 3-wire copper cable 15 cm long → KFGS-5-120-C1-11 N15C3

KFGS-5-120-C1-11 L5M2R for the gage with a vinyl-coated flat 2-wire cable 5 m long → KFGS-5-120-C1-11 L5M2R

KFGS-5-120-D17-11 L5M3S for the gage with a vinyl-coated flat 3-wire cable 5 m long → KFGS-5-120-D17-11 L5M3S

KFGS-5-120-C1-11 R5M3 for the gage with a mid-temperature 3-wire cable 5 m long → KFGS-5-120-C1-11 R5M3

KFGS-5-120-D17-11 R5M2 for the gage with a mid-temperature 2-wire cable 5 m long → KFGS-5-120-D17-11 R5M2

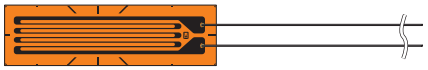
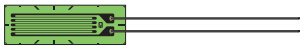
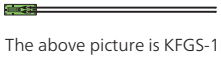
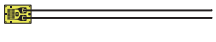
If there is no code of lead-wire cable after the model number, the gage is delivered with silver-clad copper wires 25 mm long.

Uniaxial

Silver-clad copper gage leads 25 mm long
Resistance: 120 Ω
Gage factors: Approx. 2.1

Note: *1 Base color stands for different coefficients of linear expansion.

- Common steel
- Stainless steel
- Aluminum alloy
- Magnesium alloy or sometimes wood

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm)				Remarks
			Grid		Base		
			Length	Width	Length	Width	
KFGS-30-120-C1  The above picture is KFGS-30-120-C1-11	KFGS-30-120-C1-11	●	30	3.3	37	5.2	
	KFGS-30-120-C1-16	●					
	KFGS-30-120-C1-23	●					
	KFGS-30-120-C1-27	●					
KFGS-20-120-C1  The above picture is KFGS-20-120-C1-16	KFGS-20-120-C1-11	●	20	5	28	8	
	KFGS-20-120-C1-16	●					
	KFGS-20-120-C1-23	●					
	KFGS-20-120-C1-27	●					
KFGS-10-120-C1  The above picture is KFGS-10-120-C1-23	KFGS-10-120-C1-11	●	10	3	16	5.2	
	KFGS-10-120-C1-16	●					
	KFGS-10-120-C1-23	●					
	KFGS-10-120-C1-27	●					
KFGS-6-120-C1  The above picture is KFGS-6-120-C1-27	KFGS-6-120-C1-11	●	6	1.7	10	3.4	
	KFGS-6-120-C1-16	●					
	KFGS-6-120-C1-23	●					
	KFGS-6-120-C1-27	●					
KFGS-5-120-C1  The above picture is KFGS-5-120-C1-11	KFGS-5-120-C1-5	●	5	1.4	9.4	2.8	For wood
	KFGS-5-120-C1-11	●					
	KFGS-5-120-C1-16	●					
	KFGS-5-120-C1-23	●					
	KFGS-5-120-C1-27	●					
KFGS-4N-120-C1 The above picture is KFGS-4N-120-C1-16	KFGS-4N-120-C1-11	●	4	0.7	8	1.4	
	KFGS-4N-120-C1-16	●					
	KFGS-4N-120-C1-23	●					
	KFGS-4N-120-C1-27	●					
KFGS-3-120-C1  The above picture is KFGS-3-120-C1-23	KFGS-3-120-C1-11	●	3	1.3	7.4	2.8	
	KFGS-3-120-C1-16	●					
	KFGS-3-120-C1-23	●					
	KFGS-3-120-C1-27	●					
KFGS-2-120-C1  The above picture is KFGS-2-120-C1-27	KFGS-2-120-C1-5	●	2	1.2	6.3	2.8	For wood
	KFGS-2-120-C1-11	●					
	KFGS-2-120-C1-16	●					
	KFGS-2-120-C1-23	●					
	KFGS-2-120-C1-27	●					
KFGS-2N-120-C1 The above picture is KFGS-2N-120-C1-11	KFGS-2N-120-C1-11	●	2	0.84	5.3	1.4	
	KFGS-2N-120-C1-16	●					
	KFGS-2N-120-C1-23	●					
	KFGS-2N-120-C1-27	●					
KFGS-1-120-C1  The above picture is KFGS-1-120-C1-16	KFGS-1-120-C1-11	●	1	1.1	4.8	2.4	
	KFGS-1-120-C1-16	●					
	KFGS-1-120-C1-23	●					
	KFGS-1-120-C1-27	●					
KFGS-1N-120-C1  The above picture is KFGS-1N-120-C1-23	KFGS-1N-120-C1-11	●	1	0.65	4.2	1.4	
	KFGS-1N-120-C1-16	●					
	KFGS-1N-120-C1-23	●					
	KFGS-1N-120-C1-27	●					
KFGS-03-120-C1  The above picture is KFGS-03-120-C1-27	KFGS-03-120-C1-11	●	0.3	1.4	3.5	2.4	
	KFGS-03-120-C1-16	●					
	KFGS-03-120-C1-23	●					
	KFGS-03-120-C1-27	●					
KFGS-02-120-C1  The above picture is KFGS-02-120-C1-11	KFGS-02-120-C1-11	●	0.2	1.4	3.3	2.4	
	KFGS-02-120-C1-16	●					
	KFGS-02-120-C1-23	●					
	KFGS-02-120-C1-27	●					

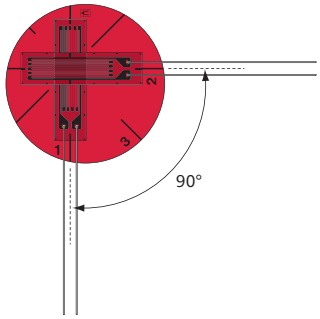
10 gages/pkg

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm)				Remarks
			Grid		Base		
			Length	Width	Length	Width	

Note: *1 Base color stands for different coefficients of linear expansion.

Biaxial, 0°/90° stacked rosette

Resistance: 120 Ω
Gage factors: Approx. 2.1

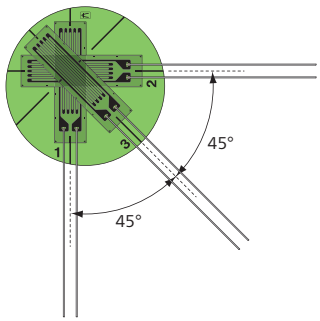


The above picture is KFGS-10-120-D16-11

KFGS-10-120-D16-11	10	3	ϕ21	
KFGS-10-120-D16-16				
KFGS-10-120-D16-23				
KFGS-10-120-D16-27				
KFGS-5-120-D16-11	5	1.4	ϕ11	
KFGS-5-120-D16-16				
KFGS-5-120-D16-23				
KFGS-5-120-D16-27				
KFGS-3-120-D16-11	3	1.3	ϕ10	
KFGS-3-120-D16-16				
KFGS-3-120-D16-23				
KFGS-3-120-D16-27				
KFGS-2-120-D16-11	2	1.2	ϕ8	
KFGS-2-120-D16-16				
KFGS-2-120-D16-23				
KFGS-2-120-D16-27				
KFGS-1-120-D16-11	1	1.1	ϕ5	
KFGS-1-120-D16-16				
KFGS-1-120-D16-23				
KFGS-1-120-D16-27				

Triaxial, 0°/90°/45° stacked rosette for Stress Analysis

Resistance: 120 Ω
Gage factors: Approx. 2.1

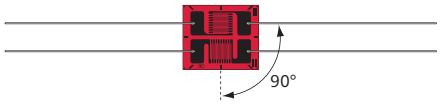


The above picture is KFGS-10-120-D17-23

KFGS-10-120-D17-11	10	3	ϕ21	
KFGS-10-120-D17-16				
KFGS-10-120-D17-23				
KFGS-10-120-D17-27				
KFGS-5-120-D17-11	5	1.4	ϕ11	
KFGS-5-120-D17-16				
KFGS-5-120-D17-23				
KFGS-5-120-D17-27				
KFGS-3-120-D17-11	3	1.3	ϕ10	
KFGS-3-120-D17-16				
KFGS-3-120-D17-23				
KFGS-3-120-D17-27				
KFGS-2-120-D17-11	2	1.2	ϕ8	
KFGS-2-120-D17-16				
KFGS-2-120-D17-23				
KFGS-2-120-D17-27				
KFGS-1-120-D17-11	1	1.1	ϕ5	
KFGS-1-120-D17-16				
KFGS-1-120-D17-23				
KFGS-1-120-D17-27				

Biaxial, 0°/90° plane arrangement

Resistance: 120 Ω
Gage factors: Approx. 2.1

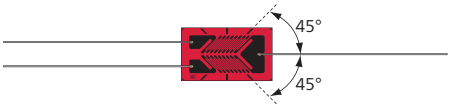


The above picture is KFGS-2-120-D1-11

KFGS-2-120-D1-11	2	3.2	10	8.5
KFGS-2-120-D1-16				
KFGS-2-120-D1-23				
KFGS-2-120-D1-27				

Biaxial, 0°/90° for torque measurement

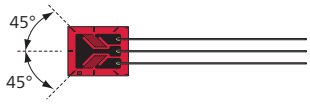
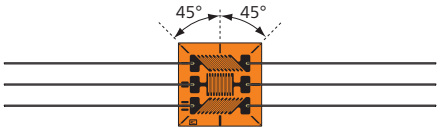
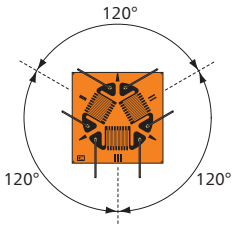
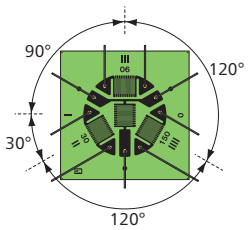
Resistance: 120 Ω
Gage factors: Approx. 2.1



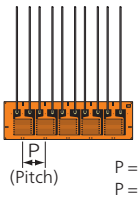
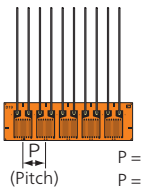
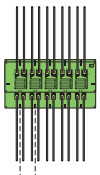
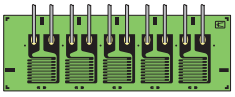
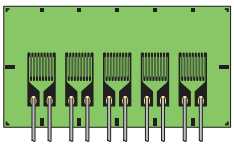
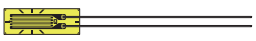
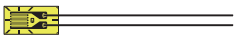
The above picture is KFGS-2-120-D2-11

KFGS-2-120-D2-11	2	3.4	12	7
KFGS-2-120-D2-16				
KFGS-2-120-D2-23				
KFGS-2-120-D2-27				

10 gages/pkg

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm) Grid Length	Grid Width	Base Length	Base Width	Remarks
Biaxial, 0°/90° for torque measurement Resistance: 120 Ω Gage factors: Approx. 2.1							Note: *1 Base color stands for different coefficients of linear expansion.
 The above picture is KFGS-2-120-D31-11	KFGS-2-120-D31-11 KFGS-2-120-D31-16 KFGS-2-120-D31-23 KFGS-2-120-D31-27	● ● ● ●	2	1.2	8	6.5	
Triaxial, 0°/90°/45° Resistance: 120 Ω Gage factors: Approx. 2.1							
 The above picture is KFGS-2-120-D3-16	KFGS-2-120-D3-11 KFGS-2-120-D3-16 KFGS-2-120-D3-23 KFGS-2-120-D3-27	● ● ● ●	2	3.6	11	11	
Triaxial, 0°/120°/240° Resistance: 120 Ω Gage factors: Approx. 2.1							
 The above picture is KFGS-2-120-D4-16	KFGS-2-120-D4-11 KFGS-2-120-D4-16 KFGS-2-120-D4-23 KFGS-2-120-D4-27	● ● ● ●	2	3.4	12	12	
	KFGS-1-120-D4-11 KFGS-1-120-D4-16 KFGS-1-120-D4-23 KFGS-1-120-D4-27	● ● ● ●	1	1.7	7	7	
Quadraxial, 0°/30°/90°/150° Resistance: 120 Ω Gage factors: Approx. 2.1							
 The above picture is KFGS-2-120-D6-23	KFGS-2-120-D6-11 KFGS-2-120-D6-16 KFGS-2-120-D6-23 KFGS-2-120-D6-27	● ● ● ●	2	3.1	17	17	
Uniaxial, with lead wires from both ends Resistance: 120 Ω Gage factors: Approx. 2.1							
 The above picture is KFGS-1-120-C2-27	KFGS-1-120-C2-11 KFGS-1-120-C2-16 KFGS-1-120-C2-23 KFGS-1-120-C2-27	● ● ● ●	1	1.8	5.6	3	
 The above picture is KFGS-1-120-C3-27	KFGS-1-120-C3-11 KFGS-1-120-C3-16 KFGS-1-120-C3-23 KFGS-1-120-C3-27	● ● ● ●	1	1.8	5.5	2.7	

10 gages/pkg

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm) Grid Length	Grid Width	Base Length	Base Width	Remarks
Uniaxial, for shearing strain measurement Resistance: 120 Ω Gage factors: Approx. 2.1							Note: *1 Base color stands for different coefficients of linear expansion.
	Torque measurement is possible by using C15 and C16 in combination.						
 The above picture is KFGS-2-120-C15-11	KFGS-2-120-C15-11 KFGS-2-120-C15-16 KFGS-2-120-C15-23 KFGS-2-120-C15-27	● ● ● ●	2	0.8	5.2	3	
 The above picture is KFGS-2-120-C16-11	KFGS-2-120-C16-11 KFGS-2-120-C16-16 KFGS-2-120-C16-23 KFGS-2-120-C16-27	● ● ● ●	2	0.8	5.2	3	
Uniaxial 5-element, for concentrated stress measurement Resistance: 120 Ω Gage factors: Approx. 2.1							
 P (Pitch) P = 3 mm for gage length 2 mm P = 2 mm for gage length 1 mm The above picture is KFGS-2-120-D9-16 N10C2	KFGS-2-120-D9-11 N10C2 KFGS-2-120-D9-16 N10C2 KFGS-2-120-D9-23 N10C2 KFGS-2-120-D9-27 N10C2	● ● ● ●	2	2.2	17	5	5 gages/pkg
	KFGS-1-120-D9-11 N10C2 KFGS-1-120-D9-16 N10C2 KFGS-1-120-D9-23 N10C2 KFGS-1-120-D9-27 N10C2	● ● ● ●	1	1.4	12	4	5 gages/pkg
 P (Pitch) P = 3 mm for gage length 2 mm P = 2 mm for gage length 1 mm The above picture is KFGS-2-120-D19-16 N10C2	KFGS-2-120-D19-11 N10C2 KFGS-2-120-D19-16 N10C2 KFGS-2-120-D19-23 N10C2 KFGS-2-120-D19-27 N10C2	● ● ● ●	2	2.5	17	5	5 gages/pkg
	KFGS-1-120-D19-11 N10C2 KFGS-1-120-D19-16 N10C2 KFGS-1-120-D19-23 N10C2 KFGS-1-120-D19-27 N10C2	● ● ● ●	1	1.5	12	4	5 gages/pkg
Biaxial 5-element stacked rosette, for concentrated stress measurement Resistance: 120 Ω Gage factors: Approx. 2.1							
 P (Pitch) P=2mm	 Upper-side gage pattern		 Lower-side gage pattern				
 The above picture is KFGS-1-120-D39-23 N10C2	KFGS-1-120-D39-11 N10C2 KFGS-1-120-D39-16 N10C2 KFGS-1-120-D39-23 N10C2 KFGS-1-120-D39-27 N10C2	● ● ● ●	1	1.4 (1.5)	12	6.4	5 gages/pkg Figures in ( ) are for lower-side gage patterns.
Uniaxial 60Ω gages Resistance: 60 Ω Gage factors: Approx. 2.1							
	Use 2 gages in parallel connection for bending compensation is possible.						
 The above picture is KFGS-5-60-C1-27	KFGS-5-60-C1-11 KFGS-5-60-C1-16 KFGS-5-60-C1-23 KFGS-5-60-C1-27	● ● ● ●	5	2	10	3.4	
 The above picture is KFGS-2-60-C1-27	KFGS-2-60-C1-11 KFGS-2-60-C1-16 KFGS-2-60-C1-23 KFGS-2-60-C1-27	● ● ● ●	2	2.3	7.2	3.7	

10 gages/pkg unless specified notes.

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm)				Remarks
			Grid		Base		
			Length	Width	Length	Width	

Note: *1 Base color stands for different coefficients of linear expansion.

Uniaxial 350Ω gages

Resistance: 350 Ω
Gage factors: Approx. 2.1

The above picture is KFGS-5-350-C1-11

KFGS-5-350-C1-11	5	2	9.4	4.2	
KFGS-5-350-C1-16					
KFGS-5-350-C1-23					
KFGS-5-350-C1-27					
KFGS-3-350-C1-11	3	2	7.4	4.2	
KFGS-3-350-C1-16					
KFGS-3-350-C1-23					
KFGS-3-350-C1-27					
KFGS-2-350-C1-11	2	2	6.3	4.2	
KFGS-2-350-C1-16					
KFGS-2-350-C1-23					
KFGS-2-350-C1-27					
KFGS-1-350-C1-11	1	2	4.8	3.4	
KFGS-1-350-C1-16					
KFGS-1-350-C1-23					
KFGS-1-350-C1-27					

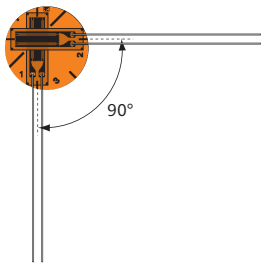
The above picture is KFGS-3-350-C1-11

The above picture is KFGS-2-350-C1-11

The above picture is KFGS-1-350-C1-11

Biaxial 350Ω gages, 0°/90° stacked rosette

Resistance: 350 Ω
Gage factors: Approx. 2.1

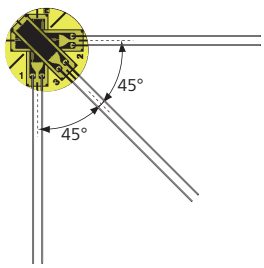


KFGS-5-350-D16-11	5	2	ϕ11		
KFGS-5-350-D16-16					
KFGS-5-350-D16-23					
KFGS-5-350-D16-27					
KFGS-3-350-D16-11	3	2	ϕ10		
KFGS-3-350-D16-16					
KFGS-3-350-D16-23					
KFGS-3-350-D16-27					
KFGS-2-350-D16-11	2	2	ϕ10		
KFGS-2-350-D16-16					
KFGS-2-350-D16-23					
KFGS-2-350-D16-27					
KFGS-1-350-D16-11	1	1.8	ϕ8		
KFGS-1-350-D16-16					
KFGS-1-350-D16-23					
KFGS-1-350-D16-27					

The above picture is KFGS-5-350-D16-16

Triaxial 350Ω gages, 0°/90°/45° stacked rosette

Resistance: 350 Ω
Gage factors: Approx. 2.1



KFGS-5-350-D17-11	5	2	ϕ11		
KFGS-5-350-D17-16					
KFGS-5-350-D17-23					
KFGS-5-350-D17-27					
KFGS-3-350-D17-11	3	2	ϕ10		
KFGS-3-350-D17-16					
KFGS-3-350-D17-23					
KFGS-3-350-D17-27					
KFGS-2-350-D17-11	2	2	ϕ10		
KFGS-2-350-D17-16					
KFGS-2-350-D17-23					
KFGS-2-350-D17-27					
KFGS-1-350-D17-11	1	1.8	ϕ8		
KFGS-1-350-D17-16					
KFGS-1-350-D17-23					
KFGS-1-350-D17-27					

The above picture is KFGS-5-350-D17-27

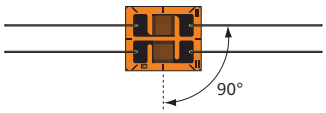
10 gages/pkg

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm)				Remarks
			Grid		Base		
			Length	Width	Length	Width	

Note: *1 Base color stands for different coefficients of linear expansion.

Biaxial 350Ω gages, 0°/90°

Resistance: 350 Ω
Gage factors: Approx. 2.1

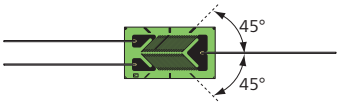


The above picture is KFGS-2-350-D1-16

KFGS-2-350-D1-11	2	3	10	8.5	
KFGS-2-350-D1-16					
KFGS-2-350-D1-23					
KFGS-2-350-D1-27					

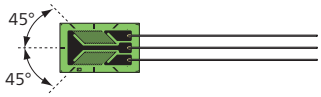
Biaxial 350Ω gages 0°/90° for torque measurement

Resistance: 350 Ω
Gage factors: Approx. 2.1



The above picture is KFGS-2-350-D2-23

KFGS-2-350-D2-11	2	4	12	6.8	
KFGS-2-350-D2-16					
KFGS-2-350-D2-23					
KFGS-2-350-D2-27					

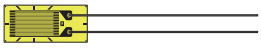


The above picture is KFGS-2-350-D31-23

KFGS-2-350-D31-11	2	3	10.5	6.5	
KFGS-2-350-D31-16					
KFGS-2-350-D31-23					
KFGS-2-350-D31-27					

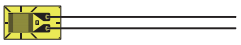
Uniaxial 500Ω gages for making transducers

Resistance: 500 Ω
Gage factors: Approx. 2.1



The above picture is KFGS-5-500-C1-27

KFGS-5-500-C1-11	5	3.5	11	4.9	
KFGS-5-500-C1-16					
KFGS-5-500-C1-23					
KFGS-5-500-C1-27					

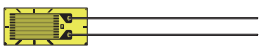


The above picture is KFGS-2-500-C1-27

KFGS-2-500-C1-11	2	2.6	7.5	4.4	
KFGS-2-500-C1-16					
KFGS-2-500-C1-23					
KFGS-2-500-C1-27					

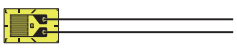
Uniaxial 1000Ω gages for making transducers

Resistance: 1000 Ω
Gage factors: Approx. 2.1



The above picture is KFGS-5-1K-C1-27

KFGS-5-1K-C1-11	5	3.5	11	4.9	
KFGS-5-1K-C1-16					
KFGS-5-1K-C1-23					
KFGS-5-1K-C1-27					



The above picture is KFGS-2-1K-C1-27

KFGS-2-1K-C1-11	2	3	7.2	4.5	
KFGS-2-1K-C1-16					
KFGS-2-1K-C1-23					
KFGS-2-1K-C1-27					

10 gages/pkg

Patterns Gage Resistance, Gage Factors	Models	Base Color *1	Dimensions (mm)				Remarks
			Grid		Base		
			Length	Width	Length	Width	

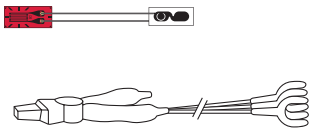
Note: *1 Base color stands for different coefficients of linear expansion.

●KFGS Series Foil Strain Gages with Gage Terminal

Uniaxial

Resistance: 120 Ω
Gage factors: Approx. 2.1

KFGS gages equipped with a gage terminal enable one-touch connection/disconnection of the lead-wire cable. They are suitable for residual stress measurement with the cutting method. A clip equipped dedicated cable T-C26 (Vinyl-coated, 2 m long) is optionally available.



T-C26

Applicable Adhesives and Operating Temperature Range after Curing

PC-600: -196 to 150°C
CC-33A: -196 to 120°C
CC-35: -30 to 120°C
CC-36: -30 to 150°C
EP-340: -55 to 150°C

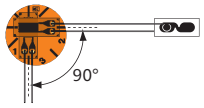
(When the clip-equipped dedicated cable is used, the operating temperature range of each adhesive after curing is –10 to 80°C.)

The above picture is KFGS-2-120-C1-11 T-F7

KFGS-2-120-C1-11 T-F7	●	2	1.2	6.3	2.8	ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-2-120-C1-16 T-F7	●					
KFGS-2-120-C1-23 T-F7	●					
KFGS-1-120-C1-11 T-F7	●	1	1.1	4.8	2.4	ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-1-120-C1-16 T-F7	●					
KFGS-1-120-C1-23 T-F7	●					

Biaxial, 0°/90° stacked rosette

Resistance: 120 Ω
Gage factors: Approx. 2.1

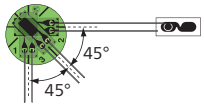


The above picture is KFGS-2-120-D16-16 T-F7

KFGS-2-120-D16-11 T-F7	●	2	1.2	ϕ8		ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-2-120-D16-16 T-F7	●					
KFGS-2-120-D16-23 T-F7	●					
KFGS-1-120-D16-11 T-F7	●	1	1.1	ϕ5		ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-1-120-D16-16 T-F7	●					
KFGS-1-120-D16-23 T-F7	●					

Triaxial, 0°/90°/45° stacked rosette

Resistance: 120 Ω
Gage factors: Approx. 2.1



The above picture is KFGS-2-120-D17-23 T-F7

KFGS-2-120-D17-11 T-F7	●	2	1.2	ϕ8		ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-2-120-D17-16 T-F7	●					
KFGS-2-120-D17-23 T-F7	●					
KFGS-1-120-D17-11 T-F7	●	1	1.1	ϕ5		ϕ0.14 Polyester-coated copper cable 15 mm long
KFGS-1-120-D17-16 T-F7	●					
KFGS-1-120-D17-23 T-F7	●					

●KFGS Series Foil Strain Gages for Boring Method

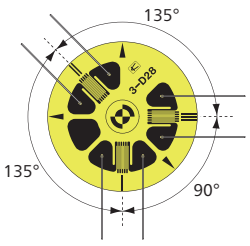
Triaxial, 0°/135°/90°

Resistance: 120 Ω
Gage factors: Approx. 2.1

Designed to measure residual stress released by the boring method.

Applicable Adhesives and Operating Temperature Range after Curing

CC-33A: -196 to 120°C
CC-35: -30 to 120°C
CC-36: -30 to 100°C
EP-340: -55 to 150°C
PC-600: -196 to 150°C

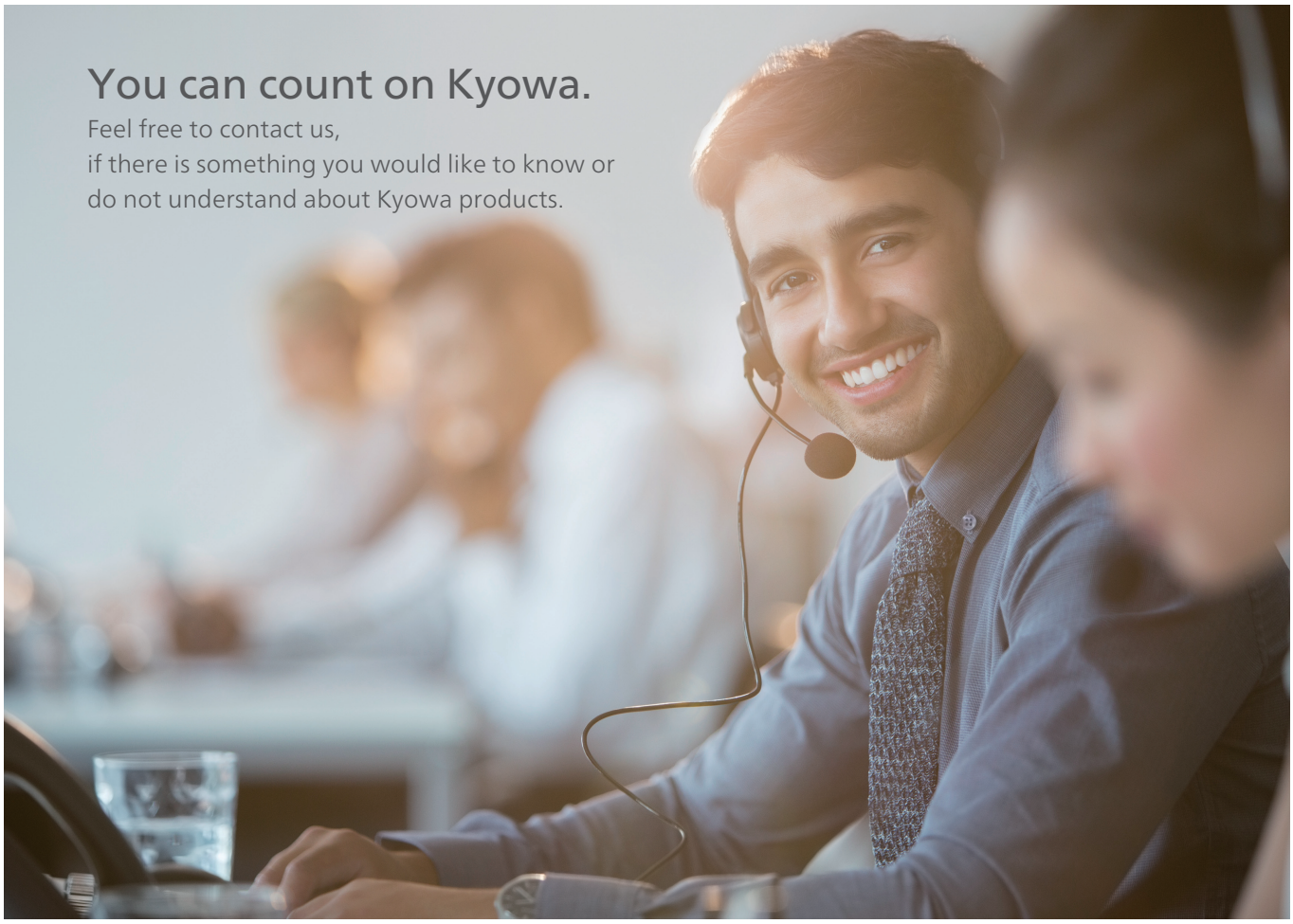


For KFGS gages with the lead-wire cable pre-attached, refer to page 4.

The above picture is KFGS-3-120-D28-27

KFGS-3-120-D28-11	●	3	2	ϕ19.8		Diameter of gage center is ϕ10.8
KFGS-3-120-D28-16	●					
KFGS-3-120-D28-23	●					
KFGS-3-120-D28-27	●					
KFGS-1.5-120-D28-11	●	1.5	1.3	ϕ12		Diameter of gage center is ϕ5.5
KFGS-1.5-120-D28-16	●					
KFGS-1.5-120-D28-23	●					
KFGS-1.5-120-D28-27	●					

10 gages/pkg



Sales Network

Americas Region
KYOWA AMERICAS, Inc.
TEL: +1-248-348-0348
E-mail: sales@kyowa-americas.com
Web: http://www.kyowa-ei.us/

China
KYOWA ELECTRONIC(SHANGHAI)TRADING CO.,LTD.
TEL: +86-21-64477770
E-mail: support-cn@d1.kyowa-ei.co.jp
Web: http://www.kyowa-ei.cn/

Thailand
KYOWA DENGYO(THAILAND) CO.,LTD.
TEL: +66-2-117-3760
E-mail:sales-thailand@kyowa-ei.co.th
Web: http://www.kyowa-ei.co.th/

Other Countries or Regions
Please visit below URL.
Web: http://www.kyowa-ei.com/

Kyowa Electronic Instruments Co.,Ltd.
Overseas Department:
3-5-1, Chofugaoka, Chofu, Tokyo 182-8520 Japan
TEL: +81-42-489-7220 FAX: +81-42-488-1122
E-mail: overseas@kyowa-ei.co.jp
Web: http://www.kyowa-ei.com/

⚠ Safety Precautions

Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.

• Specifications are subject to change without notice for improvement.

JQA-0821
JQA-EM4824

Manufacture's Representative

Cat.No. 107 E1-5

Printed in Japan June 2016