

KFU Series

Electrical Strain Gages and Accessories

Special features

- High temperature strain gage (+350 °C)
- Prewired with 1 m high temperature cable
- 2 mm and 5 mm grid available
- Linear, T-rosette and R rosette available
- Temperature compensation for steel and aluminum

Data sheet

KFU is a foil strain gage for high temperature applications.
It has a superior characteristic over a wide range of temperature.
It is capable of 72 hours continuous operation at 350 °C and 360 hours at 300 °C.

Strain Gages Types and Dimensions

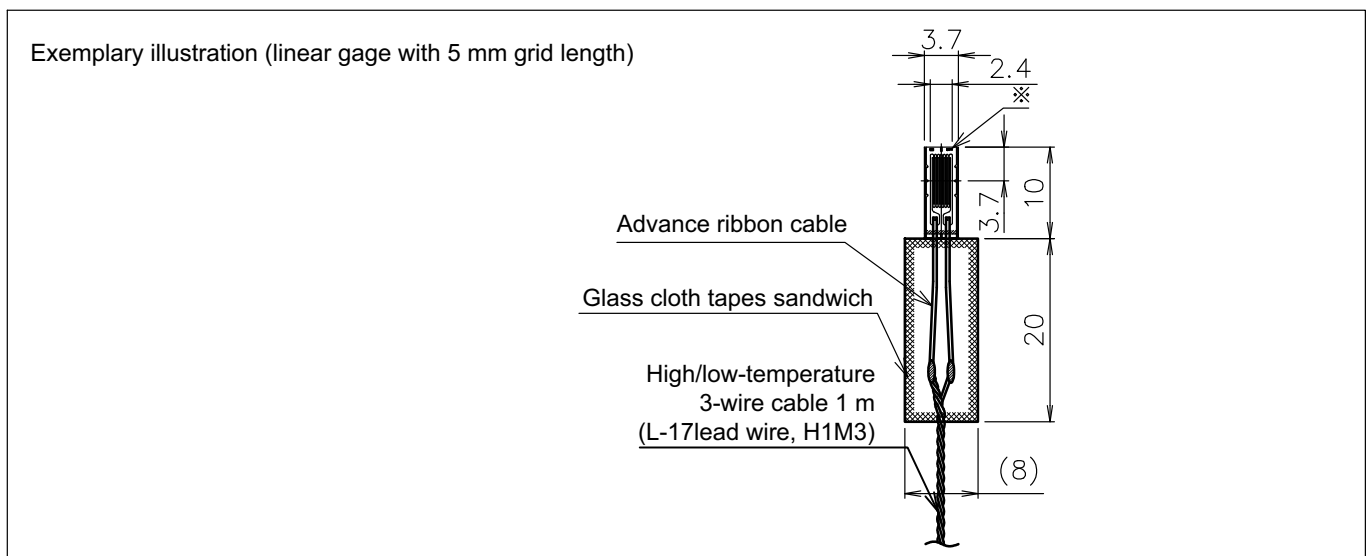
KFU Series - linear prewired

The strain gage with linear grid is delivered with preinstalled high temperature cable

	Ordering number	Temperature response	Nom. resistance	Measuring grid		Carrier		Max. perm. effect. exc. voltage	Pre-attached 3-wire high/low temperature cable
				Ω	a	b	c		
	1-LKFU11-5/ 350-1-3	Ferritic Steel	350	5	2.4	10	3.7	5-10 ¹	<ul style="list-style-type: none"> • Cable length: 1 m • Cross section per lead: 0.07 mm² • Cable diameter: 0.38 mm • Resistance: 0.5 Ohm/m • Coloring of cable Black, Yellow, Green
	1-LKFU15-5/ 350-1-3	Austenitic Steel	350	5	2.4	10	3.7	5-10 ¹	
	1-LKFU13-5/ 350-1-3	Aluminum	350	5	2.4	10	3.7	5-10 ¹	
	1-LKFU11-2/ 350-1-3	Ferritic Steel	350	2	2.4	6	3.7	5-10 ¹	
	1-LKFU15-2/ 350-1-3	Austenitic Steel	350	2	2.4	6	3.7	5-10 ¹	
	1-LKFU13-2/ 350-1-3	Aluminum	350	2	2.4	6	3.7	5-10 ¹	

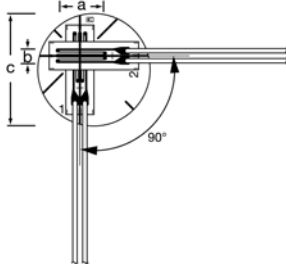
1) Specified on data sheet

The advance ribbon wire section is covered with the glass-cloth tape for reinforcement.
Content per package: 10



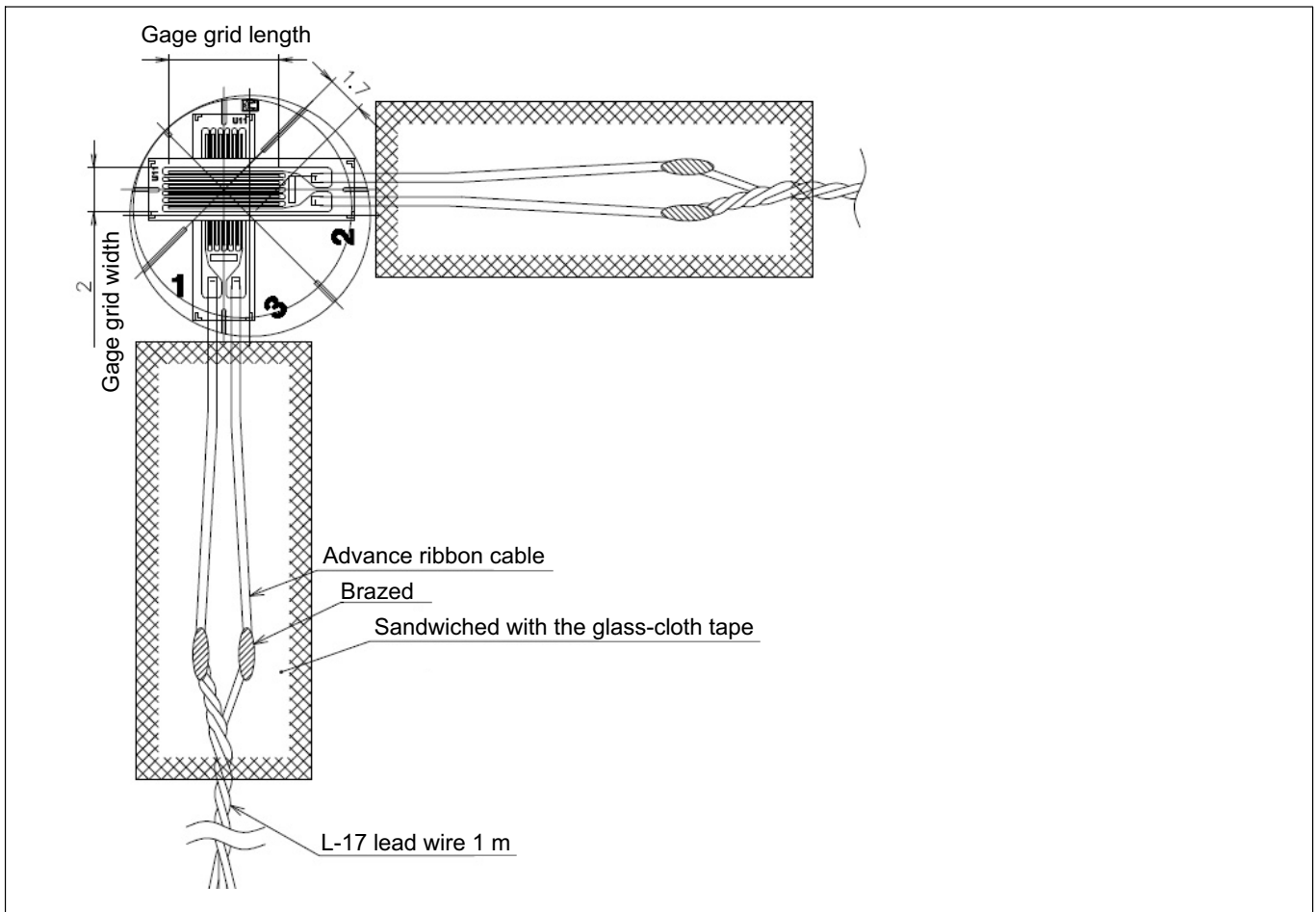
KFU Series - T rosette prewired

This strain gage comprises two stacked perpendicular grids and is delivered with preinstalled high temperature cable.

	Ordering number	Temperature response	Nom. resistance	Measuring grid		Carrier diameter	Max. perm. effect. exc. voltage	Preattached 3-wire high/low temperature cable
				Ω	a			
	1-XKFU91-2/ 350-1-3	Ferritic Steel	350	2	2	10	5 ¹	<ul style="list-style-type: none"> • Cable length: 1 m • Cross section per lead: 0.07 mm² • Cable diameter: 0.38 mm • Resistance: 0.5 Ohm/m • Coloring of cable: Black, Yellow, Green
	1-XKFU95-2/ 350-1-3	Austenitic Steel	350	2	2	10	5 ¹	
	1-XKFU93-2/ 350-1-3	Aluminum	350	2	2	10	5 ¹	
	1-XKFU91-5/ 350-1-3	Ferritic Steel	350	5	2	11	5 ¹	
	1-XKFU95-5/ 350-1-3	Austenitic Steel	350	5	2	11	5 ¹	
	1-XKFU93-5/ 350-1-3	Aluminum	350	5	2	11	5 ¹	

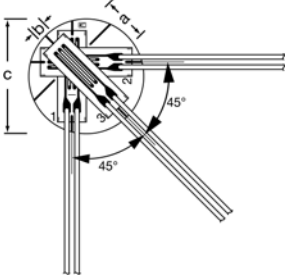
1) Specified on data sheet

The advance ribbon wire section is covered with the glass-cloth tape for reinforcement. Content per package: 10



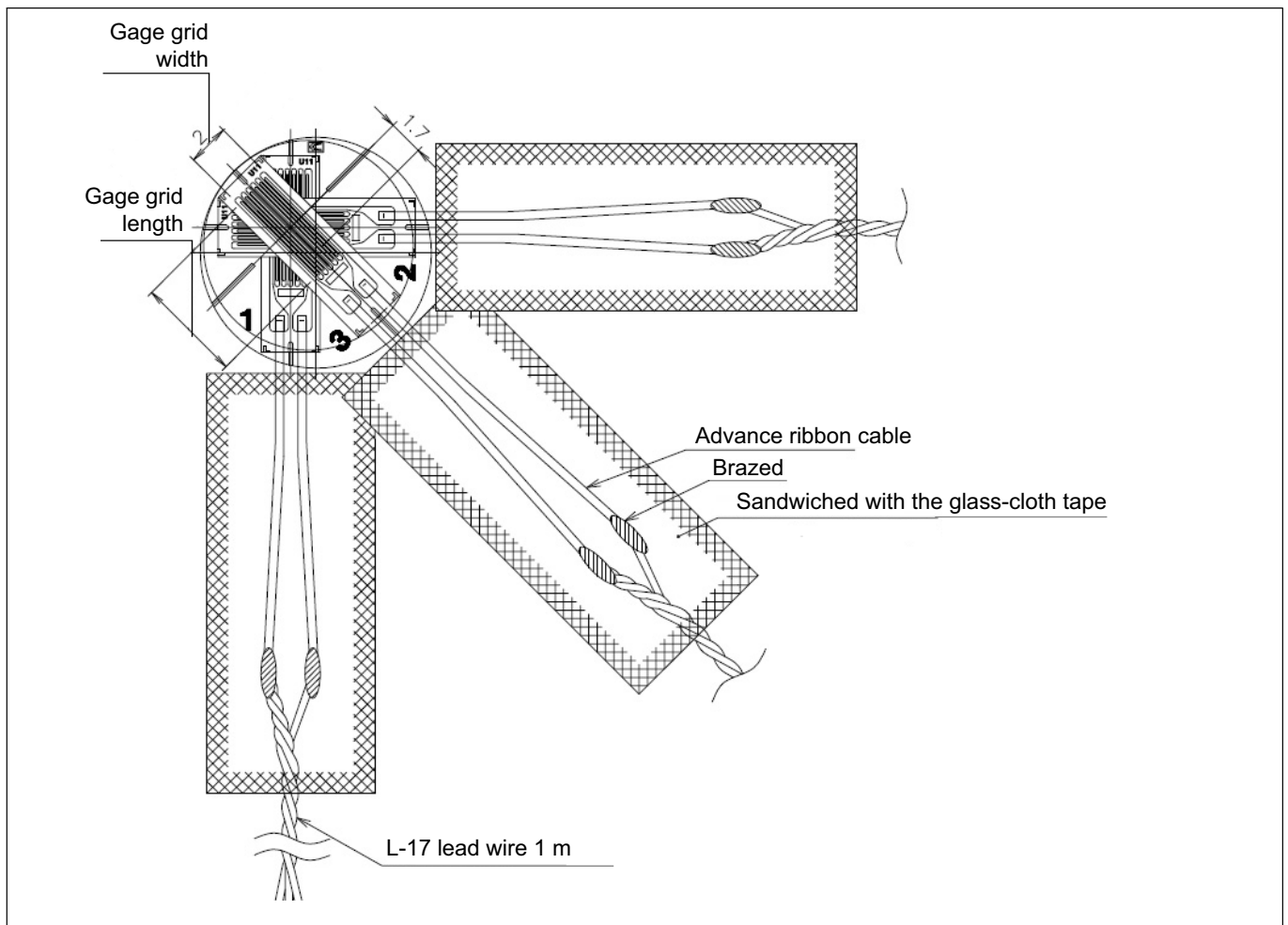
KFU Series - R rosette prewired

This strain gage comprises three stacked grids and is delivered with preinstalled high temperature cable.

	Ordering number	Temperature response	Nom. resistance	Measuring grid			Carrier	Max. perm. effect. exc. voltage	Pre-attached 3-wire high/low temperature cable
				Ω	a	b			
	1-RKFU91-2/350-1-3	Ferritic Steel	350	2	2	10	5 ¹	<ul style="list-style-type: none"> • Cable length: 1 m • Cross section per lead: 0.07 mm² • Cable diameter: 0.38 mm • Resistance: 0.5 Ohm/m • Coloring of cable Black, Yellow, Green 	
	1-RKFU95-2/350-1-3	Austenitic Steel	350	2	2	10	5 ¹		
	1-RKFU93-2/350-1-3	Aluminum	350	2	2	10	5 ¹		
	1-RKFU91-5/350-1-3	Ferritic Steel	350	5	2	11	5 ¹		
	1-RKFU95-5/350-1-3	Austenitic Steel	350	5	2	11	5 ¹		
	1-RKFU93-5/350-1-3	Aluminum	350	5	2	11	5 ¹		

1) Specified on data sheet

The advance ribbon wire section is covered with the glass-cloth tape for reinforcement.
Content per package: 10



Specifications KFU Series


Measuring grid material		NiCr alloy
Carrier material		Polyimide
Nominal resistance	Ω	350
Resistance tolerance	Ω	±2.4
Gage factor (k factor)		Approx. 2.0 (nominal temperature) Approx. 1.85 (350 °C) Specified on each package
Gage factor tolerance	%	±1.7 (see data sheet)
Nominal value of gage factor temperature coefficient		See attached data sheet
Reference temperature	°C	23
Operating temperature range (for static measurements)	°C	-30 ... +350 ¹⁾
Temperature response		Available for different materials
Temperature response with matching in the range of	°C	+10 ... +300 (72 hours or less at 350 °C, 360 hours or less at 300 °C)
Maximum elongation (positive and negative)	%	1.9 (approx.)
Fatigue life for alternation strain	cycles	1.5x10 ⁵ ±1,000 μm/m @ 300 °C
Bonding material Cold and hot curing adhesives		EP310N or PI-32
Gages/Pack	pcs.	10

¹⁾ The maximum temperature of 350 °C refers to the prewired strain gages and accessories only; HBM offers the EP310N adhesive which is suitable for applications up to 310 °C. For applications with higher temperatures (up to 350 °C) the PI-32 adhesive bond of Kyowa Electronic Instruments Co., LTD. (Japan) is suitable.


Gage geometries

	<p>LKFU Linear strain gage with one measurement grid for strain measurement in one direction</p>
	<p>XKFU Stacked T rosette with two 90° to each other orientated measurement grids to measure tensile and compression strain</p>
	<p>RKFU Stacked rosette with 3 measurement grids 0°/45°/90° to measure the strain when the directions are unknown</p>

Accessories

Ordering number	Designation	Cross section per lead	Cable diameter mm	Resistance Ω/m	Thermal resistance $^{\circ}C$	Cable length m
1-L-17-3	 <p>High/low-temperature 3-twisted wire cable</p> <p>Polyimide ceramic coted (nickel-plated copper wires)</p> <p>For internal connection of strain gage bridges or for contacting from strain gage through to solder terminal</p>	0.07mm ²	0.38	0.5	-269 ...350	30 m

Solder terminals

Ordering number	Designation	Dimensions WxLxD mm	Conductor material	Temperature range $^{\circ}C$	Content per package
1-T-F28-3	 <p>Solder Terminals for KFU High Temperature Series (nickel-plated copper wires)</p> <p>For internal connection of strain gage bridges or for contacting from strain gage through to solder terminal.</p> <p>Measuring tension and compression</p>	<p>5-pole 6x25x0,1</p> <p>1-pole 6x5x0,1</p> <p>Measuring tension and compression</p>	Cooper foil Measuring tension and compression	-196... +350 Measuring tension and compression	100 pairs (20 sheets/5 poles per sheet)

Subject to modifications.
All product descriptions are for general information
only. They are not to be understood as a guarantee
of quality or durability.

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