

DATA SHEET

M series Strain gages for experimental stress analysis

SPECIAL FEATURES

- High resistance to alternating loads
- All SGs with large solder tabs with strain relief
- For high temperature range (+300°C)
- Wide range of different types
- Standard types in stock



SPECIFICATIONS

Strain gage construction		Foil strain gage with embedded measuring grid
Measuring grid		
Material		CrNi special alloy
Thickness	μm	5
Carrier		
Material		Glass-fiber reinforced phenolic resin
Thickness	μm	35 ±10
Covering agent		
Material		Polyimide foil
Connections		Strain-reliefed solder tab made of copper-beryllium
Nominal (rated) resistance	Ω	350 or 1,000 (depending on type of strain gage)
Resistance tolerance ¹⁾	%	±0.3
Gage factor		approx. 2.2 (specified on each package)
Nominal value of gage factor		Specified on each package
Gage factor tolerance	%	±1.5 (with measuring grid length < 3 mm)
		± 0.7 (with measuring grid length \geq 3 mm)
Temperature coefficient of gage factor	1/K	Specified on each package
Nominal value of gage factor temperature coefficient		Specified on each package
Reference temperature	°C	23

Operating temperature range		
For static, i.e. zero point-related measurements	°C	-200 +250
For dynamic, i.e. non-zero point-related measurements ²⁾	U	-200 +300
Transverse sensitivity		Specified on each package
Temperature response		
a for ferritic steel		10.8 · 10 ⁶
α for aluminum		23 · 10 ⁶
α for austenitic steel	1 ///	16 · 10 ⁶
α for titanium	1/K	9 · 10 ⁶
α for molybdenum		5.4 · 10 ⁶
α for silica		0.5 · 10 ⁶
Tolerance of temperature response	1/K	±0.6 · 10 ⁶
Adaptation of temperature response in the range	°C	-200 +250
Fatigue strength ³⁾ at reference temperature when using EP310N adhesive on a type LM11-6/350GE strain gage up to the failure criterion		
Achievable number of load cycles L _w with alternating strain and a zero point variation of ≤100 µm/m:		
Strain amplitude ±2,000 μm/m		1 · 10 ⁷
Strain amplitude ±2,600 μm/m		2 · 10 ⁵
Strain amplitude ±3,100 μm/m		1 · 10 ⁴
Maximum elongation		
Absolute strain value ϵ for positive direction	µm/m	10,000 ((1%)
Absolute strain value ϵ for negative direction	µm/m	15,000 (≙1.5%)
Minimum radius of curvature, longitudinal and transverse, at reference temperature		
LM1, TM1, XM4, RM8	mm	5
TM9, RM9	mm	10
Suitable bonding material ⁴⁾		
Cold curing adhesives		CA80, X60, X280
Hot curing adhesives		P250, EP310N

¹⁾ For TM9 and RM9 the deviation is $\pm 0.5\%$

2) 300 °C for a duration of < 5 h under air
3) The data depend on the specific installation parameters and are therefore provided for representative examples only

⁴⁾ Observe the temperature limits of the adhesives

Hottinger Brüel & Kjaer GmbH Im Tiefen See 45 · 64293 Darmstadt · Germany

Tel. +49 6151 803-0 · Fax +49 6151 803-9100 www.hbkworld.com · info@hbkworld.com

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