

# FOIL STRAIN GAUGE











# series "F"



Compatible adhesive & Operational temperature  
 CN : -20~+80°C  
 P-2 : -20~+80°C    EB-2 : -20~+80°C

Operational temperature -20~+80°C  
 Temperature compensation range +10~+80°C








## GENERAL USE

Gauge pattern	Type	Gauge size		Backing		Resistance in Ω	
		L	W	L	W		
This gauge employs alloy foils which are 0.003 to 0.007 mm thick. Its gauge backing is made of epoxy resin with thickness of 0.03 mm which exhibits excellent electrical insulation performance. The backing is color coded for distinction of object specimen material for self temperature compensation.							
■Single-element (G.F. 2.1 approx.)							
 FLG-02	Single-element	FLG-02-11	0.2	1.4	3.5	2.5	120
 FLG-1		FLG-1-11	1	1.1	6.5	2.5	120
 FLA-03		FLA-03-11	0.3	1.4	3.0	2.0	120
 FLA-1		FLA-05-11	0.5	1.2	5.0	2.2	120
 FLA-2		FLA-1-11	1	1.3	5.0	2.5	120
 FLA-3		FLA-2-11	2	1.5	6.5	3.0	120
 FLA-5		FLA-3-11	3	1.7	8.8	3.5	120
 FLA-6		FLA-3-60-11	3	1.2	8.0	3.0	60
 FLA-1-350-11		FLA-5-11	5	1.5	10.0	3.0	120
 FLA-6-350-11		FLA-6-11	6	2.2	12.5	4.3	120
		FLA-1-350-11	1	2.0	5.0	4.0	350
		FLA-2-350-11	2	1.9	6.1	3.5	350
		FLA-3-350-11	3	3.2	8.5	5.0	350
		FLA-6-350-11	6	2.6	12.5	4.5	350
	FLA-1-350-17						
	FLA-1-350-23						
	FLA-2-350-17						
	FLA-2-350-23						
	FLA-3-350-17						
	FLA-3-350-23						
	FLA-6-350-17						
	FLA-6-350-23						

Each package contains 10 gauges.

Compatible adhesive & Operational temperature  
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**GENERAL USE**

Gauge pattern	Type	Gauge size		Backing		Resistance in Ω	
		L	W	L	W		
		L : length		W : width (Unit : mm)			
 FLA-10	Single-element	FLA-6-1000-11	6	4.6	13.5	7.0	1000
		-17					
		-23					
 FLA-30	Single-element	FLA-10-11	10	2.5	16.7	5.0	120
		-17					
		-23					
 FLA-30	Single-element	FLA-30-11	30	2.0	36.1	5.1	120
		-17					
		-23					
 FLK-1	FLK-type with narrow gauge width	FLK-1-11	1	0.7	4.5	1.4	120
		-17					
		-23					
 FLK-2	FLK-type with narrow gauge width	FLK-2-11	2	0.9	5.5	1.5	120
		-17					
		-23					
 FLK-6	FLK-type with narrow gauge width	FLK-6-11	6	1.0	11.2	2.2	120
		-17					
		-23					
 FLK-10	FLK-type with narrow gauge width	FLK-10-11	10	1.6	16.2	3.8	120
		-17					
		-23					







FLA - 1 - 11 Materials for S-T-C  
 Gauge length } -11 Mild steel  
 } -17 Stainless steel  
 } -23 Aluminium

Each package contains 10 gauges.

# FOIL STRAIN GAUGE series "F"



## GENERAL USE

Gauge pattern	Type	Gauge size		Backing		Resistance in $\Omega$
		L	W	L	W	
<p>● 90° 2-element Cross (G.F. 2.1 approx.) Stacked type</p>		L : length		W : width (Unit : mm)		
 FCA-1	FCA-1-11 -17 -23	1	0.7	$\phi$ 4.5		120
 FCA-2	FCA-2-11 -17 -23	2	0.9	$\phi$ 7.0		120
 FCA-3	FCA-3-11 -17 -23	3	1.7	$\phi$ 11.0		120
 FCA-5	FCA-5-11 -17 -23	5	1.9	$\phi$ 12.0		120
 FCA-6	FCA-6-11 -17 -23	6	2.4	$\phi$ 14.0		120
 FCA-10	FCA-10-11 -17 -23	10	2.5	$\phi$ 17.0		120
	350 $\Omega$					
	FCA-3-350-11 FCA-3-350-17 FCA-3-350-23	3	2	$\phi$ 11.0		350
Each package contains 10 gauges.						

**GENERAL USE**

Gauge pattern	Type	Gauge size		Backing		Resistance in $\Omega$
		L	W	L	W	
<p>●45°/90° 3-element Rosette (G.F. 2.1 approx.) Stacked type</p>		L : length W : width (Unit : mm)				
<p>45°/90° 3-element Rosette, Stacked type</p>	FRA-1-11 -17 -23	1	0.7	$\phi$ 4.5	120	
	FRA-2-11 -17 -23	2	0.9	$\phi$ 7.0	120	
	FRA-3-11 -17 -23	3	1.7	$\phi$ 11.0	120	
	FRA-5-11 -17 -23	5	1.9	$\phi$ 12.0	120	
	FRA-6-11 -17 -23	6	2.4	$\phi$ 14.0	120	
	FRA-10-11 -17 -23	10	2.5	$\phi$ 17.0	120	
	FRA-3-350-11 FRA-3-350-17 FRA-3-350-23	3	2	$\phi$ 11.0	350	

Each package contains 10 gauges.

**Point**

●Gauge size

The location of gauge installation and the material on which it is installed impose restrictions on the strain gauge size. Also, because lead wires have to be connected to the connecting terminals and a coating materials applied to protect the gauge from moisture, the space required for the coating materials must also be considered.

●Gauge length

Gauges with short gauge lengths are used to measure localized strain, while gauges with long gauge lengths can be used to measure averaged stress over a larger area.

●Gauge width

Strain gauges with the same gauge length are also available in a narrower width (FLK-type). Select narrow strain gauges for thin specimens such as cylindrical pipes, etc.




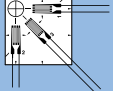
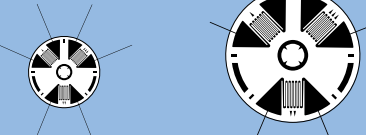
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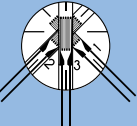
Operational temperature -20~+80°C  
 Temperature compensation range +10~+80°C

## SPECIAL USE

Gauge pattern	Type	Gauge size		Backing		Resistance in $\Omega$	
		L	W	L	W		
L : length    W : width (Unit : mm)							
Shearing strain measurement  FLT-05A    FLT-05B (Not actual size shown)	Shearing strain measurement	FLT-05A-11 -17 -23	0.5	0.66	4.0	1.3	120
		FLT-05B-11 -17 -23	0.5	0.66	4.0	1.3	120
Torque measurement  FCT-2    FCT-2-350	Torque measurement	FCT-2-11 -17 -23	2	1.5	8.7	6.5	120
		FCT-2-350-11 -17 -23	2	1.7	7.6	5.3	350
90° 2-element Cross, Plane type  FCB-2	90° 2-element Cross, Plane type	FCB-2-11 -17 -23	2	1.5	8.2	8.0	120
3-element Residual Stress measurement  FRAS-2		FCA-6-350-11 -17 -23	6	2.0	10.0	13.0	350
 FRS-2    FRS-3	Residual Stress measurement	Gauge-center diameter $\phi$ 7.0mm FRAS-2-11 -17 -23	2	1.1	9.0	9.0	120
		$\phi$ 5.14mm FRS-2-11 -17 -23	1.5	1.3	$\phi$ 9.5		120
		$\phi$ 10.26mm FRS-3-11 -17 -23	3	2.6	$\phi$ 17.5		120
Each package contains 10 gauges.							









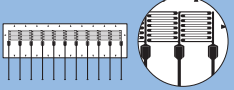
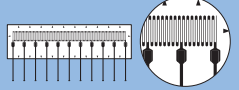


## GLASS/CERAMIC MATERIALS

Gauge pattern	Type	Gauge size		Backing		Resistance in $\Omega$	
		L	W	L	W		
L : length    W : width (Unit : mm)							
● Single-element (G.F. 2.1 approx.)  FLA-5-8	Single-element	FLA-2-8	2	1.5	6.5	3.0	120
● 90° 2-element Cross (G.F. 2.1 approx.) Stacked type  FCA-2-8		FLA-5-8	5	1.5	10.0	3.0	120
● 45°/90° 3-element Rosette (G.F. 2.1 approx.) Stacked type  FRA-5-8	90° 2-element Cross, Stacked type	FCA-2-8	2	0.9	$\phi$ 7.0		120
		FCA-5-8	5	1.9	$\phi$ 12.0		120
	45°/90° 3-element Rosette, Stacked type	FRA-2-8	2	0.9	$\phi$ 7.0		120
		FRA-5-8	5	1.9	$\phi$ 12.0		120
Each package contains 10 gauges.							



## STRESS CONCENTRATION MEASUREMENT

Gauge pattern	Type	Gauge size		Backing		Resistance in Ω						
		L	W	L	W							
<p>●5-element Single-axis (G.F.2.1 approx.)</p> <p>L : length W : width (Unit : mm)</p>												
 FXV-1-11-002LE X-axis (magnified)	 FYV-1-11-002LE Y-axis (magnified)	5-element Single-axis [gauge pitch 2mm]	FXV-1-11 -17 -23 -002LE FYV-1-11 -17 -23	1 1	1.3 1.4	5.0 5.0 12.0 12.0	120 120					
 FBXV-04 X-axis (magnified)	 FBYV-06 Y-axis (magnified)	5-element Single-axis [gauge pitch 1mm]	FBXV-04-11 -005LE FBYV-06-11	0.4 0.6	1.3 0.8	5.4 5.3 7.4 7.0	120 120					
<p>●10-element 2-axis X and Y axis</p>  FCV-1 (magnified) Y-axis leadwire is marked for identification.							10-element 2-axis [gauge pitch 2mm]	FCV-1-11 -17 -23 -005LE	1	1.4	7.5 12.0	120
<p>●Single-element (G.F. 2.1 approx.) Single element cut away from Stress Concentration gauge</p>  FBX-04 (×3)							Single-element	FBX-04-11 -005LE	0.4	1.3	5.4 1.0	120
 FBY-06 (×3)								FBY-06-11	0.6	0.8	5.3 1.0	120
 FLX-1 (×3)								FLX-1-11 -17 -23 -002LE	1	1.3	5.0 2.0	120
<p>●Chain Strain Gauges CCFXX/CCFYX</p>  CCFXX-1 (magnified) X-axis 10-element							10-element Single-axis [gauge pitch 1.5mm]	CCFXX-1	1	1.5	16.4 4.5	120
 CCFYX-1 (magnified) Y-axis 10-element								CCFYX-1	1	1.5	16.4 4.5	120
<p>These gauges are specially designed to use TML New method for strain measurement and need our Data Logger TDS-303 and TDS-602 with built-in the method. For the details, contact TML.</p> <p>Each package contains 10 gauges.</p>												