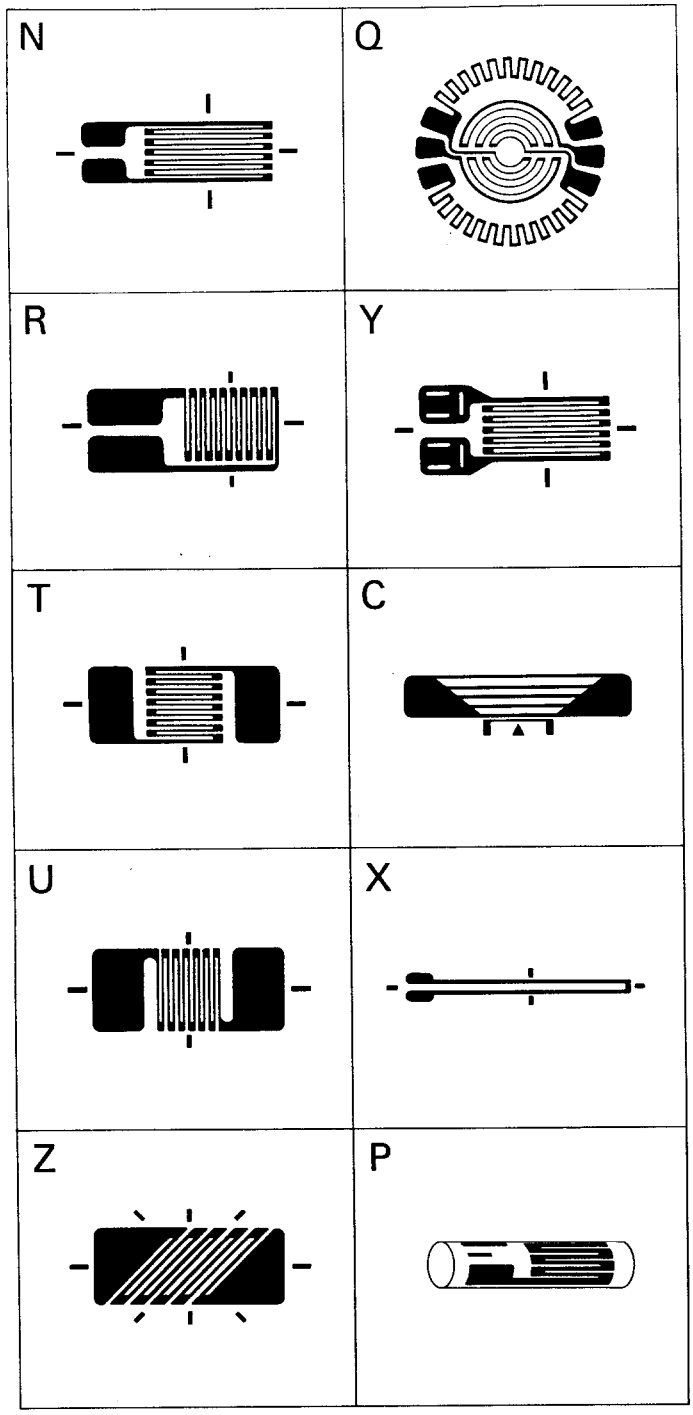
RS 632-124 N11-MA2-120-11 2mm
RS 632-145 N11-MA2-120-23 2mm
RS 632-168 N11-MA5-120-11 5mm
RS 632-180 N11-MA5-120-23 5mm

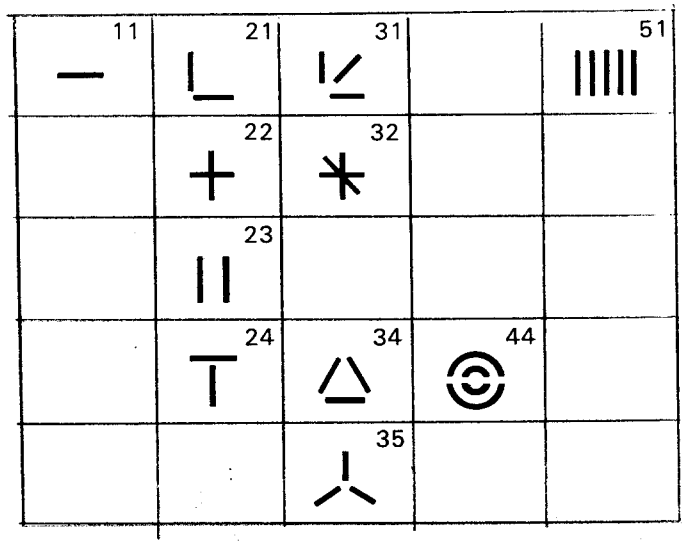
RS 308-102 N11-FA8-120-11 8mm
RS 308-118 N11-FA8-120-23 8mm

FOIL STRAIN GAUGES AND ACCESSORIES
(TERMINALS/CEMENT)

CODES FOR BASIC PATTERNS



CODES FOR BASIC PATTERN COMBINATIONS



Y: Yielding type.
For measurement of large strains ranging to plastic sphere. Designed not to cause stress concentration at the point where leads are soldered.

C: For crack analysis.
Gauge grids are arranged in parallel. Gauge resistance increases in the form of stairs when a crack takes place somewhere within the grids.

X: For crack propagation detection.
With the lengthy grid of this gauge, cracks propagating extensively can be sensed.

P: For application to internal surface of pipes or threaded holes where gauges are difficult to install.
The test object is perforated for installation of this gauge inside. Note however that application is considerably critical as the gauge is likely to be damaged when installed or its performance is affected by air bubbles introduced during installation.

*** W: Waterproof Moulded Type Strain Gauge**
Vinyl cable (2 parallel wires of 1 mm. in external dia., resp.) is being connected with strain gauge and the gauge is moulded with special Epoxy resins. No special protection for waterproofing is necessary after its having been installed on the test object. This feature can be applied to all versions in Nxx-FA Series, except N34, N35 and N51.

FEATURES :

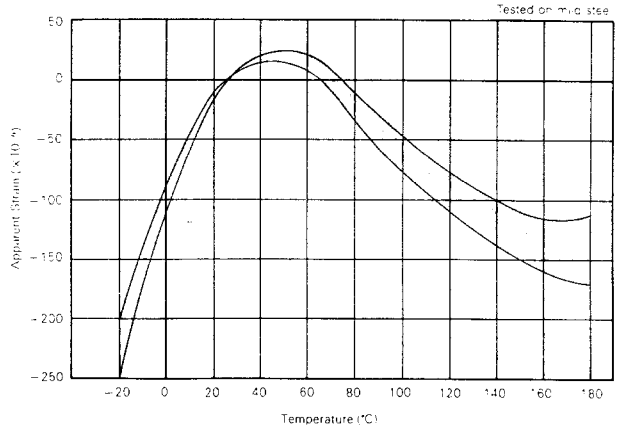
* Almost no effect on test object.
* Distant and multi-points measurements are possible.
* Applicable to both static and dynamic strains.
* Both surfaces being completely laminated, the gauge grids are entirely protected.
* The gauges, being fitted with leads, are easy to handle.

STANDARD SPECIFICATIONS :

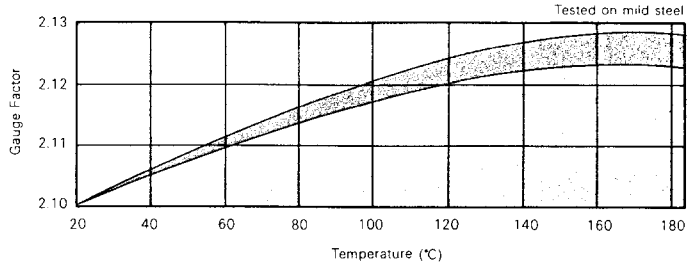
Gauge Length	0.3 mm. min. to 60 mm. max.
Measurable Strain	2 to 4% maximum. Up to 10% with foil yielding strain gauges.
Temperature Range	FA (Polyester Backing) −30°C to +80°C MA (Polyimide Backing) −30°C to +180°C
Thermal Output (See Fig. 1)	FA: Within ± 2με/°C (At room temperature up to +80°C) MA: Within ± 2με/°C (At room temperature up to +160°C) Within ± 5με/°C (At +160°C up to +180°C)
Gauge Factor Change with Temperature (See Fig. 2)	Within ± 0.015%/°C
Gauge Resistance Tolerance	Within ± 0.5% of the nominal resistance.
Gauge Factor	2.00 (Nominal)
Gauge Factor Tolerance	Within ± 1% of the value indicated on individual gauge packet for gauge lengths of 5 mm. to 60 mm. Within ± 2% of the value indicated on individual gauge packet for gauge lengths of 0.3 mm. to 3 mm.
Fatigue Life	More than 10^5 reversals at 1000×10^{-6} strain.

GENERAL PERFORMANCES OF TYPE N11-MA-5-120-11 STRAIN GAUGE

Thermal Output Characteristics (Fig. 1)



Gauge Factor variation with temperature (Fig. 2)



CONFIGURATIONS :

N11-FA-5-350-16-L03

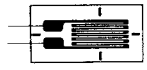
- Optional Specifications
  - 03 Length of Leads
  - L Resin Clad Copper Wire (Up to 0.3m)
  - W Waterproof Moulded Type* (See page 1)
  - P Optional Pattern Type (Subject to special quotations)
- Linear Expansion Factor of Material against which Strain Gauge is self-temperature compensated and its base colour classification

Base Colour	Materials against which strain gauge is self-temperature compensated	Linear expansion factor of materials	Codes
Red	Mild steel	10.8×10^{-6}/°C	11
Orange	Stainless steel	16.2×10^{-6}/°C	16
Blue	Aluminium alloy	23.4×10^{-6}/°C	23

Remarks : Base colour classifications are made in FA Series only. Code of "11" for mild steel can be deleted.

- Gauge Resistance
  Expressing strain gauge nominal resistance in the unit of Ω. Can be deleted when nominal resistance is 120Ω.
- Gauge Length
  Expressing grid effective length in figures in the unit of mm.
- Foil Material
  A: Cu-Ni Alloy
- Base Material
  F: Polyester, M: Polyimide
- Basic Pattern and its Combinations

PATTERNS AND SPECIFICATIONS :

Strain Gauge Pattern	Type	Nominal Resistance (Ω)	Dimensions (mm)				Approx. Gauge Factor	Material against which strain gauge is self-temperature compensated			Compatible Cement				Number of Gauges per Packet
			Grid		Base										
			Length	Width	Length	Width		Mild Steel (11)	Stainless Steel (16)	Aluminum Alloy (23)	F1	F3	18M	E110	
	N11-FA-03-120-(11,16,23)	120	0.3	1.8	3.5	2.5	1.9	●	●	●	●	●	●		10
	N11-FA- 1-120-(11,16,23)	120	1.0	1.5	4.0	2.5	2.0	●	●	●	●	●	●		
	N11-FA- 2- 60-(11)	60	2.0	1.6	6.0	2.5	2.0	●			●	●	●		
	N11-FA- 2-120-(11,16,23)	120	2.0	1.6	6.0	2.5	2.0	●	●	●	●	●	●		
	N11-FA- 2-350-(11,16,23)	350	2.0	2.2	7.0	3.5	2.0	●	●	●	●	●	●		
	N11-FA- 5- 60-(11)	60	5.0	1.8	9.5	3.5	2.1	●			●	●	●		
	N11-FA- 5-120-(11,16,23)	120	5.0	1.8	9.5	3.5	2.1	●	●	●	●	●	●		
	N11-FA- 5-350-(11,16,23)	350	5.0	2.6	11.0	4.0	2.1	●	●	●	●	●	●		
	N11-FA- 8-120-(11,16,23)	120	8.0	2.0	13.0	4.0	2.1	●	●	●	●	●	●		
	N11-FA- 8-350-(11,16,23)	350	8.0	4.0	14.0	6.0	2.1	●	●	●	●	●	●		
	N11-FA-10-120-(11,16,23)	120	10.0	2.2	15.0	5.0	2.1	●	●	●	●	●	●		
	N11-FA-10-350-(11,16,23)	350	10.0	4.5	18.0	6.5	2.1	●	●	●	●	●	●		
	N11-FA-10-600-(11)	600	10.0	3.0	16.0	5.0	2.1	●			●	●	●		
	N11-FA-10-1000-(11)	1000	10.0	4.5	15.0	6.0	2.0	●			●	●	●		
	N11-FA-30-120-(11)	120	30.0	1.2	40.0	4.5	2.1	●			●	●	●		
	N11-FA-60-120-(11)	120	60.0	2.2	65.0	5.5	2.1	●			●	●	●		
	N11-MA-03-120-(11,16,23)	120	0.3	1.8	3.5	2.5	1.9	●	●	●	●	●	●	●	
	N11-MA- 1-120-(11,16,23)	120	1.0	1.5	4.0	2.5	2.0	●	●	●	●	●	●	●	
	N11-MA- 2-120-(11,16,23)	120	2.0	1.6	6.0	2.5	2.0	●	●	●	●	●	●	●	
	N11-MA- 2-350-(11)	350	2.0	2.2	7.0	3.5	2.0	●			●	●	●	●	
	N11-MA- 5-120-(11,16,23)	120	5.0	1.8	9.5	3.5	2.1	●	●	●	●	●	●	●	
	N11-MA- 5-350-(11)	350	5.0	2.6	11.0	4.0	2.1	●			●	●	●	●	
	N11-MA- 8-120-(11,16,23)	120	8.0	2.0	13.0	4.0	2.1	●	●	●	●	●	●	●	
	N11-MA- 8-350-(11)	350	8.0	4.0	14.0	6.0	2.1	●			●	●	●	●	
	N11-MA-10-120-(11,16,23)	120	10.0	2.2	15.0	5.0	2.1	●	●	●	●	●	●	●	
	N11-MA-10-350-(11)	350	10.0	4.5	18.0	6.5	2.1	●			●	●	●	●	
	N11-MA-10-600-(11)	600	10.0	3.0	16.0	5.0	2.1	●			●	●	●	●	
	N11-MA-10-1000-(11)	1000	10.0	4.5	15.0	6.0	2.0	●			●	●	●	●	