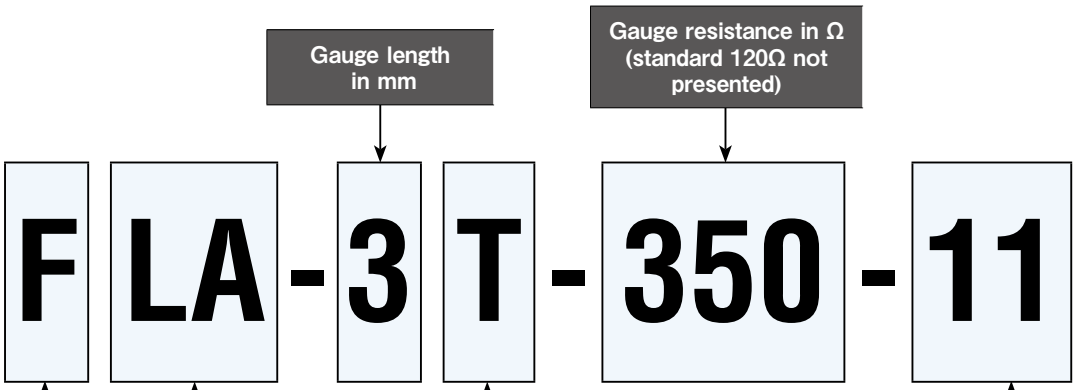
STRAIN GAUGE CODING SYSTEM



Gauge series	Applications
F	General purpose
	Residal stress, Stress concentration, Chain gauge
WF	Waterproof construction
PF	Concrete use, Polyester foil gauge
P	Concrete use, Polyester wire gauge
FLM / WFLM	Contrete use, Metal backing strain gauge
MF	Magnetic field use
PMF	Concrete use, Embedment type strain gauge
YEF / YF / YHF	Post-yield strain (Large strain) measurement
PMFLS	Asphalt use, Embedment type strain gauge
LF	Low elastic material use, Wood, Gypsum
PFLW / PLW	Low elastic material use, Wood, Gypsum
GF	Low elastic material use, Plastics
BF / UBF	Composite material use
DSF	High endurance use, Fatigue test
CF	Cryogenic temperature use
CEF	Wide range temperature use
QF / ZF / EF	High temperature use
SFA	Stress measurement
AW	Weldable strain gauge
BTM	Bolt axial strain measurement
DD	One-side gauge
FAC	Crack detection gauge
TF	Strain gauge type temperature measurement
KM	Concrete/Asphalt embedment use, strain transducer
FGMH	Frictional Strain Checker
FGAH	Frictional Axial strain transducer
FGDH	Frictional Torque Sensor System

The following strain gauges are CE marked.

For strain gauge without integral lead wire
- Strain gauge with “-F” appended to the type number
- Strain gauge indicated with “CE” mark in this catalog

Pattern configuration (*1)	
L/LA/LK/LX/LG/BX/BY	Single-axis
LAB/LKB/LGB GOBLET	
C/CA/LC/CS/CB	2-axis Rosette (0°/90°)
CAB GOBLET	
R/LR/RA/RAS/RS	3-axis Rosette (0°/45°/90°)
RAB GOBLET	
XV/YV/BXV/BYV	5-element Single
CV	5-element Rosette (0°/90°)
CT	Torque
LT	45° Single-axis

(*1) Not always coded
0°/90° 2-axis
0°/45°/90° 3-axis

Functions (*2)		Applicable gauge
T	Integrated with thermocouple	Applicable to most of strain gauges
A	Left 45°	QFLT
B	Right 45°	QFLT
W	Large width	FLAB, QFLAB, Some of 350Ω strain gauges

(*2) Not indicated for general strain gauges

Compensation material ppm/° C (*3)					
3	Composite material		17	Stainless steel/Copper alloy	
	Ceramic (Si_3N_4)	2.6~3.3		SUS 304	16.2
	CFRP	3 ~ 5		SUS 310	15.8
5	Composite material			SUS 316	16
	Ceramic (SiC)	4.6		SUS 321	16.7
	CFRP	3 ~ 5		Copper	16.7
8	Composite material			Beryllium copper	16.6
	Glass	7.9		Brass	16.7
	Titanium	8.9		Bronze	17
	Titanium alloy (Ti-6Al-4V)	8.8		Constantan	14.9
11	Mild steel		23	Aluminium	
	Mild steel (0.1~0.2C)	11.8		Aluminium	23.4
	Hard steel (0.4~0.5C)	11.2		Aluminium 2024-T4	23
	Cast iron	10.5		Lead and its alloy	29
	Hastelloy-276	11.2		Gypsum	25
	Inconel 600	13.3		Polyimide	20~30
	Inconel 750	12.1	28	Magnesium	
	Monel	13.5		Magnesium alloy	27
	SUS 630 (17-4PH)	10.8	50	Plastics	
	SUS 631 (17-7PH)	10.6		Epoxy (Cast)	45~65
	Concrete	7~13	70	Plastics	
				Acrylics	70
				ABS	74
				Polyacetal (POM)	80
				Polycarbonate (PC)	66~70
				Polystyrene (PS)	60~80

(*3) Indicated only for self-temperature-compensated strain gauges For other materials, contact TML or your local representative.

Length of leadwire pre-attached (*4)	
with 2-wire	Standard length 1 , 3 , 5 m
with 3-wire	Standard length 3 , 5 m

(*4) These strain gauges are available with integral leadwires attached. (made to order)

Option –F

The leadwire pre-attachment is available using lead-free solder. For the leadwire pre-attached strain gauges using lead-free solder, the option code "-F" is appended to the type number to discriminate them from conventional leadwire pre-attached strain gauges using leaded solder.

(-F) - 3 LJB (-F)

Option –F

Strain gauges using leaded solder as standard specifications are optionally available with lead-free solder used. The option code "-F" is appended to the type number of lead-free solder used gauges to discriminate them from conventional strain gauges using leaded solder. The option code "-F" is omitted for strain gauges with CE marking such as GOBLET series.

Suffix codes of pre-attached leadwires Option -F for CE marking	
LJB / LJB-F	0.08mm^2 paralleled vinyl leadwire
LJBT / LJBT-F	0.08mm^2 3-wire parallel vinyl leadwire
LJC / LJC-F	0.11mm^2 paralleled vinyl leadwire
LJCT / LJCT-F	0.11mm^2 3-wire paralleled vinyl leadwire
LJD	0.3mm^2 paralleled vinyl leadwire
LJDT	0.3mm^2 3-wire paralleled vinyl leadwire
LH	0.02mm^2 twisted vinyl leadwire
LHT	0.02mm^2 3-wire twisted vinyl leadwire
LS	3.2mm-dia. shielded vinyl leadwire
LTSA / LTSA-F	3mm-dia. shielded 3-wire vinyl leadwire
LTSB / LTSB-F	5mm-dia. shielded 3-wire vinyl leadwire
LQM / LQM-F	0.08mm^2 polypropylene 4-wire paralleled leadwire with modular plug
LXT / LXT-F	3-wire parallel special vinyl leadwire
LJRA	2-wire twisted cross-linked vinyl leadwire
LJRTA	3-wire twisted cross-linked vinyl leadwire
LJQTA	3-wire twisted cross-linked polyethylene leadwire
TLJBT / TLJBT-F	Temperature-integrated 3-wire paralleled vinyl leadwire
TLQ	Temperature-integrated 4-wire paralleled vinyl leadwire
6FB□TLT / 6FB□TLT-F	Temperature-integrated 3-wire twisted fluorinated resin (FEP) single-core leadwire
LP / LP-F	0.14mm / 0.18mm polyurethane leadwire
LU / LU-F	0.14mm / 0.18mm polyester leadwire
LE / LE-F	0.14mm / 0.18mm polyeimide leadwire
6FA□LT / 6FA□LT-F	3-wire twisted fluorinated resin (FEP) leadwire
6FAS□LT / 6FAS□LT-F	3-wire twisted fluorinated resin (FEP) leadwire (Surface treatment (tetra-etching) is not required)
6FB□LT / 6FB□LT-F	3-wire twisted fluorinated resin (FEP) single-core leadwire
6FC□LT / 6FC□LT-F	3-wire twisted fluorinated resin (FEP) leadwire
6FD□LTS	1.5mm-dia. 3-wire twisted fluorinated resin (FEP) leadwire with shield
4FA□LT / 4FA□LT-F	3-wire twisted fluorinated resin (PTFE) leadwire
4FB□LT / 4FB□LT-F	3-wire twisted fluorinated resin (PTFE) single-core leadwire

For further information on combination use with strain gauges, refer to pages 39~40.

Color coding for test specimen

Most of our strain gauges are self-temperature-compensated. The backings of F, WF and CF series strain gauges are classified into three colors according to the objective material for measurement.

Objective material for measurement	Coefficient of linear thermal expansion	Backing color	Type number (example)
Mild steel	11×10^{-6}/°C	Red	FLA-3-11
Stainless steel Copper alloy	17×10^{-6}/°C	Brown	FLA-3-17
Aluminium	23×10^{-6}/°C	Green	FLA-3-23

Name of each part of strain gauge