

TML STRAIN GAUGE CODING SYSTEM

F LA - 3 T - 350 - 11 (-F) -

Gauge length in mm

Gauge resistance in Ω
(standard 120 Ω not presented)

(*3) See Compensation material right

Functions (*2)	Applicable gauge
A Left 45°	QFLT-A
B Right 45°	QFLT-B
for shearing strain measurement	
T Thermocouple	Temperature-integrated

(*2) Not indicated for general model

Option -F

Strain gauge with CE marking (compliant to RoHS2 Directive)
Identification code "-F" is appended to the type number of the strain gauge.
For a strain gauge with "Option -F", lead-free solder is used in place of leaded solder. Fatigue life of the strain gauge may become shorter by using lead-free solder.

Gauge series	Applications
F (-F) GOBLET	General purpose F series of GOBLET are CE marked.
WF	Waterproof construction
PF	Concrete use, Polyester foil gauge
P	Concrete use, Polyester wire gauge
MF	Magnetic field use
PM	Concrete use, Embedment type strain gauge
PMF	Concrete use, Embedment type strain gauge
FLM/WFLM	Concrete use, Metal backing strain gauge
YEF/YF/YHF	Post-yield strain (Large strain) measurement
PMFLS	Asphalt use, Embedment type strain gauge
GF/LF	Low elastic material use, Plastics, Wood, Gypsum
PFLW/PLW	Low elastic material use, Wood, Gypsum
UBF/BF	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 LAB/LKB/LGB GOBLET	Single
C/CALC/CS/CB CAB GOBLET	2-element Rosette (0°/90°)
R/LR/RA/RAS/RS RAB GOBLET	3-element Rosette (0°/45°/90°)
XV/YV/BXV/BYV	5-element Single
CV	5-element Rosette (0°/90°)
CT	Torque
LT	45° Single

(*1) Not always coded

Pattern image

Single

2-element Rosette (0°/90°)
stacked

3-element Rosette (0°/45°/90°)
stacked

5-element Single 10-element Single

5-element Rosette (0°/90°)

Torque

45° Single

TML STRAIN GAUGE CODING SYSTEM

3 LJB(- F)

Length of leadwire pre-attached	
-002	2cm long
-005	5cm long
-1	1m long
-3	3m long
-5	5m long

Option -F
Leadwire with CE marking (compliant to RoHS2 Directive) Identification code “-F” is appended to the type number of the leadwire.

Compensation material ppm/°C (*3)	
Indicated only for self-temperature-compensated strain gauges For other materials, contact TML or your local representative.	
<u>3 Composite material</u>	
Ceramic (Si ₃ N ₄)	2.6~3.3
CFRP	3 ~ 5
<u>5 Composite material</u>	
Ceramic (SiC)	4.6
CFRP	3 ~ 5
<u>8 Composite material</u>	
Glass	7.9
Titanium	8.9
Titanium alloy (Ti-6Al-4V)	8.8
<u>11 Mild steel</u>	
Mild steel (0.1~0.2C)	11.8
Hard steel (0.4~0.5C)	11.2
Cast iron	10.5
Hastelloy-276	11.2
Inconel 600	13.3
Inconel 750	12.1
Monel	13.5
SUS 630 (17-4PH)	10.8
SUS 631 (17-7PH)	10.6
Concrete	7 ~ 13
<u>17 Stainless steel/Copper alloy</u>	
SUS 304	16.2
SUS 310	15.8
SUS 316	16.0
SUS 321	16.7
Copper	16.7
Beryllium copper	16.6
Brass	16.7
Bronze	17.0
Constantan	14.9
<u>23 Aluminium</u>	
Aluminium	23.4
Aluminium 2024-T4	23.0
Lead and its alloy	29.0
Gypsum	25.0
Polyimide	20 ~ 30
<u>28 Magnesium</u>	
Magnesium alloy	27.0
<u>50 Plastics</u>	
Epoxy (Cast)	45 ~ 65
<u>70 Plastics</u>	
Acrylics	70
ABS	74
Polycacetal (POM)	80
Polycarbonate (PC)	66 ~ 70
Polystyrene (PS)	60 ~ 80

The following strain gauges are CE marked.
For strain gauge with integral lead wire - CE marked strain gauge as the above having integral leadwire with “-F” appended to the type number of the integral leadwire

Suffix codes of pre-attached leadwires	Option -F for CE marking
-LJB/-LJB-F : 0.08mm ² paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-LJBT/-LJBT-F: 0.08mm ² 3-wire parallel leadwire	-20°C~+80°C
Applicable to same as above -LJB/-LJB-F	
-LJA : 0.08mm ² twisted vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/MF/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LJAT : 0.08mm ² 3-wire twisted vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-LJC/-LJC-F : 0.11mm ² paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-LJCT/-LJCT-F : 0.11mm ² 3-wire paralleled vinyl leadwire	-20°C~+80°C
Applicable to same as above -LJC/-LJC-F	
-LJD : 0.3mm ² paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF	
-LJDT : 0.3mm ² paralleled vinyl leadwire	-20°C~+80°C
Applicable to same as above -LJD	
-LJG : 0.5mm ² paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF	
-LJGT : 0.5mm ² 3-wire paralleled vinyl leadwire	-20°C~+80°C
Applicable to same as above -LJG	
-LH : 0.02mm ² twisted vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF	
-LHT : 0.02mm ² 3-wire twisted vinyl leadwire	-20°C~+80°C
Applicable to same as above -LH	
-LJAY: 0.08mm ² 3-wire twisted vinyl leadwire	-20°C~+80°C
Applicable to MF (Single) series	
-LS : 3.2mm-dia. shielded vinyl leadwire	-20°C~+80°C
Applicable to MF series	
-LTSA : 3mm-dia. shielded 3-wire vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/MF//LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LTSB : 5mm-dia. shielded 3-wire vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LQM/-LQM-F : 0.08mm ² polypropylene 4-wire paralleled leadwire with modular plug	-20°C~+100°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LBQM/-LBQM-F : 0.08mm ² vinyl 4-wire paralleled leadwire with modular plug	-20°C~+80°C
Applicable to same as above -LQM	
-LXT/-LXT-F : 3-wire parallel special vinyl leadwire	-20°C~+150°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LJRA : 2-wire twisted cross-linked vinyl leadwire	-20°C~+100°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-LJRTA : 3-wire twisted cross-linked vinyl leadwire	-20°C~+100°C
Applicable to same as above -LJRA	
-LJQTA : 3-wire twisted cross-linked polyethylene leadwire	-65°C~+125°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-TLJBT/-TLJBT-F : Temperature-integrated 3-wire paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/PF/P/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-TLQ : Temperature-integrated 4-wire paralleled vinyl leadwire	-20°C~+80°C
Applicable to F/FLM/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF	
-6FB_TLT : Temperature-integrated 3-wire twisted fluorinated resin (FEP) leadwire	-269°C~+200°C
Applicable to same as above -TLQ	
-LP/-LP-F : 0.14mm ² /0.18mm ² polyurethane leadwire	-10°C~+120°C
Applicable to F/PF/P/FLM/MF/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM/FAC series	
-LU/-LU-F : 0.14mm ² /0.18mm ² polyester leadwire	-196°C~+200°C
Applicable to F/PF/P/FLM/MF/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-LE/-LE-F : 0.14mm ² /0.18mm ² polyimide leadwire	-269°C~+300°C
Applicable to same as -LP/-LP-F	
-6FA_LT/ -6FA_LT-F : 3-wire twisted fluorinated resin (FEP) leadwire	-269°C~+200°C
Applicable to F/FLM/MF/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF/BTM series	
-6FAS_LT/ -6FAS_LT-F : 3-wire twisted fluorinated resin (FEP) leadwire	-269°C~+200°C
Applicable to same as above -6FA_LT	
-6FB_LT/ -6FB_LT-F : 3-wire twisted fluorinated resin (FEP) leadwire	-269°C~+200°C
Applicable to same as above -6FA_LT	
-6FC_LT/ -6FC_LT-F : 3-wire twisted fluorinated resin (FEP) leadwire	-269°C~+200°C
Applicable to F/FLM/MF/YEF/YF/YHF/LF/PFLW/PLW/GF/BF/UBF/DSF/CF/CEF/QF/ZF/EF series	
-6FD_LTS/-F : 1.5mm-dia. 3-wire twisted fluorinated resin (FEP) leadwire with shield	-269°C~+200°C
Applicable to MF series	
-4FA_LT/-4FA_LT-F : 3-wire twisted fluorinated resin (PTFE) leadwire	-269°C~+260°C
Applicable to same as above -6FB_LT	
-4FB_LT/ -4FB_LT-F : 3-wire twisted fluorinated resin (PTFE) leadwire	-269°C~+200°C
Applicable to same as above -6FB_LT	

For further information on combination use with strain gauges, refer to pages 33~42.