



Combination use of strain gauges and dedicated leadwires

Option -F: Lead-free solder

Use of lead-free solder is selectable for strain gauges and leadwires. When it is selected, the option code "-F" is added to the type number of strain gauge and leadwire separately.

The GOBLET and PF/P/YEF/YF/PFLW/PLW/UBF/FAC series gauges are only available with the use of lead-free solder because they are CE marked with their exclusive leadwires. The CF/CEF/ZF/EF/BTM series gauges are CE marked because they use high melting point solder and RoHS2 Directive is not applied.

A strain gauge with option code "-F" is a RoHS-compliant product. Since the issuance of technical document is required for the RoHS compliance, please contact us for the details of CE marking availability for the product.

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			Suffix code	LJB	LJBT	LJC	LJCT	LJD	LJDT	LH	LHT	LJAY	LS	LTSA	LTSB	
			Option (-F)	-F	-F	-F	-F			-F	-F	-F	-F	-F	-F	
			Number of cores/ Core diameter(mm)	7/0.12	7/0.12	10/0.12	10/0.12	12/0.18	12/0.18	5/0.07	5/0.07	7/0.12	7/0.12	7/0.12	7/0.26	
			Cross sectional area (mm ²)	0.08	0.08	0.11	0.11	0.3	0.3	0.02	0.02	0.08	0.08	0.08	0.3	
			Operating temperature range (°C)	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80	-20 ~ +80		
Strain Gauge Series	CE compliance	Operating temperature range °C	Temperature compensation range °C	The table below shows the maximum operating temperature of the strain gauge in combined use with the dedicated leadwire. (°C)												
F	Partly (-F)	-196~+150	+10~+100	80	80	80	80	80	80	80	80	-	-	80	80	
GOBLET	CE	-196~+150	+10~+100	80	80	80	80	-	-	-	80	-	-	80	80	
PF	CE	-20~+80	+10~+80	80	80	80	80	-	-	-	-	-	-	80	80	
P	CE	-20~+80	+10~+80	80	80	80	80	-	-	-	-	-	-	80	80	
FLM	Non	-20~+80	+10~+80	-	80	-	80	-	80	-	80	-	-	80	80	
QMF	CE	-30~+200	0~+150	-	-	-	-	-	-	-	-	80	80	80	-	
MF(Single)	Non	-20~+80	-	-	-	-	-	-	-	-	-	80	80	80	-	
MF(Rosette)	Non	-20~+200	-	-	-	-	-	-	-	-	-	-	80	-	-	
YEF GOBLET	CE	-30~+80	-	80	80	80	80	-	-	-	80	-	-	80	80	
YF	CE	-20~+80	-	80	80	80	80	80	80	80	80	-	-	-	-	
YHF	CE	-30~+80	-	80	80	80	80	80	80	80	80	-	-	-	-	
LF GOBLET	CE	-30~+80	+10~+80	80	80	80	80	-	-	-	80	-	-	80	80	
PFLW	CE	-20~+80	+10~+80	80	80	80	80	80	80	80	80	-	-	80	80	
PLW	CE	-20~+80	+10~+80	80	80	80	80	80	80	80	80	-	-	80	80	
GF GOBLET	CE	-30~+80	+10~+80 (approx.)	80	80	80	80	-	-	-	80	-	-	80	80	
BF GOBLET	CE	-30~+200	+10~+80	80	80	80	80	-	-	-	80	-	-	80	80	
UBF	CE	(Static) :-30 ~ +120	-	80	80	80	80	80	80	80	80	-	-	80	80	
		(Dynamic):-30~+150														
DSF	Non	-60~+200	-	80	80	80	80	80	80	80	80	-	-	80	80	
CF	CE	-269~+80	-196~ +80(approx.)	80	80	80	80	80	80	80	80	-	-	80	80	
CEF	CE	-269~+200	-196~ +80(approx.)	80	80	80	80	80	80	80	80	-	-	80	80	
QF	Partly (-F)	-20~+200	+10~+100	80	80	80	80	80	80	80	80	-	-	80	80	
GOBLET	CE	-30~+200	+10~+100	80	80	80	80	-	-	-	80	-	-	80	80	
ZF	CE	-20~+300	+10~+100	80	80	80	80	80	80	80	80	-	-	80	80	
EF(Single)	CE	-196~+300	+10~+150	80	80	80	80	80	80	80	80	-	-	80	80	
EF(Rosette)	CE	-196~+200	0~+150	80	80	80	80	80	80	80	80	-	-	80	80	
BTM	CE	-10~+80	-	80	80	80	80	-	-	-	-	-	-	-	-	
FAC	CE	-30~+80	-	-	-	-	-	-	-	-	-	-	-	-	-	
TF	(-F)	-20~+200	-	-	80	-	80	-	-	-	-	-	-	-	-	

Remarks: Strain gauges of the following series are available only with the dedicated leadwires which are the most suited to the series. Please also refer to the description about each series in this catalog. The option -F (use of lead-free solder) is available. To specify this option, attach the suffix "-F" to the end of each type number of the dedicated leadwire.

Series WF	Operating temperature	0 ~ +80°C	Leadwire : LDBB-F	Parallel vinyl leadwire
			LDBTB-F	3-wire paralleled vinyl leadwire 7/0.12(0.08mm ²)
Series WFLM	Operating temperature	-20 ~ +80°C	Leadwire : LJQTA	3-wire twisted cross-linked polyethylene leadwire 2 meters 7/0.127(0.09mm ²)
Note) WFLM series is not available with option -F.				
Series PMF	Operating temperature	-20 ~ +60°C	Leadwire : LJRTA	3-wire twisted cross-linked vinyl leadwire 2 meters 7/0.127(0.09mm ²)
Temperature-integrated PMF			Leadwire : LJBCT	3-wire parallel vinyl leadwire 7/0.12 (0.08mm ²)
Series PMFLS	Operating temperature	-20 ~ +60°C	Leadwire : LTJSC	4-wire shielded Chloroprene cable (3-wire connection) 2 meters, 6mm dia.

	Polypropylene 4-wire parallel leadwire (with modular plug)	3-wire parallel special vinyl leadwire	2-wire twisted cross-linked vinyl leadwire	3-wire twisted cross-linked vinyl leadwire	3-wire twisted cross-linked polyethylene leadwire	Temperature-integrated 3-wire parallel vinyl leadwire	Temperature-integrated 3-wire twisted fluorinated resin (FEP) single-core leadwire	Polyurethane leadwire	Polyester leadwire	Polyimide leadwire	3-wire twisted fluorinated resin (FEP) leadwire	3-wire twisted fluorinated resin (FEP) leadwire (Surface treatment (tetra-etching) is not required)	3-wire twisted fluorinated resin (FEP) single-core leadwire	3-wire twisted fluorinated resin (FEP) leadwire	3-wire twisted fluorinated resin (FEP) leadwire	1.5mm dia. 3-core shielded fluorinated resin (FEP) leadwire	3-wire twisted fluorinated resin (PTFE) leadwire	3-wire twisted fluorinated resin (PTFE) single-core leadwire	
	LQM	LXT	LJRA	LJRTA	LJQTA	TLJBT	6FB □LT	LP	LU	LE	6FA □LT	6FAS □LT	6FB □LT	6FC □LT	6FCS □LT	6FD □LTS	4FA □LT	4FB □LT	
	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	-F	
	7/0.12	7/0.12	7/0.16	7/0.127	7/0.127	7/0.12	1/0.2	1/0.14 1/0.18	1/0.14 1/0.18	1/0.14 1/0.18	7/0.18	7/0.18	1/0.2	7/0.08	7/0.08	7/0.08	7/0.16	1/0.2	
	0.08	0.08	0.14	0.09	0.09	0.08					0.18	0.18		0.04	0.04	0.04	0.14		
	-20 ~ +100	-20 ~ +150	-20 ~ +100	-20 ~ +100	-65 ~ +125	-20 ~ +80	-269 ~ +200	-10 ~ +120	-196 ~ +200	-269 ~ +300	-269 ~ +200	-269 ~ +200	-269 ~ +200	-269 ~ +200	-269 ~ +200	-269 ~ +200	-269 ~ +260	-269 ~ +260	
	The table below shows the maximum operating temperature of the strain gauge in combined use with the dedicated leadwire. (°C)																		Strain Gauge Series
	100	150	100	100	125	80	150	120	150	150	150	150	150	150	150	-	150	150	F (-F)
	100	150	-	-	125	80	150	120	150	150	150	150	150	150	150	-	150	150	GOBLET
	80	80	-	-	80	80	-	80	80	80	-	-	-	-	-	-	-	-	PF
	80	80	-	-	80	-	-	80	80	80	-	-	-	-	-	-	-	-	P
	80	80	-	80	80	80	80	-	-	-	80	80	80	80	80	-	80	80	FLM
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	QMF
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	-	-	MF(Single)
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	MF(Rosette)
	80	80	-	-	80	80	80	80	80	80	80	80	80	80	80	-	80	80	YEF GOBLET
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	YF
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	YHF
	80	80	-	-	80	80	80	80	80	80	80	80	80	80	80	-	80	80	LF GOBLET
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	PFLW
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	PLW
	80	80	-	-	80	80	80	80	80	80	80	80	80	80	80	-	80	80	GF GOBLET
	100	150	-	-	125	80	200	120	200	200	200	200	200	200	200	-	200	200	BF GOBLET
	100	120 150	100	100	120 125	80	120 150	120	120 150	120 150	120 150	120 150	120 150	120 150	120 150	-	120 150	120 150	UBF
	100	150	100	100	125	80	200	120	200	200	200	200	200	200	200	-	200	200	DSF
	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	-	80	80	CF
	100	150	100	100	125	80	200	120	200	200	200	200	200	200	200	-	200	200	CEF
	100	150	100	100	125	80	200	120	200	200	200	200	200	200	200	-	200	200	QF (-F)
	100	150	-	-	125	80	200	120	200	200	200	200	200	200	200	-	200	200	GOBLET
	100	150	100	100	125	80	200	120	200	300	200	200	200	200	200	-	260	260	ZF
	100	150	100	100	125	80	200	120	200	300	200	200	200	200	200	-	260	260	EF(Single)
	100	150	100	100	125	80	200	120	200	200	200	200	200	200	200	-	200	200	EF(Rosette)
	-	-	80	80	80	-	-	80	-	80	80	80	80	-	-	-	80	80	BTM
	-	-	-	-	-	-	-	80	-	80	-	-	-	-	-	-	-	-	FAC
	-	-	-	100	125	-	-	120	-	200	200	200	200	200	200	-	200	200	TF (-F)

Standard length of the leadwire is 1 m, 3 m or 5 m.

Designation of leadwire-integrated strain gauge exemplified

FLT-05A -11 -E -3 LJCT -E

Strain Gauge F series ————

(FLT: for shearing strain measurement)

Self-temperature-compensated material ————

(-11: Mild steel Thermal expansion 11ppm/°C)

Option F : LEAD-free soldering of strain gauge ————

Length of leadwire LJCT 3: 3m

Option F : LEAD-free soldering of leadwire

3-wire paralleled vinyl leadwire