Not for new design

POWER RELAY
1 POLE - 16A / Inrush 80A type
FTR-K1L Series

■ FEATURES

- Low profile
  - Height: 15.7 mm
- Inrush peak current up to 80A (TV-5)
- High insulation between coil and contacts:
  - Insulation distance: 10 mm
  - Dielectric strength: 5,000VAC
  - Surge strength: 10,000V
- Plastic materials
  - UL94 flammability class V-0
- Cadmium free relay
- RoHS compliant

Please see page 5 for more information

■ PARTNUMBER INFORMATION

[Example] FTR-K1 (a) L (b) D (c) C (d) K (e) 012 (f) W (g)

(a)	type	FTR-K1 : FTR-K1 Series
(b)	Operating function	L : Latching type
(c)	Coil type	Nil : 1 coil D : 2 coils
(d)	Contact configuration	A : 1 form A C : 1 form C
(e)	Coil power / Enclosure	K : Standard / Flux free
(f)	Coil rated voltage	012 : 5....24 VDC Coil rating table at page3
(g)	Contact material	W : $AgSnO_2$ (in combination with 1 form C type only) T : $AgSnO_2$ (in combination with 1 form A type only, TV-5 rated)

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-K1LDCK012W Actual marking: K1LDCK012W

■ SPECIFICATION

Item			FTR-K1L ( ) AK ( ) T	FTR-K1L ( ) CK ( ) W
Contact Data	Configuration		1 form A	1 form C
	Construction		Single	
	Material		$AgSnO_2$	
	Resistance (initial)		≤ 100mOhm at 1A, 6VDC	
	Contact rating		16A, 250VAC	
	Max. carrying current *1		20A	
	Max. switching voltage		440VAC	
	Max. switching power		4,000VA	
	Limited making capacity		80A 250VAC	80A 250VAC (Make)
	Min. switching load *2		100 mA, 5VDC	
Life	Mechanical		3 x 10^6 operations minimum	
	Electrical	Contact rating	100 x 10^3 operations min.	50 x 10^3 operations min.
		5/80A 250VAC (inrush)	25 x 10^3 operations minimum (N.O. contact)	
Coil Data	Rated power (20 °C)		1 coil: 400mW / 2 coils: 600mW	
	Operating temperature range		-40 °C to +85 °C (no frost)	
Timing Data	Set (at nominal voltage)		≤ 15ms (no diode, excluding bounce)	
	Reset (at nominal voltage)		≤ 15ms (no diode, excluding bounce)	
	Min. coil excitation time (at nominal voltage)		≥ 30ms	
Insulation	Resistance (initial)		≥ 1,000MOhm at 500VDC	
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1min	
		Contacts to coil	5,000VAC (50/60Hz) 1min	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
Other	Vibration resistance	Misoperation ≥ 1μs	10 to 55Hz double amplitude 0.7mm	
		Endurance	10 to 55Hz double amplitude 1.5mm	
	Shock	Misoperation ≥ 1μs	Min. 200m/s^2 (11±1ms)	
		Endurance	Min. 1,000m/s^2 (6±1ms)	
	Weight		Approximately 13g	

*1 Need to consider the heat from PCB when max. current is more than 10A.
*2 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental contions and expected reliability levels.

■ COIL RATING

Coil Code	Rated Coil Voltage (VDC)	1 coil		2 coils	
		Operating voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Operating voltage (VDC)	Coil Resistance +/- 10% (Ohm)
005	5	3.5	63	3.5	42
012	12	8.4	360	8.4	240
024	24	16.8	1,440	16.8	960

Note: All values in the table are valid for 20˚C and zero contact current.
* Specified operate values are valid for pulse wave voltage. Min. coil excitation time is 30ms.
❗ Please use at rated coil voltage. Continuous energization on coil at the voltage exceeding max. applicable voltage is prohibited. Insulation deterioration may occur.

■ SAFETY STANDARDS

Type	Compliance	Contact rating	
		1a	1c
cULus	UL508 C22.2 NO.14 (File No. E63614)	Flammability: UL 94-V0 (plastics)	
		16A, 24VDC (resistive) 16A, 277VAC (resistive) TV5, 120VAC 25,000 cycles	16A, 24VDC (resistive) 16A, 277VAC (resistive) TV5, 120VAC 25,000 cycles (make contact)
VDE	IEC/EN61810-1 EN60065 clause 14.6.1 EN60335-1 clause 15.3, 16.3, 29.1, 29.2, 29.3 EN60730 clause 12.2, 13.2, 20.1, 20.2, 20.3	16A, 250VAC (cosφ=1), 85°C 16A, 24VDC (0ms), 85°C	16A, 250VAC (cosφ=1), 85°C 16A, 24VDC (0ms), 85°C

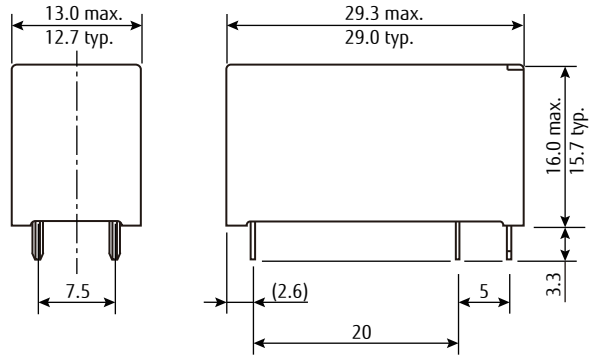
■ COIL POLARITY

Version	1 coil		2 coils		
Terminal No.	4	6	4	5	6
Set	-	+	-	+	
Reset	+	-		+	-

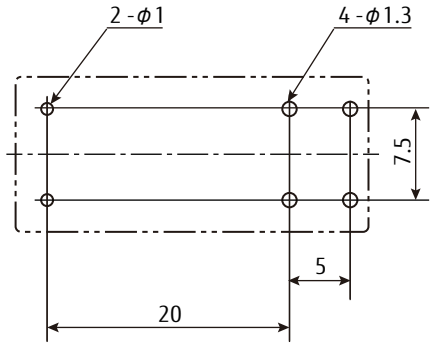
■ DIMENSIONS

FTR-K1LAK( )T

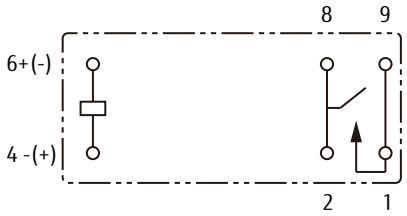
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)

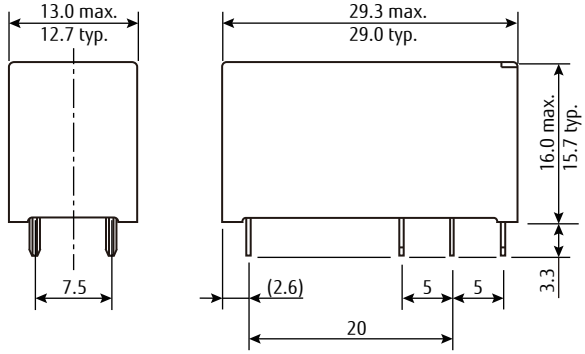


● Schematics (BOTTOM VIEW)

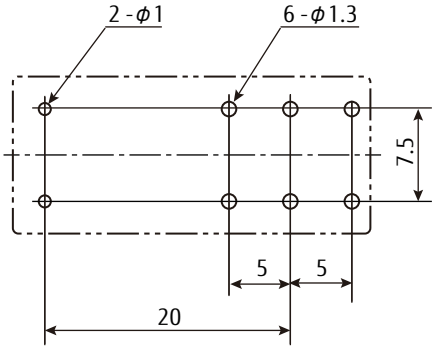


FTR-K1LCK( )W

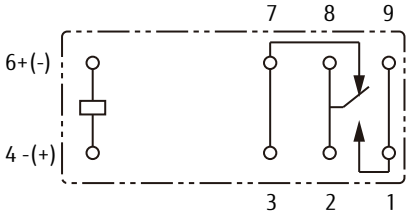
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)



● Schematics (BOTTOM VIEW)



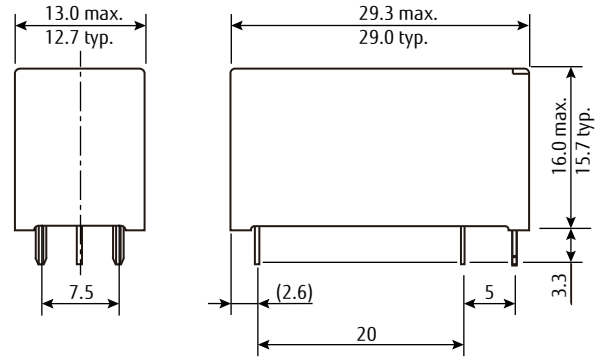
・Dimensions do not include tolerances.
・Dimensions of the terminals do not include thickness of pre-solder.
・Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

Unit: mm

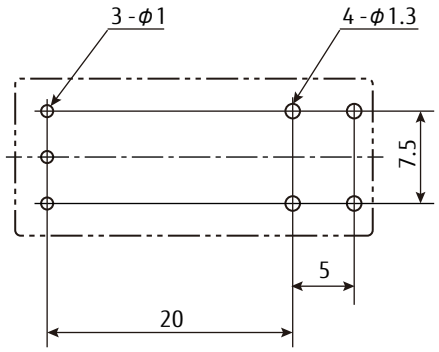
■ DIMENSIONS

FTR-K1LDAK( )T

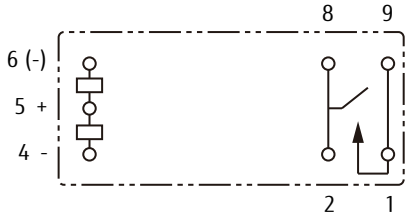
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)

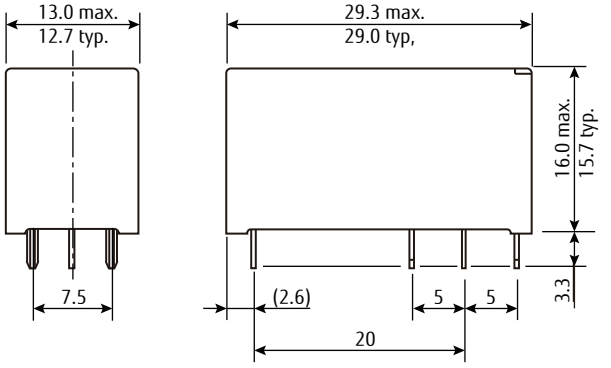


● Schematics (BOTTOM VIEW)

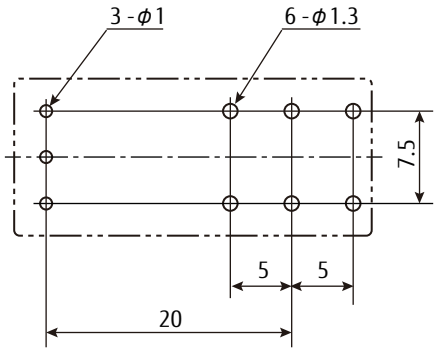


FTR-K1LDCK( )W

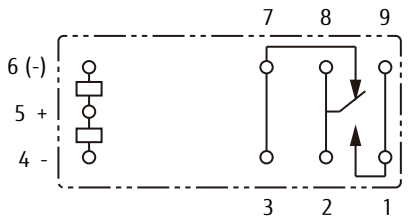
● Dimensions



● PC board mounting hole layout (BOTTOM VIEW)



● Schematics (BOTTOM VIEW)



- Dimensions do not include tolerances.
- Dimensions of the terminals do not include thickness of pre-solder.
- Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

Unit: mm

CAUTIONS

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

Notes for latching relays

- Latching relays are shipped in the state set, but state may change due to shock during transportation or mounting. Before uing the relays, it is advisable to bring the relays in necessary state (set or reset) and program a circuit sequence. Otherwise, it will or will not operate simultaneously with power activation.
- Please connect relay coils according to specified polarity.
- Do not apply voltage to both set coil and reset coil at a time.

GENERAL INFORMATION

1. ROHS Compliance

- All relays produced by FCL Components are compliant with RoHS directive 2011/65/EU, including commission delegated directive 2015/863.

2. Recommended lead free solder condition

- Lead free solder plating on relay terminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.
- Recommended solder for assembly: Sn-3.0Ag-0.5Cu.

Flow Solder Condition:

Pre-Heating:	Maximum 120˚C within 90 sec.
Soldering:	Dip within 5 sec. at 255°C±5°C solder bath

Relay must be cooled by air immediately after soldering

Solder by Soldering Iron:

Soldering Iron:	30-60W
Temperature:	Maximum 340-360˚C
Duration:	Maximum 3 sec.

We highly recommend that you confirm your actual solder conditions

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

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