POWER RELAY

1 POLE – 16A / Inrush 120A relay

FTR-K1-KS Series

■ FEATURES

- 1 pole 16A, 1 form A or 1 form C Flux Proof
- Peak inrush current 120A / TV-8
- Coil power 400mW
- High insulation in small package (between coil and contacts
  - Insulation distance: 10mm min.
  - Dielectric strength: 5,000VAC
  - Surge strength: 10,000V
- UL1446 Class F coil insulation wire
- Cadmium-free contacts for eco-program
- Flux proof, RTII
- RoHS compliant

■ PARTNUMBER INFORMATION

[Example] FTR-K1 (a) C (b) K (c) 005 (d) T (e) - KS (f)

(a)	Relay type	FTR-K1	: FTR-K1 Series
(b)	Contact configuration	A C	: 1 form A : 1 form C
(c)	Coil type	K	: Standard type (400mW)
(d)	Coil rated voltage	005	: 5....110VDC See coil rating table
(e)	Contact material / TV type	T	: $AgSnO_2$ / TV-8 rating
(f)	Inrush type	KS	: Inrush 120A type

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-K1CK005T-KS Actual marking: K1CK005T-KS

FTR-K1-KS Series

■ SPECIFICATIONS

Item			FTR-K1CK( )T-KS	FTR-K1AK( )T-KS
Contact data	Configuration		1 form C	1 form A
	Material		$AgSnO_2$	
	Resistance (initial)		Max. 100mΩ at 1A, 6VDC	
	Contact rating		16A, 250VAC	
	Max. carrying current		20A	
	Max. switching voltage		440VAC	
	Max. switching power		4,000VA	
	Min. switching load *		100 mA, 5VDC	
	Max. inrush current		120A, 250VAC (N.O. contact)	120A, 250VAC
Coil data	Rated power		400 to 430mW	
	Operate power		200 to 210mW	
	Operating temperature range		-40℃ to +85℃ (no frost)	
Timing data	Operate (at nominal voltage)		Max. 15ms (without bounce)	
	Release (at nominal voltage)		Max. 5ms (no diode, without bounce)	
Life	Mechanical		Min. 20 x 10^6 operations	
	Electrical	Resistive load	Min. 30 x 10^3 operations	Min. 100 x 10^3 operations
		lamp load (TV-8)	Min. 25 x 10^3 operations (N.O. contact)	Min. 25 x 10^3 operations
		Peak inrush (120A 250VAC)	Min. 30 x 10^3 operations (N.O. contact)	Min. 30 x 10^3 operations
Insulation	Resistance (initial)		Min. 1,000MΩ at 500VDC	
	Dielectric strength	Open contacts	1,000VAC, 1min.	
		Contacts to coil	5,000VAC, 1min.	
	Surge strength	Coil to contacts	10,000V / 1.2 x 50μs standard wave	
	Clearance		10 mm	
	Creepage		10 mm	
Others	Vibration resistance	Misoperation ≧1μs	10 to 55 to 10Hz single amplitude 0.35mm	
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm	
	Shock	Misoperation ≧1μs	Min. 100m/s^2 (11 ± 1ms)	
		Endurance	Min. 1,000m/s^2 (6 ± 1ms)	
	Weight		Approximately 13 g	
	Sealing		Flux proof RTII	

* 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 conditions and expected reliability levels.

■ COIL DATA

Coil Code	Nominal Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Nominal Power (mW)
005	5	62	3.5	0.5	400
006	6	90	4.2	0.6	
009	9	202	6.3	0.9	
012	12	360	8.4	1.2	
018	18	810	12.6	1.8	
022	22	1,210	15.4	2.2	
024	24	1,440	16.8	2.4	
028	28	1,960	19.6	2.8	
048	48	5,360	33.6	4.8	430
060	60	8,570	42.0	6.0	420
110	110	28,800	77.0	11.0	

Note: All values in the table are valid for 20℃ and zero contact current.
* Specified operate values are valid for pulse wave voltage.

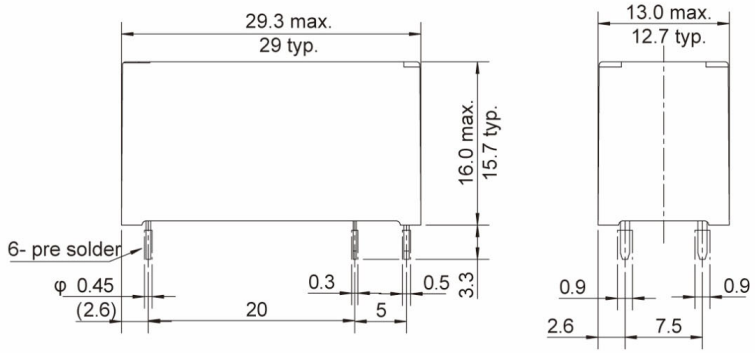
■ SAFETY STANDARDS

Type	Compliance	Contact rating	
		1 form A type	1 form C type
UL	UL 508 (No. E63614)	Flammability: UL 94-V0 (plastics)	
		16A, 277VAC (resistive), 105℃ TV-8, 120VAC, 105℃	16A, 277VAC (resistive), 105℃ TV-8, 120VAC, (N.O. contact), 105℃
CSA	C22.2 No. 14 (No. LR40304)	16A, 277VAC (resistive) TV-8, 120VAC	16A, 277VAC (resistive) TV-8, 120VAC (N.O. contact)
VDE	IEC/EN61810-1 EN60065 clause 14.6.1 EN60335-1 clause 15.3; 16.3; 29.1; 29.2; 29.3 EN60730-1 clause 12.2; 13.2; 20.1; 20.2; 20.3	16A, 250VAC, cosφ=1, 105℃ 8/120A, 250VAC, 85℃	16A, 250VAC, cosφ=1, 105℃ 8/120A, 250VAC, 85℃ (N.O. contact)

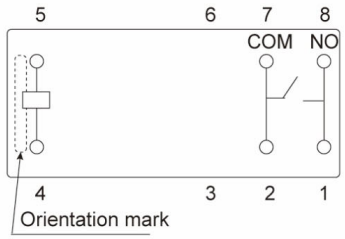
■ DIMENSIONS

FTR-K1AK( )T-KS

Dimensions

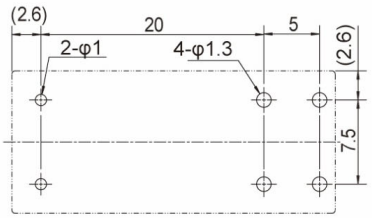


Schematics (BOTTOM VIEW)



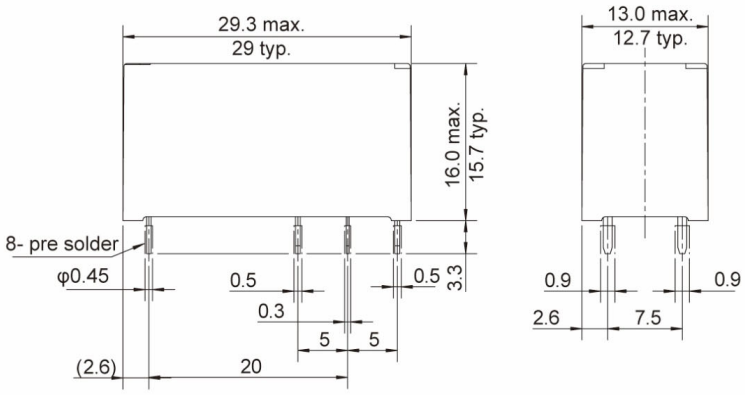
Connect terminal #1 and #8 on the PC board

PC board mounting hole layout (BOTTOM VIEW)

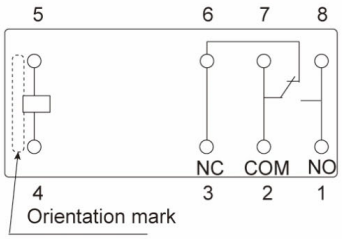


FTR-K1CK( )T-KS

Dimensions

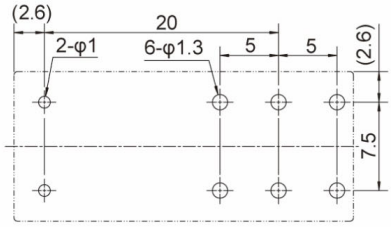


Schematics (BOTTOM VIEW)



Connect terminal #1 and #8 on the PC board

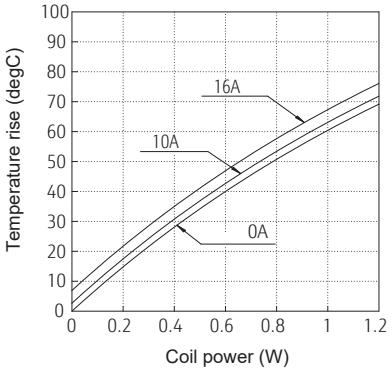
PC board mounting hole layout (BOTTOM VIEW)



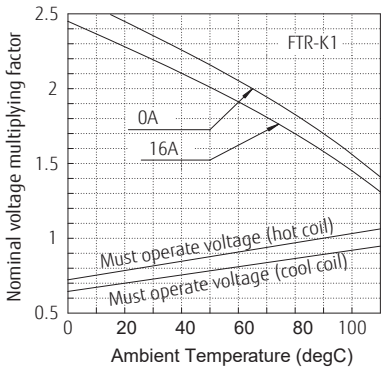
Dimensions of the terminals do not include thickness of pre-solder.
Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified. (Unit: mm)

■ CHARACTERISTIC DATA (For reference only)

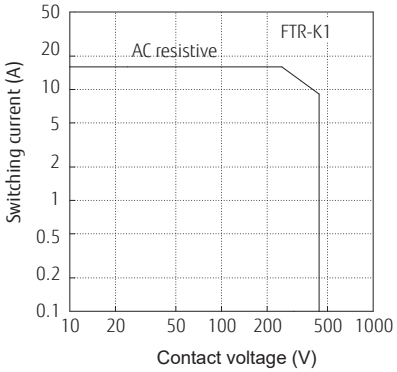
Coil Temperature Rise



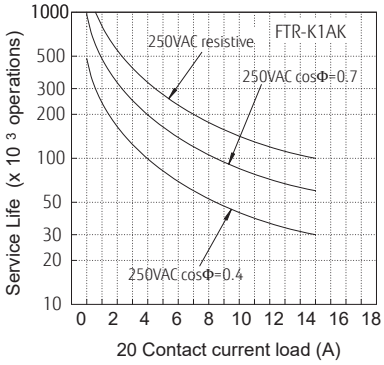
Operating Range



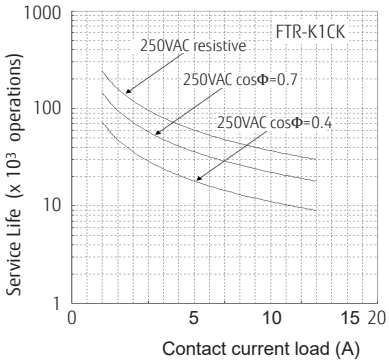
Maximum Switching Power



Life Curve



Life Curve



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.

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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