

POWER RELAY

1 POLE – 10A High sensitivity

FTR-K1 Series

■ FEATURES

- Low profile (height: 15.7mm)
- High insulation
Insulation distance (between coil and contacts): 10mm min.
Dielectric strength: 5KV
Surge strength: 10KV
- Low coil power (400mW)
- Cadmium free contacts
- Safety standards
UL, CSA, VDE approved
UL, CSA TV-5 rating approved (1 form A type)
- UL F class wire insulation
- Flux proof, RTII
- RoHS compliant



■ PARTNUMBER INFORMATION

[Example] FTR-K1 A L 012 W - LA - BG
 (a) (b) (c) (d) (e) (f) (g)

(a)	Relay type	FTR-K1	: FTR-K1 Series
(b)	Contact configuration	A C	: 1 form A (SPST-NO) : 1 form C (SPDT)
(c)	Coil type / enclosure	L	: High sensitivity (250mW) / flux proof
(d)	Coil rated voltage	012	: 5...48VDC See coil rating table
(e)	Contact material	W	: AgSnO2 (1 form C)
(f)	Terminal pitch	LA LB	: 10A high sensitive (250mW) 3.5mm pitch : 10A high sensitive (250mW) 5.0mm pitch
(g)	Special type	Nil BG	: Standard type (without gold plate) : Gold plated 3µm

Actual marking does not carry the type name : "FTR"

E.g.: Ordering code: FTR-K1AL012W-LA Actual marking: K1AL012W-LA

FTR-K1 Series

■ SPECIFICATIONS

Item		FTR-K1(A, C) L () W-(LA, LB)		
Contact data	Configuration		1 form A, 1 form C	
	Construction		Single	
	Material		AgSnO ₂	
	Resistance (initial)		Max. 100mΩ at 1A, 6VDC	
	Contact rating (resistive)		10A, 250VAC	
	Max. carrying current *1		14A	
	Max. switching voltage		440VAC	
	Max. switching power		2,500VA	
	Min. switching load *2		100mA, 5VDC	
Coil data	Rated power (20°C)		250mW	
	Operate power (20°C)		141mW	
	Operating temperature range		-40°C to +85°C (no frost), (LB: -40°C to +105°C)	
Timing data	Operate (at nominal voltage)		Max. 15ms (without bounce, no diode)	
	Release (at nominal voltage)		Max. 5ms (without bounce, no diode)	
Life	Mechanical		Min. 20 x 10 ⁶ operations	
	Electrical	AC contact rating	Min. 100 x 10 ³ operations (-LA and -LB 1 form C) Min. 150 x 10 ³ operations (-LB 1 form A)	
Insulation	Resistance (initial)		Min. 1,000MΩ 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	
	Clearance / creepage		10mm / 10mm	
	EN61810-1, VDE0435	Voltage		250V
		Pollution group		3
		Material group		III a
Category		C / 250V (Reference voltage) (VDE0110b)		
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	100m/s ² (11 ± 1ms)	
		Endurance	1,000m/s ² (6 ± 1ms)	
	Weight		Approximately 13g	
	Sealing		Flux proof, RTII	

* 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 conditions and expected reliability levels.

FTR-K1 Series

■ COIL DATA

Coil Code	Nominal Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Nominal Power (mW)
005	5	100	3.75	0.5	250
006	6	145	4.5	0.6	
009	9	325	6.75	0.9	
012	12	575	9	1.2	
018	18	1,300	13.5	1.8	
024	24	2,310	18	2.4	
048	48	9,216	36	4.8	

Note: All values in the table are valid for 20°C and zero contact current.

* Specified operate values are valid for pulse wave voltage.

Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

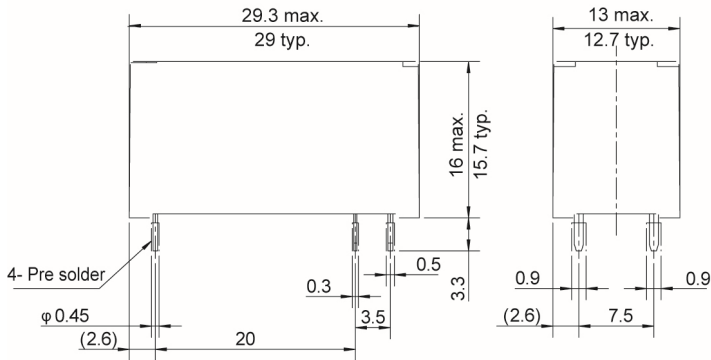
■ SAFETY STANDARDS

Type	Compliance	Contact rating	
		1 form A	1 form C
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics)	
CSA	C22.2 No. 14 LR 40304	[FTR-K1AL()W-(LA/AB)] 10A, 277VAC (resistive) 1/3hp, 125VAC 1/2hp, 277VAC Pilot duty: B300	[FTR-K1CL()W-(LA/LB)] 10A, 277VAC (resistive) [FTR-K1CL()W-LB] 16A, 260VAC (N.O.)
VDE	IEC/EN61810-1 E60335-1 clause 15.3; 16.3; 29.1; 29.2; 29.3 EN60730-1 clause 12.1; 13.2; 20.1; 20.2; 20.3	[FTR-K1AL()W-(LA/LB)] 10A, 250VAC, 150,000 cycles LA: 85°C, LB:105°C 3A, 250VAC ($\cos\phi=0.4$), 100,000 cycles, LA: 85°C, LB: 105°C	10A, 250VAC, 100,000 cycles, LA: 85°C

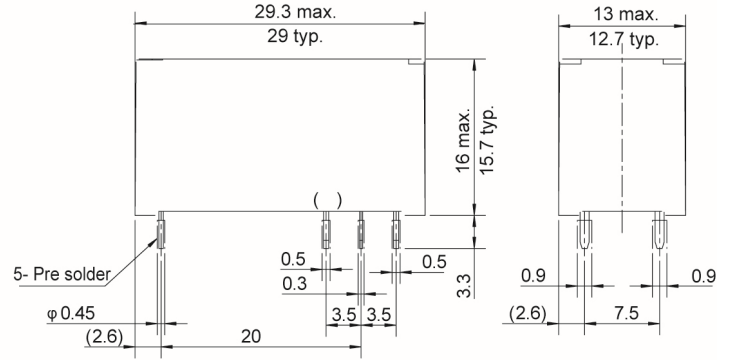
FTR-K1 Series

■ DIMENSIONS

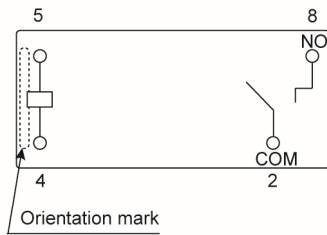
Dimensions (FTR-K1AL()W-LA)



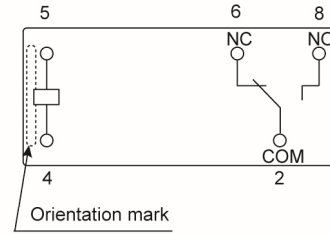
Dimensions (FTR-K1CL()W-LA)



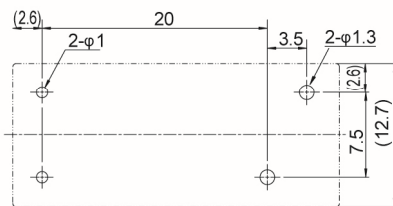
Schematics (BOTTOM VIEW) (FTR-K1AL()W-LA)



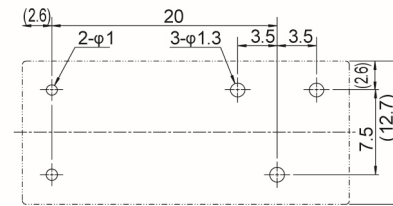
Schematics (BOTTOM VIEW) (FTR-K1CL()W-LA)



PC board mounting hole layout (BOTTOM VIEW) (FTR-K1AL()W-LA)



PC board mounting hole layout (BOTTOM VIEW) (FTR-K1CL()W-LA)



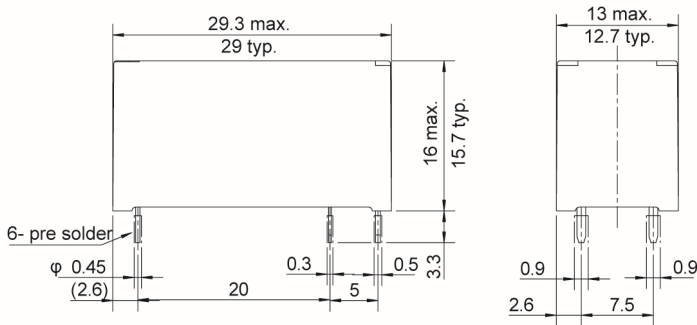
- * Dimensions of the terminals do not include thickness of pre-solder.
- * Dimensions do not include tolerances. Please ask specification in case you need tolerance.
- * Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

(Unit: mm)

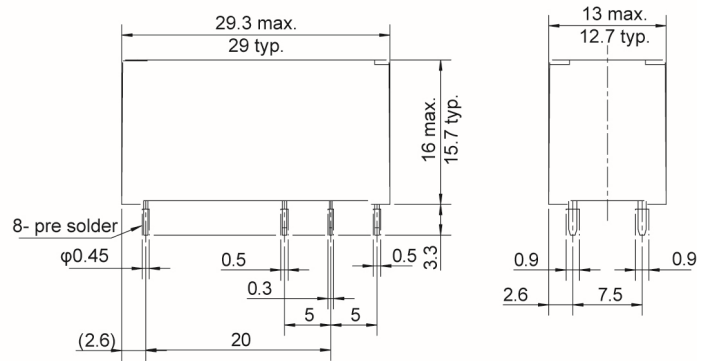
FTR-K1 Series

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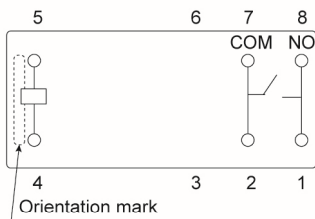
Dimensions (FTR-K1AL()W-LB)



Dimensions (FTR-K1CL()W-LB)

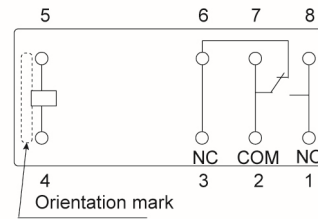


Schematics
(BOTTOM VIEW) (FTR-K1AL()W-LB)



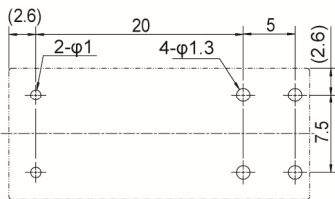
Connect terminal #1 and #8 on the PC board

Schematics
(BOTTOM VIEW) (FTR-K1CL()W-LB)

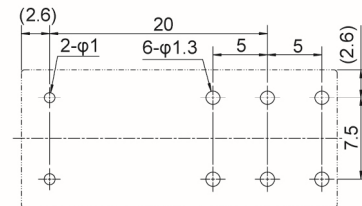


Connect terminal #1 and #8 on the PC board

PC board mounting hole layout
(BOTTOM VIEW) (FTR-K1AL()W-LB)



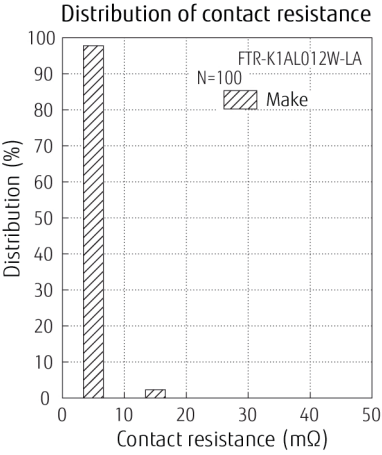
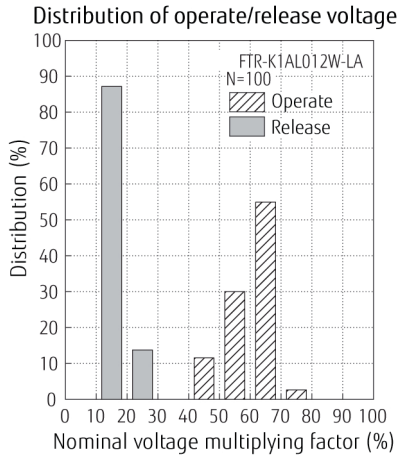
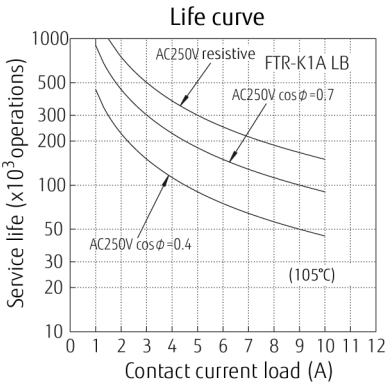
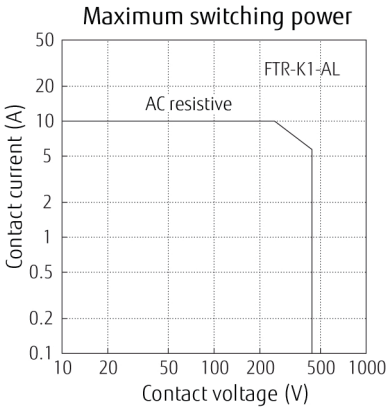
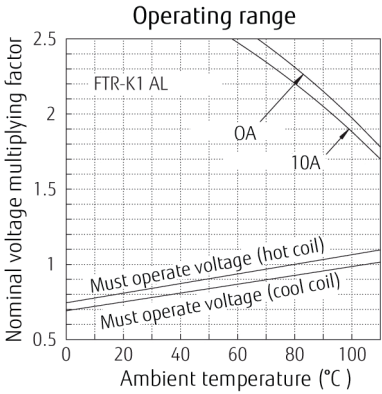
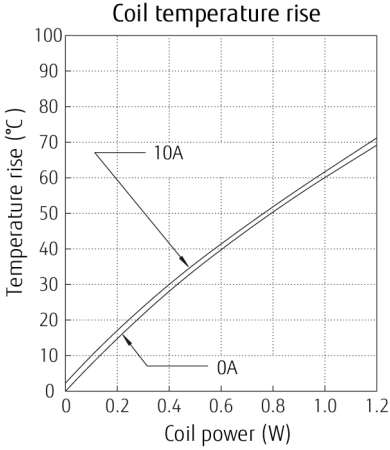
PC board mounting hole layout
(BOTTOM VIEW) (FTR-K1CL()W-LB)



- * Dimensions of the terminals do not include thickness of pre-solder.
- * Dimensions do not include tolerances. Please ask specification in case you need tolerance.
- * Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

(Unit: mm)

CHARACTERISTIC DATA



FTR-K1 Series

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 350-360°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.

Contact

Japan

FCL COMPONENTS LIMITED
Shinagawa Seaside Park Tower
12-4, Higashi-shinagawa 4-chome,
Tokyo 140 0002, Japan
Tel: +81-3-3450-1682
Email: fcl-contact@cs.fcl-components.com

North and South America

FCL COMPONENTS AMERICA, INC.
2055 Gateway Place Suite 480,
San Jose, CA 95110 USA
Tel: +1-408-745-4900
Email: fcai.components@fcl-components.com

Europe

FCL COMPONENTS EUROPE B.V.
Diamantlaan 25
2132 WV Hoofddorp, Netherlands
Tel: +31-23-556-0910
Email: info.fceu@cs.fcl-components.com

Asia Pacific

FCL COMPONENTS ASIA PTE LTD.
No. 20 Harbour Drive, #07-01B
Singapore 117612
Tel: +65-6375-8560
Email: fcal@fcl-components.com

China

FCL COMPONENTS (SHANGHAI) CO., LTD.
Unit 1105, Central Park - Jing An,
No.329 Heng Feng Road, Shanghai 200070,
China
Tel: +86-21-3253 0998
Email: fcsh@fcl-components.com

Web: www.fcl-components.com/en/

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