POWER RELAY

1 POLE – 20A High Ampere Type

FTR-K1 Series

■ FEATURES

- High capacity 20A (1 form A type)
- Low profile (height: 15.7 mm)
- High insulation
  - Insulation distance min. 10mm between coil and contact
  - Dielectric strength: 5,000VAC
  - Surge strength: 10,000V
- Class F coil wire
- Low coil power (approx. 400mW)
- Safety standards: UL, CSA, VDE, CQC
- Flux proof, RT II
- RoHS compliant

■ APPLICATIONS

- Oven controls
- Electric heating controls
- Power supplies
- Air conditioning

■ PARTNUMBER INFORMATION

[Example] FTR-K1 (a) A (b) K (c) 012 (d) W (e) - HA (f)

(a)	Relay type	FTR-K1	: FTR-K1 Series
(b)	Contact configuration	A	: 1 form A (SPST-NO)
(c)	Coil type	K	: Standard sensitive
(d)	Coil voltage	012	: 5….18VDC See coil data chart
(e)	Contact material	W	: Silver alloy
(f)	Special type	HA	: High ampere type (20A)

Actual marking does not carry the type name “FTR”, and special type is marked “ HC”

■ SPECIFICATIONS

Item	Specification			Remarks
Contact data	Configuration		1 Form A (SPST-NO)	
	Material		Silver alloy	
	Construction		Single	
	Contact rating		20A, 250VAC	Resistance
	Resistance (initial)		Max. 100mΩ	At 1A 6VDC
	Max. carrying current		24A	
	Max. switching power		5,000VA	
	Max. switching voltage		440VAC	
	Min. switching load		100mA, 5VDC	
Coil	Rated power consumption		Approx. 400mW	At 20℃
	Operate power consumption		Approx. 196mW	At 20℃
	Operating temperature range		-40℃ to +85℃	No frost, no condense dew
Time	Operate		Max. 15ms (without diode)	Nominal voltage, without bounce
	Release		Max. 5ms (without diode)	Nominal voltage, without bounce
Life	Mechanical		Min. 1 x 10^6 operations	
	Electrical		Min. 30 x 10^3 operations	At room temperature
Insula-tion	Insulation resistance		Min. 1,000MΩ	At 500VDC
	Dielectric withstanding voltage	Open contacts	1,000VAC (50/60Hz), 1 minute	
		Contacts to coil	5,000VAC (50/60Hz), 1 minute	
	Surge strength		10,000V (1.2 x 50μs)	Between coil and contacts
	Clearance / Creepage		10.0mm / 10.0 mm	Between coil and contacts
	Insulation (IEC/EN61810-1)	Voltage	250V	
		Pollution degree	3	
		Material group	IIIa	
Others	Vibration resistance	Misoperation	10 to 55 Hz at single amplitude of 0.35mm	
		Endurance	10 to 55 Hz at single amplitude of 0.75mm	
	Shock resistance	Misoperation	100m/s^2 (11 ± 1ms)	
		Endurance	1,000m/s^2 (6 ± 1ms)	

*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.

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance ±10% (Ω)	Must Operate Voltage* (VDC)	Must Release Voltage* (VDC)	Rated Power (mW)
005	5	62	3.5	0.5	Approx. 400
006	6	90	4.2	0.6	
012	12	360	8.4	1.2	
018	18	810	12.6	1.8	

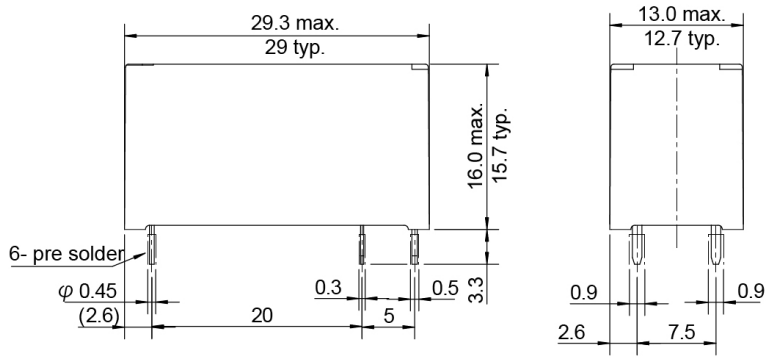
Note: All values in the table are valid for 20℃ and zero contact current unless otherwise specified.
*: Specified operated values are valid for pulse voltage.

■ SAFETY STANDARDS

Type	Compliance	Contact Rating
UL	UL508 File No. E63614	Flammability: UL94-V0 (Plastics)
		20A, 277VAC, resistive, at 85℃
CSA	C22.2 No. 14 File No. LR40304	20A, 277VAC (cosφ=1)
VDE	IEC/EN61810-1	20A, 250VAC (cosφ=1)
CQC	GB/T21711.1	20A, 250VAC

■ DIMENSIONS

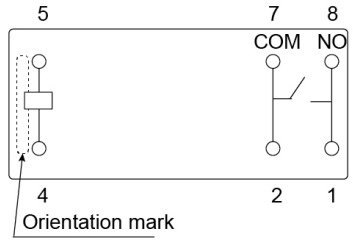
- Dimensions



Notes: Dimensions of the terminals do not include thickness of pre-solder.
Dimensions do not include tolerance.

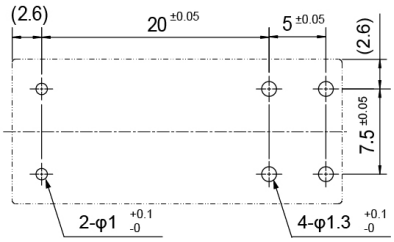
Unit:mm
( ): Reference

- Schematics (Bottom view)



Connect terminal #1 and #8 on the PC board

- PC board mounting hole layout (Bottom view)



Unit:mm
( ): Reference

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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