

POWER RELAY

1 POLE - HIGH CAPACITY 32A TYPE

FTR-K3-PV Series

RoHS Compliant



■ FEATURES

- 1 pole, 32A
- 1a (1 Form A) contact
- Wide contact gap: 1.5mm
(Compliant with European photovoltaic standard VDE0126)
- High insulation in small package (between coil and contacts)
 - Dielectric strength: 4,000VAC
 - Surge strength: 6,000V
- Low coil power consumption: 1,200mW
- Coil holding voltage can be reduced up to 35% of nominal coil voltage
(ambient temperature: +20°C, contact current: 32A)
- Power consumption at the lowest coil holding voltage: 147mW
 - * Coil holding voltage is the coil voltage after 100ms of applied nominal coil voltage
- Plastic materials: Flammability: UL94V-0
- Cadmium-free contacts
- Flux free, cat. RTII protection
- RoHS compliant



■ APPLICATIONS

Photovoltaic power generation system (power conditioner), Uninterruptible Power Supply (UPS)

■ PART NUMBERS

[Example] FTR-K3 A B 012 W - PV
 (a) (b) (c) (d) (e) (f)

(a)	Relay type	FTR-K3 series
(b)	Contact configuration	A : 1a (1 Form A) / PCB type
(c)	Coil power	B : Standard (1,200mW)
(d)	Coil rated voltage	12 : 5...48VDC Please refer to coil rating table
(e)	Contact material	W : Silver alloy
(f)	Option code	PV : High current (32A) / contact gap 1.5mm

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

E.g.: Ordering code: FTR-K3AB012W-PV Actual marking: K3AB012W-PV

■ SPECIFICATIONS

Item		Specifications	Remarks/Conditions
Contact Data	Configuration	1a (1 Form A)	
	Material	Silver alloy	
	Resistance (initial)	Max. 100mΩ	At 1A, 6VDC
	Contact rating	32A, 250VAC	Resistive
	Max. carrying current	32A	
	Max. switching voltage	250VAC	
	Max. switching power	8,000VA	
	Max. switching current	32A	
	Min. switching load ^{*1}	100mA, 5VDC	Reference
Coil	Rated power (20°C)	1,200mW	
	Operate power (20°C)	588mW	
	Coil power at holding voltage	147mW (35% of nominal coil voltage)	
	Holding voltage range ^{*2}	35 to 120% of nominal coil voltage (32A at +20°C) 45 to 80% of nominal coil voltage (32A at +85°C)	
	Operating temperature range	-40°C to +60°C (coil nominal voltage) -40°C to +85°C (holding voltage: 45~80% of nominal coil voltage)	No frost
Time	Operate (at nominal voltage)	Max. 20ms (without bounce)	
	Release (at nominal voltage)	Max. 10ms (no diode, without bounce)	
Life	Mechanical		Min. 1 x 10 ⁶ operations
	Electrical	Resistive	Min. 30 x 10 ³ operations (at 32A, 250VAC)
		Inductive (Endurance)	Min. 30 x 10 ³ operations (at 32A, 250VAC, cosφ=0.8)
		Inductive (Overload)	Min. 50 operations (at 48A, 250VAC, cosφ=0.8)
Insulation	Contact gap		Min. 1.5mm
	Resistance		Min. 1,000MΩ
	Dielectric strength	Open contacts	2,500VAC (50/60Hz), 1 minute
		Coil to contacts	5,000VAC (50/60Hz), 1 minute
	Surge strength	Coil to contacts	6,000V / 1.2 x 50μs standard wave
	Clearance		Min. 6.0mm
	Creepage		Min. 8.0mm
	EN61810-1, VDE0435	Voltage	250VAC
		Pollution degree	3
		Material group	IIIa
Others	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.75mm
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm
	Shock resistance	Misoperation	Min. 200m/s ² (11±1ms)
		Endurance	Min. 1,000m/s ² (6±1ms)
	Dimensions / Weight		15.7 x 30.1 x 23.3mm / Approximately 26g

^{*1} 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.

^{*2} Coil holding voltage is the coil voltage after 100ms of applied nominal coil voltage.

! Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

■ COIL DATA

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance $\pm 10\%$ (Ω)	Must Operate Voltage ^{*1} (VDC)	Must Release Voltage ^{*1} (VDC)	Min. Non Release Voltage ^{*1} (VDC)	Rated Power (mW)
005	5	21	3.5	0.5	1.75	1,200 (147) ^{*2}
006	6	30	4.2	0.6	2.1	
009	9	68	6.3	0.9	3.15	
012	12	120	8.4	1.2	4.2	
018	18	270	12.6	1.8	6.3	
024	24	480	16.8	2.5	8.4	
048	48	1,920	33.6	4.8	16.8	

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

*1: Specified operate values are valid for pulse wave voltage.

*2: This value is the coil power at 35% of nominal voltage at 20°C.

! 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

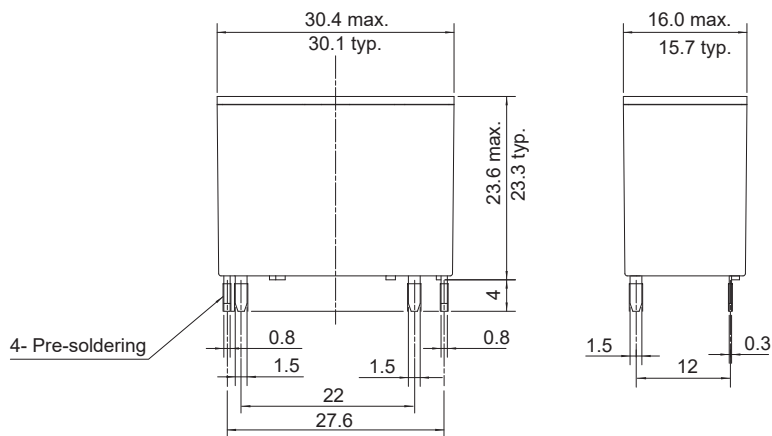
Type	Compliance	Contact Rating
UL	Flammability: UL 94-V-0 (plastics)	
	UL 508 CSA 22.2 No.14 (cULus) File No. E63614	36A, 277VAC (General use at +85°C, 10,000 operations) 32A, 277VAC (General use at +85°C, 30,000 operations) 1hp 125VAC (at +60°C) 2hp 277VAC (at +60°C, 100,000 operations)
VDE	IEC/EN61810-1	32A, 250VAC (cosφ=0.8 at +85 °C)

■ PART NUMBER LIST

Part Number	Contact Configuration	Contact Gap	Contact Material	Contact Rating	Rated Coil Power
FTR-K3AB()W-PV	1a (1 Form A)	Min. 1.5mm	Silver alloy	32A, 250VAC	1,200mW

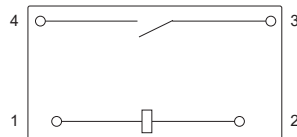
■ DIMENSIONS

• Dimensions



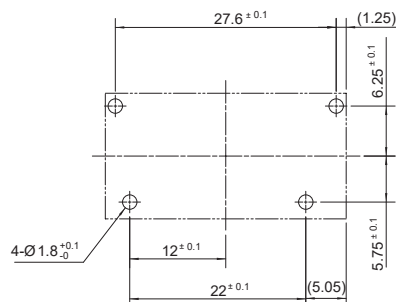
• Schematics

(BOTTOM VIEW)



• PC board mounting hole layout

(BOTTOM VIEW)



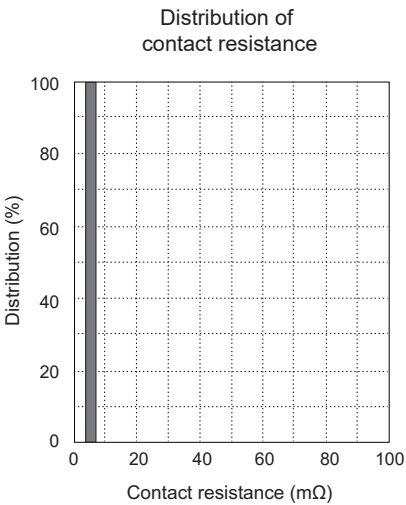
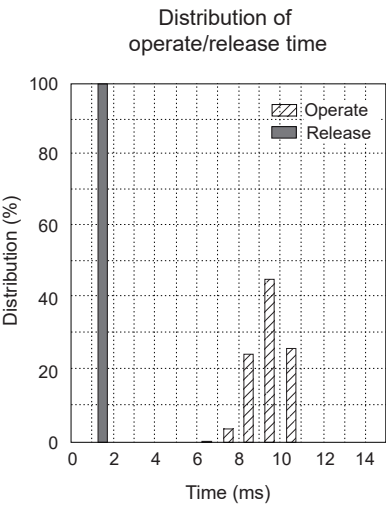
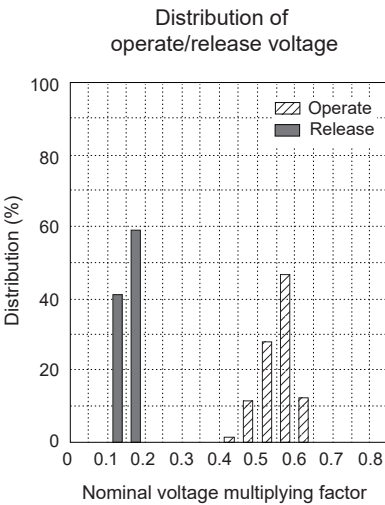
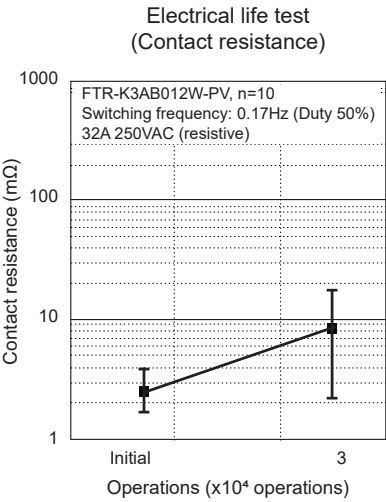
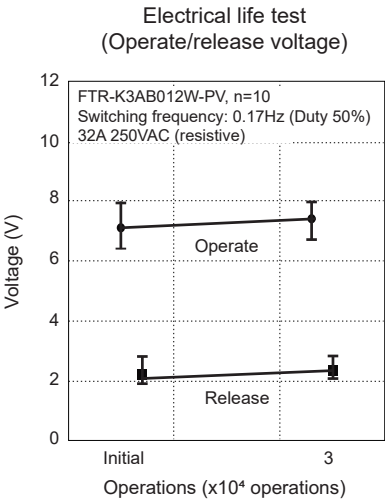
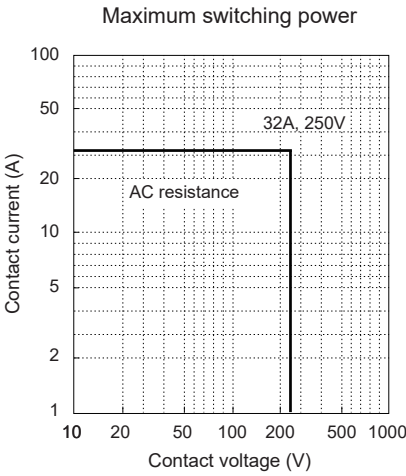
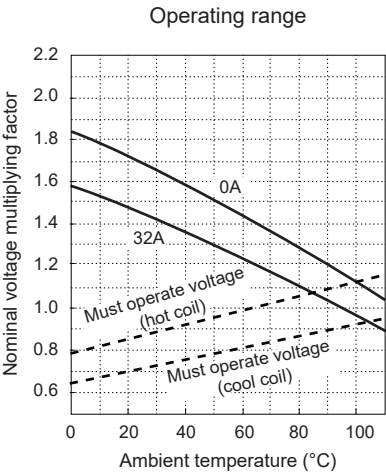
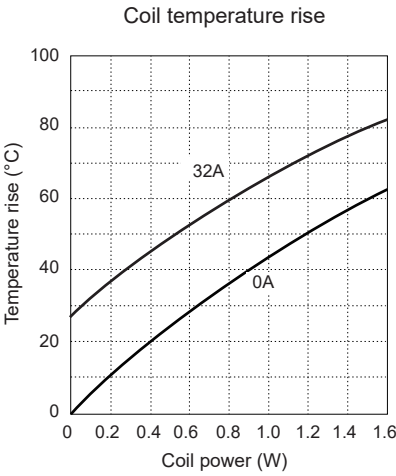
- Dimensions of the terminals do not include thickness of pre-soldering.
- Tolerance of PC board mounting hole layout : ± 0.1 unless otherwise specified.

Unit: mm

(): Reference

CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)



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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