

POWER RELAY

1 POLE—10 A LOW PROFILE TYPE

FTR-H1 SERIES

■ FEATURES

- Working class: B (for IMQ)/ C (for VDE)
- Type of service: continuous duty
- Low profile (height 16.5 mm)/ cadmium free contacts
- 1 form A/ 1 form C 10 A, TV-5 rating available
- UL class B (130°C) insulation
- High isolation in small package (between coil and contacts)
 - Insulation distance : 8 mm
 - Dielectric strength : 5,000 VAC
 - Surge strength : 10,000 V
- Plastic materials —UL94 flame class V-0
UL CTI level class 2
- Plastic sealed relay
- Pin configuration compatible to VS/ FBR610 Series
- UL, CSA, BSI, VDE, SEMKO recognized
- Conforms to FIMKO, DEMKO
- Environmentally friendly cadmium free contacts type are available



■ ORDERING INFORMATION

[Example] $\frac{\text{FTR-H1}}{\text{(a)}} \frac{\text{A}}{\text{(b)}} \frac{\text{A}}{\text{(c)}} \frac{\text{005}}{\text{(d)}} \frac{\text{V}}{\text{(e)}} \frac{\text{-**}}{\text{(f)}}$

(a)	Series Name	FTR-H1: FTR-H1 Series			
(b)	Contact Arrangement	A	: 1 form A (SPST-NO)		
		C	: 1 form C (SPDT)		
(c)	Coil Type	A	: Standard type (0.53 W)		
		D	: High sensitive type (0.4W)		
(d)	Nominal Voltage	005	: 5 VDC	012	: 12 VDC
		006	: 6 VDC	024	: 24 VDC
		009	: 9 VDC	048	: 48 VDC
(e)	Contact Material/TV Type	V	: Gold plate silver alloy (standard type)		
		T	: Gold plate silver alloy (TV-5 rating type, 1 form A standard type only)		
(f)	Custom Designation	Custom specification to be assigned			

Ordering Code Actual Marking
FTR-H1AA005V H1AA005V

■ SAFETY STANDARD AND FILE NUMBERS

UL508, 873 (File No. E63614)

C22.2 No. 14 (File No. LR40304-30/LR107822)

VDE 0435, 0631, 0700, 0860 (File No. 11039-4940-1019)

	Nominal voltage	Contact rating
TV-Rating	5 ~ 48 VDC	TV-5 120 VAC 1/2 HP 250 VAC 1/3 HP 125 VAC 10 A 30 VDC/250 VAC resistive Pilot duty B 300, Q 300
General		1/2 HP 250 VAC 1/3 HP 125 VAC 10 A 30 VDC/250 VAC resistive 3A 250 VAC inductive (PF=0.4) Pilot duty B 300, Q 300

■ SPECIFICATIONS

Item		Standard Type	Sensitive	TV-5 Rating Type
Contact	Arrangement	1 form A (SPST-NO), 1 form C (SPDT)		1 form A (SPST-NO)
	Material	Gold plate silver alloy		
	Style	Single		
	Resistance (initial)	Maximum 100 m Ω (at 1 A 6 VDC)		
	Rating (Resistive)	10 A 250 VAC/30 VDC		
	Maximum Carrying Current	14 A		
	Maximum Switching Rating	2,500 VA/300 W		
	Maximum Switching Voltage	400 VAC 300 VDC		
	Maximum Switching Current	10 A		
	Minimum Switching Load*1	10 mA 5 VDC		
	Maximum Inrush Current	—	78 A 120 VAC (at lamp load)	
Coil	Operating Range	80 to 110 % × V nominal		
	Nominal Power (at 20°C)	0.53 W	0.4W	0.53 W
	Operate Power (at 20°C)	0.26 W	0.225W	0.26W
	Operating Temperature	-40°C to +75°C (no frost) (refer to the CHARACTERISTIC DATA)		
Time Value	Operate (at nominal voltage)	Maximum 10 ms		
	Release (at nominal voltage)	Maximum 5 ms		
Insulation	Resistance (at 500 VDC)	Minimum 1,000 M Ω		
	Dielectric Strength	Between open contacts	1,000 VAC 1 minute	
		Between coil and contacts*2	5,000 VAC 1 minute	
Surge Strength*3	10,000 V (at 1.2 x 50 μs)			
Life	Mechanical	2 × 10 ⁷ operations minimum		
	Electrical	Contact Rating	1 × 10 ⁵ operations minimum	
		Lamp Load	—	2.5 x 10 ⁴ ops. minimum
Other	Vibration Resistance	Misoperation	10 to 55 Hz (double amplitude of 1.65 mm)	
		Endurance	10 to 55 Hz (double amplitude of 3.3 mm)	
	Shock Resistance	Misoperation	100 m/s ² (11 ±1 ms)	
		Endurance	1,000 m/s ² (6 ±1 ms)	
	Weight	Approximately 12 g		

*1 Minimum switching loads mentioned above are reference values. Please perform the confirmation test with the actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

*2 IMQ

*3 IMQ

■ COIL DATA CHART

MODEL		Nominal Voltage	Coil Resistance (±10%)	Must Operate Voltage	Must Release Voltage
Standard Type	TV-5 Rating Type				
FTR-H1 (C, A) A005 V	FTR-H1AA005 T	5 VDC	47 Ω	3.5 VDC	0.5 VDC
FTR-H1 (C, A) A006V	FTR-H1AA006 T	6 VDC	68 Ω	4.2 VDC	0.6 VDC
FTR-H1 (C, A) A009 V	FTR-H1AA009 T	9 VDC	155 Ω	6.3 VDC	0.9 VDC
FTR-H1 (C, A) A012 V	FTR-H1AA012 T	12 VDC	270 Ω	8.4 VDC	1.2 VDC
FTR-H1 (C, A) A024 V	FTR-H1AA024 T	24 VDC	1,100 Ω	16.8 VDC	2.4 VDC
FTR-H1 (C, A) A048 V	FTR-H1AA048 T	48 VDC	4,400 Ω	33.6 VDC	4.8 VDC

Note: All values in the table are measured at 20°C.

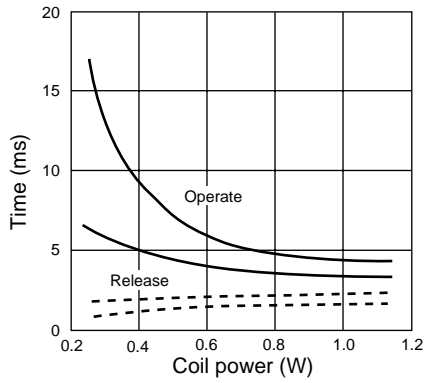
Sensitive Type

MODEL		Nominal Voltage	Coil Resistance (±10%)	Must Operate Voltage	Must Release Voltage
Standard Type					
FTR-H1 (C, A) D005 V		5 VDC	62 Ω	3.75 VDC	0.5 VDC
FTR-H1 (C, A) D006 V		6 VDC	90 Ω	4.5 VDC	0.6 VDC
FTR-H1 (C, A) D009V		9 VDC	202 Ω	6.75 VDC	0.9 VDC
FTR-H1 (C, A) D012 V		12 VDC	360 Ω	9.0 VDC	1.2 VDC
FTR-H1 (C, A) D024 V		24 VDC	1,440 Ω	18.0 VDC	2.4 VDC
FTR-H1 (C, A) D048 V		48 VDC	5,760 Ω	36.0 VDC	4.8 VDC

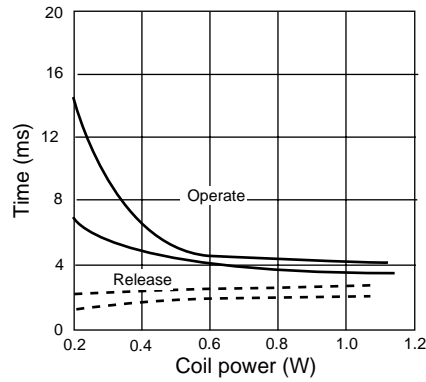
Note: All values in the table are measured at 20°C.

CHARACTERISTIC DATA

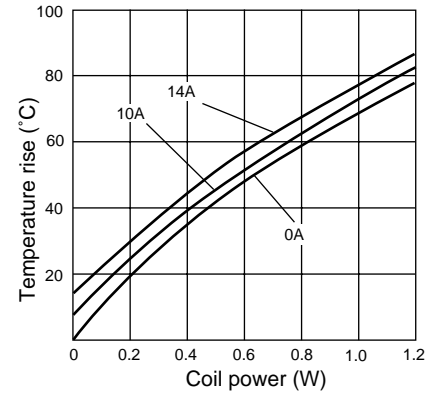
Timing



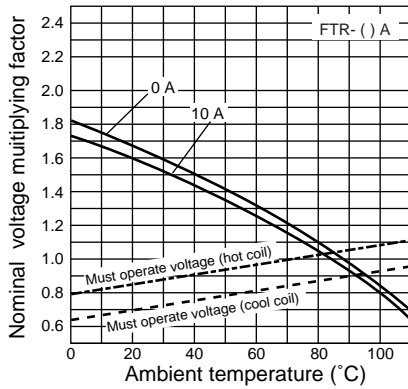
Timing



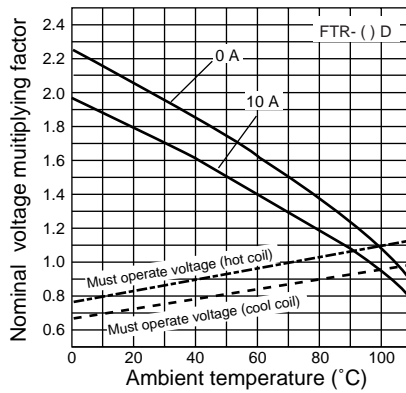
Coil temperature rise



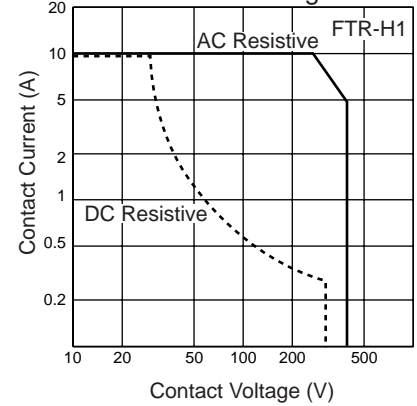
Operating range



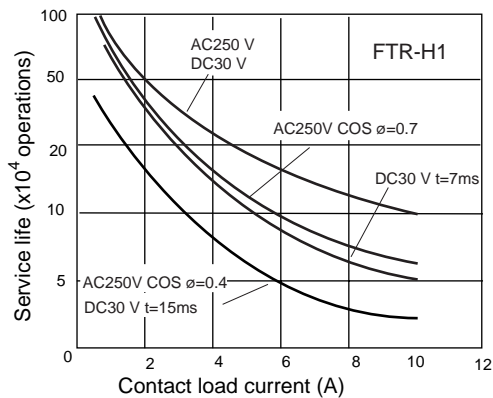
Operating range



Maximum Switching Power

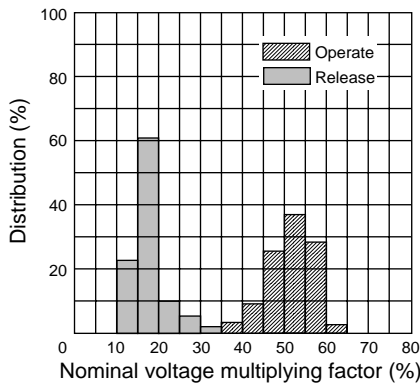


Life Curve

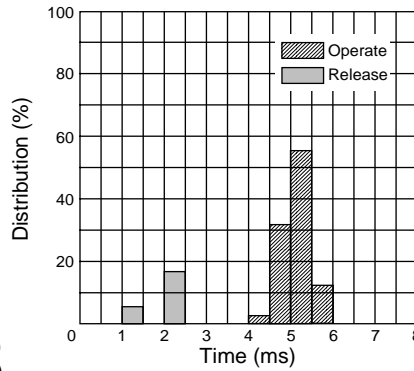


REFERENCE DATA

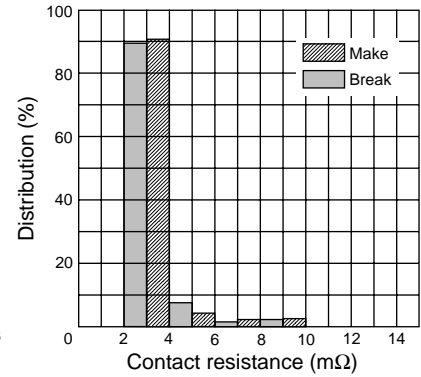
Distribution of operate and release voltage



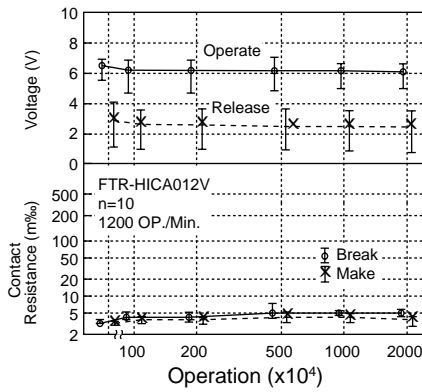
Distribution of operate and release time



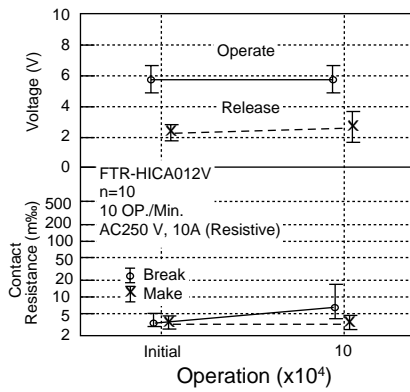
Distribution of contact resistance



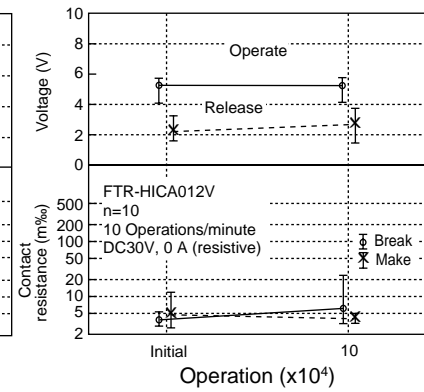
Mechanical life test



Electrical life test



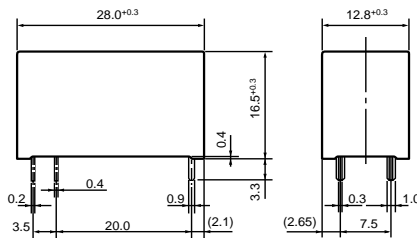
Electrical life test



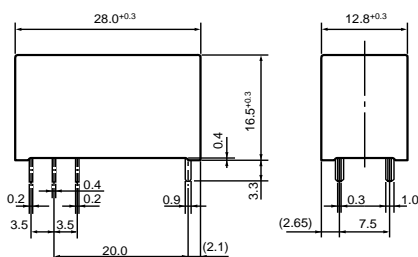
DIMENSIONS

Dimensions

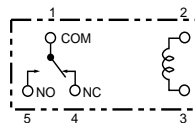
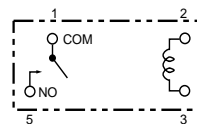
FTR-H1A type



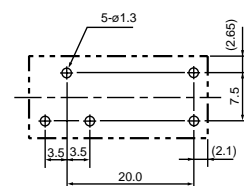
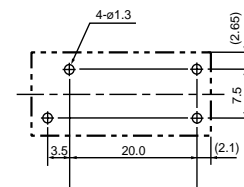
FTR-H1C type



Schematics (BOTTOM VIEW)



PC board mounting hole layout (BOTTOM VIEW)



Unit: mm

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