

HIGH POWER RELAY

1 POLE—30 A

(FOR AUTOMOTIVE APPLICATIONS)

FRL-274 SERIES

■ FEATURES

- Maximum switching current 30 A
- Three types of contact gaps (0.4 mm, 1.0 mm, 1.4 mm)
- Various contact materials
- Immersion cleanable type available
- Tube carrier package



■ ORDERING INFORMATION

[Example] $\frac{\text{FRL-274}}{(a)} \frac{\text{N}}{(b)} \frac{\text{D}}{(c)} \frac{012}{(d)} / \frac{01}{(e)} \frac{\text{C}}{(f)} \frac{\text{S}}{(g)} - \frac{01\text{A}}{(h)} - \frac{\text{***}}{(i)} \frac{(-\text{S})}{(j)}$

(a)	Series Name	FRL-274: FRL-274 Series
(b)	Enclosure	Nil : Flux free type N : Plastic sealed type
(c)	Coil Type	D : Standard (nominal power 1.7 to 2.1 W) H : Low power (nominal power 0.6 W)
(d)	Nominal Voltage	(Example) 009 : 9 VDC 012 : 12 VDC 024 : 24 VDC
(e)	Contact Gap	01 : Standard gap (0.4 mm gap) 51 : 1.0 mm gap 61 : 1.4 mm gap
(f)	Contact Arrangement	A : 1 form A (SPST-NO) C : 1 form C (SPDT)
(g)	Contact Material	S : Silver copper Y : Silver-tin oxide D : Special silver alloy
(h)	Cover Terminal	A : w/cover, standard terminal width 01A : w/cover, wide terminal width
(i)	Custom Designation	To be assigned custom specification
(j)	Package	Nil : Standard tray -S : Carrier tube

FRL-274 SERIES

■ SPECIFICATIONS

Item			Specifications		
			S Contact Material	Y Contact Material	D Contact Material
Contact	Arrangement		1 form A (SPST-NO), 1 form C (SPDT)		
	Material		Silver copper	Silver-tin oxide	Special silver alloy
	Voltage Drop (resistance)		Maximum 300 mV initial (at 5 Amps, 12 VDC) Maximum 500 mV after durability test (at 5 Amps, 12 VDC)		
	Rating	N.O.	12 VDC 15 A, 24 VDC 10 A		12 VDC 30 A
		N.C.	12 VDC 10 A, 24 VDC 7 A		
	Gap		01: 0.4 mm gap (standard gap type) 51: 1.0 mm gap 61: 1.4 mm gap		
	Maximum Carrying Current		30 A continuous ,40 A/10 minutes (at 25°C 100% rated coil voltage)		
	Max. Switching Frequency		Mechanical: 18,000 operations/hour Electrical: 1,800 operations/hour		
	Minimum Switching Load ^(*1) (reference)		0.6 W minimum (0.1 A minimum)	0.6 W minimum (50 mA minimum)	0.6 W minimum (0.3 A minimum)
Coil	Nominal Power (rated Voltage at 20°C)		Standard type (D): approximately 1.7 W Low power type (H): approximately 0.6 W 1.4 mm gap type: approximately 2.1 W		
	Coil Temperature Rise		Standard type (D): approximately 75 °C Low power type (H): approximately 35 °C 1.4 mm gap type: approximately 85 °C (rated voltage at 20°C)		
	Operating Temperature		-40°C to +85°C (no frost) (refer to the CHARACTERISTIC DATA)		
	Storage Temperature		-40°C to +100°C (no frost)		
Insulation	Resistance		Minimum 100 MΩ (at 500 VDC)		
	Dielectric Strength		AC 500 V 1 minimum		
Time Value	Operate (at nominal voltage)		Maximum 10 ms		
	Release (at nominal voltage)		Standard gap type: maximum 5 ms 1.0 mm gap type: maximum 8 ms 1.4 mm gap type: maximum 10 ms		
Life	Mechanical		10 × 10 ⁶ operations minimum		
	Electrical		250 × 10 ³ operations minimum		
Other	Vibration Resistance		10 to 55 Hz (double amplitude of 1.5 mm)		
	Shock Resistance	Misoperation	100 m/s ² (11 ± ¹ ms)		
		Endurance	1,000 m/s ² (11 ± ¹ ms)		
	Weight		Approximately 20 g		

*1 Values when switching a resistive load at normal room temperature and humidity, and in a clean environment. The minimum applicable load varies with the switching frequency and operating environment.

FRL-274 SERIES

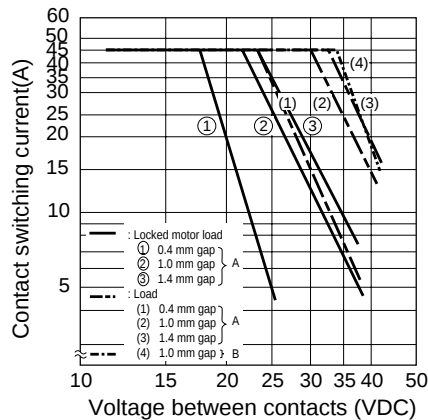
Features of contact material	Contact material	Symbol	Feature
	Silver copper	S	Excellent welding and locking proof against DC load
	Silver tin oxide	Y	High durability, long life wiper or lamps
	Special silver alloy	D	Durable against high in-rush, for head light or heavy load (30 A)

COIL DATA CHART

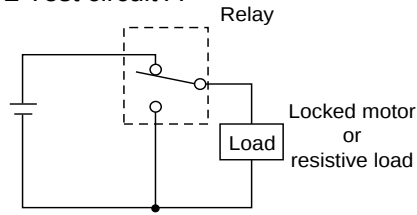
Type	Nominal voltage	Contact gap	Part number	Coil resistance ($\pm 10\%$) (at 20°C)	Nominal power	Must operate voltage		Must release voltage	Thermal resistance
						20°C	80°C		
Standard	6 VDC	0.4 mm (Standard)	FRL-274□D006/01 □□-□□A	21Ω	1.7 W	3.3 VDC	4.1 VDC	0.3 VDC	44°C/W
		1 mm	FRL-274□D006/51 □□-□□A	21Ω	1.7 W	4.2 VDC	5.2 VDC	0.3 VDC	
	12 VDC	0.4 mm (Standard)	FRL-274□D012/01 □□-□□A	85Ω	1.7 W	6.5 VDC	8.0 VDC	0.6 VDC	
		1 mm	FRL-274□D012/51 □□-□□A	85Ω	1.7 W	8.4 VDC	10.4 VDC	0.6 VDC	
	24 VDC	1 mm	FRL-274□D024/51 □□-□□A	340Ω	1.7 W	16.8 VDC	21.0 VDC	1.6 VDC	
		1.4 mm	FRL-274□D024/61 □□-□□A	275Ω	2.1 W	16.8 VDC	21.0 VDC	1.6 VDC	
Low Power	4 VDC	0.4 mm (Standard)	FRL-274□H004/01 □□-□□A	27Ω	0.6 W	3.0 VDC	3.7 VDC	0.2 VDC	58°C/W
	6 VDC		FRL-274□H006/01 □□-□□A	60Ω	0.6 W	4.2 VDC	5.2 VDC	0.3 VDC	
	9 VDC		FRL-274□H009/01 □□-□□A	135Ω	0.6 W	6.3 VDC	7.8 VDC	0.5 VDC	
	10 VDC		FRL-274□H010/01 □□-□□A	165Ω	0.6 W	7.0 VDC	8.7 VDC	0.6 VDC	
	12 VDC		FRL-274□H012/01 □□-□□A	240Ω	0.6 W	8.4 VDC	10.4 VDC	0.8 VDC	

CHARACTERISTIC DATA

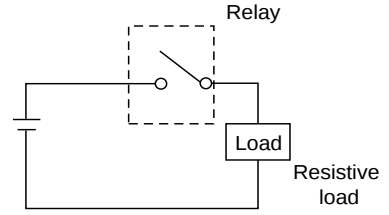
1. MAXIMUM BREAK CAPACITY



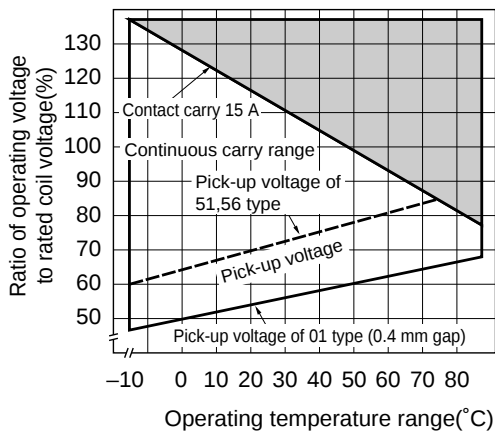
Æ Test circuit A



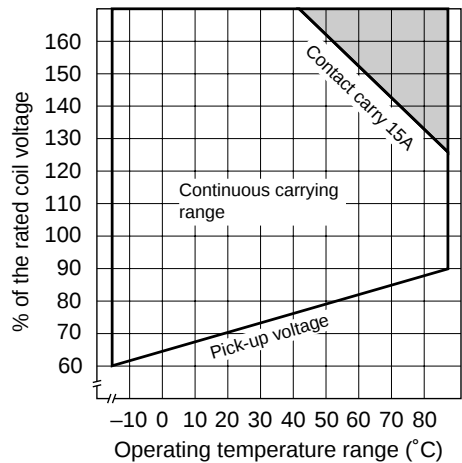
Æ Test circuit B



2. OPERATING COIL VOLTAGE (EXAMPLE)
[Standard (D type)]



[Low power (H type)]

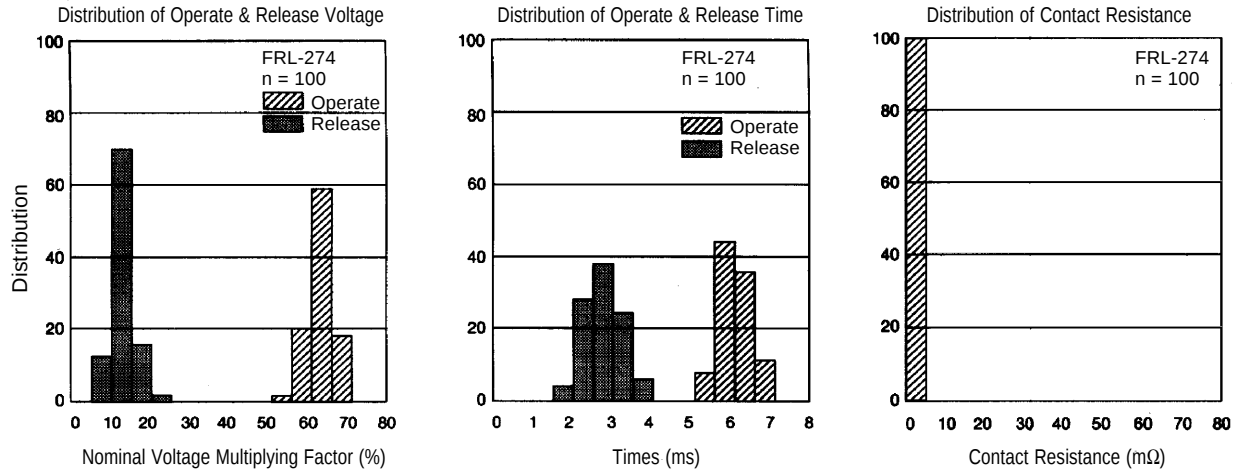


3. LIFE TEST (EXAMPLE)

Test Item	Test circuit
N.O DC 14 V-65 W × 2 N.C. DC 14 V-60 W × 2 Halogen lamp load 500,000 operations minimum (contact material: special silver alloy)	
DC 14 V-30 A Motor lock 100,000 operations minimum (contact material: silver copper)	
DC 30 V-1.6 A Motor free 200,000 operations minimum (contact material: silver copper)	

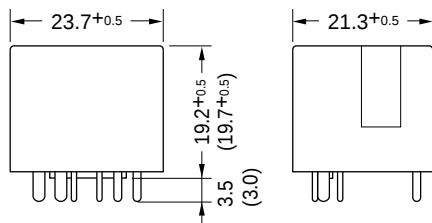
FRL-274 SERIES

REFERENCE DATA



DIMENSIONS

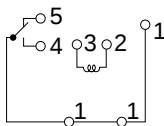
Dimensions



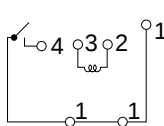
(): N type

Schematics (BOTTOM VIEW)

• 1 from C



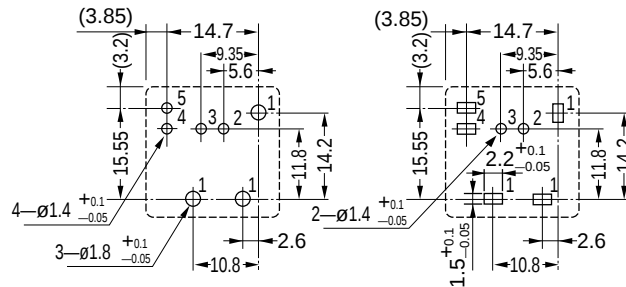
• 1 from A



PC board mounting hole layout (BOTTOM VIEW)

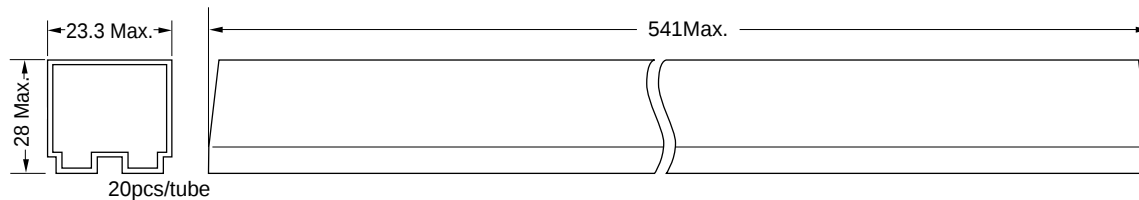
• Standard terminal width

• Wide terminal width



Note : Tolerance ± 0.1 mm

Tube carrier



Unit: mm

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