
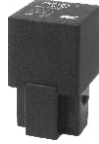
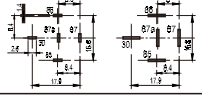
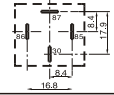






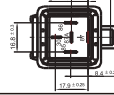
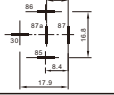

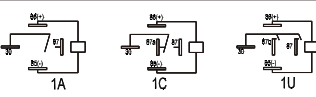


Type	FRA2	FRA3	
Appearance			
Dimensions: L x W x H (mm)	Open : 24 x 19 x 20 With cover: 26.5 x 21.5 x 22.3	Open : 16 x 13.2 x 18 With cover: 17.5 x 15 x 20	
International Security Certificates			
Coil Voltage (V)	DC6, 12, 24	DC3, 5, 6, 9, 12, 18, 24	
Coil Power	1.6W	1.0W	
Contact Material	AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1B, 1C	1A, 1B, 1C, 1U, 1V, 1W	
Contact transfer current (A)	45A	20A	
Contact rating	1A: 45A 14VDC 1C: 40/30A 14VDC	1A: 20A 14VDC 1C: 15A/10A 14VDC 1U: 2 x 15A 14VDC 1W: 2 x 15A/10A 14VDC	
Max. Switching Power	630W	280W, 2 x 280W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +125°C	-40°C ~ +105°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 750VAC
	Between Contact and Coil	50Hz 750VAC	50Hz 1,500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤30mΩ	≤50mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	Open: 17g; Sealed: 21g	Open: 9g; Sealed: 12g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	TYCO : V23076 / VKP Omron : G8PE	TYCO : V23072 / VKM	

FRA3D	FRC1	FRC1B
29.6 x 18 x 20	FRC1(B) : 26.5 x 26.5 x 24.5 (+16); FRC1(B)-1: 26.5 x 26.5 x 24.5; FRC1(B)-2: 26.5 x 26.5 x 24.5 (+14)	
DC3, 5, 6, 9, 12, 18, 24		DC6, 12, 24, 48
1.2W		1.6W
AgNi, AgSnO <sub>2</sub>		AgNi, AgSnO <sub>2</sub>
2 x 1A, 2 x 1B, 2 x 1C		1A, 1B, 1C, 1U, 2A(2 x pin#87)
20A	30A	40A
20A 15.2VDC	N.O.: 30A 14VDC N.C.: 20A 14VDC	N.O.: 40A 14VDC N.C.: 30A 14VDC 1U/2A: 2 x 20A 14VDC
280W		630W
75VDC		75VDC
-40°C ~ +105°C		-40°C ~ +125°C
50Hz 750VAC		50Hz 500VAC
50Hz 1,500VAC		50Hz 500VAC
100MΩ		100MΩ
≤50mΩ		≤30mΩ
1 x 10 <sup>5</sup>		1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>		1 x 10 <sup>7</sup>
20g		FRC1(B): 36g; FRC1(B)-1: 31g; FRC1(B)-2: 38g
TYCO : V23081		Matsushita: CB TYCO : VF4 Omron : G8J



Type	FRC1N	FRC1E	
Appearance			
Dimensions: L x W x H (mm)	FRC1N : 26.5 x 26.5 x 25 (+15.2) FRC1N-1: 26.5 x 26.5 x 25	28 x 28 x 46	
International Security Certificates			
Coil Voltage (V)	DC6, 9, 12, 24, 48	DC6, 12, 24	
Coil Power	1.6W	1.8W	
Contact Material	AgCdO, AgNi, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1B, 1C, 1U	1A	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A <b>50A</b>	<b>40A</b>	
Contact rating	N.O.: 50A 14VDC N.C.: 40A 14VDC 1U : 2 x 25A 14VDC	40A 14VDC	
Max. Switching Power	700W	630W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +125°C	-40°C ~ +125°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 750VAC	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤30mΩ	≤30mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	FRC1N: 36g; FRC1N-1: 31g	36g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)	Please refer to "FRC1"		
Cross Reference			



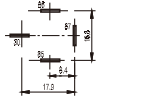

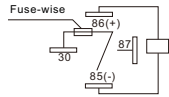
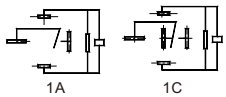
FRC1W	FRC2	FRC2B
		
35.5 x 35.5 x 45 (+23)	FRC2(B) : 29 x 29 x 26.5 (+16.5); FRC2(B)-2: 29 x 29 x 26.5 (+15.2)	FRC2(B)-1: 29 x 29 x 26.5
DC6, 12, 24, 48	DC6, 12, 24, 48	DC6, 12, 24, 48
1.6W	1.8W	1.8W
AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>
1A, 1C	1A, 1C	1A, 1C, 1U
40A	50A	60A
40A 14VDC	N.O.: 50A 14VDC N.C.: 40A 14VDC	N.O.: 60A 14VDC N.C.: 40A 14VDC 1U : 2 x 25A 14VDC
630W	840W	
75VDC	75VDC	75VDC
-40°C ~ +125°C	-40°C ~ +125°C	-40°C ~ +125°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤30mΩ	≤30mΩ	≤30mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
48g	38g	
		
		
TYCO: VF4	TYCO: VF4	




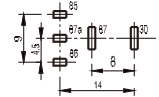
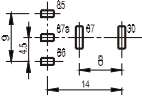
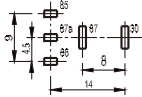
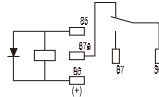
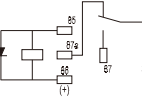
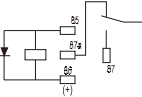


Type	FRC2N	FRC3
Appearance		
Dimensions: L x W x H (mm)	FRC2N : 26.5 x 26.5 x 23.5 (+16) FRC2N-1: 26.5 x 26.5 x 23.5	FRC3 : 29 x 29 x 26.5 (+16) FRC3-1: 29 x 29 x 26.5
International Security Certificates		
Coil Voltage (V)	DC6, 9, 12, 24, 48	DC12, 24
Coil Power	1.8W	1.8W
Contact Material	AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>
Contact Arrangement	1A, 1B, 1C	1A, 1C
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A
Contact rating	N.O.: 70A 14VDC N.C.: 50A 14VDC	N.O.: 80A 14VDC N.C.: 60A 14VDC
Max. Switching Power	980W	1120W
Max. Switching Voltage	75VDC	75VDC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 750VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤100mΩ	≤30mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	FRC2N: 35g; FRC2N-1: 30g	47g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference		TYCO: VF7



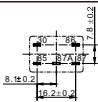
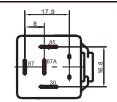
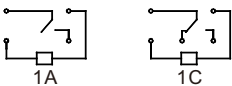
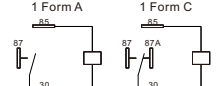
FRC3B	FRC3N	FRC4
FRC3B : 29 x 29 x 26.5 (+16) FRC3B-1: 29 x 29 x 26.5	FRC3N : 26.5 x 26.5 x 23.5 (+16) FRC3B-1: 26.5 x 26.5 x 23.5	26.5 x 26.5 x 25
DC12, 24	DC6, 12, 24, 48	DC6, 12, 24
2.9W	1.8W	1.8W
AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>
1A, 1C	1A, 1C	1A
100A	90A	30A
N.O.: 100A 14VDC N.C.: 70A 14VDC	N.O.: 90A 14VDC N.C.: 60A 14VDC	30A 14VDC
1,400W	1,260W	420W
75VDC	75VDC	75VDC
-40°C ~ +125°C	-40°C ~ +85°C	-40°C ~ +125°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 750VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤30mΩ	≤100mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
47g	38g	30g
TYCO: VF7		

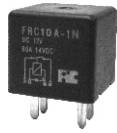


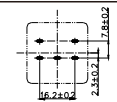
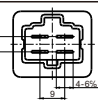
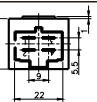
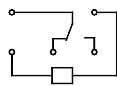

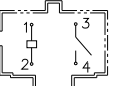


Type	FRC5	FRC6
Appearance		
Dimensions: L x W x H (mm)	33 x 25.2 x 21	35 x 33 x 35
International Security Certificates		
Coil Voltage (V)	DC6, 12, 24	DC12, 24
Coil Power	1.8W	2.9W
Contact Material	AgNi, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Contact Arrangement	1A	1A, 1C
Contact transfer current (A)	30A	150A
Contact rating	30A 14VDC	NO: 150A 12VDC NC: 100A 12VDC
Max. Switching Power	420W	1,800W
Max. Switching Voltage	75VDC	75VDC
Ambient temperature	-40°C ~ +105°C	-40°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤50mΩ	≤30mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	32g	60g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	TYCO: VFS	



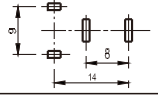
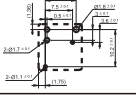
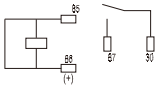
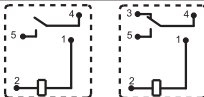
FRC7	FRC7B	FRC7N
		
23 x 15.5 x 26	20.5 x 15.5 x 22.5	20.5 x 15.4 x 22.1
DC6, 12, 24	DC6, 12, 24	DC12, 24
1.2W, 1.5W	1.8W	1.5W, 1.8W
AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
1A, 1C	1A, 1C	1A, 1C
25A	35A	40A
N.O.: 25A 14VDC N.C.: 20A 14VDC	N.O.: 35A 14VDC N.C.: 25A 14VDC	1A: 40A 14VDC 1C: 35A 14VDC 20A 14VDC
300W	490W	560W
75VDC	75VDC	28VDC
-40°C ~ +125°C	-40°C ~ +85°C	-40°C ~ +125°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 750VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤50mΩ	≤100mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
18.5g	20g	18g
		
		
TYCO: VFM Omron: G8H	TYCO : VFM Omron : G8H Matsushita: CM	TYCO : VFM Omron : G8H Matsushita: CM




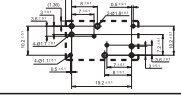
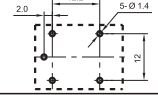
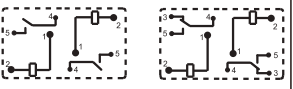
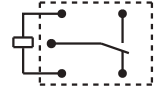


Type	FRC8	FRC9
Appearance		
Dimensions: L x W x H (mm)	23 x 15 x 25.5	28 x 26.2 x 26 (+13.9)
International Security Certificates		
Coil Voltage (V)	DC6, 12, 24	DC12
Coil Power	1.3W	-
Contact Material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Contact Arrangement	1A, 1C	1A, 1C
Contact transfer current (A)	40A	30A
Contact rating	N.O.: 40A 14VDC N.C.: 25A 14VDC	2 x 21W (lamp)
Max. Switching Power	560W	420W
Max. Switching Voltage	75VDC	75VDC
Ambient temperature	-40°C ~ +125°C	-40°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤100mΩ	≤50mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	5 x 10 <sup>4</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	10 <sup>7</sup>
Weight (Approx.)	21g	30g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: CV TYCO : VJ28	



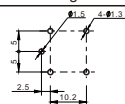
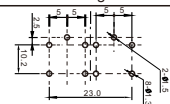
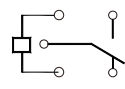
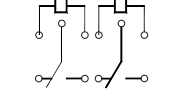
FRC10	FRC11	FRC12
		
28 x 28 x 25.5	FRC11 : 29 x 24 x 30 FRC11-2: 32 x 26 x 30	28.3 x 23 x 30.2 (+20.3)
DC12	DC12, 24	DC6, 12, 24
1.6W	1.5W	1.44W
AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
1A, 1C	1A	1A
60A	40A	30A
NO: 60A 14VDC NC: 50A 14VDC	40A 14VDC	30A 14VDC
700W	560W	420W
75VDC	75VDC	75VDC
-40°C ~ +125°C	-40°C ~ +105°C	-40°C ~ +85°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
100MΩ	100MΩ	100MΩ
≤50mΩ	≤50mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>6</sup>	5 x 10 <sup>5</sup>
34g	FRC11: 35g; FRC11-2: 38g	Plastic cover: 30g; Metal cover: 40g
		
		
Omron: G8W P&B : VF28		Song Chuan: 804



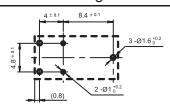
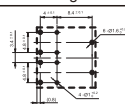
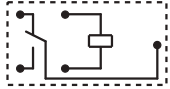
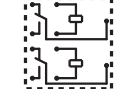


Type	<b>FRC17</b>	<b>FRS3M</b>	
Appearance			
Dimensions: L x W x H (mm)	22.5 x 15 x 16.3	12 x 12.9 x 9.9	
International Security Certificates			
Coil Voltage (V)	DC12	DC10, 12	
Coil Power	1.07W	0.56W	
Contact Material	AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	
Contact Arrangement	1A	1A, 1C	
Contact transfer current (A)	25A	30A	
Contact rating	25A 14VDC	30A 14VDC	
Max. Switching Power	300W	420W	
Max. Switching Voltage	75VDC	24VDC	
Ambient temperature	-40°C ~ +100°C	-40°C ~ +105°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC	50Hz 500VAC
Insulation Resistance	20MΩ	100MΩ	
Initial Contact Resistance	≤50mΩ	≤50mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	14g	4g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: CV TYCO : G8HL	Matsushita: CP TYCO : 23086	

<b>FRS3MD</b>	<b>FRS7M</b>	<b>FRS10M</b>
		
23.5 x 12.9 x 9.9	14.4 x 12.4 x 15	19 x 15.6 x 15.3
DC10, 12	DC12	DC6, 12, 24
0.56W	0.64W	0.64W, 0.8W
AgNi, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
2 x 1A, 2 x 1C	1U	1A, 1B, 1C
30A	20A	20A
30A 14VDC	2 x 20A 14VDC	20A 16VDC
420W	560W	280W
24VDC	75VDC	75VDC
-40°C ~ +105°C	-40°C ~ +125°C	-40°C ~ +105°C
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
50Hz 500VAC	50Hz 500VAC	50Hz 500VAC
100MΩ	100MΩ	250MΩ
≤50mΩ	≤20mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>
9g	8g	10g
		
		
Matsushita: CP TYCO : 23086	NEC: EM1	Matsushita: JSM Omron : G8U TYCO : T72M



Type	FRS12M	FRS12MD	
Appearance			
Dimensions: L x W x H (mm)	FRS12M: 15.7 x 12.3 x 14	FRS12MD: 25.5 x 16 x 14.4	
International Security Certificates			
Coil Voltage (V)	DC5, 6, 9, 12, 24	DC5, 6, 9, 12, 24	
Coil Power	0.6W, 0.8W	0.6W, 0.8W	
Contact Material	AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1C, 1U	2 x 1A, 2 x 1C, 2 x 1U	
Contact transfer current (A)	20A	20A	
Contact rating	1C: 20A 14VDC 1U: 2 x 10A 14VDC	2 x 20A 14VDC	
Max. Switching Power	280W	280W	
Max. Switching Voltage	75VDC	75VDC	
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C	
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 500VAC
	Between Contact and Coil	50Hz 500VAC	50Hz 500VAC
Insulation Resistance	100MΩ	100MΩ	
Initial Contact Resistance	≤50mΩ	≤50mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	6g	12g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: JJM/CQ Omron : G8QN	Matsushita: JJM/CQ Omron : G8QN	

FRS13M	FRS13MD	
		
14.3 x 7.5 x 13.8	14.3 x 15.7 x 13.8	
DC12	DC12	
0.64W, 0.8W	0.64W, 0.8W	
AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>	
1A, 1C	2 x 1A, 2 x 1C	
25A	25A	
25A 14VDC (Motor load)	25A 14VDC (Motor load)	
480W	480W	
16VDC	16VDC	
-40°C ~ +105°C	-40°C ~ +105°C	
50Hz 500VAC	50Hz 500VAC	
50Hz 500VAC	50Hz 500VAC	
100MΩ	100MΩ	
≤100mΩ	≤100mΩ	
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	
4.1g	8g	
		
		
Matsushita: CJ Omron : G8N	Matsushita: CJ Omron : G8NW	



Type	FRM3	FRM3N	
Appearance			
Dimensions: L x W x H (mm)	28 x 22 x 35.5	28 x 22 x 35.5	
International Security Certificates	ULus: E141516 R50086180	ULus: E141516	
Coil Voltage (V)	DC5, 6, 12, 24, 36, 48, 110 AC6, 12, 24, 36, 48, 120, 220/240	DC5, 6, 12, 24, 36, 48, 110 AC6, 12, 24, 36, 48, 120, 220/240	
Coil Power	0.9W 1.2VA	0.9W 1.2VA	
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	
Contact Arrangement	2C, 3C, 4C	2C, 3C, 4C	
Contact transfer current (A)	10A	10A	
Contact rating	2C: 10A 220VAC/28VDC 3C: 7A 220VAC/28VDC 4C: 5A 220VAC/28VDC	2C: 10A 250VAC/30VDC 3C: 7A 250VAC/30VDC 4C: 5A 250VAC/30VDC	
Max. Switching Power	300W 2,500VA	300W 2,500VA	
Max. Switching Voltage	125VDC 250VAC	125VDC 250VAC	
Ambient temperature	-55°C ~ +70°C	-55°C ~ +70°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 1,000VAC
	Between Contact and Coil	50Hz 1,500VAC	50Hz 1,500VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤50mΩ	≤50mΩ	
Electrical Life (Operations)	2 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	2 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	35g	37g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: HC Omron : MY TYCO : KHA/ZT	Matsushita: HC Omron : MY P&B : KHA/ZT	

FRM3W	FRM4	FRM7
1 & 2 poles: 28 x 22 x 35.5 3 poles : 31.3 x 28 x 35.5	41.2 x 28 x 36.5	50.5 x 33.5 x 37
ULus: E141516	ULus: E141516	
DC5, 6, 12, 24, 36, 48, 110 AC6, 12, 24, 36, 48, 120, 220/240	DC6, 12, 24, 48 AC6, 12, 24, 110, 220	DC3, 6, 12, 24, 48, 100, 110, 200 AC6, 12, 24, 48, 120, 220
0.9W 1.2VA	1.6W 2.5VA	1.9W 2.7VA
AgCdO, AgSnO <sub>2</sub>	AgCdO, AgNi	AgCdO, AgSnO <sub>2</sub>
1C, 2C, 3C	4C	1A, 2A
20A	10A	30A
1C: 20A 277VAC/28VDC 2C: 12A 250VAC/28VDC ½HP 125VAC 3C: 10A 250VAC/28VDC	10A 220VAC/28VDC	30A 277VAC 3HP 240VAC 1½HP 120VAC
560W 5,540VA	300W 2,500VA	8,310VA
30VDC 300VAC	30VDC 250VAC	277VAC
-40°C ~ +85°C	-25°C ~ +70°C	-55°C ~ +70°C
50Hz 1,000VAC	50Hz 1,500VAC	50Hz 2,000VAC
50Hz 1,500VAC	50Hz 2,000VAC	50Hz 4,000VAC
500MΩ	1,000MΩ	1,000MΩ
≤50mΩ	≤50mΩ	≤100mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
2 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>5</sup>
1 & 2 poles: 35g; 3 poles: 50g	70g	120g
Matsushita: HL Omron : LY TYCO : K10	Matsushita: HG Omron : LY4	Matsushita: HE Omron : G7L



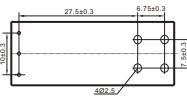
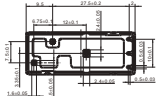
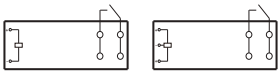





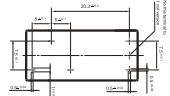
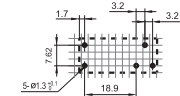
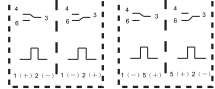
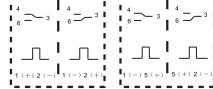


Type	FRL1	FRL1B
Appearance		
Dimensions: L x W x H (mm)	32.5 x 27.6 x 20.5	32.5 x 27.6 x 20.5
International Security Certificates	CE us: E139468	CE us: E139468
Coil Voltage (V)	DC5, 12, 24, 48	DC5, 12, 24, 48
Coil Power	0.9W, 2 x 1.8W	1.5W, 2 x 3.0W
Contact Material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Contact Arrangement	1A, 1B, 1C	1A, 1B, 1C
Contact transfer current (A)	40A	50A
Contact rating		Resistive Load : 50A 277VAC Incandescent Lamp: 3,000W 240VAC Electronic Ballast : 16A 280VAC Motor Load : 5HP 250VAC
Max. Switching Power	1,200W 12,000VA	1,500W 14,000VA
Max. Switching Voltage	110VDC 300VAC	110VDC 300VAC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 1,500VAC
	Between Contact and Coil	50Hz 2,500VAC (with pin 6) 50Hz 4,000VAC (without pin 6)
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤20mΩ	≤20mΩ
Electrical Life (Operations)	Resistive : 3 x 10 <sup>4</sup> Incandescent Lamp: 1 x 10 <sup>5</sup> Electronic Ballast : 6,000 Motor Load : 2 x 10 <sup>4</sup>	Resistive : 5 x 10 <sup>4</sup> Incandescent Lamp: 3 x 10 <sup>5</sup> Electronic Ballast : 6,000 Motor Load : 3 x 10 <sup>4</sup>
Mechanical Life (Operations)	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>
Weight (Approx.)	28g	28g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference		

FRL1T	FRL1TB	FRL7
32.5 x 27.6 x 28.5 (20)	32.5 x 27.4 x 28.5(20)	60 x 40 x 22
CE us: E139468	CE us: E139468	
DC5, 12, 24, 48	DC5, 12, 24, 48	DC6, 12, 24
0.9W, 2 x 1.8W	1.5W, 2 x 3.0W	1 coil: 2.25W, 2 coil: 4.5W
AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
1A, 1B, 1C	1A, 1B, 1C	1A, 1B
40A	50A	100A
Resistive Load : 40A 277VAC Incandescent Lamp: 3,000W 240VAC Electronic Ballast : 5A 280VAC Motor Load : 2HP 250VAC	Resistive Load : 50A 277VAC Incandescent Lamp: 3,000W 240VAC Electronic Ballast : 16A 280VAC Motor Load : 5HP 250VAC	100A 240VAC
1,200W 12,000VA	1,500W 14,000VA	23,000VA
110VDC 300VAC	110VDC 300VAC	400VAC
-40°C ~ +85°C	-40°C ~ +85°C	-25°C ~ +70°C
50Hz 1,500VAC	50Hz 1,500VAC	50Hz 2,000VAC
50Hz 2,500VAC (with pin 6) 50Hz 4,000VAC (without pin 6)	50Hz 2,500VAC (with pin 6) 50Hz 4,000VAC (without pin 6)	50Hz 4,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤20mΩ	≤20mΩ	≤30mΩ
Resistive : 3 x 10 <sup>4</sup> Incandescent Lamp: 1 x 10 <sup>5</sup> Electronic Ballast : 6,000 Motor Load : 2 x 10 <sup>4</sup>	Resistive : 5 x 10 <sup>4</sup> Incandescent Lamp: 3 x 10 <sup>5</sup> Electronic Ballast : 6,000 Motor Load : 3 x 10 <sup>4</sup>	1 x 10 <sup>4</sup>
1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>
28g	28g	82g
		Gruner: 720



Type	FRL10	FRL10N
Appearance		
Dimensions: L x W x H (mm)	39 x 15 x 29	39 x 15 x 25
International Security Certificates		ULus: E141516
Coil Voltage (V)	DC6, 12, 24	DC6, 9, 12, 24, 48
Coil Power	1.5W, 2 x 3.0W	1.5W, 2 x 3.0W
Contact Material	AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Contact Arrangement	1A	1A
Contact transfer current (A)	80A	50A
Contact rating	80A 277VAC	Resistive : 50A 277VAC Motor Load : 5HP 240VAC Incandescent Lamp: 5,000W 240VAC 16A 277VAC
Max. Switching Power	23,000VA	12,500VA
Max. Switching Voltage	350VAC	440VAC
Ambient temperature	-40°C ~ +70°C	-40°C ~ +70°C
Dielectric Strength	Between Contacts	50Hz 1,500VAC
	Between Contact and Coil	50Hz 4,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤20mΩ	≤20mΩ
Electrical Life (Operations)	60A: 1 x 10 <sup>5</sup> 80A: 5 x 10 <sup>4</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	5 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>
Weight (Approx.)	30g	25g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference		Gruner : 704L HongFa: HFE10

FRL20	FRL21	
		
29 x 13 x 15.7	28.6 x 10.1 x 12.6	
ULus: E141516		
DC3, 5, 6, 12, 24	DC3, 5, 12, 24	
1 coil: 0.4W, 2 coils: 0.6W	1 coil: 0.22W, 2 coils: 0.48W	
AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	
1A, 1C	1A, 1C	
16A	10A	
Resistive : 16A 250VAC Motor Load : 1HP 240VAC Incandescent Lamp: 360W 125VAC(1A); TV-5 120VAC(1A)	10A 250VAC/24VDC	
4,000VA	240W 2,500VA	
440VAC	150VDC 400VAC	
-40°C ~ +85°C	-40°C ~ +85°C	
50Hz 1,000VAC	50Hz 1,000VAC	
50Hz 5,000VAC	50Hz 5,000VAC	
1,000MΩ	1,000MΩ	
≤50mΩ	≤100mΩ	
5 x 10 <sup>4</sup>	5 x 10 <sup>4</sup>	
2 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>	
13g	8g	
		
		
TYCO : RTI Matsushita: DJ Fujitsu : FTR-KIL	Fujitsu: FTR-JSL	



Type	FRA1	FRA1B
Appearance		
Dimensions: L x W x H (mm)	Open: 30.2 x 24.6 x 17 Dust : 32.2 x 27 x 20.1	32.5 x 27.6 x 20.5
International Security Certificates	us: E139468 : R50128328	us: E139468
Coil Voltage (V)	DC5, 6, 9, 12, 18, 24, 48, 110/120 AC12, 24, 110, 120, 220/240	DC5, 6, 9, 12, 18, 24, 48, 110
Coil Power	0.9W, 2VA	1.5W
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>
Contact Arrangement	1A, 1B, 1C	1A, 1C
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	40A
Contact rating	N.O. : 40A 240VAC N.C. : 30A 240VAC Motor: 2HP 250VAC	N.O. : 50A 240VAC N.C. : 35A 240VAC Motor: 2HP 250VAC
Max. Switching Power	1,200W 7,200VA(10,000VA)	1,500W 12,000VA
Max. Switching Voltage	110VDC 300VAC	110VDC 300VAC
Ambient temperature	-55°C ~ +125°C	-55°C ~ +125°C
Dielectric Strength	Between Contacts	50Hz 1,500VAC
	Between Contact and Coil	50Hz 1,500VAC (with pin 6) 50Hz 3,000VAC (without pin 6)
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤30mΩ	≤30mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	3 x 10 <sup>4</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	Open: 27g; Sealed: 30g	Open: 27g; Sealed: 30g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)	 1A 1B 1C	 1A 1C
Cross Reference	Matsushita: JT Omron : G8P TYCO : T90	Matsushita: JT Omron : G8P TYCO : T90

FRA1T	FRA1TB	
FRA1T : 32.4 x 27.5 x 28.2 FRA1T-1: 32.4 x 27.5 x 20	FRA1BT : 32.4 x 27.5 x 28.2 FRA1BT-1: 32.4 x 27.5 x 20	
us: E139468 : R50128328	us: E139468	
DC5, 6, 9, 12, 18, 24, 48, 110/120 AC12, 24, 110, 120, 220/240	DC5, 6, 9, 12, 18, 24, 48, 110	
0.9W, 2VA	1.5W	
AgCdO, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	
1A, 1B, 1C	1A, 1C	
80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	40A	50A
1A : 40A 240VAC 1B : 30A 240VAC 1C : 40A/30A 240VAC Motor: 2HP 250VAC	N.O. : 50A 240VAC N.C. : 35A 240VAC Motor: 2HP 250VAC	
1,200W 7,200VA (10,000VA)	1,500W 12,000VA	
110VDC 300VAC	110VDC 300VAC	
-55°C ~ +125°C	-55°C ~ +125°C	
50Hz 1,500VAC	50Hz 1,500VAC	
50Hz 2,500VAC	50Hz 2,500VAC	
1,000MΩ	1,000MΩ	
≤30mΩ	≤30mΩ	
1 x 10 <sup>5</sup>	3 x 10 <sup>4</sup>	
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
33g(low profile type); 35g	33g(low profile type); 35g	
 1A 1B 1C	 1A 1C	
Matsushita: JT Omron : G8P TYCO : T90	Matsushita: JT Omron : G8P TYCO : T90	



Type	FRA1TP	FRA1TPB	
Appearance			
Dimensions: L x W x H (mm)	FRA1TP : 50.2 x 27.5 x 28.2 FRA1TP-1: 50.2 x 27.5 x 20	50.2 x 27.5 x 28.2	
International Security Certificates	ULus: E139468 CSA : R50128328	PENDING	
Coil Voltage (V)	DC5, 6, 9, 12, 18, 24, 48, 110/120 AC12, 24, 110, 120, 220/240	DC5, 6, 9, 12, 18, 24, 48, 110	
Coil Power	0.9W, 2VA	1.5W	
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1B, 1C	1A, 1C	
Contact transfer current (A)	40A	50A	
Contact rating	1A : 40A 240VAC 1B : 30A 240VAC 1C : 40A/30A 240VAC Motor: 2HP 250VAC	N.O. : 50A 240VAC N.C. : 35A 240VAC Motor: 2HP 250VAC	
Max. Switching Power	1,200W 7,200VA (10,000VA)	1,500W 12,000VA	
Max. Switching Voltage	110VDC 300VAC	110VDC 300VAC	
Ambient temperature	-55°C ~ +125°C	-55°C ~ +125°C	
Dielectric Strength	Between Contacts	50Hz 1,500VAC	50Hz 1,500VAC
	Between Contact and Coil	50Hz 2,500VAC	50Hz 2,500VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤30mΩ	≤30mΩ	
Electrical Life (Operations)	1 x 10 <sup>6</sup>	3 x 10 <sup>4</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	35g(low profile type); 37g	37g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: JT Omron : G8P TYCO : T90	Matsushita: JT Omron : G8P TYCO : T90	

FRA4	FRA6V	FRA6VN
50 x 32.2 x 24	30.2 x 16.2 x 26.5	30.2 x 16.2 x 26.5
ULus: E139468	ULus: E139468	ULus: E139468
DC5, 6, 9, 12, 18, 24, 48	DC12, 24, 48	DC12, 24, 48
1.2W	0.9W	0.9W
AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>
1A	1A	1A
30A	25A	25A
30A 250VAC 2HP 250VAC	25A 250VAC 20A 277VAC 1½HP 250VAC	25A 250VAC 20A 277VAC 1½HP 250VAC
7,500VA	6,380VA	6,380VA
277VAC	300VAC	300VAC
-40°C ~ +70°C	-30°C ~ +85°C	-30°C ~ +85°C
50Hz 1,200VAC	50Hz 1,000VAC	50Hz 1,000VAC
50Hz 4,000VAC	50Hz 5,000VAC	50Hz 5,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤100mΩ	≤50mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	5 x 10 <sup>5</sup>
55g	28g	28g
Matsushita: JH	Matsushita: JM OEG : PCF Omron : G4F	Matsushita: JM OEG : PCF Omron : G4F



Type	FRA7	FRA7T
Appearance		
Dimensions: L x W x H (mm)	30.5 x 16 x 26.5	30.5 x 16 x 23.5
International Security Certificates	ULus: E139468	ULus: E139468
Coil Voltage (V)	DC5, 12, 24, 48	DC5, 12, 24
Coil Power	0.9W	0.9W
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>
Contact Arrangement	1A	1A
Contact transfer current (A)	20A	20A
Contact rating	20A 250VAC 1HP 120VAC 2HP 240VAC	20A 250VAC 1HP 120VAC 2HP 240VAC
Max. Switching Power	6,250VA	6,250VA
Max. Switching Voltage	300VAC	300VAC
Ambient temperature	-25°C ~ +70°C	-25°C ~ +70°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 4,500VAC
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤30mΩ	≤30mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	2 x 10 <sup>6</sup>	2 x 10 <sup>6</sup>
Weight (Approx.)	23g	23g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: LF Omron : G4A	Matsushita: LF Omron : G4A

FRA8	FRM1	FRM1H
52 x 33.7 x 26.7	29 x 13 x 26	29 x 13 x 26.5
ULus: E139468	ULus: E141516	ULus: E141516
DC6, 12, 24, 48, 110 AC24, 120, 208, 220, 240, 277	DC5, 6, 9, 12, 24, 48, 60, 110	DC5, 6, 9, 12, 24, 48, 60
1.7W 4.0VA	0.56W	0.53W
AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>
2A, 2C	1A, 1B, 1C, 2A, 2C	1A, 1B, 1C
30A	10A	20A
NO: 30A 277VAC 1HP 120VAC 2½HP 240VAC NC: 3A 277VAC	1C: 10A 277VAC/30VDC 1/3HP 250VAC 2C: 10A 250VAC/30VDC 1/4HP 240VAC 1/8HP 120VAC	20A 277VAC/24VDC 1HP 240VAC TV-8 125VAC
8,310VA 277VAC	300W 2,770VA 30VDC 277VAC	480W 5,540VA 30VDC 277VAC
AC: -40°C ~ +65°C; DC: -40°C ~ +85°C	-40°C ~ +85°C	-40°C ~ +85°C
50Hz 1,500VAC	50Hz 1,000VAC	50Hz 1,000VAC
50Hz 4,000VAC	50Hz 5,000VAC	50Hz 4,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤50mΩ	≤50mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
5 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	5 x 10 <sup>6</sup>
86g	18g	18.5g
TYCO: T92	Matsushita: JR Omron : G2R TYCO : RKA	Matsushita: JR Omron : G2RE TYCO : 23056



Type	FRM2	FRM2H	
Appearance			
Dimensions: L x W x H (mm)	29.2 x 12.8 x 20.6	29.2 x 12.8 x 20.6	
International Security Certificates	CE: E141516 R50084297	CE: E141516 R50007462	
Coil Voltage (V)	DC5, 6, 9, 12, 24, 48	DC5, 6, 9, 12, 24, 48	
Coil Power	0.54W, 0.72W	0.54W, 0.72W	
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1C, 2A, 2C	1A, 1B, 1C	
Contact transfer current (A)	10A	16A	
Contact rating	1C: 10A 250VAC/30VDC 2C: 5A 250VAC/30VDC	16A 240VAC/30VDC	
Max. Switching Power	300W 2,500VA	480W 4,000VA	
Max. Switching Voltage	125VDC 250VAC	125VDC 250VAC	
Ambient temperature	-40°C ~ +70°C	-30°C ~ +70°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 1,000VAC
	Between Contact and Coil	50Hz 5,000VAC	50Hz 5,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤50mΩ	≤100mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	13g	13g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: JW Omron : G2R TYCO : 23077	Matsushita: JW Omron : G2RE TYCO : 23056	

FRM2HT	FRM8	FRM10LH
29 x 12.6 x 24.2	20.5 x 10.2 x 15.3	28.5 x 10.1 x 12.5
DC5, 6, 9, 12, 18, 24, 48	DC3, 5, 6, 9, 12, 18, 24, 48	DC5, 6, 9, 12, 18, 24, 48, 60
0.53W	0.2W, 0.45W	1 pole: 0.25W; 2 poles: 0.36W
AgCdO, AgSnO <sub>2</sub>	AgCdO, AgNi	AgNi, AgSnO <sub>2</sub>
1A	1A, 1C	1A, 1B, 1C, 2A, 2B, 2C
16A	10A	10A
16A 250VAC/30VDC	NO: 10A 125VAC 5A 250VAC/30VDC NC: 3A 250VAC/30VDC	1C: 10A 250VAC/30VDC 2C: 5A 250VAC/30VDC
480W 4,000VA	150W 1,250VA	1pole: 300W 2,500VA; 2 poles: 150W 1,250VA
30VDC 277VAC	30VDC 277VAC	125VDC 440VAC
-40°C ~ +70°C	-40°C ~ +70°C	-40°C ~ +85°C
50Hz 1,000VAC	50Hz 1,000VAC	50Hz 1,000VAC
50Hz 5,000VAC	50Hz 4,000VAC	50Hz 5,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤50mΩ	≤100mΩ	≤100mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
15g	7g	8g
Matsushita: JR Omron : G5J P&B : RHS	Matsushita: JQ/PQ Omron : G5Q/G5SB TYCO : RE/PCH	Omron : G6RN TYCO : RYII



Type	FRM10N	FRM10NI	
Appearance			
Dimensions: L x W x H (mm)	29 x 12.7 x 15.7	29 x 12.7 x 15.7	
International Security Certificates	us: E141516	us: E141516	
Coil Voltage (V)	DC5, 6, 9, 12, 24, 48, 60, 110 AC24, 115, 230	DC5, 6, 9, 12, 24, 48, 60	
Coil Power	0.41W 0.75VA	0.25W	
Contact Material	AgCdO, AgNi, AgSnO <sub>2</sub>	AgCdO, AgNi, AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1C, 2A, 2C	1A, 1C	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	
Contact rating	1C: 12A 250VAC 2C: 8A 250VAC/30VDC	10A 250VAC	
Max. Switching Power	1 pole: 3,000VA; 2 poles: 2,000VA	2,500VA	
Max. Switching Voltage	125VDC 440VAC	125VDC 440VAC	
Ambient temperature		-40°C ~ +105°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 1,000VAC
	Between Contact and Coil	50Hz 5,000VAC	50Hz 5,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤100mΩ	≤100mΩ	
Electrical Life (Operations)	DC: 1 x 10 <sup>5</sup> AC: 5 x 10 <sup>4</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	DC: 1 x 10 <sup>7</sup> ; AC: 1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	13.5g	13.5g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: ALZ Omron : G2RL TYCO : RT	Matsushita: ALZ Omron : G2RL TYCO : RT	

FRM10NH	FRM10NB	FRM10NT
29 x 12.7 x 15.7	29 x 12.7 x 15.7	Vertical : 41 x 12.7 x 15.7 Horizontal: 45 x 12.7 x 15.7
us: E141516	PENDING	
DC5, 6, 9, 12, 18, 24, 48, 60, 110 AC24, 115, 230	DC5, 6, 9, 12, 18, 24, 48, 60, 110	DC5, 6, 12, 24, 48, 60, 110
0.41W 0.75VA	0.41W	0.41W
AgCdO, AgNi, AgSnO <sub>2</sub>	AgCdO, AgNi, AgSnO <sub>2</sub>	AgCdO, AgNi, AgSnO <sub>2</sub>
1A, 1C	1A, 1C	1A, 1B
80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A
16A	20A	20A
16A 250VAC	N.O.: 20A 277VAC N.C.: 16A 277VAC	20A 250VAC
4,000VA	5,600VA	5,000VA
125VDC 440VAC	440VAC	125VDC 440VAC
-40°C ~ +105°C	-40°C ~ +105°C	-40°C ~ +125°C
50Hz 1,000VAC	50Hz 1,000VAC	50Hz 1,000VAC
50Hz 5,000VAC	50Hz 5,000VAC	50Hz 5,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤100mΩ	≤100mΩ	≤100mΩ
DC: 1 x 10 <sup>5</sup> AC: 5 x 10 <sup>4</sup>	20A: 5 x 10 <sup>4</sup> 16A: 1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
DC: 1 x 10 <sup>7</sup> ; AC: 1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
13.5g	13.5g	16g
Matsushita: ALZ Omron : G5RL TYCO : RT	Matsushita: ALZ Omron : G5RL TYCO : RT	TYCO: V23077



Type	FRM11	FRM15	
Appearance			
Dimensions: L x W x H (mm)	1 pole : 24.5 x 10.5 x 24.5 2 poles: 24.5 x 12.8 x 24.8	20.4 x 7 x 15	
International Security Certificates	ULus: E141516	ULus: E141516	
Coil Voltage (V)	DC5, 6, 9, 12, 18, 24, 48	DC4.5, 5, 6, 9, 12, 18, 24	
Coil Power	0.25W, 0.53W	0.2W	
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgNi, AgSnO <sub>2</sub>	
Contact Arrangement	1A, 1B, 1C, 2A	1A	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	10A	
Contact rating	1 pole : 10A 250VAC/30VDC 2 poles: 5A 250VAC/30VDC	3A 250VAC/30VDC	
Max. Switching Power	1 pole: 300W 2,500VA; 2 poles: 150W 1,250VA	90W 831VA	
Max. Switching Voltage	30VDC 250VAC	30VDC 277VAC	
Ambient temperature	-40°C ~ +70°C	-40°C ~ +85°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 750VAC
	Between Contact and Coil	50Hz 4,000VAC	50Hz 4,000VAC
Insulation Resistance	100MΩ	1,000MΩ	
Initial Contact Resistance	≤100mΩ	≤100mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 pole: 1 x 10 <sup>7</sup> ; 2 poles: 1 x 10 <sup>6</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	1 pole: 12g; 2 poles: 14.5g	4g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: LK-S Omron : G5PA	Matsushita: LD Omron : G5NB TYCO : PCT	

FRM15N	FRM16	FRM17
20.5 x 7.2 x 15.3	17.5 x 6.5 x 12.5	28 x 5 x 15
ULus: E141516	ULus: E141516	PENDING
DC4.5, 5, 6, 9, 12, 18, 24	DC5, 12, 24	DC5, 6, 9, 12, 18, 24, 48, 60
0.2W	0.2W	0.17W, 0.22W
AgCdO, AgNi, AgSnO <sub>2</sub>	Silver alloy	AgNi, AgSnO <sub>2</sub>
1A	1A	1A, 1C
10A	5A	6A
10A 277VAC/30VDC	5A 250VAC/30VDC	6A 250VAC/30VDC
300W 2,770VA	150W 1,250VA	180W 1,500VA
30VDC 277VAC	30VDC 250VAC	125VDC 400VAC
-40°C ~ +85°C	-25°C ~ +70°C	-40°C ~ +85°C
50Hz 750VAC	50Hz 750VAC	50Hz 1,000VAC
50Hz 4,000VAC	50Hz 3,000VAC	50Hz 4,000VAC
1,000MΩ	1,000MΩ	1,000MΩ
≤100mΩ	≤100mΩ	≤100mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1A: 6 x 10 <sup>4</sup> 1C: 3 x 10 <sup>4</sup> (N.O.) 1 x 10 <sup>4</sup> (N.C.)
1 x 10 <sup>7</sup>	2 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
3g	3g	5g
Matsushita: LD Omron : G5NB TYCO : PCT	Omron: G6D	Matsushita: PE TYCO : V23092/SNR Fujitsu : FTR-LY



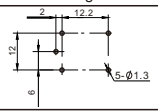
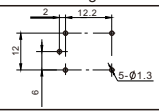
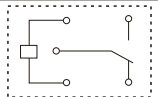
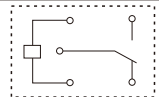





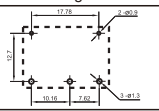
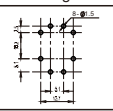
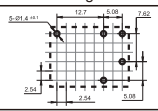
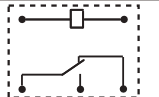
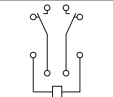
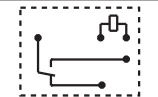


Type	FRM18	FRM18N
Appearance		
Dimensions: L x W x H (mm)	20 x 5 x 12.5	20 x 5 x 12.5
International Security Certificates	us: E141516 : 40008356	us: E141516 : 40008356
Coil Voltage (V)	DC5, 6, 9, 12, 18, 24	DC5, 6, 9, 12, 18, 24
Coil Power	0.12W, 0.18W	0.12W, 0.18W
Contact Material	AgNi, AgSnO <sub>2</sub>	AgNi, AgSnO <sub>2</sub>
Contact Arrangement	1A	1A
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A
Contact rating	5A 250VAC/30VDC	5A 250VAC/30VDC
Max. Switching Power	150W 1,250VA	150W 1,250VA
Max. Switching Voltage	30VDC 250VAC	30VDC 250VAC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 2,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤100mΩ	≤100mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	2 x 10 <sup>7</sup>	2 x 10 <sup>7</sup>
Weight (Approx.)	3g	3g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: PA Omron : G6DS TYCO : PCN	Matsushita: PA Omron : G6DS TYCO : PCN

FRS1	FRS1K	FRS4H	
15.7 x 11 x 12	15.7 x 11 x 12	20.2 x 16.5 x 20.2	
us: E141516	us: E141516	us: E141516	
DC3, 5, 6, 9, 12, 24	DC3, 5, 6, 9, 12, 24	DC3, 6, 9, 12, 24, 48	
0.2W, 0.36W, 0.45W	0.2W, 0.36W, 0.45W	0.36W, 0.45W	
Ag, AgNi	Ag, AgNi	AgCdO, AgSnO <sub>2</sub>	
1A, 1C	1A, 1C	1A, 1B, 1C	
80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	
Contact rating	5A 125VAC/30VDC	5A 125VAC/30VDC	15A 125VAC/28VDC
Max. Switching Power	150W 625VA	150W 625VA	420W 2,200VA
Max. Switching Voltage	60VDC 220VAC	60VDC 220VAC	125VDC 250VAC
Ambient temperature	-25°C ~ +75°C	-25°C ~ +75°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 500VAC	50Hz 750VAC
	Between Contact and Coil	50Hz 1,000VAC	50Hz 1,500VAC
Insulation Resistance	100MΩ	100MΩ	100MΩ
Initial Contact Resistance	≤50mΩ	≤50mΩ	≤100mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	4g	4g	15g
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Omron: G2E TYCO: 23101/T81	Omron: G2E TYCO: 23101/T81	Omron: G5L TYCO: 23074



Type	FRS4L	FRS4N
Appearance		
Dimensions: L x W x H (mm)	21 x 16 x 20.6	22.5 x 16.8 x 20.2
International Security Certificates	ULus: E139468	ULus: E141516 CE : 40025435
Coil Voltage (V)	DC3, 5, 6, 9, 12, 24, 48	DC3, 5, 6, 9, 12, 18, 24, 48
Coil Power	0.36W, 0.45W	0.36W, 0.45W
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>
Contact Arrangement	1A, 1B, 1C	1A, 1B, 1C
Contact transfer current (A)	20A	20A
Contact rating	20A 125VAC/28VDC 16A 277VAC/28VDC 10A 250VAC TV-8 1HP 125VAC/250VAC	20A 125VAC/28VDC 10A 250VAC ½HP 120VAC
Max. Switching Power	560W 4,450VA	560W 2,500VA
Max. Switching Voltage	110VDC 380VAC	110VDC 380VAC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +70°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 4,000VAC
Insulation Resistance	100MΩ	100MΩ
Initial Contact Resistance	≤100mΩ	≤100mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	16g	16g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Omron: G5LE TYCO: LNH	Omron: G5LE TYCO: SRUT

FRS5	FRS6	FRS8
		
22 x 16 x 10.5	22 x 17 x 16.5	22.1 x 17 x 15
ULus: E141516 CE : R2034463	ULus: E141516	ULus: E141516 CE : R9858273 / R50149969
DC5, 6, 9, 12, 24, 48, 110	DC3, 6, 9, 12, 24, 48	DC3, 5, 6, 9, 12, 24, 48
0.2W, 0.45W	0.5W	0.32W, 0.45W
AgCdO, AgNi, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>
1A, 1C	2C	1A, 1C
16A	5A	12A
16A 250VAC 10A 30VDC	5A 227VAC/30VDC	12A 125VAC/28VDC 10A 240VAC/28VDC 6A 300VAC/28VDC
480W 4,000VA	150W 1,250VA	336W 2,400VA
110VDC 380VAC	50VDC 380VAC	110VDC 380VAC
-40°C ~ +85°C	-40°C ~ +70°C	-40°C ~ +85°C
50Hz 750VAC	50Hz 750VAC	50Hz 1,000VAC
50Hz 1,500VAC	50Hz 1,000VAC	50Hz 2,000VAC
100MΩ	100MΩ	500MΩ
≤50mΩ	≤50mΩ	≤50mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
5 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
9g	12g	11g
		
		
Matsushita: JV Omron : G5C TYCO : PCD	AZ: 946	Omron : G4K TYCO : 23148/T73 Takamisawa: LZ



Type	FRS8N	FRS11
Appearance		
Dimensions: L x W x H (mm)	21.4 x 16.5 x 15	19 x 15.6 x 15.5
International Security Certificates	us: E141516 : R9858273 / R50149969	us: E141516 : R50136658 / R50149970
Coil Voltage (V)	DC3, 5, 6, 9, 12, 24, 48	DC3, 5, 6, 9, 12, 24, 48
Coil Power	0.32W, 0.45W	0.36W
Contact Material	AgCdO, AgSnO <sub>2</sub>	AgCdO, AgSnO <sub>2</sub>
Contact Arrangement	1A, 1C	1A, 1C
Contact transfer current (A)	<div style="border: 1px solid black; padding: 2px; display: inline-block;">12A</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">20A</div>
Contact rating	12A 125VAC/28VDC 10A 240VAC/28VDC 6A 300VAC/28VDC	20A 125VAC/16VDC 15A 28VDC 10A 250VAC 6A 277VAC 1/3HP 125/277VAC
Max. Switching Power	336W 2,400VA	420W 2,500VA
Max. Switching Voltage	110VDC 380VAC	110VDC 380VAC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 4,000VAC
Insulation Resistance	500MΩ	250MΩ
Initial Contact Resistance	≤50mΩ	≤100mΩ
Electrical Life (Operations)	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
Weight (Approx.)	11g	10g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Omron :G4K TYCO : 23148/T73 Takamisawa: LZ	Matsushita: JS Omron : G5L/G5X TYCO : 23082

FRS11L	FRS16	FRS16N
19.5 x 16 x 17.1	18.4 x 10.2 x 15.3	17.6 x 10.1 x 12.3
us: E139468 : 40014769	us: E141516 : R50019143	us: E141516
DC3, 5, 6, 9, 12, 18, 24, 48	DC3, 5, 6, 9, 12, 24, 48	DC3, 5, 6, 9, 12, 24, 48
0.36W, 0.45W	0.2W, 0.45W	0.2W, 0.45W
AgCdO, AgSnO <sub>2</sub>	AgCdO, AgNi	AgNi
1A, 1B, 1C	1A, 1C	1A, 1C
<div style="border: 1px solid black; padding: 2px; display: inline-block;">16A</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">10A</div>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">5A</div>
16A 277VAC 10A 250VAC ½HP 125VAC/250VAC TV-8 125VAC	10A 120VAC 5A 250VAC/28VDC	1A: 5A 250VAC/30VDC 1C: 3A 250VAC/30VDC
3,840VA	150W 1,250VA	150W 1,250VA
277VAC	30VDC 250VAC	30VDC 250VAC
-40°C ~ +85°C	-40°C ~ +70°C	-40°C ~ +85°C
50Hz 1,000VAC	50Hz 1,000VAC	50Hz 1,000VAC
50Hz 2,500VAC	50Hz 2,500VAC	50Hz 5,000VAC
250MΩ	100MΩ	100MΩ
≤100mΩ	≤100mΩ	≤100mΩ
1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>	1 x 10 <sup>5</sup>
1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
10g	6g	5g
Matsushita: LS Omron : G5LB P&B : T7S	TYCO : T77V Takamisawa: JV	TYCO : T77 Takamisawa: JV



Type	FRT2	FRT2S	
Appearance			
Dimensions: L x W x H (mm)	21 x 10.8 x 12.3	20.5 x 10.2 x 12.5	
International Security Certificates	us: E141516	us: E141516	
Coil Voltage (V)	DC3, 5, 6, 9, 12, 24, 48	DC3, 5, 6, 9, 12, 24, 48	
Coil Power	0.2W, 0.36W, 0.5W	0.15W, 0.2W, 0.4W, 0.56W	
Contact Material	AgNi, Ag(Au clad)	AgNi (Au clad), AgPd (Au clad)	
Contact Arrangement	2C	2C	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	
Contact rating	3A 28VDC 1A 125VAC	3A 30VDC 0.6A 125VAC	
Max. Switching Power	84W 125VA	90W 125VA	
Max. Switching Voltage	30VDC 220VAC	220VDC 250VAC	
Ambient temperature	-30°C ~ +70°C	-40°C ~ +90°C	
Dielectric Strength	Between Contacts	50Hz 750VAC	50Hz 1,000VAC
	Between Contact and Coil	50Hz 1,000VAC	50Hz 1,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤100mΩ	≤100mΩ	
Electrical Life (Operations)	1 x 10 <sup>5</sup>	AgNi : 1 x 10 <sup>5</sup> AgPd: 3 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>	
Weight (Approx.)	5g	4.5g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: DS-2Y Omron : G5V-2 TYCO : V23105	Matsushita: DS-2Y Omron : G5V-2 TYCO : V23105	



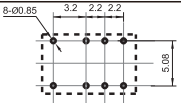
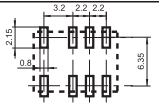
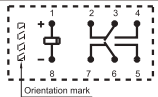
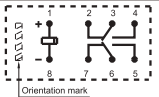
Type	FRT3	FRT4	
Appearance			
Dimensions: L x W x H (mm)	20.2 x 10.2 x 10.6	12.5 x 7.5 x 10	
International Security Certificates	us: E141516	us: E141516	
Coil Voltage (V)	Single side: DC3, 5, 6, 9, 12, 15, 24, 48 1 coil : DC3, 5, 6, 9, 12, 15, 24 2 coils : DC3, 5, 6, 9, 12, 15, 24	DC1.5, 3, 5, 6, 9, 12, 24	
Coil Power	0.075W, 0.1W, 0.15W, 0.2W	0.15W, 0.2W	
Contact Material	Ag (Au clad), AgPd	Ag (Au clad), AgNi (Au clad)	
Contact Arrangement	2C	1A, 1C	
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	
Contact rating	3A 30VDC 1A 125VAC	1A 30VDC 0.5A 125VAC	
Max. Switching Power	90W 125VA	30W 62.5VA	
Max. Switching Voltage	220VDC 250VAC	60VDC 125VAC	
Ambient temperature	-40°C ~ +85°C	-30°C ~ +70°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 400VAC
	Between Contact and Coil	50Hz 1,000VAC	50Hz 1,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤50mΩ	≤100mΩ	
Electrical Life (Operations)	1A 30VDC: 5 x 10 <sup>5</sup> 2A 30VDC: 1 x 10 <sup>5</sup> 3A 30VDC: 5 x 10 <sup>4</sup>	1 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>6</sup>	5 x 10 <sup>6</sup>	
Weight (Approx.)	4.5g	2.2g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: DS2Y Omron : G6A-2 TYCO : V23042	Matsushita: HY Omron : G5V-1 TYCO : 23111	



Type	FRT5	FRT5S
Appearance		
Dimensions: L x W x H (mm)	14.3 x 9.3 x 5	14.3 x 9.3 x 5.3
International Security Certificates	us: E141516	us: E141516
Coil Voltage (V)	DC3, 4.5, 5, 6, 9, 12, 24	DC3, 4.5, 5, 6, 9, 12, 24
Coil Power	0.1W, 0.14W, 0.2W, 0.3W	0.1W, 0.14W
Contact Material	AgPd (Au clad)	AgNi (Au clad)
Contact Arrangement	2C	2C
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A
Contact rating	2A 30VDC 0.5A 125VAC	2A 30VDC 0.5A 125VAC
Max. Switching Power	60W 62.5VA	60W 62.5VA
Max. Switching Voltage	220VDC 250VAC	220VDC 250VAC
Ambient temperature	-40°C ~ +70°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 1,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤50mΩ	≤50mΩ
Electrical Life (Operations)	1A 30VDC : 2 x 10 <sup>5</sup> 0.5A 125VAC: 1 x 10 <sup>5</sup>	1A 30VDC : 2 x 10 <sup>5</sup> 0.5A 125VAC: 1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>8</sup>	1 x 10 <sup>8</sup>
Weight (Approx.)	1.5g	1.5g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: TQ2 Omron : G6H TYCO : 23106	Matsushita: TQ2-SA Omron : G6H-2F TYCO : 23106

Type	FRT6	FRT6S
Appearance		
Dimensions: L x W x H (mm)	15 x 7.5 x 9	15 x 7.5 x 9.5
International Security Certificates	us: E141516	us: E141516
Coil Voltage (V)	DC1.5, 3, 4.5, 5, 6, 9, 12, 24, 48	DC1.5, 3, 4.5, 5, 6, 9, 12, 24, 48
Coil Power	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W
Contact Material	AgNi (Au clad)	AgNi (Au clad)
Contact Arrangement	2C	2C
Contact transfer current (A)	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A	80A 70A 50A 40A 30A 20A 15A 10A 5A 1A
Contact rating	2A 30VDC 0.5A 125VAC	2A 30VDC 0.5A 125VAC
Max. Switching Power	60W 62.5VA	60W 62.5VA
Max. Switching Voltage	220VDC 250VAC	220VDC 250VAC
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C
Dielectric Strength	Between Contacts	50Hz 1,000VAC
	Between Contact and Coil	50Hz 3,000VAC
Insulation Resistance	1,000MΩ	1,000MΩ
Initial Contact Resistance	≤50mΩ	≤50mΩ
Electrical Life (Operations)	1A 30VDC : 5 x 10 <sup>5</sup> 2A 30VDC / 0.5A 125VAC: 1 x 10 <sup>5</sup>	1A 30VDC : 5 x 10 <sup>5</sup> 2A 30VDC / 0.5A 125VAC: 1 x 10 <sup>5</sup>
Mechanical Life (Operations)	1 x 10 <sup>8</sup>	1 x 10 <sup>8</sup>
Weight (Approx.)	2g	2g
Mounting Layout (Bottom View) (mm)		
Wiring Diagram (Bottom View)		
Cross Reference	Matsushita: TX Omron : G6S TYCO : 23079	Matsushita: TX Omron : G6S TYCO : 23079

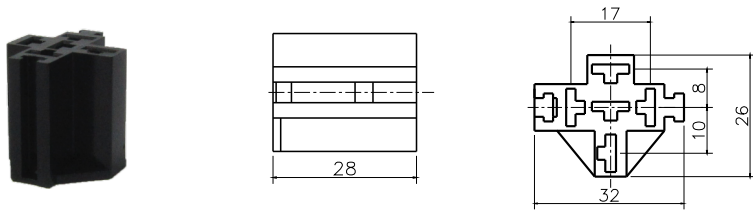


Type	FRT7	FRT7S	
Appearance			
Dimensions: L x W x H (mm)	10 x 6.5 x 5.4	10 x 6.5 x 5.65	
International Security Certificates			
Coil Voltage (V)	DC1.5, 3, 4.5, 5, 6, 9, 12, 24	DC1.5, 3, 4.5, 5, 6, 9, 12, 24	
Coil Power	0.1W, 0.14W, 0.2W	0.1W, 0.14W, 0.2W	
Contact Material	AgNi (Au clad)	AgNi(Au clad)	
Contact Arrangement	2C	2C	
Contact transfer current (A)	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; margin-right: 5px;">                     80A 70A 50A 40A 30A 20A 15A 10A 5A 1A                 </div> <div style="border: 1px solid black; padding: 2px;">2A</div> </div>	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; margin-right: 5px;">                     80A 70A 50A 40A 30A 20A 15A 10A 5A 1A                 </div> <div style="border: 1px solid black; padding: 2px;">2A</div> </div>	
Contact rating	2A 30VDC 0.5A 125VAC	2A 30VDC 0.5A 125VAC	
Max. Switching Power	60W 62.5VA	60W 62.5VA	
Max. Switching Voltage	220VDC 250VAC	220VDC 250VAC	
Ambient temperature	-40°C ~ +85°C	-40°C ~ +85°C	
Dielectric Strength	Between Contacts	50Hz 1,000VAC	50Hz 1,000VAC
	Between Contact and Coil	50Hz 1,800VAC	50Hz 1,800VAC
Insulation Resistance	1,000MΩ	1,000MΩ	
Initial Contact Resistance	≤70mΩ	≤70mΩ	
Electrical Life (Operations)	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	
Mechanical Life (Operations)	1 x 10 <sup>8</sup>	1 x 10 <sup>8</sup>	
Weight (Approx.)	0.8g	0.8g	
Mounting Layout (Bottom View) (mm)			
Wiring Diagram (Bottom View)			
Cross Reference	Matsushita: GQ Omron : G6K TYCO : Axicom IM	Matsushita: GQ Omron : G6K TYCO : Axicom IM	



## CS1

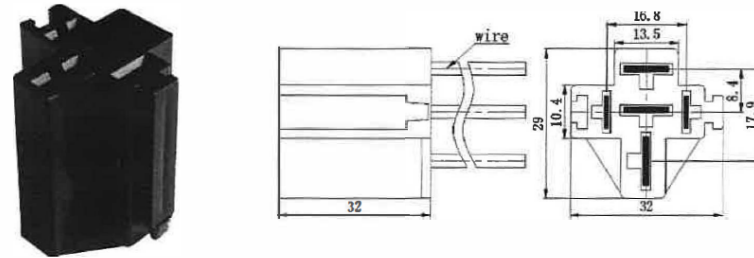
Appearance illustration (Unit: mm)



\*Note: With 15mm wire (AWG#14): A Type: CS1-AW  
 B Type: CS1-CW  
**\*\*Applicable relay type: FRC1 and FRC2 (with 15mm wire AWG#14)**

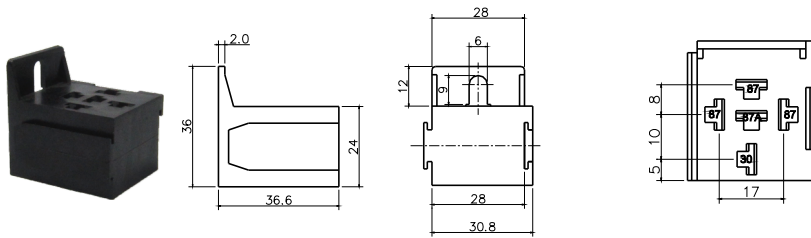
## CS3-CW

Terminal Layout 底视图 (Bottom View)



## CS1-4

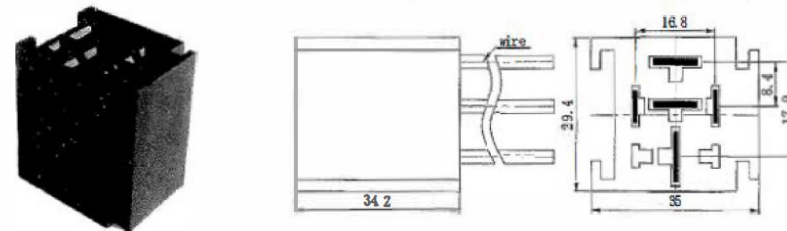
Appearance illustration (Unit: mm)



**\*\*Applicable relay type: FRC1 and FRC2**

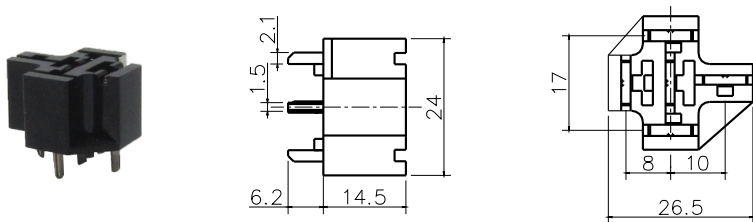
## CS3-2CW

Terminal Layout 底视图 (Bottom View)



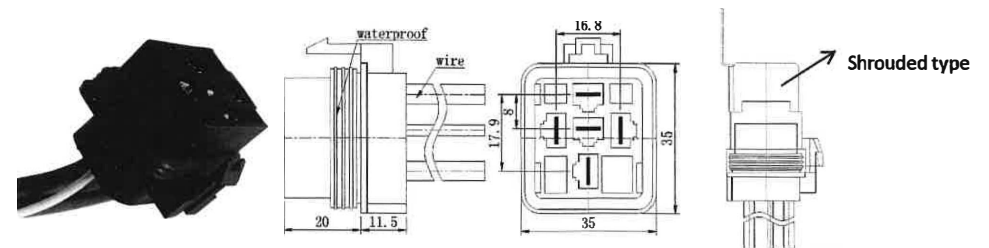
## CS1-1A

Appearance illustration (Unit: mm)

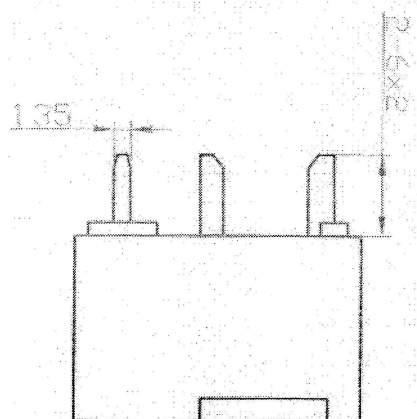
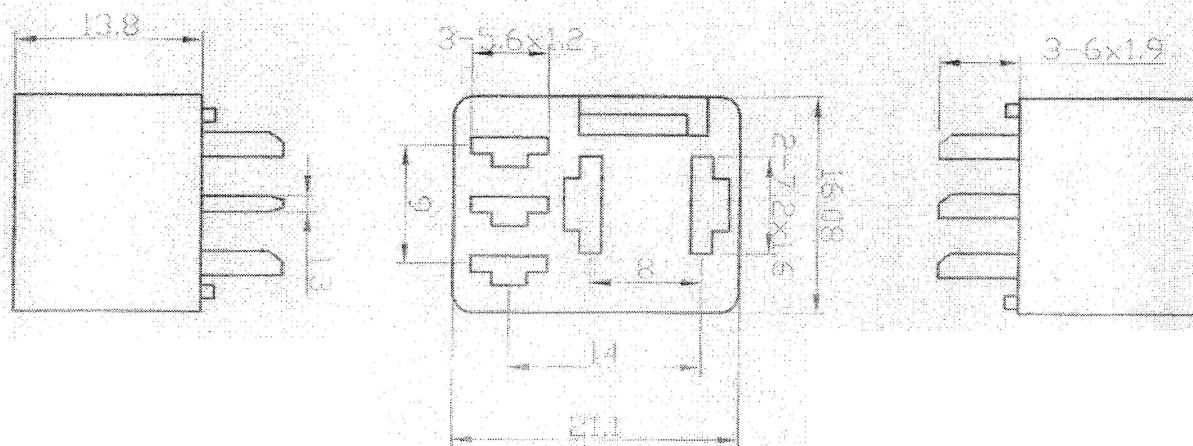


**\*\*Applicable relay type: FRC1 and FRC2 (with PCB pin)**

## CS4-CW

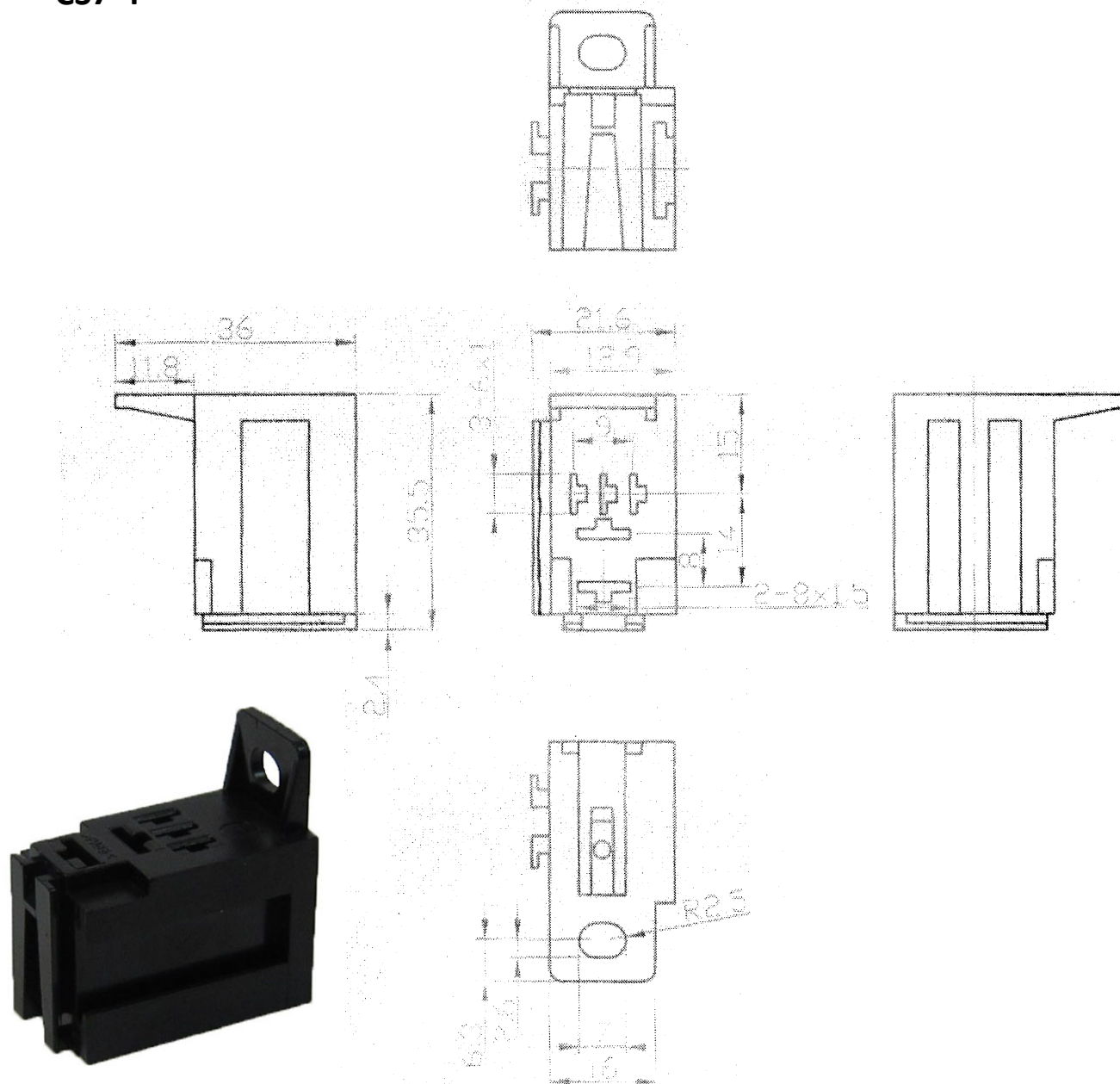


### CS7-1A (CS4-1A)





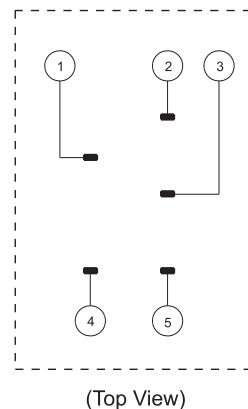
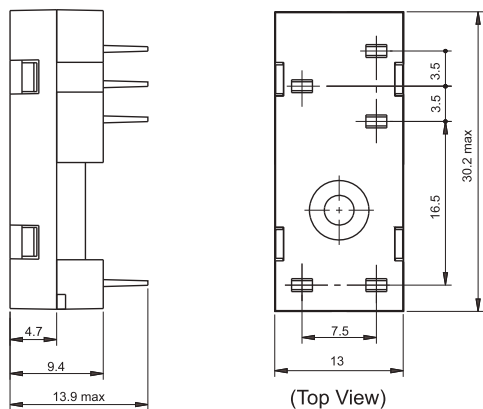
CS7-4



MS1-1

Outline dimensions (Unit: mm)

Wiring diagram

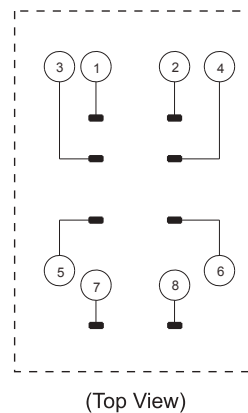
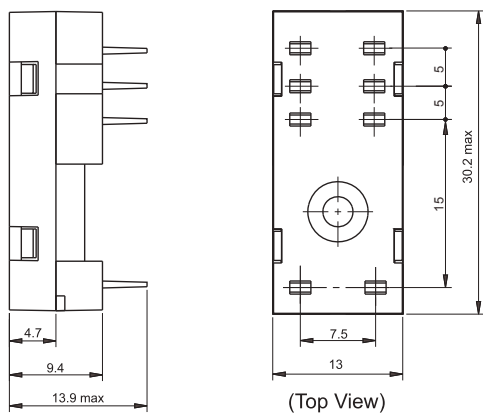


**\*\*Applicable relay type: FRM1-1, FRM2-1 and FRM10N-1**

MS1-2

Outline dimensions (Unit: mm)

Wiring diagram

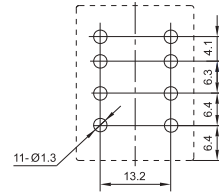
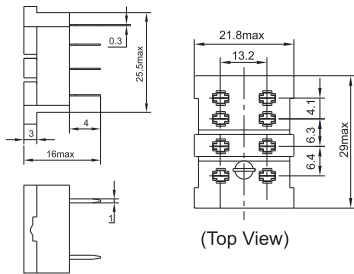


**\*\*Applicable relay type: FRM1H, FRM1-2, FRM2-2, FRM10NH and FRM10N-2**

## MS3-2A

Outline dimensions (Unit: mm)

PCB layout

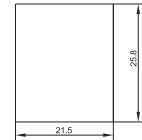
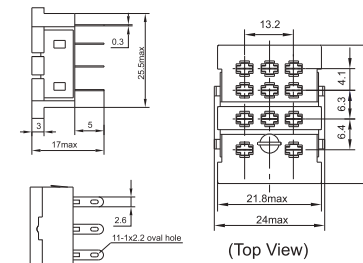


\*\*Applicable relay type: FRM3 (2 poles)

## MS3-3B

Outline dimensions (Unit: mm)

PCB layout

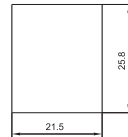
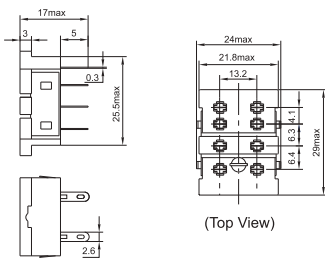


\*\*Applicable relay type: FRM3 (3 poles)

## MS3-2B

Outline dimensions (Unit: mm)

PCB layout

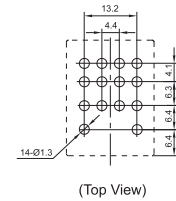
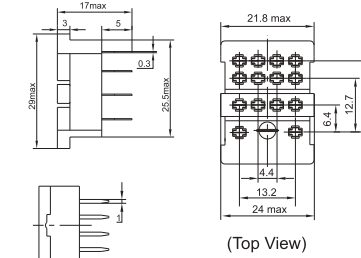


\*\*Applicable relay type: FRM3 (2 poles)

## MS3-4A

Outline dimensions (Unit: mm)

PCB layout

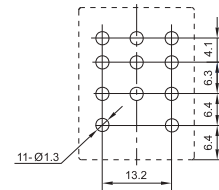
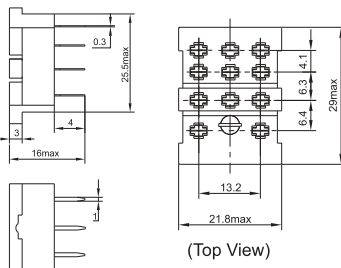


\*\*Applicable relay type: FRM3 (4 poles)

## MS3-3A

Outline dimensions (Unit: mm)

PCB layout

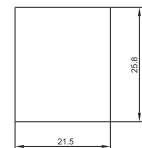
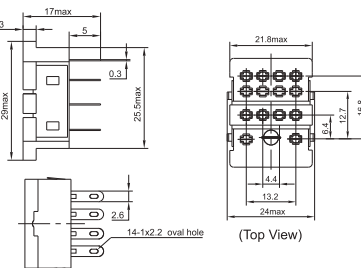


\*\*Applicable relay type: FRM3 (3 poles)

## MS3-4B

Outline dimensions (Unit: mm)

PCB layout

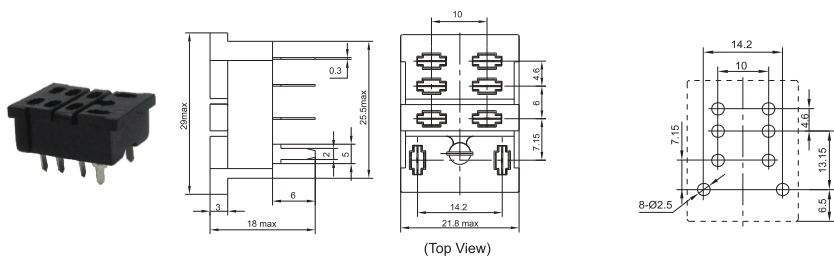


\*\*Applicable relay type: FRM3 (4 poles)

MS3W-2A

Outline dimensions (Unit: mm)

PCB layout

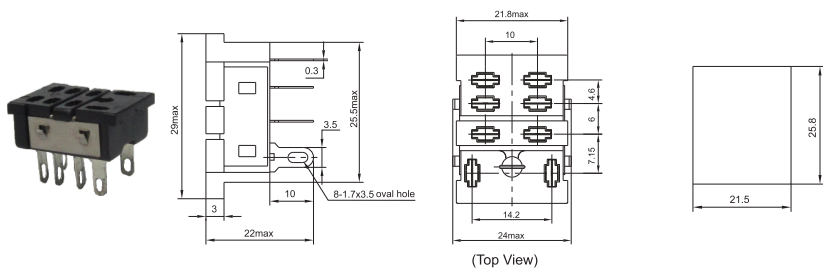


**\*\*Applicable relay type: FRM3W (2 poles)**

MS3W-2B

Outline dimensions (Unit: mm)

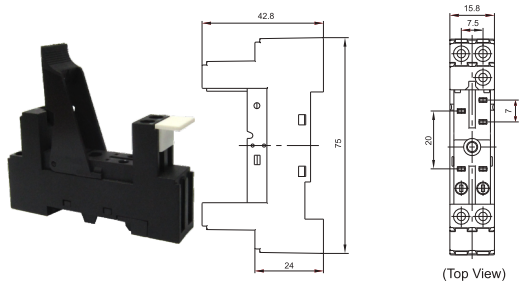
PCB layout



**\*\*Applicable relay type: FRM3W (2 poles)**

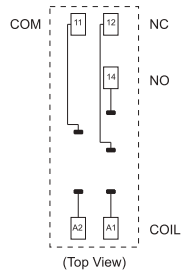
# Sockets

**MSR1-1C-...A** Outline dimensions (Unit: mm)

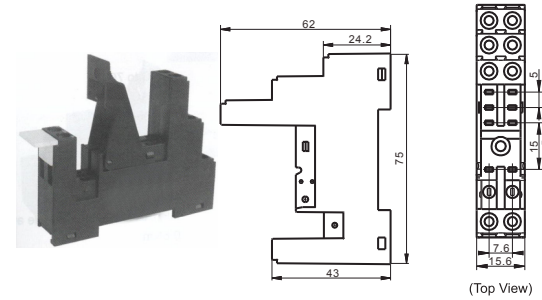


**\*\*Applicable relay type: MSR1-1C-1A: FRM10N-1;  
MSR1-1C-2A: FRM2-1;  
MSR1-1C-3A: FRM1-1**

Wiring diagram

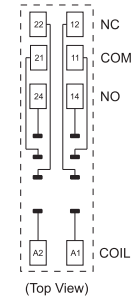


**MSR-2C-C3** Outline dimensions (Unit: mm)

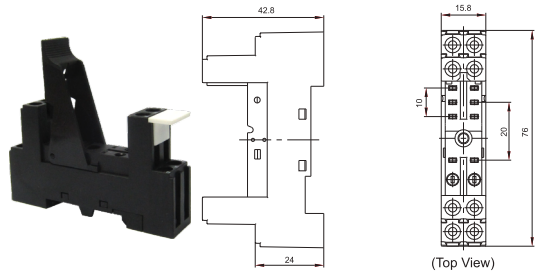


**\*\*Applicable relay type: MSR-2C-C3-1: FRM10N (2 poles) and FRM10NH  
MSR-2C-C3-2: FRM2-2  
MSR-2C-C3-3: FRM1-2**  
**\*\*Modules are available for this socket**

Wiring diagram

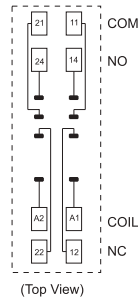


**MSR1-2C-...A** Outline dimensions (Unit: mm)

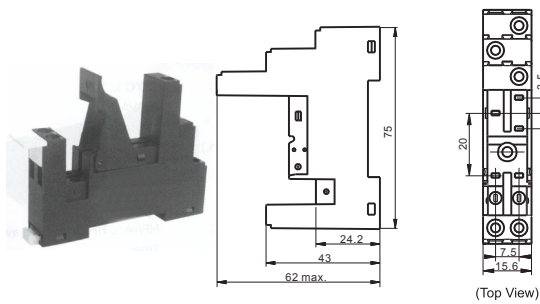


**\*\*Applicable relay type: MSR1-2C-1A: FRM10N-2;  
MSR1-2C-2A: FRM2-2;  
MSR1-2C-3A: FRM1-2**

Wiring diagram

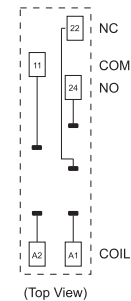


**MSR1-1C-C3** Outline dimensions (Unit: mm)



**\*\*Applicable relay type: MSR1-1C-C3-1: FRM10N (1 poles);  
MSR1-1C-C3-2: FRM2-1  
MSR1-1C-C3-3: FRM1-1**  
**\*\*Modules are available for this socket**

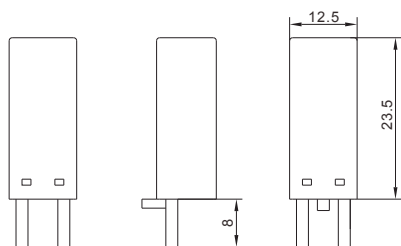
Wiring diagram



## Plug-in modules



## Outline dimensions (Unit: mm)



\*\*Applicable socket type: MSR1-1C-C3 and MSR1-2C-C3

Ordering code	Circuit diagram	Voltage	Components	Functions
FR-AA		6 to 230VDC	Diode	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> </ul>
FR-AB		6 to 230VDC	Diode	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> </ul>
FR-BC		6 to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>
FR-BD		24 to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>
FR-BE		110 to 230VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>

Ordering code	Circuit diagram	Voltage	Components	Functions
FR-CF		6 to 24VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>
FR-CG		24 to 60VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>
FR-CH		110 to 230VDC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>
FR-DI		6 to 24VDC	Capacitor Resistor	<ul style="list-style-type: none"> <li>With RC to protect the coil and to absorb instant starting surge current</li> </ul>
FR-DJ		24 to 60VDC	Capacitor Resistor	<ul style="list-style-type: none"> <li>With RC to protect the coil and to absorb instant starting surge current</li> </ul>
FR-DK		110 to 230VDC	Capacitor Resistor	<ul style="list-style-type: none"> <li>With RC to protect the coil and to absorb instant starting surge current</li> </ul>
FR-EL		6 to 24V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>With diode to protect the coil and to eliminate the converse current</li> <li>With LED to show the coil in voltage</li> </ul>

Ordering code	Circuit diagram	Voltage	Components	Functions
FR-EM		24 to 60V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> </ul>
FR-EN		110 to 230V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> </ul>
FR-FO		6 to 24V DC / AC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>
FR-FP		24 to 60V DC / AC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>
FR-FQ		110 to 230V DC / AC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>
FR-GR		24VAC	Varistor	<ul style="list-style-type: none"> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>
FR-GS		115VAC	Varistor	<ul style="list-style-type: none"> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>

Ordering code	Circuit diagram	Voltage	Components	Functions
FR-GT		230VAC	Varistor	<ul style="list-style-type: none"> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>
FR-HU		110 to 230VAC	Resistor	<ul style="list-style-type: none"> <li>• With resistor to protect the coil and to spread around current</li> </ul>
FR-JU		110 to 230V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> </ul>
FR-JW		24 to 60V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> </ul>
FR-JV		6 to 24V DC / AC	Diode LED Resistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> </ul>
FR-FR		12 to 48V DC / AC	Diode LED Resistor Varistor	<ul style="list-style-type: none"> <li>• With diode to protect the coil and to eliminate the converse current</li> <li>• With LED to show the coil in voltage</li> <li>• With varistor in parallel connection to absorb instant starting surge current</li> </ul>