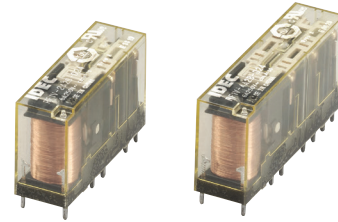





RF1V Force Guided Relays/SF1V Relay Sockets

Key features:

- Compact and EN compliant RF1V force guided relays
- Force guided contact mechanism (EN50205 Type A TÜV approved)
- Contact configuration
4-pole (2NO-2NC, 3NO-1NC)
6-pole (4NO-2NC, 5NO-1NC, 3NO-3NC)
- Built-in LED indicator model and Counter Electromotive force diode models
- Fast response time (8 ms maximum).
- High shock resistance (200 m/s² minimum)
- Finger-safe DIN rail mount socket and PC board mount soc





| Applicable Standard | Marking | Certification Organization/ File Number |
|----------------------|---|---|
| UL508 |  | UL recognized File No. E55996 |
| CSA C22.2 No.14 |  | CSA File No. 253350 |
| EN50205 EN61810-1 |  | TÜV SÜD |





Part Number Selection

| | | Part Number | | | |
|---------|--------------------|-----------------------|--------------------|-----------------------------|------------------|
| Contact | Rated Coil Voltage | Without LED Indicator | With LED Indicator | Counter-Electromotive Force | |
| 4-pole | 2NO-2NC | 12V DC | RF1V-2A2B-D12 | RF1V-2A2BL-D12 | RF1V-2A2BLD1-D12 |
| | | 24V DC | RF1V-2A2B-D24 | RF1V-2A2BL-D24 | RF1V-2A2BLD1-D24 |
| | | 48V DC | RF1V-2A2B-D48 | RF1V-2A2BL-D48 | RF1V-2A2BLD1-D48 |
| | 3NO-1NC | 12V DC | RF1V-3A1B-D12 | RF1V-3A1BL-D12 | RF1V-3A1BLD1-D12 |
| | | 24V DC | RF1V-3A1B-D24 | RF1V-3A1BL-D24 | RF1V-3A1BLD1-D24 |
| | | 48V DC | RF1V-3A1B-D48 | RF1V-3A1BL-D48 | RF1V-3A1BLD1-D48 |
| 6-pole | 4NO-2NC | 12V DC | RF1V-4A2B-D12 | RF1V-4A2BL-D12 | RF1V-4A2BLD1-D12 |
| | | 24V DC | RF1V-4A2B-D24 | RF1V-4A2BL-D24 | RF1V-4A2BLD1-D24 |
| | | 48V DC | RF1V-4A2B-D48 | RF1V-4A2BL-D48 | RF1V-4A2BLD1-D48 |
| | 5NO-1NC | 12V DC | RF1V-5A1B-D12 | RF1V-5A1BL-D12 | RF1V-5A1BLD1-D12 |
| | | 24V DC | RF1V-5A1B-D24 | RF1V-5A1BL-D24 | RF1V-5A1BLD1-D24 |
| | | 48V DC | RF1V-5A1B-D48 | RF1V-5A1BL-D48 | RF1V-5A1BLD1-D48 |
| | 3NO-3NC | 12V DC | RF1V-3A3B-D12 | RF1V-3A3BL-D12 | RF1V-3A3BLD1-D12 |
| | | 24V DC | RF1V-3A3B-D24 | RF1V-3A3BL-D24 | RF1V-3A3BLD1-D24 |
| | | 48V DC | RF1V-3A3B-D48 | RF1V-3A3BL-D48 | RF1V-3A3BLD1-D48 |

Sockets

| Style | No. of Poles | Ordering Type No. |
|---|--------------|-------------------|
|  DIN Rail Mount Sockets | 4 | SF1V-4-07L |
| | 6 | SF1V-6-07L |
|  PC Board Mount Sockets | 4 | SF1V-4-61 |
| | 6 | SF1V-6-61 |

Certification for Sockets

| Applicable Standard | Marking | Certification Organization/ File Number |
|----------------------|---|---|
| UL508 |  | UL recognized File No. E62437 |
| CSA C22.2 No.14 |  | CSA File No. 253350 |
| EN147000 EN147100 |  | TÜV SÜD |
| |  | EC Low Voltage Directive (DIN rail mount sockets only) |




Coil Ratings

| Contact | Rated Coil Voltage (V) | Rated Current (mA) ±10% (at 20°C) ¹ | Coil Resistance (Ω) ±10% (at 20°C) | Operating Characteristics (at 20°C) | | | Power Consumption | | | |
|---------|------------------------|--|------------------------------------|-------------------------------------|-----------------|---|-------------------|-------------|------|--------------|
| | | | | Pickup Voltage | Dropout Voltage | Maximum Continuous Applied Voltage ² | | | | |
| 4-pole | 2NO-2NC | 12V DC | 30 | 75% maximum | 10% minimum | 110% | Approx. 0.36W | | | |
| | | 24V DC | 15 | | | | | | | |
| | | 48V DC | 7.5 | | | | | | | |
| | 3NO-1NC | 12V DC | 30 | | | | | | | |
| | | 24V DC | 15 | | | | | | | |
| | | 48V DC | 7.5 | | | | | | | |
| 6-pole | 4NO-2NC | 12V DC | 41.7 | | | | 75% maximum | 10% minimum | 110% | Approx. 0.5W |
| | | 24V DC | 20.8 | | | | | | | |
| | | 48V DC | 10.4 | | | | | | | |
| | 5NO-1NC | 12V DC | 41.7 | | | | | | | |
| | | 24V DC | 20.8 | | | | | | | |
| | | 48V DC | 10.4 | | | | | | | |
| | 3NO-3NC | 12V DC | 41.7 | | | | | | | |
| | | 24V DC | 20.8 | | | | | | | |
| | | 48V DC | 10.4 | | | | | | | |



- For relays with LED indicator, the rated current increases by approx. 2 mA.
- Maximum continuous applied voltage is the maximum voltage that can be applied to relay coils.

Accessories

| Item | Appearance | Specifications | Type No. | Remarks |
|----------|---|--|----------|----------------------------|
| DIN Rail |  | Aluminum Weight: Approx. 250g | BNDN1000 | Length: 1m Width: 35 mm |
| End Clip |  | Metal (zinc plated steel) Weight: Approx. 15g | BNL5 | — |
| |  | | BNL6 | |

Specifications

| | | | | | |
|---|---|---|--|---------|---------|
| Number of Poles | 4-pole | | 6-pole | | |
| Contact Configuration | 2NO-2NC | 3NO-1NC | 4NO-2NC | 5NO-1NC | 3NO-3NC |
| Contact Resistance (initial value) ¹ | 100 mΩ maximum | | | | |
| Contact Material | AgSnO ₂ (Au flashed) | | | | |
| Rated Load (resistive load) | 6A 250V AC, 6A 30V DC | | | | |
| Allowable Switching Power (resistive load) | 1500 VA, 180W | | | | |
| Allowable Switching Voltage | 250V AC, 30V DC | | | | |
| Allowable Switching Current | 6A | | | | |
| Minimum Applicable Load ² | 5V DC, 1 mA (reference value) | | | | |
| Power Consumption (approx.) | 0.36W | | 0.5W | | |
| Insulation Resistance | 1000 MΩ minimum (500V DC megger, same measurement positions as the dielectric strength) | | | | |
| Dielectric Strength | Between contact and coil | 4000V AC, 1 minute | | | |
| | Between contacts of different poles | 2500V AC, 1 minute Between contacts 7-8 and 9-10 | 2500V AC, 1 minute Between contacts 7-8 and 11-12 Between contacts 9-10 and 13-14 Between contacts 11-12 and 13-14 | | |
| | | 4000V AC, 1 min. Between contacts 3-4 and 5-6 Between contacts 3-4 and 7-8 Between contacts 5-6 and 9-10 | 4000V AC, 1 min. Between contacts 3-4 and 5-6 Between contacts 3-4 and 7-8 Between contacts 5-6 and 9-10 Between contacts 7-8 and 9-10 | | |
| | Between contacts of the same pole | 1500V AC, 1 minute | | | |
| Operating Time (at 20°C) | 20 ms maximum (at the rated coil voltage, excluding contact bounce time) | | | | |
| Response Time (at 20°C) ³ | 8 ms maximum (at the rated coil voltage, excluding contact bounce time) | | | | |
| Release Time (at 20°C) | 20 ms maximum (at the rated coil voltage, excluding contact bounce time) | | | | |
| Vibration Resistance | Operating Extremes | 10 to 55 Hz, amplitude 0.75 mm | | | |
| | Damage Limits | 10 to 55 Hz, amplitude 0.75 mm | | | |
| Shock Resistance | Operating Extremes (half sine-wave pulse: 11 ms) | 200 m/s ² , when mounted on DIN rail mount socket: 150 m/s ² | | | |
| | Damage Limits (half sine-wave pulse: 6 ms) | 1000 m/s ² | | | |
| Electrical Life | 250V AC 6A resistive load: 100,000 operations minimum (operating frequency 1200 per hour) 30V DC 6A resistive load: 100,000 operations minimum (operating frequency 1200 per hour) 250V AC 1A resistive load: 500,000 operations minimum (operating frequency 1800 per hour) 30V DC 1A resistive load: 500,000 operations minimum (operating frequency 1800 per hour) [AC 15] 240V AC 2A inductive load: 100,000 operations minimum (operating frequency 1200 per hour, cos φ = 0.3) [DC 13] 24V DC 1A inductive load: 100,000 operations minimum (operating frequency 1200 per hour, L/R = 48 ms) | | | | |
| Mechanical Life | 10 million operations minimum (operating frequency 10,800 operations per hour) | | | | |
| Operating Temperature ⁴ | -40 to +85°C (no freezing) | | | | |
| Operating Humidity | 5 to 85%RH (no condensation) | | | | |
| Storage Temperature | -40 to +85°C | | | | |
| Operating Frequency (rated load) | 1200 operations per hour | | | | |
| Weight (approx.) | 20g | | 23g | | |




1. Measured using 6V DC, 1A voltage drop method.
2. Failure rate level P (reference value)

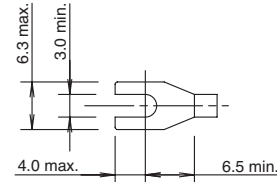
3. Response time is the time until NO contact opens, after the coil voltage is turned off.
4. When using at 70 to 85°C, reduce the switching current by 0.1A/°C.


Socket Specifications

| Part Number | SF1V-4-07L | SF1V-6-07L | SF1V-4-61 | SF1V-6-61 |
|-------------------------------------|--|------------|-----------|-----------|
| Rated Current | 6A | | | |
| Rated Voltage | 250V AC/DC | | | |
| Insulation Resistance | 1000 MΩ minimum (500V DC megger, between terminals) | | | |
| Dielectric Strength | 2500V AC, 1 minute (between terminals) | | | |
| Screw Terminal Style | M3 slotted Phillips screw | | — | |
| Applicable Wire | 0.7 to 1.65 mm ² (18 AWG to 14 AWG) | | — | |
| Recommended Screw Tightening Torque | 0.5 to 0.8 N·m | | — | |
| Terminal Strength | Wire tensile strength: 50N min. | | — | |
| Vibration Resistance | Damage limits: 10 to 55 Hz, amplitude 0.75 mm Resonance: 10 to 55 Hz, amplitude 0.75 mm | | | |
| Shock Resistance | 1000 m/s ² | | | |
| Operating Temperature ¹ | -40 to +85°C (no freezing) | | | |
| Operating Humidity | 5 to 85% RH (no condensation) | | | |
| Degree of Protection | IP20 (finger-safe screw terminals) | | — | |
| Weight (approx.) | 40g | 55g | 9g | 10g |

 1. When using at 70 to 85°C, reduce the switching current by 0.1A/°C.

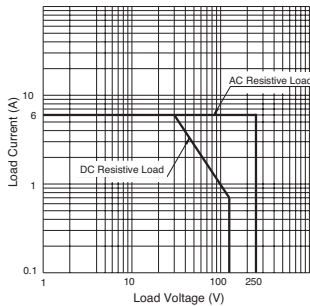
Applicable Crimping Terminals Specifications



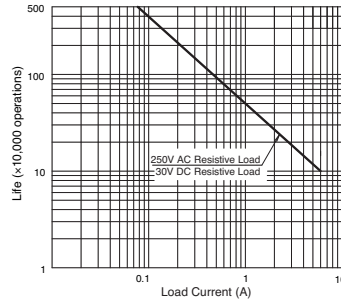
 Note: Ring tongue terminals cannot be used.

Characteristics

Maximum Switching Capacity

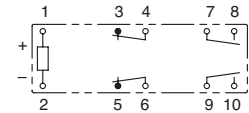


Electrical Life Curve



Notes on Contact Gaps except Welded Contacts

Example: RF1V-2A2B-D24



- If the NO contact (7-8 or 9-10) welds, the NC contact (3-4 or 5-6) remains open even when the relay coil is de-energized, maintaining a gap of 0.5 mm. The remaining unwelded NO contact (9-10 or 7-8) is either open or closed.
- If the NC contact (3-4 or 5-6) welds, the NO contact (7-8 or 9-10) remains open even when the relay coil is energized, maintaining a gap of 0.5 mm. The remaining unwelded NC contact (5-6 or 3-4) is either open or closed.

Switches & Pilot Lights

Signaling Lights

Relays & Sockets

Timers

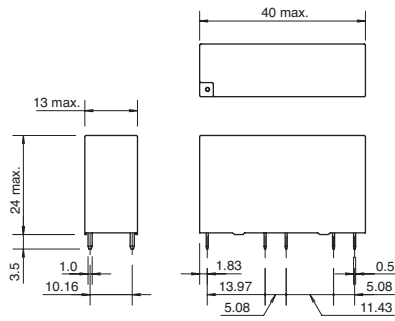
Contactors

Terminal Blocks

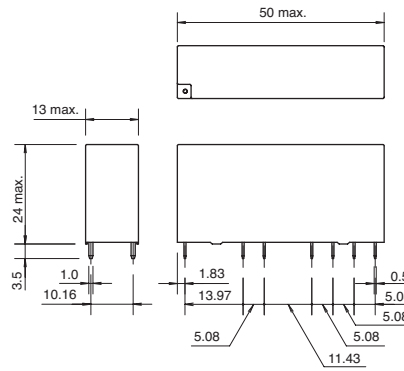
Circuit Breakers

RF1V Dimensions (mm)

RF1V (4-pole)

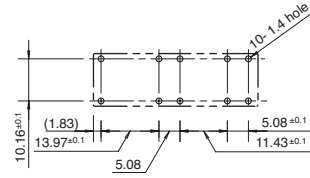


RF1V (6-pole)

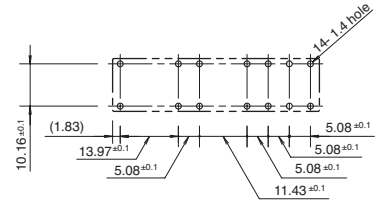


PC Board Terminal type Mounting Hole Layout (Bottom View)

RF1V (4-pole)



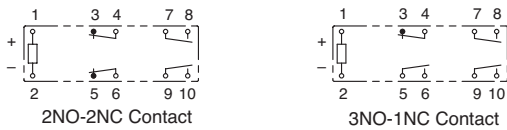
RF1V (6-pole)



Internal Connection (View from Bottom)
With Indicator and Diode (-LD type)

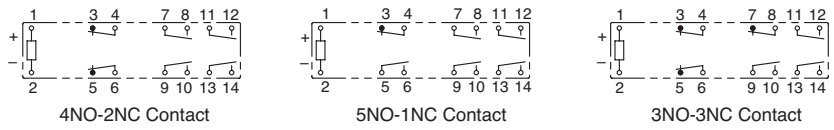
RF1V (4-pole)

Without LED Indicator

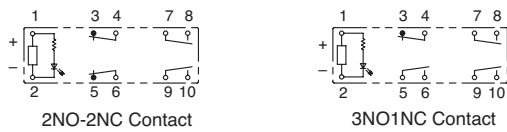


RF1V (6-pole)

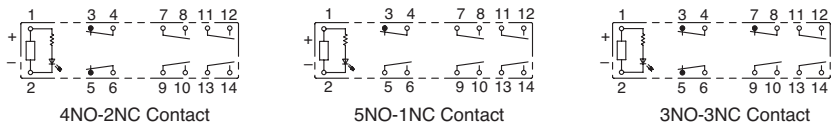
Without LED Indicator



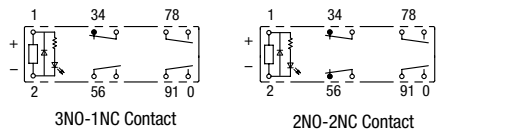
With LED Indicator



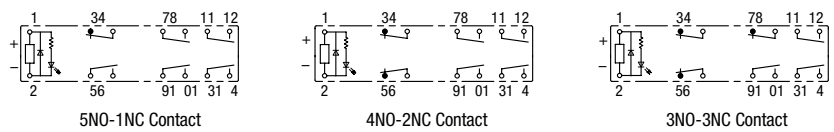
With LED Indicator



With Counter-electromotive Force Diode



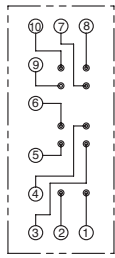
With Counter-electromotive Force Diode



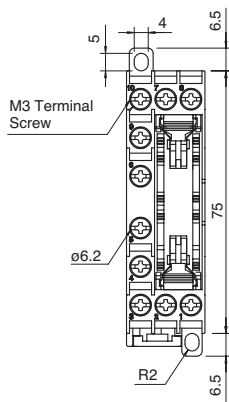
SF1V DIN Rail Mount Socket Dimensions (mm)

SF1V-4-07L (4-pole)

(Internal Connection)

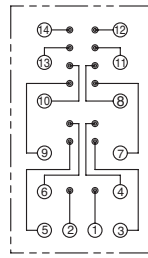


(Top View)

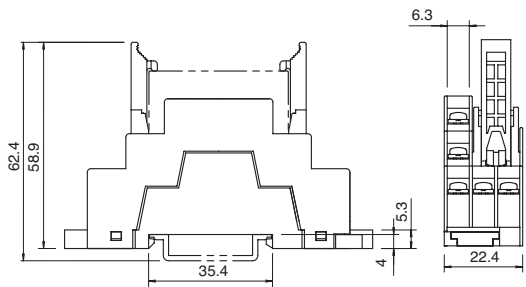
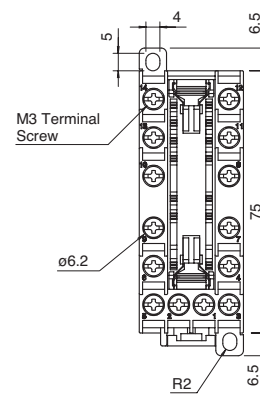


SF1V-6-07L (6-pole)

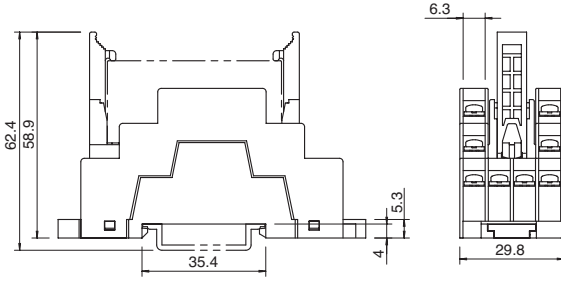
(Internal Connection)



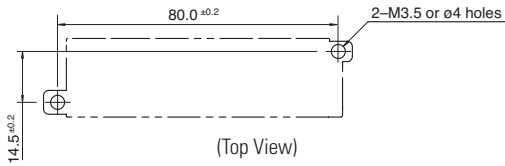
(Top View)



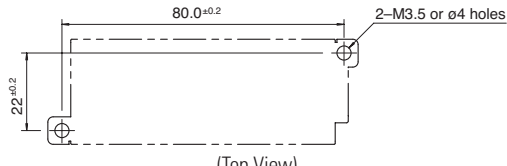
(Panel Mounting Hole Layout)



(Panel Mounting Hole Layout)



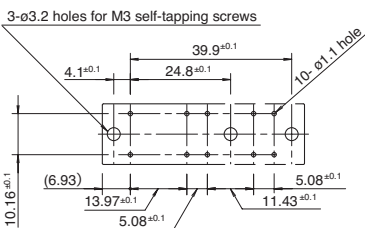
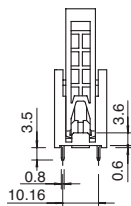
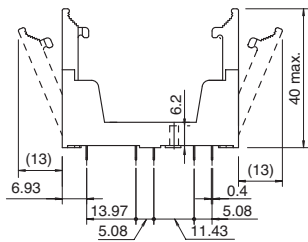
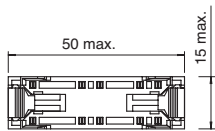
(Top View)



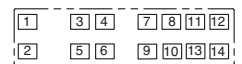
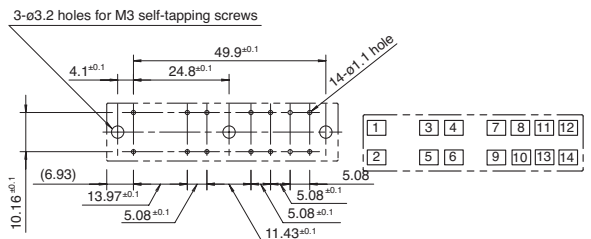
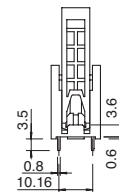
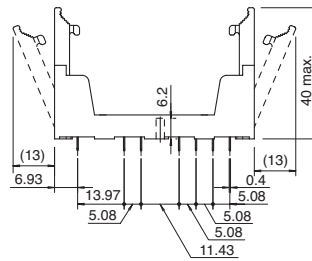
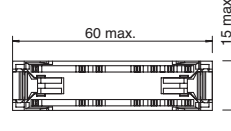
(Top View)

SF1V PC Board Mount Sockets

SF1V-4-07L (4-pole)



SF1V-6-07L (6-pole)



Switches & Pilot Lights

Signaling Lights

Relays & Sockets

Timers

Contactors

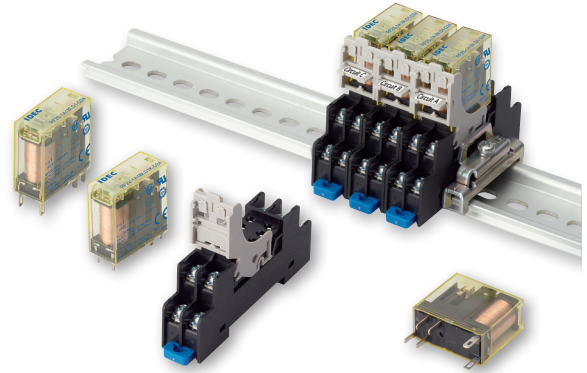
Terminal Blocks

Circuit Breakers

RF2V 2-Pole Force Guided Relays/SJ Series Relay Sockets

Key features:

- 2-pole force guided relay to reduce cost and installation space.
- Force guided contact mechanism (EN50205 Type A TÜV approved).
- Reinforced insulation between coil and contact and contacts of different poles.
- Mechanical indicator shows contact status.
- Two terminal styles - socket mounting and PC board mounting.
- RTIII degree of protection, LED, diode models available.
- Can be used with SJ series relay socket.
- Applicable Standards Mark Certification



| Applicable Standard | Marking | Certification Organization/ File Number |
|----------------------|---------|---|
| UL60947-4-1a | | UL/Recognition File No. E55996 |
| CSA C22.2 No.14 | | CSA File No. LR35144 |
| EN50205 EN61810-1 | | TÜV SÜD |
| | | EU Low Voltage Directive |

Part Numbers

| Contact Configuration | Terminal Style | LED Indicator | w/Diode | Degree of Protection (Note) | | Rated Coil Voltage | Part No. | |
|--------------------------------|----------------|---------------|---------|-----------------------------|----------------|--------------------|-------------------|----------------|
| | | | | Flux-tight (RTII) | Sealed (RTIII) | | | |
| 2-pole SPST-NO + SPST-NC | Plug-in | With | √ | √ | | 12V DC | RF2S-1A1BLD1-D12 | |
| | | Without | — | √ | | | RF2S-1A1B-D24 | |
| | | With | √ | √ | | 24V DC | RF2S-1A1BD1-D24 | |
| | | | √ | | √ | | RF2S-1A1BLD1K-D24 | |
| | | Without | — | √ | | | RF2S-1A1B-D48 | |
| | | With | √ | √ | | 48V DC | RF2S-1A1BLD1-D48 | |
| | √ | | | √ | | RF2S-1A1BLD1K-D48 | | |
| | PC Board | Without | — | — | √ | | 12V DC | RF2V-1A1B-D12 |
| | | | — | — | √ | | | RF2V-1A1B-D24 |
| | | | — | — | | √ | | RF2V-1A1BK-D24 |
| | | | √ | √ | | 24V DC | RF2V-1A1BD1-D24 | |
| | | With | √ | | √ | | RF2V-1A1BD1K-D24 | |
| | | | √ | | √ | | RF2V-1A1BLD1K-D24 | |
| | | Without | — | — | √ | | 48V DC | RF2V-1A1B-D48 |
| Without | | — | — | √ | | 24V DC | RF2V-2C-D24 | |

Switches & Pilot Lights

Signalng Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers