Alphanumeric Index

Definitions – Relays with forcibly guided contacts ("safety relays")

General Information

Relays with forced guidance contacts play a decisive role in avoiding accidents on machines and in systems. Safety control circuits enable to switch into the fail safe state. Forcibly guided contacts monitor the function of the safety control circuits.

For this safety function, all the assumed faults that can occur must already have been taken into consideration and their effects examined. Standard EN 50205 "Relays with forcibly guided contacts" contains current internationally-defined design requirements. Relays with forcibly guided contacts that comply with EN 50205 are also referred as "safety" relays.

Function

Power relays with forcibly guided (linked) contacts:

Power relays with at least one break contact and at least one make contact designed that by mechanical means make and break contacts can never be simultaneously in the closed position.

Contact gaps shall never be less than 0.5 mm over the operating life, not only under normal operating conditions, but also when a fault occurs.

This requirement allows the respective exclusive-or contact to detect the fault of a contact to open. For example, the welding of a make contact is indicated by the non-closing of the break contact when the energization is switched off.

To fulfill the specifications of the standard, the assumed faults must be considered:

Assumed fault	Effect
Failure of the contact to open due to welding	The failure of any make contact to open has the effect that none of the break contacts close even when the relay is not energized. The failure of any break contact to open has the effect that none of the make contacts close when the relay is energized.
Failure of the contact to open due to failure of the drive	The drive has no effect on the forcibly guided contact operation.
Breakage of the contact spring	Simultaneous closing of the break and make contacts is not possible even as a result of breakage. Completely insulated contact chambers (SR2, SR4, SR6) or barriers (SR2M) guarantee a contact gap of 0.5 mm.

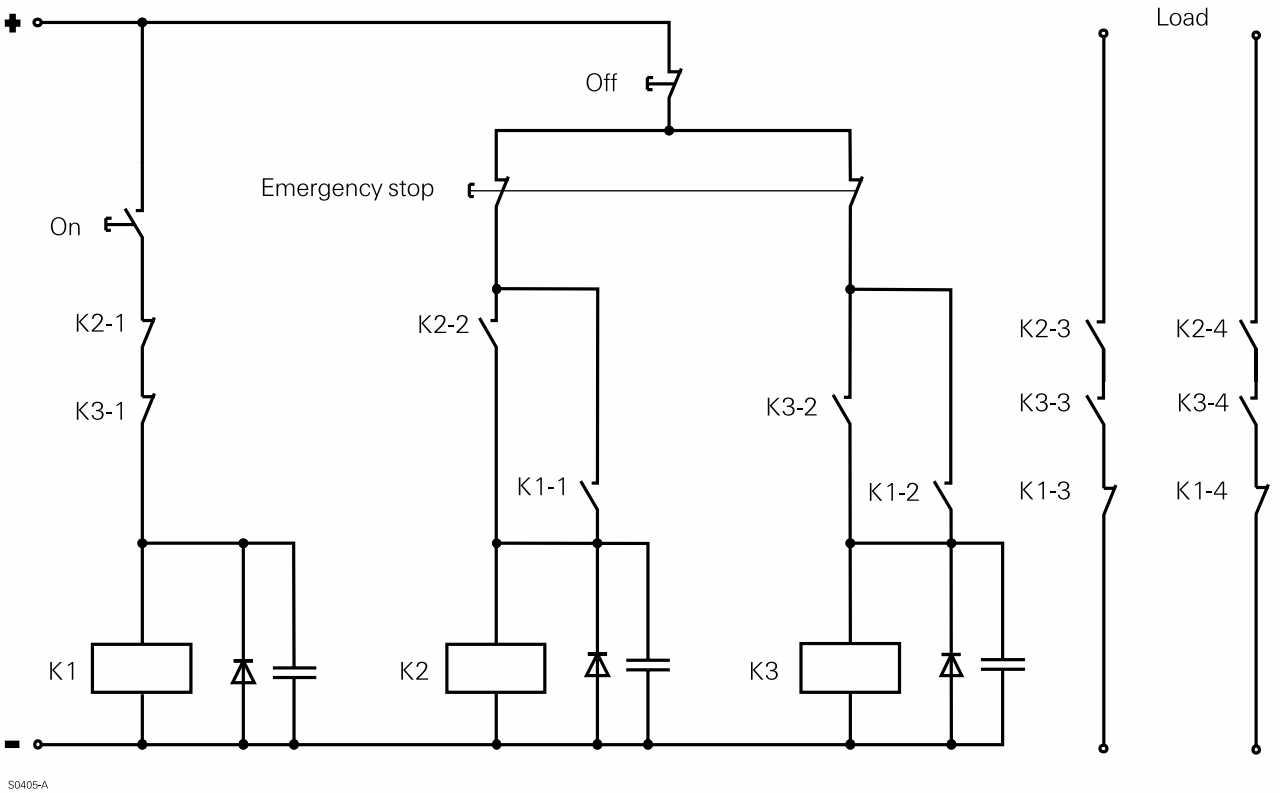
Application Example – Relays with forcibly guided contacts ("safety relays")

The configuration of safety control circuits is basically only possible with specified fault conditions. Safety relays have the characteristic that make and break contacts can never both be closed at the same time.

The following circuit diagram shows an emergency stop control circuit consisting of three 4-pole safety relays.

The first fault to occur
- does not cause the safety function to fail because more components are used than required for the circuit to function (redundancy).
- prevents an restart and can be detected as a result (self monitoring)

Operation
- Closing the "ON" switch causes the K1 relay to be pulled in
- The K2 and K3 relays are energized via the make contacts K1-1 and K1-2 and hold themselves via K2-2 or K3-2
- The break contacts K2-1 and K3-1 cause the drop-out of K1 where the load circuit is released via the break contacts of K1-3 or K1-4.



Fault analysis (examples):

Type of fault	Is there any danger arising from the fault?	Is a restart possible?
Failure of contact K2-3 to open	No, K3-3 opens when the emergency stop switch is actuated	No, K2-1 and K2-3 cannot be closed at the same time (fault excluded by forcibly guidance). "ON" button does not cause K1 to close
Failure of contact K1-3 to open	No, K2-3 and K3-3 open when the emergency stop switch is actuated	No, K1-1 and K1-2 cannot close due to closed K1-3. K2 and K3 are not energized

V23047 series

SR2M "Safety Relay" - PCB, neutral, monostable relay with two forcibly guided contacts.

c UL us File E214024

VDE No. 116064

TUV-Rheinland, No. 945/EZ 116/99

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 1 NO and 1 NC or 2 Form C contacts.
- High insulation spacing for the safe separation of the contact circuits.
- Sealed case.
- Ideal for emergency shut-off, machine control, elevator and escalator control, light barrier control.

Contact Data @ 23°C

Type: Single button contacts, forcibly guided.
Arrangements: 1 NO and 1 NC or 2 Form C.
Material: Silver-nickel alloy.
Max. Continuous Current at Max. Amb. Temp.: 6A, 1 contact loaded.
Max. Switched Current: See Expected Electrical Life chart.
Max. Switched Voltage: 250VDC.
Max. Switched Power: 1,500VA. (See Fig. 1, Limit Curve for DC Power Load).
Max. Switching Rate: 6 operations/min. at rated load.
300 operations/min. at minimum load.
Minimum Load: AgNi: >50mW.
Initial Contact Resistance: AgNi: ≤100 mΩ - 1A/24VDC.
Expected Mechanical Life: 10^7 operations.
Expected Electrical Life:

6A @ 250VAC, Resistive, 100,000 ops. @ 70°C amb. temp.;

10/0.5A @ 110VAC, Inductive, 2,000,000 ops. @ 23°C amb. temp.;

6A/230VAC, 100,000 ops. @ 70°C amb. temp.;

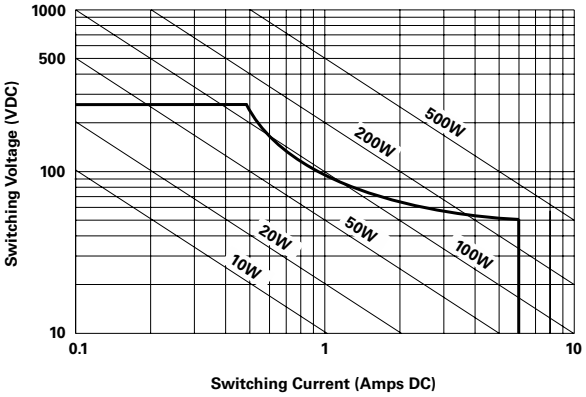
6A/24VDC, $T_{0.95}$ = 300ms, switchcycle 0.1 Hz.,
Standard IEC947-5-1 (DC-13), NO contact loaded;

Standard IEC947-5-1 (AC-15), power factor 0.3; switchcycle 0.1 Hz.,
NO contact: 3A/230VAC, inrush current 30A, 6,050 ops.,
NC contact: 1.5A/230VAC, inrush current 15A, 6,050 ops;

3A/24VDC, $T_{0.95}$ = 300ms, switchcycle 0.33 Hz., Diode (1N4007)
across the inductive load, Standard IEC947-5-1 (DC-13),
NO contact loaded, 1,000,000 ops;

1A/24VDC, $T_{0.95}$ = 144ms, switchcycle 0.33 Hz., Diode (1N4007)
across the inductive load, Standard IEC947-5-1 (DC-13),
NO contact loaded, 1,500,000 ops.

Figure 1 - Limiting Curve for DC Power Load



Initial Dielectric Strength

Between Open Contacts: 1,000V rms.
Between Adjacent Contacts: 4,000V rms.
Between Coil and Contacts: 4,000V rms.

Initial Insulation Resistance

Between Mutually Insulated Elements: 10^6 ohms.

Coil Data @ 23°C

Voltage: 5 to 110VDC.
Nominal Power: 700mW.
Max. Coil Temperature: 105°C.
Duty Cycle: Continuous.

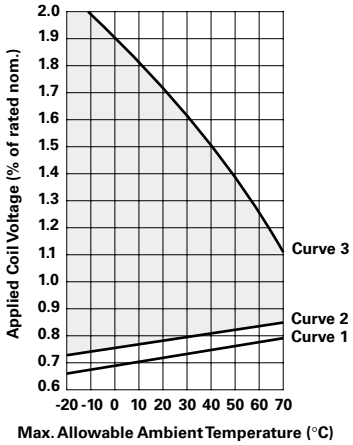
Coil Data @ 23°C

Rated Coil Voltage (VDC)	Coil Resistance (Ohms)	Must Operate Voltage (VDC)	Nominal Coil Current (mA)
5	35.7 ± 3.6	3.75	140
6	51 ± 5.1	4.5	118
9	116 ± 11.6	6.8	78
12	206 ± 20.6	9	60
21	630 ± 63.0	15.8	34
24	823 ± 82.3	18	30
36	1,851 ± 185	27	19.5
48	3,291 ± 494	36	14.6
60	5,142 ± 617	45	11.7
80	9,143 ± 1,097	60	8.8
110	17,285 ± 2,074	83	6.4

Operate Data @ 23°C

Operate Time: 10 ms (excluding bounce).
Release Time (w/o parallel diode, typ.): 4 ms (excluding bounce).
Bounce Time: 10 ms.
Must Release Voltage: 10% of nominal voltage.

Max. Allowed Ambient Temp. vs. Applied Coil Voltage



Operating

Curve 1 - Must operate voltage when the coil is not pre-energized.

Curve 2 - Operate voltage raises due to a pre-energizing with 1.1 x Vnom.

Curve 3 - Maximum allowable voltage.

Release

The must release voltage may fall to ≥ 5% of Vnom during operation life of the relay.

Denotes recommended operation area.

Environmental Data

Temperature Range: -25°C to +70°C.
Solder Bath Temp./Max. Duration: 260°C/5s.

Mechanical Data

Termination: Printed circuit terminals.
Enclosure (94V-0 Flammability Ratings): Sealed plastic case.
Weight: 0.6 oz. (18g).

Ordering Information

Typical Part Number ►	V23047	A1	012	A	5	01

1. Basic Series:
V23047 = SR2M safety relay.

2. Enclosure:
A1 = Sealed.

3. Coil Voltage:
005 = 5VDC 006 = 6VDC 009 = 9VDC 012 = 12VDC 021 = 21VDC 024 = 24VDC
036 = 36VDC 048 = 48VDC 060 = 60VDC 080 = 80VDC 110 = 110VDC

4. Contact Type:
A = Single button, forcibly guided.

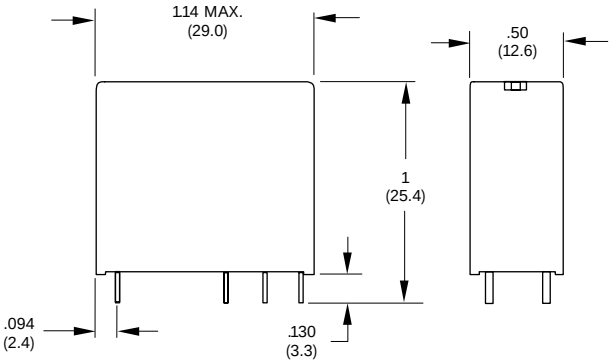
5. Contact Material:
5 = Silver nickel.

6. Contact Arrangement:
01 = 2 Form C.
11 = 1 NO and 1 NC.

Our authorized distributors are more likely to stock the following items for immediate delivery.

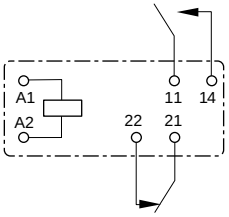
V23047A1012A501
V23047A1012A511

Outline Dimensions

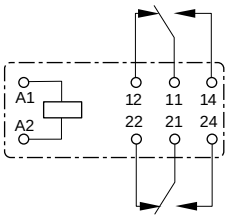


Wiring Diagrams (Bottom Views)

1 NO and 1 NC

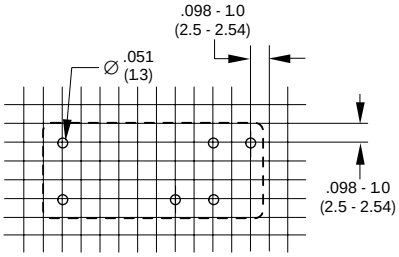


2 Form C

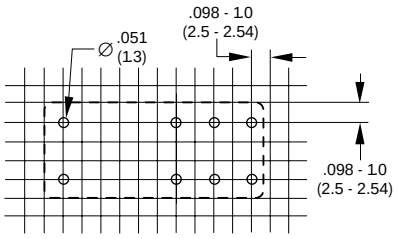


Suggested PC Board Layouts (Bottom Views)

1 NO and 1 NC



2 Form C



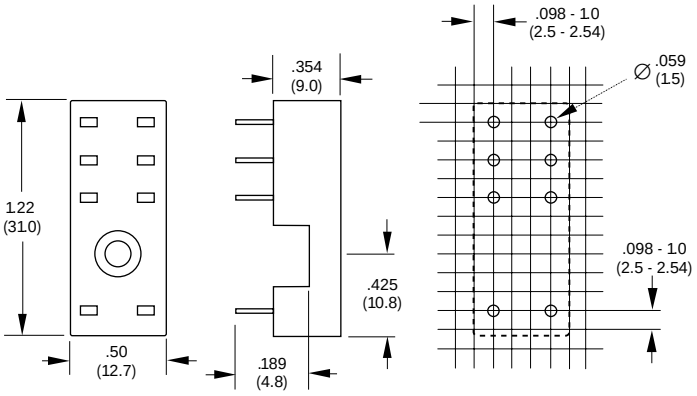
Dimensions are shown for reference purposes only.

Dimensions are in inches over (millimeters) unless otherwise specified.

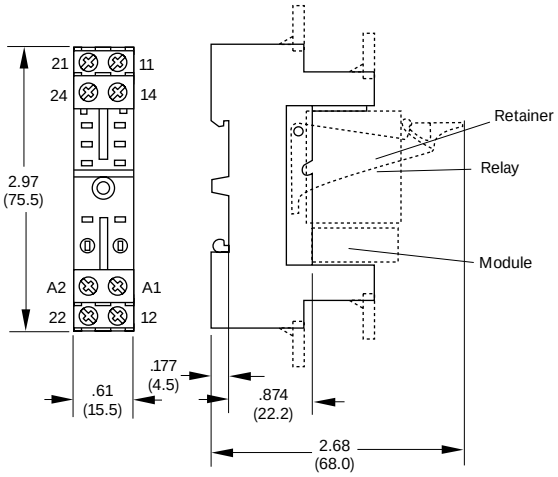
Specifications and availability subject to change.

Sockets for V23047 Series Relays

RP78602
Socket with PCB Terminals

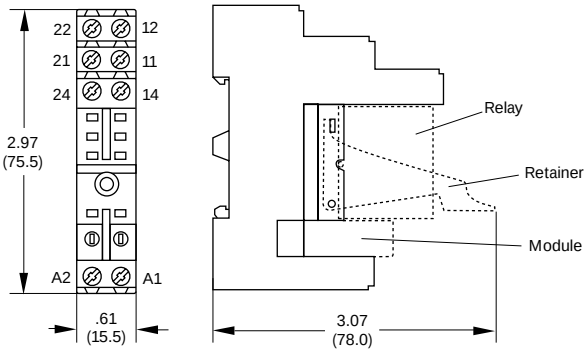


RT78625
DIN Rail Mount Socket with Screw-Type Terminals



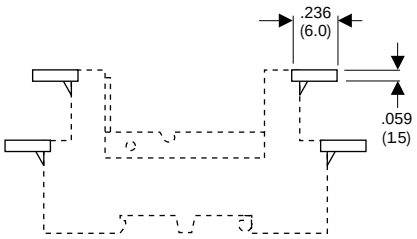
RP16104 Plastic Retaining Clip

RT78626
DIN Rail Mount Socket with Screw-Type Terminals



RP16104 Plastic Retaining Clip

RT16040 Marking Tags



- White
- Marking area .610 (15.5) x .236 (6.0).
- Snaps on socket in up to 4 positions.

Function and Protection Modules

- Easy insertion of module into the socket.
- Wiring in parallel to the coil.

Ordering Code	Type
RT16040	Marking Tags
RPMT00A0	Protection Diode 1N4007*
RPML0024	LED 12 - 24VDC*
RPML0524	LED 12 - 48VDC
RPML0110	LED 110VDC*

* Standard Polarity: A1:+, A2:-

SR4 D/M series

"Safety Relay" with four forcibly guided contacts.

c UL us File E214024

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 2 NO + 2NC or 3NO + 1 NC contacts.
- 4kV/10mm contact-to-coil.
- Compact package.
- Well suited for emergency shut-off, machine control, elevator and escalator control, light barrier control.

Contact Data

Type: Single button contact, forcibly guided.
Arrangements: 2 NO + 2NC or 3NO + 1 NC.
Material: Silver-tin oxide.
Expected Mechanical Life: 10 million operations.
Ratings:
Current: 8A.
Voltage: 250VAC.
Voltage (breaking): 440VAC.
Power (breaking): 2,000VA.
Minimum Contact Load: >50mW.
Initial Contact Resistance: ≤ 100 millohms/1A/24VDC;
≤ 20 millohms/10mA/5VDC.

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms.
Between Coil and Contacts: 4,000Vrms.
Between Contact Sets: 2,500Vrms.
Creepage/Clearance: Contact-to-coil: 10/10mm.
Between Contact Sets: 3/3.5mm.

Initial Insulation Resistance

Between Mutually Insulated Elements: 10^6 ohms.

Operate Data

Must Operate Voltage: See Coil Data table.
Operate Time /Release Time (typical): 12 ms / 20 ms.
Switching Rate: 3,600 ops./hr. max. at rated load.

Coil Data DC @ 20°C

Nominal Coil Power: 800mW.

Nominal Voltage VDC	DC Resistance in Ohms	Must Operate Voltage VDC	Drop-out Voltage VDC	Nominal Coil Current (mA)
5	31 ± 10%	3.8	0.5	161.3
6	45 ± 10%	4.5	0.6	133.3
9	101 ± 10%	6.8	0.9	89.1
12	180 ± 10%	9.0	1.2	66.7
15	281 ± 10%	11.3	1.5	53.4
18	405 ± 10%	13.5	1.8	44.4
21	551 ± 10%	15.8	2.1	38.1
24	720 ± 10%	18.0	2.4	33.3
36	1,620 ± 10%	27.0	3.6	22.2
40	2,000 ± 10%	30.0	4.0	20.0
48	2,880 ± 10%	25.0	4.8	16.7
60	4,500 ± 10%	45.0	6.0	13.3
85	9,031 ± 10%	64.0	8.5	9.4
110	15125 ± 10%	82.5	11.0	7.3

All values are given for coil without preenergization, at 20°C ambient.
At 70°C after preenergization with 1.1 x nominal voltage, the maximum operating voltage is 85% of nominal.
At 70°C maximum coil voltage is 1.1 x nominal.

Environmental Data

Temperature Range: Operating: -20°C to +70°C.
Vibration (10-200 Hz.): NO: 8g; **NC:** 2.5g.

Mechanical Data

Termination: Printed circuit terminals.
Enclosure: Sealed (RTIII) plastic case.
Weight: 0.56 oz. (16 g) approximately.

Ordering Information

Typical Part Number ▶	SR4	D	4	012

1. Basic Series:
SR4 = 4 pole printed circuit board relay with forcibly guided contacts.

2. Contact Configuration:
D = 2 NO + 2 NC contacts M = 3 NO + 1 NC contacts

3. Contact Material:
4 = Silver-tin oxide.

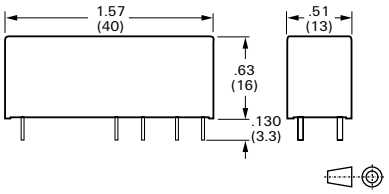
4. Coil Voltage:

005 = 5VDC	009 = 9VDC	015 = 15VDC	021 = 21VDC	036 = 36VDC	048 = 48VDC	085 = 85VDC
006 = 6VDC	012 = 12VDC	018 = 18VDC	024 = 24VDC	040 = 40VDC	060 = 60VDC	110 = 110VDC

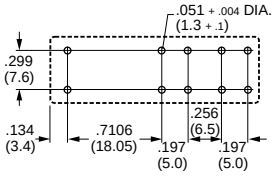
Our authorized distributors are more likely to stock the following items for immediate delivery.

None at present.

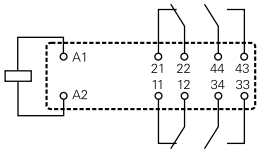
Outline Dimensions



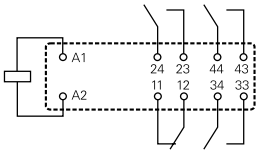
PC Board Layout (Bottom View)



Wiring Diagrams (Bottom Views)



2 NO + 2 NC



3 NO + 1 NC

Dimensions are shown for reference purposes only.
Dimensions are in inches over (millimeters) unless otherwise specified.
Specifications and availability subject to change.
www.tycoelectronics.com
Technical support:
Refer to inside back cover.

SR6 D/M series

"Safety Relay" with four forcibly guided contacts and large spacings, improved isolation

c UL us File E214024

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 2 NO + 2NC or 3NO + 1 NC contacts.
- Large spacings for improved isolation.
- Well suited for emergency shut-off, machine control, elevator and escalator control, light barrier control

Contact Data

Type: Single button contact, forcibly guided.
Arrangements: 2 NO + 2NC or 3NO + 1 NC.
Material: Silver-tin oxide.
Expected Mechanical Life: 10 million operations.
Ratings:
Current: 8A.
Voltage: 250VAC.
Voltage (breaking): 440VAC.
Power (breaking): 2,000VA.
Minimum Contact Load: >50mW.
Initial Contact Resistance: ≤ 100 millohms/1A/24VDC;
≤ 20 millohms/10mA/5VDC.

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms.
Between Coil and Contacts: 3,000Vrms.
Between Contact Sets: 3,000Vrms; 4,000Vrms, in longitudinal direction.
Creepage/Clearance: Contact-to-coil: 5.5/5.5mm.
Between Contact Sets: 5.5/5.5mm; 12/12mm, in longitudinal direction.

Coil Data DC @ 20°C

Nominal Coil Power: 800mW.

Nominal Voltage VDC	DC Resistance in Ohms	Must Operate Voltage VDC	Drop-out Voltage VDC	Nominal Coil Current (mA)
5	21 ± 10%	3.8	0.5	238.1
6	30 ± 10%	4.5	0.6	200.0
9	68 ± 10%	6.8	0.9	132.4
12	120 ± 10%	9.0	1.2	100.0
18	270 ± 10%	13.5	1.8	66.7
21	368 ± 10%	15.8	2.1	57.1
24	480 ± 10%	18.0	2.4	50.0
36	1,080 ± 10%	27.0	3.6	33.3
40	1,333 ± 10%	30.0	4.0	30.0
48	1,920 ± 10%	25.0	4.8	25.0
60	3,000 ± 12%	45.0	6.0	20.0
85	6,021 ± 12%	64.0	8.5	14.1
110	10,080 ± 12%	82.5	11.0	10.9

All values are given for coil without preenergization, at 20°C ambient.
At 70°C after preenergization with 1.1 x nominal voltage, the maximum operating voltage is 85% of nominal.
At 70°C maximum coil voltage is 1.1 x nominal.

Initial Insulation Resistance

Between Mutually Insulated Elements: 10^6 ohms.

Operate Data

Must Operate Voltage: See Coil Data table.
Operate Time /Release Time (typical): 11 ms / 3ms.
Switching Rate: 3,600 ops./hr. max. at rated load.

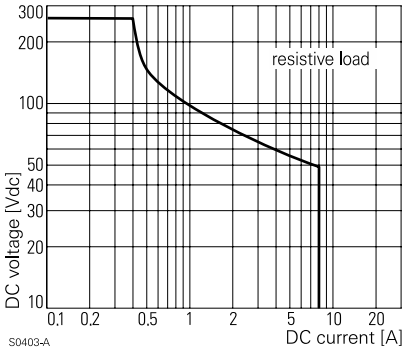
Environmental Data

Temperature Range: Operating: -20°C to +70°C.
Vibration (10-200 Hz.): NO: 8g; **NC:** 5g.
Shock (functional) 16ms, half-sine: NO: 8g; **NC:** 6g.

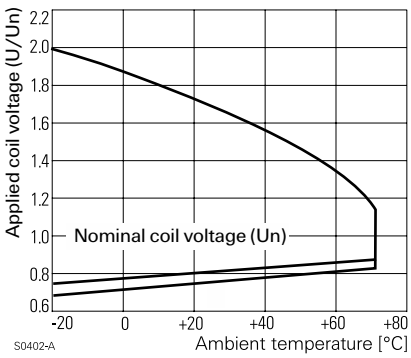
Mechanical Data

Termination: Printed circuit terminals.
Enclosure (94 V-0 rated): Sealed (RTIII) plastic case.
Weight: 1.06 oz. (30 g) approximately.

Max. DC Load Breaking Capacity



Coil Operating Range



Ordering Information

	Typical Part Number ▶	SR6	D	4	012

1. Basic Series:
SR6 = 4 pole printed circuit board relay with forcibly guided contacts, increased spacing.

2. Contact Configuration:
D = 2 NO + 2 NC contacts
M = 3 NO + 1 NC contacts

3. Contact Material:
4 = Silver-tin oxide.

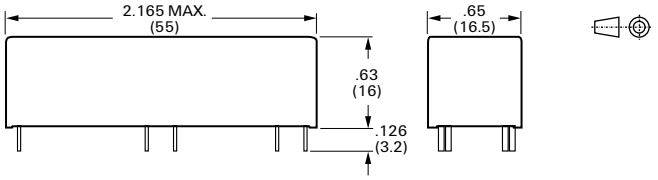
4. Coil Voltage:

005 = 5VDC	009 = 9VDC	018 = 18VDC	024 = 24VDC	040 = 40VDC	060 = 60VDC	110 = 110VDC
006 = 6VDC	012 = 12VDC	021 = 21VDC	036 = 36VDC	048 = 48VDC	085 = 85VDC	

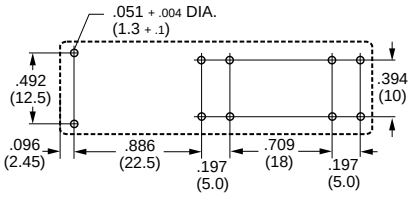
Our authorized distributors are more likely to stock the following items for immediate delivery .

None at present.

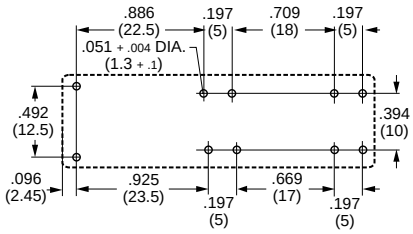
Outline Dimensions



PC Board Layouts (Bottom Views)

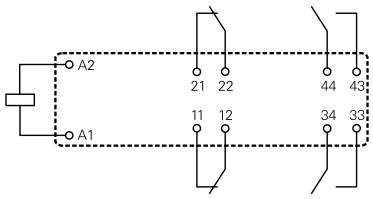


2 NO + 2 NC

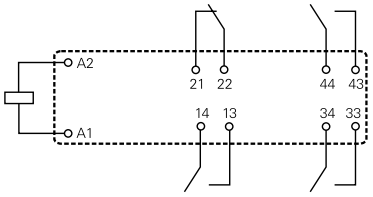


3 NO + 1 NC

Wiring Diagrams (Bottom Views)



2 NO + 2 NC



3 NO + 1 NC

Dimensions are shown for reference purposes only.
Dimensions are in inches over (millimeters) unless otherwise specified.
Specifications and availability subject to change.
www.tycoelectronics.com
Technical support:
Refer to inside back cover.

V23050 series

SR6 "Safety Relay" - PCB, neutral, monostable relay with six forcibly guided contacts.

c UL us File E214024
VDE No. 116064
TUV-Rheinland, No. 945/EZ 116/99

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 4 NO and 2 NC or 3 NO and 3 NC or 5 NO and 1 NC contacts.
- Extremely compact.
- High insulation spacing for the safe separation of the contact circuits.
- Sealed case.
- Ideal for emergency shut-off, machine control, elevator and escalator control, light barrier control.

Contact Data @ 23°C

Type: Single button contacts, forcibly guided.
Arrangements: 3 NO and 3 NC, 4 NO and 2 NC or 5 NO and 1 NC.
Material: Silver nickel alloy.
Max. Continuous Current at Max. Amb. Temp.: 8A, 1 contact loaded.
Max. Switched Voltage: 400VAC/VDC.
Max. Switched Power: 2,000VA.
Max. Switching Rate: 6 operations/min. at rated load.
600 operations/min. at minimum load.
Minimum Load: 50mW.
Initial Contact Resistance: 100 mΩ - 1A/24VDC.
Expected Mechanical Life: 10^7 operations.
Electrical Life: 250VAC, 70°C ambient, 1 NO loaded with 8A and 1 NC loaded with 5A: 75,000 operations.

Initial Dielectric Strength

Between Open Contacts: 1,000VAC rms.
Between Adjacent Contacts: 3,000VAC rms.
Between Coil and Contacts: 3,000VAC rms.

Coil Data @ 23°C

Voltage: 5 to 110VDC.
Nominal Power: 1.2W.
Max. Coil Temperature: 130°C.
Duty Cycle: Continuous.

Coil Data @ 23°C

Rated Coil Voltage (VDC)	Coil Resistance (Ohms)	Must Operate Voltage (VDC)	Nominal Coil Current (mA)
5	21 ± 2	3.75	240
6	30 ± 3	4.5	200
9	68 ± 7	6.8	130
12	120 ± 12	9.0	100
18	270 ± 27	13.5	70
21	370 ± 40	15.8	60
24	480 ± 50	18.0	50
40	1,330 ± 130	30.0	30
60	3,000 ± 300	45.0	20
85	6,020 ± 600	64.0	14
110	10,000 ± 1,000	82.5	11

Operate Data @ 23°C

Minimum Release Voltage: 10% of nominal voltage.
Minimum Operating Voltage @ 70°C: 85% of nominal voltage.

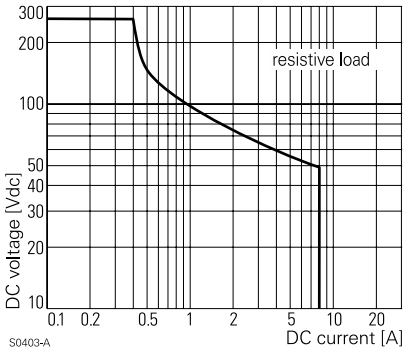
Environmental Data

Temperature Range: -25°C to +70°C.
Solder Bath Temp./Max. Duration: 260°C/5s.

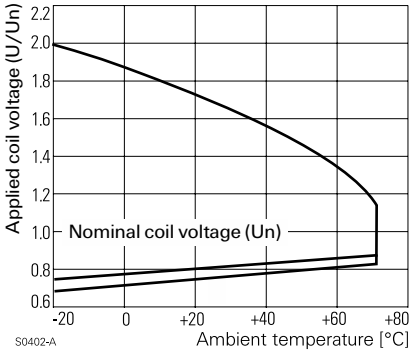
Mechanical Data

Termination: Printed circuit terminals.
Enclosure (UL94V-2 Flammability Ratings): Sealed (RTIII) plastic case.
Weight: 1.01 oz. (30g).

Max. DC Load Breaking Capacity



Coil Operating Range



Ordering Information

Typical Part Number ▶	V23050	A1	012	A	5	33

1. Basic Series:
V23050 = SR6 safety relay.

2. Enclosure:
A1 = Sealed.

3. Coil Voltage:
005 = 5VDC 006 = 6VDC 009= 9VDC 012 = 12VDC 021= 21VDC
024= 24VDC 040 = 40VDC 060= 60VDC 085 = 85VDC 110 = 110VDC

4. Contact Type:
A = Single contact.

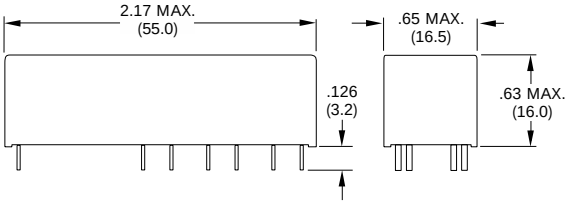
5. Contact Material:
5 = Silver nickel.

6. Contact Arrangement:
33 = 3 NO and 3 NC.
42 = 4 NO and 2 NC.
51 = 5 NO and 1 NC.

Our authorized distributors are more likely to stock the following items for immediate delivery.

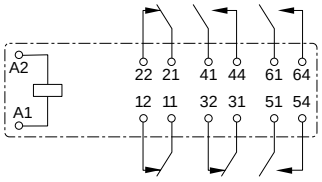
None at present.

Outline Dimensions

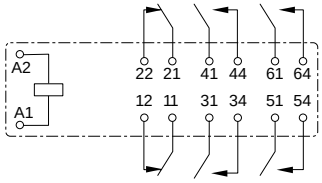


Wiring Diagrams (Bottom Views)

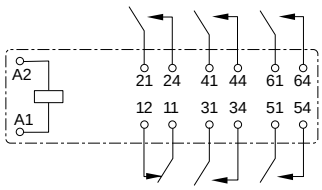
3 NO and 3 NC



4 NO and 2 NC

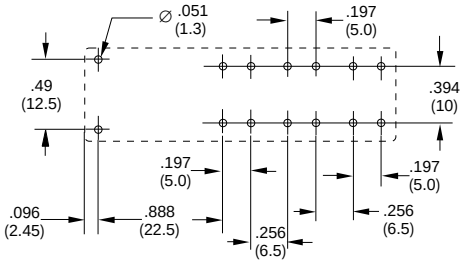


5 NO and 1 NC

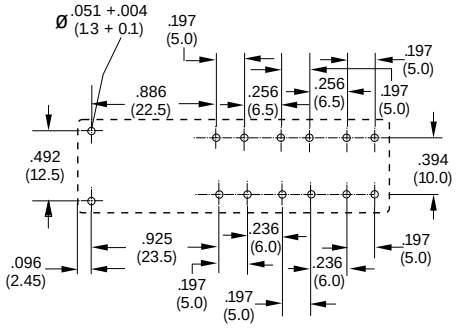


Suggested PC Board Layouts (Bottom Views)

3 NO and 3 NC, 4 NO and 2 NC



5 NO and 1 NC



Dimensions are shown for reference purposes only.

Dimensions are in inches over (millimeters) unless otherwise specified.

Specifications and availability subject to change.

www.tycoelectronics.com
Technical support:
Refer to inside back cover.

SR6 Sensitive series

Sensitive "Safety Relay" with six forcibly guided contacts.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 4 NO + 2NC, 3 NO + 3 NC or 5 NO + 1 NC contacts.
- Polarized, 800mW coil.
- 6 kV surge resistance between poles.
- Well suited for emergency shut-off, machine control, elevator and escalator control, light barrier control

Contact Data

Type: Single button contact, forcibly guided.
Arrangements: 4 NO + 2NC, 3 NO + 3 NC or 5 NO + 1 NC.
Material: Silver-tin oxide.
Expected Mechanical Life: 10 million operations.
Ratings:
Current: 8A.
Voltage: 250VAC.
Voltage (breaking): 440VAC.
Power (breaking): 2,000VA.
Minimum Contact Load: >50mW.
Initial Contact Resistance: ≤ 100 millohms/1A/24VDC;
≤ 20 millohms/10mA/5VDC.

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms.
Between Coil and Contacts: 3,000Vrms.
Between Contact Sets: 3,000Vrms.
Creepage/Clearance: **Contact-to-coil:** 5.5/5.5mm.
Between Contact Sets: 5.5/5.5mm.

Coil Data DC @ 20°C

Nominal Coil Power: 800mW.

Nominal Voltage VDC	DC Resistance in Ohms	Must Operate Voltage VDC	Drop-out Voltage VDC	Nominal Coil Current (mA)
5	31 ± 10%	3.8	0.5	161.3
6	45 ± 10%	4.5	0.6	133.3
9	101 ± 10%	6.8	0.9	89.1
12	180 ± 10%	9.0	1.2	66.7
15	281 ± 10%	11.3	1.5	53.4
18	405 ± 10%	13.5	1.8	44.4
21	551 ± 10%	15.8	2.1	38.1
24	720 ± 10%	18.0	2.4	33.3
36	1,620 ± 10%	27.0	3.6	22.2
40	2,000 ± 10%	30.0	4.0	20.0
48	2,880 ± 10%	25.0	4.8	16.7

All values are given for coil without preenergization, at 20°C ambient.
At 70°C after preenergization with 1.1 x nominal voltage, the maximum operating voltage is 85% of nominal.
At 70°C maximum coil voltage is 1.1 x nominal.

Initial Insulation Resistance

Between Mutually Insulated Elements: 10^6 ohms.

Operate Data

Must Operate Voltage: See Coil Data table.
Operate Time /Release Time (typical): 11 ms / 3ms.
Switching Rate: 3,600 ops./hr. max. at rated load.

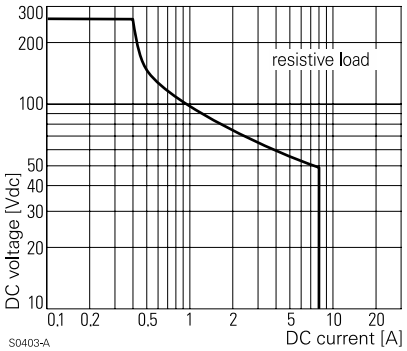
Environmental Data

Temperature Range: Operating: -20°C to +70°C.
Vibration (10-200 Hz.): NO: 8g; **NC:** 5g.
Shock (functional) 16ms, half-sine: NO: 8g; **NC:** 6g.

Mechanical Data

Termination: Printed circuit terminals.
Enclosure (94 V-0 rated): Sealed (RTIII) plastic case.
Weight: 1.06 oz. (30 g) approximately.

Max. DC Load Breaking Capacity



Ordering Information

Typical Part Number ▶	**SR6**	**A**	**4**	**S**	**012**	

1. Basic Series:
SR6 = 6 pole printed circuit board relay with forcibly guided contacts.

2. Contact Configuration:
A = 3 NO + 3 NC contacts B = 4 NO + 2 NC contacts C = 5 NO + 1 NC contacts

3. Contact Material:
4 = Silver-tin oxide.

3. Coil Type:
S = Sensitive coil.

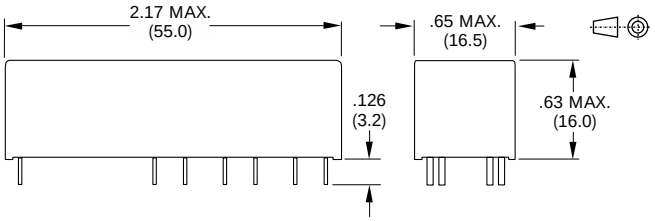
5. Coil Voltage:

005 = 5VDC	009 = 9VDC	018 = 18VDC	024 = 24VDC	040 = 40VDC	060 = 60VDC	110 = 110VDC
006 = 6VDC	012 = 12VDC	021 = 21VDC	036 = 36VDC	048 = 48VDC	085 = 85VDC	

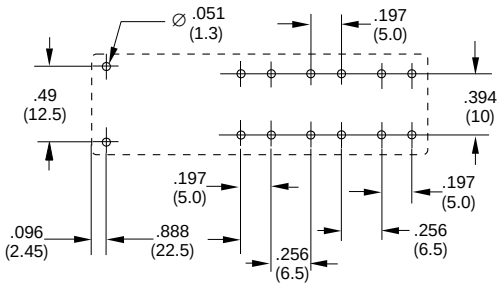
Our authorized distributors are more likely to stock the following items for immediate delivery.

None at present.

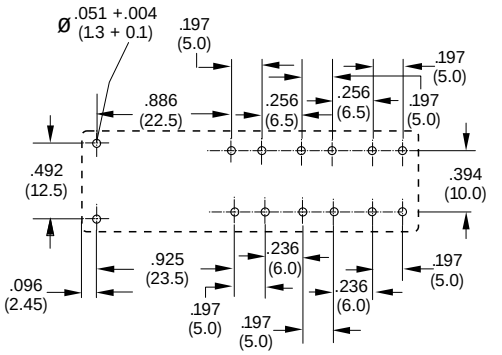
Outline Dimensions



PC Board Layouts (Bottom Views)

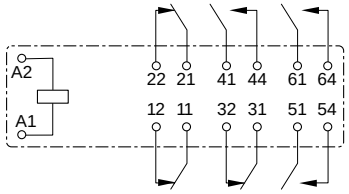


3 NO + 3 NC and 4 NO + 2 NC

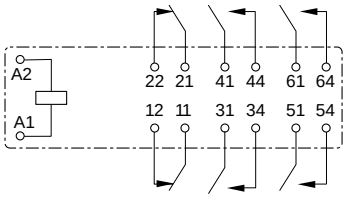


5 NO + 1 NC

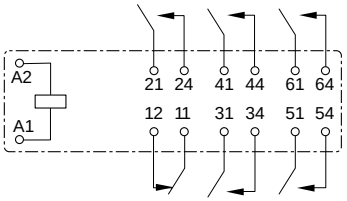
Wiring Diagrams (Bottom Views)



3 NO + 3 NC

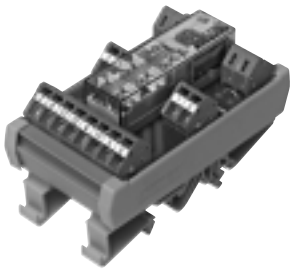


4 NO + 2 NC



5 NO + 1 NC

Dimensions are shown for reference purposes only.
Dimensions are in inches over (millimeters) unless otherwise specified.
Specifications and availability subject to change.
www.tycoelectronics.com
Technical support:
Refer to inside back cover.



SR6 Z series

6-pole "Safety Relay" on DIN-rail module.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- 6-pole SR6 relay mounted to PC board on DIN-rail module.
- AC/DC input.
- Spring connectors.
- Module is 1.81 in (46mm) wide.
- Well suited for emergency shut-off, machine control, elevator and escalator control, light barrier control

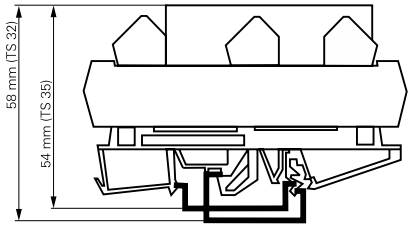
Contact Data

Type: Single button contact, forcibly guided.
Arrangements: 4 NO + 2NC, 3 NO + 3 NC or 5 NO + 1 NC.
Material: Silver-tin oxide.
Expected Mechanical Life: 10 million operations.
Ratings:
Current: 8A.
Voltage: 250VAC.
Voltage (breaking): 440VAC.
Power (breaking): 2,000VA.
Minimum Contact Load: >50mW.
Initial Contact Resistance: ≤ 100 millohms/1A/24VDC;
≤ 20 millohms/10mA/5VDC.

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms.
Between Coil and Contacts: 3,000Vrms.
Between Contact Sets: 2,000Vrms.
Creepage/Clearance: **Contact-to-coil:** 5.5/5.5mm.
Between Contact Sets: 3/3mm.

Outline Dimensions



Module width: 1.81 in (46 mm).
Module length: 3.42 in (87 mm).
Mounted height: 2.12 - 2.28 in. (54 - 58 mm) depending upon DIN rail.

Module fits mounting rails per DIN EN 50022 or DIN EN 50035.

Coil Data DC @ 20°C

Nominal DC Voltage: 24VDC.
Nominal AC/DC Voltage: 24, 115VAC/VDC.
Nominal AC Voltage: 230VAC.
Minimum Operating Voltage: 90% of nominal.
Minimum Release Voltage: ≤10% of nominal.
Maximum Operating Voltage: 110% of nominal.
Input Circuit: Bridge rectifier, series resistor.

Operate Data

Switching Rate: 3,600 ops./hr. max. at rated load.

Environmental Data

Temperature Range: Operating: -20°C to +50°C.

Mechanical Data

Termination: Spring clamp connections.
Acceptable Wire Sizes: 14 - 18 AWG..
Weight: 3.17 oz. (90 g) approximately.

Ordering Information

Typical Part Number ▶	SR6Z	A	024

1. Basic Series:
SR6Z = 6 pole relay with forcibly guided contacts on DIN-rail module.

2. Contact Configuration:
A = 3 NO + 3 NC contacts
B = 4 NO + 2 NC contacts
C = 5 NO + 1 NC contacts

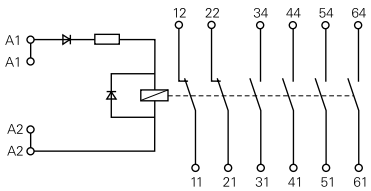
5. Coil Voltage:

024 = 24VDC	524 = 24VAC/VDC
615 = 115VAC/VDC	730 = 230VAC

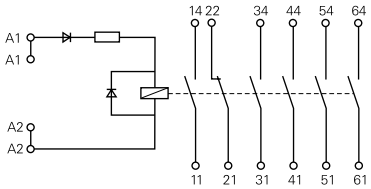
Distributors are more likely to stock the following items.

None at present.

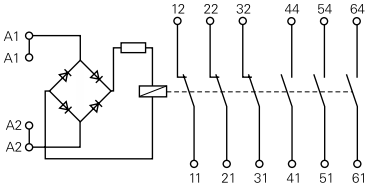
Wiring Diagrams (Bottom Views)



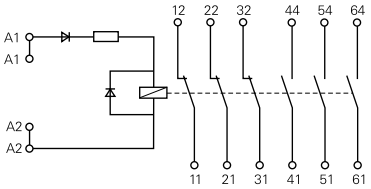
DC Module, 4 NO + 2 NC



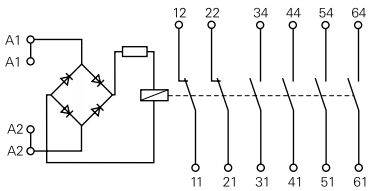
DC Module, 5 NO + 1 NC



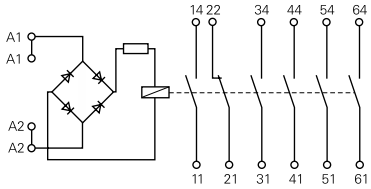
AC/DC Module, 3 NO + 3 NC



DC Module, 3 NO + 3 NC



AC/DC Module, 4 NO + 2 NC



AC/DC Module, 5 NO + 1 NC

Engineering Notes

Dimensions are shown for reference purposes only.

Dimensions are in inches over (millimeters) unless otherwise specified.

Specifications and availability subject to change.