



SC relay - Latching, 8 contacts Datasheet



Description

The SC is a latching relay with 2 stable magnetically latched states. When 1 coil is energized, the relay actuates from magnetically latched position 1 to 2. When the other coil is energized, the relay actuates back from magnetically latched position 2 to 1. Relays have 8 double break contacts with different configurations.

The plug-in design offers secure locking feature for maximum ease of maintenance (no wires need to be disconnected or other hardware removed for relay inspection or replacement). The resistance to impact and vibration is conform to standards in force for Railway Transported Equipment.

Positive mechanical keying of relay to socket is built into relay and socket during manufacture and terminal identifications are clearly marked on identification plate that is permanently attached to the relay.

The SC relay is pluggable in the COR NJ socket.

Application

The SC latching relay allows the memory of the state of the circuit in case of power interruption.







Features

- Latching relay using 2 separate coils and magnetic rocker mechanism
- Double break in all N/O and N/C combinations
- Plug-in design with secure locking feature for maximum ease of maintenance
- Weld no transfer safety contacts standard
- Contact life (mechanical) of 50 million cycles
- -40 °C...+80 °C operating temperature

Benefits

- Proven reliable
- Long life cycle
- Easy to maintain and replace
- Low life cycle cost
- No maintenance

Railway compliancy

- N FF 62-002 Rolling stock -Instantaneous relays contacts and sockets
- NF F 16-101/102 Fire behaviour -Railway rolling stock



Functional and connection diagrams



Connection diagram







Schematic #1 and #2 operation 8 Contacts Type:

To operate this relay, it is recommended that the coil be actuated with a pulse of 100 ms min. duration. Assuming that before any voltage is applied to either coil all contacts are in position as shown in schematic (trip), operation is as follows: When a signal is applied to terminals AO BO, the relay actuates

and magnetically latches all contacts to the "set" position. A subsequent signal applied to terminals A4 B4 actuates the relay contacts from their magnetically latched "trip" position back to their former magnetically latched "set" position. Note: A pulse of 100 ms min. duration is required to operate the

relay and that only one coil can be energizedat a time

Schematic #3 operation 6 + 2 Contacts Type:

socket.

This relay is designed for actuation of the coil with a permanent voltage. After connecting the negative terminal of the power supply to terminals A3 and C0 assuming that before any voltage is applied to either coil, all contacts are in the "trip" position, operation is as follows

When a positive signal from the power supply is applied to terminal A0, the relay actuates and magnetically latches all contacts to the "set" position. During this actuation, as contact C0 D0 opens and A3 B3 closes, the power supply is effectively diconnected at positive terminal D0 and a new connection is made at terminal A4 so that the power to the relay coil lasts only while C0 D0 is ON. A subsequent positive signal applied at terminal A4 actuates the relay contacts from their magnetically latched "set" position A4 back to their formar magnetically latched "trip" position. Note: Customer must make dotted connections shown external to

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DS-SC relay V2.0 May 2017



Coil data

Unom	Uoperating	Pnom	R coil (Ω) ⁽¹⁾	L/R (ms) ⁽²⁾
24 VDC	18 / 33 VDC	4-5 W	135	30 ms
72 VDC	50 / 90 VDC	4-5 W	1500	30 ms
110 VDC	77 / 138 VDC	4-5 W	3000	30 ms

(1) Coil resistance tol.: ± 8% at 20 °C

(2) Valid for closed relay.

Contact data

8 A resistive			
2.4 A at 72 VDC	L/R : 0 ms	Electrical life: 5x10 ⁶ op.	
0.8 A at 72 VDC	L/R: 30 ms	Electrical life: 2x10 ⁶ op.	
2.4 A at 220 VAC 50 Hz	cosØ=1	Electrical life: 5x10 ⁶ op.	
Lamp filament circuit: 160 W at	: 72 VDC	Electrical life: 5x10 ⁵ op.	
For schematic 3 (page 2), must be limited to 15 W			
At 24 VDC: 160 A at $L/R = 0$ for 10 ms, (10 operations at the rate of 1			
operation per minute)			
Pick-up time N/O < 45 ms	Drop-out	t* time N/C < 45ms	
20 mA at 24 VDC			
Double make / double break contacts (form X and Y)			
Hard silver overlay laminated to copper			
$10 \text{ m}\Omega$ max at 5 A			
$30 \text{ m}\Omega$ max at 5 A			
	8 A resistive 2.4 A at 72 VDC 0.8 A at 72 VDC 2.4 A at 220 VAC 50 Hz Lamp filament circuit: 160 W at For schematic 3 (page 2), must b At 24 VDC: 160 A at L/R = 0 for operation per minute) Pick-up time N/O < 45 ms 20 mA at 24 VDC Double make / double break con Hard silver overlay laminated to 10 m Ω max at 5 A 30 m Ω max at 5 A	8 A resistive 2.4 A at 72 VDC L/R : 0 ms 0.8 A at 72 VDC L/R : 30 ms 2.4 A at 220 VAC 50 Hz $\cos 0 = 1$ Lamp filament circuit: 160 W at 72 VDC For schematic 3 (page 2), must be limited to 15 V At 24 VDC: 160 A at L/R = 0 for 10 ms, (10 option operation per minute) Pick-up time N/O < 45 ms Drop-out 20 mA at 24 VDC Double make / double break contacts (form X ar Hard silver overlay laminated to copper 10 m Ω max at 5 A 30 m Ω max at 5 A	

Values without transil

Electrical characteristics

Dielectric strength	2550 VAC, 1 min between contacts, coil and frame
Dielectric strength for open contact	1940 VAC / 50 Hz
Insulation resistance	\geq 1000 M Ω at 500 VDC







Environmental characteristics

Vibration	NF F 62-002 The tests are conducted in the X, Y , Z planes at frequency between 5 & 50 cycles (sinusoidal) at 1 g
Shock	NF F 62-002 Tests are applied in both directions in the X, Y & Z planes. Then successive shocks are administered consisting of the positive component of sinusoidal with a value of 15 g, 18 ms Other vibration and shock tests can be performed on request
Mechanical life	$> 50 \text{ x } 10^6 \text{ operations}$
Weight	500 g (17.6 ounces)
Temperature	-40 °C+80 °C
Humidity	93% RH, 40° C for 4 days
Salt mist	5% NaCl, 35° C for 4 days
Protection	IP40 (relay on socket)
Fire & smoke	Materials: Polycarbonate resin (cover) / phenolic compound (base) Note: These materials have been tested for fire propagation and smoke emission according standards NF F 16-101, NF F 16-102, and have been approved for use on the English/French train channel shuttle.









Dimensions (mm)









Dynamic relay selection curve No 1

AC Current breaking capacity versus life expectancy in millions of cycles. Rate of contacts opening and closing = 1200 operations per hour. Curves shown for resistive load (Power Factor = 1).

Curve	1	2	3	4
VAC	220	125	48	24









Dynamic relay selection curve No 2

DC Current breaking capacity versus life expectancy in millions of cycles. Rate of contacts opening and closing = 1200 operations per hour. Curves shown for inductive load:

L/R= 20 ms continuous current ---- L/R= 40 ms continuous current

Curves	1-3	2-4	5-7	6-8
VDC	220	125	48	24







Dynamic relay selection curve No 3

DC Current breaking capacity versus life expectancy in millions of cycles. Rate of contacts opening and closing = 1200 operations per hour. Curves shown for resistive load (L/R = 0). Continuous current.











Dynamic relay selection curve No 4

Maximum contact breaking capacity versus voltage for a given L/R. Rate of contacts opening and closing = 600 operations per hour. Curves shown for resistive load (L/R=0) and inductive loads. Continuous current. Curve 1 2 3 4 5 6 L/R= 15ms 0ms 20ms 40ms 60ms 100ms 280 270 260 250 240 230 220 210 200 190 180 170 160 Volts 150 (1)140 130 $(\mathbf{2})$ 120 3 110 100 (4 90 80 70 (5) 60 50 40 30 (6) 20 10 0 7,5 0,75 1,5 2,25 3 3,75 4,5 5,25 6 6,75 8,25 9 9,75



Dynamic relay selection curve No 5









SC relay Mounting possiblities



COR NJ

Panel mounting

153879	COR NJ X*	Socket (Alkyde compound) with locking spring

* X indicates keying code from relay table





SC relay Instructions

Installation

Install socket and connect wiring correctly according identification to terminals. Plug relay into socket. Reverse installation into socket not possible due to mechanical blocking by snap-lock. Don't reverse polarity of coil connection. Relays can be mounted tightly next to each other. This relay must be mounted horizontal with the identification label on top (see diagram page 4). **Warning!** Never use silicon near by relays

Operation

Before operating always apply voltage to coil to check correct operation.

Long term storage may corrode the silver on the relay pins. Just by plugging the relay into the socket, the female bifurcated receivers will automatically clean the corrosion on the pins and guarantee a good connection. Do not use the relay in places with flammable gas as the arc generated from switching could ignite gasses.

Maintenance

Correct operation of relay can easily be checked as transparent cover gives good visibility on the moving contacts. When the relay doesn't seem to operate correct, please check presence of coil voltage. Use a multimeter. If coil voltage is present, but the relay doesn't work, a short circuit of suppression diode is possible (The coil connection was reversed). If relay doesn't work after inspection, please replace relay unit by a similar model. Send defective relay back to manufacturer. Normal wear and tear excluded.







SC relay Ordering scheme

Configuration: SC 035 24 111E S 1. Relay model 2. Basic part number 3. Coil OVP

This example represents a SC 035 24 111E S.

Description: SC relay, contact configuration 3 N/C + 5 N/O, Unom 24 VDC, keying 111E, transil coil protection,

1. Relay model

SC

2. Relay basic part number*

044 110 5G	4 N/C + 4 N/O	110 VDC	Sch.#1
035 24 111E	3 N/C + 5 N/O	24 VDC	Sch.#2
035 72 2D	3 N/C + 5 N/O	72 VDC	Sch.#2
033 72 67	3 N/C + 3 N/O	72 VDC	Sch.#3
033 110 7F	3 N/C + 3 N/O	110 VDC	Sch.#3

3. Coil overvoltage protection

_	No coil protection
S	Transil coil protection

* Description part number















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