

CS8 Industrial Control Relays

The miniature relay system with big advantages



CS8 front mount auxiliaries are positive guidance

Despite increasing complexity, control systems and installations must become increasingly compact. And the CS8 Miniature Relay System packs maximum performance into minimum space.

Small but rugged

Sprecher + Schuh has subjected this relay series to monitored endurance tests that demonstrate their ruggedness. Under normal duty, CS8 contacts have an electrical life of 700,000 operations, while the AC magnet system has a mechanical life of 15,000,000 operations.

The coil is designed for absolute undervoltage reliability. Undervoltages that do not cause the contactor to close can be withstood indefinitely without damage.

The body of the device is sturdy as well. The front housing, containing the phase partitions and screwdriver guides, is manufactured in one piece. Front and rear housing are then joint fitted together.

Superior Contact Reliability

The standard CS8 base relay and auxiliary contacts are bifurcated H-bridge design which divides each movable contact into two sections at the tip of the spanner which provides a higher degree of reliability for low signal applications. Perfect fit for PLC and other electronic circuits operate at signals as low as 15V @ 2mA.

Mechanically linked contacts for safety

The CS8 control relay are the perfect choice for fail-safe control circuits to meet mechanically linked performance per IEC 60947-4-1. Mechanically linked is an interlock contact design that maintains minimum 0.5mm clearance which prevents the NC contact from reclosing if the NO contact is welded when in operation. This feature applies to CS8 base relays with AC & DC coils; base relays and add-on auxiliaries for DC coils only.



Accessories require no additional panel space

The entire CS8 system is logically engineered. Auxiliary contact blocks are modular and snap-on without increasing the CS8's original width of 45mm. Also, due to its sideways switching movement, the basic relay has the same low profile whether an AC or DC operating magnet is used. This permits the use of enclosures with shallow mounting depths. Once the CS8 is installed, all auxiliary contact blocks can be snapped on or removed without changing any existing wiring.

Auxiliary components provide flexibility


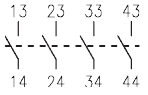
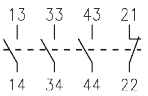
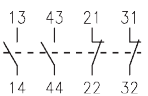
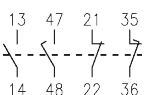
CS8 auxiliary components allow you to convert the basic four pole relay up to an 8 pole relay.

Effortless installation

CS8 relays are DIN-rail mountable for instant installation and modification. Fittings are also included for base mounting. All terminals are clearly marked and shipped in the open position for installation with either manual or power screwdrivers. Using self-adhesive labels, or plastic clip-on tags.

The entire line is cULus Listed and CE Certified and offers finger and back of hand protection to the strictest international standards.

CS8 Complete Assemblies - 4 Pole

| CS8 Relay | Contact Arrangement and Numbering | Contacts | | AC Operation | | DC Operation | |
|---|---|-----------|-----------|----------------|--|----------------|--|
| | | NO | NC | Catalog Number | | Catalog Number | |
|  |  | 4 | 0 | CS8-40E-* | | CS8C-40E-* | |
| |  | 3 | 1 | CS8-31Z-* | | CS8C-31Z-* | |
| |  | 2 | 2 | CS8-22Z-* | | CS8C-22Z-* | |
| |  | 1+ 1EM | 1+ 1LB | CS8-L22Z-* | | CS8C-L22Z-* | |

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Contact Ratings (Per UL508/NEMA B600 & Q600) ③

| Standard | Circuit Voltage | Make (Amps/VA) | Break (Amps/VA) | Continuous Amps |
|----------|-----------------|----------------|-----------------|-----------------|
| B600 | 120AC | 30A/3600VA | 3.0A/360VA | 10 |
| | 240AC | 15A/3600VA | 1.5A/360VA | |
| | 480AC | 7.5A/3600VA | 0.75A/360VA | |
| | 600AC | 6A/3600VA | 0.60A/360VA | |
| Q600 | 125DC | 0.55A/69VA | 0.55A/69VA | 2.5 |
| | 250DC | 0.27A/69VA | 0.27A/69VA | |
| | 301-600DC | 0.1A/69VA | 0.1A/69VA | |

Mechanical Link

- Base relay meets IEC 60947-5-1.
See page G20 for additional information.

AC Coil Codes ①

| AC Coil Code | Voltage Range | |
|--------------|-------------------|-----------|
| | 50 Hz | 60 Hz |
| 12 | 12V | 12V |
| 24Z | 24V | 24V |
| 48Z | 48V | 48V |
| 120 | 110V | 120V |
| 208 | 200V-220V | 208V-220V |
| 240 | 240V | 240V |
| 380 ④ | Use Coil Code 400 | |
| 400 ④ | 400V | 400V |
| 480 | 440V | 480V |
| 575 ⑤ | Use Coil Code 600 | |
| 600 ⑤ | 525V | 600V |

DC Coil Codes ①

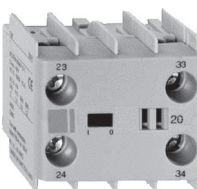
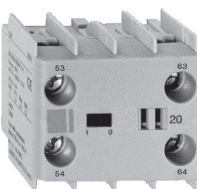

| DC Coil Code | Voltage |
|--------------|---------|
| 12D | 12V |
| 24D | 24V ② |
| 110D | 110V |
| 125D | 125V |
| 220D | 220V |

Ordering Instructions

| | |
|----------------------------|-----------------------------|
| Specify Catalog Number | |
| Replace (*) with Coil Code | See Coil Codes on this page |

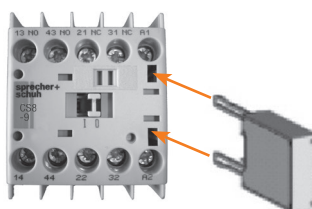
- ① The coil codes shown are for the most commonly stocked items. Contact your Sprecher + Schuh representative to determine if other voltages are on-hand or can be specially ordered in quantity.
- ② Integrated diode surge suppressor coils available. Order coil code **24DD**. For example CS8C-22Z-**24D** becomes CS8C-22Z-**24DD**. Add \$42 to list price.
- ③ Contacts are bifurcated (H-bridge) with a minimum current rating of 2mA @ 15V.
- ④ The European Community has agreed that 400V is the nominal voltage in lieu of 380V. Use this code when 380V is required.
- ⑤ Use this code for 575V applications.

Auxiliary Contact Blocks (2 & 4 Pole) ①③

| Auxiliary Contact Blocks | NO | NC | Contact Arrangement | Catalog Number | | Auxiliary Contact Blocks | NO | NC | Contact Arrangement | Catalog Number | |
|--|----|----|---------------------|----------------|--------------|---|----|----|---------------------|----------------|--------------|
|  <p>2-Pole</p> <p>Typical auxiliary contact block</p> | 1 | 1 | | CA8-P11 | See page A21 |  <p>2-Pole</p> <p>Typical auxiliary contact block</p> | 1 | 1 | | CS8-P11E | See page A21 |
| | 0 | 2 | | CA8-P02 | | | 0 | 2 | | CS8-P02E | |
| | 2 | 0 | | CA8-P20 | | | 2 | 0 | | CS8-P20E | |
| | 2 | 2 | | CA8-P22 | | | 2 | 2 | | CS8-P22Z | |
| | 3 | 1 | | CA8-P31 | | | 3 | 1 | | CS8-P31Z | |
|  <p>4-Pole</p> | 1 | 3 | | CA8-P13 | | 1 | 3 | | CS8-P13E | | |
| | 0 | 4 | | CA8-P04 | | 0 | 4 | | CS8-P04E | | |
| | 4 | 0 | | CA8-P40 | | 4 | 0 | | CS8-P40E | | |

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Miscellaneous Accessories

| Accessory | Description | Catalog Number | |
|---|---|--|--------------|
|  | Surge Suppressor CR_8 - for limiting voltage spikes when switching off coil. Coil itself provides sufficient limitation at voltages over 240V. | | See page A22 |
| | RC Link (Type CRC8...) for AC Control 24-48VAC 110-280VAC 380-480VAC | CRC8-50 CRC8-280 CRC8-480 | |
| | Diode Link (Type CRD8...) for DC Control ② 12-250VDC (diode) | CRD8-250 | |
| | Varistor Link (Type CRV8...) for AC/DC Control 12-55VAC/12-77VDC 56-136VAC/78-180VDC 137-277VAC/181-250VDC | CRV8-55 CRV8-136 CRV8-277 | |

① Auxiliary contact ratings per UL 508/NEMA (B600/Q600). Contacts are bifurcated (H-bridge) with a minimum current rating of 15V@2mA.

② CS8 relays with 24 VDC coils can be special ordered with integrated diodes (built-in) rather than applying CRD8 to the coil terminals.

③ Base relay with add-on auxiliaries meet mechanically linked IEC 60947-5-1 for CS8 DC coil versions only. See page G20 for additional information.

Technical Information

| | | | CS8 | Auxiliary Contacts |
|---|--------------------|------|---------------------|---------------------|
| | | | B600, Q600 | B600, Q600 |
| Electrical | | | | |
| Contact Ratings — NEMA | | | | |
| Contact Ratings — IEC | | | | |
| AC-15 (solenoids, contactors) | 24...120V | [A] | 3 | 3 |
| at rated voltage | 230...240V | [A] | 2 | 2 |
| IEC 947, EN 60947 | 400V | [A] | 1.2 | 1.2 |
| NEMA B600 | 480...500V | [A] | 1 | 1 |
| | 600...690V | [A] | 0.6 | 0.6 |
| AC-12 (Rated thermal current) | | | | |
| Ambient Temperature 40°C | I_{th} 24...690V | [A] | 10 | 10 |
| Ambient Temperature 60°C | I_{th} 24...240V | [A] | 6 | 6 |
| Low Level Signal Switching | | | | |
| Contact design | | | H-bridge bifurcated | H-bridge bifurcated |
| Minimum switching recommendation | | | 15V 2mA | 15V 2mA |
| Short Circuit Protection | | | | |
| Coordination Type 2 acc. IEC 947-5-1 | Fuse gG | [A] | 10 | 10 |
| Switching DC-13 (Q600) | | | | |
| 1 pole | 24V | [A] | 2.3 | 2.3 |
| | 48V | [A] | 1 | 1 |
| | 110V | [A] | 0.55 | 0.55 |
| | 125V | [A] | 0.55 | 0.55 |
| | 220V | [A] | 0.27 | 0.27 |
| | 250V | [A] | 0.27 | 0.27 |
| | 400V | [A] | 0.15 | 0.15 |
| | 440V | [A] | 0.15 | 0.15 |
| | 600V | [A] | 0.1 | 0.1 |
| Load Carrying Capacity according to UL/CSA | | | | |
| Rated voltage | AC | [V] | max. 600 | max. 600 |
| | DC | [V] | max. 600 | max. 600 |
| Continuous rating (40°C) | AC | [A] | 10 | 10 |
| Switching Capacity | AC | [A] | B600 | B600 |
| | DC | [A] | Q600 | Q600 |
| Continuous rating (general purpose) | 300V | [V] | 5 | 5 |
| | 600V | [V] | 10 | 10 |
| Resistance and Power Dissipation | | | | |
| Main current circuit resistance, 1 pole | | [mΩ] | 6.5 | 6.5 |
| Power dissipation I_{th} , 4 poles | | [W] | 2.6 | 2.6 |
| Total Power dissipation | | | | |
| I_{th} | AC control, warm | [W] | 4.4 | 4.4 |
| | DC control, warm | [W] | 5.2 | 5.2 |

Mechanically Linked Contacts and Mirror Contact Performance





| Type | Coil | Add-on Auxiliary Contact | Conforms to IEC | Status |
|------|----------|--------------------------|-----------------|--|
| CS8 | AC or DC | None | 60947-5-1 | Mechanically linked within the base relay |
| | DC | Yes | 60947-5-1 | Mechanically linked within the base relay and with add-on auxiliary contacts |
| | AC | Yes | ~ | Mechanically linked within the base relay only |

Definitions

- Mechanically linked contacts (IEC 60947-5-1 Annex L):
- N.C. Auxiliary Contact will not re-close if a N.O. power pole welds.
- N.O. Power Pole or Auxiliary Contact will not close if N.C. contact welds.
- The term "Positive Guided" contacts is the same as mechanically linked.

Technical Information

| | | CS8 Relays | |
|--------------------------------|------------|------------|-------------|
| Mechanical | | | |
| Mechanical Life | | [Mil. Op] | 15 |
| Electrical Life | | | |
| AC-15 (240V, 2A) AC Operations | | [Mil. Op] | 0.7 |
| Weight | AC control | [kg/lbs] | 0.16 (0.35) |
| | DC control | [kg/lbs] | 0.2 (0.44) |

| | | CS8 Relays | |
|---|--------------------------|---|------------------------------------|
| Terminations - Main contacts and Auxiliary contacts | | | |
|  | | | |
| Terminal Type | | Combination Screw Head: Cross, Slotted, Pozidrive | |
|  | Fine stranded w/ ferrule | 1 wire | [mm ²] 0.75...2.5 |
| | | 2 wires | [mm ²] 0.75...2.5 |
|  | Solid or coarse stranded | 1 wire | [mm ²] 1...4 |
| | | 2 wires | [mm ²] 1...2.5 + 1...4 |
| Max. Wire Size  | | [AWG] | 18...12 |
| Tightening Torque | | [Nm] | 1.2 |
| | | [lb-in] | 10.6 |

| | | CS8 Relays | |
|--------------------------|--------------|---------------------|--------------------------------|
| Control Circuit | | | |
| Operating Voltage | | | |
| AC 50/60 Hz | Pickup | [x U _s] | 0.85...1.1 |
| | Dropout | [x U _s] | 0.2...0.75 |
| DC | Pickup | [x U _s] | 0.8...1.1 |
| | | [x U _s] | 9,12,24,110V DC: 0.7...1.25 |
| with protection circuit | Dropout | [x U _s] | 0.1...0.75 |
| Coil Consumption | | | |
| AC 50/60 Hz | Inrush | [VA/W] | 35/32 |
| | Seal | [VA/W] | 5/1.8 |
| DC | Inrush/Seal | [W] | cold 3.0, warm 2.6 |
| Operating Times | | | |
| AC- 50/60 Hz | Pickup Time | [ms] | 15...40 |
| | Dropout Time | [ms] | 15...33 |
| With RC module | Pickup Time | [ms] | 15...28 |
| | | | |
| DC | Pickup Time | [ms] | 18...40 |
| | Dropout Time | [ms] | 6...12 |
| With Integ. diode | Pickup Time | [ms] | 8...12 |
| With External diode | Pickup Time | [ms] | 35...50 |

| | | CS8 Relays | |
|---|-----|---|------|
| General | | | |
| Rated Voltage Withstand U | | | |
| IEC | | | 690V |
| UL; CSA | | | 600V |
| Rated Impulse Strength U_{imp} | | | |
| | | 6 kV | |
| Rated Voltage U_e | | | |
| AC | [V] | 24, 48, 120, 230, 400, 500, 600, 690 | |
| DC | [V] | 24, 48, 110, 220, 440V | |
| Rated Frequency | | | |
| | | AC 50/60 Hz, DC | |
| Ambient Temperature | | | |
| Storage | | -55...+80°C (-67...176°F) | |
| Operation at nominal current | | -25...+60°C (-13...140°F) | |
| At 85% rated operation current | | -25...+70°C (-13... 158°F) | |
| Resistance to Climatic Change | | | |
| | | 40° C (104° F), 95% relative humidity, 56 days | |
| | | 23° C (73.4 ° F), 83%/40 °C (104 °F), 93%, 56 cycles | |
| Altitude | | 2000m M.S.L., per IEC 60947-4-1 | |
| Type of Protection | | IP2X | |
| Standards | | IEC/EN 60947-1, -5-1, -5-4; UL 508; CSA 22.2. No. 14 | |
| Approvals | | UL File E33916 | |

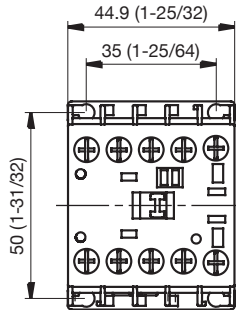


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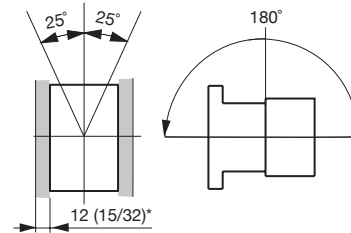
 Pozidrive No.2 / Blade No.3 screw

Series CS8 Industrial Control Relays

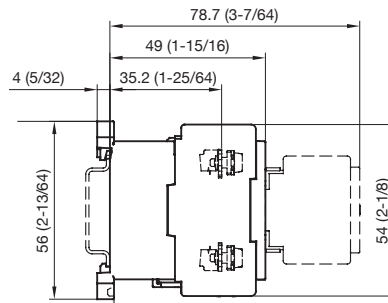
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



Mounting Position with Accessories



* Minimum distance to grounded parts or walls



With front mount auxiliary

| Contactor with... | Dim. [mm] | Dim. [inches] |
|-------------------------|-----------|---------------|
| with aux. contact block | 78.7 | 3.1 |
| with timer | | |
| on contactor | 81.7 | 3.25 |
| at side of contactor | 66.9 | 2.63 |
| with neutral terminal | | |
| at side of contactor | 64.9 | 2.56 |
| with nameplate | 51 | 2 |