

# 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 relays 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


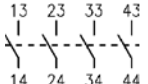
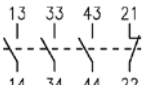
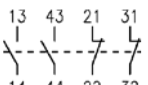
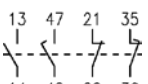
CS8 auxiliary components allow you to convert the basic four pole relay up to an 8 pole relay.

## 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	Price	Catalog Number	Price
		4	0	CS8-40E-*	73.19	CS8C-40E-*	92.85
		3	1	CS8-31Z-*	73.19	CS8C-31Z-*	92.85
		2	2	CS8-22Z-*	73.19	CS8C-22Z-*	92.85
		1+ 1EM	1+ 1LB	CS8-L22Z-*	73.19	CS8C-L22Z-*	92.85

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### Contact Ratings (Per UL508/NEMA B600 & Q600) Ⓢ

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



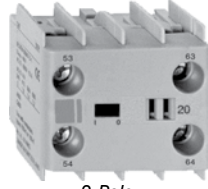

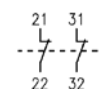

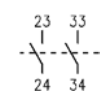

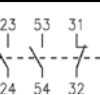

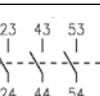


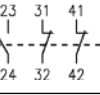

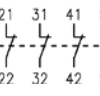

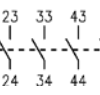

DC Coil Code	Voltage
12D	12V
24D	24V ②
110D	110V
125D	125V
220D	220V

### Ordering Instructions

Specify Catalog Number	
Replace (□) with Coil Code	See Coil Codes on this page

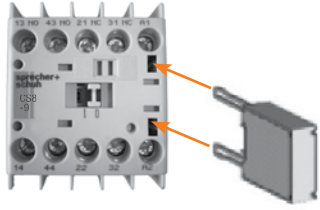
- ① The coil codes shown are for the most commonly stocked items. Contact your Sprecher + Schuh representative to determine if other voltages are on-hand or can be specially ordered in quantity.
- ② Integrated diode surge suppressor coils available. Order coil code 24DD. For example CS8C-22Z-24D becomes CS8C-22Z-24DD. Add \$39.39 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	
	<b>Surge Suppressor CR_8</b> - for limiting voltage spikes when switching off coil. Coil itself provides sufficient limitation at voltages over 240V.	<b>CRC8-50</b> <b>CRC8-280</b> <b>CRC8-480</b>	See page A22
	RC Link (Type CRC8...) for AC Control 24-48VAC 110-280VAC 380-480VAC		
	Diode Link (Type CRD8...) for DC Control ② 12-250VDC (diode)		
	Varistor Link (Type CRV8...) for AC/DC Control 12-55VAC/12-77VDC 56-136VAC/78-180VDC 137-277VAC/181-250VDC	<b>CRV8-55</b> <b>CRV8-136</b> <b>CRV8-277</b>	

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
<b>Electrical</b>				
<b>Contact Ratings — NEMA</b>				
<b>Contact Ratings — IEC</b>				
<b>AC-15</b> (solenoids, contactors) at rated voltage	24...120V	[A]	3	3
	230...240V	[A]	2	2
	400V	[A]	1.2	1.2
IEC 947, EN 60947	480...500V	[A]	1	1
NEMA B600	600...690V	[A]	0.6	0.6
<b>AC-12</b> (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
<b>Low Level Signal Switching</b>				
Contact design			H-bridge bifurcated	H-bridge bifurcated
Minimum switching recommendation			15V 2mA	15V 2mA
<b>Short Circuit Protection</b>				
Coordination Type 2 acc. IEC 947-5-1			Fuse gG [A] 10	10
<b>Switching DC-13</b> (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
<b>Load Carrying Capacity according to UL/CSA</b>				
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
<b>Resistance and Power Dissipation</b>				
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			
<b>Mechanical</b>			
Mechanical Life	[Mil. Op]		15
<b>Electrical Life</b>			
AC-15 (240V, 2A) AC Operations	[Mil. Op]		0.7
<b>Weight</b>			
AC control	[kg/lbs]		0.16 (0.35)
DC control	[kg/lbs]		0.2 (0.44)

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

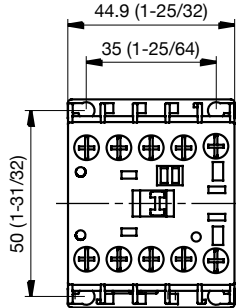
Control Circuit			
<b>Operating Voltage</b>			
AC 50/60 Hz	Pickup	[x U <sub>s</sub> ]	0.85...1.1
	Dropout	[x U <sub>s</sub> ]	0.2...0.75
DC	Pickup	[x U <sub>s</sub> ]	0.8...1.1
		[x U <sub>s</sub> ]	9,12,24,110V DC: 0.7...1.25
with protection circuit	Dropout	[x U <sub>s</sub> ]	0.1...0.75
<b>Coil Consumption</b>			
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
<b>Operating Times</b>			
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			
<b>General</b>			
<b>Rated Voltage Withstand U</b>			
IEC			690V
UL; CSA			600V
<b>Rated Impulse Strength U<sub>imp</sub></b>			
			6 kV
<b>Rated Voltage U<sub>e</sub></b>			
AC	[V]	24, 48, 120, 230, 400, 500, 600, 690	
DC	[V]	24, 48, 110, 220, 440V	
<b>Rated Frequency</b>			
			AC 50/60 Hz, DC
<b>Ambient Temperature</b>			
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)
<b>Resistance to Climatic Change</b>			
			40° C (104° F), 95% relative humidity, 56 days
			23° C (73.4 ° F), 83%/40 °C (104 °F), 93%, 56 cycles
<b>Altitude</b>			
			2000m M.S.L., per IEC 60947-4-1
<b>Type of Protection</b>			
			IP2X
<b>Standards</b>			
			IEC/EN 60947-1, -5-1, -5-4; UL 508; CSA 22.2. No. 14
<b>Approvals</b>			
UL File E33916			

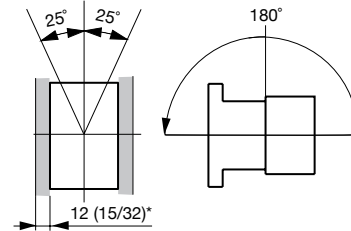
Pozidrive No.2 / Blade No.3 screw

**Series CS8 Industrial Control Relays**

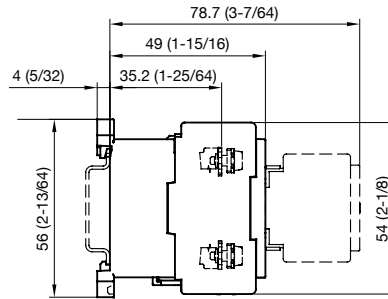
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



**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