

CS7 Industrial Control Relays

Reliable, general
purpose relays for heavy
duty applications

CS7 Industrial Control Relays share the same design as our modern CA7 contactor range. They are compact and designed for heavy duty industrial control applications where reliability and versatility are essential.

Introducing Three CS7 Models for any Control Application

The standard CS7 relay utilizes x-stamped contact technology that reliably switches typical control circuits up to 10A (AC-15). For master relay circuits requiring higher amp capacity, the CS7-M Master Relay is designed for control circuits up to 15A (AC-15).

For applications requiring low energy switching such as PLC's or other electronic circuits, the CS7-B relay with bifurcated contacts is designed for 20 million operations down to a signal level of 5V @ 3mA.

The bifurcated H-bridge design divides each movable gold contact into two sections at the tip of the spanner which provides a higher degree of reliability for low signal applications.

Auxiliary components provide a range of options

CS7 auxiliary components convert the basic four pole relay into a:

- 5, 6, 7, 8, 9, 10, 11 or 12 pole relay
- 4, 5, 6, 7 or 8 pole latched relay
- 4, 5, 6, 7 or 8 pole relay with two pneumatic time delay contacts
- Mechanically latched 4, 5, 6, 7 or 8 pole relay
- Also available are top mounted bifurcated auxiliary contacts which operate down to 5V @ 3mA.

Since the CS7 uses the same auxiliary components as our CA7 contactors, inventory is reduced and selection of components is simplified with this modular system.



Mechanically linked contacts for safety

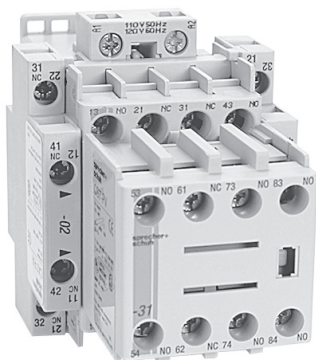
CS7 control relays are perfect for fail-safe control circuits. An interlock contact design, which maintains minimum 0.3mm clearance, prevents the NC contact from reclosing if the NO contact is welded when in operation. This feature not only includes the base contact poles, but extends to the front and/or side mounted auxiliary contacts. This is a requirement in safety circuits and is backed by SUVA-PRO certification.

Maximum convenience and safety

CS7 relays are designed for fast and trouble free installation and maintenance. All components are modular and snap-on without the use of tools. The relays are DIN-rail mountable so they can be installed, moved or replaced quickly. All terminals are "captive" and are shipped in the open position, saving you an operation. The entire line is UL Listed, CSA Certified and CE marked and offers finger and back of hand protection to the strictest international standards.

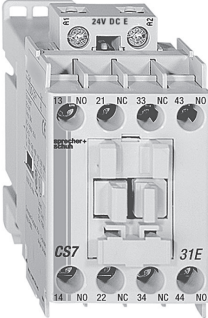
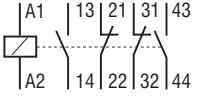
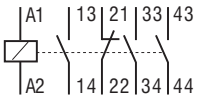
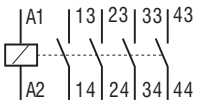
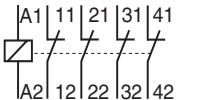
Effortless installation

CS7 relays are DIN-rail mountable for instant installation and modification. Fittings are also included for base mounting. All terminals are clearly marked and ready for installation with either manual or power screwdrivers. A complete identification system is also available using self-adhesive labels, paper tags or plastic clip-on tags.



The base four pole CS7 relay can be expanded up to twelve poles with the addition of front and side mount auxiliaries

Series CS7 Standard Control Relays - 4 Pole ①④

CS7 Relay	Contact Arrangement and Numbering	Contacts ①		AC Operation	Electronic DC ⑤
		NO	NC	Catalog Number	Catalog Number
 CS7-31E		2	2	CS7-22E-*	CS7E-22E-*
		3	1	CS7-31E-*	CS7E-31E-*
		4	0	CS7-40E-*	CS7E-40E-*
		0	4	CS7-04E-*	CS7E-04E-*

Contact Ratings (Per UL508/NEMA A600 & P600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC	60A/7200VA	6A/720VA	10
	240AC	30A/7200VA	3A/720VA	
	480AC	15A/7200VA	1.5A/720VA	
	600AC	12A/7200VA	1.2A/720VA	
P600	125DC ②	1.1A/138VA	1.1A/138VA	5
	250DC ②	0.55A/138VA	0.55A/138VA	
	301-600DC ②	0.2A/138VA	0.2A/138VA	

Other UL Ratings

Maximum Voltage **600 volts AC or DC**

General Purpose Amps

CS7	25 amps
Auxiliaries (@ 40°C)	10 amps
Auxiliaries (@ 60°C)	6 amps

AC Coil Codes ③

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

DC Coil Codes ⑤

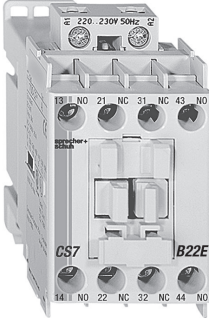
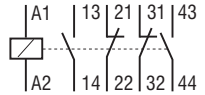
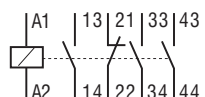
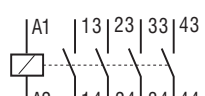
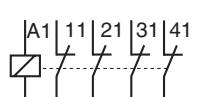
DC Coil Codes	Voltage
12E	12V
24E	24V
36E ⑥	36-48V
48E ⑥	48-72V
110E ⑥	110-125V
220E ⑥	220-250V

Ordering Instructions

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

- ① Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
- ② DC rating for CS7 base control relay.
- ③ Other voltages available, see page G1:12.
- ④ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.
- ⑤ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.
- ⑥ Not applicable with Electronic Timer accessories (CRZ_7).

Series CS7-B Control Relays - 4 Pole, Bifurcated Contacts for Lower Level Signals ①④

CS7-B Relay	Contact Arrangement and Numbering	Contacts ①		AC Operation	Electronic DC ⑤
		NO	NC	Catalog Number	Catalog Number
 CS7-B22E		2	2	CS7-B22E-*	CS7E-B22E-*
		3	1	CS7-B31E-*	CS7E-B31E-*
		4	0	CS7-B40E-*	CS7E-B40E-*
		0	4	CS7-B04E-*	CS7E-B04E-*

Contact Ratings (Per UL508/NEMA A600 & Q600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC	60A/7200VA	6A/720VA	10
	240AC	30A/7200VA	3A/720VA	
	480AC	15A/7200VA	1.5A/720VA	
	600AC	12A/7200VA	1.2A/720VA	
Q600	125DC ②	0.55A/69VA	0.55A/69VA	2.5
	250DC ②	0.27A/69VA	0.27A/69VA	
	301-600DC ②	0.1A/69VA	0.1A/69VA	

CS7-B Bifurcated Control Relay

- Gold plated bifurcated contacts for low level switching application, min 5V, 3mA
- Maximum voltage 600V AC or DC
- General purpose amps - 10 amps
- Positively guided/mechanically-linked main contacts

Principle moving contact designs:



CS7-B
Bifurcated Contacts



CS7
Standard Contacts

AC Coil Codes ③

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
120	110V	120V

DC Coil Codes ⑤

DC Coil Codes	Voltage
12E	12V
24E	24V
36E ⑥	36-48V
48E ⑥	48-72V
110E ⑥	110-125V
220E ⑥	220-250V

Ordering Instructions

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

① Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.

② DC rating for CS7-B base control relay.

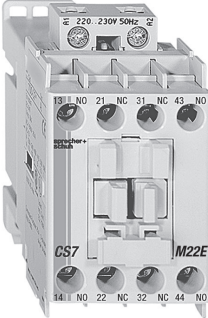
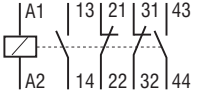
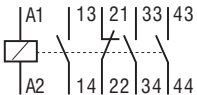
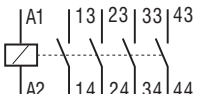
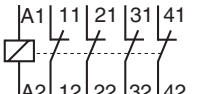
③ Other AC voltages available, see page G1:12.

④ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.

⑤ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.

⑥ Not applicable with Electronic Timer accessories (CRZ_7).

Series CS7 Master Control Relays - 4 Pole ①④

CS7-M Relay	Contact Arrangement and Numbering	Contacts ①		AC Operation	Electronic DC ⑤
		NO	NC	Catalog Number	Catalog Number
 CS7-M22E		2	2	CS7-M22E-*	CS7E-M22E-*
		3	1	CS7-M31E-*	CS7E-M31E-*
		4	0	CS7-M40E-*	CS7E-M40E-*
		0	4	CS7-M04E-*	CS7E-M04E-*

Contact Ratings (Per UL508/NEMA A600 & P600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	20
P600	125DC ② 250DC ② 301-600DC ②	1.1A/138VA 0.55A/138VA 0.2A/138VA	1.1A/138VA 0.55A/138VA 0.2A/138VA	5

CS7-M Master Control Relays

- Excellent replacement for heavy duty NEMA master relay users.
- Maximum voltage 600V AC or DC
- General purpose rating 30 amps (2X A600 for CS7-M Base Relay)

Principle moving contact designs:



CS7-M
Contacts For
Master Control Relay



CS7
Standard Contacts

AC Coil Codes ③

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
120	110V	120V

DC Coil Codes ⑤

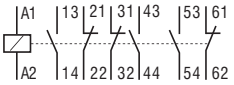
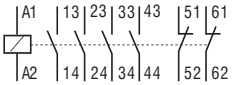
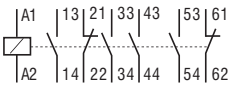
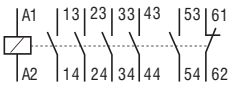
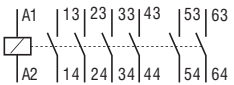
DC Coil Codes	Voltage
12E	12V
24E	24V
36E ⑦	36-48V
48E ⑦	48-72V
110E ⑦	110-125V
220E ⑦	220-250V

Ordering Instructions

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

- ① Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
- ② DC rating for CS7-M base control relay.
- ③ Other AC voltages available, see page G1:12.
- ④ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles.
- ⑤ CS7E electronic coils are not interchangeable with non-electronic DC or AC coils.
- ⑦ Not applicable with Electronic Timer accessories (CRZ_7).

CS7 Complete Assemblies - 6 Pole, AC Control ①⑤

CS7 Relay	Contact Arrangement and Numbering	Contacts ①		AC Operation
		NO	NC	Catalog Number
 CS7-33Y		3	3	CS7-33Y-*
		4	2	CS7-42E-*
		4	2	CS7-42Y-*
		5	1	CS7-51E-*
		6	0	CS7-60E-*

AC Coil Codes ④

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

Contact Ratings (Per UL508/NEMA A600, P600 & Q600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC	60A/7200VA	6A/720VA	10
	240AC	30A/7200VA	3A/720VA	
	480AC	15A/7200VA	1.5A/720VA	
	600AC	12A/7200VA	1.2A/720VA	
P600	125DC ②	1.1A/138VA	1.1A/138VA	5
	250DC ②	0.55A/138VA	0.55A/138VA	
	301-600DC ②	0.2A/138VA	0.2A/138VA	
Q600	125DC ③	0.55A/69VA	0.55A/69VA	2.5
	250DC ③	0.27A/69VA	0.27A/69VA	
	301-600DC ③	0.1A/69VA	0.1A/69VA	

Other UL Ratings

Maximum Voltage
600 volts AC or DC

General Purpose Amps

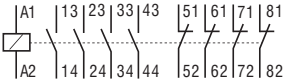
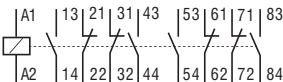
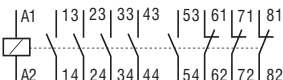
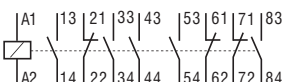
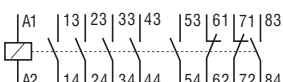
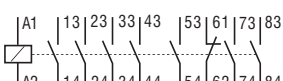
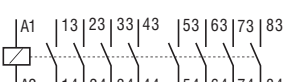
CS7 25 A
Aux. (@40°C) 10 A
Aux. (@60°C) 6 A

Ordering Instructions

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

- ① Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
- ② DC rating for CS7 base control relay.
- ③ DC rating for CS7 auxiliary blocks.
- ④ Other voltages available, see page G1:12.
- ⑤ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles and auxiliaries.

CS7 Complete Assemblies - 8 Pole, AC Control ①⑤

CS7 Relay	Contact Arrangement and Numbering	Contacts ①		AC Operation
		NO	NC	Catalog Number
 CS7-44E		4	4	CS7-44E-*
		4	4	CS7-44Y-*
		5	3	CS7-53E-*
		5	3	CS7-53Y-*
		6	2	CS7-62E-*
		7	1	CS7-71E-*
		8	0	CS7-80E-*

G1

CS7 Control Relays

AC Coil Codes ④

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

Contact Ratings (Per UL508/NEMA A600, P600 & Q600)

Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA)	Continuous Amps
A600	120AC	60A/7200VA	6A/720VA	10
	240AC	30A/7200VA	3A/720VA	
	480AC	15A/7200VA	1.5A/720VA	
	600AC	12A/7200VA	1.2A/720VA	
P600	125DC ②	1.1A/138VA	1.1A/138VA	5
	250DC ②	0.55A/138VA	0.55A/138VA	
	301-600DC ②	0.2A/138VA	0.2A/138VA	
Q600	125DC ③	0.55A/69VA	0.55A/69VA	2.5
	250DC ③	0.27A/69VA	0.27A/69VA	
	301-600DC ③	0.1A/69VA	0.1A/69VA	

Other UL Ratings

Maximum Voltage
600 volts AC or DC

General Purpose Amps

CS7 25 A
Aux. (@40°C) 10 A
Aux. (@60°C) 6 A

Ordering Instructions

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

- ① Side mounted and/or top auxiliaries may be field installed to increase the number of available poles, limitations apply. Refer to page G1:14 for ordering and restriction details. Please note that side mount auxiliary terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.
- ② DC rating for CS7 base control relay.
- ③ DC rating for CS7 auxiliary blocks.
- ④ Other voltages available, see page G1:12.
- ⑤ Positively-Guided/Mechanically-Linked Contacts per IEC 947-5-1 Annex L on 4 main poles and auxiliaries.

Side Mount Auxiliary Contact Blocks (1 & 2 Pole) ①②

Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number
 1-pole (typical)  2-pole (typical)	Auxiliary Contact Blocks for Side Mounting ①② 1 and 2-pole - Two way numbering for right or left mounting on the contactor - Snap-on design - mounts without tools - Electronic compatible contacts 17V, 10mA - Late break / early make (L) available - Mirror contact performance to control relay poles	0	1		CS7 all	CA7-PA-01
		1	0		CS7 all	CA7-PA-10
		0	2		CS7 all	CA7-PA-02
		1	1		CS7 all	CA7-PA-11
		2	0		CS7 all	CA7-PA-20
		1L	1L		CS7 all	CA7-PA-L11

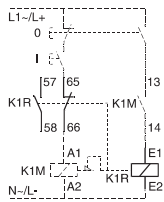
Top Mount Auxiliary Contact Blocks (2 & 4 Pole) ②

Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number	Bifurcated Contacts Catalog Number
 2-pole (typical)  4-pole (typical)	Auxiliary Contact Blocks for Top Mounting ② 2 and 4 pole - Snap-on design - mounts without tools - Electronic compatible standard contacts down to 17V, 5mA, bifurcated version 5V, 3mA - Mechanically linked between N.O. and N.C. poles and to the control relay poles (excluding L types). - Several terminal numbering choices even for models with equal function - Late break / early make (L) available	0	2		CS7 all	CS7-PV-02	CS7-PVB-02
		1	1		CS7 all	CS7-PV-11	CS7-PVB-11
		2	0		CS7 all	CS7-PV-20	CS7-PVB-20
		2	2		CS7 all	CS7-PV-22	CS7-PVB-22
		3	1		CS7 all	CS7-PV-31	CS7-PVB-31
		1	3		CS7 all	CS7-PV-13	CS7-PVB-13
		4	0		CS7 all	CS7-PV-40	CS7-PVB-40
		0	4		CS7 all	CS7-PV-04	CS7-PVB-04
		1+1L	1+1L		CS7 all	CS7-PV-L22	Not Available

① Side mounted auxiliaries may be field installed to increase the number of available poles. Please note that terminal markings may conflict with base relay and/or top mount auxiliary terminal markings.

② See page G1:14 for maximum number of auxiliaries to be mounted.

Control Modules

Module	Description	For use with...	Connection Diagrams	Catalog Number
	Mechanical Latch Following relay latching, the relay coil is immediately de-energized by the NC auxiliary contact (65-66). - Electrical or manual release 1 NO + 1 NC auxiliary switch - Suitable for all CS7 relays	CS7 all		CV7-11-* Replace * with coil code below (See Application Note)

CV7 Mechanical Latch Coil Codes ①②③④

Coil Code	Application Range			Latch & Contactor Coil Rating
	50 Hz	60 Hz	VDC	
24Z	24 VAC	24 VAC	12 VDC	24V 50/60 Hz
48Z	48 VAC	48 VAC	24 VDC	48V 50/60 Hz
110	100 VAC	110 VAC	48 or 60VDC	110V50/110V60
120	110 VAC	120 VAC	~	110V50/120V60
220W	~	208...240 VAC	~	208...240V60
240Z	240 VAC	240 VAC	125 VDC	240V 50/60 Hz
400Z	400 VAC	400 VAC	220 VDC	400V 50/60 Hz
415	400...415 VAC	~	~	400...415 V50 Hz

APPLICATION NOTE:

The CV7 Mechanical Latch for CS7 Control Relay may be used for both AC and DC applications; however when using DC control circuit the user must apply the following rules for coil selection of the control relay and latch combination:

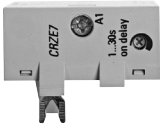
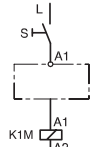
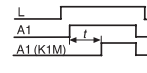
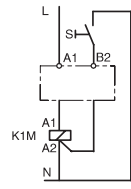
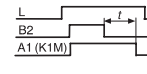
- The CS7E control relay uses an electronic DC coil and the CV7 latch coil code should be chosen from the table on the left. (i.e.: 24V DC control circuit select CS7E with code 24E and CV7 latch uses a 48Z AC coil code).

- ① Other voltages available. Contact your Sprecher + Schuh representative.
- ② CV7 must be wired for momentary impulse operation only.
- ③ Command duration 0.03...15 seconds.
- ④ Coil operating limits on CV7-11 match those of the relay it is being used with.

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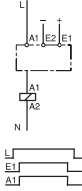
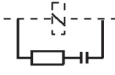
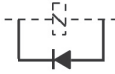
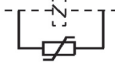
CS7 Control Relays

Control Modules

Module	Description	For use with...	Connection Diagrams	Function	Catalog Number
	Pneumatic Timing Module – The contacts in the Pneumatic Timing Element switch after the delay time. The contacts on the relay continue to operate without delay. Continuous adjustment range	CS7 all ❶		ON-Delay .3...30s 1.8...180s	CZE7-30 CZE7-180
				OFF-Delay 0.3...30s 1.8...180s	CZA7-30 CZA7-180
	Electronic Timing Module – ❷ ON-Delay The relay is energized at the end of the delay time.	CS7 with 110...240V, 50/60Hz or 110...250V DC		110...240V 50/60Hz 110...250V DC 0.1...3s 1...30s 10...180s	CRZE7-3-110/240 CRZE7-30-110/240 CRZE7-180-110/240
		CS7 with 24...48V DC		24...48V DC 0.1...3s 1...30s 10...180s	CRZE7-3-24/48VDC CRZE7-30-24/48VDC CRZE7-180-24/48VDC
	Electronic Timing Module – ❷ OFF-Delay After interruption of the control signal, the relay is de-energized at the end of the delay time.	CS7 with 24V, 50/60Hz		110...240V 50/60Hz 0.3...3s 1...30s 10...180s	CRZA7-3-110/240 CRZA7-30-110/240 CRZA7-180-110/240
		CS7 with 110...240V, 50/60Hz		24V AC 50/60Hz 0.3...3s 1...30s 10...180s	CRZA7-3-24VAC CRZA7-30-24VAC CRZA7-180-24VAC

❶ Cannot be used with side-mounted auxiliary contacts on CS7 relays with DC coils.
 ❷ CRZ_7 timing modules are not compatible to electronic DC coils at 36V DC and larger

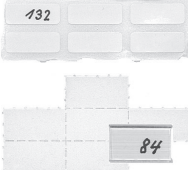
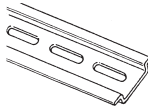
Control Modules *(continued)*

Module	Description	For use with...	Connection Diagrams	Function		Catalog Number
				Input	Output	
	Electronic Interface – Interface between the DC control signal from a PLC and the AC operating mechanism of the relay. - Requires no additional surge suppression for the coils - Switching capacity 200VA - Suitable for all CS7 relays	CS7 all (with AC control)		24V DC 18...30V DC 48V DC	110... 240V AC	CRI7E-24 CRI7E-12 CRI7E-48 <i>Indicates special order</i>
	Surge Suppressors - Limits coil switching transients. - Plug-in, coil mounted - Suitable for all CS7 contactors	CS7 all (with AC control)		RC Module - AC Control (50/60Hz) 24...48V 110...280V 380...480V		CRC7-48 CRC7-280 CRC7-480
		CS7C (with conventional DC control)		Diode Module - DC Control 12-250VDC		CRD7-250 ①
		CS7 all (with AC control) CS7C (with conventional DC control)		Varistor Module - AC/DC Control 12...55VAC/ 12...77VDC 56...136VAC/ 78...180VDC 137...277VAC/ 181...350VDC 278...575VAC		CRV7-55 ① CRV7-136 ① CRV7-277 ① CRV7-575 ①

Assembly Components

Component	Description	For Use With...	Pkg. Qty.	Catalog Number
	Spade Connectors - Dual stab for coil terminals (0.250 inch)	All CS7	20	CA7-SC2

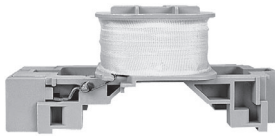
Other Common Accessories

 Protective Covers - See Section A	 Marking Systems - like Label Sheets, Marker Tags and Carrier Tags See Section A	 DIN-rail – See Section N
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① Electronic DC Control Relays (CS7E) include internal surge protection and do not require additional external surge protection.

Renewal Coils - AC ❶

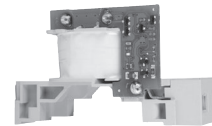
AC Control Voltages			AC Coil Codes ❶	Electronic AC Coils
50 Hz	60 Hz	50/60 Hz		Cat. No.
~	~	24V	24Z	CA7-
110V	120V	~	120	TA473
115V	127V	~	127	TA424
~	208V...240V	~	220W	TA296
~	~	230V	230Z	TA851
240V	277V	~	277	TA480
400V...415V	~	~	415	TA457
440V	480V	~	480	TA475
550V	600V	~	600	TA476



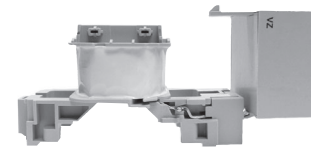
CS7 AC coil (typical)

Renewal Coils - Electronic DC ❷

DC Control Voltages	DC Coil Codes ❶	Electronic DC Coils
		Cat. No.
		CA7-
12V	12E	TC708E
24V	24E	TC714E
36-48V	36E	TC719E
48-72V	48E	TC724E
110-125V	110E	TC733E
220-250V	220E	TC747E



12V & 24V Electronic DC coil ❷



36V...220V Electronic DC coil with Back Pack ❷

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CS7 Control Relays

❶ Coil Codes in bold letters indicate coils that are standard stocked items.

❷ Electronic DC Coils are not interchangeable with non-electronic DC or AC coils.

Technical Information

			Standard Control Relay CS7	Front Mounted Standard Auxiliary Contacts	Bifurcated Control Relay CS7-B	Front Mounted Bifurcated Auxiliary Contacts	Master Relay CS7-M	Side Mounted Contacts
Electrical Contact Ratings - NEMA			A600, P600	A600, Q600			2x A600, P600	A600, Q600
Min. Contact Rating			17V, 10 mA	17V, 5 mA	8V, 5 mA	5V, 3 mA		17V, 10 mA
Contact Ratings - IEC AC-15 (solenoids, contactors) rated voltage IEC 60947-5-1	24V		10 A	6 A	3 A	3 A	15 A	6 A
	48V		10 A	6 A	3 A	3 A	15 A	6 A
	120V		10 A	6 A	3 A	3 A	15 A	6 A
	240V		10 A	5 A	3 A	3 A	15 A	5 A
	400V		6 A	3 A	2 A	2 A	7.5 A	3 A
	480V/500V		2.5 A	1.6 A	1.2 A	1.2 A	5 A	1.6 A
	600V		1 A	1 A	0.7 A	0.7 A	2 A	1 A
	690V		1 A	1 A	0.7 A	0.7 A	2 A	1 A
AC-12 (Control of resistive loads) IEC 60947-5-1	40 °C	I _{th}	20 A	10 A	10 A	10 A	20 A	10 A
		230V	8 kW					
		400V	14 kW					
		690V	24 kW					
	60 °C	I _{th}	20 A	6 A	6 A	6 A	20 A	6 A
		230V	8 kW					
DC-12 Switching DC Loads t _R < 1 ms, Resistive Loads IEC 60947-5-1	24V		15 A	10 A	6 A	6 A	20 A	6 A
	48V		10 A	9 A	3.2 A	3.2 A	20 A	3.2 A
	110V		6 A	3.5 A	1.0 A	1.0 A	8 A	1.0 A
	220V		1.0 A	0.7 A	0.5 A	0.5 A	1.5 A	0.5 A
	440V		0.4 A	0.2 A	0.2 A	0.2 A	0.4 A	0.2 A
DC-13 IEC 60947-5-1, Solenoids and contactors	24V		5 A	5 A	2.5 A	2.5 A	5 A	5 A
	48V		3 A	3 A	1.5 A	1.5 A	3 A	2.5 A
	110V		1.2 A	1.2 A	0.6 A	0.6 A	1.2 A	0.68 A
	220V		0.6 A	0.6 A	0.3 A	0.3 A	0.6 A	0.32 A
	440V		0.3 A	0.15 A	0.15 A	0.15 A	0.3 A	0.15 A

Mechanically Linked Contacts ②

Location of welded NO contacts	State of NC contacts if NO contact welds			
	Main	Front mount auxiliary	Left side auxiliary	Right side auxiliary
Main	Open	Open ❶	Open ❸	Open ❹
Front auxiliary	Open	Open ❶	Open ❸	Open ❹
Left side aux.	Open	Open ❶	Open ❸	Open ❹
Right side aux.	Open	Open ❶	Open ❸	Open ❹

DC Switching Ratings for CS7 Main Poles in Series (Resistive Load at 60 °C)

	1 pole	2 poles	3 poles
24/48 V	25/20 A	25 A	25 A
125 V	6 A	25 A	25 A
220 V	1.5 A	8 A	25 A
440 V	0.4 A	1 A	3 A

Standards Compliance

UL 508
CSA C22.2 NO. 14
EN/IEC 60947-1, -5-1
Meets the material restrictions for European Directive 2002/95/EC - EU-RoHS.

- ❶ If the accessory is a Pneumatic Timer or latch, there is no positive guidance; the accessory contacts are independent.
❷ Defined in IEC 947-5-1 annex L. Mechanically linked is a relationship between contacts of opposite types (i.e., NO and NC).
❸ Side mounted auxiliary contacts provide "mirror contact" performance with main poles only.

		CS7 Relays	Front Mount Auxiliaries & Pneumatic Timer Contacts
Mechanical			
Mechanical Life	[Mil]	15	5
Electrical Life			
AC-15 (240V, 3A) AC Operations	[Mil]	1.5	1.5
Shipping Weight			
AC - CS7	[kg]	0.39	
	[lbs]	0.86	
DC - CS7E	[kg]	0.41	
	[lbs]	0.90	
Terminal Cross-Sections			
Terminal Type			
Terminal Size per IEC 947-1		2 x A4	2 x A4
	Flexible with Wire End Ferrule	1 Cond. [mm²]	1...4
		2 Cond. [mm²]	1...4
	Solid/Stranded	1 Cond. [mm²]	1.5...6
		2 Cond. [mm²]	1.5...6
Max. Wire Size per UL/CSA		[AWG]	16...10
Tightening Torque		[Nm]	1.5...2.0
		[lb-in]	13.3...17.7

Certifications

cULus Listed (File No. E33916,
Guide NKCR/NKCR7)
CE Marked

Technical Information

Rated Insulation Voltage U_i	
IEC	690V
UL; CSA	600V
Rated Impulse Strength U_{imp}	
	6 kV
High Test Voltage	
1 minute (per IEC 947-4)	2500V
Rated Voltage U_e	
AC	115, 230, 400, 500, 690V
DC	24, 48, 110, 220, 440V
Rated Frequency	
	50/60 Hz, DC
Ambient Temperature	
Storage	-55...+80°C (-67...176°F)
Operation at nominal current	-25...+60°C (-13...140°F)
Conditioned 15% current reduction after AC-1 at > 60°C	-25...+70°C (-13...158°F)

Corrosion Resistance	
	humid-alternating climate, cyclic, per IEC 68-2-30 and DIN 50 016, 56 cycles
Altitude	
	2000m above main sea level, per IEC 947-4
Type of Protection	
IP 2X (IEC 60529 and DIN 40050)	in connected state
Finger Protection	
	safe from touch by fingers and back of hand per VDE 0106, Part 100
Shock Protection	
IEC 68-2: Half Sinusoidal shock 11ms	30G (in 3 directions)
Vibration Resistance	
IEC 68-2: static >2G in normal position	no malfunction <5G

Coil Data - AC Control Circuit

Operating Voltage Range	Pickup	[x U_i]	0.85...1.1
	Dropout	[x U_i]	0.3...0.6
Coil Consumption	Inrush	[VA]	75
	Seal	[VA/W]	9.5/2.7
Operating Times	Pickup Time	[ms]	15...30
	Dropout Time	[ms]	10...60

Latch Attachment Release, CV7-11

Coil Consumption	AC	[VA/W]	45 / 40
	DC	[W]	25
Contact Signal Duration		[min/max]	0.03...15s

Timing Attachment, CRZE7, CRZA7

Reset Time		
at min. time setting	[ms]	10
at max. time setting	[ms]	70
Repeat Accuracy		± 10%

Coil Data - Electronic DC

Voltage Range			Coil Consumption & Operating Times ③				
Voltage Code	Nominal Voltage US [V DC]	Ratings [x U_i]	Average/Peak Pickup [W]	Hold-in [W]	Dropout Voltage [x U_i]	Pickup [ms]	Dropout [ms]
12E	12	0.7...1.25	10/17	1.7	0.3...0.4	20...50	20...50
24E	24	0.7...1.25	10/17	1.7			
36E	36...48	0.7...1.25	10/17	1.7...1.9			
48E	48...72	0.8...1.25	10/17	1.7...1.9	0.3...0.4	20...50	23...33
110E	110...125	0.7...1.12④	12/19	2.0...2.1			
220E	220...250	0.8...1.1	14/22	2.7...3.0			

Control Relays Maximum Auxiliary Contacts

CS7 (AC and DC electronic coils, vertical mounting, 60° C)	CS7(E)-40E	CS7(E)-31E	CS7(E)-22E	CS7(E)-04E
Maximum N.O. Side Auxiliaries	2	2	4	2
Maximum N.C. Side Auxiliaries	4	4 ①	4 ①	2
Maximum N.O. Front Auxiliaries	4	4	4	4
Maximum N.C. Front Auxiliaries	4	4 ②	2	0
Maximum N.O. Front + Side Auxiliaries	6	6	8	6
Maximum N.C. Front + Side Auxiliaries	7	5	5	2
Maximum N.O. + N.C. Front + Side Auxiliaries	8	8	8	6

- ① With no front auxiliary contacts installed. Otherwise 3 N.C. maximum.
- ② With no side mount auxiliary contacts installed. Otherwise 3 N.C. maximum.
- ③ The hold-in demand of the CS7E is very low but the pick-up demand is approximately 1 ampere at 24 VDC. When sizing (dimensioning) a power supply for applications involving parallel switched contactors then multiply the peak demand by the number of contactors to be simultaneously switched and add to the hold-in demand of all other control circuit burdens, including other contactors, pilot devices, solenoids, etc.
- ④ At 110VDC, coil code 110E has an operating range of 0.7...1.25 x U_i

Utilization Category Table from EN 947-5-1

Verification of Making and Breaking Capacities of Switching Elements Under Normal Conditions

Corresponding to the Utilization Categories ①

Utilization Category	Normal Condition of Use								
	Make ②			Break ②			Number & Rate of Making & Breaking Operations		
	I / I _e	U / U _e	COS Ψ	I / I _e	U / U _e	COS Ψ	No. of operating cycles ③	Operating cycles per minute	ON time(s) ④
AC-12 ⑥	1	1	0.9	1	1	0.9	6050	6	0.05
AC-13 ⑥	2	1	0.65	1	1	0.65	6050	6	0.05
AC-14 ⑥	6	1	0.3	1	1	0.3	6050	6	0.05
AC-15 ⑥	10	1	0.3	1	1	0.3	6050	6	0.05
DC			T _{0.95}			T _{0.95}			
DC-12	1	1	1ms	1	1	1ms	6050	6	0.05 ⑥
DC-13	1	1	6 x P ④	1	1	6 x P ④	6050	6	0.05 ⑥
DC-14 ⑥	10	1	15ms	1	1	15ms	6050	6	0.05 ⑥

I_e Rated operational current
P=U_e/I_e steady-state power consumption (W)

U_e Rated operational voltage.
Current to be made or broken.

T_{0.95} Time to reach 95% of the steady-state current (ms)
U₀ Voltage before make

NEMA Ratings and Test Values for AC (50 and 60Hz) and DC Control Circuits Contacts

Designation ⑦	Utilization Category	Therm. Continuous Test Current (A)	Maximum Current								VA	
			120V		240V		480V		600V			
AC			Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A150	AC-15	10	60	6.00	~	~	~	~	~	~	7200	720
A300	AC-15	10	60	6.00	30	3.00	~	~	~	~	7200	720
A600	AC-15	10	60	6.00	30	3.00	15	1.50	12	1.20	7200	720
B150	AC-15	5	30	3.00	~	~	~	~	~	~	3600	360
B300	AC-15	5	30	3.00	15	1.50	~	~	~	~	3600	360
B600	AC-15	5	30	3.00	15	1.50	7.5	0.75	6	0.60	3600	360
C150	AC-15	2.5	15	1.50	~	~	~	~	~	~	1800	180
C300	AC-15	2.5	15	1.50	7.5	0.75	~	~	~	~	1800	180
C600	AC-15	2.5	15	1.50	7.5	0.75	3.75	0.375	3	0.30	1800	180
D150	AC-14	1.0	3.60	0.60	~	~	~	~	~	~	432	72
D300	AC-14	1.0	3.60	0.60	1.8	0.30	~	~	~	~	432	72
E150	AC-14	0.5	1.80	0.30	~	~	~	~	~	~	216	36
2 x A300	AC-15	20	120	12	60	6.00	~	~	~	~	14400	1440
2 x A600	AC-15	20	120	12	60	6.00	30	3.00	24	2.40	14400	1440
DC			5...28V		125V		250V		301...600V		Make or Break at 300V or less [VA]	
N150	DC-13	10	10		2.2		~		~		275	
N300	DC-13	10	10		2.2		1.1		~		275	
N600	DC-13	10	10		2.2		1.1		0.40		275	
P150	DC-13	5.0	5.0		1.1		~		~		138	
P300	DC-13	5.0	5.0		1.1		0.55		~		138	
P600	DC-13	5.0	5.0		1.1		0.55		0.20		138	
Q300	DC-13	2.5	2.5		0.55		0.27		0.11		69	
Q600	DC-13	2.5	2.5		0.55		0.27		0.11		69	
2 x P600	DC-13	10	102.2		2.2		1.1		0.40		275	

① See sub-clause 8.3.3.5.2

② For tolerances on test quantities, see sub-clause 8.3.2.2

③ The first 50 operating cycles shall be run at U/U_e=1.1 with the loads set at U_e

④ The value "6 x P" results from an empirical relationship which is found to represent most DC magnetic loads to an upper limit of P = 50W, i.e. 6 x P = 300ms.

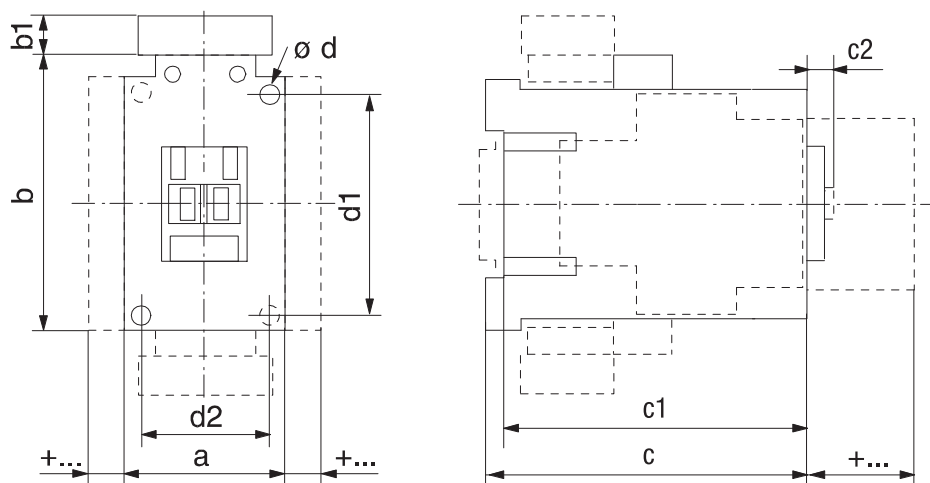
⑤ The ON time shall be at least equal to T_{0.95}

⑥ Where the break current differs from the make current value, the ON time refers to the make current value after which the current is reduced to break current value for a suitable period e.g., 0.05 s.

⑦ This is the NEMA Contact Rating Designation, where the letter stands for the conventional thermal current and identifies AC or DC: e.g., B = 5A AC. The number that follows is the rated insulation voltage.

Series CS7 Industrial Control Relays (AC and Electronic DC)

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

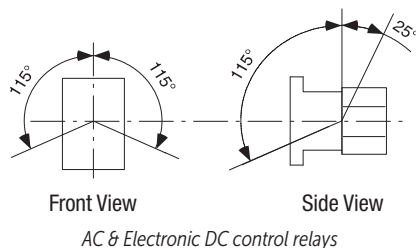


Catalog Number	Coil Code	a	b	b1	c	c1	c2	Ød	d1	d2
CS7 (AC)	All	45 (1-25/32)	81 (3-3/16)	~	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	① 4.5 (3/16)	60 (2-23/64)	35 (1-25/64)
CS7 (Electronic DC)	12E...24E	45 (1-25/32)	81 (3-3/16)	~	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	① 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)
	36E...220E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	① 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)

Relays & Accessories (+...)

Relays with...		Dim. [mm]	Dim. [inches]
auxiliary contact block for front mounting	2-, or 4-pole	$c/c_1 + 39$	$c/c_1 + 1-37/64$
auxiliary contact block for side mounting	1-, or 2-pole	$a + 9$	$a + 23/64$
pneumatic timing module		$c/c_1 + 58$	$c/c_1 + 2-23/64$
electronic timing module	on coil terminal side	$b + 24$	$b + 15/16$
mechanical latch		$c/c_1 + 61$	$c/c_1 + 2-31/64$
interface module	on coil terminal side	$b + 9$	$b + 23/64$
surge suppressor	on coil terminal side	$b + 3$	$b + 1/8$
Labeling with...	label sheet	+ 0	+ 0
	marking tag sheet with clear cover	+ 0	+ 0
	marking tag adapter for V7 Terminals	+ 5.5	+ 7/32

Mounting Position



① 2 mounting holes.