Series CA7 Contactors

Rugged, space saving and modular… Sprecher + Schuh's newest contactor for applications up to 75HP @ 460V

Over 100 years of design experience has produced Sprecher + Schuh's seventh generation contactor line. The CA7 represents the most modern and flexible power contactor available today, meeting the highest industrial application requirements.

Big performance in a small package

A wide selection of eleven contactors in four frame sizes covers the entire CA7 horsepower range (up to 75HP @ 460/575V). Six of the contactors are only 45mm wide, an extremely small footprint for such rugged performance. A number of design features account for this efficiency, including high contact pressure and "bounce-free" contacts, allowing the devices to handle the high starting currents typical of modern motors.

Type 1 and Type 2 Coordination

Whether you're designing motor circuits for use in North America, Europe or any other part of the world, all CA7 contactors have been designed and tested with respect to Type 1 and Type 2 short circuit coordination. Find out more in the CA7 Technical Information section in this chapter.

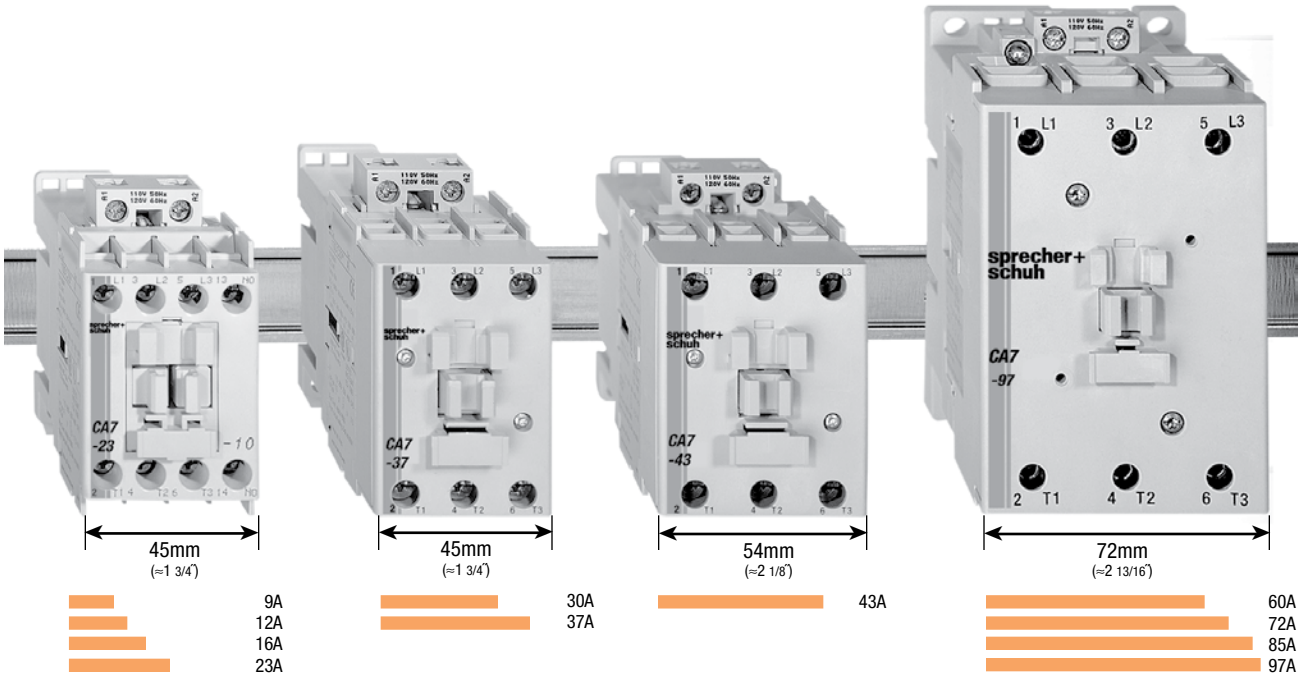
Advanced safety and reliability features

The entire CA7 line features mechanically linked contacts, sometimes referred to as "positively guided contacts" or "force guided contacts". If a main power pole welds, adequate clearances exist (≥0.3mm) to ensure that the auxiliary contacts do not change state when coil power is removed and the device tries to open. This is a requirement in safety circuits per IEC 60947-5-1.

Reliability is further assured by "cross-stamped" auxiliary contacts, which provide multi-point reliability in low current, low voltage applications.

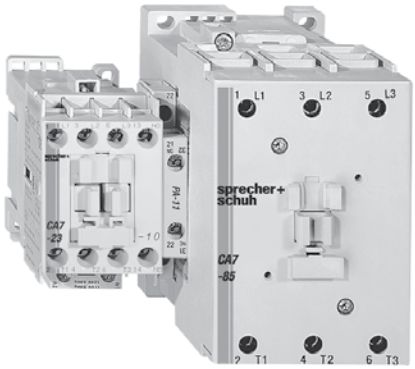
Advantages of Electronic DC Coil

CA7-9E through CA7-43E are provided with DC coils that dramatically decrease wattage consumption during pull-in. This allows the use of smaller power supplies. The electronic DC coil design brings the height of the contactor back down to the same size as the AC version. Select CA7 contactors are also available with a two-winding DC coil that reduces the size of the contactor as well as the hold-in values.



Modular accessories are common to all devices

All accessories are interchangeable among all CA7 contactors and CS7 control relays. This minimizes inventory requirements and maximizes flexibility. Top and side mount auxiliary contacts are available depending on your application. A mechanical interlock with two built-in NC auxiliaries also provides electrical interlocking if desired. Pneumatic and electronic timers, surge suppressors and electronic interface modules provide solutions for even the most complex applications.

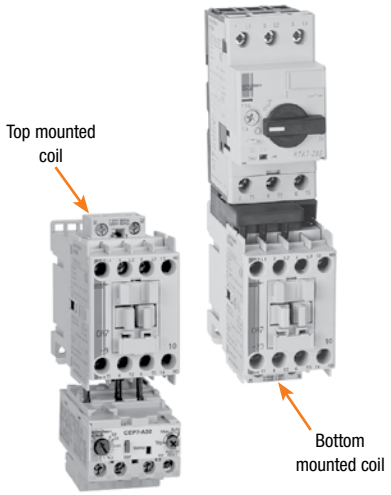


Reversible coil provides total flexibility

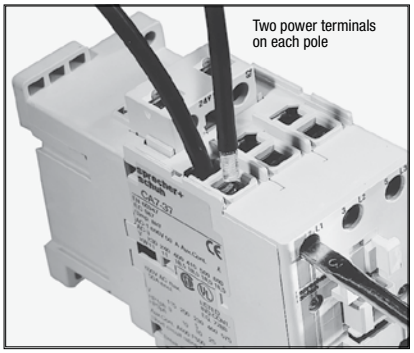
When shipped, both coil connections are normally located at the top of the contactor in preparation for mounting an overload relay at the bottom. For multi-starter panels, however, the coil can be reversed, which provides space to close-couple a KT7 Motor Circuit Controller on the top of the contactor. CA7 contactors can either be ordered with the coil reversed or may be easily reversed in the field.

Dual power terminals speed wiring

CA7-30 through 97 contactors are designed with two power terminals for all three poles. This simplifies power wiring of interconnected contactors in reversing, reduced voltage and two-speed applications. Preformed power wiring connectors are also available for virtually instantaneous wiring in these labor intensive applications. Simplified wiring means less labor and less cost.



Reversible coils are standard on all CA7 contactors



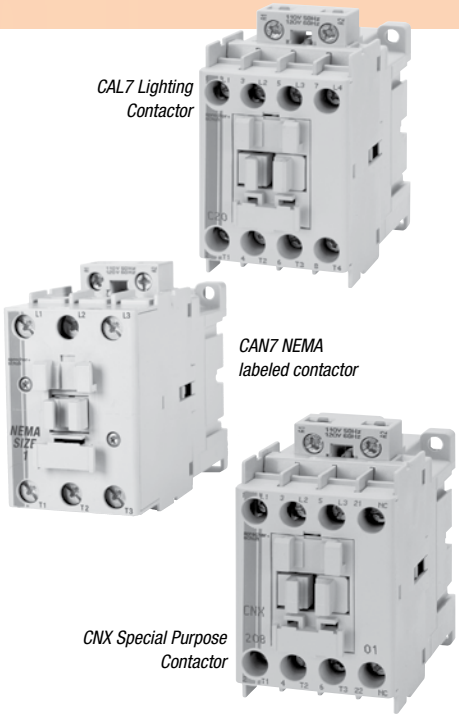
Dual power terminals assure hassle-free wiring in complex control schemes

Special use contactors for specialized applications

The CA7 line has been expanded to include a number of contactors designed and labeled for specific industrial applications. In all cases, these devices are UL and CSA approved for these specialized uses.

Lighting contactors

The CAL7 contactor can be used to control a wide variety of lighting loads. These contactors are well suited to handle the high inrush currents typical of this application as well as other non-motor (resistive) loads. Both mechanically held and electrically held models are available for lighting load applications up to 20A, 30A and 60A.



Sprecher + Schuh's expanded CA7 line includes contactors designed and labeled for specific industrial applications

NEMA Labeled Contactors

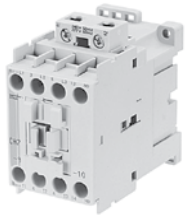
CAN7 contactors are UL Listed and rated in accordance with the requirements of NEMA standards publication ICS-2. These contactors are NEMA compliant and are labeled accordingly.

Special purpose contactors

CNX contactors are standard CA7 contactors that have been tested, approved and labeled by UL for heating ventilation and air conditioning (HVAC) applications.

Non-Reversing, Three Pole Contactors With AC Coil, Series CA7 (Open type only) ❶

I_e [A] ❶		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Auxiliary Contacts per Contactor		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V / 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	1	0	CA7-9-10-✱
												0	1	CA7-9-01-✱
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	0	CA7-12-10-✱
												0	1	CA7-12-01-✱
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	0	CA7-16-10-✱
												0	1	CA7-16-01-✱
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	1	0	CA7-23-10-✱
												0	1	CA7-23-01-✱
30	65	10	15	15	15	2	5	7-1/2	10	20	25	0	0	CA7-30-00-✱
												1	0	CA7-30-10-✱
												0	1	CA7-30-01-✱
37	65	11	18.5/ 20	20	18.5	3	5	10	10	25	30	0	0	CA7-37-00-✱
												1	0	CA7-37-10-✱
												0	1	CA7-37-01-✱
43	85	13	22	25	22	3	7-1/2	10	15	30	30	0	0	CA7-43-00-✱
												1	0	CA7-43-10-✱
												0	1	CA7-43-01-✱
60	100	18.5	32	37	32	5	10	15	20	40	50	0	0	CA7-60-00-✱
												1	0	CA7-60-10-✱
												0	1	CA7-60-01-✱
72	100	22	40	45	40	5	15	20	25	50	60	0	0	CA7-72-00-✱
												1	0	CA7-72-10-✱
												0	1	CA7-72-01-✱
85	100	25	45	55	45	7-1/2	15	25	30	60	60	0	0	CA7-85-00-✱
												1	0	CA7-85-10-✱
												0	1	CA7-85-01-✱
97	130	30	55	55	55	10	20	30	30	75	75	0	0	CA7-97-00-✱
												1	0	CA7-97-10-✱
												0	1	CA7-97-01-✱



CA7-9-10 contactor

CA7-43-00 contactor

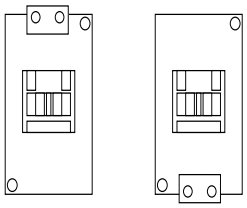
CA7-60-00 contactor

Coil Codes ❷

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
208	~	208V
220W	**200V-220V**	**208V-240V**
240	220V	240V
277	240V	277V
380	380V-400V	440V
480	**440V**	**480V**
600	550v	600V

Coil Terminal Position

All CA7 contactors are stocked and delivered with the coil terminals located on the line side (top) of the contactor. This is the typical configuration when using the contactor with an overload relay. When the contactor is used with the KT7 Motor Circuit Controller, the coil must be reversed, so that the coil terminals are located at the load side (bottom) of the contactor. CA7 coils can easily be reversed in the field, however, they are also available for order with the coils reversed from the factory. Contact your Sprecher+Schuh representative for more information about ordering CA7 contactors with reversed coils.



All CA7 contactors come with reversible coils.

Ordering Instructions

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

❶ AC1 Resistive Ratings and UL/CSA Continuous Current Ratings may be increased by the use of Lug Kits or Paralleling Links. See CA7 Accessories section for applicable information.

❷ Other voltages available, see page A56. *Non-standard coil voltages not listed here must be ordered and installed separately as renewal parts.*

Non-Reversing, Four Pole Contactors With AC Coil, Series CA7 (Open type only)

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Contact Configuration, Main Pole		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	**1/2**	**1 1/2**	**2**	**2**	**5**	**7-1/2**	4 3 2	0 1 2	**CA7-9-M40-∗** **CA7-9-M31-∗** **CA7-9-M22-∗**
12	32	4	5.5	5.5	5.5	**1/2**	**2**	**3**	**3**	**7-1/2**	**10**	4 3 2	0 1 2	**CA7-12-M40-∗** **CA7-12-M31-∗** **CA7-12-M22-∗**
16	32	5.5	7.5	7.5	7.5	**1**	**3**	**5**	**5**	**10**	**15**	4 3 2	0 1 2	**CA7-16-M40-∗** **CA7-16-M31-∗** **CA7-16-M22-∗**
23	32	7.5	11	13	10	**2**	**3**	**5**	**7-1/2**	**15**	**15**	4 3 2	0 1 2	**CA7-23-M40-∗** **CA7-23-M31-∗** **CA7-23-M22-∗**
37	75	11	18.5	20	18.5	**3**	**5**	**10**	**10**	**25**	**30**	4	0	**CA7-40-M40-∗**
37	75	11	18.5/20	18.5	7.5	**3**	**5**	**10**	**10**	**25**	**15**	2	2	**CA7-40-M22-∗**
85	130	25	45	55	45	**7-1/2**	**15**	**25**	**30**	**60**	**50**	4	0	**CA7-90-M40-∗**
85	130	25	45	55	18.5	**7-1/2**	**15**	**25**	**30**	**50**	**20**	2	2	**CA7-90-M22-∗**

CA7-23-M22-120 contactor

Coil Codes ❶

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
208	~	208V
220W	**200V-220V**	**208V-240V**
240	220V	240V
277	240V	277V
380	380V-400V	440V
480	**440V**	**480V**
600	550V	600V

Ordering Instructions

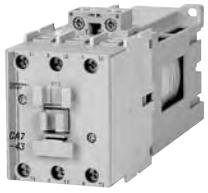
Specify Catalog Number	
Replace (∗) with Coil Code	**See Coil Codes on this page.**

❶ Other voltages available, see page A56. *Non-standard coil voltages not listed here must be ordered and installed separately as renewal parts.*

Non-Reversing, Three Pole Contactors With True DC Coil, Series CA7 (Open type only) ❶❹

I_e [A] ❶		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Auxiliary Contacts per Contactor		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V/ 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	**1/2**	**1 1/2**	**2**	**2**	**5**	**7-1/2**	1 0	0 1	**CA7-9C-10-✱** **CA7-9C-01-✱**
12	32	4	5.5	5.5	5.5	**1/2**	**2**	**3**	**3**	**7-1/2**	**10**	1 0	0 1	**CA7-12C-10-✱** **CA7-12C-01-✱**
16	32	5.5	7.5	7.5	7.5	**1**	**3**	**5**	**5**	**10**	**15**	1 0	0 1	**CA7-16C-10-✱** **CA7-16C-01-✱**
23	32	7.5	11	13	10	**2**	**3**	**5**	**7-1/2**	**15**	**15**	1 0	0 1	**CA7-23C-10-✱** **CA7-23C-01-✱**
30	65	10	15	15	15	**2**	**5**	**7-1/2**	**10**	**20**	**25**	0 1 0	0 0 1	**CA7-30C-00-✱** **CA7-30C-10-✱** **CA7-30C-01-✱**
37	65	11	18.5/ 20	20	18.5	**3**	**5**	**10**	**10**	**25**	**30**	0 1 0	0 0 1	**CA7-37C-00-✱** **CA7-37C-10-✱** **CA7-37C-01-✱**
43	85	13	22	25	22	**3**	**7-1/2**	**10**	**15**	**30**	**30**	0 1 0	0 0 1	**CA7-43C-00-✱** **CA7-43C-10-✱** **CA7-43C-01-✱**

CA7-9C contactor (typical)



CA7-43C-00-120 contactor

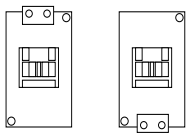
Description:
True DC coils have low inrush which allows the use of smaller power supplies. See page A62 for more information. DC and AC coils are not interchangeable. CA7-9C…43C contactors have increased dimensions to accommodate true DC coils.

Coil Codes ❷

DC Coil Codes	Voltage
12D	12V
24D ❸	**24V**
48D	48V
110D	110V
220D	220V

Coil Terminal Position

All CA7 contactors are stocked and delivered with the coil terminals located on the line side (top) of the contactor. This is the typical configuration when using the contactor with an overload relay. When the contactor is used with the KT7 Motor Circuit Controller, the coil must be reversed, so that the coil terminals are located at the load side (bottom) of the contactor. CA7 coils can easily be reversed in the field, however, they are also available for order with the coils reversed from the factory. Contact your Sprecher+Schuh representative for more information about ordering CA7 contactors with reversed coils.



All CA7 contactors come with reversible coils.

Ordering Instructions

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

❶ AC1 Resistive Ratings and UL/CSA Continuous Current Ratings may be increased by the use of Lug Kits or Paralleling Links. See CA7 Accessories section for applicable information.

❸ Surge suppressor coil with integrated diode available. Order coil code **24DD** and add $42 to list price. To order, change "C" in catalog number to "D".
Ex: CA7-9**C**-10-24DD becomes CA7-9**D**-10-24DD. Check with customer service representative to determine stock availability.

Non-Reversing, Four Pole Contactors With True DC Coil, Series CA7 (Open type only)

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Contact Configuration, Main Pole		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	4	0	CA7-9C-M40-✱
												3	1	CA7-9C-M31-✱
												2	2	CA7-9C-M22-✱
12	32	1	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	4	0	CA7-12C-M40-✱
												3	1	CA7-12C-M31-✱
												2	2	CA7-12C-M22-✱
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	4	0	CA7-16C-M40-✱
												3	1	CA7-16C-M31-✱
												2	2	CA7-16C-M22-✱
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	4	0	CA7-23C-M40-✱
												3	1	CA7-23C-M31-✱
												2	2	CA7-23C-M22-✱
37	75	11	18.5	20	18.5	3	5	10	10	25	30	4	0	CA7-40C-M40-✱
37	75	11	18.5/20	18.5	7.5	3	5	10	10	25	15	2	2	CA7-40C-M22-✱

CA7-9C contactor (typical)

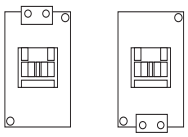
Description:
True DC coils have low inrush which allows the use of smaller power supplies. See page A62 for more information. DC and AC coils are not interchangeable. CA7-9C…40C contactors have increased dimensions to accommodate true DC coils.

Coil Codes ❶

DC Coil Codes	Voltage
12D	12V
24D ❷	24V
48D	48V
110D	110V
220D	220V

Coil Terminal Position

All CA7 contactors are stocked and delivered with the coil terminals located on the line side (top) of the contactor. This is the typical configuration when using the contactor with an overload relay. When the contactor is used with the KT7 Motor Circuit Controller, the coil must be reversed, so that the coil terminals are located at the load side (bottom) of the contactor. CA7 coils can easily be reversed in the field, however, they are also available for order with the coils reversed from the factory. Contact your Sprecher+Schuh representative for more information about ordering CA7 contactors with reversed coils.



All CA7 contactors come with reversible coils.

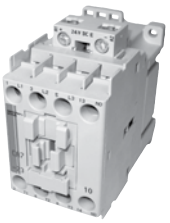
Ordering Instructions

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

Non-Reversing, Three Pole Contactors With Electronic DC Coil, Series CA7 (Open type only) ❶❷❸

I_e [A] ❶		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Auxiliary Contacts per Contactor		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V/ 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	1	0	CA7-9E-10-✱
												0	1	CA7-9E-01-✱
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	0	CA7-12E-10-✱
												0	1	CA7-12E-01-✱
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	0	CA7-16E-10-✱
												0	1	CA7-16E-01-✱
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	1	0	CA7-23E-10-✱
												0	1	CA7-23E-01-✱
30	65	10	15	15	15	2	5	7-1/2	10	20	25	0	0	CA7-30E-00-✱
												1	0	CA7-30E-10-✱
												0	1	CA7-30E-01-✱
37	65	11	18.5/ 20	20	18.5	3	5	10	10	25	30	0	0	CA7-37E-00-✱
												1	0	CA7-37E-10-✱
												0	1	CA7-37E-01-✱
43	85	13	22	25	22	3	7-1/2	10	15	30	30	0	0	CA7-43E-00-✱
												1	0	CA7-43E-10-✱
												0	1	CA7-43E-01-✱

A7-16E-10-110E contactor ❹



CA7-23E-10-24E contactor

CA7-37E-00-24E contactor

Description

Low Consumption Electronic DC coils have extremely low inrush which allows the use of smaller power supplies. CA7-9E…43E has internal surge suppression. See page A68 for more information.

This new design results in:

- Lighter, lower depth
- More energy efficient contactors
- Easier wiring
- Uniform panel appearance.

Applications

Direct control from PLC:

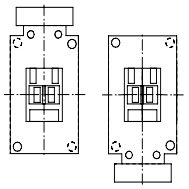
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced limiting the heat effect in control panels.

Coil Codes ❷❹

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

Coil Terminal Position

All CA7 contactors are stocked and delivered with the coil terminals located on the line side (top) of the contactor. This is the typical configuration when using the contactor with an overload relay. When the contactor is used with the KT7 Motor Circuit Controller, the coil must be reversed, so that the coil terminals are located at the load side (bottom) of the contactor. CA7 coils can easily be reversed in the field, however, they are also available for order with the coils reversed from the factory. Contact your Sprecher+Schuh representative for more information about ordering CA7 contactors with reversed coils.



All CA7 contactors come with reversible coils. (48V DC shown)

❶ AC1 Resistive Ratings and UL/CSA Continuous Current Ratings may be increased by the use of Lug Kits or Paralleling Links. See CA7 Accessories section for applicable information.
❷ CA7-9E…43E with electronic coils are not interchangeable with non-electronic DC or AC coils.
❸ See page A47 for limitations on adding auxiliaries to Electronic DC Coil contacts.
❹ Voltages of 48V DC and greater are supplied with backpack module standard. See page A85.

Non-Reversing, Four Pole Contactors With Electronic DC Coil, Series CA7 (Open type only) ❶❷

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Contact Configuration, Main Pole		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	4 3 2	0 1 2	CA7-9E-M40-∗ CA7-9E-M31-∗ CA7-9E-M22-∗
12	32	1	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	4 3 2	0 1 2	CA7-12E-M40-∗ CA7-12E-M31-∗ CA7-12E-M22-∗
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	4 3 2	0 1 2	CA7-16E-M40-∗ CA7-16E-M31-∗ CA7-16E-M22-∗
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	4 3 2	0 1 2	CA7-23E-M40-∗ CA7-23E-M31-∗ CA7-23E-M22-∗
37	75	11	18.5	20	18.5	3	5	10	10	25	30	4	0	CA7-40E-M40-∗
37	75	11	18.5/20	18.5	7.5	3	5	10	10	25	15	2	2	CA7-40E-M22-∗

CA7-23E-M22-24E contactor

Description

Low Consumption Electronic DC coils have extremely low inrush which allows the use of smaller power supplies. CA7-9E…43E have internal surge suppression. See page A68 for more information.

This design results in:

- Lighter, lower depth
- More energy efficient contactors
- Easier wiring
- Uniform panel appearance

Applications

Direct control from PLC:

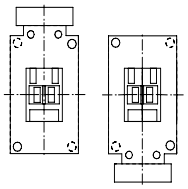
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced limiting the heat effect in control panels.

Coil Codes ❶❸

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

Coil Terminal Position

All CA7 contactors are stocked and delivered with the coil terminals located on the line side (top) of the contactor. This is the typical configuration when using the contactor with an overload relay. When the contactor is used with the KT7 Motor Circuit Controller, the coil must be reversed, so that the coil terminals are located at the load side (bottom) of the contactor. CA7 coils can easily be reversed in the field, however, they are also available for order with the coils reversed from the factory. Contact your Sprecher+Schuh representative for more information about ordering CA7 contactors with reversed coils.



All CA7 contactors come with reversible coils. (48V DC shown)

❶ CA7-9E…43E with electronic coils are not interchangeable with non-electronic DC or AC coils

❷ See pages A47 for limitations on adding auxiliaries to Electronic DC Coil contacts.

❸ Voltages of 48V DC and greater are supplied with backpack module standard. See page A85.

Non-Reversing, Three Pole Contactors With Two Winding DC Coil, Series CA7 (Open type only) ❶

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Auxiliary Contacts per Contactor ❶		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)								
						1 Ø		3 Ø						
AC-3	AC-1	230V	400V/ 415V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	Catalog Number
60	100	18.5	32	37	32	5	10	15	20	40	50	0	0	CA7-60D-00-✱
												1	0	CA7-60D-10-✱
												0	1	CA7-60D-01-✱
72	100	22	40	45	40	5	15	20	25	50	60	0	0	CA7-72D-00-✱
												1	0	CA7-72D-10-✱
												0	1	CA7-72D-01-✱
85	100	25	45	55	45	7-1/2	15	25	30	60	60	0	0	CA7-85D-00-✱
												1	0	CA7-85D-10-✱
												0	1	CA7-85D-01-✱
97	130	30	55	55	55	10	20	30	30	75	75	0	0	CA7-97D-00-✱
												1	0	CA7-97D-10-✱
												0	1	CA7-97D-01-✱

CA7-60D Contactor

Description:
Contactors with two winding DC coils have very low hold-in values and share the same dimensions with AC contactors. See page A57 for more information. See page A84 for dimensional information.

Non-Reversing, Four Pole Contactors With Two Winding DC Coil, Series CA7 (Open type only) ❶

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Contact Configuration Main Pole		Auxiliary Contacts per Contactor		Open Type
		kW (50 Hz)				UL/CSA HP (60 Hz)										
						1 Ø		3 Ø								
AC-3	AC-1	230V	415V 400V	500V	690V	115V	230V	200V	230V	460V	575V	NO	NC	NO	NC	Catalog Number
85	130	25	45	55	45	7-1/2	15	25	30	60	50	4	0	0	0	CA7-90D-M40-✱
85	130	25	45	55	18.5	7-1/2	15	25	30	50	20	2	2	0	0	CA7-90D-M22-✱

Coil Codes ❷❸❹

DC Coil Code	Voltage
24DD	24V
110DD	110V

Ordering Instructions

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

❶ CA7-60D…CA7-97D have an internal auxiliary contact to transition from the start winding to the run winding.
❷ Coils include an integrated diode surge suppressor.
❸ Other coil voltages are available, see page A57. Contact your Sprecher + Schuh Sales Representative to determine which coil voltages may be stocked. *Non-standard coil voltages (non-stock) must be ordered and installed separately as renewal parts.*
❹ The coil codes shown are the most commonly stocked items. Contact your Sprecher + Schuh representative to determine if other voltages, i.e.., 12DD, 48DD, 220DD are on-hand or can be specially ordered in quantities.

Top (Front) Mount Auxiliary Contact Blocks ❶

Top mount auxiliary contact blocks snap-on to the top (front) of any CA7 contactor

4-pole auxiliary

2-pole auxiliary contact block (typical)

Auxiliary Contact Blocks for Top Mounting -

- 2 and 4 pole
- Snap on design - mounts without tools
- Electronic compatible contacts
- Mutual positive guidance to the main contactor poles (excluding L types)
- Several terminal numbering choices even for models wit equal function
- Late break /early make (L) available

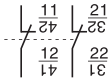
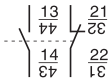
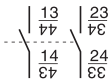
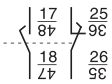
Bifurcated Contacts

Bifurcated auxiliary contacts provides a higher degree of reliability than the standard cross-stamped auxiliary contacts because it H-bridge divides each movable contact into two sections at the tip of the spanner. Typical application is low-voltage low-current applications (i.e.: PLC). Cross-stamped contacts are good for a minimum of 5mA at 17v while bifurcated contacts are good for a minimum of 3mA at 5v.

NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number		Bifurcated Contacts Catalog Number ❷
0	2	51 61 / 52 62	CA7 all	**CS7-PV-02**		**CS7-PVB-02**
		11 21 / 12 22	CA7-30...85-✱-00	**CA7-PV-02**		**CA7-PVB-02**
1	1	53 61 / 54 62	CA7 all	**CS7-PV-11**		**CS7-PVB-11**
		13 21 / 14 22	CA7-30...85-✱-00	**CA7-PV-11**		**CA7-PVB-11**
		23 31 / 24 32	CA7-9...23-✱-10 CA7-9...23-✱-01	**CA7-PV-S11**		**CA7-PVB-S11**
2	0	53 63 / 54 64	CA7 all	**CS7-PV-20**		**CS7-PVB-20**
		13 23 / 14 24	CA7-30...85-✱-00	**CA7-PV-20**		**CA7-PVB-20**
1EM	1LB	17 25 / 18 26	CA7-30...85-✱-00	**CA7-PV-L11**		**NOT AVAILABLE**
1	3	53 61 71 81 / 54 62 72 82	CA7-30...85-✱-00	**NOT AVAILABLE**		**CA7-PVB-13**
2	2	53 61 71 83 / 54 62 72 84	CA7 all	**CS7-PV-22**		**CS7-PVB-22**
		13 21 31 43 / 14 22 32 44	CA7-30...85-✱-00	**CA7-PV-22**		**CA7-PVB-22**
		21 31 43 53 / 22 32 44 54	CA7-9...23-✱-10 CA7-9...23-✱-01	**CA7-PV-S22**		**CA7-PVB-S22**
3	1	53 61 73 83 / 54 62 74 84	CA7 all	**CS7-PV-31**	53	**CS7-PVB-31**
		21 33 43 53 / 22 34 44 54	CA7-9...23-✱-01	**CA7-PV-S31**		**CA7-PVB-S31**
1	3	53 61 71 81 / 54 62 72 82	CA7 all	**CS7-PV-13**		**CS7-PVB-13**
4	0	53 63 73 83 / 54 64 74 84	CA7 all	**CS7-PV-40**		**CS7-PVB-40**
0	4	51 61 71 81 / 52 62 72 82	CA7 all	**CS7-PV-04**		**CS7-PVB-04**
1+1EM	1+1LB	53 61 75 87 / 54 62 76 88	CA7 all	**CS7-PV-L22**		**NOT AVAILABLE**

❶ Max. number of auxiliary contacts that may be mounted:
- AC Coil contactors - max. 4 N.O. contacts on the front of the contactor, 2-N.O. contacts on the side, 4-N.C. front or side: 6 total.
- DC Coil contactors - max. 4 N.O. contacts on the front of the contactor, or max. 2-N.O. contacts on side, 4-N.C. front or side: (4) total.

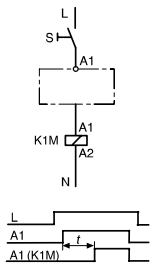
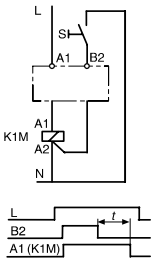
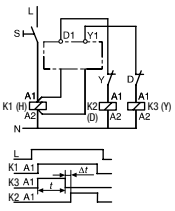
Side Mount Auxiliary Contact Blocks (1 & 2 Pole) ❶

Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Catalog Number ❸
 *1-pole (typical)*  *2-pole (typical)*	**Auxiliary Contact Blocks for Side Mounting - ❶** • 1 and 2-pole • Two way numbering for right or left mounting on the contactor • Snap-on design - mounts without tools • Electronic compatible contacts down to 24V, 20mA • Late break / early make (L) available • Mutual positive guidance to the main contactor poles (excluding L-types)	0	1		CA7 all	**CA7-PA-01**
		1	0		CA7 all ❷	**CA7-PA-10**
		0	2		CA7 all	**CA7-PA-02**
		1	1		CA7 all ❷	**CA7-PA-11**
		2	0		CA7 all ❷	**CA7-PA-20**
		1EM	1LB		CA7 all	**CA7-PA-L11**

❶ Max. number of auxiliary contacts that may be mounted:
- AC Coil contactors - max. 4 N.O. contacts on the front of the contactor, 2-N.O. contacts on the side, 4-N.C. front or side: 6 total.
- DC Coil contactors - max. 4 N.O. contacts on the front of the contactor, or max. 2-N.O. contacts on side, 4-N.C. front or side: (4) total.

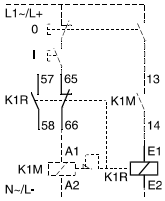
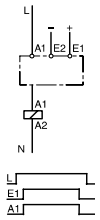
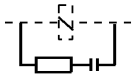
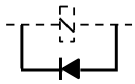
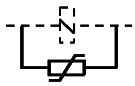
❷ Left mounting only is recommended when using with CA7-9…CA7-23 contactors. These contactors have built-in auxiliaries, which will result in duplicate terminal markings if mounted on the right.

Control Modules ❶

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 main contactor continue to operate without delay. • Continuous adjustment range	CA7 all		**ON-Delay** 0.3…30s 1.8…180s	**CZE7-30** **CZE7-180**
		CA7 all		**OFF-Delay** 0.3…30s 1.8…180s	**CZA7-30** **CZA7-180**
	**Electronic Timing Module –** **ON-Delay** The contactor is energized at the end of the delay time.	CA7 all		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**
				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 –** **OFF-Delay** After interruption of the control signal, the contactor is de-energized at the end of the delay time.	CA7 all		110…240V 50/60Hz 0.3…3s 1…30s 10…180s	**CRZA7-3-110/240** **CRZA7-30-110/240** **CRZA7-180-110/240**
		CA7-9… CA7-37		24V AC 50/60Hz 0.3…3s 1…30s 10…180s	**CRZA7-3-24VAC** **CRZA7-30-24VAC** **CRZA7-180-24VAC**
	**Electronic Timing Module –** **Wye-Delta Transition Timer** Contactor K3 (Y) is de-energized and contactor K2 (D) is energized after the end of the set transition time. Switching delay at 50ms. • Continuous adjustment range • High repeat accuracy	CA7 all		110…240V 50/60Hz 1…30s	**CRZY7-30-110/240**
	**Mechanical/Electrical Interlocks –** • Common to all CA7 contactors; interlocks different contactor sizes • Mechanical and electrical interlocking possible in one module by means of integrated auxiliary contacts • Dovetail (CA7-S9) connector included (9mm)	CA7 all ❶		**Mechanical** Without auxiliaries	**CM7**
				**Mechanical/ Electrical** Two NC aux contacts	**CM7-02**

❶ Not for use with CA7-40 or CA7-90 (4-pole) Contactors.

Control Modules *(continued)*

Module	Description	For use with…	Connection Diagrams	Function		Catalog Number
	**Mechanical Latch –** Following contactor latching, the contactor 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 CA7 contactors	CA7-9…85 (except true DC coils)				**CV7-11-✱** *Replace ✱ with coil code below (See Application Note below)*
	**Electronic Interface –** Interface between the DC control signal from a PLC and the AC operating mechanism of the contactor. • Requires no additional surge suppression for the coils • Switching capacity 200VA • Suitable for all CA7 contactors ❹	CA7 all (with AC control)		Input **24V DC ❶** 12V DC 48V DC	Output 110… 240V AC	**CRI7E-24** **CRI7E-12** **CRI7E-48** *Indicates special order*
	**Surge Suppressors -** Limits coil switching transients. • Plug-in, coil mounted • Suitable for all CA7 contactors	CA7 all		**RC Module -** AC Control (50/60Hz) 24…48V 110…280V 380…480V		 **CRC7-48** **CRC7-280** **CRC7-480**
				**Diode Module -** DC Control 12-250VDC		 **CRD7-250**
				**Varistor Module -** AC/DC Control 12…55VAC/ 12…77VDC 56…136VAC/ 78…180VDC 137…277VAC/ 181…350VDC 278…575VAC		 **CRV7-55** **CRV7-136** **CRV7-277** **CRV7-575**

CV7 Mechanical Latch Coil Codes ❷❸❻

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
120	110 VAC	**120 VAC**	~	110V50/120V60
220W	~	**208…240 VAC**	~	208…240V60
230Z	230 VAC	230 VAC	110 VDC	230V 50/60 Hz
240Z	**240 VAC**	**240 VAC**	125 VDC	240V 50/60 Hz
277	240 VAC	277 VAC	~	240V50/277V60
380	380…400 VAC	440 VAC	~	380…400V50/440V60
400Z	400 VAC	400 VAC	220 VDC	400V 50/60 Hz
415	400…415 VAC	~	~	400…415 V50 Hz
480	440 VAC	**480 VAC**	~	440V50/480V60
600 ❺	550 VAC	600 VAC	~	550V50/600V60

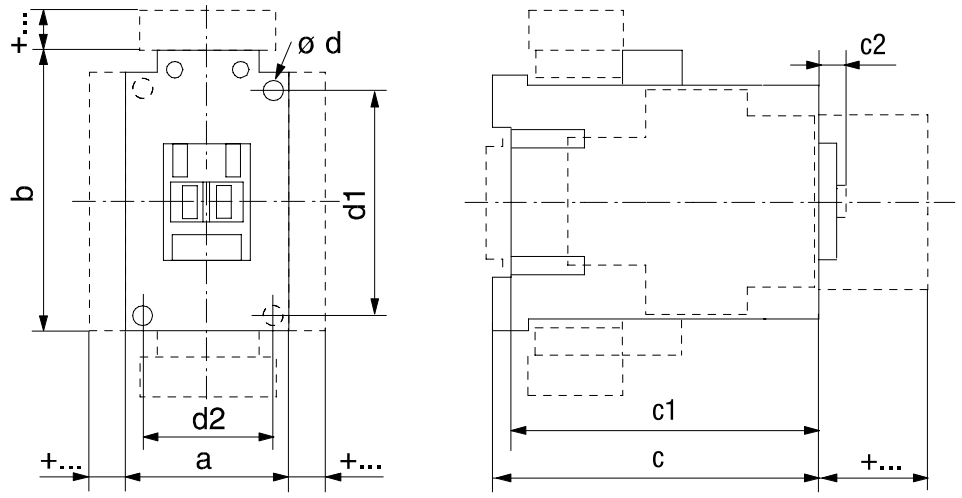
APPLICATION NOTE: The CV7 Mechanical Latch for CA7 may be used for both AC and DC applications. However, when using in a DC application, both the Contactor and Latch must still be AC, using the Coil Code Table shown. For example, if needing a latched contactor for 24 V DC, choose coil code 48Z for a CA7 contactor and Latch for 48V AC. This combination will work at 24V DC momentary due to coil clearing contacts.

❶ Control voltage 18…30V DC (10…15mA)
❷ Other voltages available. Contact your Sprecher + Schuh representative.
❸ CV7 must be wired for momentary operation only.
❹ Minimum actuation current is 5 volts, 2ma. The leakage current is <1MA for the following:
- CRI7E-12 @ 2.5 VDC input
- CRI7E-24 @5 VDC input
- CRI7E-48 @ 10 VDC input.

❺ Use 600V AC when 575 V is required.
❻ Command duration 0.03…10 seconds.

Series CA7, CAU7, CNX, CAN7 and CAL7 (Contactors, Reversing Contactors & Special Use Contactors)

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

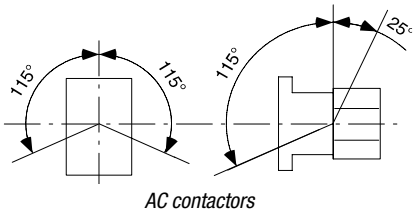


	Catalog Number	a	b	c	c1	c2	ød	d1	d2
AC Contactors	CA7-9...CA7-23; CAN7-12, CAN7-16, CNX-205...208; CA(V)L7-20	45 (1-25/32)	80 (3-3/16)	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-30...CA7-37; CNX-209; CAN7-37	45 (1-25/32)	81 (3-3/16)	97.5 (4)	92.6 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-40-M... CAL7-30-M40	59 (2-21/64)	81 (3-3/16)	100.5 (4-7/64)	95.5 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-43, CAN7-43, CNX-212	54 (2-1/8)	81 (3-3/16)	100.5 (4-7/64)	95.5 (3-49/64)	6.5 (17/64)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-60...CA7-97, CAN7-85 CNX-218	72 (2-53/64)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
	CA7-90-M... CAL7-60-M40	95 (3-3/4)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)

Reversing Contactors, Capacitor Contactors & Accessories (+...)

Contactors with...		Dim. [mm]	Dim. [inches]
auxiliary contact block-front mounting	2-, or 4-pole	c/c1 + 39	c/c1 +1-37/64
auxiliary contact block-side mounting	1-, or 2-pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
reversing contactor w-mech.interlock	on side of contactor	a+9+a	a+ 23/64+a
mechanical latch		c/c1 + 61	c/c1 +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 marking tag sheet with clear cover marking tag adapter for V7 Terminals	+0 +0 +5.5	+0 +0 +7/32

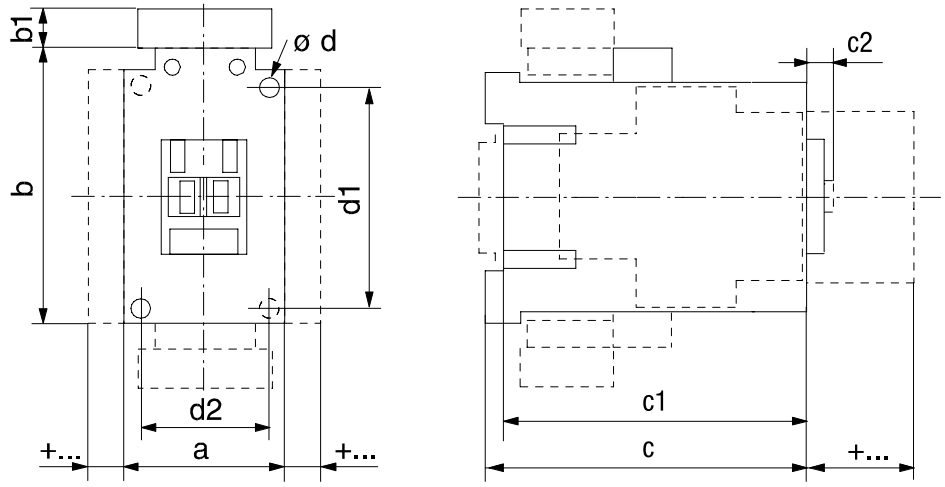
Mounting Position



AC contactors

Series CA7 with Electronic DC Coil

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

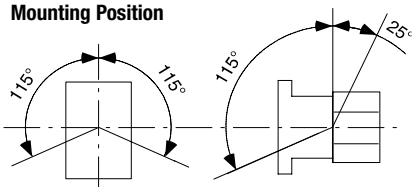


Catalog Number	Coil Code	a	b	b1	c	c1	c2	Ød	d1	d2
CA7-9E…CA7-23E, CAN7-12E…CAN7-16E	12E	45 (1-25/32)	81 (3-3/16)	~ ~	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	24E	45 (1-25/32)	81 (3-3/16)	~ ~	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	48E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	110E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	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)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
CA7-30E…CA7-37E, CAN7-37E	12E	45 (1-25/32)	81 (3-3/16)	~ ~	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	24E	45 (1-25/32)	81 (3-3/16)	~ ~	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	48E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	110E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
	220E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	35 (1-3/8)
CA7-40E	12E	59 (2-21/64)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	24E	59 (2-21/64)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	48E	59 (2-21/64)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	110E	59 (2-21/64)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	220E	59 (2-21/64)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
CA7-43E, CAN7-43E	12E	54 (2-1/8)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	24E	54 (2-1/8)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	48E	54 (2-1/8)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	110E	54 (2-1/8)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)
	220E	54 (2-1/8)	81 (3-3/16)	24 (15/16)	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	2-4.5 (2-3/16)	60 (2-23/64)	45 (1-25/32)

Reversing Contactors, Capacitor Contactors & Accessories (+...)

	Contactors with...	Dim. [mm]	Dim. [inches]
auxiliary contact block-front mounting	2-, or 4-pole	c/c1 + 39	c/c1 +1-37/64
auxiliary contact block- left side mounting	1-, or 2 pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
mechanical latch		c/c1 + 61	c/c1 +61
interface module	on coil terminal side	b + 9	c/c1 + 2-31/64
Labeling with...	label sheet marking tag sheet with clear cover marking tag adapter for V7 Terminals	+0 +0 +5.5	+0 +0 +7/32

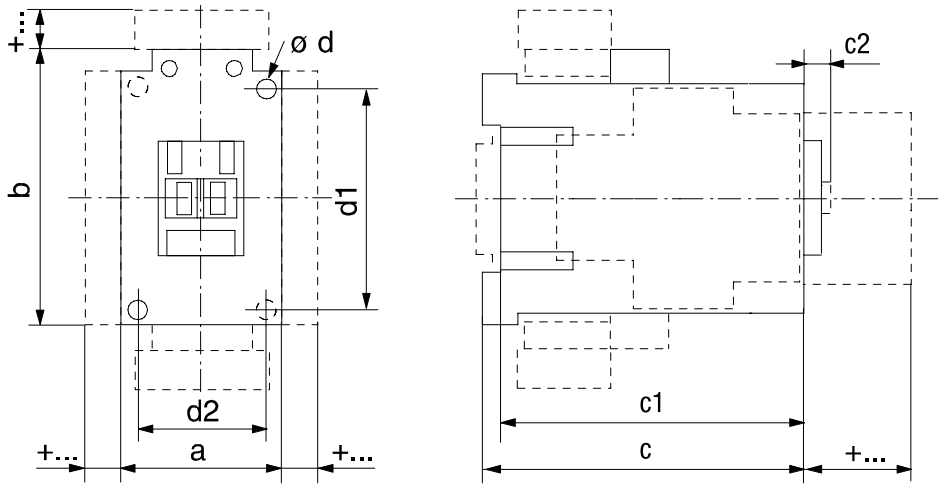
Mounting Position



Electronic DC contactors

Series CA7 with Two Winding DC Coils

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

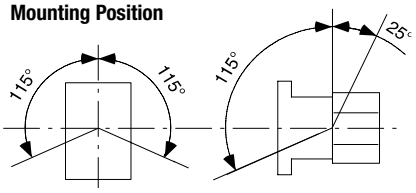


	Catalog Number	a	b	c	c1	c2	ød	d1	d2
Two Winding DC Contactors	CA7-60D...CA7-97D CAN7-85D	72 (2-53/64)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
	CA7-60D...CA7-97D CAN7-85D	81 (3-3/16)	131 (5-5/32)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)
	CA7-90D	95 (3-3/4)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	4-5.4 (4-7/32)	100 (3-15/16)	55 (2-11/64)

Reversing Contactors, Capacitor Contactors & Accessories (+...)

	Contactors with...	Dim. [mm]	Dim. [inches]
auxiliary contact block-front mounting	2-, or 4-pole	c/c1 + 39	c/c1 +1-37/64
auxiliary contact block- left side mounting	1-, or 2 pole	a + 9	a + 23/64
pneumatic timing module		c/c1 + 58	c/c1 + 2-23/64
electronic timing module	on coil terminal side	b + 24	b + 15/16
mechanical latch		c/c1 + 61	c/c1 +61
interface module	on coil terminal side	b + 9	c/c1 + 2-31/64
Labeling with...	label sheet marking tag sheet with clear cover marking tag adapter for V7 Terminals	+0 +0 +5.5	+0 +0 +7/32

Mounting Position



Two Winding DC contactors

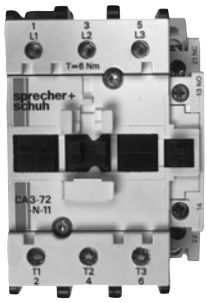
Replacement Contactors Cross Reference, Series CA1 to Series CA7 (Open Type Only) ❶

I_e [A] ❶		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Series CA1U Obsolete	Series CA7 Equivalent
		kW (50 Hz)				UL/CSA HP (60 Hz)							
						1 Ø		3 Ø					
AC-3	AC-1	230V	400V / 415V	500V	690V	115V	230V	200V	230V	460V	575V	Catalog Number	Catalog Number
						1	3	5	5	10	10	CA1U-10	
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15		CA7-16-10
						2	3	7-1/2	7-1/2	15	20	CA1U-14	
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15		CA7-23-10
						2	5	7-1/2	10	20	25	CA1U-16	
30	65	10	15	15	15	2	5	7-1/2	10	20	25		CA7-30-10
						3	7-1/2	10	15	30	40	CA1U-25	
43	85	13	22	25	22	3	7-1/2	10	15	30	30		CA7-43-10
72	100	22	40	45	40	5	15	20	25	50	60		CA7-72-10
						5	15	25	25	50	60	CA1U-40	
85	100	25	45	55	45	7-1/2	15	25	30	60	60		CA7-85-10

CA1U-10 Contactor

Replacement Contactors Cross Reference, Series CA3 to Series CA7 (Open Type Only) ❶

I_e [A] ❶		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Series CA3 Obsolete	Series CA7 Equivalent
		kW (50 Hz)				UL/CSA HP (60 Hz)							
						1 Ø		3 Ø					
AC-3	AC-1	230V	400V / 415V	500V	690V	115V	230V	200V	230V	460V	575V	Catalog Number	Catalog Number
								2	2	5	7-1/2	CA3-9-10	
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2		CA7-9-10
								3	3	7-1/2	10	CA3-12-10	
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10		CA7-12-10
								5	5	10	15	CA3-16-10	
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15		CA7-16-10
								5	5	10	15	CA3-23A-10	
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15		CA7-23-10
								7-1/2	7-1/2	15	20	CA3-23-10	
30	65	10	15	15	15	2	5	7-1/2	10	20	25		CA7-30-10
								10	10	20	25	CA3-30-10	
								10	10	25	30		CA7-37-10
37	65	11	18.5/20	20	18.5	3	5	10	10	25	30	CA3-37	
43	85	13	22	25	22	3	7-1/2	10	15	30	30		CA7-43-10
								10	15	30	40	CA3-43	
								15	20	40	50	CA3-60	
60	100	18.5	37	37	32	5	10	15	20	40	50		CA7-60-10
								20	20	50	60	CA3-72	
72	100	22	40	45	40	5	15	20	25	50	60		CA7-72-10
85	100	25	45	55	45	7-1/2	15	25	30	60	60		CA7-85-10



CA3-72 Contactor

❶ Available auxiliary contacts may vary. See selection pages for more information.

Second Generation CEP7 Solid State Overload Relays

Advanced solid state motor protection

The introduction of the second generation of CEP7 solid state overload relays advances Sprecher + Schuh's leading edge technology with several improved features. This second generation of CEP7 overload relay includes features like:

- Selectable trip class and field installable modules
- A wider (5:1) set current adjustment range
- A more robust mechanical and electrical mounting
- Self-sealed latching mechanism

The basic concept of utilizing Application Specific Integrated Circuits (ASICs) resulting in an affordable solid state overload relays remains unchanged. This kind of versatility and accuracy was simply not possible with traditional bimetallic or eutectic alloy electromechanical overload relays.

Fewer units means greater application flexibility

The new CEP7 is available in three basic models:

- CEP7-ED1 is a Class 10, manual reset model available up to 27 amperes which covers the most common horsepower motors and your every day application. This model is economically priced to be competitive with adjustable bimetallic overload relays.
- CEP7-EE is full featured selectable trip class (10, 15, 20 & 30) 3-phase application overload relay with provision for field mountable modules to handle remote reset, stall and other modules previously available only in higher priced electronic overload relays. Manual reset or automatic reset can be selected with dip switches on the new CEP7-EE models.
- CEP7S-EE is a 1-phase application overload relay packing all features of the 3-phase CEP7-EE model.

Wide current adjustment range

Thermal or bimetallic overload relays typically have a small current adjustment range of 1.5:1 meaning that the maximum setting is generally 1.5 times the lower setting. The first generation of CEP7 caused the industry to take note of the flexibility when it

introduced a 3.2:1 adjustment ratio. A wider adjustment range is the primary reason the industry has been turning to more specifications calling for electronic overload relay protection over thermal overload relays. Sprecher + Schuh building on field experience now introduces a CEP7 overload capable of adjustment to a maximum of five times the minimum set current which dramatically reduces the number of units required on-hand to cover the full range of current settings up to 90 amperes.

5 : 1 Current Range

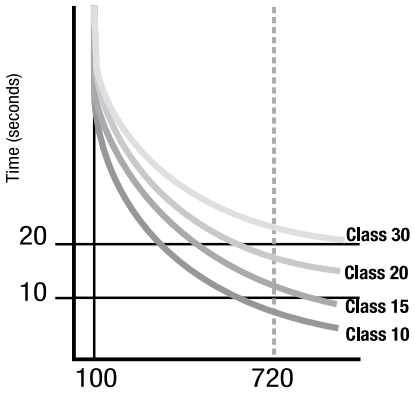
27A

45A

90A

30A 800A

SSNA9000



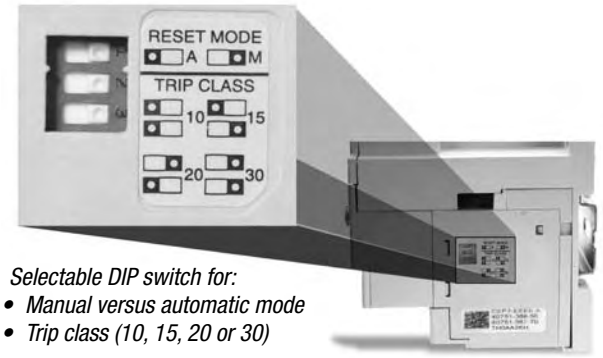
CEP7 overload relays are available with Class 10, 15, 20 or 30 tripping characteristics

Selectable tripping class

Because of today's lighter T-frame motors, Class 10 overload relays (relays that trip within 10 seconds of a locked rotor condition) have become the industry standard. If your application requires a longer motor run-up time. The new CEP7-EE Selectable Trip Class has DIP-switches providing Trip Class selection of 10, 15, 20 or 30 seconds. This ability allows you to closely match the Trip Class with the run-up time of the motor.

Choice of reset options

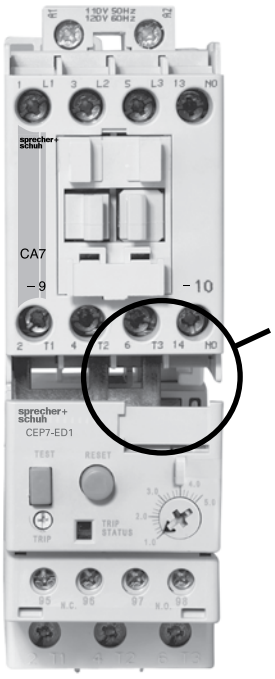
Most industrial applications usually calls for an overload relay that must be manually reset in the event of a trip. This allows the cause of the overload to be identified before the motor is restarted. In specialized cases, however, such as rooftop AC units or where restarting the motor will not harm people or equipment, automatic reset may be desired. CEP7-ED1 overload relays are available with Manual Reset exclusively which keeps the cost down. CEP7-EE models have a selectable dip switch in Manual and Automatic Reset modes.



Selectable DIP switch for:
- *Manual versus automatic mode*
- *Trip class (10, 15, 20 or 30)*

More robust design

The CEP7 has been re-designed to physically extend to the back-pan therefore aligning the mounting of the overload with the corresponding contactor. Further, the mechanical attachment and direct electrical connection to the contactor has been "beefed-up." This provides for a more robust mounting which means less damage from shipping or during field wire installation. The bipolar latching relay which controls the normally closed trip contacts and normally open alarm circuit contacts have been self-enclosed therefore insolating the electromagnet and shielding against airborne metal particles and other potential environmental debris. The new CEP7 has been tested to operate in -20° C. or up to 60° C (140 °F.) and withstand 3G of vibration or 30G of shock on a mountain up to an altitude of 2000m or in a jungle at 95% humidity. Reliability under every conceivable environmental condition is a quality built into the design of this second generation of CEP7 electronic overload relay.

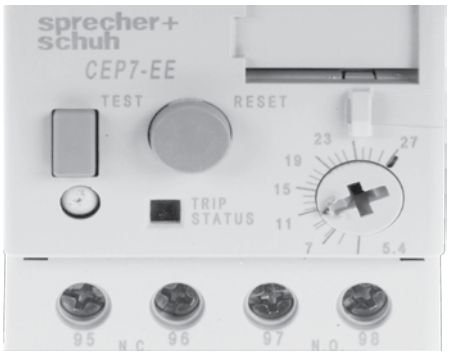


Self-powered design means convenience

By developing the power it requires from the applied voltage, the CEP7 is "self-powered," eliminating the need for a separate control power source. This is not the case with some other competitive electronic overload relays. Since the CEP7 is self-powered and a traditional auxiliary contact is used to interface with the contactor, the user can apply the CEP7 the same way as an electromechanical overload. No special connections or control schematic diagram provisions are required in 3-phase applications.

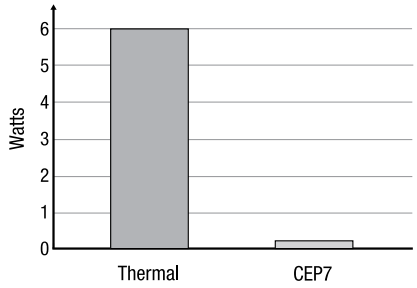
Superior phase failure protection

The CEP7's on-board electronics are constantly monitoring all three phases. If the ASIC board senses that one phase is missing during a steady state running condition on a fully loaded motor, it will trigger in 3 seconds. If a single phase condition is present during starting, the CEP7 will trip within 8 seconds (for a motor >80% loaded). These times are much faster than any thermal bimetallic overload relay. In addition, CEP7 overload relays detect a 50% phase imbalance in the same way as a phase loss.



Increased accuracy and improved motor protection

Microelectronics provides flexible and accurate motor overload protection. Unlike traditional overload relays that simulate heat build-up in the motor by passing current through a heater element, CEP7 solid state overload relays measure motor current directly through integrated current transformers. The transformers, in turn, create a magnetic field that induces DC voltage onto the ASIC board. The electronics identify excessive current or loss of phase more accurately, and react to the condition with greater speed and reliability, than traditional overload relays. In addition, CEP7 solid state relays offer setting accuracies from 2.5 – 5% and repeat accuracy of 1%.



Conventional overload relays dissipate as much as six watts of energy compared with as little as 150 milliwatts for the CEP7

Dramatically lowered energy requirement saves money, reduces panel space

Because traditional overload relays work on the principle of "modeling" the heat generated in the motor (recreating the heat in the bimetal elements or heaters), a significant amount of energy is wasted. In traditional bimetallic overload relays, as many as six watts of heat are dissipated to perform the protective function. Because the CEP7 uses sampling techniques to actually measure the current flowing in the circuit, very little heat is dissipated in the device…as little as 150 milliwatts. This not only reduces the total amount of electrical energy consumed in an application, but it can also have a dramatic impact on the design and layout of control panels. The density of motor starters can be much greater because less heat is generated by each of the individual components. Higher density results in smaller control panels. In addition, special ventilation or air conditioning that might have been required to protect sensitive electronic equipment such as PLC's can now be reduced or eliminated. CEP7 overload relays dramatically reduced energy requirement saves money and reduces panel space.

Additional Protection with Side Mount Modules

The CEP7 offers a variety of field installable accessories for side mount on the left side. Side mount modules provide additional motor protection functionality traditionally found only on more expensive models. Modules include the following additional features.

- **Remote Reset** provision for reset after trip from a remote pilot device
- **Jam Protection/Remote Reset** provides adjustable Jam set points and trip delay plus remote reset
- **Ground Fault Protection/Remote Reset** combined with ground fault current transformers provide adjustable set points for ground fault trip protection of equipment plus remote reset
- **Ground Fault/Jam Protection/ Remote Reset** combines all three features as described above
- **PTC Thermistor Relay/Remote Reset** manages thermistor sensor signals from the motor
- **Network Communication Modules** provide motor diagnostic information via **Profibus** or **Ethernet** communication
  - Two discreet Inputs and one discreet Output
  - Differentiate between various motor protection algorithms
  - Overload and underload warning
  - Jam protection
  - Proactively alert maintenance personnel just before or when a fault occurs
  - Plus remote reset

Directly Mounted CEP7 Solid State Overload Relays, Manual Reset ❶❷❹

Overload Relay	Directly Mounts to Contactor… ❷	Adjustment Range (A)	Trip Class 10 Catalog Number
Manual Reset for 3Ø Applications ❶			
	CA7-9…CA7-23 CAN7-12, CAN7-16	0.1…0.5	**CEP7-ED1AB**
		0.2…1.0	**CEP7-ED1BB**
		1.0…5.0	**CEP7-ED1CB**
		3.2…16	**CEP7-ED1DB**
		5.4…27	**CEP7-ED1EB**
	CA7-30…CA7-43 CAN7-37, CAN7-43	1.0…5.0	**CEP7-ED1CD**
		3.2…16	**CEP7-ED1DD**
		5.4…27	**CEP7-ED1ED**
		9…45	**CEP7-ED1FD**

Directly Mounted CEP7 Solid State Overload Relays, Automatic/Manual Reset ❶❷❸❹

Overload Relay	Directly Mounts to Contactor… ❷	Adjustment Range (A)	Adjustable Trip Class 10, 15, 20 & 30 Catalog Number
Automatic or Manual Reset for 3Ø Applications ❶			
	CA7-9…CA7-23 CAN7-12, CAN7-16	0.1…0.5	**CEP7-EEAB**
		0.2…1.0	**CEP7-EEBB**
		1.0…5.0	**CEP7-EECB**
		3.2… 16	**CEP7-EEDB**
		5.4…27	**CEP7-EEEB**
	CA7-30…CA7-43 CAN7-37, CAN7-43	1.0…5.0	**CEP7-EECD**
		3.2…16	**CEP7-EEDD**
		5.4…27	**CEP7-EEED**
		9…45	**CEP7-EEFD**
	CA7-60…CA7-97 CAN7-85	5.4…27	**CEP7-EEEE**
		9…45	**CEP7-EEFE**
		18…90	**CEP7-EEGE**
		60…120	**CEP7-EEVE**
Automatic or Manual Reset for 1Ø Applications ❶			
	CA7-9…CA7-23 CAN7-12, CAN7-16	1.0…5.0	**CEP7S-EEPB**
		3.2…16	**CEP7S-EERB**
		5.2…27	**CEP7S-EESB**
	CA7-30…CA7-43 CAN7-37, CAN7-43	9…45	**CEP7S-EETD**
	CA7-60…CA7-85 CAN7-85	18…90	**CEP7S-EEUE**

TIP!

Most industrial applications usually call for an overload relay that must be manually reset in the event of a trip. This allows the cause of the overload to be identified before the motor is restarted. An overload relay that resets automatically is generally for specialized, or remote applications, such as rooftop AC units where restarting the motor will not harm people or equipment.

❶ 3-phase CEP7 units are only designed for 3Ø applications. Single phase CEP7S units are only designed for single phase applications.

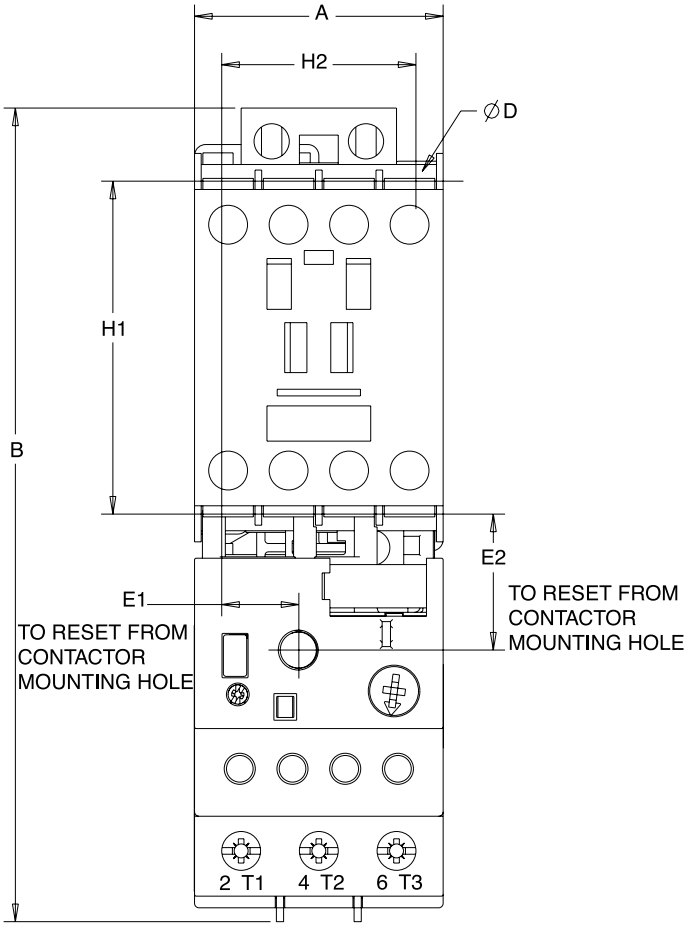
❷ This reference is not intended to be a guide for selecting contactors. Size overload relays using the full load current of the motor.

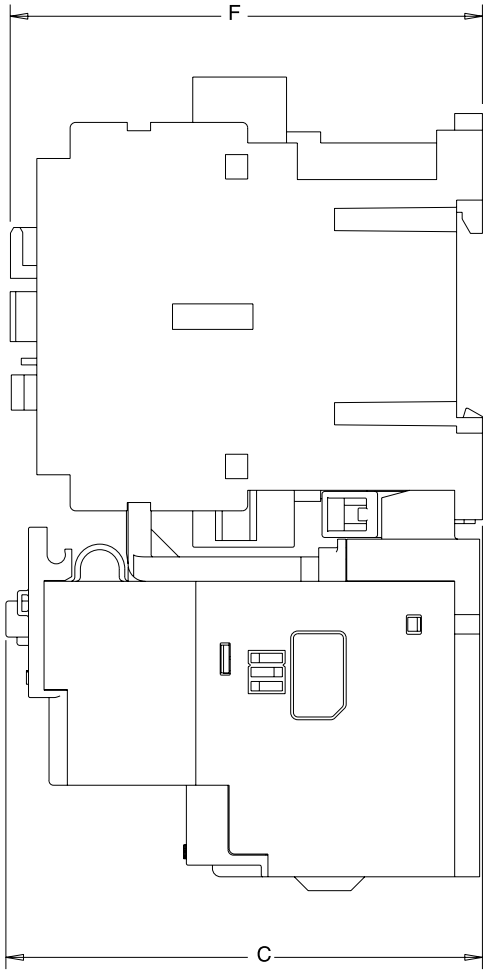
❸ The reset time of a CEP7 set in the automatic mode is approximately 120 seconds.

❹ CEP7 overload relays do not work with Variable Frequency Drives, DC Applications or Softstarters with braking options.

CEP7 Mounted to CA7 Contactor

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





Overload	Mounted to Contactor		A Width	B Height	C Depth	D	E1	E2	F	H1	H2
CEP7-ED1ED..FD CEP7-ED1…B CEP7-EE…B CEP7S-EE…B	CA7-9…23	mm (in)	45 (1-25/32)	146.6 (5-25/32)	85.2 (3-23/64)	4.5 (3/16)	13.9 (35/64)	24.5 (31/32)	86.5 (3-13/32)	60 (2-23/64)	35 (1-3/8)
CEP7-ED1…D CEP7-EE…D CEP7S-EE…D	CA7-30…37	mm (in)	45 (1-25/32)	146.6 (5-25/32)	101.2 (3-63/64)	4.5 (3/16)	13.9 (35/64)	24.5 (31/32)	104 (4-3/32)	60 (2-23/64)	35 (1-3/8)
CEP7-ED1…D CEP7-EE…D CEP7S-EE…D	CA7-43	mm (in)	54 (2-1/8)	146.6 (5-25/32)	101.2 (3-63/64)	4.5 (3/16)	18.9 (3/4)	24.5 (31/32)	107 (4-3/32)	60 (2-23/64)	45 (1-25/32)
CEP7-EE…E CEP7S-EE…E	CA7-60…97	mm (in)	72 (2-53/64)	192.3 (7-37/64)	120.4 (4-3/4)	5.4 (7/32)	23.8 (15/16)	29 (1-9/64)	125.5 (4-15/16)	100 (3-15/16)	55 (2-11/64)