Series CA7 Contactors

Rugged, space saving and modular... Sprecher + Schuh's 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 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.

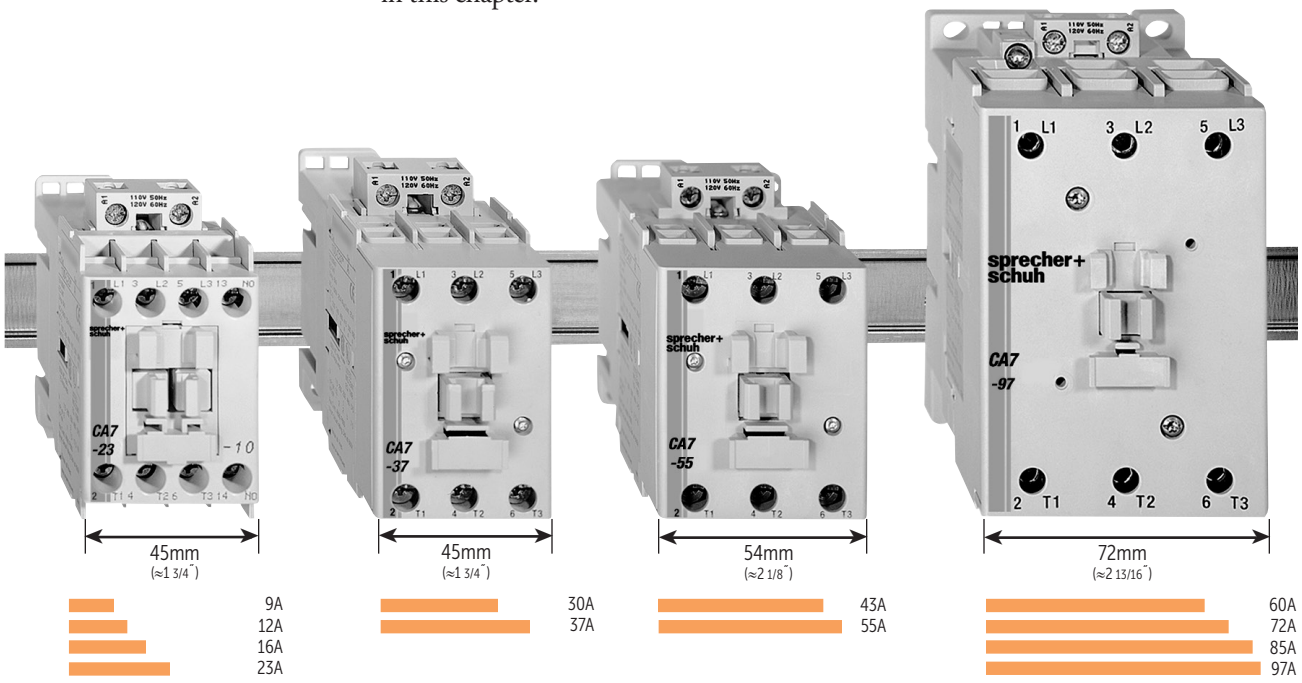
Advanced safety and reliability features

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.

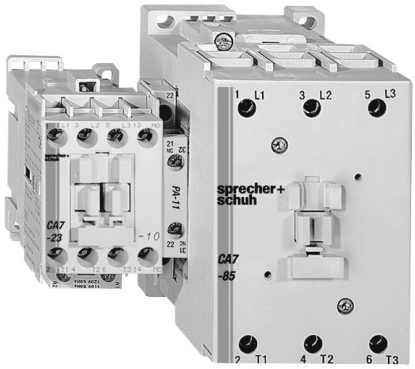
Advantages of Electronic DC Coil

CA7-9E through CA7-55E 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 allows the height of the contactor to be the same size as the AC version. Larger CA7 contactors are available with a two-winding DC coil that also 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.

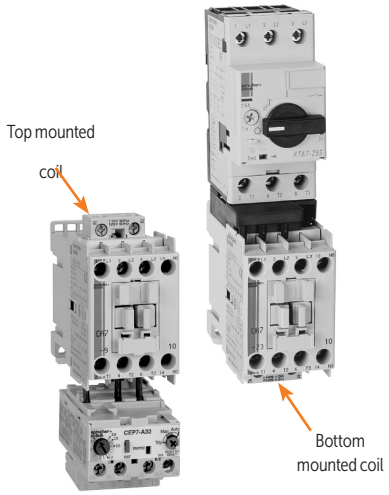


Reversible coil provides total flexibility

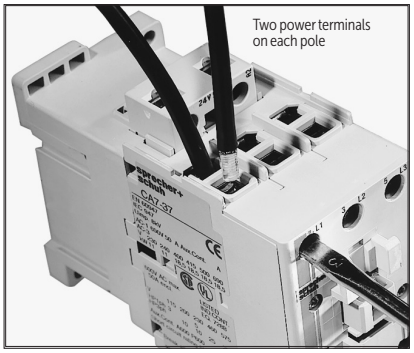
When shipped, both coil connections are normally located at the top of the contactor in preparation for mounting an overload relay at the bottom. For multi-starter panels, however, the coil can be reversed, which provides space to close-couple a KT7 Motor Circuit Controller on the top of the contactor. 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 includes 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 CA7 line includes contactors designed and labeled for specific industrial applications

NEMA Labeled Contactors

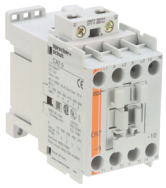
CAN7 contactors are UL Listed and rated in accordance with the requirements of NEMA standards publication ICS-2. These contactors are NEMA compliant and are labeled accordingly.

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-✱**
55	85	15	30	30	22	**5**	**10**	**15**	**20**	**40**	**40**	0	0	**CA7-55-00-✱**
												1	0	**CA7-55-10-✱**
												0	1	**CA7-55-01-✱**
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

CA7-55-00 contactor

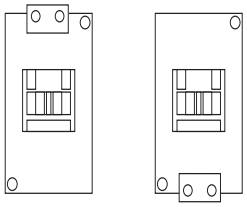
CA7-97-00 contactor

Coil Codes ❷

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	**440V**	**480V**
600	550V	600V

Coil Terminal Position ❸

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.

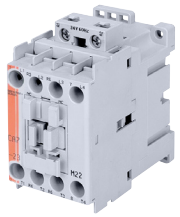
Ordering Instructions

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 A2:28.
❸ For coil terminals on the load side (bottom) add a **U** in front of the coil code. For example: CA7-23-10-120 becomes CA7-23-10-U120.

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	0	**CA7-9-M40-✱**
												3	1	**CA7-9-M31-✱**
												2	2	**CA7-9-M22-✱**
12	32	4	5.5	5.5	5.5	**1/2**	**2**	**3**	**3**	**7-1/2**	**10**	4	0	**CA7-12-M40-✱**
												3	1	**CA7-12-M31-✱**
												2	2	**CA7-12-M22-✱**
16	32	5.5	7.5	7.5	7.5	**1**	**3**	**5**	**5**	**10**	**15**	4	0	**CA7-16-M40-✱**
												3	1	**CA7-16-M31-✱**
												2	2	**CA7-16-M22-✱**
23	32	7.5	11	13	10	**2**	**3**	**5**	**7-1/2**	**15**	**15**	4	0	**CA7-23-M40-✱**
												3	1	**CA7-23-M31-✱**
												2	2	**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-✱**



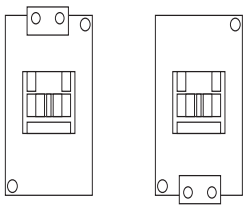
CA7-23-M22-120 contactor

Coil Codes ❶

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	**440V**	**480V**
600	550V	600V

Coil Terminal Position ❷

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.

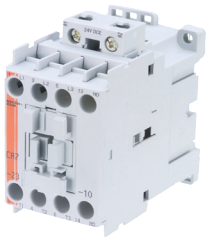
❶ Other voltages available, see page A2:28.

❷ For coil terminals on the load side (bottom) add a U in front of the coil code. For example: CA7-23-M40-120 becomes CA7-23-M40-U120.

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	0 1	**CA7-9E-10-✱** **CA7-9E-01-✱**
12	32	4	5.5	5.5	5.5	**1/2**	**2**	**3**	**3**	**7-1/2**	**10**	1 0	0 1	**CA7-12E-10-✱** **CA7-12E-01-✱**
16	32	5.5	7.5	7.5	7.5	**1**	**3**	**5**	**5**	**10**	**15**	1 0	0 1	**CA7-16E-10-✱** **CA7-16E-01-✱**
23	32	7.5	11	13	10	**2**	**3**	**5**	**7-1/2**	**15**	**15**	1 0	0 1	**CA7-23E-10-✱** **CA7-23E-01-✱**
30	65	10	15	15	15	**2**	**5**	**7-1/2**	**10**	**20**	**25**	0 1 0	0 0 1	**CA7-30E-00-✱** **CA7-30E-10-✱** **CA7-30E-01-✱**
37	65	11	18.5/ 20	20	18.5	**3**	**5**	**10**	**10**	**25**	**30**	0 1 0	0 0 1	**CA7-37E-00-✱** **CA7-37E-10-✱** **CA7-37E-01-✱**
43	85	13	22	25	22	**3**	**7-1/2**	**10**	**15**	**30**	**30**	0 1 0	0 0 1	**CA7-43E-00-✱** **CA7-43E-10-✱** **CA7-43E-01-✱**
55	85	15	30	30	22	**5**	**10**	**15**	**20**	**40**	**40**	0 1 0	0 0 1	**CA7-55E-00-✱** **CA7-55E-10-✱** **CA7-55E-01-✱**

CA7-16E-10-110E contactor ❹



CA7-23E-10-24E contactor

CA7-55E-00-24E contactor

Description

Low Consumption Electronic DC coils have extremely low inrush which allows the use of smaller power supplies. CA7-9E...55E has internal surge suppression. See page A2:41 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:

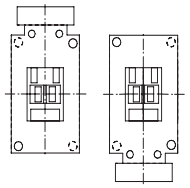
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced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

Coil Codes ❷❹

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

Coil Terminal Position ❻

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...55E with electronic coils are not interchangeable with non-electronic DC or AC coils.

❸ See page A2:19-A2:20 for limitations on adding auxiliaries to Electronic DC Coil contacts.

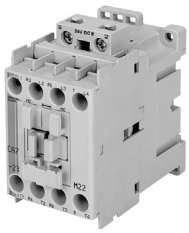
❹ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

❺ Not applicable with Electronic Timer accessories (CRZ_7).

❻ For coil terminals on the load side (bottom) add a **U** in front of the coil code. For example: CA7-23E-10-24E becomes CA7-23E-10-U24E.

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	4	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...55E have internal surge suppression. See page A2:46 for more information.

This design results in:

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

Applications

Direct control from PLC:

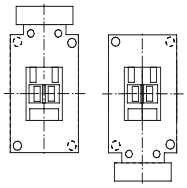
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced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

Coil Codes ❶❸

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

Coil Terminal Position ❺

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...55E with electronic coils are not interchangeable with non-electronic DC or AC coils

❷ See pages A2:19-A2:20 for limitations on adding auxiliaries to Electronic DC Coil contacts.

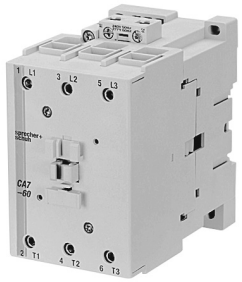
❸ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

❹ Not applicable with Electronic Timer accessories (CRZ_7).

❺ For coil terminals on the load side (bottom) add a **U** in front of the coil code. For example: CA7-23E-M40-24E becomes CA7-23E-M40-U24E.

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 1 0	0 0 1	**CA7-60D-00-✱** **CA7-60D-10-✱** **CA7-60D-01-✱**
72	100	22	40	45	40	**5**	**15**	**20**	**25**	**50**	**60**	0 1 0	0 0 1	**CA7-72D-00-✱** **CA7-72D-10-✱** **CA7-72D-01-✱**
85	100	25	45	55	45	**7-1/2**	**15**	**25**	**30**	**60**	**60**	0 1 0	0 0 1	**CA7-85D-00-✱** **CA7-85D-10-✱** **CA7-85D-01-✱**
97	130	30	55	55	55	**10**	**20**	**30**	**30**	**75**	**75**	0 1 0	0 0 1	**CA7-97D-00-✱** **CA7-97D-10-✱** **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 A2:29 for more information. See page A2:59 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 ❷❸

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 A2:29. Contact your Sprecher + Schuh Sales Representative to determine which coil voltages may be stocked.

Reversing, Three Pole Contactors With AC Coil, Series CAU7 (Open type only)

I_e [A]		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 ❸	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	1	1	CAU7-9-22-✱
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	1	CAU7-12-22-✱
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	1	CAU7-16-22-✱
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	1	1	CAU7-23-22-✱
30	65	10	15	15	15	2	5	7-1/2	10	20	25	0	1	CAU7-30-02-✱
												1 ❹	1	CAU7-30-22-✱
37	65	11	18.5/ 20	20	8.5	3	5	10	10	25	30	0	1	CAU7-37-02-✱
												1 ❹	1	CAU7-37-22-✱
43	85	13	22	25	22	3	7-1/2	10	15	30	30	0	1	CAU7-43-02-✱
												1 ❹	1	CAU7-43-22-✱
55	85	15	30	30	22	5	10	15	20	40	40	0	1	CAU7-55-02-✱
												1 ❹	1	CAU7-55-22-✱
60	100	18.5	32	37	32	5	10	15	20	40	50	0	1	CAU7-60-02-✱
												1 ❹	1	CAU7-60-22-✱
72	100	22	40	45	40	5	15	20	25	50	60	0	1	CAU7-72-02-✱
												1 ❹	1	CAU7-72-22-✱
85	100	25	45	55	45	7-1/2	15	25	30	60	60	0	1	CAU7-85-02-✱
												1 ❹	1	CAU7-85-22-✱
97	130	30	55	55	55	10	20	30	30	75	75	0	1	CAU7-97-02-✱
												1 ❹	1	CAU7-97-22-✱

CAU7-9-22-120 reversing contactor

CAU7-43-22-120 reversing contactor

Includes:

- Line side coil terminations
- Mechanical and electrical Interlock ❸
- Reversing power wiring ❶ (using Power Wiring Kit Cat.# CAUT7-PW...)
- Control wiring available; see footnote ❷

Coil Codes ❺

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

Ordering Instructions

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

❶ For Reversing Contactors *without* power wiring add suffix "**-LW**" to catalog number. For example: CAU7-9-22-✱ becomes CAU7-9-22-✱-LW.
CAU7-60...97 not available without power wiring. Price reduction applies.

❷ For control wiring, add suffix **-CW** to catalog number. Example: CAU7-9-22-✱ becomes CAU7-9-22-✱-CW. Price addition applies.

❸ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.

❹ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.

❺ Other voltages available, see page A2:28.

Reversing, Three Pole Contactors With Electronic DC Coil, Series CAU7 (Open type only) ❺❻

I_e [A]		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 ❸	Catalog Number
9	32	3	4	4	4	1/2	1 1/2	2	2	5	7-1/2	1	1	**CAU7-9E-22-✱**
12	32	4	5.5	5.5	5.5	1/2	2	3	3	7-1/2	10	1	1	**CAU7-12E-22-✱**
16	32	5.5	7.5	7.5	7.5	1	3	5	5	10	15	1	1	**CAU7-16E-22-✱**
23	32	7.5	11	13	10	2	3	5	7-1/2	15	15	1	1	**CAU7-23E-22-✱**
30	65	10	15	15	15	2	5	7-1/2	10	20	25	0 1 ❹	1 1	**CAU7-30E-02-✱** **CAU7-30E-22-✱**
37	65	11	18.5/ 20	20	8.5	3	5	10	10	25	30	0 1 ❹	1 1	**CAU7-37E-02-✱** **CAU7-37E-22-✱**
43	85	13	22	25	22	3	7-1/2	10	15	30	30	0 1 ❹	1 1	**CAU7-43E-02-✱** **CAU7-43E-22-✱**
55	85	15	30	30	22	5	10	15	20	40	40	0 1 ❹	1 1	**CAU7-55E-02-✱** **CAU7-55E-22-✱**

CAU7-9E-22-24E Reversing contactor

CAU7-37E-22-24E Reversing contactor

Description

Low Consumption Electronic DC coils have extremely low inrush which allows the use of smaller power supplies. CA7-9E...55E have internal surge suppression. See page A2:41 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.

Includes:

- Line side coil terminations
- Mechanical and electrical Interlock ❸
- Reversing power wiring ❶ (using Power Wiring Kit Cat.# CAUT7-PW...)
- Control wiring available; see footnote ❷
- CAU7-9E...55E has internal surge suppression.

Coil Codes ❽❼

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

❶ For Reversing Contactors without power wiring add suffix "**-LW**" to catalog number. For example CAU7-9E-22-24E becomes CAU7-9E-22-24E-**LW**. Price reduction applies.

❷ For control wiring, add suffix **-CW** to catalog number. For example: CAU7-9E-22-24E becomes CAU7-9E-22-24E-**CW**. Price addition applies.

❸ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.

❹ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.

❺ CA7-9E...55E with electronic coils are not interchangeable with non-electronic DC or AC coils.

❻ See pages A2:19-A2:20 for limitations. on adding auxiliaries to Electronic DC Coil contacts.

❼ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

❽ Not applicable with Electronic Timer accessories (CRZ_7).

Reversing, Three Pole Contactors With DC Coil, Series CAU7 (Open type only)

I_e [A]		Ratings for Switching AC Motors (AC2 / AC3 / AC4)										Auxiliary Contacts per Contactor		Open Type Catalog Number
		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 ❷	
60	100	18.5	32	37	32	**5**	**10**	**15**	**20**	**40**	**50**	0	1	**CAU7-60D-02-✱**
												1 ❸	1	**CAU7-60D-22-✱**
72	100	22	40	45	40	**5**	**15**	**20**	**25**	**50**	**60**	0	1	**CAU7-72D-02-✱**
												1 ❸	1	**CAU7-72D-22-✱**
85	100	25	45	55	45	**7-1/2**	**15**	**25**	**30**	**60**	**60**	0	1	**CAU7-85D-02-✱**
												1 ❸	1	**CAU7-85D-22-✱**
97	130	30	55	55	55	**10**	**20**	**30**	**30**	**75**	**75**	0	1	**CAU7-97D-02-✱**
												1 ❸	1	**CAU7-97D-22-✱**

NOTE: DC and AC coils are not interchangeable. CA7-60D...97D contactors have a two winding, 3-lead coil with built-in late break auxiliary contact and coil suppression. Refer to dimensions starting on page A2:59.

CAU7-85D Reversing (Typical)

Includes:

- DC operating mechanism
- Line side coil terminations
- Mechanical and electrical Interlock ❷
- Reversing power wiring
- Control wiring available; see footnote ❶

Coil Codes ❹❺

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

Ordering Instructions

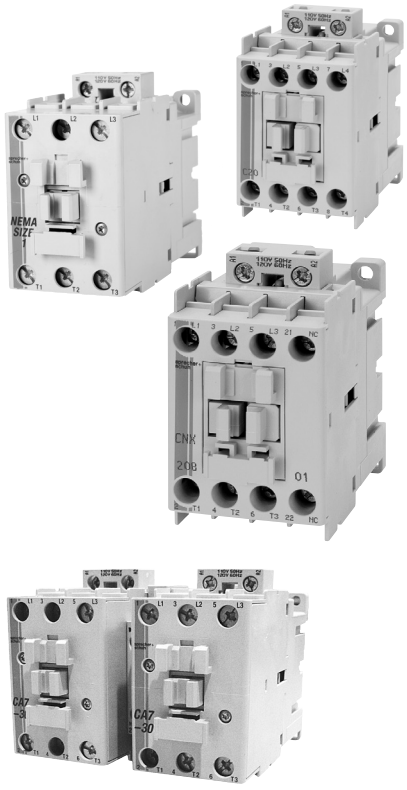
Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page.

❶ For control wiring, add suffix **-CW** to catalog number. For example: CAU7-60D-22-✱ becomes CAU7-60D-22-✱**-CW**. Price addition applies.
❷ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.
❸ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.
❹ Other voltages available, see page A2:29.
❺ Coils for CAU7-60D...97D reversing contactors include an integrated diode surge suppressor.

Series CA7 Special Use Contactors

Contactors designed and labeled for specific industrial applications

The CA7 line includes a number of contactors designed and labeled for specific industrial applications. In most cases, these devices are UL and CSA approved for these specialized uses. Where appropriate, contactors also carry approval by specific industry associations such as ARI (Air Conditioning and Refrigeration Institute).



CNX Special Purpose Contactors

CNX Special Purpose Contactors are rated by FLA & LRA as well as resistive current rated - primarily to meet the demands of the HVAC and compressor markets. CNX contactors have all the flexibility of a CA7 contactor like easy coil change out, DIN rail mounting and field installable auxiliaries as well as mechanical interlocks not normally associated with true definite purpose contactors. CNX contactors may also be combined with CEP7 or CT7N overload relays to make a special purpose starter. CNX starters are cUL rated and labeled as well as ARI (Air Conditioning and Refrigeration Institute) approved.

CAN7 NEMA size labeled contactors

CAN7 contactors are UL Listed in accordance with NEMA standards publication ICS-2. CAN7 contactors are UL labeled for application under IEC KW, as well as NEMA Size, for specified horsepower at various voltages. CAN7 contactors have been purposely selected larger to increase the life of the device. Only the devices listed here are available with the NEMA size on the UL label. CAN7 NEMA sized contactors may be combined with all Sprecher + Schuh overload relays to make a NEMA sized starter.

Hydraulic Elevator Wye-Delta Contactors

Most industrial wye-deltas consist of three contactors with interlocks but Hydraulic Elevators are a special application. Hydraulic Elevator wye-deltas consist of a pair of mechanically linked contactors with sufficient auxiliaries for electrical interlocks. The wye-delta is similar to a reversing contactor but the power wiring is different. We offer Hydraulic Elevator contactors with a choice of power wiring inter-connections for ease of installation, or without power wiring inter-connections, allowing the elevator serviceman to make use of the existing power cables. This convenient selection of a complete assembly saves time and effort in the field.

Special Use Contactors

Hydraulic elevator duty contactors

HVAC rated contactors

Lighting contactors

NEMA size labeled contactors

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

Full Load Amps	Locked Rotor Amps - 3Ø			Resistive Amps ❸	Maximum Horsepower						Auxiliary Contacts per Contactor		Catalog Number
					1 Ø		3 Ø						
	200V 230V	460V	575V		115V	230V	200V/ 208V	230V	460V	575V	NO	NC	
15	91	91	66	25	1-1/2	3	4	5	10	10	1	0	CNX-205-✱
											0	1	CNX-206-✱
30	180	150	120	40	2	5	7-1/2	10	20	20	1	0	CNX-207-✱
											0	1	CNX-208-✱
40	240	200	160	50	3	5	10	10	25	25	0	0	CNX-209-00-✱
											1	0	CNX-209-10-✱
											0	1	CNX-209-01-✱
50	300	250	200	65	3	7-1/2	10	15	30	30	0	0	CNX-212-00-✱
											1	0	CNX-212-10-✱
											0	1	CNX-212-01-✱
90	540	450	360	120	~	~	25	30	60	60	0	0	CNX-218-00-✱
											1	0	CNX-218-10-✱
											0	1	CNX-218-01-✱

CNX-208-120
Special Purpose contactor

Description

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

Coil Codes ❷

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

Ordering Instructions

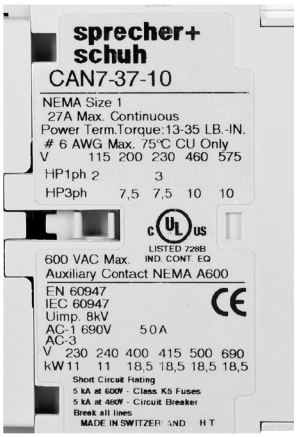
Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page.

❶ All CNX contactors listed here are ARI (Air Conditioning and Refrigeration Institute) approved.
❷ Other voltages available, see page A2:28.
❸ Reference page A2:49 for Operation Life Data.

Non-Reversing, Three Pole NEMA Labeled Contactors with AC Coil ❶

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower						Standard Auxiliary Contacts		Catalog Number
		1Ø		3Ø						
		115V	230V	200V	230V	460V	575V	NO	NC	
00	~	1/3	1	1-1/2	1-1/2	2	2	1	0	**CAN7-12-10-✱**
0	18	1	2	3	3	5	5	1	0	**CAN7-16-10-✱**
1	27	2	3	7-1/2	7-1/2	10	10	1	0	**CAN7-37-10-✱**
2	45	3	7-1/2	10	15	25	25	1	0	**CAN7-43-10-✱**
3	90	7-1/2	15	25	30	50	50	1	0	**CAN7-85-10-✱**

CAN7 NEMA1 labeled contactor (AC)



Application Notes

- NEMA contactors are UL Listed and rated in accordance with the requirements of NEMA standards publication ICS-2. These contactors are labeled for applications that require compliance with NEMA standards.
- Sizes are based on standard NEMA classifications.
- Easy coil change. See page A2:28 for CAN7 coils.
- Snap-on auxiliary contact blocks available in many configurations. See pages A2:19-A2:20.
- Available as open units or in Type 1, 3R, 4, 4X and 12 enclosures. Contact your Sprecher + Schuh representative for enclosed pricing. NEMA sized starters with AC Coils are listed on page C7:14.

CAN7 AC Coil Codes ❷

CAN7-12...85		
AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	**440V**	**480V**
600	**550V**	**600V**

Ordering Instructions

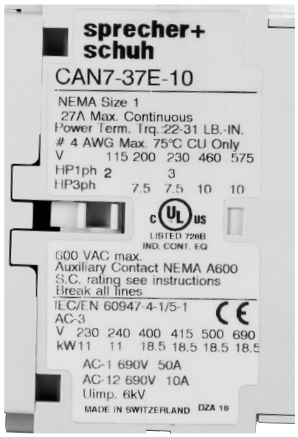
Specify Catalog Number	
Replace (✱) with Coil Code	See Coil Codes on this page.

❶ Refer to page A2:57 for CAN7 dimensional information.
❷ Other voltages available, see page A2:28 for other coil voltage.

Non-Reversing, Three Pole NEMA Labeled Contactors with DC Coil ❶

NEMA Size	Continuous Ampere Rating [A]	Maximum Horsepower						Standard Auxiliary Contacts		Catalog Number
		1Ø		3Ø						
		115V	230V	200V	230V	460V	575V	NO	NC	
00	~	1/3	1	1-1/2	1-1/2	2	2	1	0	**CAN7-12E-10-✱ ❸**
0	18	1	2	3	3	5	5	1	0	**CAN7-16E-10-✱ ❸**
1	27	2	3	7-1/2	7-1/2	10	10	1	0	**CAN7-37E-10-✱ ❸**
2	45	3	7-1/2	10	15	25	25	1	0	**CAN7-43E-10-✱ ❸**
3	90	7-1/2	15	25	30	50	50	2	1	**CAN7-85D-10-✱**

CAN7 NEMA1 labeled contactor (24V Electronic DC shown)



Application Notes

- NEMA contactors are UL Listed and rated in accordance with the requirements of NEMA standards publication ICS-2. These contactors are labeled for applications that require compliance with NEMA standards.
- Sizes are based on standard NEMA classifications.
- Easy coil change and contact replacement. See page A2:29 for CAN7 DC coils.
- Snap-on auxiliary contact blocks available in many configurations. See pages A2:19-A2:20.
- Available as open units or in Type 1, 3R, 4, 4X and 12 enclosures. Contact your Sprecher + Schuh representative for enclosed pricing. NEMA sized starters with AC Coils are listed on page C7:14.

CAN7 Electronic DC Coil Codes ❸❹

CAN7-12E...43E	
DC Coil Code	Voltage Range
12E	12V
24E	24V
36E ❺	36-48V
48E ❺	48-72V
110E ❺	110-125V
220E ❺	220-250V

CAN7 DC Coil Codes with integrated Diode ❷

CAN7-85D	
DC Coil Code	Voltage Range
24DD	24V
110DD	110V

Ordering Instructions

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

❶ Refer to page A2:58-A2:59 for CAN7 dimensional information.
❷ Other voltages available, see page A2:29 for other coil voltage.
❸ CAN7-12E..43E electronic coils are not interchangeable with non-electronic DC or AC coils.
❹ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.
❺ Not applicable with Electronic Timer accessories (CRZ_7).

Hydraulic Elevator Wye Delta, with AC Coils (Two Contactor Type ❶)

Maximum Horsepower Three Phase				Auxiliary Contacts per Contactor		Open Type
200V	230V	460V	575V	NO ❹	NC ❸	Catalog No.
10 / 7.5	15 / 7.5	30 / 20	30 / 20	0	1	**CA7Y2-30-02-✱-LW**
				1	1	**CA7Y2-30-22-✱-LW**
15 / 7.5	20 / 10	40 / 20	40 / 25	0	1	**CA7Y2-37-02-✱-LW**
				1	1	**CA7Y2-37-22-✱-LW**
20 / 10	25 / 10	50 / 25	50 / 30	0	1	**CA7Y2-43-02-✱-LW**
				1	1	**CA7Y2-43-22-✱-LW**
25 / 10	30 / 15	60 / 30	60 / 40	0	1	**CA7Y2-55-02-✱-LW**
				1	1	**CA7Y2-55-22-✱-LW**
30 / 10	40 / 15	75 / 30	75 / 40	0	1	**CA7Y2-60-02-✱-LW**
				1	1	**CA7Y2-60-22-✱-LW**
40 / 15	50 / 20	100 / 40	100 / 50	0	1	**CA7Y2-72-02-✱-LW**
				1	1	**CA7Y2-72-22-✱-LW**
50 / 20	60 / 25	125 / 50	125 / 60	0	1	**CA7Y2-85-02-✱-LW**
				1	1	**CA7Y2-85-22-✱-LW**
50 / 25	60 / 30	125 / 60	125 / 75	0	1	**CA7Y2-97-02-✱-LW**
				1	1	**CA7Y2-97-22-✱-LW**

HP Selection

Industrial Application ❺ / UL/CSA Elevator Duty ❻

Larger sizes available. Contact your Sprecher + Schuh representative.

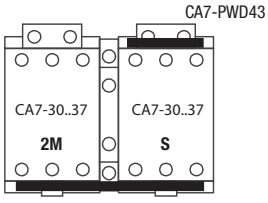
CA7Y2-30 Wye-Delta contactor

Includes:

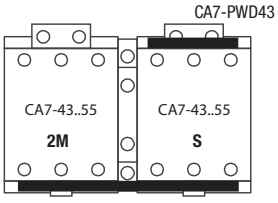
- Line side coil terminations
- Mechanical and electrical Interlocks ❷
- CA7Y2-60...97 include a back pan

Optional:

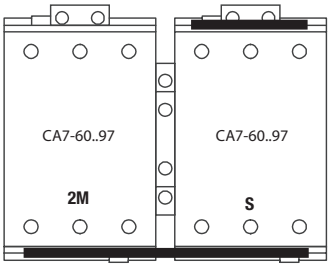
- Power Wiring available but not included (see page A2:27) ❶❼
- Elevator controllers often require additional auxiliary contacts. ❸



CA7-PWLM37M



CA7-PWLM55M



CA7-PWLM85M

Coil Codes ❹

AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	24V	24V
120	110V	120V
220W	200-220V	208-240V
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	440V	480V
600	550V	600V

Ordering Instructions

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

❶ For Contactors *with* power wiring change catalog number suffix "-LW" to "**-PW**". Price addition applies. For example CA7Y2-30-22-✱-LW becomes CA7Y2-30-22-✱-PW. **NOTE:** CA7Y2-30...55-22-✱-PW do not include a backpan.
❷ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.
❸ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.
❹ Other voltages available, see page A2:28.
❺ HP selection based on UL508 for Industrial Applications.
❻ HP selection based on UL/CSA Elevator Duty Ratings.
❼ See typical Wye-Delta Wiring Diagram on page C8:16.

Series CAL7 Lighting Contactors

Compact contactors for North American lighting applications

Sprecher + Schuh CA7 contactors 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.

Lamps can basically be divided into three categories:

- Tungsten Filament Lamps
  - General purpose incandescent
  - Special purpose incandescent
  - Infrared
  - Sodium Iodine
- Discharge Lamps (with Ballast)
  - Fluorescent lamps
  - Mercury vapor
  - High/low pressure sodium
  - Quartz
  - Halogen metal-vapor
- Mixed Light Lamps

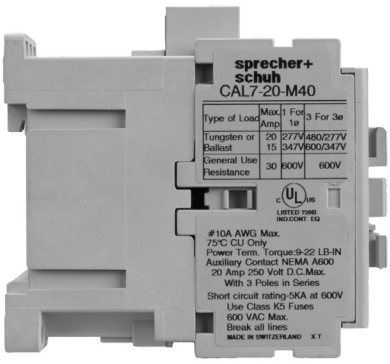
In application...

The tungsten filaments of incandescent lamps have a very low ohmic resistance when cold. As a result, the closing current is very high but also very short.

The closing current of discharge lamps (lighting with ballast) is highly inductive (due to series-connected transformers or chokes), and its duration depends on the lamp type.

In general, North Americans refer to Lighting Contactor ratings in amperes without distinction between incandescent or ballast type of load. The lighting contactor selection table provided on the following page is for North American use, so ratings are selected for mixed lamp loads which account for the higher incandescent inrush.

Europeans usually separate the values for incandescent from discharge (ballast) lighting. Both values are provided in the technical section of our general catalog and may be more appropriate for those applying by CE standards.



CAL7-20...60 are labeled and UL approved for lighting applications

Electrically held contactors

Electrically held contactors are available for use where the control signal is activated by a timer or other maintained electrical signal. The coil is energized as long as the contactor is closed. This design is well suited for applications where lights are operated frequently or where the control panel is in a remote location.

Mechanically held contactors

Mechanically held contactors are available for applications where quiet operation or critical lighting is required, i.e., institutions, hospitals and residential/commercial areas. After the contactor closes, the voltage is disconnected from the operating coil and the contactor is held closed by the mechanical latch. Built-in clearing interlocks allow control from either a momentary or maintained pilot device for the separate “pull-in” and “release” functions.

Lighting Contactors with AC Coil ❹❺

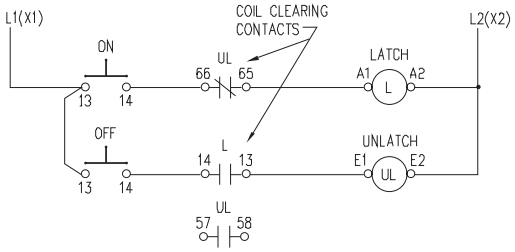
Type of Load	Continuous Ampere Rating ❸	Max. AC Volts, Poles to Load		# of Poles	Standard Auxiliary Contacts		Holding Type	Open Type Catalog Number
		1 for 1ø	3 for 3ø		NO	NC		
Tungsten or Ballast	20	277	480Y/277V	4	0	0	Electrical	**CAL7-20-M40-✱**
	15	347	600Y/347V					
General	30	600	600				Mechanical	**CAVL7-20-M40-✱-L10** ❶
Tungsten or Ballast	30	277	480Y/277V	4	0	0	Electrical	**CAL7-30-M40-✱**
	25	347	600Y/347V					
General	37	600	600				Mechanical	**CAVL7-30-M40-✱-L10** ❶
Tungsten or Ballast	60	277	480Y/277V	4	0	0	Electrical	**CAL7-60-M40-✱**
	55	347	600Y/347V					
General	85	600	600				Mechanical	**CAVL7-60-M40-✱-L10** ❶

Larger sizes available. Contact your Sprecher + Schuh representative. See catalog page C2:8 for enclosed lighting contactors.

Description
The CAL7 electrically held contactors and CAVL7 mechanical held contactors are cUL rated and labeled for tungsten and ballast lighting duty applications at 20, 30, and 60 amperes respectively.

Operation of Mechanically Held Contactor with "ON-OFF" Pushbutton

Catalog number "CAVL7" consists of a CAL7 contactor with CV7-11 mechanical latch. Depressing the "ON" button energizes the "L" coil and the contactor closes. The mechanical latch locks the contactor in the closed position. The "L" coil is then de-energized by the coil, clearing contact "UL" (Terminals 65-66) to remove voltage. Depressing the "OFF" button energizes the "UL" coil, and the mechanical latch releases the contactor. The "UL" coil is immediately de-energized by the coil clearing contact "L" (Terminals 13-14) to remove voltage. The contactor is now open.



CA(L)7 Coil Codes ❷

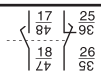
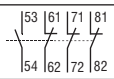
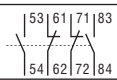
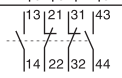
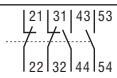
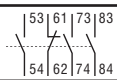
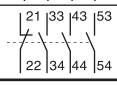
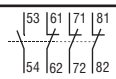
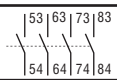
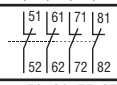
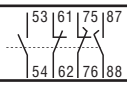
AC Coil Code	Voltage Range	
	50 Hz	60 Hz
24Z	**24V**	**24V**
120	**110V**	**120V**
220W	**200-220V**	**208-240V**
230Z	230V	230V
277	240V	277V
415	400-415V	~
480	**440V**	**480V**
600	550V	600V

Ordering Instructions

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

❶ The N.O. auxiliary on the mechanical latch is used by the control circuit and is not available to the customer for other uses.
❷ Other voltages available, see page A2:28.
❸ Engineering practice permits 2.5 x I_e to be applied to a contactor when 3 poles are connected in parallel for single phase discharge lamp (ballast lighting) applications. For example CAL7-20-M40-✱ Lighting Contactor plus a CA7-P-B23 Paralleling Link can be used on a 50A ballast load. Applying parallel conductors to incandescent lamp loads does NOT result in a greater permissible load. Paralleling Links can be found in the Accessories section.
❹ Lighting contactor applications greater than 4-poles can be achieved. Contact Sprecher + Schuh representative for assistance.
❺ Definite Purpose Contactors can also be used in Lighting Contactor applications. See page A4:6.

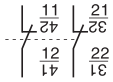
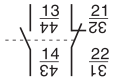
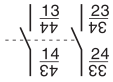
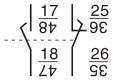
Top (Front) Mount Auxiliary Contact Blocks ❶

Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Standard Contacts Catalog Number	Bifurcated Contacts Catalog Number ❷
 Top mount auxiliary contact blocks snap-on to the top (front) of any CA7 contactor	**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.	0	2		CA7 all	**CS7-PV-02**	**CS7-PVB-02**
					CA7-30...97-✱-00	**CA7-PV-02**	**CA7-PVB-02**
		1	1		CA7 all	**CS7-PV-11**	**CS7-PVB-11**
					CA7-30...97-✱-00	**CA7-PV-11**	**CA7-PVB-11**
					CA7-9...23-✱-10 CA7-9...23-✱-01	**CA7-PV-S11**	**CA7-PVB-S11**
		2	0		CA7 all	**CS7-PV-20**	**CS7-PVB-20**
					CA7-30...97-✱-00	**CA7-PV-20**	**CA7-PVB-20**
 4-pole auxiliary		1EM	1LB		CA7-30...97-✱-00	**CA7-PV-L11**	**NOT AVAIL-ABLE**
		1	3		CA7-30...97-✱-00	**NOT AVAIL-ABLE**	**CA7-PVB-13**
		2	2		CA7 all	**CS7-PV-22**	**CS7-PVB-22**
					CA7-30...97-✱-00	**CA7-PV-22**	**CA7-PVB-22**
					CA7-9...23-✱-10 CA7-9...23-✱-01	**CA7-PV-S22**	**CA7-PVB-S22**
 2-pole auxiliary contact block (typical)		3	1		CA7 all	**CS7-PV-31**	**CS7-PVB-31**
					CA7-9...23-✱-10 CA7-9...23-✱-01	**CA7-PV-S31**	**CA7-PVB-S31**
		1	3		CA7 all	**CS7-PV-13**	**CS7-PVB-13**
		4	0		CA7 all	**CS7-PV-40**	**CS7-PVB-40**
		0	4		CA7 all	**CS7-PV-04**	**CS7-PVB-04**
		1+1EM	1+1LB		CA7 all	**CS7-PV-L22**	**NOT AVAIL-ABLE**

❶ Max. number of auxiliary contacts that may be mounted:
- AC Coil and Electronic DC 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.
- True 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 Detailed ratings can be found on page A2:47.

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

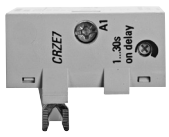
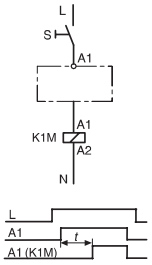
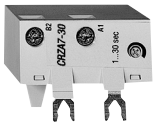
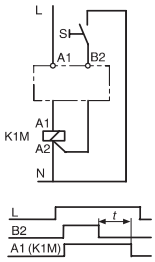
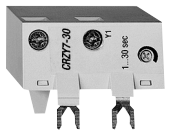
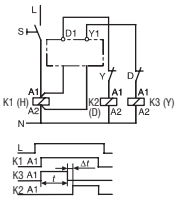
Contact Block	Description	NO	NC	Contact Arrangement	For use with...	Catalog Number ❸
 1-pole (typical)  2-pole (typical)	**Auxiliary Contact Blocks for Side Mounting - ❶** • 1 and 2-pole • Two way numbering for right or left mounting on the contactor • Snap-on design - mounts without tools • Electronic 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.

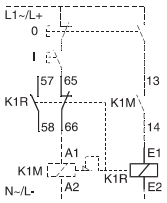
❸ Detailed ratings can be found on page A2:47.

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 with AC or 24V DC electronic coil		**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 – ❷** **ON-Delay** The contactor is energized at the end of the delay time.	CA7 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**
		CA7 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 contactor is de-energized at the end of the delay time.	CA7-9...37 with 110...240V, 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**
		CA7-9...37 with 24V, 50/60Hz		24V AC 50/60Hz 0.3...3s 1...30s 10...180s	**CRZA7-3-24VAC** **CRZA7-30-24VAC** **CRZA7-180-24VAC**
	**Electronic Timing Module – ❷** **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 with 110...240V, 50/60Hz		110...240V 50/60Hz 1...30s	**CRZY7-30-110/240**
 CM7 CM7-02	**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.
❷ Not available for use on CA7-9E...55E coil voltage 48V...220V.

Control Modules *(continued)*

Module	Description	For use with...	Connection Diagrams	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	All CA7 ❺		**CV7-11-✱** **Replace ✱ with coil code below (See Application Note below)**

CV7 Mechanical Latch Coil Codes ❶❷❸❹

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

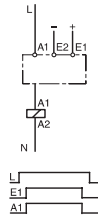
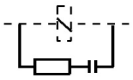
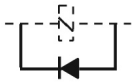
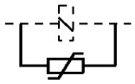
APPLICATION NOTE:

The CV7 Mechanical Latch for CA7 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 contactor and latch combination:

- The CA7-9E...55E contactor 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 CA7-9E...55E with code 24E and CV7 latch uses a 48Z AC coil code).
- When DC control circuits are required use CA7-60D...97D contactors with standard two winding DC coil and the CV7 latch with AC coil selected from the table, top left. (i.e.: 125V DC control circuit should use 125DD coil code in the contactor and 240Z AC coil code in the CV7 latch).

❶ Other voltages available. Contact your Sprecher + Schuh representative.
❷ CV7 must be wired for momentary operation only.
❸ Command duration 0.03...10 seconds.
❹ Coil operating limits on CV7-11 match those of the contactor it is being used with.
❺ Not for use with CA7-90 (4-pole) contactors.

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 contactor. • Requires no additional surge suppression for the coils • Suitable for all CA7 contactors ❷	CA7 all (with AC control)		24V DC ❶ 12V DC 48V DC	110... 240V AC	**CRI7E-24** **CRI7E-12** **CRI7E-48** Gray is special order
	**Surge Suppressors -** Limits coil switching transients. • Plug-in, coil mounted • Suitable for all CA7 contactors	CA7 all (with AC control)		**RC Module -** AC Control (50/60Hz) 24...48V 110...280V 380...480V		**CRC7-48** **CRC7-280** **CRC7-480**
		CA7-9C...43C (with conventional DC control)		**Diode Module -** DC Control 12-250VDC		**CRD7-250** ❸
		CA7 all (with AC control) CA7-9C...43C (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** ❸ **CRV7-136** ❸ **CRV7-277** ❸ **CRV7-575** ❸

❶ Control voltage 18...30V DC (10...15mA)

❷ 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.

❸ Electronic DC Contactors (CA7-9E...55E) include internal surge protection and do not require additional external surge protection.

AC Voltage Sag Immunity Modules

Module	Description	Full-Wave Bridge Rectifier		Catalog Number
		Module Input	Module Output	
		Control circuit voltage range	For use with CA7-60...97 contactors with DC coil	
	SEMI-F47-Module	24-250 VAC	24-250 VDC ❶	**CA7-SF47**
	Semi-F47-Module with 1...30s on-delay timer	110-250 VAC	110-250 VDC ❶	**CA7-SF47A30**

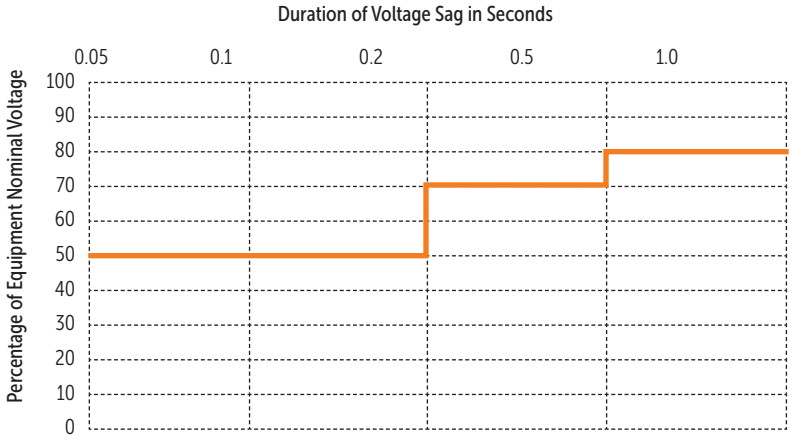
Sprecher + Schuh's CA7-SF47 module meets the Semi-F47 AC voltage sag immunity requirements to 50% voltage sag for 200 ms. Voltage sags can affect the readiness and operation of contactors and starters, resulting in shut downs, lost production, and diminished revenue. It is essential for process equipment to be compatible with its electrical environment. The CA7-SF47 voltage sag immunity module is an essential component to achieve equipment reliability during voltage sag events.

Product Features

- Meets Semi-F47 standard requirements
- For use with CA7-60...97 contactors with DC coils. A full-wave bridge rectifier internal to the CA7-SF47 module provides AC to DC coil voltage rectification.
- Suitable for contactor range (with screw terminals)
  - CA7-60...97, 3-Pole contactors
  - CA7-90, 4-Pole contactor
- Optional 1 to 30 seconds On-Delay timer function.

Benefits

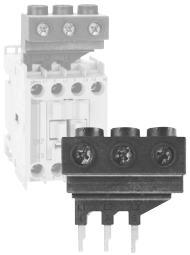
- Direct mounting to the coil terminals of the CA7 contactors. Only 24 mm is added to the component height.
- Direct electrical connection to the contactor. Customer coil power connections are made at the terminals of the CA7-SF47 module
- The CA7-SF47A30 module includes a 1 to 30 seconds adjustable On-Delay timer in addition to the voltage sag immunity functionality. Two independent functions in a single module.



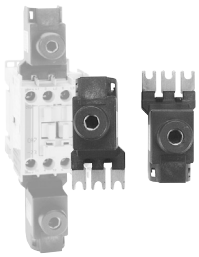
VOLTAGE SAG DURATION				VOLTAGE SAG
Seconds	*Milliseconds*	*Cycles at 60 hz*	*Cycles at 50 hz*	*Percent (%) of Equipment Nominal Voltage*
< 0.05 s	< 50 ms	< 3 cycles	< 2.5 cycles	Not specified
0.05 to 0.2 s	50 to 200 ms	3 to 12 cycles	2.5 to 10 cycles	50%
0.2 to 0.5 s	200 to 500 ms	12 to 30 cycles	10 to 25 cycles	70%
0.5 to 1.0 s	500 to 1000 ms	30 to 60 cycles	25 to 50 cycles	80%
> 1.0 s	> 1000 ms	> 60 cycles	> 50 cycles	Not specified

❶ Input AC control circuit voltage must be matched when selecting the contactor/relay DC coil voltage.

Terminal Lug Kits ❶

Component	Description	For use with . . .	Maximum Resistive Current Ratings (A) ❷ IEC (40°C)	IEC (60°C)	UL/CSA (40°C)	Pkg. Qty.	Catalog Number ❶
	**3 Pole Lug Kit –** Allows larger wires to be used with the contactor. Ideal for wye-delta, reversing and multispeed contactors and starters. Can increase IEC AC-1 current rating, as well as the UL/CSA continuous current (resistive) rating of the contactor. Three pole kit used for smaller contactors.	CA7-9. . .23 -line side -load side	45	45	40	1	**CA7-P-KN23 CA7-P-KL23**
		CA7-30. . .37	60	55	55	1	**CA7-P-K37**
	**1 Pole Lug Kit –** Allows larger wires to be used with the contactor. Ideal for wye-delta, reversing and multispeed contactors and starters. Can increase AC-1 current rating of the contactor. One pole kit used for larger contactors.	CA7-43...55	90	75	75	3 ❸	**CA7-P-K43**

Paralleling Links ❶❷

Component	Description	For use with . . .	Maximum Resistive Current Ratings (A) ❷ IEC (40°C)	IEC (60°C)	UL/CSA (40°C)	Pkg. Qty.	Catalog Number ❶
	**3 Pole Paralleling Link –** Allows smaller CA7 contactors to be used on single-phase resistive applications. By paralleling the three power poles, the contacts see only a portion of the actual load. ❹	CA7-9. . .23	100	100	100	2 ❸	**CA7-P-B23**
		CA7-30. . .37	150	135	150	2 ❸	**CA7-P-B37**

Quick Connectors

Component	Description	For use with . . .	Pkg. Qty.	Catalog Number
	**Stab Connectors -** Dual stab (0.250 inch)	CA7-9...97 coil term. CA7-9...23 power term. CA7 accessories	20 100 100	**CA7-SC2** **CA7-SC10** **CA4-SC11**

❶ cULus Approved (File E33916).

❷ Lighting applications are not considered purely resistive loads. Therefore, the IEC and UL/CSA resistive ratings listed here do not apply to lighting loads. Lighting contactor ratings are provided in the Technical Information section.

❸ Must be ordered in multiples of package quantity. For example on CA7-P-K43, order minimum quantity of 3 for one package of 3 pieces. Price is per piece.

❹ Engineering practice permits 2.5 x Ie to be applied to a contactor when 3 poles are connected in parallel for single phase discharge lamp (ballast lighting) applications.

Reversing Components

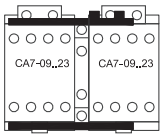
Component	Description	For Use With...	Catalog Number	Pkg. Qty.
	**Dovetail Connectors –** Connects multiple contactor and starter assemblies together.	CA7 all	**CA7-S9**	10
	**Reversing Power Wiring Kit - ❶** Provides a solid "wireless" connection for reversing applications. May be used with both solid state and thermal O/L relays.	CA7-9...12 CA7-16...23	**CAUT7-PW23**	1
		CA7-30...37 CA7-43...55 CA7-60...97	**CAUT7-PW37** **CAUT7-PW55** **CAUT7-PW85**	1 1 1

Reversing Power Wiring Kits

Only the kits are catalog items. Single components are available by special order in bulk packages of 20 pieces.

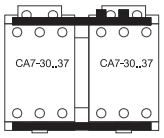
Reversing Starter Connection Kits ❷

Kit = CAUT7-PW23
CA7-PWNM23M



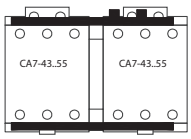
CA7-PWLM23M

Kit = CAUT7-PW37
CA7-PWNM37M



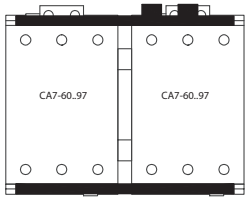
CA7-PWLM37M

Kit = CAUT7-PW55
CA7-PWNM55M



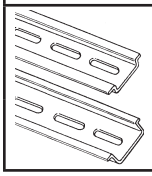
CA7-PWLM55M

Kit = CAUT7-PW85
CA7-PWNM85M

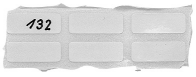
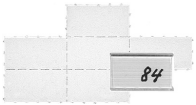
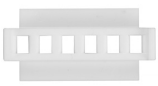


CA7-PWLM85M

Assembly Components

Component	Description	For Use With...	Catalog Number	Pkg. Qty.
	**Protective Covers -** Protects against unintended manual operation.	CA7 all	**CA7-SCC**	1
	**Protective Covers -** For front mounted auxiliary contacts, pneumatic timers and latches.	CS7-PV, CA7-PV, CZE7, CZA7, CV7	**CA7-SCF**	1
	**DIN-rail** - 2 meter lengths (6' 6"); price per rail Top Hat, low profile Top Hat, high profile	CA7 all	**3F** **3AF**	20 10

Marking Systems

Component	Description	Catalog Number	Pkg. Qty.
	**Label Sheet –** 1 sheet with 105 self-adhesive paper labels, each 6 x 17mm	**CA7-FMS**	1
	**Marking Tag Sheet -** 1 sheet with 160 perforated paper labels each, 6 x 17mm. To be used with transparent cover.	**CA7-FMP**	1
	Transparent Cover - To be used with Marking Tag Sheets.	**CA7-FMC**	100 ❷
	**Tag Carrier -** For marking with marker cards and tags. See Section N for complete listing of available cards and tabs.	**CA7-FMA2**	100 ❷

❶ cULus Approved (File E33916).

❷ Minimum quantity is one package of 100. Price is each x 100 = package price.

Wye-Delta Starter Kits ❶

Wye-Delta power wiring kits were designed to aid in the field assembly of open-transition wye-delta starters that use CA7 contactors. These kits include line, load and start-point (shorting) connections. Assembling a wye-delta starter requires the use of the following components:

- Contactors and overload relay
- Mechanical / Electrical Interlock (Cat.No: CM7-02)
- Electronic Wye-delta Timer (Cat. No: CRZY7-30-110/240)
- Dovetail Connector to couple 1M and 2M contactor (Cat. No: CA7-S9); optional

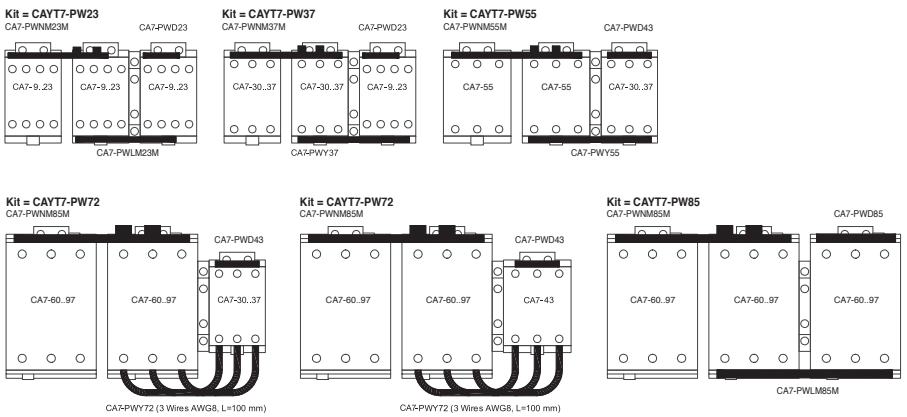
Power Jumper Connection

Shorting Bar

Reversing Power Connection

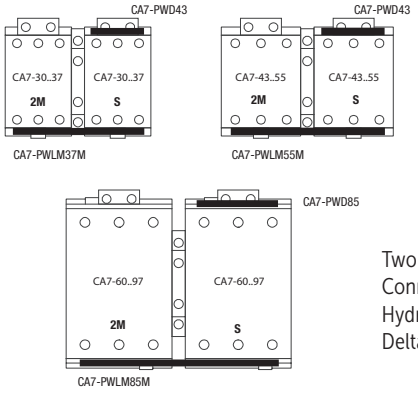
Three Contactor Assembly Components

3-Phase Rating											For 3 contactor assembly ❷
kW (50Hz)				HP (60Hz)				Use with catalog number . . .			
								Delta		Wye	
230V	380V 415V	500V	690V	200V	230V	460V	575V	1M	2M	1S	Catalog Number
5.5	8	8	8	5	5	10	10	CA7-9	CA7-9	CA7-9	CAYT7-PW23
7.5	11	11	11	5	7.5	15	15	CA7-12	CA7-12	CA7-9	
10	14	15	14	7.5	10	20	20	CA7-16	CA7-16	CA7-12	
14	21	21	19	7.5	10	25	25	CA7-23	CA7-23	CA7-12	
18	28	28	28	10	15	30	30	CA7-30	CA7-30	CA7-16	CAYT7-PW37
19	35	35	32	15	20	40	40	CA7-37	CA7-37	CA7-23	
23	40	40	41	20	25	50	50	CA7-43	CA7-43	CA7-30	CAYT7-PW55
30	45	45	45	25	30	60	60	CA7-55	CA7-55	CA7-37	
33	58	60	56	30	40	75	75	CA7-60	CA7-60	CA7-37	CAYT7-PW72
39	69	67	70	40	50	100	100	CA7-72	CA7-72	CA7-43	
47	82	82	81	50	60	125	125	CA7-85	CA7-85	CA7-60	CAYT7-PW85
50	90	90	90	50	60	125	125	CA7-97	CA7-97	CA7-60	



Two Contactor Assembly Components

When Connecting...		Load Side Power Connection	Shorting Bar
Delta	Wye		
2M	1S	Catalog Number	Catalog Number
CA7-30	CA7-30	CA7-PWLM37M	CA7-PWD43
CA7-37	CA7-37		
CA7-43	CA7-43	CA7-PWLM55M	
CA7-55	CA7-55		
CA7-60	CA7-60	CA7-PWLM85M	CA7-PWD85
CA7-72	CA7-72		
CA7-85	CA7-85		
CA7-97	CA7-97		



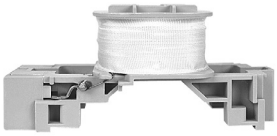
Two Contactor Wiring Connections are for Hydraulic Elevator Wye-Delta Contactors CA7Y2

❶ cULus Approved (File E33916).

❷ Individual parts of kits are available for unique applications by special order. Contact your Sprecher + Schuh Representative.

Renewal Coils - A.C. ❶

AC Control Voltages			AC Coil Codes	For use with contactor . . .				
				CA7-9...16	CA7-23...37	CA7-43...55	CA7-60...85	CA7-97
				CA7-9-M...16-M...	CA7-23-M...37-M...	~	~	CA7-90-M...
				CAQ7-16	CAQ7-37	~	~	~
				CNX-205...206	CNX-207...209	CNX-212	CNX-218	~
				CAN7-12...16	CAN7-37	CA7-40-M, CAN7-43	CAN7-85	~
				~	CAL(V)7-20-M40	CAL(V)7-30-M40	~	CAL(V)7-60-M40
50 Hz	60 Hz	50/60 Hz		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
				CA7-	**CA7-**	**CA7-**	**CA7-**	**CA7-**
~	~	24V	**24Z**	**TA855**	**TC855**	**TD855**	**TE855**	**TF855**
32V	36V	~	**36**	~	~	~	**TE481**	~
48V	~		**48A**	~	**TC414**	**TD414**	~	~
110V	120V	~	**120**	**TA473**	**TC473**	**TD473**	**TE473**	**TF473**
115V	127V	~	**127**	**TA424**	**TC424**	~	~	~
200...220V	208.. 240V	~	**220W**	**TA296**	**TC296**	**TD296**	**TE296**	**TF296**
~	~	230V	**230Z**	**TA851**	**TC851**	**TD851**	**TE851**	**TF851**
240V	277V	~	**277**	**TA480**	**TC480**	**TD480**	**TE480**	**TF480**
400...415V	~	~	**415**	**TA457**	**TC457**	**TD457**	**TE457**	**TF457**
440V	480V	~	**480**	**TA475**	**TC475**	**TD475**	**TE475**	**TF475**
550V	600V	~	**600**	**TA476**	**TC476**	**TD476**	**TE476**	**TF476**



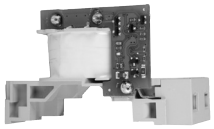
CA7 AC Coil (typical)

❶ AC Codes in bold letters and shaded indicate coils that are standard stocked items.

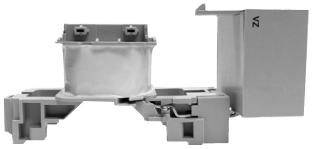
Renewal Coils - D.C. ❶

DC Control Voltages	DC Coil Codes ❶	Electronic DC Replacement Coils ❹				Two Winding DC Replacement Coils	
		For use with contactor...				For use with contactor...	
		CA7-9E...16E CA7-9E-M... 16E-M... CAN7-12E...16E	CA7-23E...37E CA7-23E-M... CAN7-37E	CA7-43E...55E CA7-40E-M... CAN7-43E (Series A)	CA7-43E...55E CA7-40E-M... CAN7-43E (Series B)	CA7-60D...85D ❸ CNX7-218 CAN7-85D	CA7-97D ❸ CA7-90D-M...
		Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
		CA7-	CA7-	CA7-	CA7-	CA7-	CA7-
12V Electronic	12E	TC708E	TC708E	~	TD708E2	~	~
24V Electronic	24E	TC714E	TC714E	~	TD714E2	~	~
24V Diode ❷	24DD	~	~	~	~	TE714M	TF714M
36-48V Elec	36E	TC719E	TC719E	~	TD719E2	~	~
48-72V Elec	48E	TC724E	TC724E	~	TD724E2	~	~
64V Diode	64DD	~	~	~	~	~	TF727M
72V Diode	72DD	~	~	~	~	TE728M	TF728M
110-125V Elec	110E	TC733E	TC733E	~	TD733E2	~	~
110V Diode	110DD	~	~	~	~	TE733M	TF733M
220-250V Elec	220E	TC747E	TC747E	~	TD747E2	~	~

Note: The "DD" coils listed above include an integrated bidirectional diode. Drop out time of this design is significantly improved when compared to an external diode. See ratings on page A2:41.



12V & 24V Electronic DC coil



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

Two Winding DC coil (typical) ❸

❶ DC Codes in bold letters and shaded indicate coils that are standard stocked items.
❷ Voltage operating range: 0.7...1.25 x Us.
❸ CA7-60D...97D contactors have a two winding coil with built-in late break auxiliary contact and coil suppression.
❹ CA7-9E...55E electronic coils are not interchangeable with non-electronic DC or AC coils

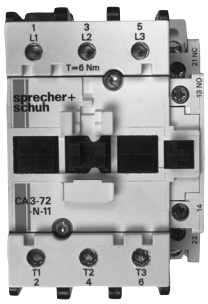
Replacement Contactors Cross Reference, Series CA1 to Series CA7 (Open Type Only) ❶

I_e [A]		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
						7-1/2	20	30	30	60	75	CA1U-55	
97	130	30	55	55	55	10	15	30	30	75	75		CA7-97-10

CA1U-10
Contactor

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

I_e [A]		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	
55	85	15	30	30	22	5	10	15	20	40	40		CA7-55-10
60	100	18.5	32	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
97	130	30	55	55	55	10	15	30	30	75	75		CA7-97-10



CA3-72
Contactor

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

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Rated Insulation Voltage U_i														
IEC, AS,BS,SEV, VDE 0660		[V]	690V											
UL; CSA		[V]	600V											
Rated Impulse Voltage U_{imp}		[kV]	6kV											
Rated Voltage U_e-Main Contacts														
AC 50/60Hz		[V]	115, 200, 208, 230, 240, 380, 400, 415, 460, 500, 575, 690											
DC		[V]	24, 48, 110, 115, 220, 230, 300, 440											
Rated coil frequency			AC 50/60 Hz, DC											
Switching Motor Loads														
Standard IEC Ratings														
AC-2, AC-3, AC-4	230V	[A]	12	15	20	26.5	35	38	44	56	62	72	85	96
DOL Reversing	240V	[A]	12	15	20	26.5	35	38	44	56	62	72	85	95
50Hz/60 ° C	400V	[A]	9	12	16	23	30	37	43	55	60	72	85	97
	415V	[A]	9	12	16	23	30	37	43	55	60	72	85	97
	500V	[A]	7	10	14	20	25	30	38	44	55	67	80	78
	690V	[A]	5	7	9	12	18	21	25	25	34	42	49	57
	230V	[kW]	3	4	5.5	7.5	10	11	13	15	18.5	22	25	30
	240V	[kW]	3	4	5.5	7.5	10	11	13	15	18.5	22	25	30
	400V	[kW]	4	5.5	7.5	11	15	18.5	22	30	32	40	45	55
	415V	[kW]	4	5.5	7.5	11	15	20	22	30	32	40	45	55
	500V	[kW]	4	5.5	7.5	13	15	20	25	30	37	45	55	55
	690V	[kW]	4	5.5	7.5	10	15	18.5	22	22	32	40	45	55
UL/CSA														
DOL Reversing	115V	[A]	9.8	9.8	16	24	24	34	34	56	56	56	80	100
60Hz 1Ø	230V	[A]	10	12	17	17	28	28	40	50	50	68	68	88
	115V	[HP]	1/2	1/2	1	2	2	3	3	5	5	5	7-1/2	10
	230V	[HP]	1 1/2	2	3	3	5	5	7-1/2	10	10	15	15	20
	200V	[A]	7.8	11	17.5	17.5	25.3	32.2	32.2	48.3	48.3	62.1	78.2	92
3Ø	230V	[A]	6.8	9.6	15.2	22	28	28	42	54	54	68	80	80
	460V	[A]	7.6	11	14	21	27	34	40	52	52	65	77	96
	575V	[A]	9	11	17	17	27	32	32	41	52	62	62	77
	200V	[HP]	2	3	5	5	7-1/2	10	10	15	15	20	25	30
	230V	[HP]	2	3	5	7-1/2	10	10	15	20	20	25	30	30
	460V	[HP]	5	7-1/2	10	15	20	25	30	40	40	50	60	75
	575V	[HP]	7-1/2	10	15	15	25	30	30	40	50	60	60	75
Maximum Operating Rate (at max. amps) ❶	AC2	[ops/hr]	450	450	450	400	400	400	400	400	300	300	200	200
	AC3	[ops/hr]	700	700	700	600	600	600	600	600	500	500	500	500
	AC4	[ops/hr]	200	150	120	80	80	70	70	70	70	60	50	50

❶ See page A2:54 for additional detail.

Electrical Data

				CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Switching Motor Loads (continued)															
AC-4		230V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
200,000 Op. Cycles		240V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
50Hz		400V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
		415V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
		500V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
		690V	[A]	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44
		230V	[kW]	0.75	1.5	2.2	2.2	3	3.7	4	5.5	6.3	7.5	11	11
		240V	[kW]	0.75	1.5	2.2	2.2	3	4	4	5.5	7.5	7.5	11	11
		400V	[kW]	1.8	3	4	4	5.5	6.3	7.5	11	13	15	20	22
		415V	[kW]	1.8	3	4	4	5.5	6.3	7.5	11	13	17	20	22
		500V	[kW]	2.2	3.7	5.5	5.5	7.5	7.5	10	11	15	20	25	30
		690V	[kW]	3	5.5	7.5	7.5	10	11	15	18.5	22	25	32	37
60Hz	1Ø	115V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
		230V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
		115V	[HP]	1/8	1/4	1/3	1/2	1/2	3/4	1	1.5	2	2	3	3
		230V	[HP]	1/3	1/2	1	1-1/2	2	2	2	3	3	5	5	7-1/2
		200V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
	3Ø	230V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
		460V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
		575V	[A]	4.3	6.6	9	10	12	14	16.5	22	25.5	31	38	44
		200V	[HP]	3/4	1	2	2	3	3	3	5	7-1/2	7-1/2	10	10
		230V	[HP]	1	1-1/2	2	3	3	3	5	7-1/2	7-1/2	10	10	15
		460V	[HP]	2	3	5	5	7-1/2	10	10	15	15	20	25	30
		575V	[HP]	3	5	7-1/2	7-1/2	10	10	10	20	20	25	30	40
Maximum Operating Rate			[ops/hour]	250	250	220	200	200	200	200	200	120	120	120	120
Wye-Delta (Star Delta)		230V	[kW]	5.5	7.5	10	13	17	20	22	30	32	37	45	50
50 Hz		240V	[kW]	5.5	7.5	10	13	18.5	20	22	30	32	40	50	50
		400V	[kW]	7.5	10	13	20	25	32	40	45	55	63	80	90
		415V	[kW]	7.5	11	15	22	25	37	40	45	55	63	80	90
		500V	[kW]	7.5	11	15	22	25	32	45	45	63	80	90	90
		690V	[kW]	7.5	10	13	18.5	25	32	40	45	55	63	80	90
		200V	[HP]	5	5	7-1/2	7-1/2	10	15	20	25	30	40	50	50
60 Hz		230V	[HP]	5	7-1/2	10	10	15	20	25	30	40	50	60	60
		460V	[HP]	10	15	20	25	30	40	50	60	75	100	125	125
		575V	[HP]	10	15	20	25	30	40	50	60	75	100	125	125
UL/CSA Elevator Duty															
		200V	[A]	7.8	11.0	11.0	17.5	25.3	25.3	32.2	30.8	32.2	48.3	62.1	78.2
		230V	[A]	6.8	9.6	15.2	15.2	22.0	28.0	28.0	42.0	42.0	54.0	68.0	80.0
		460V	[A]	7.6	11.0	14.0	21.0	27.0	27.0	34.0	40.0	40.0	52.0	65.0	77.0
		575V	[A]	6.1	9.0	11.0	17.0	22.0	27.0	32.0	41.0	41.0	52.0	62.0	77.0
		200V	[HP]	2	3	3	5	7-1/2	7-1/2	10	10	10	15	20	25
		230V	[HP]	2	3	5	5	7-1/2	10	10	15	15	20	25	30
		460V	[HP]	5	7-1/2	10	15	20	20	25	30	30	40	50	60
		575V	[HP]	5	7-1/2	10	15	20	25	30	40	40	50	60	75

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
AC-1 Load, 3Ø Switching	I_{th}	[A]	32	32	32	32	65	65	85	85	100	100	100	130
Ambient Temperature 40º C	230V	[kW]	13	13	13	13	26	26	34	34	40	40	40	52
	240V	[kW]	13	13	13	13	27	27	35	35	42	42	42	54
	400V	[kW]	22	22	22	22	45	45	59	59	69	69	69	90
	415V	[kW]	23	23	23	23	47	47	61	61	72	72	72	93
	500V	[kW]	28	28	28	28	56	56	74	74	87	87	87	113
	690V	[kW]	38	38	38	38	78	78	102	102	120	120	120	155
Ambient Temperature 60º C	I_{th}	[A]	32	32	32	32	65	65	75	75	100	100	100	110
	230V	[kW]	13	13	13	13	26	26	25	25	40	40	40	44
	240V	[kW]	13	13	13	13	27	27	26	26	42	42	42	46
	400V	[kW]	22	22	22	22	45	45	44	44	69	69	69	76
	415V	[kW]	23	23	23	23	47	47	45	45	72	72	72	76
	500V	[kW]	28	28	28	28	56	56	55	55	87	87	87	95
	690V	[kW]	38	38	38	38	78	78	75	75	120	120	120	131
Maximum Operating Rate		[ops/ hour]	1,000	1,000	1,000	1,000	1,000	1,000	300	300	600	600	600	600
Continuous Current (UL/CSA)														
General Purpose Rating (40°)	Open	[A]	25	25	30	30	55	60	75	75	90	90	100	120
	Enclosed	[A]	25	25	30	30	55	60	75	75	90	90	100	120
Maximum Operating Rate		[ops/ hour]	1,400	1,400	1,200	1,200	1,200	1,000	1000	1000	700	700	600	600
Lighting Loads ❶														
Elec.Dischrg.Lamps-AC-5a,	Open	[A]	22.5	25	28	29	40.5	45	77	77	81	85	90	115
single compensated	Enclosed	[A]	22.5	25	28	29	37	41	57	57	77	81	90	100
Max. capacitance at prospective	10kA	[mf]	1,000	1,000	1,000	1,000	2,700	2,700	3,200	3,200	4,000	4,000	4,700	4,700
short circuit current available at	20kA	[µf]	500	500	500	500	1,350	1,350	1,600	1,600	2,000	2,000	2,350	2,350
the contactor	50kA	[µf]	200	200	200	200	540	540	640	640	800	800	940	940
Incandescent Lamps - AC -5b														
Electrical endurance ~ 100,000 operations		[A]	12	16	18	22	30	37	43	51	60	70	76	90
Switching power transformers AC-6a														
50Hz														
Inrush	= n													
Rated transformer current														
		[A]	10.9	10.9	10.9	10.9	20	20	23	23	40.8	40.8	40.8	48.5
n=30	230 VAC	[kVA]	4.3	4.3	4.3	4.3	8	8	9.2	9.2	16	16	16	19.3
	240 VAC	[kVA]	4.5	4.5	4.5	4.5	8.3	8.3	10	10	17	17	17	20.2
	380 VAC	[kVA]	7.2	7.2	7.2	7.2	13.2	13.2	15.4	15.4	26.9	26.9	26.9	31.9
	400 VAC	[kVA]	7.5	7.5	7.5	7.5	14	14	16	16	28	28	28	33.6
	415 VAC	[kVA]	7.8	7.8	7.8	7.8	14	14	17	17	29	29	29	34.9
	500 VAC	[kVA]	9.4	9.4	9.4	9.4	17	17	20	20	35	35	35	42
	690 VAC	[kVA]	13	13	13	13	24	24	27	27	49	49	49	58
		[A]	16.3	16.3	16.3	16.3	30	30	34.5	34.5	61.3	61.3	61.3	72.8
n=20	230 VAC	[kVA]	6.5	6.5	6.5	6.5	12	12	14	14	24.4	24.4	24.4	29.0
	240 VAC	[kVA]	6.8	6.8	6.8	6.8	12.5	12.5	14.6	14.6	25.5	25.5	25.5	30.3
	380 VAC	[kVA]	10.7	10.7	10.7	10.7	19.7	19.7	23.2	23.2	40.3	40.3	40.3	47.9
	400 VAC	[kVA]	11.3	11.3	11.3	11.3	20.8	20.8	24.4	24.4	42.5	42.5	42.5	50.4
	415 VAC	[kVA]	11.7	11.7	11.7	11.7	21.6	21.6	25.3	25.3	44.1	44.1	44.1	52.3
	500 VAC	[kVA]	14.1	14.1	14.1	14.1	26	26	30.5	30.5	53.1	53.1	53.1	63.0
	690 VAC	[kVA]	19.5	19.5	19.5	19.5	35.9	35.9	42.1	42.1	73.3	73.3	73.3	86.9
		[A]	21.7	21.7	21.7	21.7	40	40	46	46	81.7	81.7	81.7	97.0
n=15	230 VAC	[kVA]	8.7	8.7	8.7	8.7	15.9	15.9	18.7	18.7	32.5	32.5	32.5	38.6
	240 VAC	[kVA]	9	9	9	9	16.6	16.6	19.5	19.5	33.9	33.9	33.9	40.3
	380 VAC	[kVA]	14.3	14.3	14.3	14.3	26.3	26.3	30.9	30.9	53.8	53.8	53.8	63.8
	400 VAC	[kVA]	15.1	15.1	15.1	15.1	27.7	27.7	32.5	32.5	56.6	56.6	56.6	67.2
	415 VAC	[kVA]	15.6	15.6	15.6	15.6	28.8	28.8	33.7	33.7	58.7	58.7	58.7	69.7
	500 VAC	[kVA]	18.8	18.8	18.8	18.8	34.6	34.6	40.6	40.6	70.7	70.7	70.7	84.0
	690 VAC	[kVA]	26	26	26	26	47.8	47.8	56.1	56.1	97.6	97.6	97.6	115.9

❶ CA7 ratings for lighting loads are provided for technical reference. For cUL rated and labeled devices, see CAL7 contactors listed in this section.

Electrical Data

AC-6a			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Switching power transformers - 60Hz														
Inrush = n														
Rated transformer current		[A]	10.9	10.9	10.9	10.9	20	20	23	23	40.8	40.8	40.8	48.5
n=30	200 VAC	[kVA]	3.8	3.8	3.8	3.8	6.9	6.9	8.0	8.0	14.1	14.1	14.1	16.8
	208 VAC	[kVA]	3.9	3.9	3.9	3.9	7.2	7.2	8.3	8.3	14.7	14.7	14.7	17.5
	240 VAC	[kVA]	4.5	4.5	4.5	4.5	8.3	8.3	9.6	9.6	17	17	17	20.2
	480 VAC	[kVA]	9.1	9.1	9.1	9.1	16.6	16.6	19.1	19.1	33.9	33.9	33.9	40.3
	600 VAC	[kVA]	11.3	11.3	11.3	11.3	20.8	20.8	23.9	23.9	42.4	42.4	42.4	50.4
	660 VAC	[kVA]	12.5	12.5	12.5	12.5	22.9	22.9	26.3	26.3	46.6	46.6	46.6	55.4
		[A]	16.3	16.3	16.3	16.3	30	30	34.5	34.5	61.3	61.3	61.3	72.8
n=20	200 VAC	[kVA]	5.6	5.6	5.6	5.6	10.4	10.4	12	12	21.2	21.2	21.2	25.2
	208 VAC	[kVA]	5.9	5.9	5.9	5.9	10.8	10.8	12.4	12.4	22.1	22.1	22.1	26.2
	240 VAC	[kVA]	6.8	6.8	6.8	6.8	12.5	12.5	14.3	14.3	25.5	25.5	25.5	30.3
	480 VAC	[kVA]	13.6	13.6	13.6	13.6	24.9	24.9	28.7	28.7	51	51	51	60.5
	600 VAC	[kVA]	16.9	16.9	16.9	16.9	31.2	31.2	35.9	35.9	63.7	63.7	63.7	75.7
	660 VAC	[kVA]	18.6	18.6	18.6	18.6	34.3	34.3	39.4	39.4	70.1	70.1	70.1	83.2
		[A]	22	22	22	22	40	40	46	46	82	82	82	97
n=15	200 VAC	[kVA]	7.5	7.5	7.5	7.5	13.9	13.9	15.9	15.9	28.4	28.4	28.4	33.6
	208 VAC	[kVA]	7.8	7.8	7.8	7.8	14.4	14.4	16.6	16.6	29.5	29.5	29.5	34.9
	240 VAC	[kVA]	9	9	9	9	16.6	16.6	19.1	19.1	34.1	34.1	34.1	40.3
	480 VAC	[kVA]	18.1	18.1	18.1	18.1	33.3	33.3	38.2	38.2	68.2	68.2	68.2	80.6
	600 VAC	[kVA]	22.6	22.6	22.6	22.6	41.6	41.6	47.8	47.8	85.2	85.2	85.2	100.8
	660 VAC	[kVA]	24.9	24.9	24.9	24.9	45.7	45.7	52.6	52.6	93.7	93.7	93.7	110.9
AC-6b ❶														
Capacitor Switching - 50Hz														
Single Capacitor - 40°C	230 VAC	[kVar]	8	8	8.5	9	14	14	24	24	28	28	28	28
	240 VAC	[kVar]	8	8	8.5	9	14	14	25	25	29	29	29	29
	400 VAC	[kVar]	8	8	10	12.5	20	24	35	35	48	48	48	48
	415 VAC	[kVar]	8	8	10	12.5	20	25	35	35	50	50	50	50
	500 VAC	[kVar]	8	8	10	12.5	20	25	35	35	50	55	60	60
	690 VAC	[kVar]	8	8	10	12.5	20	25	35	35	50	55	60	60
Single Capacitor - 60°C	230 VAC	[kVar]	8	8	8.5	9	12.5	12.5	18	18	28	28	28	28
	240 VAC	[kVar]	8	8	8.5	9	12.5	12.5	18	18	29	29	29	29
	400 VAC	[kVar]	8	8	10	12.5	20	21.5	30	30	42	48	48	48
	415 VAC	[kVar]	8	8	10	12.5	20	22	30	30	42	50	50	50
	500 VAC	[kVar]	8	8	10	12.5	20	25	30	30	42	50	55	55
	690 VAC	[kVar]	8	8	10	12.5	20	25	30	30	42	50	55	55
Capacitor Bank - 40°C	230 VAC	[kVar]	5	5	8	9	12.5	14	20	20	28	28	28	28
	240 VAC	[kVar]	5	5	8	9	12.5	14	20	20	29	29	29	29
	400 VAC	[kVar]	5	5	8	10	15	20	25	25	40	48	48	48
	415 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	500 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	690 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
Capacitor Bank - 60°C	230 VAC	[kVar]	5	5	8	9	12.5	12.5	18	18	28	28	28	28
	240 VAC	[kVar]	5	5	8	9	12.5	12.5	18	18	29	29	29	29
	400 VAC	[kVar]	5	5	8	10	15	20	25	25	40	48	48	48
	415 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	500 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	690 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
Capacitor Switching - 60Hz														
Single Capacitor - 40°C	200 VAC	[kVar]	5	5	8	9	12.5	14	20	20	28	28	28	28
	230 VAC	[kVar]	5	5	8	9	12.5	14	20	20	29	29	29	29
	460 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	600 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	60	60
Capacitor Bank - 40°C	200 VAC	[kVar]	5	5	8	9	12.5	12.5	18	18	28	28	28	28
	230 VAC	[kVar]	5	5	8	9	12.5	12.5	18	18	29	29	29	29
	460 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50
	600 VAC	[kVar]	5	5	8	10	15	20	25	25	40	50	50	50

❶ Inductance of leads between capacitors in parallel: min. 6 µH (CA7-9...CA7-30 = L min. 30 µH)

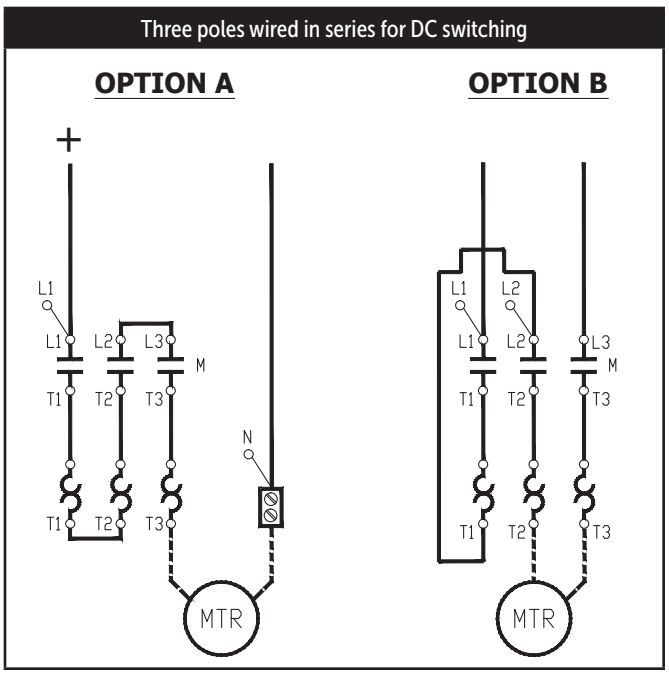
Electrical Data

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Switching of Low Inductive Loads in Home Appliances and Similar Applications per IEC 61095 (50 Hz)													
AC-7a													
230 VAC	[A]	32	32	32	32	45	45	63	63	~	~	~	~
400 VAC	[A]	32	32	32	32	45	45	63	63	~	~	~	~
440 VAC	[A]	32	32	32	32	45	45	63	63	~	~	~	~
Switching of Motor Load Home Appliances - 50 Hz													
AC-7b													
230 VAC	[A]	10.5	14	19	23	30	~	~	~	~	~	~	~
400 VAC	[A]	9	12	16	20	30	~	~	~	~	~	~	~
440 VAC	[A]	7.5	10	13.5	18	27	~	~	~	~	~	~	~
Switching of Hermetically Sealed Cooling Compressor Motors - 50 Hz													
AC-8a manual reset of overload release													
400 VAC	[A]	12	16	22	32	38	45	63	63	72	85	100	115
500 VAC	[A]	12	16	22	32	38	45	63	63	72	85	100	115
690 VAC	[A]	8	10	14	20	28	35	42	42	56	67	80	90
AC-8b automatic reset of overload release													
400 VAC	[A]	5.5	7	9.3	12	13	14	16	16	24	30	35	35
500 VAC	[A]	5.5	7	9.3	12	13	14	16	16	24	30	35	35
690 VAC	[A]	5.5	7	9.3	12	13	14	16	16	24	30	35	35

Electrical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
DC-1 Switching - 60°C	24VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
	48VDC	[A]	20	20	20	20	25	25	30	30	40	40	40	40
1 Pole	60VDC	[A]	20	20	20	20	25	25	30	30	40	40	40	40
	110VDC	[A]	6	6	6	6	8	8	9	9	11	11	11	11
	220VDC	[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	2	2	2
	440VDC	[A]	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5
	24VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
	48VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
2 Poles in Series	60VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
	110VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
	220VDC	[A]	8	8	8	8	10	10	10	10	15	15	15	15
	440VDC	[A]	1	1	1	1	1	1	1	1	1.5	1.5	1.5	1.5
	24VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
	48VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
3 Poles in Series	60VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
	110VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
	220VDC	[A]	25	25	32	32	45	45	50	50	70	80	80	80
	440VDC	[A]	3	3	3	3	3.5	3.5	4	4	5	5	5	5
DC-2, 3, 5 Switching - 60°C														
Starting, reverse current	24VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
braking, reversing, DC-5, 60ºC	48VDC	[A]	25	25	32	32	45	45	50	50	70	70	80	80
	60VDC	[A]	25	25	32	32	45	45	50	50	70	70	80	80
Shunt Wound	110VDC	[A]	20	20	25	25	30	30	35	35	70	70	80	80
3 Poles in Series	220VDC	[A]	6	6	6	10	15	15	20	20	25	25	30	30
	440VDC	[A]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	24VDC	[A]	25	25	32	32	45	45	63	63	90	90	100	100
	48VDC	[A]	25	25	32	32	45	45	50	50	70	70	80	80
Series-wound Motors	60VDC	[A]	25	25	32	32	45	45	50	50	70	70	80	80
3 Poles in Series	110VDC	[A]	20	20	25	25	30	30	35	35	70	70	80	80
	220VDC	[A]	6	6	6	10	15	15	20	20	25	25	30	30
	440VDC	[A]	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Three poles wired in series for DC switching



Electrical Data

		CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Resistance and Watt Loss I_e AC-3/ 400V													
Resistance per power pole	[mΩ]	2.7	2.7	2.7	2.0	2.0	2.0	1.5	1.0	0.9	0.9	0.9	0.6
Watt Loss - 3 power poles	[W]	0.66	1.2	2.1	3.2	5.4	8.2	8.3	9.1	9.7	14.0	19.5	17
Coil and 3 power poles	AC (coil warm) [W]	3.4	3.9	4.8	6.3	8.5	11.3	11.6	12.4	16.2	18	23.5	26
	DC (coil warm) [W]	2.4	2.9	3.8	4.9	7.1	9.9	10.8	11.6	13.7	18	23.5	22
Short-Circuit Coordination													
Max. Fuse or circuit breaker ratings													
DIN Fuses -gG, gL													
Available Fault Current	[KA]	50	50	50	50	50	50	50	50	50	50	50	50
Type "1" (690V) ❸	[A]	50	50	50	80	125	125	160	160	250	250	250	250
Type "2" (690V) ❸	[A]	25	35	35	40	80	80	100	100	160	160	160	200
BS 88 Fuses													
Available Fault Current	[KA]	65	65	65	65	65	65	65	❹	65	65	65	❹
Type "1" (415V) ❸	[A]	25	32	40	50	63	80	80	❹	100	160	160	❹
Type "2" (415V) ❸	[A]	20	25	32	50	63	80	80	❹	100	125	160	❹
cUL Short-Circuit Ratings													
Class K1, RK1, K5, and RK5 Fuses													
Available Fault Current	[KA]	5	5	5	5	5	5	5	5	5	10	10	10
cUL Max. Rating (600V) ❷ Type 1	[A]	35	40	70	90	110	125	150	200	200	250	300	350
Class CC & CSA HRCI Fuses													
Available Fault Current	[KA]	100	100	100	100	~	~	~	~	~	~	~	~
cUL Max. Rating (600V) ❷ Type 2	[A]	15	20	30	40	~	~	~	~	~	~	~	~
Class J CSA & HRCI-J Fuses													
Available Fault Current	[KA]	100	100	100	100	100	100	100	100	100	100	100	100
cUL Max. Rating (600V) Type 2	[A]	15	20	30	40	50	50	70	70	80	100	150	175
Inverse-Time Circuit Breaker ❶													
Available Fault Current	[KA]	5	5	5	5	5	5	5	5	5	10	10	10
cUL Max. Rating 480V ❷ Type 1	[A]	30	30	50	50	125	125	125	150	250	250	250	250
cUL Max. Rating 600V ❷ Type 1	[A]	~	~	~	~	125	125	125	150	250	250	250	250
Short Time Current Withstand Ratings													
I_{cw} 60° C 10 s	[A]	170	170	170	215	300	304	375	375	700	700	700	840
Off Time Between Operations	[Min.]	20	20	20	20	20	20	20	20	20	20	20	20

❶ When used as a Branch Circuit Protection device, NEC 430-152 defines the maximum rating of an Inverse-time circuit breaker to be sized at 250% of the motor nameplate FLA for most applications.

❷ UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.

❸ Per IEC 60947-1 for contactor and fuses only.

❹ To be determined - Test data not available at time of this printing.

Short Circuit Ratings

High Fault Short Circuit Ratings per UL508 and CSA 22.2 No.14

CEP7 Third Generation Cat. No.		Contactor Cat. No.	Max. starter FLC (A)	Fuse Ratings			UL Listed Circuit Breaker Ratings		
				Max. available fault current (kA)	Max. voltage (V)	UL Class J/CC/ CSA HRCI-J fuse max. (A)	Short Circuit Rating (kA)	Max. voltage (V)	Max. CB Rating (A)
CEP7	1EEAB, 1EFAB	CA7-9	0.5	100	600	3	5 ~	480 600	30 ~
	1EEBB, 1EFBB		1			6			
	1EECB, 1EFCB, 1EEDB, 1EFDB, 1EEEB, 1EFEB	CA7-9	09			20			
		CA7-12 CAN7-12	12			20			
		CA7-16 CAN7-16	16	100	600	30	5 ~	480 600	50 ~
		CA7-23	23			30			
	1EEED, 1EFED, 1EEFD, 1EFFD	CA7-30	30	100	600	50	65 25	480 600	50
		CA7-37 CAN7-37	37			50			
		CA7-43 CAN7-43	43			70			80
		CA7-55	55	100	600	70	65 25	480 600	80
	1EEGE, 1EFGE	CA7-60	60	100	600	80	65 25	480 600	125 125
		CA7-72	72			100			
		CA7-85 CAN7-85	85			150			
		CA7-97	97	100	600	175	65 25	480 600	125 125

Short Circuit Ratings

Standard Fault Short Circuit Ratings per UL508 and CSA 22.2 No.14

CEP7 Third Generation Cat. No.		Max. available fault current (kA)	Conditional S.C. current, Iq (kA)	S.C.P.D.
CEP7	1EEAB, 1EFAB, 1EEBB, 1EFBB	1	600V Max. Voltage	Suitable for use with fuses only
	1EECB, 1EFCB, 1EEDB, 1EFDB, 1EEEB, 1EFEB 1EEED, 1EFED, 1EEFD, 1EFFD	5		Not restricted to fusing only
	1EEGE, 1EFGE	10		

IEC Short Circuit Ratings per EN60947-4-1

CEP7 Third Generation Cat. No.		Prospective S.C. current, Ir (kA)	Conditional S.C. current, Iq (kA)	Max. voltage (V)	S.C.P.D.
CEP7	1EEAB, 1EFAB, 1EEBB, 1EFBB	1	100	690	Suitable for use with fuses only
	1EECB, 1EFCB, 1EEDB, 1EFDB, 1EEEB, 1EFEB	1			Not restricted to fusing only
	1EEED, 1EFED, 1EEFD, 1EFFD	3			
	1EEGE, 1EFGE	5			

IEC Type I and Type II Fuse Coordination with CA7 Series contactors per EN60947-4-1

CEP7 Third Generation Cat. No.		Contactor Cat. No.	Max. starter FLC (A)	Prospective S.C. current/ Ir (kA)	Conditional S.C. current/ Iq (kA)	Max. voltage (V)	Type I with Class J fuse max. (A)	Type II with Class J fuse max. (A)
CEP7	1EEAB, 1EFAB	CA7-9	0.5	1	100	600	3	3
	1EEBB, 1EFBB		1				6	6
	1EECB, 1EFCB, 1EEDB, 1EFDB	CA7-9	9	1			20	15
		CA7-12	12				20	20
		CA7-16	16				30	30
		CA7-23	23				30	30
	1EEEB, 1EFEB	CA7-9	9	3			20	15
		CA7-12	12				20	20
		CA7-16	16				30	30
		CA7-23	23				30	30
	1EEED, 1EFED, 1EEFD, 1EFFD	CA7-30	30	3			50	50
		CA7-37	37				50	50
		CA7-43	43				70	70
		CA7-55	55				70	70
	1EEGE, 1EFGE	CA7-60	60	3	100	600	80	80
		CA7-72	72				100	100
		CA7-85	85				150	150
		CA7-60	60	5			80	80
		CA7-72	72				100	100
		CA7-85	85				150	150
		CA7-97	97				175	175

Electro-Mechanical Data

			CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97
Service Life														
Mechanical	AC	[Mil.]	13	13	13	13	13	13	12	12	6	6	6	6
	DC	[Mil.]	13	13	13	13	13	13	13	13	6	6	6	6
Electrical AC-3 (400V)	AC	[Mil.]	1.3	1.3	1.3	1.3	1.3	1.3	1.0	0.8	1.0	1.0	1.0	1.0
Shipping Weights														
AC - CA7		[kg]	0.39	0.39	0.39	0.39	0.48	0.49	0.51	0.51	1.45	1.45	1.45	1.45
		[Lbs.]	0.86	0.86	0.86	0.86	1.06	1.08	1.12	1.12	3.20	3.20	3.20	3.20
AC -CAU7		[kg]	0.85	0.85	0.85	0.85	1.08	1.08	1.15	1.15	3.14	3.14	3.14	3.14
		[Lbs.]	1.89	1.89	1.89	1.89	2.39	2.39	2.54	2.54	6.92	6.92	6.92	6.92
DC - CA7		[kg]	0.41	0.41	0.41	0.41	0.45	0.45	0.60	0.60	1.47	1.47	1.47	1.47
		[Lbs.]	0.90	0.90	0.90	0.91	1.00	1.00	1.32	1.32	3.24	3.24	3.24	3.24
DC - CAU7		[kg]	0.89	0.89	0.89	0.90	0.98	0.98	1.33	1.33	3.22	3.22	3.22	3.22
		[Lbs.]	1.97	1.97	1.97	1.99	2.17	2.17	3.93	2.93	7.10	7.10	7.10	7.10
Terminations - Power														
Description			 One saddleclamp per pole: cross, slotted or Pozidrive No. 2/blade No. 3 screw				 Dual connection; one saddleclamp and one box lug per pole; cross, slotted or Pozidrive No. 2/blade No. 4 screw				 Dual connection; two box lugs per pole Allen Head: 4mm, 5/32			
	1 Wire	[mm²]	1...4				2.5...16				2.5...35			
	2 Wires	[mm²]	1...4				2.5...10				2.5...25			
	1 Wire	[mm²]	1.5...6				2.5...25				2.5...50			
	2 Wires	[mm²]	1.5...6				2.5...16				2.5...35			
	1 Wire	[AWG]	16...10				14...4				14...1			
	2 Wires	[AWG]	16...10				14...4				14...1			
Torque Requirement		[Nm]	1.5...2.0				2.5...3.5				4.5...6			
		[Lb-in]	13.3...17.7				22...31				40...53			
Terminations - Control														
Description			 Combination Screw Head: Cross, Slotted, Pozidrive											
Coils	1 or 2	[mm²]	1...2.5											
Wires		[AWG]	16...12											
Control Modules	1or 2	[mm²]	1...4											
Wires		[AWG]	16...12											
Torque Requirement		[Nm]	1...1.5											
		[Lb-in]	8.9...13											
Degree of Protection - contactor			CA7-9...23: IP2X from all directions CA7-30...55: IP2X from front with front (upper) terminal wired CA7-60...97: IP2X from front with front (upper) terminal wired (min. wire size 16mm² or #6 AWG)											
Protection Against Accidental Contact			Safe from touch by fingers and back-of-hand per VDE 0106; Part 100											

Environmental and General Specifications

Ambient Temperature ❶	
Storage	-55°C...+80°C (-67...176° F) - [CRI7E Electronic Interface -50...+80° C (-58°F...176°F)]
Operation at rated voltage	-40°C...+60°C (-40°F...140°F) (40°C per UL)
15% current reduction against 60°C (140°F) values	at 70°C (158°F)
Climatic Withstand	IEC60068-2-1/-2/-30
Altitude at installed site	2000 meters above sea level per IEC 60947-1
Resistance to Corrosion/Humidity	Damp-alternating climate: cyclic to IEC 68-2, 56 cycles Dry heat: IEC 68-2, +100°C (212°F), relative humidity <50%, 7 days. Damp tropical: IEC 68-2, +40°C (104°F), relative humidity <92%, 56 days.
Shock Resistance	IEC 60068-2-27: Half sinusoidal shock 11ms, 30g (in all three directions)
Vibration Resistance	IEC 60068-2-6: Static > 2g, in normal position no malfunction <5g
Pollution Degree	3
Operating Position	Refer to Dimension Pages
Standards	IEC/EN 60947-1/-4-1/-5-1; UL508; CSA 22.2 No. 14
Approvals	CE, cULus, CCC

❶ Ambient is the temperature outside the enclosure.

Lug Kit and Paralleling Link Specifications

			CA7-P-KN23 / KL23	CA7-P-K37	CA7-P-K43	CA7-P-K85	CA7-P-B23	CA7-P-B37
Approvals			UL Listed; CSA Certified; C					
Conformity to Standards			UL508; CSA 22.2 No. 14; IEC 60947-4					
Protection Against Accidental Contact			IP2LX Finger Protection					
Terminations								
Description			Cross, slotted or Pozidrive screw		Allen Head; 5mm, 3/16		Allen Head; 7 mm, 15/32	
Wire Size								
	1 Wire	[mm²]	4...16	4..16	6...35	10...70	35...70	35...70
	1 Wire	[mm²]	4...25	4..25	6...50	10...95	35...95	35...95
	1 Wire	[AWG]	10...4	10...4	8...2	8..2/0	0...2/0	0...2/0
Torque Requirement		[Nm]	2...3	2...3	3..6	8...12	6...12	6....12
		[Lb-in]	18...27	18...27	27...54	72...108	54...108	54...108

Coil Data - AC / Two Winding DC

			CA7-9...12	CA7-16	CA7-23	CA7-30...37	CA7-43...55	CA7-60...85	CA7-97
Voltage Range									
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[xU$_s$]	0.85...1.1						
	Dropout	[xU$_s$]	0.3...0.6						
DC: Two Winding (60D...97D)	Pickup	[xU$_s$]	0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25)						
	Dropout	[xU$_s$]	0.1...0.6						
Coil Consumption									
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[VA]	75	75	105	105	135	235	400VA/240W
	Hold-in	[VA/W]	9.5/2.7	9.5/2.7	12.3/3.1	12.3/3.1	13.3/3.3	19/6.5	24/9
DC: Two Winding (60D...97D)	Pickup	[W]	~					200	325
	Hold-in	[W]						4.5	5.5
Operating Times									
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[ms]	15...30	15...30	15...30	15...30	15...30	20...40	20...40
	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40
with RC Suppressor	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40
DC: Two Winding (60D...97D)	Pickup	[ms]	~					20...40	15...25
	Dropout	[ms]						20...35 ❶	15...25 ❶

Coil Data - Electronic DC

Voltage Range

Voltage Code	Nominal Voltage US [VDC]	Ratings [xU$_s$]
12E	12	0.7...1.25
24E	24	0.7...1.25
36E	36...48	0.7...1.25
48E	48...72	0.8...1.25
110E	110...125	0.7...1.12 ❸
220E	220...250	0.8...1.1

Coil Consumption & Operating Times ❷

Average/Peak Pickup [W]		Hold-in [W]		Dropout Voltage [xU$_s$]	Pickup [ms]	Dropout [ms]
CA7-9E...37E	CA7-43E...55E	CA7-9E...37E	CA7-43E...55E			
10/17	16/25	1.7	2.5	0.3...0.4	25...50	27...45
10/17	16/25	1.7	2.5			
10/17	16/25	1.7...1.9	2.5...2.7			
10/17	16/25	1.7...1.9	2.5...2.7	0.3...0.4	25...50	23...33
12/19	16/26	2.0...2.1	2.7...2.8			
14/22	18/29	2.7...3.0	3.5...4.0			

❶ ≤ 220V.

❷ The hold-in demand of the CA7-9E...55E 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.

❸ At 110VDC, coil code 110E has an operating range of 0.7...1.25 xU$_s$

Electrical Data

			CA7-9-M40 (31; 22)	CA7-12-M40 (31; 22)	CA7-16-M40 (31; 22)	CA7-23-M40 (31; 22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40
Rated Insulation Voltage U_i										
IEC, AS, BS, SEV, VDE 0660							690V			
UL; CSA							600V			
Rated Impulse Voltage U_{imp}							8 kV			
Rated Voltage U_e - Main Contacts										
AC 50/60Hz						115, 200, 208, 230, 240, 380, 400, 415, 460, 500, 575, 690V				
DC						24, 48, 110, 115, 220, 230, 300, 440V				
Operating Frequency for AC Loads							50...60Hz			
Switching Motor Loads										
Standard IEC Ratings										
AC-2, AC-3, AC-4	230V	[A]	12	15	20	26.5	38	38	85	85
DOL & Reversing	240V	[A]	12	15	20	26.5	38	38	85	85
50Hz/60ºC	400V	[A]	9	12	16	23.	37	37	85	85
	415V	[A]	9	12	16	23	37	37	85	85
	500V	[A]	7	10	14	20	29	30	80	80
	690V	[A]	5	7	9	12	9	21	22	49
	230V	[kW]	3	4	5.5	7.5	11	11	25	25
	240V	[kW]	3	4	5.5	7.5	11	11	25	25
	400V	[kW]	4	5.5	7.5	11	18.5	18.5	45	45
	415V	[kW]	4	5.5	7.5	11	18.5	18.5	45	45
	500V	[kW]	4	5.5	7.5	13	18.5	20	55	55
	690V	[kW]	4	5.5	7.5	10	7.5	18.5	18.5	45
UL/CSA										
DOL & Reversing	115V	[A]	7.2	9.8	16	24	34	34	80	80
60Hz/60ºC 1Ø	230V	[A]	18	12	17	17	28	28	68	68
	115V	[HP]	1/2	1/2	1	2	3	3	7-1/2	7-1/2
	230V	[HP]	1-1/2	2	3	3	5	5	15	15
	200V	[A]	7.8	11	17.5	17.5	32.2	32.2	78.2	78.2
	230V	[A]	6.8	9.6	15.2	22	28	28	80	80
	460V	[A]	7.6	11	14	21	34	34	65	77
	575V	[A]	9	11	17	17	17	32	22	52
	200V	[HP]	2	3	5	5	10	10	25	25
	230V	[HP]	2	3	5	7-1/2	10	10	30	30
	460V	[HP]	5	7-1/2	10	15	25	25	50	60
	575V	[HP]	7-1/2	10	15	15	15	30	20	50
Maximum Operating Rate	AC2	[ops hr]	450	450	450	400	400	400	200	200
(at max. amps)	AC3	[ops/hr]	700	700	700	600	600	600	500	500
	AC4	[ops/hr]	200	150	120	80	70	70	50	50

Electrical Data

			CA7-9-M40 (31; 22)	CA7-12-M40 (31; 22)	CA7-16-M40 (31; 22)	CA7-23-M40 (31; 22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40
AC-1 Load, 3Ø Switching										
Ambient Temperature 40ºC	I_{th}	[A]	32	32	32	32	75	75	130	130
	230V	[kW]	13	13	13	13	30	30	52	52
	240V	[kW]	13	13	13	13	31	31	54	54
	400V	[kW]	22	22	22	22	52	52	90	90
	415V	[kW]	23	23	23	23	54	54	93	93
	500V	[kW]	28	28	28	28	65	65	113	113
	690V	[kW]	38	38	38	38	90	90	155	155
	I_{th}	[A]	32	32	32	32	60	60	110	110
	230V	[kW]	13	13	13	13	24	24	44	44
Ambient Temperature 60º	240V	[kW]	13	13	13	13	25	25	46	46
	400V	[kW]	22	22	22	22	42	42	76	76
	415V	[kW]	23	23	23	23	43	43	79	79
	500V	[kW]	28	28	28	28	52	52	95	95
	690V	[kW]	38	38	38	38	72	72	131	131
Max Operating Rate		[ops/hour]	1,000	1,000,	1,000,	1,000	300	300	600	600
Continuous Current (UL/CSA)										
General Purpose Rating (40º)	Open	[A]	25	25	30	30	60	60	125	130
	Enclosed	[A]	25	25	30	30	60	60	125	130
Max. Operating Rate		[ops/hour]	1,400	1,400	1,200	1,200	1,000	1,000	600	600
Lighting Loads ❶										
Elec. Dischrg.Lamps-AC-5a,	Open	[A]	22.5	25	28	29	65	65	115	115
single compensated	Enclosed	[A]	22.5	25	28	29	54	54	95	95
Incandescent Lamps AC-5b, Electrical endurance~100,000 operations			12	16	18	22	18	25	60	75
DC-1 Switching - 60ºC	24VDC	[A]	25	25	32	32	45	45	80	80
	48VDC	[A]	20	20	20	20	25	25	40	40
1 Pole	60VDC	[A]	20	20	20	20	25	30	40	40
	110VDC	[A]	6	6	6	6	10	10	11	11
	220VDC	[A]	1.5	1.5	1.5	1.5	1.5	1.5	1.8	1.8
	440VDC	[A]	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
	24VDC	[A]	25	25	32	32	45	45	80	80
	48VDC	[A]	25	25	32	32	45	45	80	80
2 Pole in Series	60VDC	[A]	25	25	32	32	45	45	80	80
	110VDC	[A]	25	25	32	32	45	45	80	80
	220VDC	[A]	8	8	8	8	10	10	15	15
	440VDC	[A]	1	1	1	1	1	1	1.5	1.5
	24VDC	[A]	25	25	32	32	~	48	~	100
	48VDC	[A]	25	25	32	32	~	48	~	100
3 Poles in Series ❷	60VDC	[A]	25	25	32	32	~	48	~	100
	110VDC	[A]	25	25	32	32	~	48	~	100
	220VDC	[A]	25	25	32	32	~	48	~	80
	440VDC	[A]	3	3	3	3	~	3.5	~	5
	24VDC	[A]	25	25	32	32	~	60	~	110
	48VDC	[A]	25	25	32	32	~	60	~	110
4 Poles in Series	60VDC	[A]	25	25	32	32	~	60	~	110
	110VDC	[A]	25	25	32	32	~	60	~	110
	220VDC	[A]	25	25	32	32	~	60	~	100
	440VDC	[A]	8	8	8	8	~	10	~	15

❶ CA7 ratings for lighting loads are provided for technical reference. For cUL rated and labeled devices, see CAL7 contactors listed in this section.
❷ See page A2:36 for Three poles wired in series for DC switching

Electrical Data

			CA7-9-M40 (31; 22)	CA7-12-M40 (31; 22)	CA7-16-M40 (31; 22)	CA7-23-M40 (31;22)	CA7-40-M22	CA7-40-M40	CA7-90-M22	CA7-90-M40
Resistance and Watt Loss I_e AC-3/ 400V										
Resistance per power pole		[mΩ]	2.7	2.7	2.7	2.0	2.0	1.5	0.8	0.7
Watt Loss - 4 power poles		[W]	0.66	1.2	2.1	3.2	11.3	8.4	13.5	11.8
Coil and 4 power poles	AC	[W]	3.4	3.9	4.8	6.3	8.8	9.5	36	56.3
	DC	[W]	2.4	2.9	3.8	4.9	8	8.7	32.5	52.8
Short Circuit Coordination										
DIN Fuses -gG, gL										
Available Fault Current		[A]	100 KA	100 KA	100 KA	100 KA	50 KA	50 KA	50 KA	50 KA
Type "1" (690V) ❸		[A]	50	50	50	80	160	160	250	250
Type "2" (690V) ❸		[A]	25	35	35	40	100	100	160	160
BS 88 Fuses										
Available Fault Current		[A]	80 KA	80 KA	80 KA	80 KA	~	~	~	~
Type "1" (690V) ❸		[A]	25	32	35	50	~	~	~	~
Type "2" (690V) ❸		[A]	25	32	35	50	~	~	~	~
Class K1, RK1 Fuses										
Available Fault Current		[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA
Type "2" (600V) ❸		[A]	15	20	20	30	70	70	100	100
cUL Short-Circuit Ratings										
Class K1, RK1, K5, and RK5 Fuses										
Available Fault Current		[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	10 KA	10 KA
cUL Max. Rating (600V) ❷ Type 1		[A]	35	40	70	90	125	125	300	300
Class CC & CSA HRCI Fuses										
Available Fault Current		[A]	100 KA	100 KA	100 KA	100 KA	~	~	~	~
cUL Max. Rating (600V) ❷ Type 2		[A]	15	20	30	30	~	~	~	~
Class J CSA & HRCI-J Fuses										
Available Fault Current		[A]	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA	100 KA
cUL Max. Rating (600V) ❷ Type 2		[A]	15	20	30	30	70 ❹	70 ❹	150 ❹	150 ❹
Inverse-Time Circuit Breaker ❶										
Available Fault Current		[A]	5 KA	5 KA	5 KA	5 KA	5 KA	5 KA	10 KA	10 KA
cUL Max. Rating 480V ❷ Type 1		[A]	30	30	50	50	125	125	250	250
cUL Max. Rating 600V ❷ Type 1		[A]	~	~	~	~	125	125	250	250
Short Time Current Withstand Ratings										
I_{cw} 60° C		[A]	170	170	170	215	304	304	700	700
Off Time Between Operations		[Min.]	20	20	20	20	5	5	5	5

❶ When used as a Branch Circuit Protection device, NEC 430-152 defines the maximum rating of an Inverse-time circuit breaker to be sized at 250% of the motor nameplate FLA for most applications.

❷ UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.

❸ Per IEC 60947-1 for contactor and fuses only.

❹ UL Testing not complete a the time of printing this catalog.

Mechanical Data

			CA7-9-M40 (31; 22)	CA7-12-M40 (31; 22)	CA7-16-M40 (31; 22)	CA7-23-M40 (31; 22) CAL7-20	CA7-40-M22	CA7-40-M40 CAL7-30	CA7-90-M22	CA7-90-M40 CAL7-60
Service Life										
Mechanical	AC	[Mil.]	13	13	13	13	10	10	10	10
	DC	[Mil.]	13	13	13	13	10	10	10	10
Shipping Weights										
AC - CA7		[kg]	0.39	0.39	0.39	0.39	0.51	0.51	1.45	1.45
		[Lbs.]	0.86	0.86	0.86	0.86	1.12	1.12	3.20	3.20
DC - CA7		[kg]	0.41	0.41	0.41	0.41	0.59	0.59	1.47	1.47
		[Lbs.]	0.90	0.90	0.90	0.91	1.30	1.30	3.24	3.24
Terminations - Power										
Description										
			One saddleclamp per pole: cross, slotted or Pozidrive No. 2/blade No. 3 screw				Dual connection; one saddleclamp and one box lug per pole; cross, slotted or Pozidrive No. 2/ blade No. 4 screw		Dual connection; two box lugs per pole Allen Head: 4mm, 5/32	
	1 Wire	[mm²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...16	2.5...35
	2 Wires	[mm²]	1...4	1...4	1...4	1...4	2.5...10	2.5...10	2.5...10	2.5...25
	1 Wire	[mm²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...25	2.5...50
	2 Wires	[mm²]	1.5...6	1.5...6	1.5...6	1.5...6	2.5...16	2.5...16	2.5...16	2.5...35
	1 Wire	[AWG]	16...10	16...10	16...10	16...10	14...6	14..6	14...4	14...1
	2 Wires	[AWG]	16...10	16...10	16...10	16...10	14...6	14..6	14...4	14...1
Torque Requirement		[Nm]	1.5...2.0	1.5...2.0	1.5...2.0	1.5...2.0	2.5...3.5	2.5...3.5	3.5...6	3.5...6
		[Lb-in]	13.3...17.7	13.3...17.7	13.3...17.7	13.3...17.7	22...31	22...31	31...52	31...52
Terminations - Control										
Description										
			Combination Screw Head: Cross, Slotted, Pozidrive							
Coils	1 or 2	[mm²]	1...2.5							
Wires		[AWG]	16...12							
Control Modules	1or 2	[mm²]	1...4							
Wires		[AWG]	16...12							
Torque Requirement		[Nm]	1...1.5							
		[Lb-in]	8.9...13							
Degree of Protection - contactor			CA7-9...23: IP2X from all directions CA7-30...55: IP2X from front with front (upper) terminal wired CA7-60...97: IP2X from front with front (upper) terminal wired (min. wire size 16mm² or #6 AWG)							
Protection Against Accidental Contact			Safe from touch by fingers and back-of-hand per VDE 0106; Part 100							

Environmental and General Specifications

Ambient Temperature ❶	
Storage	-55...+80° C (-67...176° F) - [CRI7E Electronic Interface -50...+80° C (-58...176° F)]
Operation	-25...+60° C (-13...140° F) (40° C per UL)
Conditioned 15% current reduction after AC-1 at >60° C	-25...+70° C (-13...158° F)
Altitude at installed site	2000 meters above sea level per IEC 60947-1
Resistance to Corrosion/Humidity	Damp-alternating climate: cyclic to IEC 68-2, 56 cycles Dry heat: IEC 68-2, +100° C (212° F), relative humidity <50%, 7 days. Damp tropical: IEC 68-2, +40° C (104° F), relative humidity <92%, 56 days.
Shock Resistance	IEC 60068-2-27: Half sinusoidal shock 11ms, 30g (in all three directions)
Vibration Resistance	IEC 60068-2-6: Static > 2g, in normal position no malfunction <5g
Pollution Degree	3
Operating Position	Refer to Dimension Pages
Standards	IEC/EN 60947-1/-4-1/-5-1; UL508; CSA 22.2 No. 14
Approvals	CE, cULus, CCC

❶ Ambient is the temperature outside the enclosure.

Coil Data - AC / Two Winding DC

			CA7-9-M40 (31; 22)	CA7-12-M40 (31; 22)	CA7-16-M40 (31; 22)	CA7-23-M40 (31; 22) CAL7-20	CA7-40-M22	CA7-40-M40 CAL7-30	CA7-90-M22	CA7-90-M40 CAL7-60
Voltage Range										
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[xU_s]				0.85...1.1				
	Dropout	[xU_s]				0.3...0.6				
DC, Two Winding (90D)	Pickup	[xU_s]				0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25)				
	Dropout	[xU_s]				0.1...0.6				
Coil Consumption										
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[VA]	75	75	75	105	135	135	400VA/240W	400VA/240W
	Hold-in	[VA/W]	9.5/2.7	9.5/2.7	9.5/2.7	12.3/3.1	13.3/3.3	13.3/3.3	24/9	24/9
DC: Two Winding (90D)	Pickup	[W]	~	~	~	~	~	~	325	325
	Hold-in	[W]	~	~	~	~	~	~	5.5	5.5
Operating Times										
AC: 50Hz, 60Hz, 50/60 Hz	Pickup	[ms]	15...30	15...30	15...30	15...30	15...30	15...30	20...30	20...40
	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40	20...40
with RC Suppressor	Dropout	[ms]	10...60	10...60	10...60	10...60	10...60	10...60	20...40	20...40
DC: Two Winding (90D)	Pickup	[ms]	~	~	~	~	~	~	15...20	15...25
	Dropout	[ms]	~	~	~	~	~	~	20...25	15...25

Coil Data - Electronic DC

Voltage Range

Voltage Code	Nominal Voltage US [VDC]	Ratings [xU_s]
12E	12	0.7...1.25
24E	24	0.7...1.25
36E	36...48	0.7...1.25
48E	48...72	0.8...1.25
110E	110...125	0.7...1.12 ❷
220E	220...250	0.7...1.1

Coil Consumption & Operating Times ❶

Average/Peak Pickup [W]		Hold-in [W]		Dropout Voltage [xU_s]	Pickup [ms]	Dropout [ms]
CA7-9E...37E	CA7-40E	CA7-9E...37E	CA7-40E			
10/17	16/25	1.7	2.5	0.3...0.4	25...50	27...45
10/17	16/25	1.7	2.5			
10/17	16/25	1.7...1.9	2.5...2.7			
10/17	16/25	1.7...1.9	2.5...2.7	0.3...0.4	25...50	23...33
12/19	16/26	2.0...2.1	2.7...2.8			
14/22	18/29	2.7...3.0	3.5...4.0			

❶ The hold-in demand of the CA7-9E...55E 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.

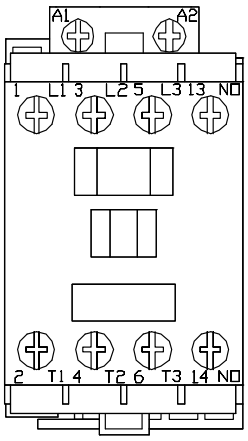
❷ At 110VDC, coil code 110E has an operating range of 0.7...1.25 xU_s

Technical Information – Auxiliary Contact Data

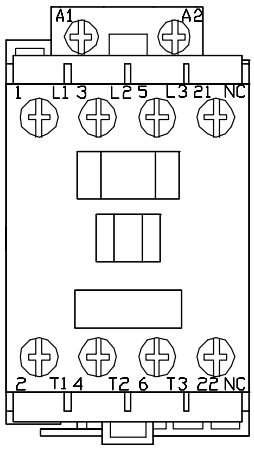
			Built-in Auxiliary Contacts in Contactor CA7-9...CA7-23	Front Mounted Auxiliary Contacts CA7-PV, CS7-PV, CZE/A7, CV7	Front Mounted Bifurcated Auxiliary Contacts	Side Mounted Auxiliary Contacts CA-PA, CM7
Electrical Contact Ratings - NEMA			A600, P600	A600, Q600		A600, Q600
Min. Contact Rating			17V, 10 mA	17V, 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	6 A
		48V	10 A	6 A	3 A	6 A
		120V	10 A	6 A	3 A	6 A
		240V	10 A	5 A	3 A	5 A
		400V	6 A	3 A	2 A	3 A
		480V/500V	2.5 A	1.6 A	1.2 A	1.6 A
		600V	1 A	1 A	0.7 A	1 A
		690V	1 A	1 A	0.7 A	1 A
AC-12 (Control of resistive loads) IEC 60947-5-1	40 ºC	I_{th}	20 A	10 A	10 A	10 A
		230V	8 kW			
		400V	14 kW			
		690V	24 kW			
	60 ºC	I_{th}	20 A	6 A	6 A	6 A
		230V	8 kW			
		400V	14 kW			
		690V	24 kW			
DC-12 Switching DC Loads $L/_R$ < 1 ms, Resistive Loads IEC 60947-5-1		24V	12 A	12 A	6 A	6 A
		48V	9 A	9 A	3.2 A	3.2 A
		110V	3.5 A	3.5 A	0.45 A	0.45 A
		220V	0.55 A	0.55 A	0.18 A	0.18 A
		440V	0.2 A	0.2 A	0.1 A	0.1 A
DC-13 IEC 60947-5-1, Solenoids and contactors		24V	5 A	5 A	2.5 A	5 A
		48V	3 A	3 A	1.5 A	3 A
		110V	1.2 A	1.2 A	0.6 A	1.2 A
		220V	0.6 A	0.6 A	0.3 A	0.6 A
		440V	0.3 A	0.15 A	0.15 A	0.15 A

Terminal Marking Information for Built In Auxiliary Contacts

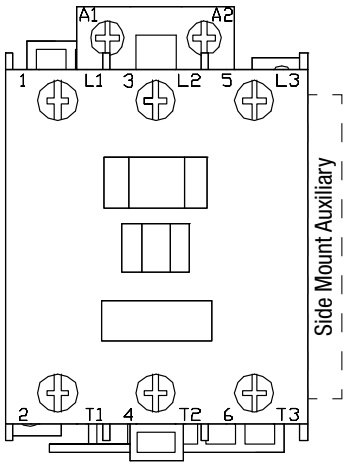
CA7-9…23-10 Typical



CA7-9…23-01 Typical



CA7-30...97 Typical



Auxiliary Contacts

			Built-in Auxiliary Contacts in Contactor CA7-9...CA7-23	Front Mounted Auxiliary Contacts CA7-PV, CS7-PV, CZE/A7, CV7	Side Mounted Auxiliary Contacts CA-PA, CM7
Continuous Current Rating per UL/CSA					
Rated Voltage	AC	[V]	600 max.	600 max.	600 max.
Continuous Rating	40°C	[A]	10 A general purpose Heavy pilot duty (A600)	10 A general purpose Heavy pilot duty (A600)	10 A general purpose Heavy pilot duty (A600)
Continuous Rating	DC	[A]	5A, 600 max. Standard pilot duty (P600)	2.5A, 600 max. Standard pilot duty (Q600)	2.5A, 600 max. Standard pilot duty (Q600)
Short-Circuit Protection -gGFuse Type 2 Coordination		[A]	20	10	10
Rated Impulse Voltage U_{imp}		[kV]	8	8	6
Insulation Voltage (between control and load circuit) per DIN< VDE 0103, Part 101 (NAMUR recommendation)		[V]	380	440	440
Mechanically Linked Contacts (per IEC60947-5-1 ❶Annex L (SUVA Third-party certified)			Mutually unrestricted between all NO and NC contacts	Mutually unrestricted between all NO & NC contacts. CZE & CV7 not mechanically linked with contactor main contacts	Mutually unrestricted between all NO and NC contacts
Terminals					
Terminal Type					
Maximum Wire Size per IEC 947-1			2xA4	2xA4	2xA4
 Flexible with Wire-End Ferrule	1 conductor	[mm²]	1...4	0.5...2.5	0.5...2.5
	2 conductor	[mm²]	1...4	0.75...2.6	0.75...2.6
 Solid/Stranded-Conductor	1 conductor	[mm²]	1.5...6	0.5...2.5	0.5...2.5
	2 conductor	[mm²]	1.5...6	0.75...2.6	0.75...2.6
Recommended Tightening Torque		[Nm]	1.5...2.5	1...1.5	1...1.5
Max. Wire Size per UL/CSA		[AWG]	16...10	16...12	16...12
Recommended Tightening Torque		[lb-in]	13...22	8.9...13	8.9...13

Accessories

Latch Attachment Release, CV7-11		
Coil Consumption	[VA/W] [W]	AC 45/40 DC 25W
Contact Signal Duration	[min/max]	0.03...15s
Time Attachment, CRZE7, CRZA7		
Reset Time		
at min. time setting	[ms]	10
at max. time setting	[ms]	70
Repeat Accuracy		±10%

Positively-Guided Contacts (Mechanically-linked)
SUVA Certified

- Restricted guidance guarantees without restrictions from contactor to auxiliary contact and auxiliary contact to contactor.❶

Contact Ratings (Per NEMA/UL A600 & Q600)

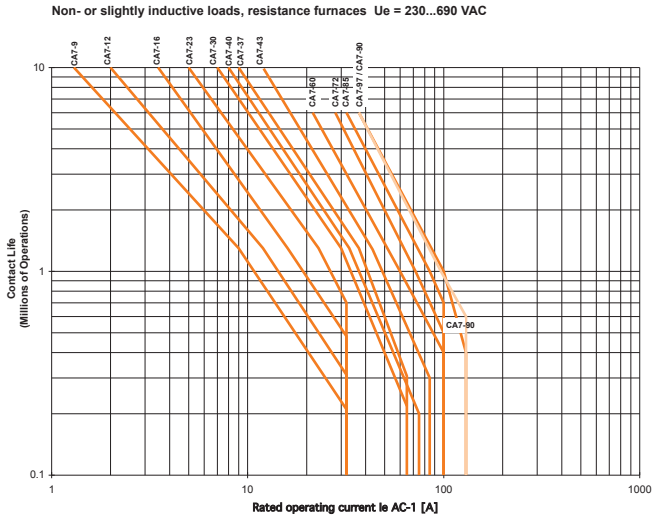
Standard	Circuit Voltage	Make (Amps/VA)	Break (Amps/VA	Continuous Amps
A600	120AC 240AC 480AC 600AC	60A/7200VA 30A/7200VA 15A/7200VA 12A/7200VA	6A/720VA 3A/720VA 1.5A/720VA 1.2A/720VA	10
Q600	125DC 250DC 301-600DC	0.55A/69VA 0.27A/69VA 0.1A/69VA	0.55A/69VA 0.27A/69VA 0.1A/69VA	2.5

❶ See Section G for additional details.

Life-Load Curves

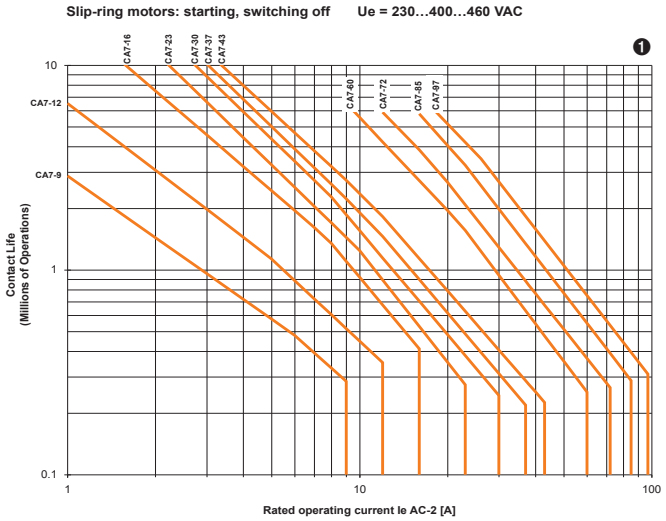
- Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
- Read the estimated contact life along the vertical axis.

AC-1
(to 690V)

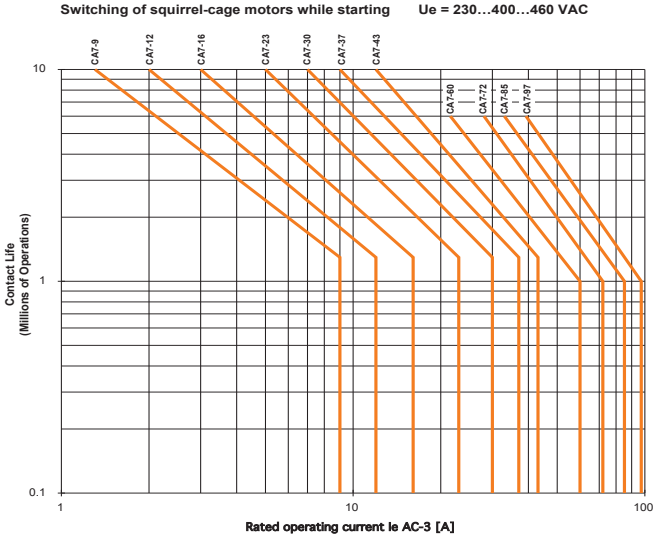


Instructions on
***How to* read**
Life Curves
can be found on page A0:8

AC-2
(to 460V)



AC-3
(to 460V)



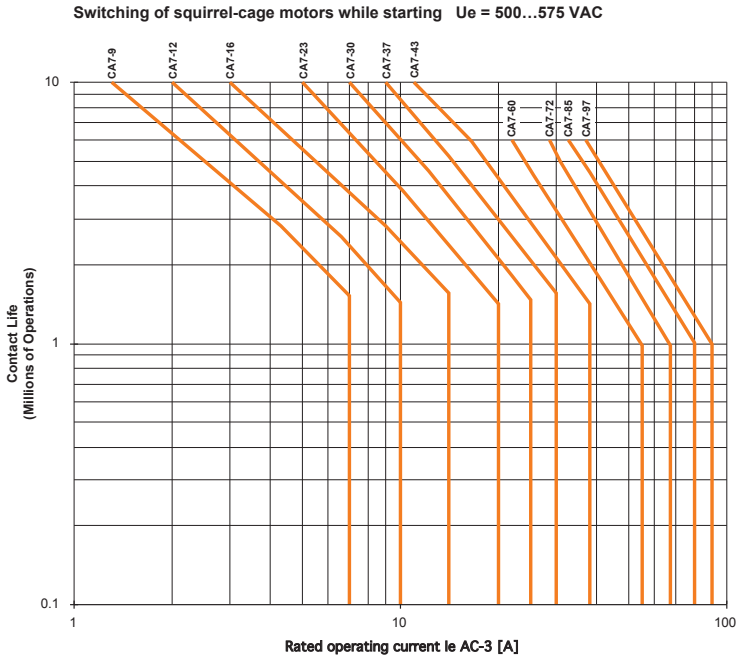
NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

❶ 575V applications use 90% of curve value.

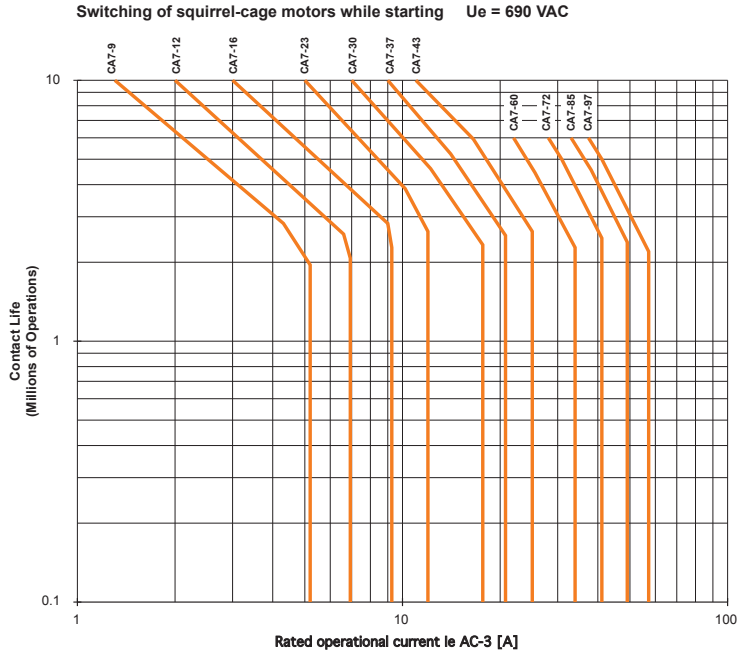
Life-Load Curves

- Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
- Read the estimated contact life along the vertical axis.

AC-3
(to 575V)



AC-3
(to 690V)

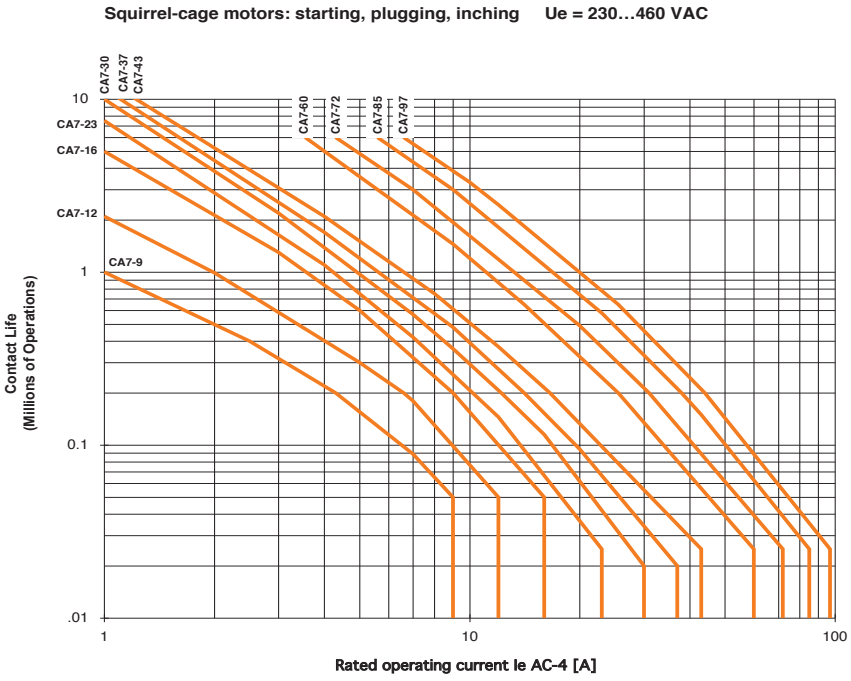


NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

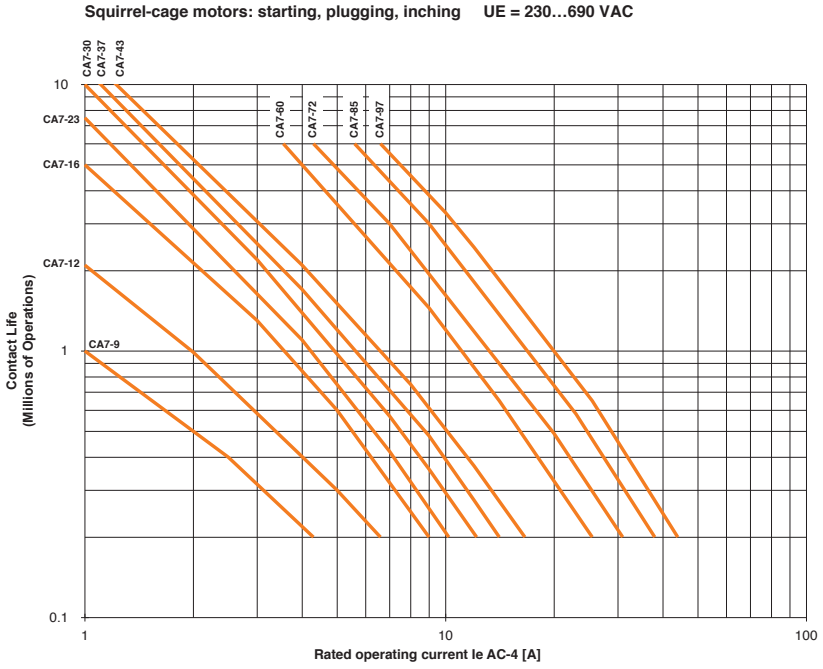
Life-Load Curves

- Locate the Rated Operational Current (I_e) along the bottom of the chart and follow the graph lines up to the intersection of the appropriate contactor's life-load curve.
- Read the estimated contact life along the vertical axis.

AC-4
(to 460V)



AC-4
(to 690V)



NOTE: The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the curves shown here.

Contact Life for Mixed Utilization Categories AC-3 and AC-4

In many applications, the utilization category cannot be defined as either purely AC-3 or AC-4. In those applications, the electrical life of the contactor can be estimated with the following equation:

$L_{mixed} = L_{ac3} / [1+P_{ac4} \times (L_{ac3}/L_{ac4}-1)]$, where:

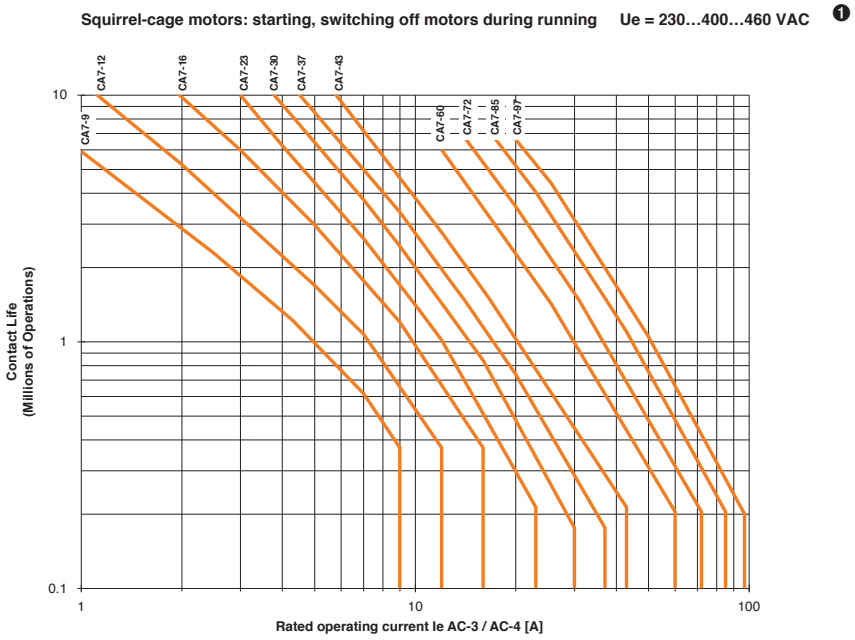
L_{mixed} Approximate contact life in operations for a mixed AC-3/AC-4 utilization category application.

L_{ac3} Approximate contact life in operations for a pure AC-3 utilization category (from the AC-3 life-load curve).

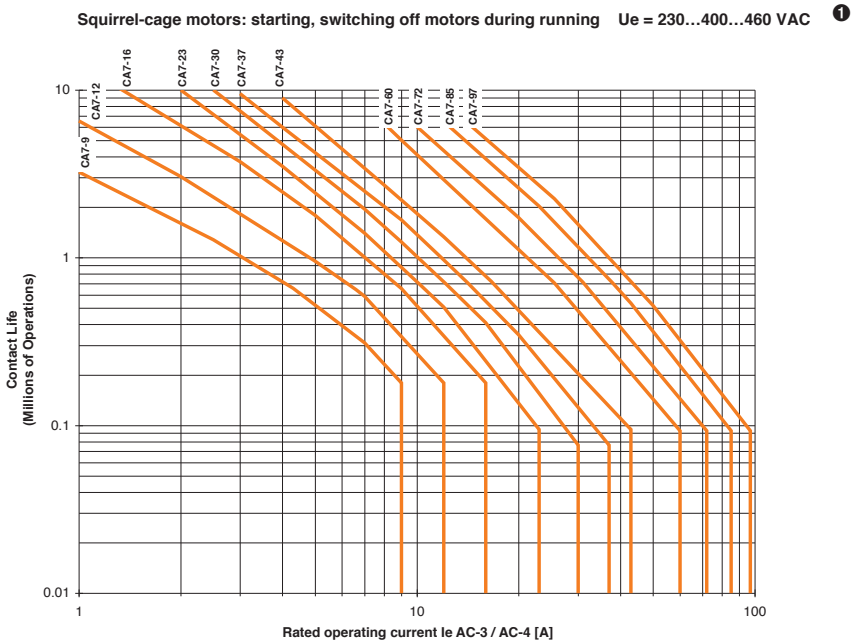
L_{ac4} Approximate contact life in operations for a pure AC-4 utilization category (from the AC-4 life-load curve).

P_{ac4} Percentage of AC-4 operations

AC-3 (90%), AC-4 (10%)



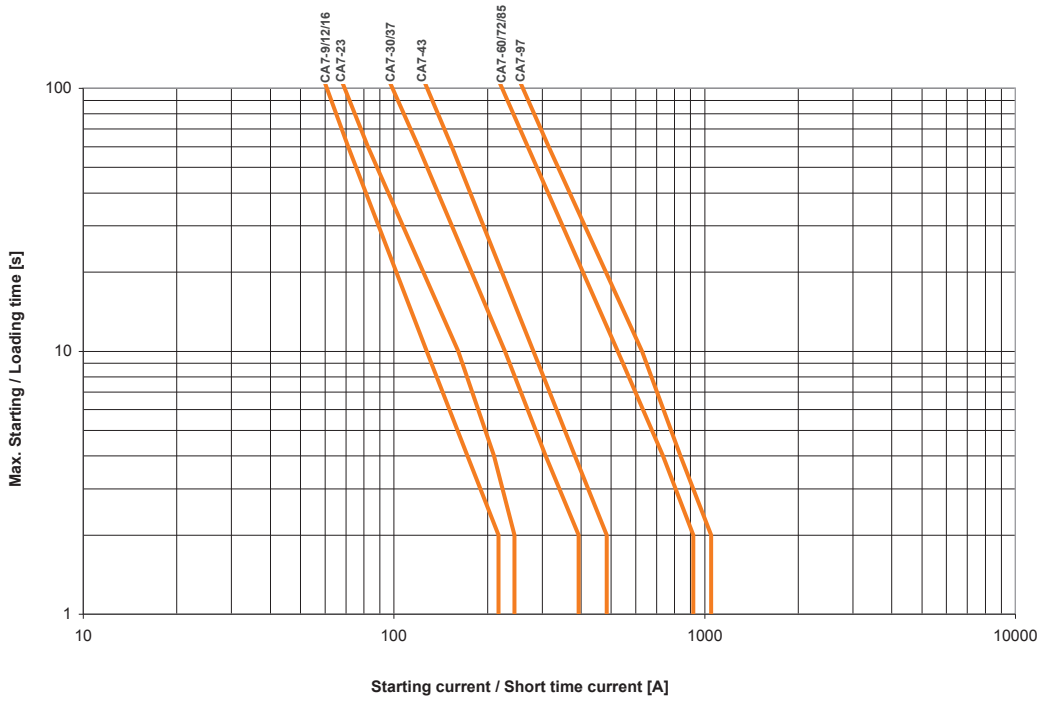
AC-3 (75%), AC-4 (25%)



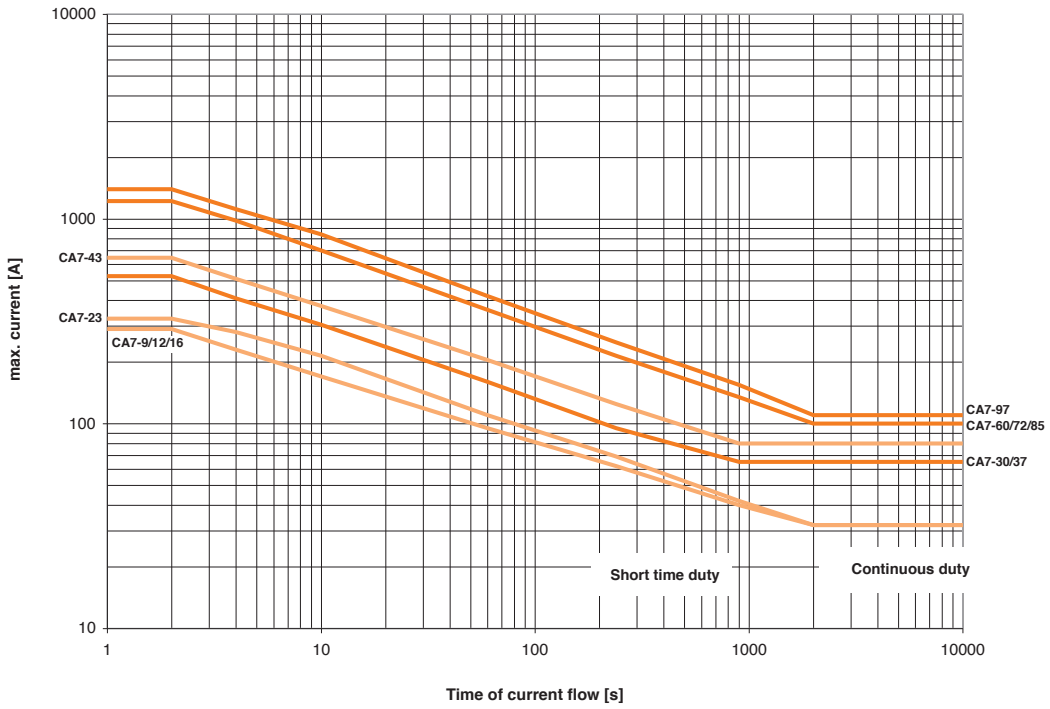
❶ 575V applications use 85% of curve value.

Contact Life for Special Applications

Heavy duty Starting and Regular Short-time Operation



Short-time withstand current Icw at 60°



Operating Rates

The estimated contact life shown in the life-load curves is based on the standard operating rates shown in Table B below. For applications requiring a higher operating frequency, the maximum operating power (Pn in kW or HP) for a given contactor must be reduced to maintain the same contact life.

To find a contactor's maximum operating power, for an operating rate greater than shown in Table B, follow these guidelines:

1. Identify the appropriate curve for the contactor and utilization category from Table B.
2. Locate the appropriate Maximum Operating Rate curve on the following pages.
3. Locate the intersection of the curve with the application's operating rate (ops/hr.) found on the vertical axis.
4. Read the percent of maximum operating power (Pn) of the contactor from the horizontal axis.
5. Multiply the % maximum power by the standard power rating.

Example: The contactor selected for an AC-4 utilization category application is a CA7-16 (10HP at 460V), however, the application requires an operating rate of 200 ops/hr., compared to the standard operating rate of 120 ops/hr. as shown in Table B.

1. Locate the AC-4 Maximum Operating Rate curve on the following pages.
2. Locate the intersection of 200 ops/hr on the CA7-16 curve. The data shows that the maximum operating power of the CA7-16 contactor in this application is 60%.
3. Therefore, the maximum horsepower that can be switched by the CA7-16 contactor in this application is 6 HP (0.60 x 10HP).

Table B – Standard Operating Rates by Contactor and Utilization Category

Contactor	AC-1 Max. ops/hr.	AC-2 Max. ops/hr.	AC-3 Max. ops/hr.	AC-4 Max. ops/hr.	AC-4 @ I_e for 200K ops. Max. ops/hr.
	Operating Parameters and Start Time				
			40% Duty Cycle 250ms ❶	250ms	250ms
CA7-9	1000	500	700	200	400
CA7-12	1000	500	700	150	300
CA7-16	1000	500	700	120	240
CA7-23	1000	400	600	80	160
CA7-30	400	400	600	80	160
CA7-37	400	400	600	70	140
CA7-43	300	400	600	70	140
CA7-55	300	400	600	70	140
CA7-60	600	300	500	70	140
CA7-72	600	300	500	60	120
CA7-85	600	200	500	50	140
CA7-97	250	200	500	50	140

❶ Duty Cycle or Load Factor – Defined as the "on" time for a given operating cycle per hour including the "start time." A 40% Duty Cycle is calculated in the following manner:

Contactor switches six (6) times per minute (tpm), 250ms start time; 40% duty cycle.

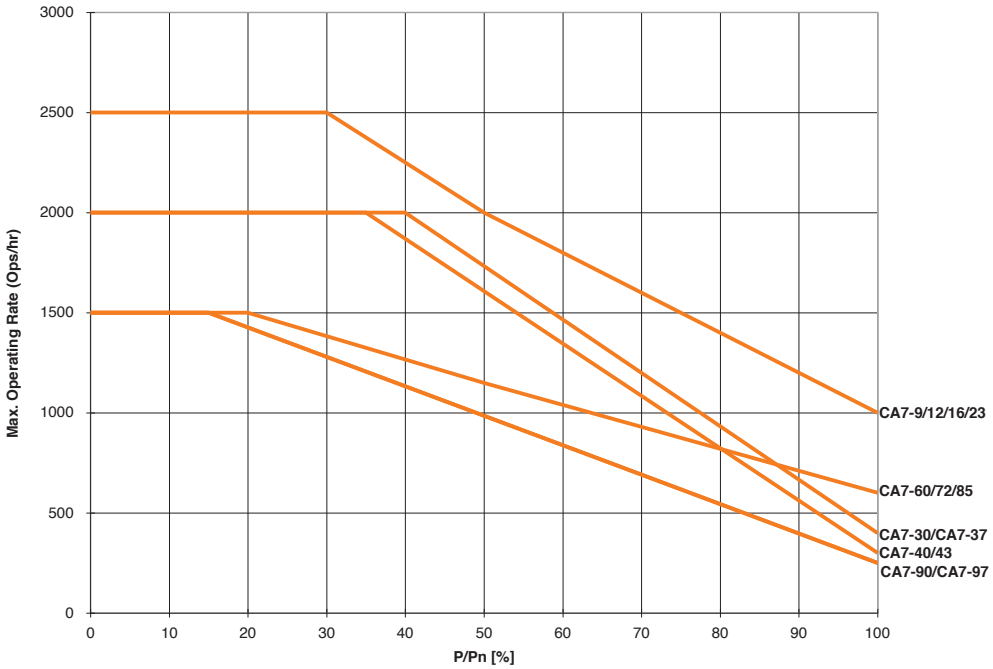
To determine the "on" time and "off" time:

- Operations per hour = 360; [60 min x 6 tpm = 360]
- One operating cycle = 10 sec; [60 min ÷ 6 tpm = 10 sec]
- "On" time at 40% duty cycle = 4 sec; [10 sec x 0.4 (40%) = 4 sec]
- 4 sec "on" time includes the start time of 250ms
- "Off" time at 40% duty cycle = 6 sec; [10 sec – 4 sec = 6 sec]

Operating Rate Curves

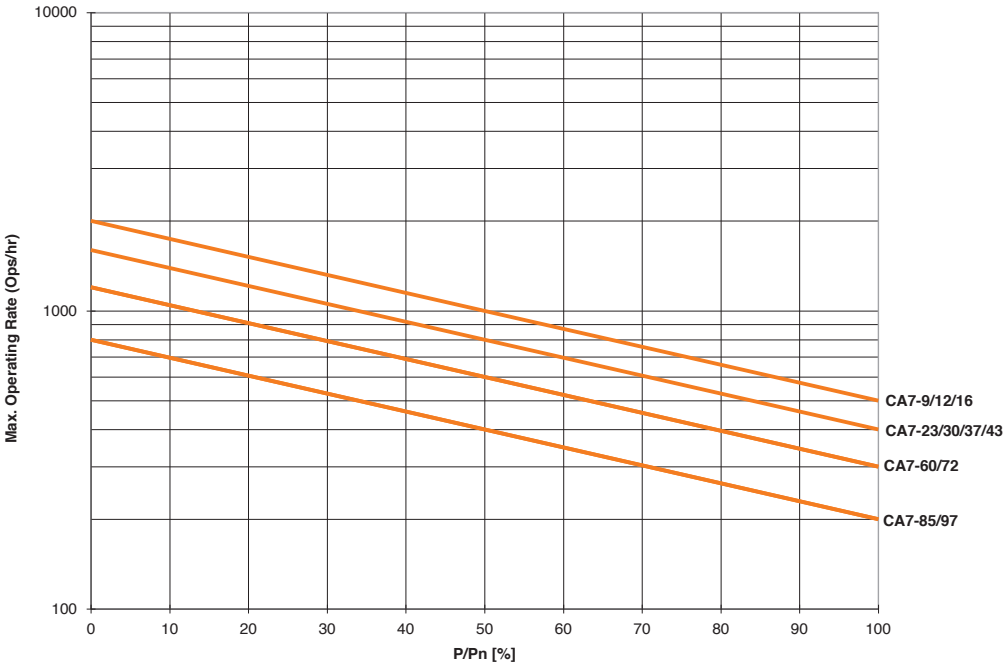
AC-1

Non- or slightly inductive loads, resistance furnaces Ue = 230…690 VAC



AC-2

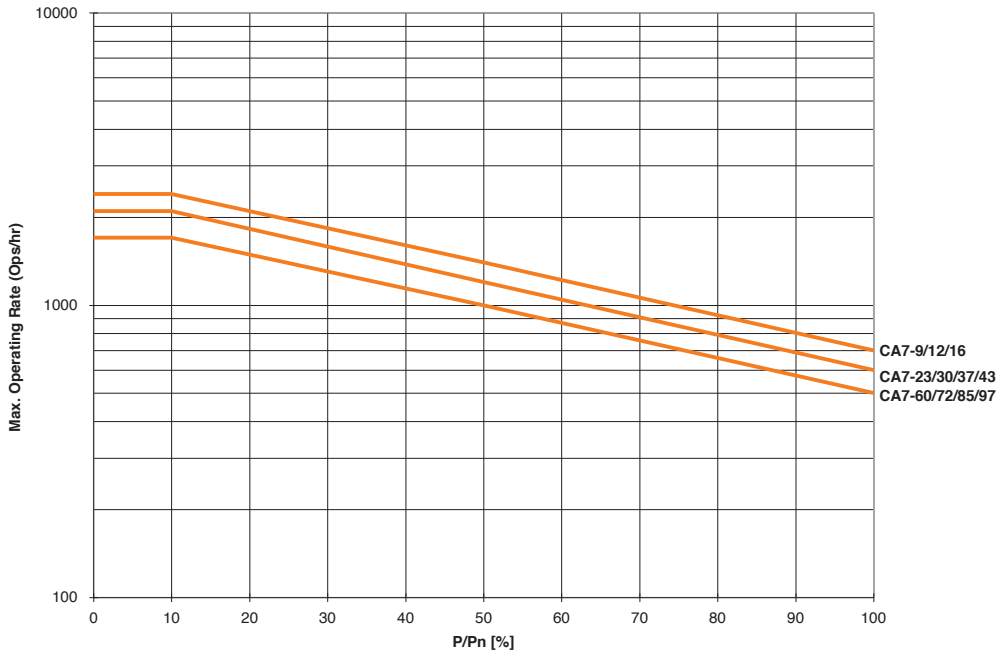
Slip-ring motors: starting, switching off Ue = 230…460 VAC



Operating Rate Curves

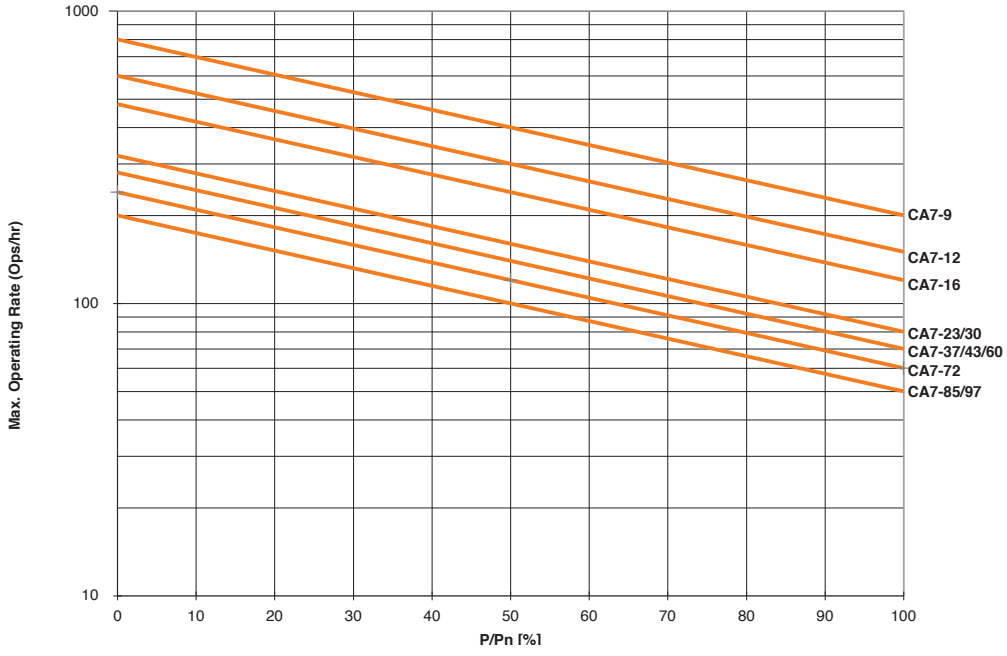
AC-3

Squirrel-cage motors: starting, switching off motors during running
250ms Start-up, 40% Duty Cycle
Ue = 230...460VAC



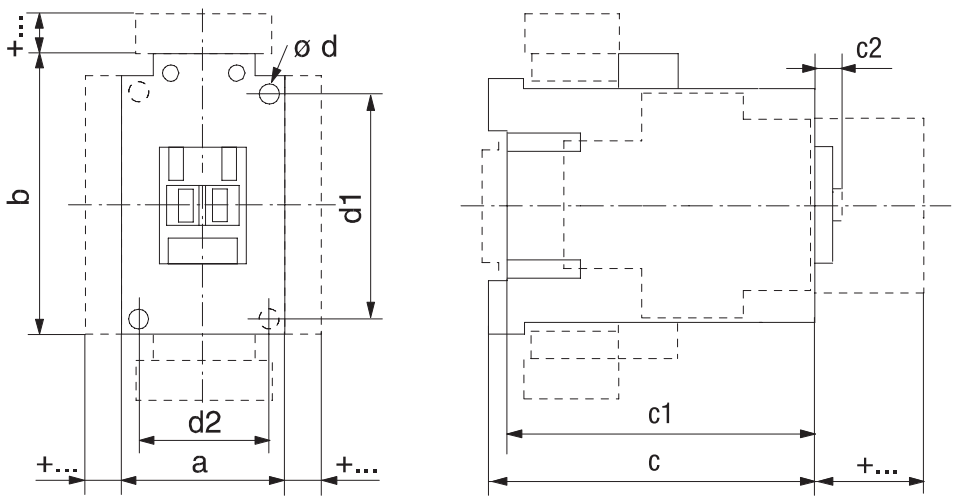
AC-4

Squirrel-cage motors: starting, plugging, inching
250ms Start-up
Ue=230...460VAC



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

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

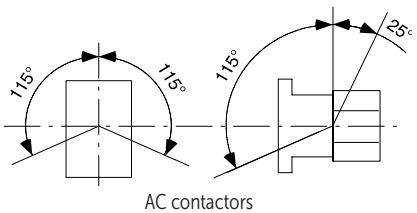


	Catalog Number	a	b	c	c1	c2	ød	d1	d2
AC Contactors	CA7-9...CA7-23; CAN7-12, CAN7-16, CNX-205...208; CA(V)L7-20	45 (1-25/32)	81 (3-3/16)	80.5 (3-11/64)	75.5 (3-3/32)	6 (1/4)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-25/64)
	CA7-30...CA7-37; CNX-209; CAN7-37	45 (1-25/32)	81 (3-3/16)	97.5 (4)	92.6 (3-49/64)	6.5 (17/64)	❶ 4.5 (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)	❶ 4.5 (3/16)	60 (2-23/64)	45 (1-25/32)
	CA7-43...CA7-55, 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)	❶ 4.5 (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)	❷ 5.4 (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)	❷ 5.4 (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

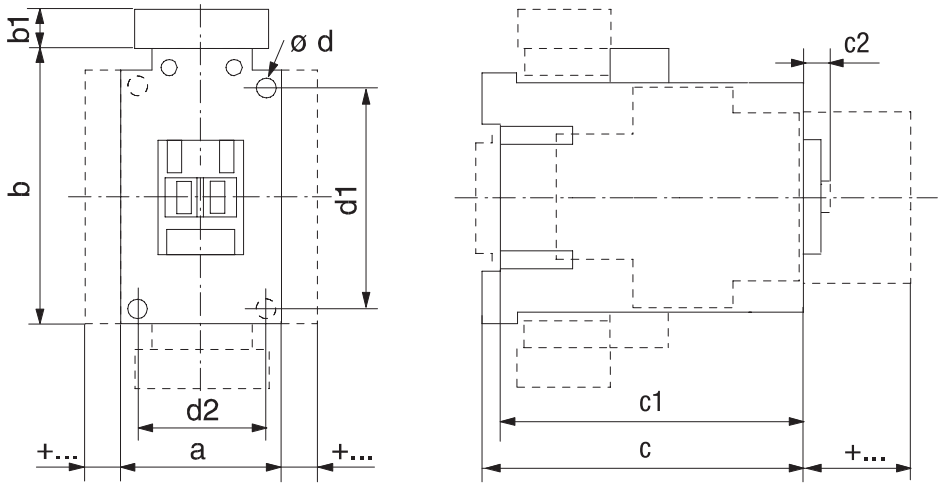


AC contactors

❶ 2 mounting holes.
❷ 4 mounting holes.

Series CA7 with Electronic DC Coil

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

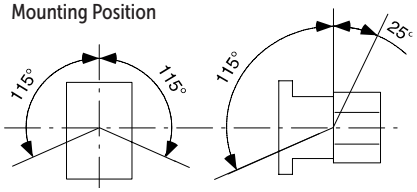


Catalog Number	Coil Code	a	b	b1	c	c1	c2	Ød	d1	d2
CA7-9E...CA7-23E, CAN7-12E...CAN7-16E	12E...24E	45 (1-25/32)	81 (3-3/16)	~ ~	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)
	36E...220E	45 (1-25/32)	81 (3-3/16)	24 (15/16)	80.5 (3-11/64)	75.5 (2-31/32)	6 (15/64)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)
CA7-30E...CA7-37E, CAN7-37E	12E...24E	45 (1-25/32)	81 (3-3/16)	~ ~	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	❶ 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)	97.5 (4)	92.5 (3-41/64)	6.5 (1/4)	❶ 4.5 (3/16)	60 (2-23/64)	35 (1-3/8)
CA7-40E	12E...24E	59 (2-21/64)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	❶ 4.5 (3/16)	60 (2-23/64)	45 (1-25/32)
	36E...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)	❶ 4.5 (3/16)	60 (2-23/64)	45 (1-25/32)
CA7-43E...55E, CAN7-43E	12E...24E	54 (2-1/8)	81 (3-3/16)	~ ~	100.5 (3-61/64)	95.5 (3-49/64)	6.5 (1/4)	❶ 4.5 (3/16)	60 (2-23/64)	45 (1-25/32)
	36E...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)	❶ 4.5 (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

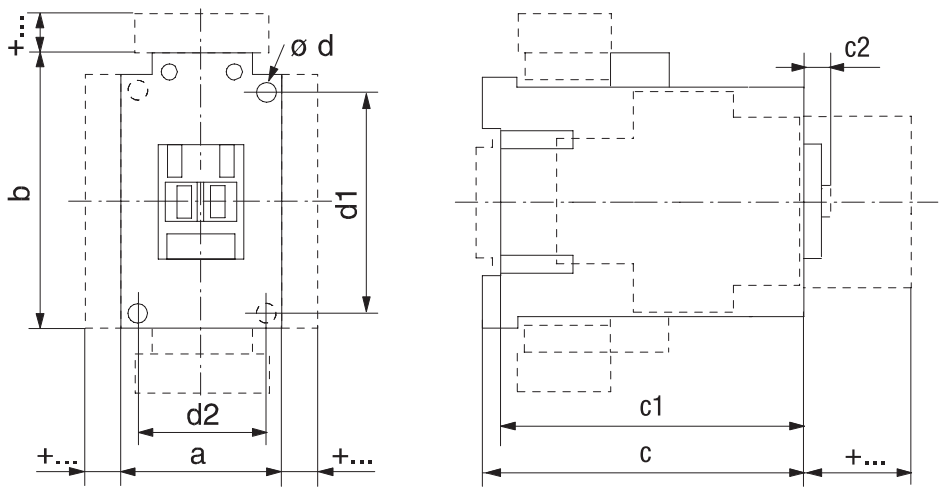


Electronic DC contactors

❶ 2 mounting holes.

Series CA7 with Two Winding DC Coils

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

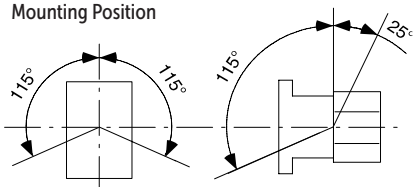


	Catalog Number	a	b	c	c1	c2	ød	d1	d2
Two Winding DC Contactors	CA7-60D...CA7-97D CAN7-85D	72 (2-53/64)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	❶ 5.4 (7/32)	100 (3-15/16)	55 (2-11/64)
	CA7-90D	95 (3-3/4)	122 (4-51/64)	117 (4-49/64)	111.5 (4-35/64)	8.5 (21/64)	❶ 5.4 (7/32)	100 (3-15/16)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

❶ 4 mounting holes.

CA7 Contactors with Terminal Lugs

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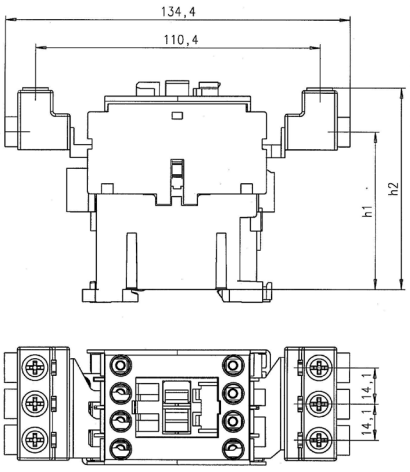
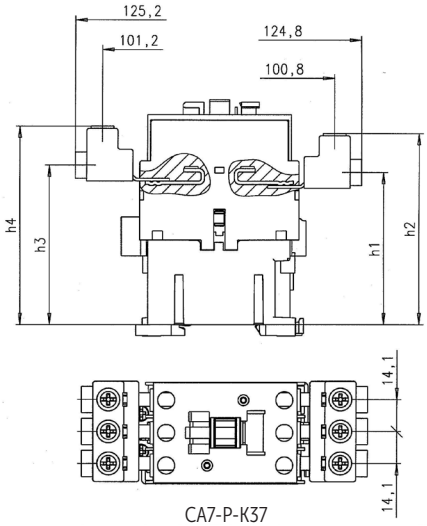
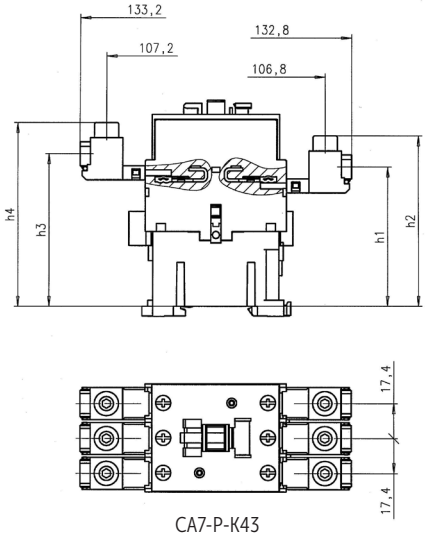


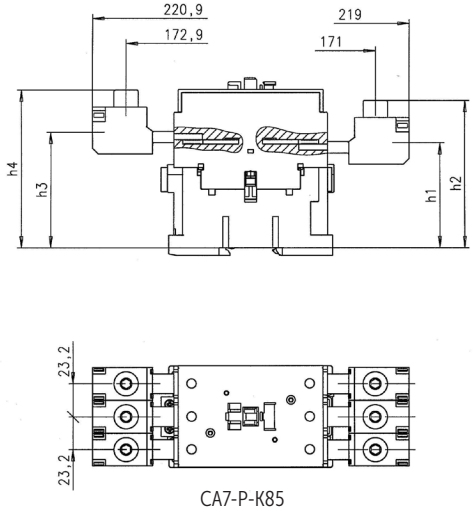
CA7-P-KN23 / KL23



CA7-P-K37



CA7-P-K43



CA7-P-K85

Catalog Number	With Contactor	AC Operated Contactor				DC Operated Contactor			
		h1	h2	h3	h4	h1	h2	h3	h4
CA7-P-KN23 / KL23	CA7-9...16	61.6 (2-27/64)	78.6 (3-3/32)	~	~	87.2 (3-7/16)	104.2 (4-3/32)	~	~
	CA7-23	61.6 (2-27/64)	78.6 (3-3/32)	~	~	105.2 (4-9/64)	122.2 (4-13/16)	~	~
CA7-P-K37	CA7-30...37	67.6 (2-21/32)	84.6 (3-21/64)	71.5 (2-13/16)	88.5 (3-31/64)	111.2 (4-3/8)	128.2 (5-3/64)	115.1 (4-17/32)	132.1 (5-13/64)
CA7-P-K43	CA7-43...55	69.0 (2-23/32)	85.0 (3-11/32)	74.5 (2-15/16)	90.5 (3-9/16)	112.6 (4-7/16)	128.6 (5-1/16)	118.1 (4-21/32)	134.1 (5-9/32)
CA7-P-K85	CA7-60...97	79.7 (3-1/8)	104.7 (4-1/8)	86.7 (3-13/64)	111.7 (4-3/8)	79.7 (3-1/8)	104.7 (4-1/8)	86.7 (3-13/64)	111.7 (4-3/8)

CA7 Contactors with Paralleling Links

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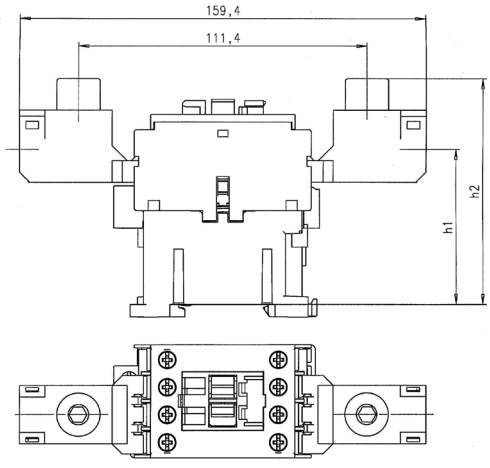
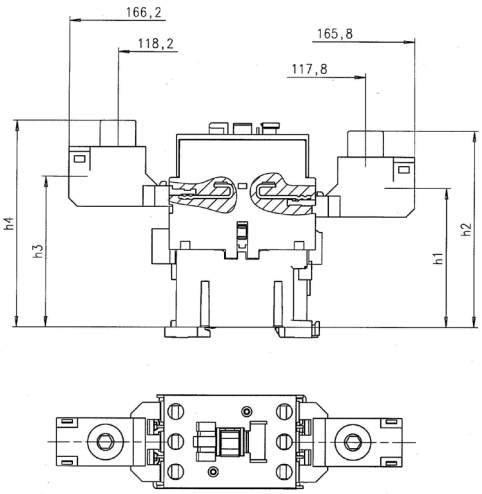


CA7-P-B23



CA7-P-B37

Catalog Number	With Contactor	AC Operated Contactor				DC Operated Contactor			
		h1	h2	h3	h4	h1	h2	h3	h4
CA7-P-B23	CA7-9...16	65.1 (2-9/16)	90.1 (3-9/16)	~	~	90.7 (1/4)	104.2 (2-3/16)	~	~
	CA7-23	65.1 (2-9/16)	90.1 (3-9/16)	~	~	108.7 (4-9/32)	133.7 (5-17/64)	~	~
CA7-P-K37	CA7-30...37	69.0 (2-23/32)	94.0 (3-45/64)	74.5 (2-15/16)	99.5 (3-29/32)	112.6 (4-7/16)	137.6 (5-13/32)	118.1 (4-21/32)	143.1 (5-5/8)