

# 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.

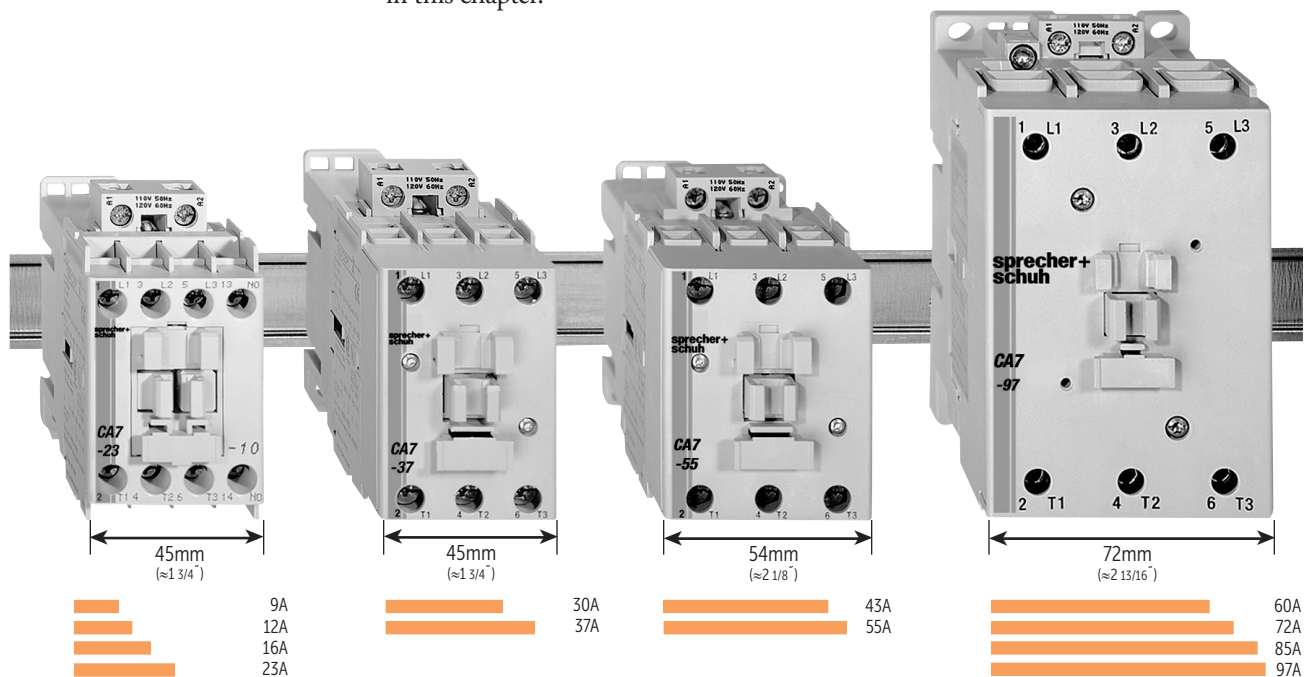
## Advanced safety and reliability features

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 ( $\geq 0.3\text{mm}$ ) 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.

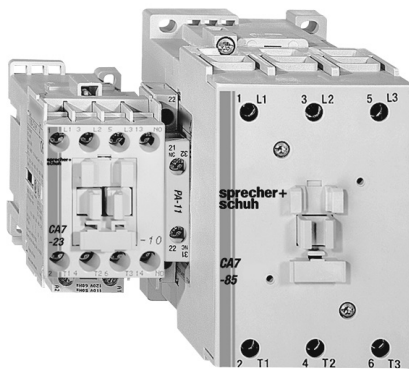
## Advantages of Electronic DC Coil

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.



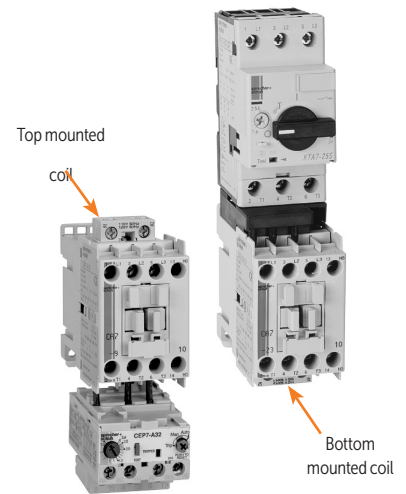
## Modular accessories are common to all devices

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

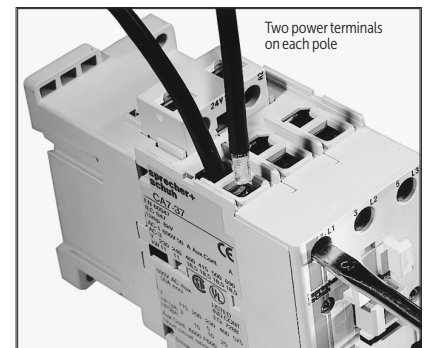
When shipped, both coil connections are normally located at the top of the contactor in preparation for mounting an overload relay at the bottom. For multi-starter panels, however, the coil can be reversed, which provides space to close-couple a KT7 Motor Circuit Controller on the top of the contactor.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



Reversible coils are standard on all CA7 contactors

## 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.



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.



## 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.

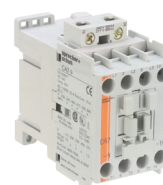
Sprecher + Schuh's CA7 line includes contactors designed and labeled for specific industrial applications

## A2

CA7 Contactors

### Non-Reversing, Three Pole Contactors With AC Coil, Series CA7 (Open type only) ①

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



CA7-9-10 contactor



CA7-55-00 contactor



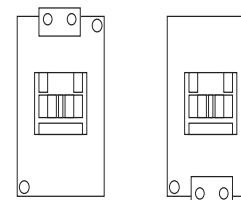
CA7-97-00 contactor

### Coil Codes ②

| AC<br>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 ③

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.

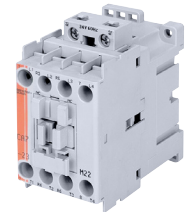
### Ordering Instructions

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

- ① 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.
- ② Other voltages available, see page A2:28.
- ③ 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 <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |         |      |              |                   |      |      |       |       |       | Contact Configuration, Main Pole |             | Open Type Catalog Number                  |
|--------------------|------|---|---------|------|--------------|-------------------|------|------|-------|-------|-------|----------------------------------|-------------|---|
|                    |      | kW (50 Hz)  |         |      |              | UL/CSA HP (60 Hz) |      |      |       |       |       |                                  |             |   |
|                    |      | AC-3  | AC-1    | 230V | 400V<br>415V | 500V              | 690V | 1 Ø  |       | 3 Ø   |       |                                  |             |   |
| 115V               | 230V |   |         |      |              |                   |      | 200V | 230V  | 460V  | 575V  | NO                               | NC          |   |
| 9                  | 32   | 3   | 4       | 4    | 4            | 1/2               | 11/2 | 2    | 2     | 5     | 7-1/2 | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-9-M40-<br>CA7-9-M31-<br>CA7-9-M22-    |
| 12                 | 32   | 4   | 5.5     | 5.5  | 5.5          | 1/2               | 2    | 3    | 3     | 7-1/2 | 10    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-12-M40-<br>CA7-12-M31-<br>CA7-12-M22- |
| 16                 | 32   | 5.5   | 7.5     | 7.5  | 7.5          | 1                 | 3    | 5    | 5     | 10    | 15    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-16-M40-<br>CA7-16-M31-<br>CA7-16-M22- |
| 23                 | 32   | 7.5   | 11      | 13   | 10           | 2                 | 3    | 5    | 7-1/2 | 15    | 15    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-23-M40-<br>CA7-23-M31-<br>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-                               |



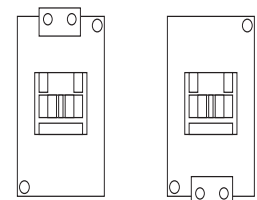
CA7-23-M22-120 contactor

**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.



## A2 Non-Reversing, Three Pole Contactors With Electronic DC Coil, Series CA7 (Open type only) ①②③

CA7 Contactors

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

### 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.

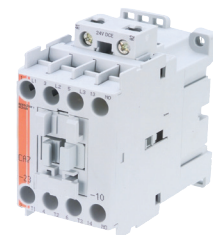
### Applications

Direct control from PLC:

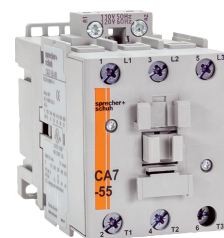
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced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



CA7-16E-10-110E contactor ④



CA7-23E-10-24E contactor



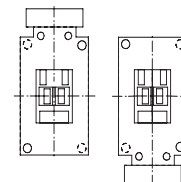
CA7-55E-00-24E contactor

### Coil Codes ②④

| DC Coil Codes | Voltage  |
|---------------|----------|
| 12E           | 12V      |
| 24E           | 24V      |
| 36E ⑤         | 36-48V   |
| 48E ⑤         | 48-72V   |
| 110E ⑤        | 110-125V |
| 220E ⑤        | 220-250V |

### Coil Terminal Position ⑥

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)

① 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.

② CA7-9E...55E with electronic coils are not interchangeable with non-electronic DC or AC coils.

③ See page A2:19-A2:20 for limitations on adding auxiliaries to Electronic DC Coil contacts.

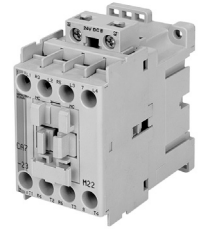
④ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

⑤ Not applicable with Electronic Timer accessories (CRZ\_7).

⑥ 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) ①②**

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |         |      |              |                   |      |      |       |       |       | Contact Configuration, Main Pole |             | Open Type                                    |
|--------------------|------|---|---------|------|--------------|-------------------|------|------|-------|-------|-------|----------------------------------|-------------|--|
|                    |      | kW (50 Hz)  |         |      |              | UL/CSA HP (60 Hz) |      |      |       |       |       |                                  |             |  |
|                    |      | AC-3  | AC-1    | 230V | 400V<br>415V | 500V              | 690V | 1 Ø  |       | 3 Ø   |       |                                  |             |  |
| 115V               | 230V |   |         |      |              |                   |      | 200V | 230V  | 460V  | 575V  |                                  |             |  |
| NO                 | NC   | Catalog Number                                    |         |      |              |                   |      |      |       |       |       |                                  |             |  |
| 9                  | 32   | 3   | 4       | 4    | 4            | 1/2               | 11/2 | 2    | 2     | 5     | 7-1/2 | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-9E-M40-<br>CA7-9E-M31-<br>CA7-9E-M22-    |
| 12                 | 32   | 4   | 5.5     | 5.5  | 5.5          | 1/2               | 2    | 3    | 3     | 7-1/2 | 10    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-12E-M40-<br>CA7-12E-M31-<br>CA7-12E-M22- |
| 16                 | 32   | 5.5   | 7.5     | 7.5  | 7.5          | 1                 | 3    | 5    | 5     | 10    | 15    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-16E-M40-<br>CA7-16E-M31-<br>CA7-16E-M22- |
| 23                 | 32   | 7.5   | 11      | 13   | 10           | 2                 | 3    | 5    | 7-1/2 | 15    | 15    | 4<br>3<br>2                      | 0<br>1<br>2 | CA7-23E-M40-<br>CA7-23E-M31-<br>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:

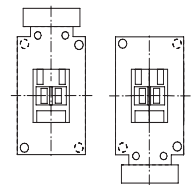
The low power consumption contactor designed to control motors and other loads is especially aligned to the specific requirement of electronic control circuits. The low power consumption of 1.7 allows direct control through PLC's without the need for interposing relays. Power dissipation is greatly reduced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

**Coil Codes ①③**

| DC Coil Codes | Voltage  |
|---------------|----------|
| 12E           | 12V      |
| 24E           | 24V      |
| 36E ④         | 36-48V   |
| 48E ④         | 48-72V   |
| 110E ④        | 110-125V |
| 220E ④        | 220-250V |

**Coil Terminal Position ⑤**

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)

- ① CA7-9E...55E with electronic coils are not interchangeable with non-electronic DC or AC coils
- ② See pages A2:19-A2:20 for limitations on adding auxiliaries to Electronic DC Coil contacts.
- ③ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

- ④ Not applicable with Electronic Timer accessories (CRZ\_7).

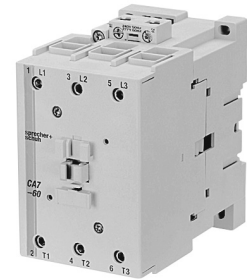
- ⑤ For coil terminals on the load side (bottom) add a U in front of the coil code. For example: CA7-23E-M40-24E becomes CA7-23E-M40-U24E.

## A2

CA7 Contactors

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

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |      |      |               |                   |      |      |      |      |      | Auxiliary<br>Contacts per<br>Contactor<br>❶ |             | Open Type                                 |
|--------------------|------|---|------|------|---------------|-------------------|------|------|------|------|------|---|-------------|---|
|                    |      | kW (50 Hz)  |      |      |               | UL/CSA HP (60 Hz) |      |      |      |      |      |   |             |   |
|                    |      | AC-3  | AC-1 | 230V | 400V/<br>415V | 500V              | 690V | 1 Ø  |      | 3 Ø  |      |   |             |   |
| 115V               | 230V |   |      |      |               |                   |      | 200V | 230V | 460V | 575V | NO  | NC          | Catalog Number                            |
| 60                 | 100  | 18.5  | 32   | 37   | 32            | 5                 | 10   | 15   | 20   | 40   | 50   | 0<br>1<br>0                                 | 0<br>0<br>1 | CA7-60D-00-<br>CA7-60D-10-<br>CA7-60D-01- |
| 72                 | 100  | 22  | 40   | 45   | 40            | 5                 | 15   | 20   | 25   | 50   | 60   | 0<br>1<br>0                                 | 0<br>0<br>1 | CA7-72D-00-<br>CA7-72D-10-<br>CA7-72D-01- |
| 85                 | 100  | 25  | 45   | 55   | 45            | 7-1/2             | 15   | 25   | 30   | 60   | 60   | 0<br>1<br>0                                 | 0<br>0<br>1 | CA7-85D-00-<br>CA7-85D-10-<br>CA7-85D-01- |
| 97                 | 130  | 30  | 55   | 55   | 55            | 10                | 20   | 30   | 30   | 75   | 75   | 0<br>1<br>0                                 | 0<br>0<br>1 | CA7-97D-00-<br>CA7-97D-10-<br>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 <sub>e</sub> [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) |      |      |      |      |      |                                 |      |                                  |      |                |
|                    |      |   | 415V<br>400V |      |      | 1 Ø               |      | 3 Ø  |      |      |      |                                 |      |                                  |      |                |
| AC-3               | AC-1 |   |              |      |      | 230V              | 400V | 500V | 690V | 115V | 230V | 200V                            | 230V | 460V                             | 575V |                |
| AC-3               | AC-1 | 230V  | 400V         | 500V | 690V | 115V              | 230V | 200V | 230V | 460V | 575V | NO                              | NC   | NO                               | NC   | Catalog Number |
| 85                 | 130  | 25  | 45           | 55   | 45   | 7-1/2             | 15   | 25   | 30   | 60   | 50   | 4                               | 0    | 0                                | 0    | CA7-90D-M40-*  |
| 85                 | 130  | 25  | 45           | 55   | 18.5 | 7-1/2             | 15   | 25   | 30   | 50   | 20   | 2                               | 2    | 0                                | 0    | CA7-90D-M22-*  |

### Coil Codes ❷❸❹

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

### Ordering Instructions

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

- ❶ CA7-60D...CA7-97D have an internal auxiliary contact to transition from the start winding to the run winding.
- ❷ Coils include an integrated diode surge suppressor.
- ❸ Other coil voltages are available, see page A2:29. Contact your Sprecher + Schuh Sales Representative to determine which coil voltages may be stocked.
- ❹ The coil codes shown are the most commonly stocked items. Contact your Sprecher + Schuh representative to determine if other voltages, i.e., 12DD, 48DD, 220DD are on-hand or can be specially ordered in quantities.

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

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |              |      |      |                   |       |       |       |       |       | Auxiliary<br>Contacts per<br>Contactor |      | Open Type                   |
|--------------------|------|---|--------------|------|------|-------------------|-------|-------|-------|-------|-------|--|------|-----------------------------|
|                    |      | kW (50 Hz)  |              |      |      | UL/CSA HP (60 Hz) |       |       |       |       |       |  |      |                             |
|                    |      | 230V  | 400V<br>415V | 500V | 690V | 1 Ø               |       | 3 Ø   |       |       |       |  |      |                             |
| 115V               | 230V |   |              |      |      | 200V              | 230V  | 460V  | 575V  |       |       |  |      |                             |
| AC-3               | AC-1 | 230V  | 400V<br>415V | 500V | 690V | 115V              | 230V  | 200V  | 230V  | 460V  | 575V  | NO                                     | NC ⑤ | 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<br>1 ④                               | 1    | CAU7-30-02-<br>CAU7-30-22-* |
| 37                 | 65   | 11  | 18.5/<br>20  | 20   | 8.5  | 3                 | 5     | 10    | 10    | 25    | 30    | 0<br>1 ④                               | 1    | CAU7-37-02-<br>CAU7-37-22-* |
| 43                 | 85   | 13  | 22           | 25   | 22   | 3                 | 7-1/2 | 10    | 15    | 30    | 30    | 0<br>1 ④                               | 1    | CAU7-43-02-<br>CAU7-43-22-* |
| 55                 | 85   | 15  | 30           | 30   | 22   | 5                 | 10    | 15    | 20    | 40    | 40    | 0<br>1 ④                               | 1    | CAU7-55-02-<br>CAU7-55-22-* |
| 60                 | 100  | 18.5  | 32           | 37   | 32   | 5                 | 10    | 15    | 20    | 40    | 50    | 0<br>1 ④                               | 1    | CAU7-60-02-<br>CAU7-60-22-* |
| 72                 | 100  | 22  | 40           | 45   | 40   | 5                 | 15    | 20    | 25    | 50    | 60    | 0<br>1 ④                               | 1    | CAU7-72-02-<br>CAU7-72-22-* |
| 85                 | 100  | 25  | 45           | 55   | 45   | 7-1/2             | 15    | 25    | 30    | 60    | 60    | 0<br>1 ④                               | 1    | CAU7-85-02-<br>CAU7-85-22-* |
| 97                 | 130  | 30  | 55           | 55   | 55   | 10                | 20    | 30    | 30    | 75    | 75    | 0<br>1 ④                               | 1    | CAU7-97-02-<br>CAU7-97-22-* |



CAU7-9-22-120 reversing contactor



CAU7-43-22-120 reversing contactor

**Includes:**

- Line side coil terminations
- Mechanical and electrical Interlock ③
- Reversing power wiring ① (using Power Wiring Kit Cat.# CAU7-PW...)
- Control wiring available; see footnote ②

**Coil Codes ⑤**

| 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. |

- ① 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.
- ② For control wiring, add suffix "-CW" to catalog number. Example: CAU7-9-22-\* becomes CAU7-9-22-\***CW**. Price addition applies.
- ③ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.
- ④ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.
- ⑤ Other voltages available, see page A2:28.



## A2

CA7 Contactors

### Reversing, Three Pole Contactors With Electronic DC Coil, Series CAU7 (Open type only) ⑤⑥

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |              |      |      |                   |       |       |       |       |       | Auxiliary<br>Contacts per<br>Contactor |        | Open Type                     |
|--------------------|------|---|--------------|------|------|-------------------|-------|-------|-------|-------|-------|--|--------|-------------------------------|
|                    |      | kW (50 Hz)  |              |      |      | UL/CSA HP (60 Hz) |       |       |       |       |       |  |        |                               |
|                    |      | 230V  | 400V<br>415V | 500V | 690V | 1 Ø               |       | 3 Ø   |       |       |       |  |        |                               |
| 115V               | 230V |   |              |      |      | 200V              | 230V  | 460V  | 575V  | NO    | NC ③  | Catalog Number                         |        |                               |
| AC-3               | AC-1 | 230V  | 400V<br>415V | 500V | 690V | 115V              | 230V  | 200V  | 230V  | 460V  | 575V  | NO                                     | NC ③   | 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<br>1 ④                               | 1<br>1 | CAU7-30E-02-<br>CAU7-30E-22-* |
| 37                 | 65   | 11  | 18.5/<br>20  | 20   | 8.5  | 3                 | 5     | 10    | 10    | 25    | 30    | 0<br>1 ④                               | 1<br>1 | CAU7-37E-02-<br>CAU7-37E-22-* |
| 43                 | 85   | 13  | 22           | 25   | 22   | 3                 | 7-1/2 | 10    | 15    | 30    | 30    | 0<br>1 ④                               | 1<br>1 | CAU7-43E-02-<br>CAU7-43E-22-* |
| 55                 | 85   | 15  | 30           | 30   | 22   | 5                 | 10    | 15    | 20    | 40    | 40    | 0<br>1 ④                               | 1<br>1 | CAU7-55E-02-<br>CAU7-55E-22-* |

#### 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 ③
- Reversing power wiring ① (using Power Wiring Kit Cat.# CAUT7-PW...)
- Control wiring available; see footnote ②
- CAU7-9E...55E has internal surge suppression.



CAU7-9E-22-24E Reversing contactor



CAU7-37E-22-24E Reversing contactor

### Coil Codes ⑥⑦

| DC Coil Codes | Voltage  |
|---------------|----------|
| 12E           | 12V      |
| 24E           | 24V      |
| 36E ⑧         | 36-48V   |
| 48E ⑧         | 48-72V   |
| 110E ⑧        | 110-125V |
| 220E ⑧        | 220-250V |

① 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.

② For control wiring, add suffix "-CW" to catalog number. For example: CAU7-9E-22-24E becomes CAU7-9E-22-24E-CW. Price addition applies.

③ The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.

④ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.

⑤ CA7-9E...55E with electronic coils are not interchangeable with non-electronic DC

or AC coils.

⑥ See pages A2:19-A2:20 for limitations. on adding auxiliaries to Electronic DC Coil contacts.

⑦ Voltages of 36V DC and greater are supplied with backpack module standard. See page A2:58.

⑧ Not applicable with Electronic Timer accessories (CRZ\_7).

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

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |      |      |              |                   |      |      |      |      |      | Auxiliary<br>Contacts per<br>Contactor |        | Open Type<br><br>Catalog<br>Number |
|--------------------|------|---|------|------|--------------|-------------------|------|------|------|------|------|--|--------|------------------------------------|
|                    |      | kW (50 Hz)  |      |      |              | UL/CSA HP (60 Hz) |      |      |      |      |      |  |        |                                    |
|                    |      | AC-3  | AC-1 | 230V | 400V<br>415V | 500V              | 690V | 1 Ø  |      | 3 Ø  |      |  |        |                                    |
| 115V               | 230V |   |      |      |              |                   |      | 200V | 230V | 460V | 575V | NO                                     | NC ②   |                                    |
| 60                 | 100  | 18.5  | 32   | 37   | 32           | 5                 | 10   | 15   | 20   | 40   | 50   | 0<br>1 ⑤                               | 1<br>1 | CAU7-60D-02-<br>CAU7-60D-22-*      |
| 72                 | 100  | 22  | 40   | 45   | 40           | 5                 | 15   | 20   | 25   | 50   | 60   | 0<br>1 ⑤                               | 1<br>1 | CAU7-72D-02-<br>CAU7-72D-22-*      |
| 85                 | 100  | 25  | 45   | 55   | 45           | 7-1/2             | 15   | 25   | 30   | 60   | 60   | 0<br>1 ⑤                               | 1<br>1 | CAU7-85D-02-<br>CAU7-85D-22-*      |
| 97                 | 130  | 30  | 55   | 55   | 55           | 10                | 20   | 30   | 30   | 75   | 75   | 0<br>1 ⑤                               | 1<br>1 | CAU7-97D-02-<br>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 ②
- Reversing power wiring
- Control wiring available; see footnote ①

**Coil Codes ④ ⑤**

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

**Ordering Instructions**

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

- ① For control wiring, add suffix -CW to catalog number. For example: CAU7-60D-22-\* becomes CAU7-60D-22-\*CW. Price addition applies.
- ② The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.
- ③ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.
- ④ Other voltages available, see page A2:29.
- ⑤ 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



Special Use Contactors

Hydraulic elevator duty contactors

HVAC rated contactors

Lighting contactors

NEMA size labeled contactors

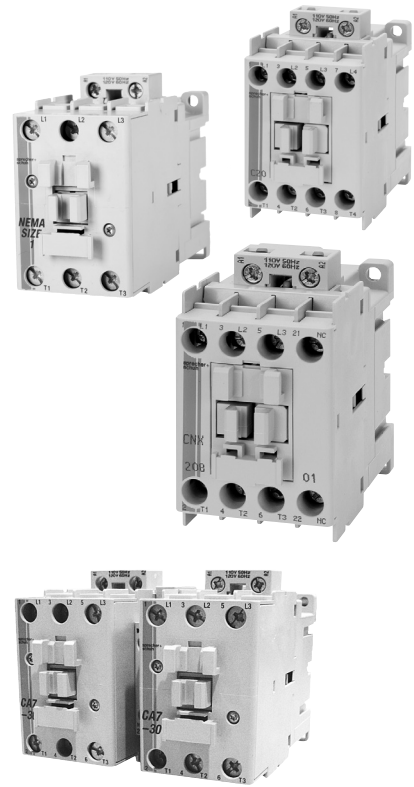
The CA7 line includes a number of contactors designed and labeled for specific industrial applications. In most cases, these devices are UL and CSA approved for these specialized uses. Where appropriate, contactors also carry approval by specific industry associations such as ARI (Air Conditioning and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

**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

**A2**
**CA7 Contactors**
**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.



### A2 Non-Reversing, Three Pole NEMA Labeled Contactors with AC Coil ①

CAN7 Contactors

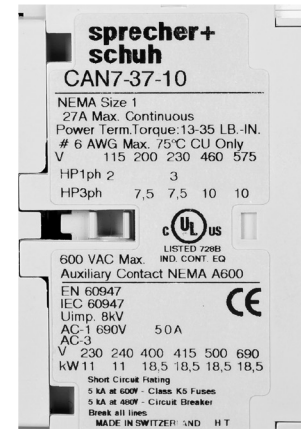
| NEMA<br>Size | Continuous<br>Ampere<br>Rating [A] | Maximum Horsepower |       |       |       |      |      | Standard<br>Auxiliary<br>Contacts |    | Catalog Number |
|--------------|------------------------------------|--------------------|-------|-------|-------|------|------|-----------------------------------|----|----------------|
|              |                                    | 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-*   |

#### 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 NEMA1 labeled contactor (AC)



#### CAN7 AC Coil Codes ②

| 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. |  |

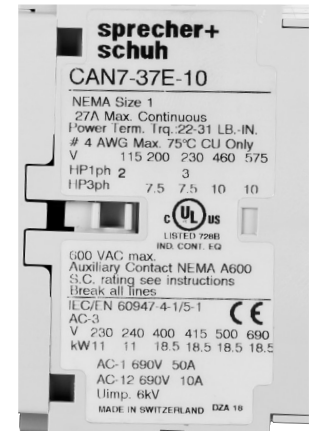
- ① Refer to page A2:57 for CAN7 dimensional information.  
② Other voltages available, see page A2:28 for other coil voltage.

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

| NEMA<br>Size | Continuous<br>Ampere<br>Rating [A] | Maximum Horsepower |       |       |       |      |      | Standard<br>Auxiliary<br>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 ❸          | 36-48V        |
| 48E ❸          | 48-72V        |
| 110E ❸         | 110-125V      |
| 220E ❸         | 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).

## A2 Hydraulic Elevator Wye Delta, with AC Coils (Two Contactor Type ①)

CA7 Contactors

| Maximum Horsepower<br>Three Phase |           |           |           | Auxiliary<br>Contacts per<br>Contactor |        | Open Type                            |
|-----------------------------------|-----------|-----------|-----------|--|--------|--------------------------------------|
| 200V                              | 230V      | 460V      | 575V      | NO ④                                   | NC ⑤   | Catalog No.                          |
| 10<br>7.5                         | 15<br>7.5 | 30<br>20  | 30<br>20  | 0<br>1                                 | 1<br>1 | CA7Y2-30-02-∗-LW<br>CA7Y2-30-22-∗-LW |
| 15<br>7.5                         | 20<br>10  | 40<br>20  | 40<br>25  | 0<br>1                                 | 1<br>1 | CA7Y2-37-02-∗-LW<br>CA7Y2-37-22-∗-LW |
| 20<br>10                          | 25<br>10  | 50<br>25  | 50<br>30  | 0<br>1                                 | 1<br>1 | CA7Y2-43-02-∗-LW<br>CA7Y2-43-22-∗-LW |
| 25<br>10                          | 30<br>15  | 60<br>30  | 60<br>40  | 0<br>1                                 | 1<br>1 | CA7Y2-55-02-∗-LW<br>CA7Y2-55-22-∗-LW |
| 30<br>10                          | 40<br>15  | 75<br>30  | 75<br>40  | 0<br>1                                 | 1<br>1 | CA7Y2-60-02-∗-LW<br>CA7Y2-60-22-∗-LW |
| 40<br>15                          | 50<br>20  | 100<br>40 | 100<br>50 | 0<br>1                                 | 1<br>1 | CA7Y2-72-02-∗-LW<br>CA7Y2-72-22-∗-LW |
| 50<br>20                          | 60<br>25  | 125<br>50 | 125<br>60 | 0<br>1                                 | 1<br>1 | CA7Y2-85-02-∗-LW<br>CA7Y2-85-22-∗-LW |
| 50<br>25                          | 60<br>30  | 125<br>60 | 125<br>75 | 0<br>1                                 | 1<br>1 | CA7Y2-97-02-∗-LW<br>CA7Y2-97-22-∗-LW |

### HP Selection

|                             |                           |
|-----------------------------|---------------------------|
| Industrial<br>Application ⑥ | UL/CSA<br>Elevator Duty ⑥ |
|-----------------------------|---------------------------|

Larger sizes available. Contact your Sprecher + Schuh representative.



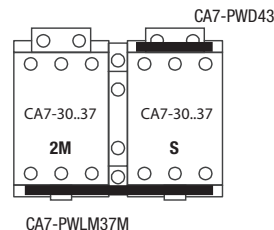
CA7Y2-30 Wye-Delta contactor

### Includes:

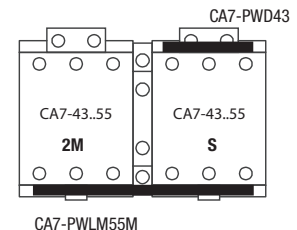
- Line side coil terminations
- Mechanical and electrical Interlocks ②
- CA7Y2-60...97 include a back pan

### Optional:

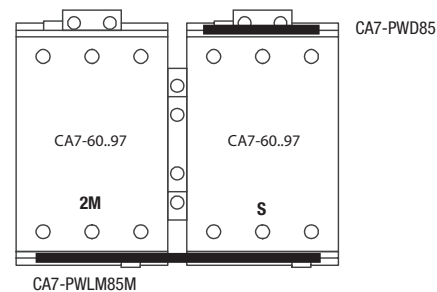
- Power Wiring available but not included (see page A2:27) ①⑦
- Elevator controllers often require additional auxiliary contacts. ③



CA7-PWLM37M



CA7-PWLM55M



CA7-PWLM85M

### Coil Codes ④

| AC Coil<br>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. |

- ① 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.
- ② The NC auxiliary contacts are supplied as part of the mechanical interlock (Cat.# CM7-02) and are used to electrically interlock the contactors.
- ③ The NO auxiliary contacts supplied are side mounted. Top mounted NO (or NC) auxiliary contacts must be ordered separately.
- ④ Other voltages available, see page A2:28.
- ⑤ HP selection based on UL508 for Industrial Applications.
- ⑥ HP selection based on UL/CSA Elevator Duty Ratings.
- ⑦ 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

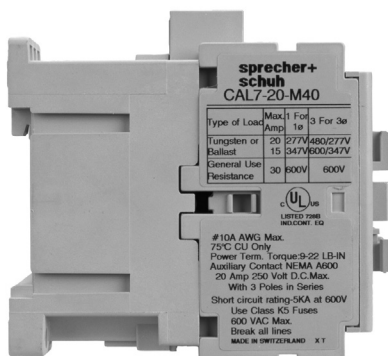
### In application...

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



A2

CA7 Contactors

### 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.

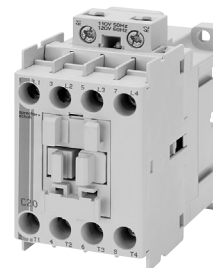


## A2 Lighting Contactors with AC Coil ④⑤

CA7 Contactors

| Type of Load        | Continuous Ampere Rating ③ | 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 |            |                             |    | Mechanical   | CAVL7-20-M40-*-L10 ①     |
| General             | 30                         | 600                          | 600       |            |                             |    |              |                          |
| Tungsten or Ballast | 30                         | 277                          | 480Y/277V | 4          | 0                           | 0  | Electrical   | CAL7-30-M40-*            |
|                     | 25                         | 347                          | 600Y/347V |            |                             |    | Mechanical   | CAVL7-30-M40-*-L10 ①     |
| General             | 37                         | 600                          | 600       |            |                             |    |              |                          |
| Tungsten or Ballast | 60                         | 277                          | 480Y/277V | 4          | 0                           | 0  | Electrical   | CAL7-60-M40-*            |
|                     | 55                         | 347                          | 600Y/247V |            |                             |    | Mechanical   | CAVL7-60-M40-*-L10 ①     |
| General             | 85                         | 600                          | 600       |            |                             |    |              |                          |

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

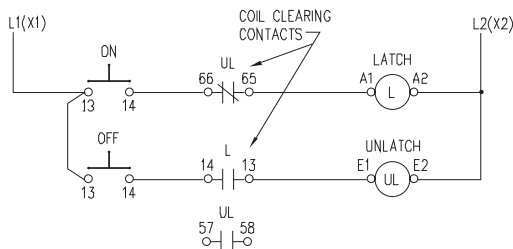


### Description

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 ②

| 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. |

- ① The N.O. auxiliary on the mechanical latch is used by the control circuit and is not available to the customer for other uses.
- ② Other voltages available, see page A2:28.
- ③ Engineering practice permits  $2.5 \times I_n$  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.
- ④ Lighting contactor applications greater than 4-poles can be achieved. Contact Sprecher + Schuh representative for assistance.
- ⑤ Definite Purpose Contactors can also be used in Lighting Contactor applications. See page A4:6.

Top (Front) Mount Auxiliary Contact Blocks ❶

A2

CA7 Contactors

| Contact Block   | Description   | NO    | NC    | Contact Arrangement   | For use with...                  | Standard Contacts Catalog Number | Bifurcated Contacts Catalog Number ❷ |
|---|---|-------|-------|---|----------------------------------|----------------------------------|--------------------------------------|
|  <p>Top mount auxiliary contact blocks snap-on to the top (front) of any CA7 contactor</p> | <p><b>Auxiliary Contact Blocks for Top Mounting -</b></p> <ul style="list-style-type: none"> <li>• 2 and 4 pole</li> <li>• Snap on design - mounts without tools</li> <li>• Electronic compatible contacts</li> <li>• Mutual positive guidance to the main contactor poles (excluding L types)</li> <li>• Several terminal numbering choices even for models with equal function</li> <li>• Late break /early make (L) available</li> </ul> <p><b>Bifurcated Contacts</b></p> <p>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.</p> | 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<br>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                           |
|   |   | 1EM   | 1LB   |   | CA7-30...97-*00                  | CA7-PV-L11                       | NOT AVAILABLE                        |
|   |   | 1     | 3     |  | CA7-30...97-*00                  | NOT AVAILABLE                    | 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<br>CA7-9...23-*01 | CA7-PV-S22                       | CA7-PVB-S22                          |
|  <p>4-pole auxiliary</p>  |   | 3     | 1     |  | CA7 all                          | CS7-PV-31                        | CS7-PVB-31                           |
|   |   |       |       |  | CA7-9...23-*10<br>CA7-9...23-*01 | CA7-PV-S31                       | CA7-PVB-S31                          |
|  <p>2-pole auxiliary contact block (typical)</p>   |   | 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 AVAILABLE                        |





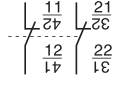
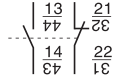
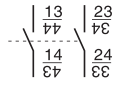
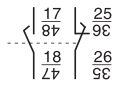
❶ Max. number of auxiliary contacts that may be mounted:

- 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.

## A2 Side Mount Auxiliary Contact Blocks (1 & 2 Pole) ❶

CA7 Contactors

| Contact Block  | Description   | NO  | NC  | Contact Arrangement  | For use with... | Catalog Number ❸ |
|--|---|-----|-----|--|-----------------|------------------|
|  <p>1-pole (typical)</p><br> <p>2-pole (typical)</p> | <b>Auxiliary Contact Blocks for Side Mounting - ❶</b> <ul style="list-style-type: none"> <li>• 1 and 2-pole</li> <li>• Two way numbering for right or left mounting on the contactor</li> <li>• Snap-on design - mounts without tools</li> <li>• Electronic compatible contacts down to 24V, 20mA</li> <li>• Late break / early make (L) available</li> <li>• Mutual positive guidance to the main contactor poles (excluding L-types)</li> </ul> | 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       |





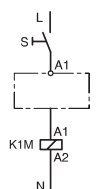
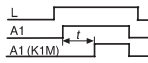
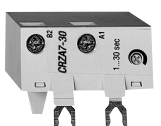
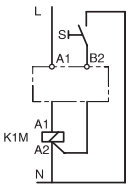
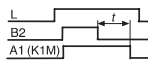
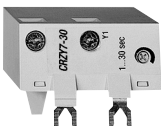
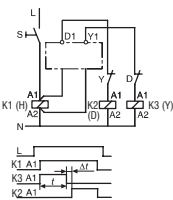
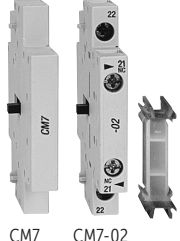


❶ Max. number of auxiliary contacts that may be mounted:

- 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   |
|---|--|---|--|---|--|
|    | <b>Pneumatic Timing Module –</b><br>The contacts in the Pneumatic Timing Element switch after the delay time. The contacts on the main contactor continue to operate without delay. <ul style="list-style-type: none"> <li>Continuous adjustment range</li> </ul>  | CA7 with AC or 24V DC electronic coil         |     | <b>ON-Delay</b><br>0.3...30s<br>1.8...180s                              | <b>CZE7-30</b><br><b>CZE7-180</b>  |
|   |  | CA7 all                                       |     | <b>OFF-Delay</b><br>0.3...30s<br>1.8...180s                             | <b>CZA7-30</b><br><b>CZA7-180</b>  |
|    | <b>Electronic Timing Module – ❷ ON-Delay</b><br>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<br>110...250V DC<br>0.1...3s<br>1...30s<br>10...180s | <b>CRZE7-3-110/240</b><br><b>CRZE7-30-110/240</b><br><b>CRZE7-180-110/240</b>    |
|   |  | CA7 with 24...48V DC                          |    | 24...48V DC<br>0.1...3s<br>1...30s<br>10...180s                         | <b>CRZE7-3-24/48VDC</b><br><b>CRZE7-30-24/48VDC</b><br><b>CRZE7-180-24/48VDC</b> |
|   | <b>Electronic Timing Module – ❷ OFF-Delay</b><br>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<br>0.3...3s<br>1...30s<br>10...180s                  | <b>CRZA7-3-110/240</b><br><b>CRZA7-30-110/240</b><br><b>CRZA7-180-110/240</b>    |
|   |  | CA7-9...37 with 24V, 50/60Hz                  |  | 24V AC 50/60Hz<br>0.3...3s<br>1...30s<br>10...180s                      | <b>CRZA7-3-24VAC</b><br><b>CRZA7-30-24VAC</b><br><b>CRZA7-180-24VAC</b>          |
|  | <b>Electronic Timing Module – ❷ Wye-Delta Transition Timer</b><br>Contactor K3 (Y) is de-energized and contactor K2 (D) is energized after the end of the set transition time. Switching delay at 50ms. <ul style="list-style-type: none"> <li>Continuous adjustment range</li> <li>High repeat accuracy</li> </ul>                          | CA7 with 110...240V, 50/60Hz                  |  | 110...240V 50/60Hz<br>1...30s   | <b>CRZY7-30-110/240</b>  |
|  | <b>Mechanical/Electrical Interlocks –</b> <ul style="list-style-type: none"> <li>Common to all CA7 contactors;</li> <li>interlocks different contactor sizes</li> <li>Mechanical and electrical interlocking possible in one module by means of integrated auxiliary contacts</li> <li>Dovetail (CA7-S9) connector included (9mm)</li> </ul> | CA7 all ❶                                     |   | <b>Mechanical</b><br>Without auxiliaries                                | <b>CM7</b>   |
|   |  |   |   | <b>Mechanical/<br/>Electrical</b><br>Two NC aux contacts                | <b>CM7-02</b>  |


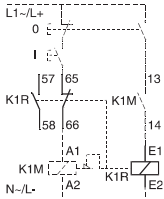
❶ Not for use with CA7-40 or CA7-90 (4-pole) contactors.

❷ Not available for use on CA7-9E...55E coil voltage 48V...220V.



**A2** Control Modules (continued)

CA7 Contactors

| Module  | Description  | For use with... | Connection Diagrams  | Catalog Number   |
|---|--|-----------------|--|--|
|  | <b>Mechanical Latch –</b><br>Following contactor latching, the contactor coil is immediately de-energized by the NC auxiliary contact (65-66). <ul style="list-style-type: none"> <li>Electrical or manual release</li> <li>1 NO + 1 NC auxiliary switch</li> <li>Suitable for all CA7 contactors</li> </ul> | All CA7 ⑥       |  | <b>CV7-11-*</b><br>Replace * with coil code below (See Application Note below) |

**CV7 Mechanical Latch Coil Codes ①②④⑤**

| 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                  |
| 230Z      | 230 VAC           | 230 VAC       | 110 VDC     | 230V 50/60 Hz                 |
| 240Z      | 240 VAC           | 240 VAC       | 125 VDC     | 240V 50/60 Hz                 |
| 277       | 240 VAC           | 277 VAC       | ~           | 240V50/277V60                 |
| 380       | 380...400 VAC     | 440 VAC       | ~           | 380...400V50/440V60           |
| 400Z      | 400 VAC           | 400 VAC       | 220 VDC     | 400V 50/60 Hz                 |
| 415       | 400...415 VAC     | ~             | ~           | 400...415 V50 Hz              |
| 480       | 440 VAC           | 480 VAC       | ~           | 440V50/480V60                 |
| 600 ③     | 550 VAC           | 600 VAC       | ~           | 550V50/600V60                 |

**APPLICATION NOTE:**

The CV7 Mechanical Latch for CA7 may be used for both AC and DC applications; however when using 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).

① Other voltages available. Contact your Sprecher + Schuh representative.

② CV7 must be wired for momentary operation only.


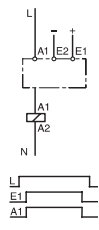

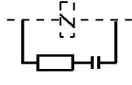
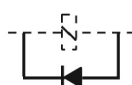
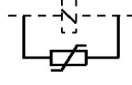
③ Use 600V AC when 575 V is required.

④ Command duration 0.03...10 seconds.

⑤ Coil operating limits on CV7-11 match those of the contactor it is being used with.

⑥ Not for use with CA7-90 (4-pole) contactors.

**Control Modules (continued)**

| Module  | Description   | For use with...  | Connection Diagrams   | Function   |                   | Catalog Number  |
|---|---|--|---|--|-------------------|---|
|  | <b>Electronic Interface –</b><br>Interface between the DC control signal from a PLC and the AC operating mechanism of the contactor.<br><ul style="list-style-type: none"> <li>Requires no additional surge suppression for the coils</li> <li>Suitable for all CA7 contactors ❷</li> </ul> | CA7 all (with AC control)  |    | Input  | Output            | <b>CRI7E-24</b><br><b>CRI7E-12</b><br><b>CRI7E-48</b><br>Gray is special order  |
|   |   |  |   | 24VDC ❶<br>12V DC<br>48V DC  | 110...<br>240V AC |   |
|  | <b>Surge Suppressors -</b><br>Limits coil switching transients.<br><ul style="list-style-type: none"> <li>Plug-in, coil mounted</li> <li>Suitable for all CA7 contactors</li> </ul>   | CA7 all (with AC control)  |   | <b>RC Module -</b><br>AC Control (50/60Hz)<br>24...48V<br>110...280V<br>380...480V   |                   | <b>CRC7-48</b><br><b>CRC7-280</b><br><b>CRC7-480</b>                            |
|   |   | CA7-9C...43C (with conventional DC control)                                  |   | <b>Diode Module -</b><br>DC Control<br>12-250VDC   |                   | <b>CRD7-250</b> ❸   |
|   |   | CA7 all (with AC control)<br><br>CA7-9C...43C (with conventional DC control) |  | <b>Varistor Module -</b><br>AC/DC Control<br>12...55VAC/<br>12...77VDC<br>56...136VAC/<br>78...180VDC<br>137...277VAC/<br>181...350VDC<br>278...575VAC |                   | <b>CRV7-55</b> ❸<br><b>CRV7-136</b> ❸<br><b>CRV7-277</b> ❸<br><b>CRV7-575</b> ❸ |



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

❷ Minimum actuation current is 5 volts, 2ma. The leakage current is &lt;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    |

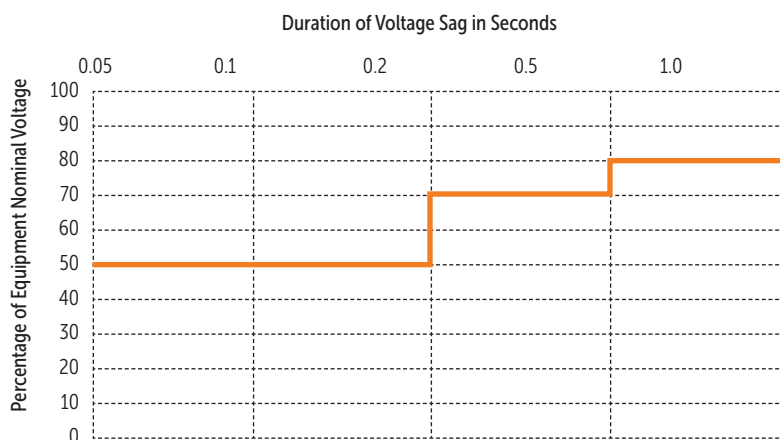
Sprecher + Schuh's CA7-SF47 module meets the Semi-F47 AC voltage sag immunity requirements to 50% voltage sag for 200 ms. Voltage sags can affect the readiness and operation of contactors and starters, resulting in shut downs, lost production, and diminished revenue. It is essential for process equipment 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

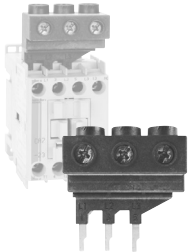

- Direct mounting to the coil terminals of the CA7 contactors.  
Only 24 mm is added to the component height.
- Direct electrical connection to the contactor. Customer coil power connections are made at the terminals of the CA7-SF47 module
- The CA7-SF47A30 module includes a 1 to 30 seconds adjustable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



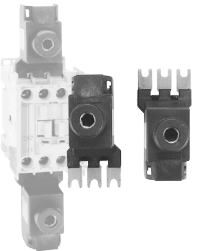
| VOLTAGE SAG DURATION |                |                 |                  | VOLTAGE SAG                              |
|----------------------|----------------|-----------------|------------------|--|
| Seconds              | Milliseconds   | Cycles at 60 hz | Cycles at 50 hz  | Percent (%) of Equipment 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 |            |               | Pkg. Qty. | Catalog Number ❶                       |
|---|---|--|---|------------|---------------|-----------|--|
|   |   |  | IEC (40°C)                              | IEC (60°C) | UL/CSA (40°C) |           |  |
|  | <b>3 Pole Lug Kit</b> – 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<br>-line side<br>-load side | 45                                      | 45         | 40            | 1         | <b>CA7-P-KN23</b><br><b>CA7-P-KL23</b> |
|   |   | CA7-30...37                            | 60                                      | 55         | 55            | 1         | <b>CA7-P-K37</b>                       |
|  | <b>1 Pole Lug Kit</b> – 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       | <b>CA7-P-K43</b>                       |
|   |   | CA7-60...97                            | 130                                     | 130        | 130           | 3 ❸       | <b>CA7-P-K85</b>                       |

**Paralleling Links ❶❷**

| Component   | Description   | For use with . . . | Maximum Resistive Current Ratings (A) ❷ |            |               | Pkg. Qty. | Catalog Number ❶ |
|---|---|--------------------|---|------------|---------------|-----------|------------------|
|   |   |                    | IEC (40°C)                              | IEC (60°C) | UL/CSA (40°C) |           |                  |
|  | <b>3 Pole Paralleling Link</b> – 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       | <b>CA7-P-B23</b> |
|   |   | CA7-30...37        | 150                                     | 135        | 150           | 2 ❸       | <b>CA7-P-B37</b> |

**Quick Connectors**

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

❶ cULus Approved (File E33916).


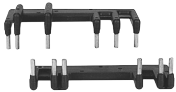
❷ Lighting applications are not considered purely resistive loads. Therefore, the IEC and UL/CSA resistive ratings listed here do not apply to lighting loads. Lighting contactor ratings are provided in the Technical Information section.

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 I<sub>e</sub> to be applied to a contactor when 3 poles are connected in parallel for single phase discharge lamp (ballast lighting) applications.

## A2 Reversing Components

CA7 Contactors

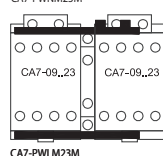
| Component   | Description   | For Use With...                           | Catalog Number  | Pkg. Qty.   |
|---|---|---|---|-------------|
|  | <b>Dovetail Connectors –</b><br>Connects multiple contactor and starter assemblies together.  | CA7 all                                   | <b>CA7-S9</b>  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

### Reversing Power Wiring Kits

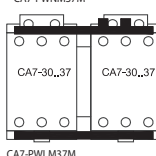
Only the kits are catalog items. Single components are available by special order in bulk packages of 20 pieces.

### Reversing Starter Connection Kits ❷

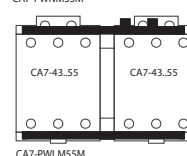
Kit = CAUT7-PW23  
CA7-PWNM23M



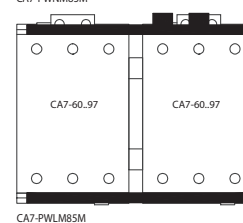
Kit = CAUT7-PW37  
CA7-PWNM37M





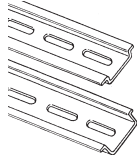
Kit = CAUT7-PW55  
CA7-PWNM55M




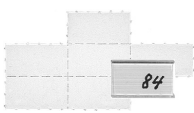

Kit = CAUT7-PW85  
CA7-PWNM85M



## Assembly Components

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

## Marking Systems

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

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

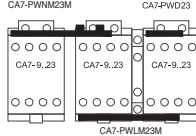
A2

CA7 Contactors

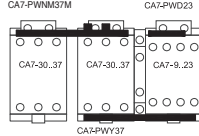
#### Three Contactor Assembly Components

| 3-Phase Rating |              |      |      |           |      |      |      |                               |        |        | For 3 contactor assembly ② |
|----------------|--------------|------|------|-----------|------|------|------|-------------------------------|--------|--------|----------------------------|
| kW (50Hz)      |              |      |      | HP (60Hz) |      |      |      | Use with catalog number . . . |        |        |                            |
| 230V           | 380V<br>415V | 500V | 690V | 200V      | 230V | 460V | 575V | Delta                         |        | Wye    |                            |
|                |              |      |      |           |      |      |      | 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 |                            |

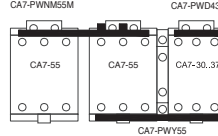
Kit = CAYT7-PW23



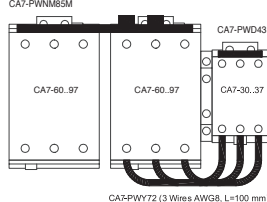
Kit = CAYT7-PW37



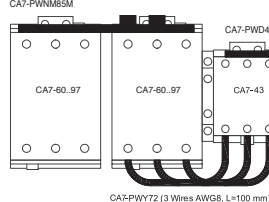
Kit = CAYT7-PW55



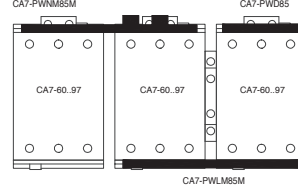
Kit = CAYT7-PW72



Kit = CAYT7-PW72

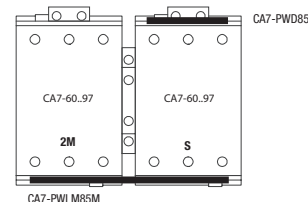
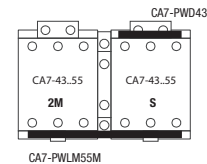
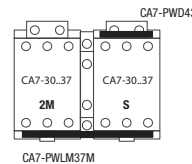


Kit = CAYT7-PW85



#### 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 |                            |                |
| CA7-55             | CA7-55 | CA7-PWLM55M                | CA7-PWD85      |
| CA7-60             | CA7-60 |                            |                |
| CA7-72             | CA7-72 |                            |                |
| CA7-85             | CA7-85 | CA7-PWLM85M                | CA7-PWD85      |
| CA7-97             | CA7-97 |                            |                |



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

① cULus Approved (File E33916).

② 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<br>CA7-9-M...16-M...<br>CAQ7-16<br>CNX-205...206<br>CAN7-12...16<br>~ | CA7-23...37<br>CA7-23-M...37-M...<br>CAQ7-37<br>CNX-207...209<br>CAN7-37<br>CAL(V)7-20-M40 | CA7-43...55<br>~<br>~<br>CNX-212<br>CA7-40-M, CAN7-43<br>CAL(V)7-30-M40 | CA7-60...85<br>~<br>~<br>CNX-218<br>CAN7-85<br>~ | CA7-97<br>CA7-90-M...<br>~<br>~<br>CAL(V)7-60-M40 |
| 50 Hz               | 60 Hz      | 50/60 Hz |               | Cat. No.   | Cat. No.   | Cat. No.  | Cat. No.   | Cat. No.  |
|                     |            |          |               | <b>CA7-</b>  | <b>CA7-</b>  | <b>CA7-</b>   | <b>CA7-</b>                                      | <b>CA7-</b>                                       |
| ~                   | ~          | 24V      | <b>24Z</b>    | <b>TA855</b>   | <b>TC855</b>   | <b>TD855</b>  | <b>TE855</b>                                     | <b>TF855</b>                                      |
| 32V                 | 36V        | ~        | <b>36</b>     | ~  | ~  | ~   | TE481  | ~   |
| 48V                 | ~          |          | <b>48A</b>    | ~  | TC414  | TD414   | ~  | ~   |
| 110V                | 120V       | ~        | <b>120</b>    | <b>TA473</b>   | <b>TC473</b>   | <b>TD473</b>  | <b>TE473</b>                                     | <b>TF473</b>                                      |
| 115V                | 127V       | ~        | <b>127</b>    | <b>TA424</b>   | <b>TC424</b>   | ~   | ~  | ~   |
| 200...220V          | 208...240V | ~        | <b>220W</b>   | <b>TA296</b>   | <b>TC296</b>   | <b>TD296</b>  | <b>TE296</b>                                     | <b>TF296</b>                                      |
| ~                   | ~          | 230V     | <b>230Z</b>   | <b>TA851</b>   | <b>TC851</b>   | <b>TD851</b>  | <b>TE851</b>                                     | <b>TF851</b>                                      |
| 240V                | 277V       | ~        | <b>277</b>    | <b>TA480</b>   | <b>TC480</b>   | <b>TD480</b>  | <b>TE480</b>                                     | <b>TF480</b>                                      |
| 400...415V          | ~          | ~        | <b>415</b>    | <b>TA457</b>   | <b>TC457</b>   | <b>TD457</b>  | <b>TE457</b>                                     | <b>TF457</b>                                      |
| 440V                | 480V       | ~        | <b>480</b>    | <b>TA475</b>   | <b>TC475</b>   | <b>TD475</b>  | <b>TE475</b>                                     | <b>TF475</b>                                      |
| 550V                | 600V       | ~        | <b>600</b>    | <b>TA476</b>   | <b>TC476</b>   | <b>TD476</b>  | <b>TE476</b>                                     | <b>TF476</b>                                      |



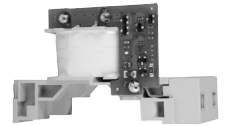
CA7 AC Coil (typical)

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

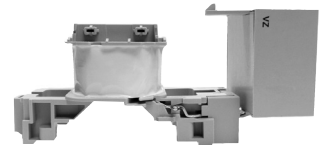
**Renewal Coils - D.C. ①**

| DC Control Voltages | DC Coil Codes ① | Electronic DC Replacement Coils ④                     |   |  |  | Two Winding DC Replacement Coils        |                           |
|---------------------|-----------------|---|---|--|--|---|---------------------------|
|                     |                 | For use with contactor...                             |   |  |  | For use with contactor...               |                           |
|                     |                 | CA7-9E...16E<br>CA7-9E-M...16E-M...<br>CAN7-12E...16E | CA7-23E...37E<br>CA7-23E-M...<br>CAN7-37E | CA7-43E...55E<br>CA7-40E-M...<br>CAN7-43E (Series A) | CA7-43E...55E<br>CA7-40E-M...<br>CAN7-43E (Series B) | CA7-60D...85D ③<br>CNX7-218<br>CAN7-85D | CA7-97D ③<br>CA7-90D-M... |
|                     |                 | Cat. No.  | Cat. No.                                  | Cat. No.   | Cat. No.   | Cat. No.                                | Cat. No.                  |
|                     |                 | CA7-  | CA7-                                      | CA7-   | CA7-   | CA7-                                    | CA7-                      |
| 12V Electronic      | <b>12E</b>      | TC708E  | TC708E                                    | ~  | TD708E2  | ~                                       | ~                         |
| 24V Electronic      | <b>24E</b>      | TC714E  | TC714E                                    | ~  | TD714E2  | ~                                       | ~                         |
| 24V Diode ②         | <b>24DD</b>     | ~   | ~   | ~  | ~  | TE714M                                  | TF714M                    |
| 36-48V Elec         | <b>36E</b>      | TC719E  | TC719E                                    | ~  | TD719E2  | ~                                       | ~                         |
| 48-72V Elec         | <b>48E</b>      | TC724E  | TC724E                                    | ~  | TD724E2  | ~                                       | ~                         |
| 64V Diode           | <b>64DD</b>     | ~   | ~   | ~  | ~  | ~                                       | TF727M                    |
| 72V Diode           | <b>72DD</b>     | ~   | ~   | ~  | ~  | TE728M                                  | TF728M                    |
| 110-125V Elec       | <b>110E</b>     | TC733E  | TC733E                                    | ~  | TD733E2  | ~                                       | ~                         |
| 110V Diode          | <b>110DD</b>    | ~   | ~   | ~  | ~  | TE733M                                  | TF733M                    |
| 220-250V Elec       | <b>220E</b>     | 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) ③

**A2**
**CA7 Contactors**

- ① DC Codes in bold letters and shaded indicate coils that are standard stocked items.
- ② Voltage operating range: 0.7...1.25 x Us.
- ③ CA7-60D...97D contactors have a two winding coil with built-in late break auxiliary contact and coil suppression.
- ④ CA7-9E...55E electronic coils are not interchangeable with non-electronic DC or AC coils

A2

CA7 Contactors

#### Replacement Contactors Cross Reference, Series CA1 to Series CA7 (Open Type Only) ①

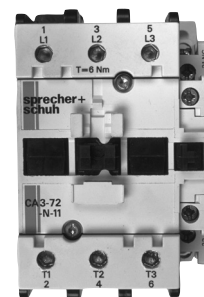
| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |                |      |      |                   |       |       |       |    |    | Series CA1U<br>Obsolete | Series CA7<br>Equivalent |
|--------------------|------|---|----------------|------|------|-------------------|-------|-------|-------|----|----|-------------------------|--------------------------|
|                    |      | kW (50 Hz)  |                |      |      | UL/CSA HP (60 Hz) |       |       |       |    |    |                         |                          |
|                    |      | 230V  | 400V /<br>415V | 500V | 690V | 1 Ø               |       | 3 Ø   |       |    |    |                         |                          |
| 115V               | 230V |   |                |      |      | 200V              | 230V  | 460V  | 575V  |    |    |                         |                          |
| AC-3               | AC-1 |   |                |      |      | 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) ①

| I <sub>e</sub> [A] |      | Ratings for Switching AC Motors (AC2 / AC3 / AC4) |         |      |                |                   |       |       |       |       |       | Series CA3<br>Obsolete | Series CA7<br>Equivalent |
|--------------------|------|---|---------|------|----------------|-------------------|-------|-------|-------|-------|-------|------------------------|--------------------------|
|                    |      | kW (50 Hz)  |         |      |                | UL/CSA HP (60 Hz) |       |       |       |       |       |                        |                          |
|                    |      | AC-3  | AC-1    | 230V | 400V /<br>415V | 500V              | 690V  | 1 Ø   |       | 3 Ø   |       |                        |                          |
| 115V               | 230V |   |         |      |                |                   |       | 200V  | 230V  | 460V  | 575V  |                        |                          |
|                    |      |   |         |      |                |                   |       | 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

① 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]       |        |        |        |        |        |        |        |        |        |        |        |
| UL; CSA   |         |          | [V]       |        |        |        |        |        |        |        |        |        |        |        |
| Rated Impulse Voltage $U_{imp}$                 |         |          | [kV]      |        |        |        |        |        |        |        |        |        |        |        |
| Rated Voltage $U_e$ - Main Contacts             |         |          |           |        |        |        |        |        |        |        |        |        |        |        |
| AC 50/60Hz                                      |         |          | [V]       |        |        |        |        |        |        |        |        |        |        |        |
| DC  |         |          | [V]       |        |        |        |        |        |        |        |        |        |        |        |
| Operating Frequency for AC Loads                |         |          | [Hz]      |        |        |        |        |        |        |        |        |        |        |        |
| Switching Motor Loads                           |         |          | 50...60Hz |        |        |        |        |        |        |        |        |        |        |        |
| Standard IEC Ratings                            |         |          |           |        |        |        |        |        |        |        |        |        |        |        |
| AC-2, AC-3, AC-4<br>DOL Reversing<br>50Hz/60 °C | 230V    | [A]      | 12        | 15     | 20     | 26.5   | 35     | 38     | 44     | 56     | 62     | 72     | 85     | 96     |
|   | 240V    | [A]      | 12        | 15     | 20     | 26.5   | 35     | 38     | 44     | 56     | 62     | 72     | 85     | 95     |
|   | 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     |
| UL/CSA<br>DOL Reversing<br>60Hz                 | 10 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     |
|   | 30 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     |
| Maximum Operating Rate<br>(at max. amps) ①      | 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     |

① See page A2:54 for additional detail.

A2 Electrical Data

CA7 Contactors

|                                   |                        |       | 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     | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   | 50Hz                   | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   |                        | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   |                        | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   |                        | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   |                        | [A]   | 4.3        | 6.6    | 9      | 9      | 12     | 14     | 16.5   | 22     | 25.5   | 31     | 38     | 44     |       |
|                                   |                        | [kW]  | 0.75       | 1.5    | 2.2    | 2.2    | 3      | 3.7    | 4      | 5.5    | 6.3    | 7.5    | 11     | 11     |       |
|                                   |                        | [kW]  | 0.75       | 1.5    | 2.2    | 2.2    | 3      | 4      | 4      | 5.5    | 7.5    | 7.5    | 11     | 11     |       |
|                                   |                        | [kW]  | 1.8        | 3      | 4      | 4      | 5.5    | 6.3    | 7.5    | 11     | 13     | 15     | 20     | 22     |       |
|                                   |                        | [kW]  | 1.8        | 3      | 4      | 4      | 5.5    | 6.3    | 7.5    | 11     | 13     | 17     | 20     | 22     |       |
|                                   |                        | [kW]  | 2.2        | 3.7    | 5.5    | 5.5    | 7.5    | 7.5    | 10     | 11     | 15     | 20     | 25     | 30     |       |
| 60Hz                              | 690V                   | [kW]  | 3          | 5.5    | 7.5    | 7.5    | 10     | 11     | 15     | 18.5   | 22     | 25     | 32     | 37     |       |
|                                   | 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 |
|                                   | 3Ø                     | 200V  | [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    |
|                                   |                        | 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 | [kW]       | 5.5    | 7.5    | 10     | 13     | 18.5   | 20     | 22     | 30     | 32     | 40     | 50     | 50    |
|                                   |                        |       | [kW]       | 7.5    | 10     | 13     | 20     | 25     | 32     | 40     | 45     | 55     | 63     | 80     | 90    |
|                                   |                        |       | [kW]       | 7.5    | 11     | 15     | 22     | 25     | 37     | 40     | 45     | 55     | 63     | 80     | 90    |
|                                   |                        | [kW]  | 7.5        | 11     | 15     | 22     | 25     | 32     | 45     | 45     | 63     | 80     | 90     | 90     |       |
|                                   |                        | [kW]  | 7.5        | 10     | 13     | 18.5   | 25     | 32     | 40     | 45     | 55     | 63     | 80     | 90     |       |
| 60 Hz                             | 200V                   | [HP]  | 5          | 5      | 7-1/2  | 7-1/2  | 10     | 15     | 20     | 25     | 30     | 40     | 50     | 50     |       |
|                                   | 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<br>Ambient Temperature 40° C                                   | I <sub>th</sub> | [A]        | 32    | 32     | 32     | 32     | 65     | 65     | 85     | 85     | 100    | 100    | 100    | 130    |    |
|  | 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 60° C  | I <sub>th</sub> | [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,<br>single compensated  | Open            | [A]        | 22.5  | 25     | 28     | 29     | 40.5   | 45     | 77     | 77     | 81     | 85     | 90     | 115    |    |
|  | Enclosed        | [A]        | 22.5  | 25     | 28     | 29     | 37     | 41     | 57     | 57     | 77     | 81     | 90     | 100    |    |
| Max. capacitance at prospective<br>short circuit current available at<br>the contactor | 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  |    |
|  | 20kA            | [µf]       | 500   | 500    | 500    | 500    | 1,350  | 1,350  | 1,600  | 1,600  | 2,000  | 2,000  | 2,350  | 2,350  |    |
|  | 50kA            | [µf]       | 200   | 200    | 200    | 200    | 540    | 540    | 640    | 640    | 800    | 800    | 940    | 940    |    |
| Incandescent Lamps - AC -5b<br>Electrical endurance ~ 100,000 operations               |                 |            | [A]   | 12     | 16     | 18     | 22     | 30     | 37     | 43     | 51     | 60     | 70     | 76     | 90 |
| Switching power transformers AC-6a<br>50Hz   |                 |            |       |        |        |        |        |        |        |        |        |        |        |        |    |
| Inrush = n   |                 |            |       |        |        |        |        |        |        |        |        |        |        |        |    |
| Rated transformer current  |                 |            |       |        |        |        |        |        |        |        |        |        |        |        |    |
| n=30   |                 | [A]        | 10.9  | 10.9   | 10.9   | 10.9   | 20     | 20     | 23     | 23     | 40.8   | 40.8   | 40.8   | 48.5   |    |
|  | 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     |    |
| n=20   |                 | [A]        | 16.3  | 16.3   | 16.3   | 16.3   | 30     | 30     | 34.5   | 34.5   | 61.3   | 61.3   | 61.3   | 72.8   |    |
|  | 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   |    |
| n=15   |                 | [A]        | 21.7  | 21.7   | 21.7   | 21.7   | 40     | 40     | 46     | 46     | 81.7   | 81.7   | 81.7   | 97.0   |    |
|  | 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.

### A2 Electrical Data

CA7 Contactors

| 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                          |                           |        |       |        |        |        |        |        |        |        |        |        |        |        |
| n=30                                | Rated transformer current | [A]    | 10.9  | 10.9   | 10.9   | 10.9   | 20     | 20     | 23     | 23     | 40.8   | 40.8   | 40.8   | 48.5   |
|                                     | 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   |
| n=20                                |                           | [A]    | 16.3  | 16.3   | 16.3   | 16.3   | 30     | 30     | 34.5   | 34.5   | 61.3   | 61.3   | 61.3   | 72.8   |
|                                     | 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   |
| n=15                                |                           | [A]    | 22    | 22     | 22     | 22     | 40     | 40     | 46     | 46     | 82     | 82     | 82     | 97     |
|                                     | 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 ①                             |                           |        |       |        |        |        |        |        |        |        |        |        |        |        |
| 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     |

① Inductance of leads between capacitors in parallel: min. 6 µH (CA7-9...CA7-30 = L min. 30 µH)

## Electrical Data

A2

CA7 Contactors

Switching of Low Inductive Loads in Home Appliances and Similar Applications per IEC 61095 (50 Hz)

AC-7a

|         |     | CA7-9 | CA7-12 | CA7-16 | CA7-23 | CA7-30 | CA7-37 | CA7-43 | CA7-55 | CA7-60 | CA7-72 | CA7-85 | CA7-97 |
|---------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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 |

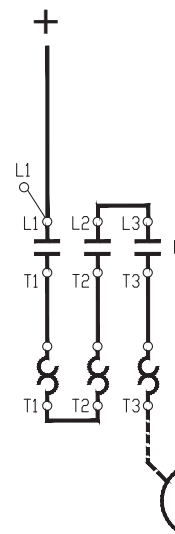
**A2** Electrical Data

CA7 Contactors

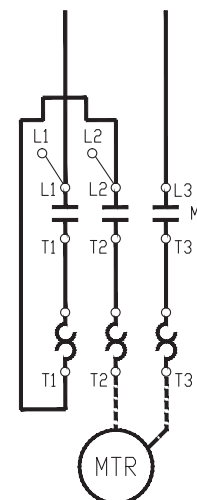
| DC-1 Switching - 60°C                                       |        |     | CA7-9 | CA7-12 | CA7-16 | CA7-23 | CA7-30 | CA7-37 | CA7-43 | CA7-55 | CA7-60 | CA7-72 | CA7-85 | CA7-97 |
|---|--------|-----|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 Pole  | 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     |
|   | 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    |
| 2 Poles in Series   | 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     |
|   | 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    |
| 3 Poles in Series   | 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    |
|   | 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<br>braking, reversing, DC-5, 60°C | 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     |
|   | 60VDC  | [A] | 25    | 25     | 32     | 32     | 45     | 45     | 50     | 50     | 70     | 70     | 80     | 80     |
| Shunt Wound<br>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    |
| Series-wound Motors<br>3 Poles in Series                    | 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     |
|   | 60VDC  | [A] | 25    | 25     | 32     | 32     | 45     | 45     | 50     | 50     | 70     | 70     | 80     | 80     |
|   | 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

**OPTION A**



**OPTION B**



## 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) ③                         | [A]                | 50    | 50     | 50     | 80     | 125    | 125    | 160    | 160    | 250    | 250    | 250    | 250    |
| Type "2" (690V) ③                         | [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     | ④      | 65     | 65     | 65     | ④      |
| Type "1" (415V) ③                         | [A]                | 25    | 32     | 40     | 50     | 63     | 80     | 80     | ④      | 100    | 160    | 160    | ④      |
| Type "2" (415V) ③                         | [A]                | 20    | 25     | 32     | 50     | 63     | 80     | 80     | ④      | 100    | 125    | 160    | ④      |
| 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) ② 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) ② 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 ①            |                    |       |        |        |        |        |        |        |        |        |        |        |        |
| Available Fault Current                   | [KA]               | 5     | 5      | 5      | 5      | 5      | 5      | 5      | 5      | 5      | 10     | 10     | 10     |
| cUL Max. Rating 480V ② Type 1             | [A]                | 30    | 30     | 50     | 50     | 125    | 125    | 125    | 150    | 250    | 250    | 250    | 250    |
| cUL Max. Rating 600V ② 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     |

① 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.

② UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.

③ Per IEC 60947-1 for contactor and fuses only.

④ To be determined - Test data not available at time of this printing.

## A2 Short Circuit Ratings

CA7 Contactors

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

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



## Short Circuit Ratings

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

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

### IEC Short Circuit Ratings per EN60947-4-1






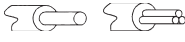

| CEP7 Third Generation<br>Cat. No. |  | Prospective S.C.<br>current, I <sub>r</sub> (kA) | Conditional S.C.<br>current, I <sub>q</sub> (kA) | Max. voltage (V) | S.C.P.D.                            |
|-----------------------------------|--|--|--|------------------|-------------------------------------|
| CEP7                              | 1EEAB, 1EFAB, 1EEBB, 1EFBB               | 1  | 100  | 690              | Suitable for use<br>with fuses only |
|                                   | 1EECB, 1EFCB, 1EEDB, 1EFDB, 1EEEB, 1EFEB | 1  |  |                  | Not restricted<br>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<br>Cat. No. |                               | Contactor Cat.<br>No. | Max. starter<br>FLC (A) | Prospective<br>S.C. current/<br>I <sub>r</sub> (kA) | Conditional<br>S.C. current/<br>I <sub>q</sub> (kA) | Max. voltage<br>(V) | Type I with<br>Class J fuse<br>max. (A) | Type II with<br>Class J fuse<br>max. (A) |
|-----------------------------------|-------------------------------|-----------------------|-------------------------|---|---|---------------------|---|--|
| CEP7                              | 1EEAB, 1EFAB                  | CA7-9                 | 0.5                     | 1   | 100   | 600                 | 3                                       | 3  |
|                                   | 1EEBB, 1EFBB                  |                       | 1                       |   |   |                     | 6                                       | 6  |
|                                   | 1EECB, 1EFCB,<br>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,<br>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                                      |

## A2 Electro-Mechanical Data

CA7 Contactors









| 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    |
| 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:<br>cross, slotted or Pozidrive No. 2/blade<br>No. 3 screw   |        |        |        | Dual connection; one saddleclamp and<br>one box lug per pole; cross,<br>slotted or Pozidrive No. 2/blade No. 4<br>screw |        |        |        | Dual connection;<br>two box lugs per pole<br>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<br>CA7-30...55: IP2X from front with front (upper) terminal wired<br>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.

**Lug Kit and Paralleling Link Specifications**

|   |        |       | CA7-P-<br>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;<br>5mm, 3/16  | Allen Head;<br>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     | 3...6   | 8...12  | 6...12  | 6...12  |
|   |        |       | [Lb-in]   | 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 <sub>i</sub> ] | 0.85...1.1  |         |          |             |             |             |            |
|                             | Dropout | [xU <sub>i</sub> ] | 0.3...0.6   |         |          |             |             |             |            |
| DC: Two Winding (60D...97D) | Pickup  | [xU <sub>i</sub> ] | 0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25) |         |          |             |             |             |            |
|                             | Dropout | [xU <sub>i</sub> ] | 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 |                          |                            | Coil Consumption & Operating Times ❷ |               |              |               |                                    |             |              |
|---------------|--------------------------|----------------------------|--------------------------------------|---------------|--------------|---------------|------------------------------------|-------------|--------------|
| Voltage Code  | Nominal Voltage US [VDC] | Ratings [xU <sub>s</sub> ] | Average/Peak Pickup [W]              |               | Hold-in [W]  |               | Dropout Voltage [xU <sub>i</sub> ] | Pickup [ms] | Dropout [ms] |
|               |                          |                            | CA7-9E...37E                         | CA7-43E...55E | CA7-9E...37E | CA7-43E...55E |                                    |             |              |
| 12E           | 12                       | 0.7...1.25                 | 10/17                                | 16/25         | 1.7          | 2.5           | 0.3...0.4                          | 25...50     | 27...45      |
| 24E           | 24                       | 0.7...1.25                 | 10/17                                | 16/25         | 1.7          | 2.5           |                                    |             |              |
| 36E           | 36...48                  | 0.7...1.25                 | 10/17                                | 16/25         | 1.7...1.9    | 2.5...2.7     |                                    |             |              |
| 48E           | 48...72                  | 0.8...1.25                 | 10/17                                | 16/25         | 1.7...1.9    | 2.5...2.7     | 0.3...0.4                          | 25...50     | 23...33      |
| 110E          | 110...125                | 0.7...1.12 ❸               | 12/19                                | 16/26         | 2.0...2.1    | 2.7...2.8     |                                    |             |              |
| 220E          | 220...250                | 0.8...1.1                  | 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<sub>i</sub>

### A2 Electrical Data

CA7 Contactors

|                                     |      |          | CA7-9-M40<br>(31; 22)                                       | CA7-12-M40<br>(31; 22) | CA7-16-M40<br>(31; 22) | CA7-23-M40<br>(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/60°C                           | 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/60°C                           | 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<br>(31; 22) | CA7-12-M40<br>(31; 22) | CA7-16-M40<br>(31; 22) | CA7-23-M40<br>(31; 22) | CA7-40-M22 | CA7-40-M40 | CA7-90-M22 | CA7-90-M40 |
|--|-----------------|------|-----------------------|------------------------|------------------------|------------------------|------------|------------|------------|------------|
| AC-1 Load, 3Ø Switching                        |                 |      |                       |                        |                        |                        |            |            |            |            |
| Ambient Temperature 40°C                       | I <sub>th</sub> | [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        |
| Ambient Temperature 60°                        | I <sub>th</sub> | [A]  | 32                    | 32                     | 32                     | 32                     | 60         | 60         | 110        | 110        |
|  | 230V            | [kW] | 13                    | 13                     | 13                     | 13                     | 24         | 24         | 44         | 44         |
|  | 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                  | 300        | 300        | 600        | 600        |
| Continuous Current (UL/CSA)                    |                 |      |                       |                        |                        |                        |            |            |            |            |
| General Purpose Rating (40°)                   | 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      | 600        | 600        |
| Lighting Loads ❶                               |                 |      |                       |                        |                        |                        |            |            |            |            |
| Elec. Dischrg. Lamps-AC-5a, single compensated | Open            | [A]  | 22.5                  | 25                     | 28                     | 29                     | 65         | 65         | 115        | 115        |
|  | 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 - 60°C                          |                 |      |                       |                        |                        |                        |            |            |            |            |
| 1 Pole   | 24VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | 45         | 45         | 80         | 80         |
|  | 48VDC           | [A]  | 20                    | 20                     | 20                     | 20                     | 25         | 25         | 40         | 40         |
|  | 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        |
| 2 Pole in Series                               | 24VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | 45         | 45         | 80         | 80         |
|  | 48VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | 45         | 45         | 80         | 80         |
|  | 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        |
| 3 Poles in Series ❷                            | 24VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | ~          | 48         | ~          | 100        |
|  | 48VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | ~          | 48         | ~          | 100        |
|  | 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          |
| 4 Poles in Series                              | 24VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | ~          | 60         | ~          | 110        |
|  | 48VDC           | [A]  | 25                    | 25                     | 32                     | 32                     | ~          | 60         | ~          | 110        |
|  | 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

### A2 Electrical Data

CA7 Contactors

|  |        | CA7-9-M40<br>(31; 22) | CA7-12-M40<br>(31; 22) | CA7-16-M40<br>(31; 22) | CA7-23-M40<br>(31; 22) | CA7-40-M22 | CA7-40-M40 | CA7-90-M22 | CA7-90-M40 |
|--|--------|-----------------------|------------------------|------------------------|------------------------|------------|------------|------------|------------|
| <b>Resistance and Watt Loss I<sub>e</sub> AC-3/ 400V</b> |        |                       |                        |                        |                        |            |            |            |            |
| 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         |
|  | DC     | [W]                   | 2.4                    | 2.9                    | 3.8                    | 4.9        | 8          | 8.7        | 32.5       |
| <b>Short Circuit Coordination</b>                        |        |                       |                        |                        |                        |            |            |            |            |
| <b>DIN Fuses -gG, gL</b>                                 |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 100 KA                | 100 KA                 | 100 KA                 | 100 KA                 | 50 KA      | 50 KA      | 50 KA      | 50 KA      |
| Type "1" (690V) ③  | [A]    | 50                    | 50                     | 50                     | 80                     | 160        | 160        | 250        | 250        |
| Type "2" (690V) ③  | [A]    | 25                    | 35                     | 35                     | 40                     | 100        | 100        | 160        | 160        |
| <b>BS 88 Fuses</b>                                       |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 80 KA                 | 80 KA                  | 80 KA                  | 80 KA                  | ~          | ~          | ~          | ~          |
| Type "1" (690V) ③  | [A]    | 25                    | 32                     | 35                     | 50                     | ~          | ~          | ~          | ~          |
| Type "2" (690V) ③  | [A]    | 25                    | 32                     | 35                     | 50                     | ~          | ~          | ~          | ~          |
| <b>Class K1, RK1 Fuses</b>                               |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 100 KA                | 100 KA                 | 100 KA                 | 100 KA                 | 100 KA     | 100 KA     | 100 KA     | 100 KA     |
| Type "2" (600V) ③  | [A]    | 15                    | 20                     | 20                     | 30                     | 70         | 70         | 100        | 100        |
| <b>cUL Short-Circuit Ratings</b>                         |        |                       |                        |                        |                        |            |            |            |            |
| <b>Class K1, RK1, K5, and RK5 Fuses</b>                  |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 5 KA                  | 5 KA                   | 5 KA                   | 5 KA                   | 5 KA       | 5 KA       | 10 KA      | 10 KA      |
| cUL Max. Rating (600V) ② Type 1                          | [A]    | 35                    | 40                     | 70                     | 90                     | 125        | 125        | 300        | 300        |
| <b>Class CC &amp; CSA HRCI Fuses</b>                     |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 100 KA                | 100 KA                 | 100 KA                 | 100 KA                 | ~          | ~          | ~          | ~          |
| cUL Max. Rating (600V) ② Type 2                          | [A]    | 15                    | 20                     | 30                     | 30                     | ~          | ~          | ~          | ~          |
| <b>Class J CSA &amp; HRCI-J Fuses</b>                    |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 100 KA                | 100 KA                 | 100 KA                 | 100 KA                 | 100 KA     | 100 KA     | 100 KA     | 100 KA     |
| cUL Max. Rating (600V) ② Type 2                          | [A]    | 15                    | 20                     | 30                     | 30                     | 70 ④       | 70 ④       | 150 ④      | 150 ④      |
| <b>Inverse-Time Circuit Breaker ①</b>                    |        |                       |                        |                        |                        |            |            |            |            |
| Available Fault Current                                  | [A]    | 5 KA                  | 5 KA                   | 5 KA                   | 5 KA                   | 5 KA       | 5 KA       | 10 KA      | 10 KA      |
| cUL Max. Rating 480V ② Type 1                            | [A]    | 30                    | 30                     | 50                     | 50                     | 125        | 125        | 250        | 250        |
| cUL Max. Rating 600V ② Type 1                            | [A]    | ~                     | ~                      | ~                      | ~                      | 125        | 125        | 250        | 250        |
| <b>Short Time Current Withstand Ratings</b>              |        |                       |                        |                        |                        |            |            |            |            |
| I <sub>cw</sub> 60° C                                    | [A]    | 170                   | 170                    | 170                    | 215                    | 304        | 304        | 700        | 700        |
| Off Time Between Operations                              | [Min.] | 20                    | 20                     | 20                     | 20                     | 5          | 5          | 5          | 5          |

① 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.













② UL Listed Combination. (UL File E41850) Per UL508A, NEC409 abd CSA 22.2 No.14 for contactor and fuses or circuit breaker only.

③ Per IEC 60947-1 for contactor and fuses only.

④ UL Testing not complete a the time of printing this catalog.



**Mechanical Data**

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

**Environmental and General Specifications**

|  |  |  |
|--|--|--|
| <b>Ambient Temperature ❶</b>                           |  |  |
| 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)  |
| <b>Altitude at installed site</b>                      |  | 2000 meters above sea level per IEC 60947-1  |
| <b>Resistance to Corrosion/Humidity</b>                |  | Damp-alternating climate: cyclic to IEC 68-2, 56 cycles<br>Dry heat: IEC 68-2, +100 °C (212 °F), relative humidity <50%, 7 days.<br>Damp tropical: IEC 68-2, +40 °C (104 °F), relative humidity <92%, 56 days. |
| <b>Shock Resistance</b>                                |  | IEC 60068-2-27: Half sinusoidal shock 11ms, 30g (in all three directions)  |
| <b>Vibration Resistance</b>                            |  | IEC 60068-2-6: Static > 2g, in normal position no malfunction <5g  |
| <b>Pollution Degree</b>                                |  | 3  |
| <b>Operating Position</b>                              |  | Refer to Dimension Pages   |
| <b>Standards</b>                                       |  | IEC/EN 60947-1/-4-1/-5-1; UL508; CSA 22.2 No. 14   |
| <b>Approvals</b>                                       |  | CE, cULus, CCC   |

❶ Ambient is the temperature outside the enclosure.

## A2 Coil Data - AC / Two Winding DC

CA7 Contactors

|                          |         |                    | CA7-9-M40<br>(31; 22)                                     | CA7-12-M40<br>(31; 22) | CA7-16-M40<br>(31; 22) | CA7-23-M40<br>(31; 22) | CA7-40-M22 | CA7-40-M40<br>CAL7-30 | CA7-90-M22 | CA7-90-M40<br>CAL7-60 |
|--------------------------|---------|--------------------|---|------------------------|------------------------|------------------------|------------|-----------------------|------------|-----------------------|
| Voltage Range            |         |                    | CAL7-20   |                        |                        |                        |            |                       |            |                       |
| AC: 50Hz, 60Hz, 50/60 Hz | Pickup  | [xU <sub>s</sub> ] | 0.85...1.1  |                        |                        |                        |            |                       |            |                       |
|                          | Dropout | [xU <sub>s</sub> ] | 0.3...0.6   |                        |                        |                        |            |                       |            |                       |
| DC, Two Winding (90D)    | Pickup  | [xU <sub>s</sub> ] | 0.8...1.1 (9V coils = 0.65...1.3; 24V coils = 0.7...1.25) |                        |                        |                        |            |                       |            |                       |
|                          | Dropout | [xU <sub>s</sub> ] | 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

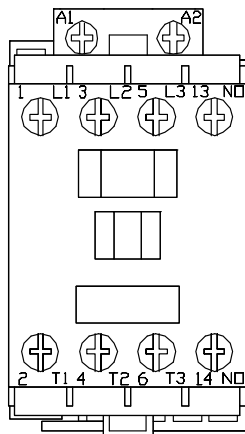
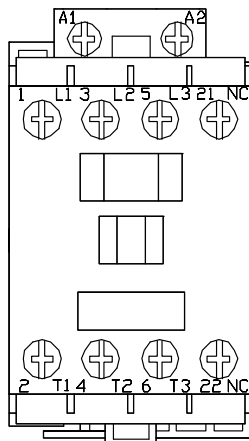
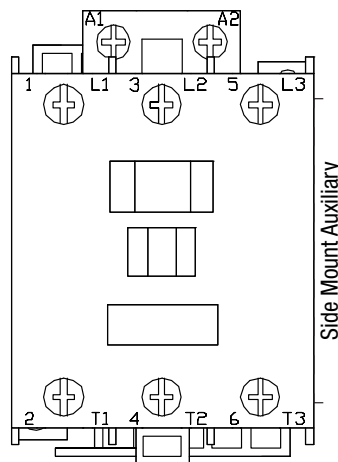
| Voltage Range |                          |                            | Coil Consumption & Operating Times ❶ |         |              |           |                                    |             |              |
|---------------|--------------------------|----------------------------|--------------------------------------|---------|--------------|-----------|------------------------------------|-------------|--------------|
| Voltage Code  | Nominal Voltage US [VDC] | Ratings [xU <sub>s</sub> ] | Average/Peak Pickup [W]              |         | Hold-in [W]  |           | Dropout Voltage [xU <sub>s</sub> ] | Pickup [ms] | Dropout [ms] |
|               |                          |                            | CA7-9E...37E                         | CA7-40E | CA7-9E...37E | CA7-40E   |                                    |             |              |
| 12E           | 12                       | 0.7...1.25                 | 10/17                                | 16/25   | 1.7          | 2.5       | 0.3...0.4                          | 25...50     | 27...45      |
| 24E           | 24                       | 0.7...1.25                 | 10/17                                | 16/25   | 1.7          | 2.5       |                                    |             |              |
| 36E           | 36...48                  | 0.7...1.25                 | 10/17                                | 16/25   | 1.7...1.9    | 2.5...2.7 |                                    |             |              |
| 48E           | 48...72                  | 0.8...1.25                 | 10/17                                | 16/25   | 1.7...1.9    | 2.5...2.7 | 0.3...0.4                          | 25...50     | 23...33      |
| 110E          | 110...125                | 0.7...1.12 ❷               | 12/19                                | 16/26   | 2.0...2.1    | 2.7...2.8 |                                    |             |              |
| 220E          | 220...250                | 0.7...1.1                  | 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<sub>s</sub>.






**Technical Information – Auxiliary Contact Data**

|  |       |           | Built-in Auxiliary<br>Contacts in Contactor<br>CA7-9...CA7-23 | Front Mounted<br>Auxiliary Contacts<br>CA7-PV, CS7-PV, CZE/A7, CV7 | Front Mounted<br>Bifurcated Auxiliary<br>Contacts | Side Mounted<br>Auxiliary Contacts<br>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,<br>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<br>loads) IEC 60947-5-1                                | 40 °C | $I_{th}$  | 20 A  | 10 A   | 10 A  | 10 A   |
|  |       | 230V      | 8 kW  |  |   |  |
|  |       | 400V      | 14 kW   |  |   |  |
|  |       | 690V      | 24 kW   |  |   |  |
|  | 60 °C | $I_{th}$  | 20 A  | 6 A  | 6 A   | 6 A  |
|  |       | 230V      | 8 kW  |  |   |  |
|  |       | 400V      | 14 kW   |  |   |  |
|  |       | 690V      | 24 kW   |  |   |  |
| DC-12 Switching DC Loads<br>$t_{cr} < 1$ ms, Resistive Loads<br>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<br>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**


## A2 Auxiliary Contacts

CA7 Contactors

|  |                          |             | Built-in Auxiliary Contacts in<br>Contactor CA7-9...CA7-23                        | Front Mounted Auxiliary Contacts<br>CA7-PV, CS7-PV, CZE/A7, CV7  | Side Mounted Auxiliary<br>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<br>Heavy pilot duty (A600)                                   | 10 A general purpose<br>Heavy pilot duty (A600)  | 10 A general purpose<br>Heavy pilot duty (A600)                                     |
| Continuous Rating  | DC                       | [A]         | 5A, 600 max.<br>Standard pilot duty (P600)  | 2.5A, 600 max.<br>Standard pilot duty (Q600)   | 2.5A, 600 max.<br>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<br>circuit) per DIN< VDE 0103, Part 101 (NAMUR<br>recommendation) |                          |             |   |  |   |
|  |                          | [V]         | 380   | 440  | 440   |
| Mechanically Linked Contacts (per IEC60947-5-1 ① Annex<br>L (SUVA Third-party certified)                       |                          |             | Mutually unrestricted<br>between all NO and NC contacts                           | Mutually unrestricted between all NO & NC<br>contacts. CZE & CV7 not mechanically linked<br>with contactor main contacts | Mutually unrestricted between all<br>NO and NC contacts                             |
| Terminals  |                          |             |   |  |   |
| Terminal Type  |                          |             |  |                                       |  |
| Maximum Wire Size per IEC 947-1  |                          |             | 2xA4  | 2xA4   | 2xA4  |
|                               | Flexible                 | 1 conductor | [mm²]   | 1...4  | 0.5...2.5   |
|  | with Wire-End<br>Fernule | 2 conductor | [mm²]   | 1...4  | 0.75...2.6  |
|                               | Solid/Stranded-          | 1 conductor | [mm²]   | 1.5...6  | 0.5...2.5   |
|  | Conductor                | 2 conductor | [mm²]   | 1.5...6  | 0.75...2.6  |
| Recommended Tightening Torque  |                          |             | [Nm]  | 1...1.5  | 1...1.5   |
| Max. Wire Size per UL/CSA  |                          |             | [AWG]   | 16...10  | 16...12   |
| Recommended Tightening Torque  |                          |             | [lb-in]   | 13...22  | 8.9...13  |

## Accessories

|                                  |           |            |
|----------------------------------|-----------|------------|
| Latch Attachment Release, CV7-11 |           |            |
| Coil Consumption                 | [VA/W]    | AC 45/40   |
|                                  | [W]       | 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%       |

## Contact Ratings (Per NEMA/UL A600 & Q600)

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

### Positively-Guided Contacts ( Mechanically-linked)

#### SUVA Certified

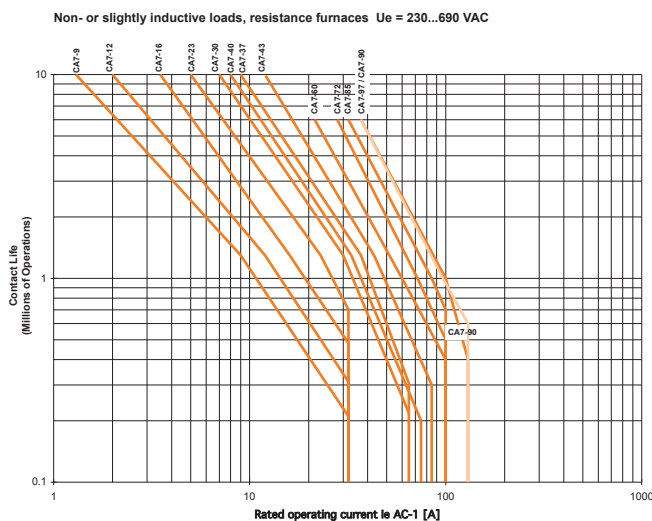
- Restricted guidance guarantees without restrictions from contactor to auxiliary contact and auxiliary contact to contactor.①

① 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)

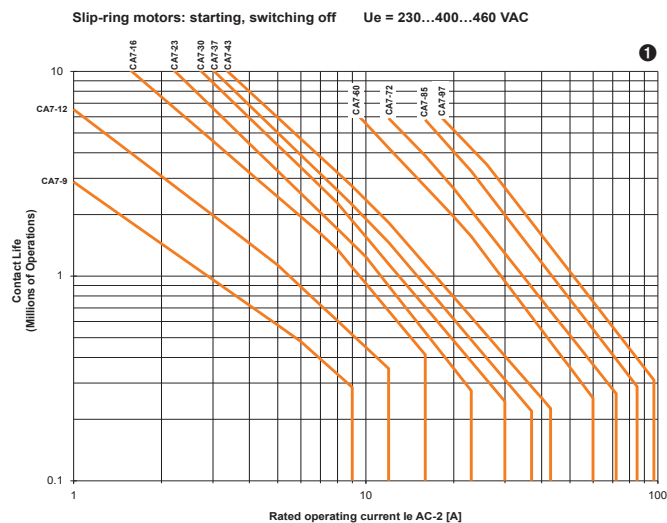


## Instructions on

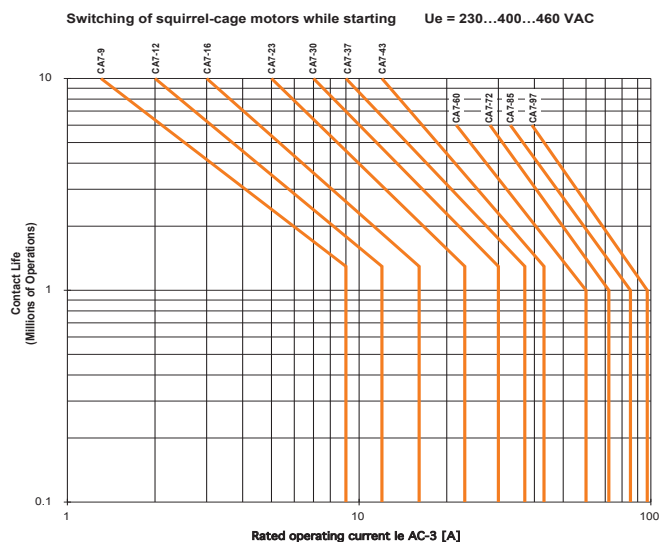
*How to* read

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.

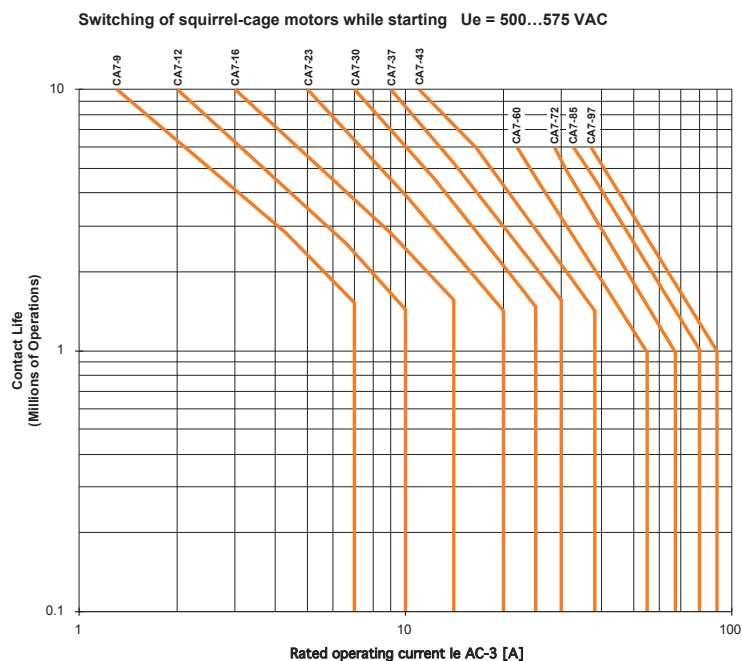
① 575V applications use 90% of curve value.

## A2 Life-Load Curves

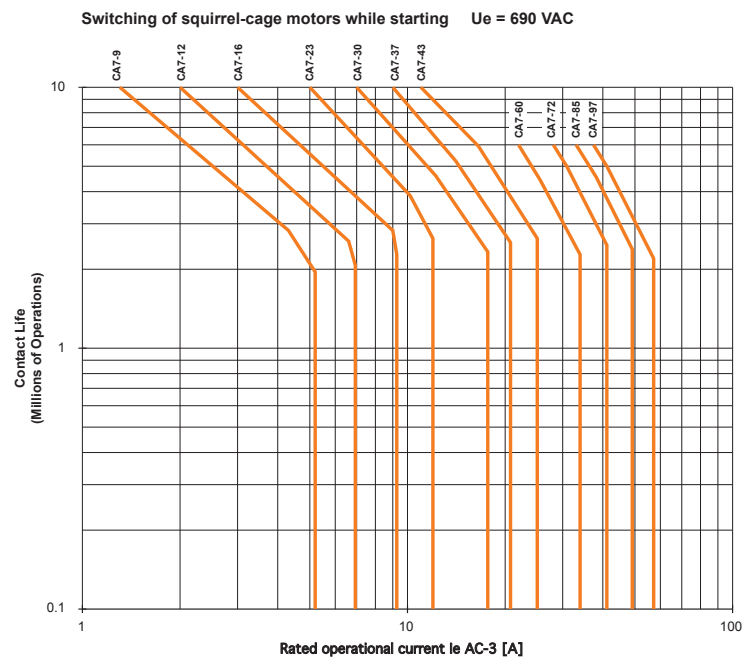
CA7 Contactors

- 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)



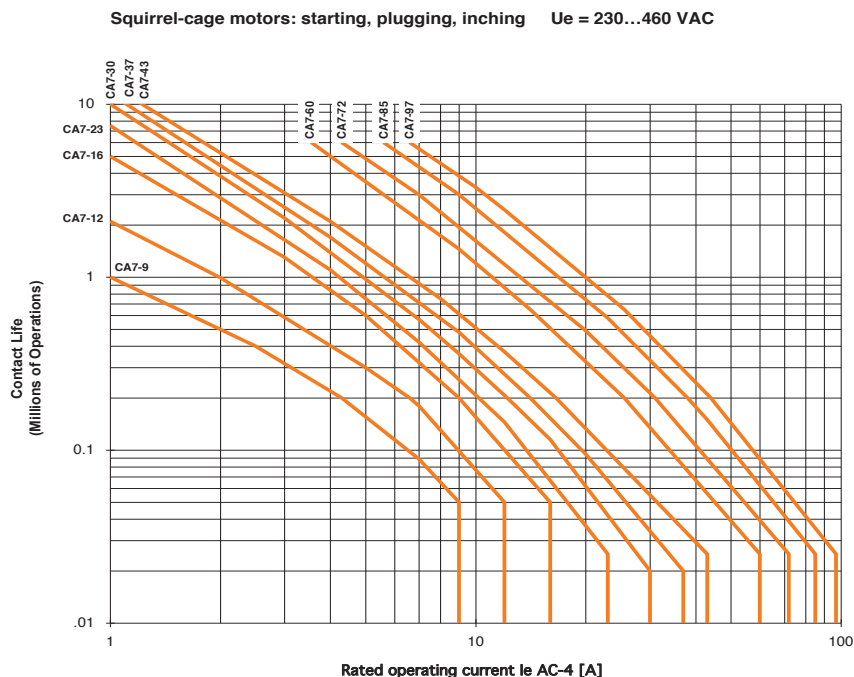
**NOTE:** The life-load curves shown here are based on Sprecher+Schuh tests according to the requirements defined in IEC 60947-4-1. Since contact life in any given application is dependent on environmental conditions and duty cycle, actual application contact life may vary from that indicated by the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



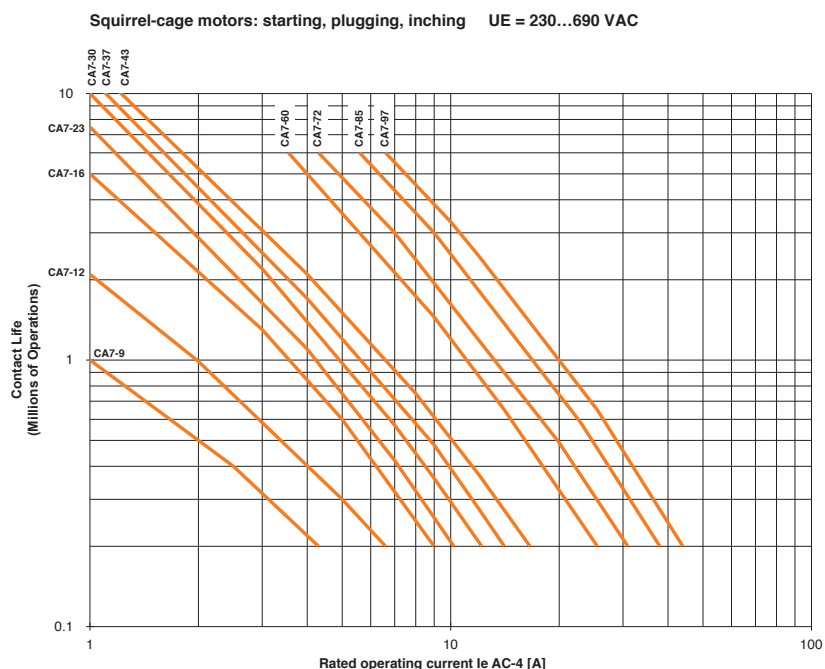
## Life-Load Curves

- 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.

## A2 Contact Life for Mixed Utilization Categories AC-3 and AC-4

CA7 Contactors

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:

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

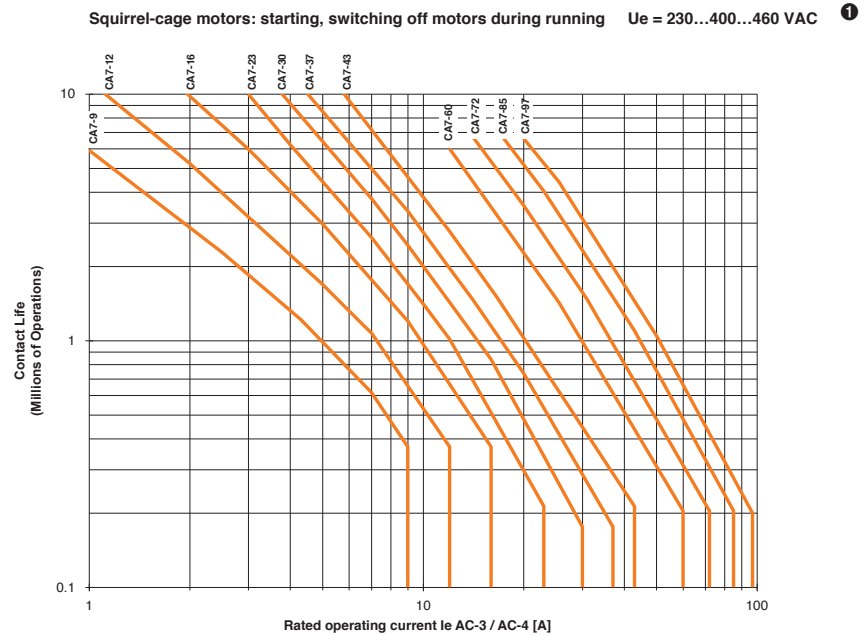
$L_{\text{mixed}}$  Approximate contact life in operations for a mixed AC-3/AC-4 utilization category application.

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

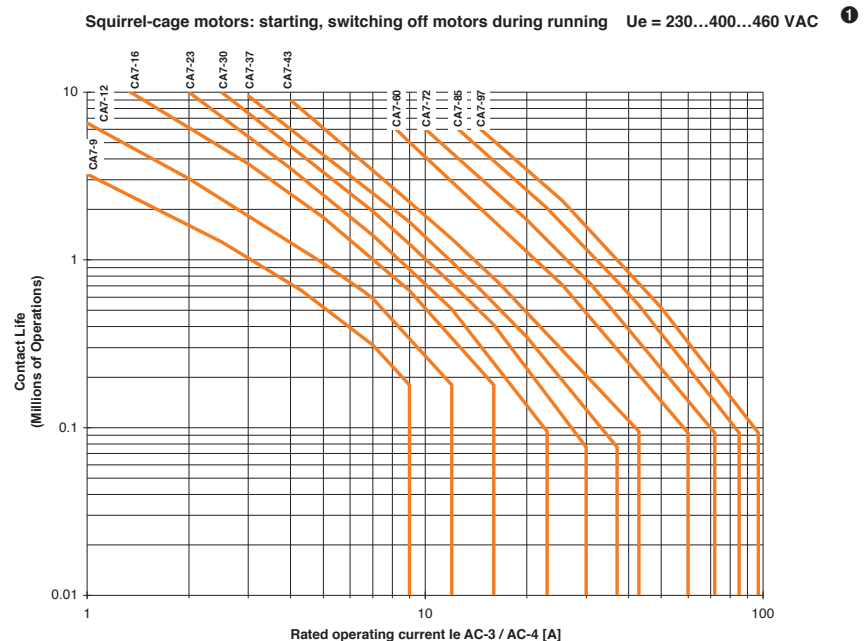
$L_{\text{ac4}}$  Approximate contact life in operations for a pure AC-4 utilization category (from the AC-4 life-load curve).

$P_{\text{ac4}}$  Percentage of AC-4 operations

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



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



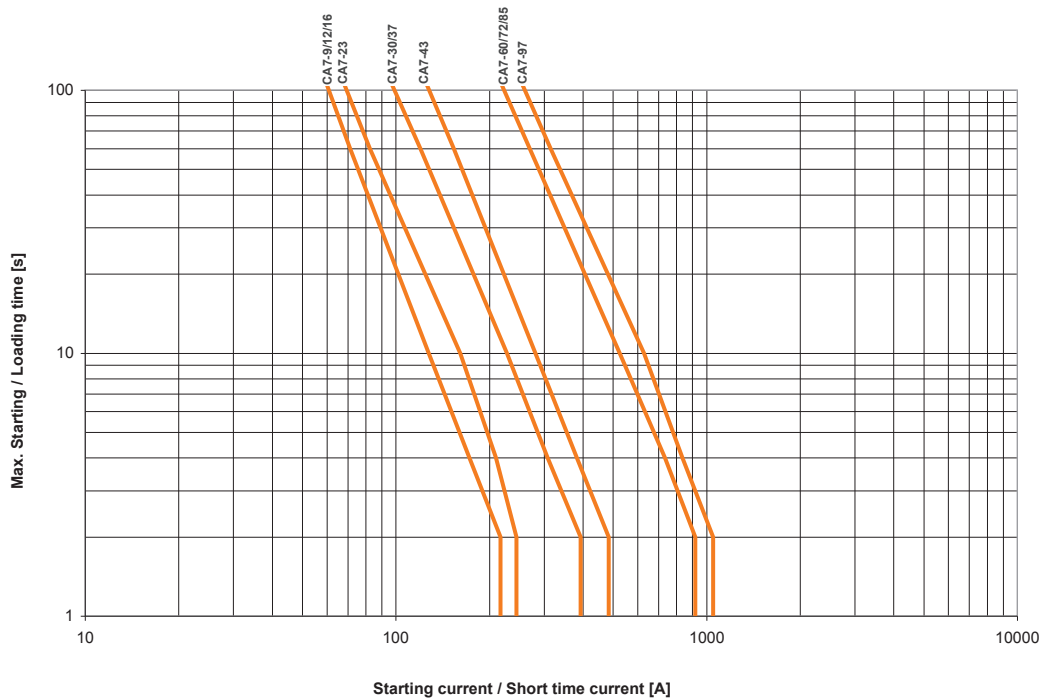
① 575V applications use 85% of curve value.

Contact Life for Special Applications

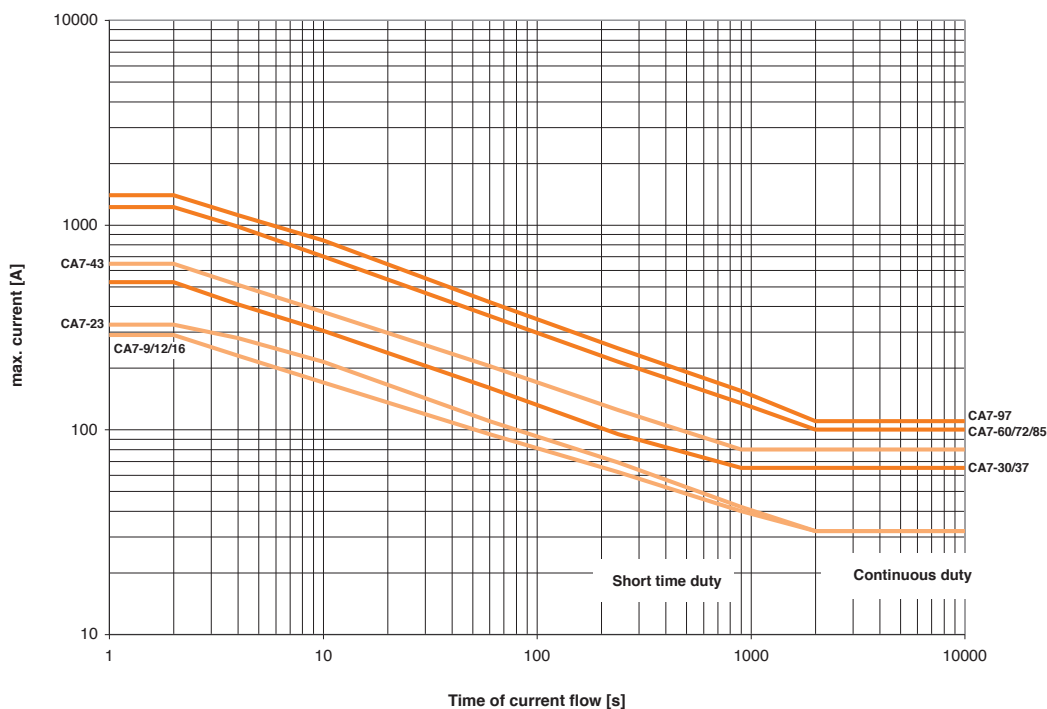
**A2**

CA7 Contactors

Heavy duty Starting and Regular Short-time Operation



Short-time withstand current  $I_{cw}$  at 60°



## A2 Operating Rates

CA7 Contactors

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 (P<sub>n</sub> 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 (P<sub>n</sub>) 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<br>Max. ops/hr.                | AC-2<br>Max. ops/hr. | AC-3<br>Max. ops/hr.      | AC-4<br>Max. ops/hr. | AC-4 @ I <sub>e</sub> for<br>200K ops.<br>Max. ops/hr. |
|-----------|-------------------------------------|----------------------|---------------------------|----------------------|--|
|           | Operating Parameters and Start Time |                      |                           |                      |  |
|           |                                     |                      | 40% Duty Cycle<br>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]

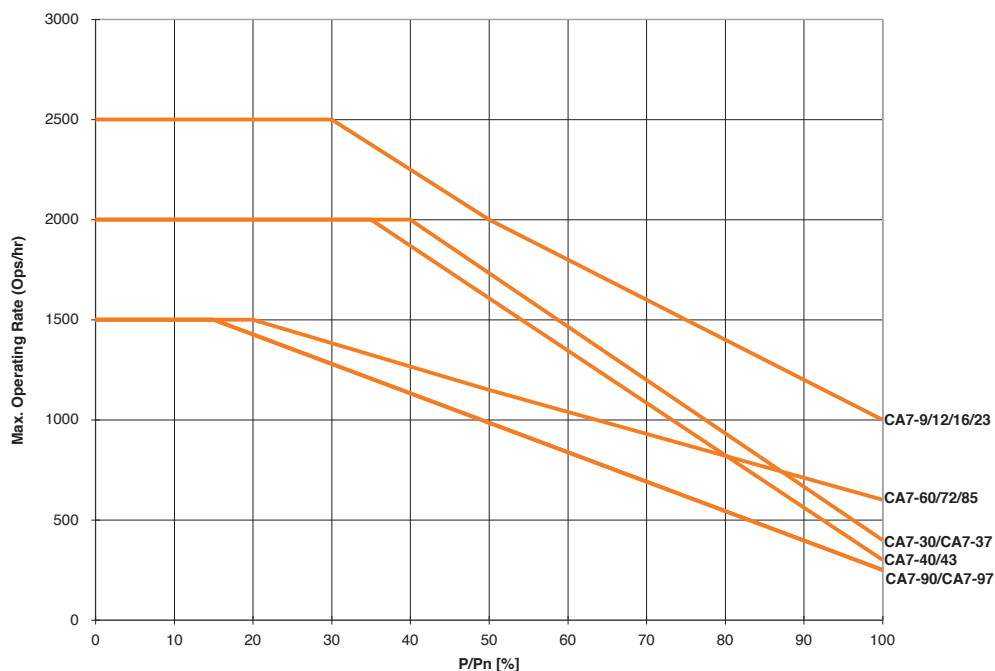
## Operating Rate Curves

**A2**

CA7 Contactors

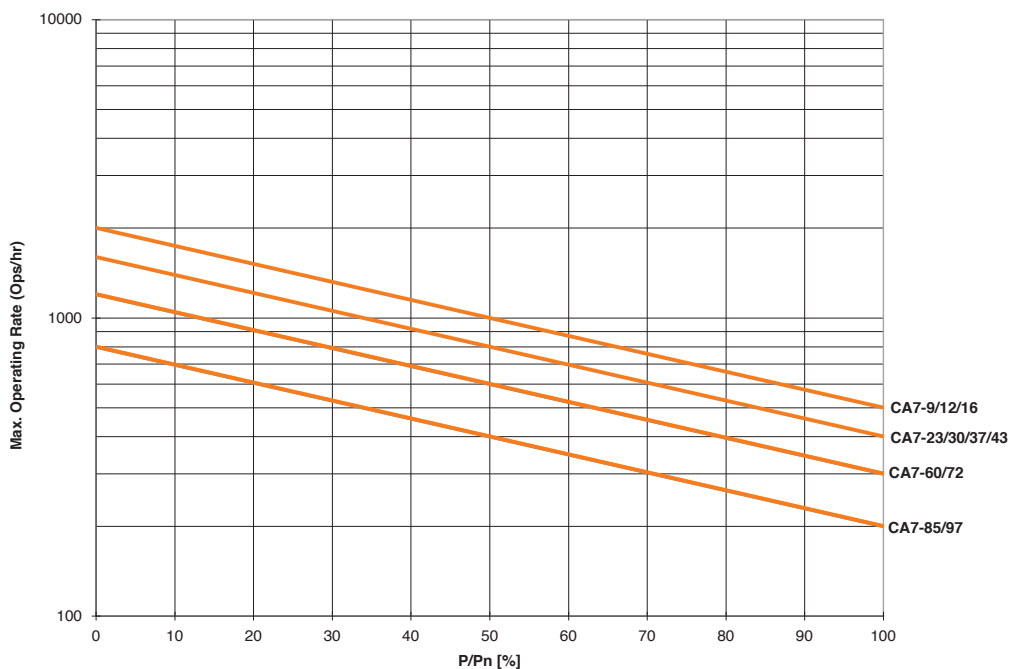
### AC-1

Non- or slightly inductive loads, resistance furnaces  $U_e = 230 \dots 690 \text{ VAC}$



### AC-2

Slip-ring motors: starting, switching off  $U_e = 230 \dots 460 \text{ VAC}$

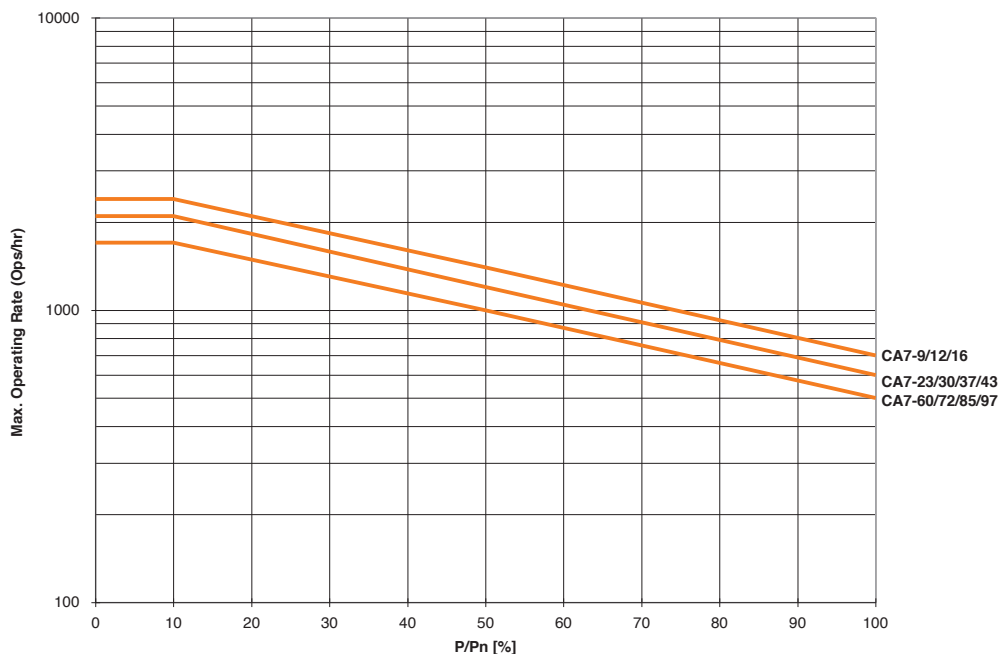


## A2 Operating Rate Curves

CA7 Contactors

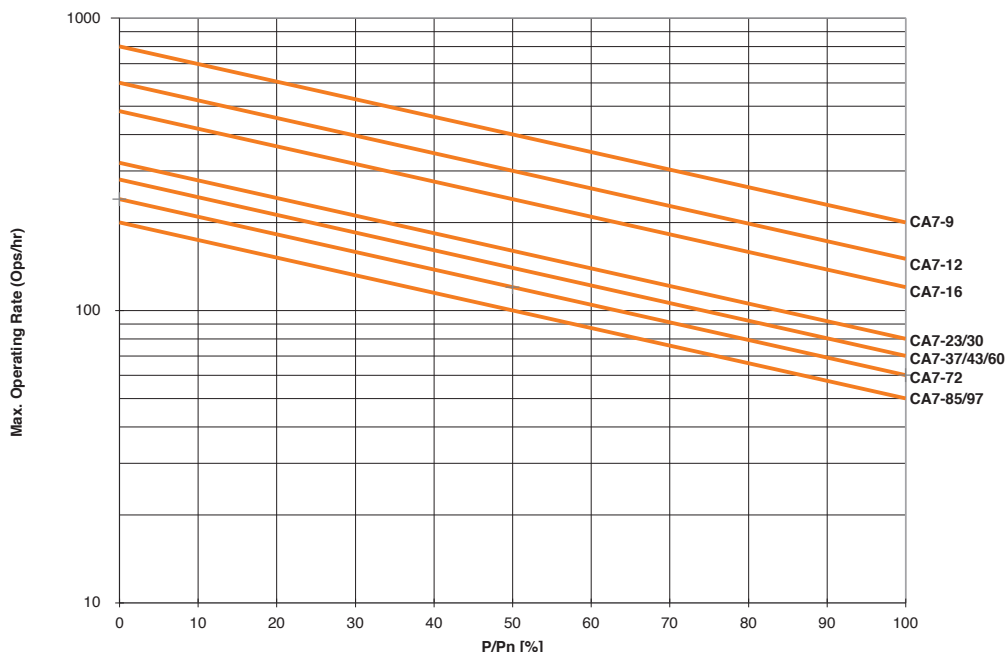
AC-3

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



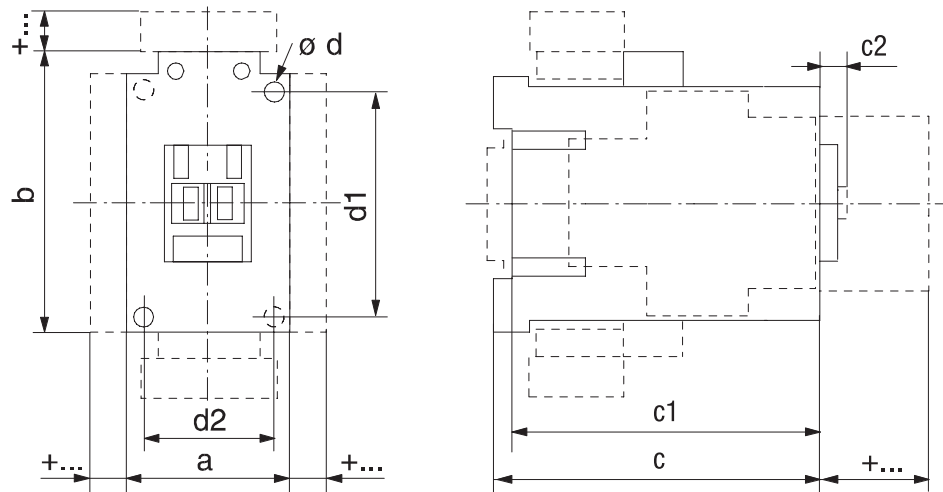
AC-4

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.

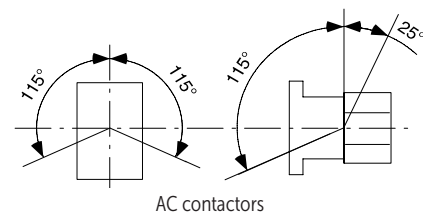


|               | Catalog Number  | a               | b                | c                 | c1                 | c2             | ø d             | d1               | d2              |
|---------------|---|-----------------|------------------|-------------------|--------------------|----------------|-----------------|------------------|-----------------|
| AC Contactors | CA7-9...CA7-23; CAN7-12, CAN7-16, CNX-205...208; CA(W)L7-20 | 45<br>(1-25/32) | 81<br>(3-3/16)   | 80.5<br>(3-11/64) | 75.5<br>(3-3/32)   | 6<br>(1/4)     | ① 4.5<br>(3/16) | 60<br>(2-23/64)  | 35<br>(1-25/64) |
|               | CA7-30...CA7-37; CNX-209; CAN7-37                           | 45<br>(1-25/32) | 81<br>(3-3/16)   | 97.5<br>(4)       | 92.6<br>(3-49/64)  | 6.5<br>(17/64) | ① 4.5<br>(3/16) | 60<br>(2-23/64)  | 35<br>(1-25/64) |
|               | CA7-40-M...<br>CAL7-30-M40                                  | 59<br>(2-21/64) | 81<br>(3-3/16)   | 100.5<br>(4-7/64) | 95.5<br>(3-49/64)  | 6.5<br>(17/64) | ① 4.5<br>(3/16) | 60<br>(2-23/64)  | 45<br>(1-25/32) |
|               | CA7-43...CA7-55,<br>CAN7-43, CNX-212                        | 54<br>(2-1/8)   | 81<br>(3-3/16)   | 100.5<br>(4-7/64) | 95.5<br>(3-49/64)  | 6.5<br>(17/64) | ① 4.5<br>(3/16) | 60<br>(2-23/64)  | 45<br>(1-25/32) |
|               | CA7-60...CA7-97, CAN7-85<br>CNX-218                         | 72<br>(2-53/64) | 122<br>(4-51/64) | 117<br>(4-49/64)  | 111.5<br>(4-35/64) | 8.5<br>(21/64) | ② 5.4<br>(7/32) | 100<br>(3-15/16) | 55<br>(2-11/64) |
|               | CA7-90-M...<br>CAL7-60-M40                                  | 95<br>(3-3/4)   | 122<br>(4-51/64) | 117<br>(4-49/64)  | 111.5<br>(4-35/64) | 8.5<br>(21/64) | ② 5.4<br>(7/32) | 100<br>(3-15/16) | 55<br>(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                          | +0        | +0             |
|  | marking tag sheet with clear cover   | +0        | +0             |
|  | marking tag adapter for V7 Terminals | +5.5      | +7/32          |

**Mounting Position**

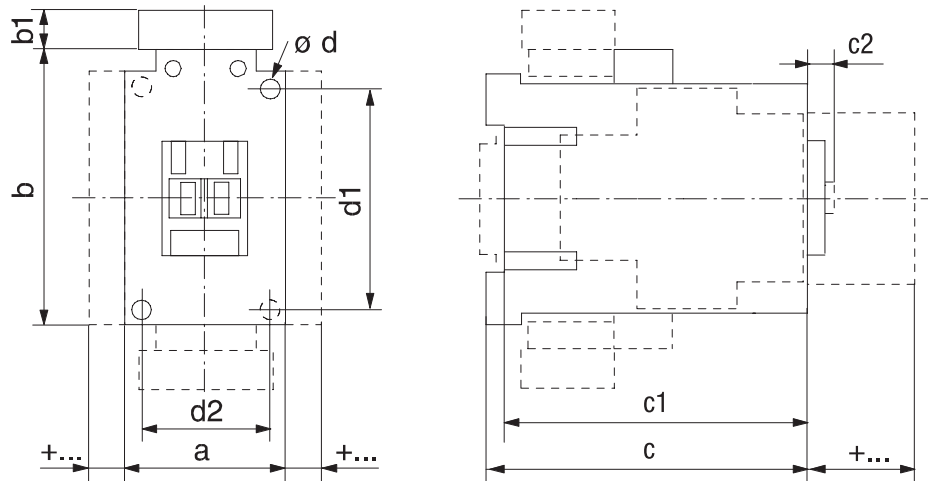


- ① 2 mounting holes.
- ② 4 mounting holes.



**Series CA7 with Electronic DC Coil**

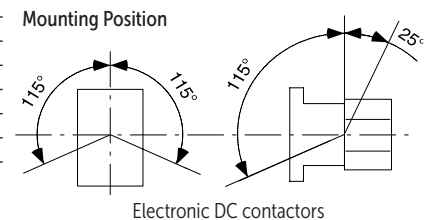
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



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

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

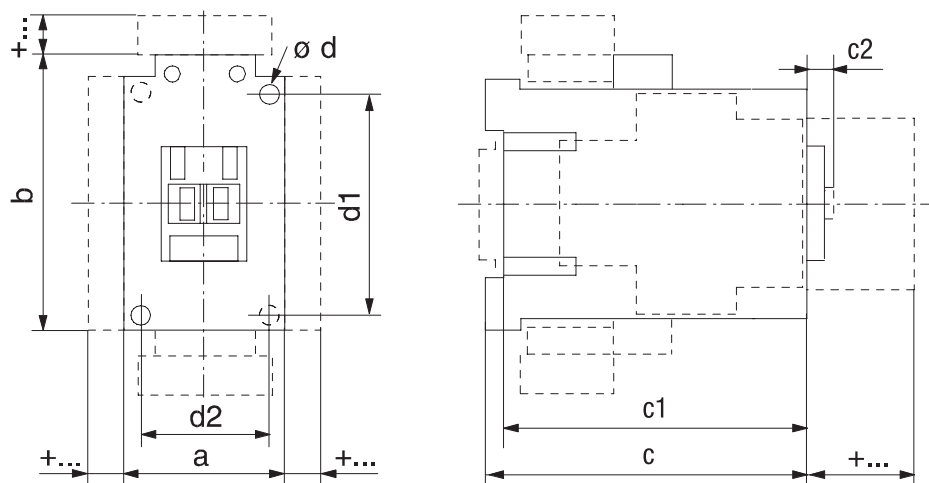
|   | Contactors with...                   | Dim. [mm] | Dim. [inches]  |
|---|--------------------------------------|-----------|----------------|
| auxiliary contact block-front mounting      | 2-, or 4-pole                        | c/c1 + 39 | c/c1 + 1-37/64 |
| auxiliary contact block- left side 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                          | +0        | +0             |
|   | marking tag sheet with clear cover   | +0        | +0             |
|   | marking tag adapter for V7 Terminals | +5.5      | +7/32          |



① 2 mounting holes.

### Series CA7 with Two Winding DC Coils

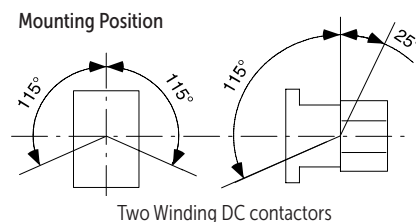
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



|                           | Catalog Number    | a         | b         | c         | c1        | c2      | ø d    | d1        | d2        |
|---------------------------|-------------------|-----------|-----------|-----------|-----------|---------|--------|-----------|-----------|
| Two Winding DC Contactors | CA7-60D...CA7-97D | 72        | 122       | 117       | 111.5     | 8.5     | ① 5.4  | 100       | 55        |
|                           | CAN7-85D          | (2-53/64) | (4-51/64) | (4-49/64) | (4-35/64) | (21/64) | (7/32) | (3-15/16) | (2-11/64) |
|                           | CA7-90D           | 95        | 122       | 117       | 111.5     | 8.5     | ① 5.4  | 100       | 55        |
|                           |                   | (3-3/4)   | (4-51/64) | (4-49/64) | (4-35/64) | (21/64) | (7/32) | (3-15/16) | (2-11/64) |

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

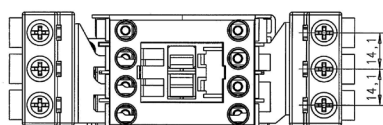
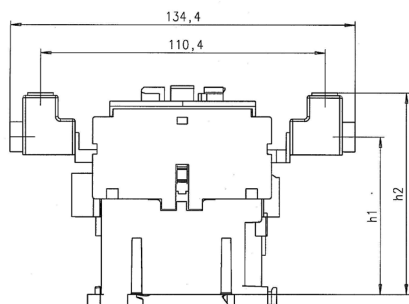
|   | Contactors with...                   | Dim. [mm] | Dim. [inches]  |
|---|--------------------------------------|-----------|----------------|
| auxiliary contact block-front mounting      | 2-, or 4-pole                        | c/c1 + 39 | c/c1 + 1-37/64 |
| auxiliary contact block- left side 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                          | +0        | +0             |
|   | marking tag sheet with clear cover   | +0        | +0             |
|   | marking tag adapter for V7 Terminals | +5.5      | +7/32          |



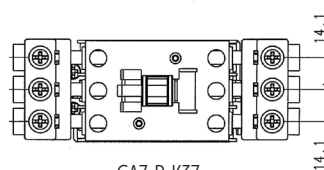
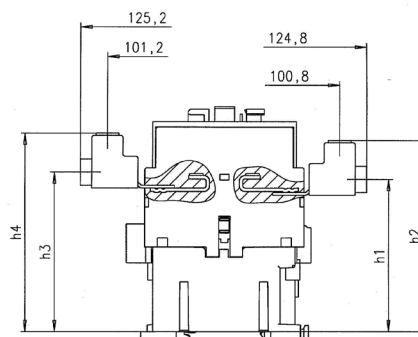
① 4 mounting holes.

## CA7 Contactors with Terminal Lugs

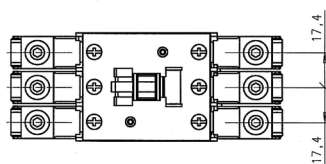
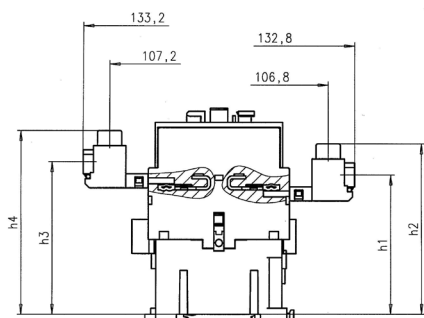
Dimensions are in millimeters (inches). Dimensions not intended for manufacturing purposes.



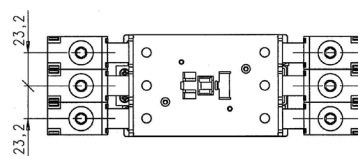
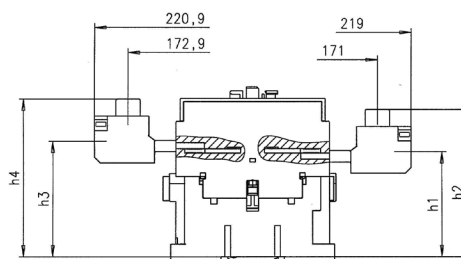
CA7-P-KN23 / KL23



CA7-P-K37



CA7-P-K43

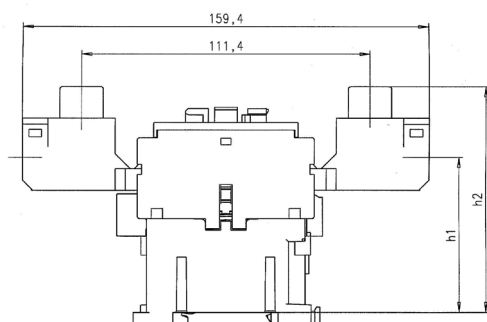


CA7-P-K85

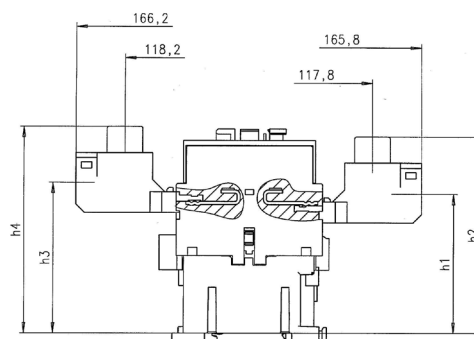
| Catalog Number    | With Contactor | AC Operated Contactor |                   |                   |                   | DC Operated Contactor |                    |                    |                    |
|-------------------|----------------|-----------------------|-------------------|-------------------|-------------------|-----------------------|--------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

## CA7 Contactors with Paralleling Links

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



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<br>(2-9/16)      | 90.1<br>(3-9/16)  | ~                 | ~                 | 90.7<br>(1/4)         | 104.2<br>(2-3/16)  | ~                  | ~                |
|                | CA7-23         | 65.1<br>(2-9/16)      | 90.1<br>(3-9/16)  | ~                 | ~                 | 108.7<br>(4-9/32)     | 133.7<br>(5-17/64) | ~                  | ~                |
| CA7-P-K37      | CA7-30...37    | 69.0<br>(2-23/32)     | 94.0<br>(3-45/64) | 74.5<br>(2-15/16) | 99.5<br>(3-29/32) | 112.6<br>(4-7/16)     | 137.6<br>(5-13/32) | 118.1<br>(4-21/32) | 143.1<br>(5-5/8) |