July 2008

Lighting Contactors

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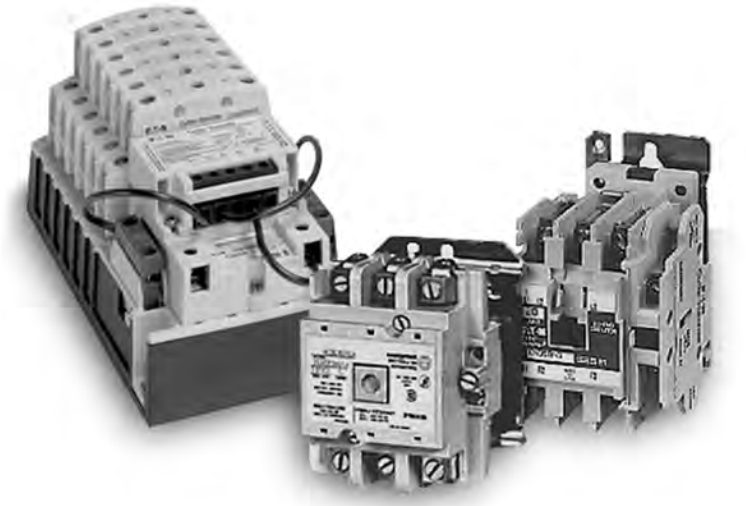


Mechanically Held, Magnetically Latched and Electrically Held Lighting Contactors

Contents

E

20A Cat. No. CN35BN3AB

Product Description

Cutler-Hammer®Type CN35 Electrically Held Lighting Contactors from Eaton's electrical business are designed to handle the switching of tungsten (incandescent) or ballast (fluorescent and mercury arc) lamp loads as well as other non-motor (resistive) loads.

Application Description

- Ideal applications include industrial plants, stadiums, parks and any new construction requiring lighting control.
- Ballast Lamps equate to Fluorescent, Mercury Vapor, Sodium Vapor and Quartz loads and will operate at a maximum of 600V.
- Filament Lamps equate to Incandescent, Infrared, Sodium Iodine and Heating loads and will operate at a maximum of 480V.
- Resistance Heating equates to radiant and convection heating, furnace and oven loads.

Features

- Designed and tested specifically for lighting and resistive loads
- Easy to install and maintain
- Full line of Freedom snap-on Accessories
- Standard with 1NO auxiliary contact (the 10A two- and three-pole ship standard with the auxiliary in the fourth power pole position with no increase in width)
- Top and side mounted auxiliary contacts available for 10 – 60A devices; side mounted auxiliaries only available on 100A and greater
- Straight-through wiring

Standards and Certifications

- UL File # E37317, Guide LR353
- CSA File # LR353

Accessories

Transient Suppressor Kits

10 – 60A Contactors

Cat. No. C320TS2

These kits limit high voltage transients produced in the control circuit when power is removed from the contactor or starter coil. There are three separate suppressors for use on 24 –120V, 240V or 480V coils respectively.

These devices mount directly to the coil terminals of lighting contactors 10 – 60A.

Table E-1. Kits for 10 – 60A

Description	Coil Voltage	Catalogue Number	Price
Transient Suppressor	24 –120V 240V 480V	**C320TS1** **C320TS2** **C320TS3**	

100 – 300A Contactors

Cat. No. C320AS1

This device mounts on top of any side mounted auxiliary contact on lighting contactors 100 – 300A. It connects across coil terminals on any 120V contactor magnet coil.

Limits high voltage transients produced in the circuit when power is removed from the coil.

Table E-2. Kits for 100 – 300A

Description	Coil Voltage	Catalogue Number	Price
Transient Suppressor	120V	**C320AS1**	

Instructional Leaflets

19225	CN35AN (2-, 3-, 4-Pole)
19227	CN35BN (2-, 3-Pole)
24829	CN35BN (4-, 5-Pole)
24840	CN35BN (6-, 9-, 12-Pole)
19227	CN35DN (2-, 3-Pole)
19229	CN35GN (2-, 3-Pole)
19874	CN35GN (4-, 5-Pole)
20218	CN35KN (2-, 3-Pole)
20171	CN35NN (2-, 3-Pole)
20172	CN35SN (2-, 3-Pole)
20172	CN35TN (2-, 3-Pole)

Discount Symbol **MC7**

Auxiliary Contacts

CN35 Lighting Contactors include a 1NO maintaining auxiliary contact mounted on right hand side (on 10A, 2- and 3-pole devices, auxiliary contact occupies 4th power pole position — no increase in width). The 10 – 60A devices will accept additional auxiliary contacts on the top and/or sides.

Auxiliary contact blocks are designed for snap-on installation — fast, easy installation (no tools required up to 60A). All auxiliary contacts are of the bifurcated design with parallel circuit paths. This redundant path provides very high reliability. Auxiliary contacts can be snapped on the side (up to 2 circuits — per auxiliary contact) and on the top (up to 4 circuits). Auxiliary contacts for larger contactors, 100 – 400A sizes, will accept side mounted auxiliaries only and easily attach to the side of the contactor with 2 screws.

Auxiliary Contacts — 10 – 60A Contactors

Side Mounted

Top Mounted

Auxiliary Contacts — 100 – 400A Contactors

Base Auxiliary Contact Cat. No. C320KGS42

Auxiliary Contact Cat. No. C320KGS22

Contact Configuration Code

This 2-digit code is found on the auxiliary contact to assist in identifying the specific contact configuration. The first digit indicates the quantity of NO contacts and the second indicates the quantity of NC contacts.

Table E-3. Auxiliary Contacts — 10 – 60A Contactors

Description	Contact Configuration Code ①	Catalogue Number	Price
Side Mounted			
1NO 1NC	10 01	**C320KGS1** **C320KGS2**	
1NO-1NC 2NO 2NC	11 20 02	**C320KGS3** **C320KGS4** **C320KGS5**	
Top Mounted ②			
1NO 1NC	10 01	**C320KGT1** **C320KGT2**	
1NO-1NC 2NO 2NC	11 20 02	**C320KGT3** **C320KGT4** **C320KGT5**	
3NO 2NO-1NC 1NO-2NC 3NC 4NO	30 21 12 03 40	**C320KGT9** **C320KGT10** **C320KGT11** **C320KGT12** **C320KGT13**	
3NO-1NC 2NO-2NC 1NO-3NC 4NC	31 22 13 04	**C320KGT14** **C320KGT15** **C320KGT16** **C320KGT17**	

① For Reference Only — not part of Catalogue Number. See below left.
② Cannot be added to contactors or starters mounted in Box 1 (NEMA Type 1).

Table E-4. Auxiliary Contacts — 100 – 400A Contactors

Circuit	Contact Configuration Code ③	100A Contactors Catalogue Number	200 & 300A Contactors Catalogue Number	Price
Base Auxiliary Contacts — 100 – 400A Contactors				
NO NO-NC	10 11	**C320KGS31** **C320KGS32**	**C320KGS41** **C320KGS42**	

Circuit	Contact Configuration Code ③	Catalogue Number	Price
Auxiliary Contacts — 100 – 400A Contactors			
NO NC NO-NC ④	10 01 11	**C320KGS20** **C320KGS21** **C320KGS22**	

③ For Reference Only — not part of Catalogue Number. See below left.
④ NO-NC occupies two positions — L2 & L3 or R2 & R3. See **Page E-4**.

Table E-5. Auxiliary Contact Ratings (Amperes)

Current	AC Volts			
	120V	240V	480V	600V
NEMA A600				
Make & Interrupting Break Continuous	60.0 6.0 10.0	30.0 3.0 10.0	15.0 1.5 10.0	12.0 1.0 10.0
NEMA P300				
Continuous Thermal Rating: 5 Amperes				
DC Volts	**Make/Break Amperes**			
125 250	1.10 0.55			

Discount Symbol **MC7**

Auxiliary Contact Location

Auxiliary Contacts — Mounting Positions

The sketches below illustrate the maximum number of auxiliary contacts that can be assembled to a contactor and their locations in standard enclosures.

Table E-6. Auxiliary Contact Mounting Positions

Size	Poles	Available Mounting Positions ①②③		
		Open Type	NEMA 1	NEMA 3R, 4X, 12
10 Ampere	2 – 4	T1, L1, R1	L1	L1,T1
20 – 60 Ampere	2 – 3	T1, L1	L1	L1,T1
60 Ampere	4	T1, L1	—	L1,T1
60 Ampere	5	T1, L1	—	L1,T1
100 Ampere	2 – 3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
200 Ampere	2 – 3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
300 Ampere	2 – 3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3
400 Ampere	2 – 3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3	R2, R3, L1, L2, L3

① Available positions on contactors or starters other than what is factory installed.

② When a pneumatic timer is mounted on contactor, only side mounted auxiliary contact positions are available. The solid-state timer, when added, takes up side mounted auxiliary contact position.

③ For 100 – 400A contactors, a base auxiliary contact must be added in position L1 before additional contacts can be mounted.

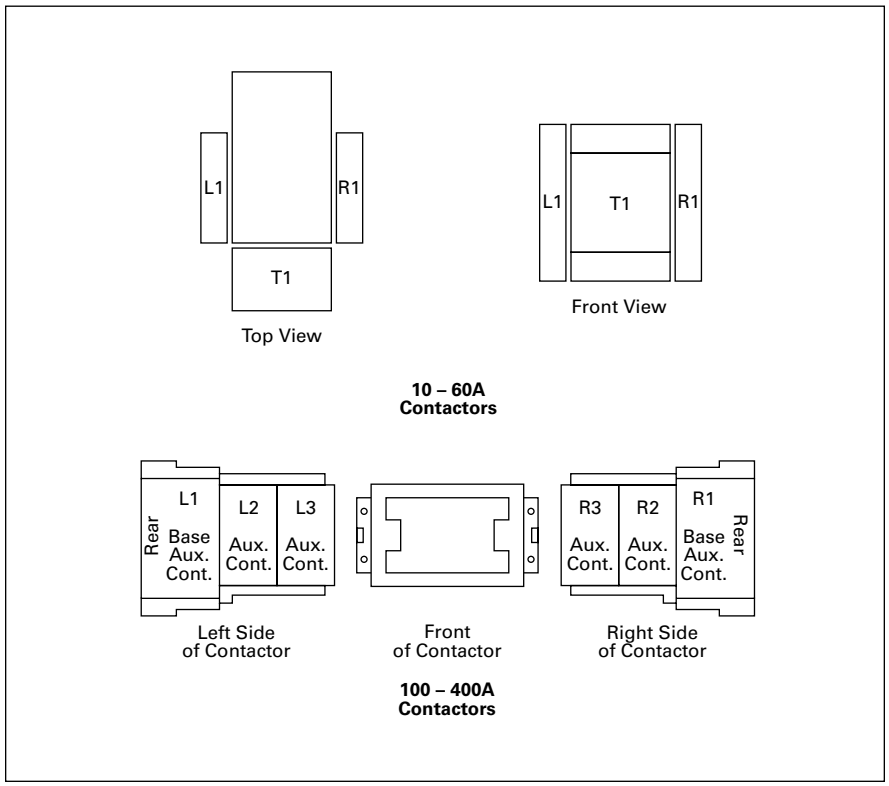


Figure E-1. Auxiliary Contact Location

Pneumatic Timers — Top Mounted

Pneumatic Timer

Attachment mounts on top of 10 – 60A lighting contactors (top mounted auxiliary contacts can not be installed on device when timer is used). Timer unit has DPST timed contacts — circuits in each pole must be the same polarity. Units are convertible from OFF to ON Delay or vice-versa.

Table E-7. Pneumatic Timers

Timing Range	Catalogue Number	Price
.1 to 30 Seconds	**C320TP1**	
10 to 180 Seconds	**C320TP2**	

Table E-8. Maximum Ampere Ratings

Description	Volts AC			
	120	240	480	600
Make	30.0	15.0	7.5	6.0
Break	3.0	1.5	0.75	0.6

Discount Symbol **MC7**

Solid-State Timers

Solid-State ON DELAY Timer — Side Mounted on CN35 Freedom Series Lighting Contactors through 60A

This timer is designed to be **wired in SERIES with the load** (typically a coil). When the START button is pushed (power applied to timer), the ON DELAY timing function starts. At the completion of the set timing period, timer and series wired load will both be energized.

Table E-9. Product Selection — Mounted Timer

Timing Range	Catalogue Number ①②③	Price
.1 – 1.0 Seconds	**C320TDN1_**	
1 – 30 Seconds	**C320TDN30_**	
30 – 300 Seconds	**C320TDN300_**	
5 – 30 Minutes	**C320TDN3000_**	

① Add operating voltage Suffix to Catalogue Number. **A** = 120V, **B** = 240V, **E** = 208V

② Rated .5 ampere pilot duty — not to be used on larger contactors.

③ Terminal connections are quick connects only. Two per side.

Renewal Parts

Table E-10. Renewal Parts for CN35 Lighting Contactors

Description		10A	Price	20A, 30A	Price	60A	Price	100A	Price	200A	Price	300A	Price
		Series C1		Series C1		Series B1						Series B1	
		Part No.		Part No.		Part No.		Part No.		Part No.		Part No.	
Contact Kits													
2-Pole		④		④		**6-65-7**		**6-43-5**		**6-44**		**6-45**	
3-Pole		④		④		**6-65-8**		**6-43-6**		**6-44-2**		**6-45-2**	
4-Pole		④		④		**6-65-15**		—		—		—	
5-Pole		④		④		**6-65-16**		—		—		—	
Magnet Coils	**Coil Suffix**												
120V 60 Hz or 110V 50 Hz	**A**	**9-2875-1**		**9-2876-1**		**9-2703-1**		**9-2756-1**		**9-1891-1**		**9-1891-1**	
240V 60 Hz or 220V 50 Hz	**B**	**9-2875-2**		**9-2876-2**		**9-2703-2**		**9-2756-2**		**9-1891-2**		**9-1891-2**	
480V 60 Hz or 440V 50 Hz	**C**	**9-2875-3**		**9-2876-3**		**9-2703-3**		**9-2756-3**		**9-1891-3**		**9-1891-3**	
600V 60 Hz or 550V 50 Hz	**D**	**9-2875-4**		**9-2876-4**		**9-2703-4**		**9-2756-4**		**9-1891-4**		**9-1891-4**	
208V 60 Hz	**E**	**9-2875-5**		**9-2876-5**		**9-2703-9**		**9-2756-5**		**9-1891-13**		**9-1891-13**	
277V 60 Hz	**H**	**9-2875-12**		**9-2876-12**		**9-2703-7**		**9-2756-9**		**9-1891-26**		**9-1891-26**	
208/240V 60Hz	**J**	**9-2875-37**		**9-2876-37**		—		—		—		—	
240V 50Hz.	**K**	**9-2875-11**		**9-2876-11**		**9-2703-14**		**9-2756-13**		**9-1891-20**		**9-1891-20**	
380 – 415V 50 Hz	**L**	**9-2875-6**		**9-2876-6**		**9-2703-8**		—		—		—	
380V 50 Hz	**L**	—		—		—		**9-2756-12**		**9-1891-14**		**9-1891-14**	
415V 50 Hz	**M**	—		—		—		**9-2756-8**		**9-1891-21**		**9-1891-21**	
550V 50 Hz	**N**	—		—		—		**9-2756-14**	④	**9-1891-8**		**9-1891-8**	
24V 60 Hz – 24V 50 Hz	**T**	**9-2875-36**		**9-2876-36**		—		—		—		—	
24V 60 Hz	**T**	—		—		**9-2703-6**		**9-2756-6**		**9-1891-15**		**9-1891-15**	
24V 50 Hz	**U**	**9-2875-36**		**9-2876-13**		**9-2703-12**		**9-2756-11**		**9-1891-16**		**9-1891-16**	
32V 50 Hz	**V**	**9-2875-16**		**9-2876-16**		**9-2703-10**		**9-2756-10**		—		—	
48V 60 Hz	**W**	**9-2875-8**		**9-2876-8**		**9-2703-11**		**9-2756-15**		—		—	
48V 50 Hz	**Y**	**9-2875-9**		**9-2876-9**		**9-2703-13**		**9-2756-7**		**9-1891-18**		**9-1891-18**	

④ Replace with complete contactor.

Discount Symbol **MC7/ MC17**

Dimensions

Table E-11. Approximate Dimensions and Shipping Weights

Ampere Rating	Number of Poles	Dimensions in Inches (mm)							Ship. Wt. Lbs. (kg)
		Wide A	High B	Deep C	Mounting D ①	Mounting E	F	G	
Open Type									
10	2 – 4	2.00 (50.8)	3.88 (98.6)	3.49 (88.6)	1.50 (38.1)	3.38 (85.9)	4.90 (124.5)	.54 (13.7)	1.4 (.6)
20 – 30	2 – 3	2.00 (50.8)	3.88 (98.6)	3.49 (88.6)	1.50 (38.1)	3.38 (85.9)	4.90 (124.5)	.54 (13.7)	1.5 (.7)
20 – 30	4 – 6	4.20 (106.7)	4.35 (110.5)	3.52 (89.4)	3.50 (88.9)	3.86 (98.0)	4.90 (124.5)	.54 (13.7)	2.9 (1.3)
20 – 30	9	10.50 (266.7)	5.75 (146.1)	4.52 (114.8)	4.50 (114.3)	5.00 (127.0)	—	—	4.4 (2.0)
20 – 30	12	10.50 (266.7)	5.75 (146.1)	4.52 (114.8)	4.50 (114.3)	5.00 (127.0)	—	—	5.8 (2.6)
60	2 – 3	2.56 (65.0)	5.05 (128.3)	4.44 (112.8)	2.00 (50.8)	4.50 (114.3)	5.80 (147.3)	.54 (13.7)	3.5 (1.6)
60	4	3.46 (87.9)	5.05 (128.3)	4.44 (112.8)	2.00 (50.8)	4.50 (114.3)	5.80 (147.3)	.54 (13.7)	3.5 (1.6)
60	5	4.36 (110.7)	5.05 (128.3)	4.44 (112.8)	2.00 (50.8)	4.50 (114.3)	5.80 (147.3)	.54 (13.7)	3.5 (1.6)
100	2 – 3	3.54 (89.9)	7.17 (182.1)	5.94 (150.9)	3.00 (76.2)	6.63 (168.4)	—	.54 (13.7)	9.0 (4.1)
200	2 – 3	7.05 (179.1)	9.11 (231.4)	7.25 (184.2)	6.00 (152.4)	8.50 (215.9)	—	—	20.0 (9.1)
300 – 400	2 – 3	7.05 (179.1)	13.12 (333.2)	7.78 (197.6)	6.00 (152.4)	12.50 (317.5)	—	—	23.0 (10.4)

① Center mounting slot at bottom on 10 – 30A sizes only.

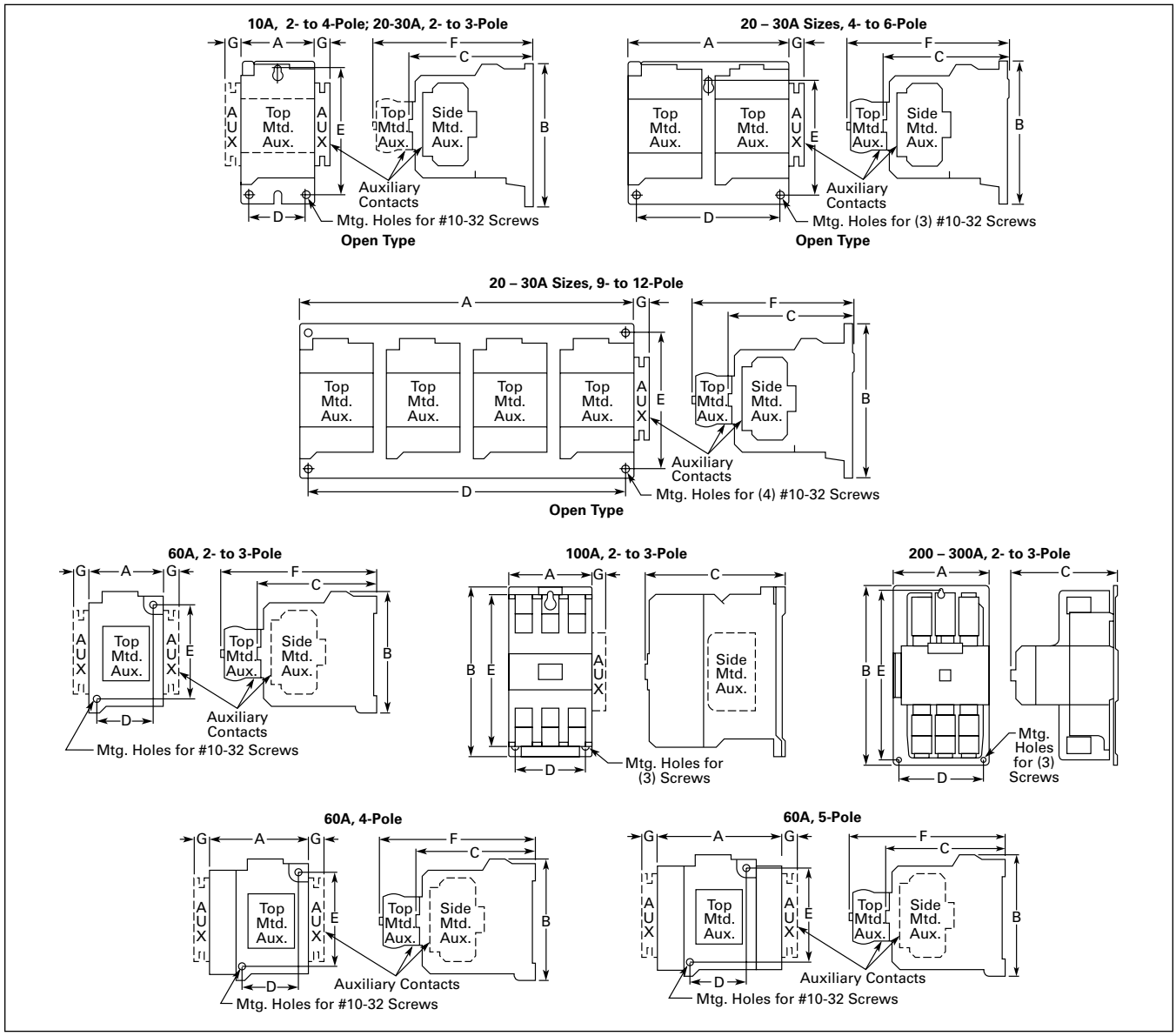
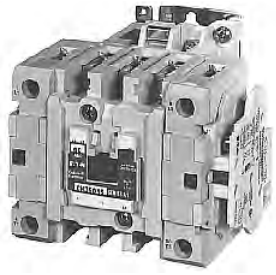


Figure E-2. Dimensions

Product Selection



60A Cat. No. CN35GN5A

When Ordering Specify

- Catalogue Number including the Coil Suffix Code from the Magnet Coil Selection Table.
- Any required Accessories.

Table E-12. CN35 AC Lighting Contactors — Electrically Held

Maximum Ampere Rating ①	Number of Poles	Open Type	
		Catalogue Number ③	Price
10	2	**CN35AN2_B**	
	3	**CN35AN3_B**	
	4	**CN35AN4_B**	
20	2	**CN35BN2_B**	
	3	**CN35BN3_B**	
	4	**CN35BN4_C**	
	6	**CN35BN6_B**	
	9	**CN35BN9_B**	
	12	**CN35BN12_B**	
30	2	**CN35DN2_B**	
	3	**CN35DN3_B**	
	4	**CN35DN4_B**	
	5	**CN35DN5_B**	
	6	**CN35DN6_B**	
	9	**CN35DN9_B**	
	12	**CN35DN12_B**	
60	2	**CN35GN2_B**	
	3	**CN35GN3_B**	
	4 ②	**CN35GN4_B**	
	5 ②	**CN35GN5_B**	
100	2	**CN35KN2_**	
	3	**CN35KN3_**	
200	2	**CN35NN2_**	
	3	**CN35NN3_B**	
300	2	**CN35SN2_**	
	3	**CN35SN3_**	
400 ④	2	**CN35TN2_**	
	3	**CN35TN3_**	

① The listed ampere ratings are based on a maximum load voltage of 480V for tungsten lamp applications and 600V for ballast or mercury vapor type applications.

② Additional power poles mounted on side(s) of contactor.

③ Underscore (_) indicates missing Code Letter for Magnet Coil — see Magnet Coil Selection table below.

④ UL ballast and resistive ratings only.

Table E-13. Magnet Coil Selection

Coil Voltage and Hertz ⑦	Code Suffix	Coil Voltage and Hertz	Code Suffix	Coil Voltage and Hertz	Code Suffix	Coil Voltage and Hertz	Code Suffix
120/60 or 110/50	**A**	208/60	**E**	380 – 415/60	**L**	32/50	**V**
240/60 or 220/50	**B**	277/60	**H**	550/50	**N**	48/60	**W**
480/60 or 440/50	**C**	208 – 240/60 ⑤	**J**	24/60, 24/50 ⑥	**T**	48/50	**Y**
600/60 or 550/50	**D**	240/50	**K**	24/50	**U**	347/60	**XL**

⑤ For 10, 20 and 30A sizes only.

⑥ For 10, 20 and 30A sizes only. Sizes 60 – 400A are 24V/60 Hz only.

⑦ For **DC Magnet Coils**, see NEMA Contactors & Starters, **Pages A-45** – **A-46**.

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Discount Symbol **MC7**

Contents

E

C30CNM

Product Description

The Cutler-Hammer® C30CNM 30A Mechanically Held Lighting Contactors from Eaton's electrical business are designed for industrial, commercial and outdoor lighting applications where efficient control is required. The mechanically held operation ensures that the contactor will not switch to OFF during control power failure. It also ensures the removal of coil from the circuit for noise-free operation and the elimination of all coil losses after the contactor is latched. The control module microprocessor validates the control signal before operation, so it will not respond to momentary voltage spikes of noise. The operation command has a built-in .4 sec delay to avoid multiple short-term commands that can cause contact fatigue or failure. Also, the feedback loop prevents the contactor from getting out of sequence with switches, even after power failures.

Application Description

The mechanically held lighting contactor provides effective control in applications such as office buildings, industrial plants, hospitals, stadiums, airports, etc.

They are ideal for applications that require quiet, energy-efficient operation.

Designed to handle different load types:

- Tungsten (incandescent filament)
- Ballast (fluorescent and mercury arc)
- High intensity discharge (HID)
- Non-motor AC resistive
- Single- and Three-Phase Motor Ratings

Features

See **Figure E-3**.

- 30 amp power pole rating
- Up to 12 poles maximum
- Power poles latch easily onto the base, and designating them as NO or NC is a simple matter of left or right positioning. Additional poles, either NO or NC, may be easily added at any time.
- Low magnetic noise results in quiet operation
- Low input VA permits long wire runs
- Come in a wide range of input voltages and with coils from 24V to 277V AC and 12V to 24V DC.

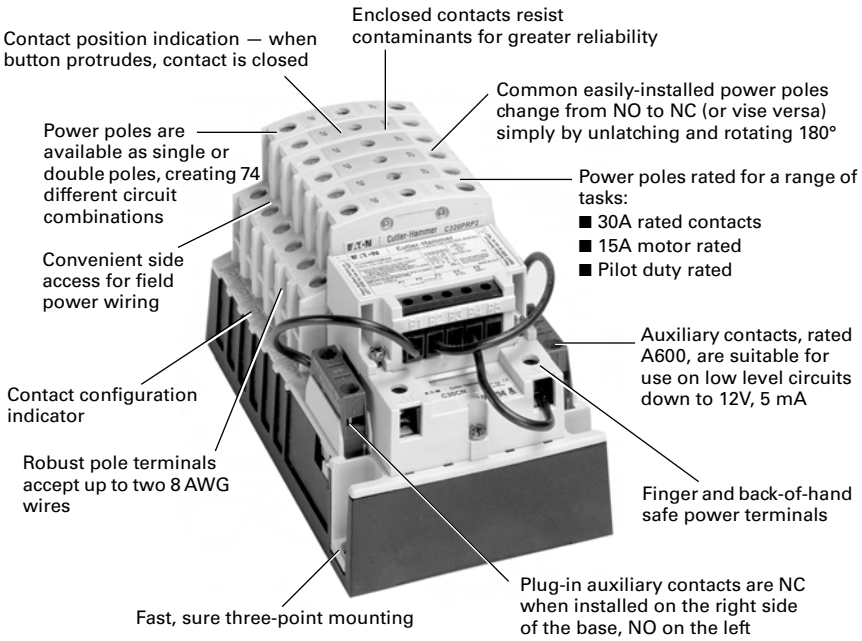


Figure E-3. C30CNM Features

Operation

3-wire control is the choice for use with momentary devices allowing operation from multiple locations. A momentary pulse of energy operates the contactor while a second pulse on an alternate leg returns the contactor to its original state.

2-wire control is the choice for single output automatic operation or for operation from single-pole devices. When voltage is applied to the input terminals the contactor is latched into position (coil is removed from the circuit while control voltage is continuously supplied). When control voltage is removed, the latch is disengaged and the contactor is returned to its original state.

Instructional Leaflets

50765	C30CN Lighting Contactor Series
50766	Coil Kit for C30CN Lighting Contactors
50767	Power Pole Kit for C30CN Lighting Contactors
50768	Control Module Kit for C30CN Lighting Contactors

Standards and Certifications

- UL Listed File E1491, UL Category Code/Guide NLDX/NLDX7
- cUL
- CE

c UL us Listed

CE

Technical Data and Specifications

Main Power Poles

Table E-14. Maximum AC Voltage and Amp Ratings

Load Type	Amps Continuous	Poles	
		1-Phase	3-Phase
Ballast	30	347V AC	600V AC
General Use	30	600V AC	600V AC
Tungsten	20	277V AC	480V AC
AC Resistive	30	600V AC	600V AC

Table E-15. Maximum Horsepower Rating

Normal Starting Duty	
1 Pole, Single-Phase	
Volts	**Horsepower**
110 – 120V	1
220 – 240V	2
3 Poles, Three-Phase	
Volts	**Horsepower**
200 – 208V	3
220 – 240V	5
440 – 480V	10
550 – 600V	15

Control Circuit Characteristics

Table E-16. Coil

Description	VA
Inrush	248 VA
Sealed	28 VA

Table E-17. Control Module

Input Voltage	Steady State Current @ Rated Voltage (mA)	Maximum VA
12 – 24V DC	42	2
24V AC	80	5
115 – 120V AC	83	12
200 – 277V AC	91	30

Table E-18. Other Control Module Characteristics

Description	Specification
Minimum pulse duration (3-wire control module)	250 ms
Maximum allowable leakage current	1.8 mA
EMI	35 V/m
Surge transient peak	6 kV
Frequency Range	40 – 70 Hz

Auxiliary Contacts Rating:

A600, 24V DC, 24 VA

Ambient Temperature:

-13 to 104°F (-25 to 40°C)

Mounting Position:

Vertical 3-point mounting only.

Wire Size

Table E-19. Wire Specifications

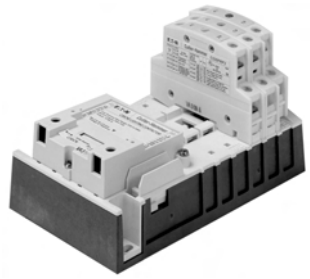
Component	Number of Cables	Wire Range (Solid or Stranded)	Wire Temperature
Power Poles	1	14 – 8 AWG	75°C Cu
	2	14 – 8 AWG ①	75°C Cu
Coil	1 or 2	18 – 14 AWG	60°/75°C Cu
Control Module	1	22 – 12 AWG	60°/75°C Cu
Auxiliary Contacts	1 or 2	22 – 12 AWG	60°/75°C Cu

① 8 AWG stranded only.

Components

Electrically Held Base Contactor

The C30CNE20_0 Electrically Held Base Contactor contains a 2NO power pole as standard and will allow the addition of power poles to build an Electrically Held Contactor up to 12 poles maximum. A Mechanically Held Module Kit can also be added to convert the Electrically Held Contactor into a Mechanically Held Contactor in the field.



Electrically Held Base Contactor

Table E-20. Electrically Held Base Contactor

Power Poles	Catalogue Number ①	Price
2NO	**C30CNE20_0**	

① When ordering, select required contactor by Catalogue Number and replace the magnet coil alpha designation in the Catalogue Number (_) with the proper Code Suffix from **Table E-21**.

Table E-21. Coil Base Voltage (Digit 9)

Voltage (Digit 9)	Code Suffix
115 – 120V 60 Hz/110V 50 Hz	**A**
230 – 240V 60 Hz/220V 50 Hz	**B**
460 – 480V 60 Hz/440V 50 Hz	**C**
575 – 600V 60 Hz/550V 50 Hz	**D**
200 – 208V 60 Hz	**E**
265 – 277V 60 Hz/240V 50 Hz	**H**
24V 60 Hz/20V 50 Hz	**T**
28V 60 Hz/24V 50 Hz	**V**
347V 60 Hz	**X**

Power Poles

Power Poles

The C30CN contactor accepts up to a maximum 6 single- or double-pole (or combinations) power poles. These can be used to form up to:

- 12 NO poles max. when 6 double-poles are used in NO positions (1 – 6) or
- 8 NC poles max. with 4 double-poles in the NC position (1 – 4) and 4 NO poles with 2 double-poles in the 2 NO positions (5 – 6)

Table E-22. Power Poles

Power Poles	Catalogue Number	Price
Single-Pole	**C320PRP1**	
Double-Pole	**C320PRP2**	

Mechanically Held Module Kits

These kits are for converting electrically held contactors to mechanically held units. Kits include control module, latch, latch cover and auxiliary contacts plus installation instructions. Conversion kits are suitable for coil voltages of 277V and below.

Conversion Kits

Table E-23. Mechanically Held Module Kits

Coil Volts	Control Volts	Catalogue Number	Price
2-Wire			
24 – 277V AC	110 – 120V AC 200 – 277V AC 24V AC 12 – 24V DC	**C320MH2WA0** **C320MH2WH0** **C320MH2WT0** **C320MH2WT1**	
3-Wire			
24 – 277V AC	110 – 120V AC 200 – 277V AC 24V AC 12 – 24V DC	**C320MH3WA0** **C320MH3WH0** **C320MH3WT0** **C320MH3WT1**	

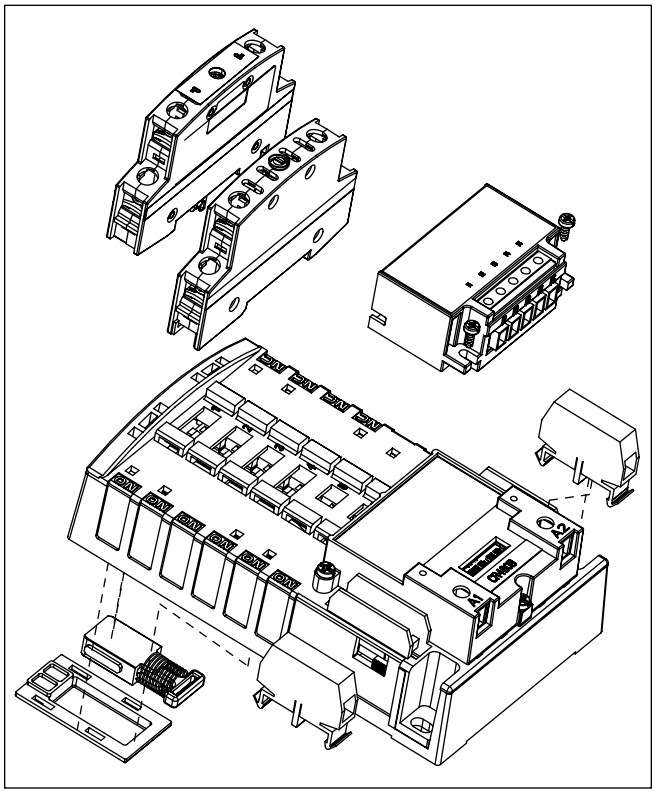


Figure E-4. C30CNM Components — Exploded View

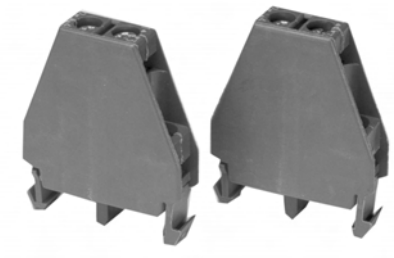
Discount Symbol **MC7**

Auxiliary Contacts

A Mechanically Held Contactor with a 2-wire control module uses 1NC auxiliary contact as standard for the control wiring circuit. The Mechanically Held Contactor with a 3-wire control module uses 1NO-1NC auxiliary contacts as standard for the control wiring circuit. See **Table E-24** for possible additional auxiliary contact configurations.

Table E-24. Auxiliary Contact Configurations

2-Wire	3-Wire
None 1NO (single-pole) 2NO (double-pole) 1NC (double-pole) 1NO-1NC (NO single pole, NC double-pole) 2NO-1NC (double-pole)	1NC (double-pole) 1NO (double-pole) 1NO-1NC (double-pole)



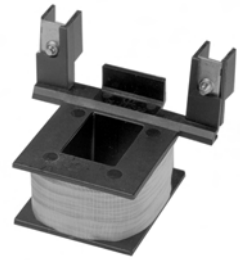
Auxiliary Contacts

Table E-25. Auxiliary Contacts

Auxiliary Block	Catalogue Number	Price
Single-Pole	**C320AMH1**	
Double-Pole	**C320AMH2**	

Replacement Parts

Magnet Coils for the Base Contactor



Magnetic Coils

Table E-26. Magnetic Coils

Coil Voltage	Catalogue Number	Price
115 – 120V 60 Hz/110V 50 Hz 230 – 240V 60 Hz/220V 50 Hz 460 – 480V 60 Hz/440V 50 Hz 575 – 600V 60 Hz/550V 50 Hz 200 – 208V 60 Hz	**9-3242-1** **9-3242-2** **9-3242-3** **9-3242-4** **9-3242-5**	
265 – 277V 60 Hz/240V 50 Hz 24V 60 Hz/20V 50 Hz 28V 60 Hz/24V 50 Hz 347V 60 Hz	**9-3242-6** **9-3242-7** **9-3242-8** **9-3242-9**	

Discount Symbol **MC7/ MC17**

Wiring Diagrams

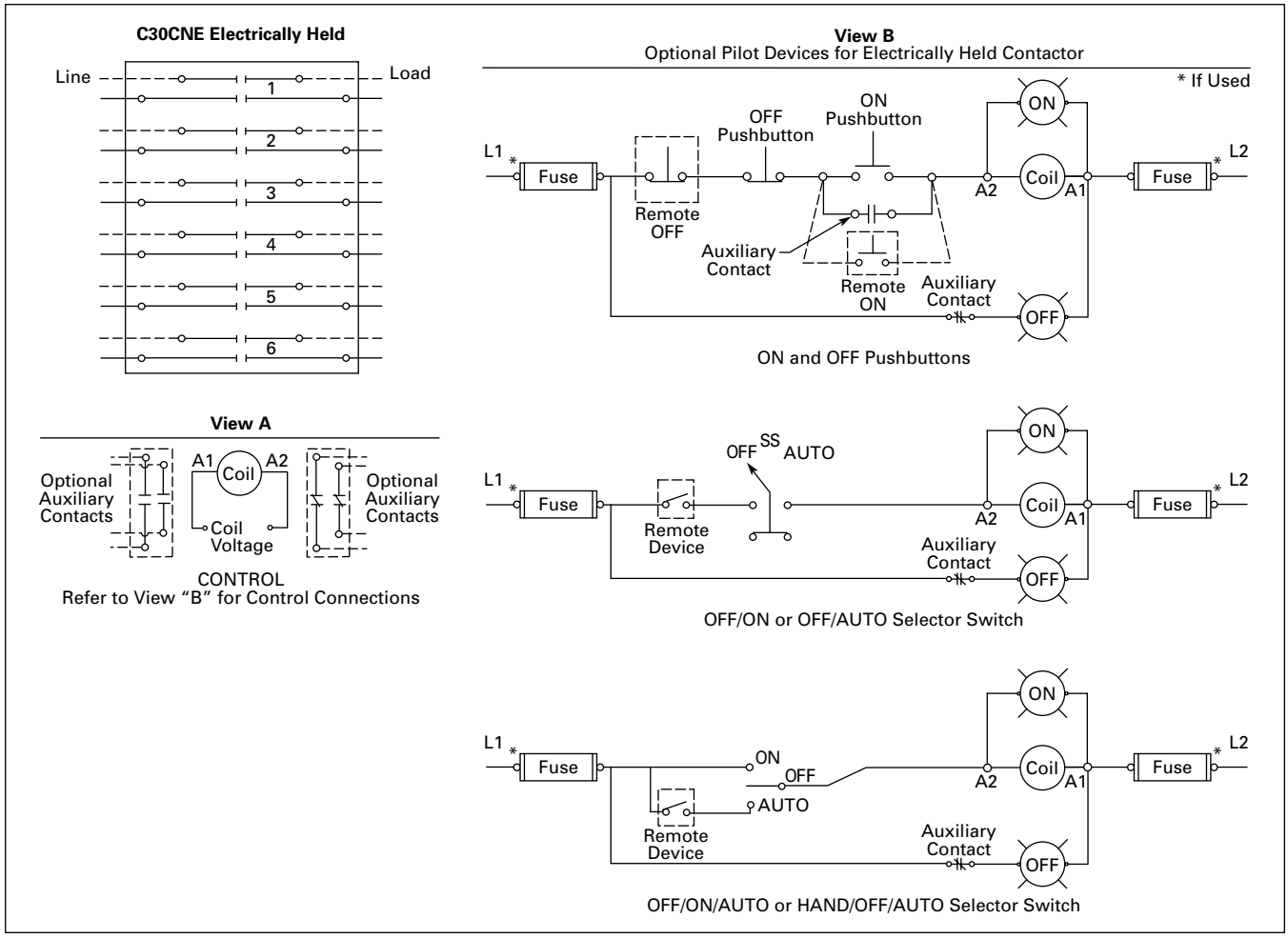


Figure E-5. C30CNE Wiring Diagrams

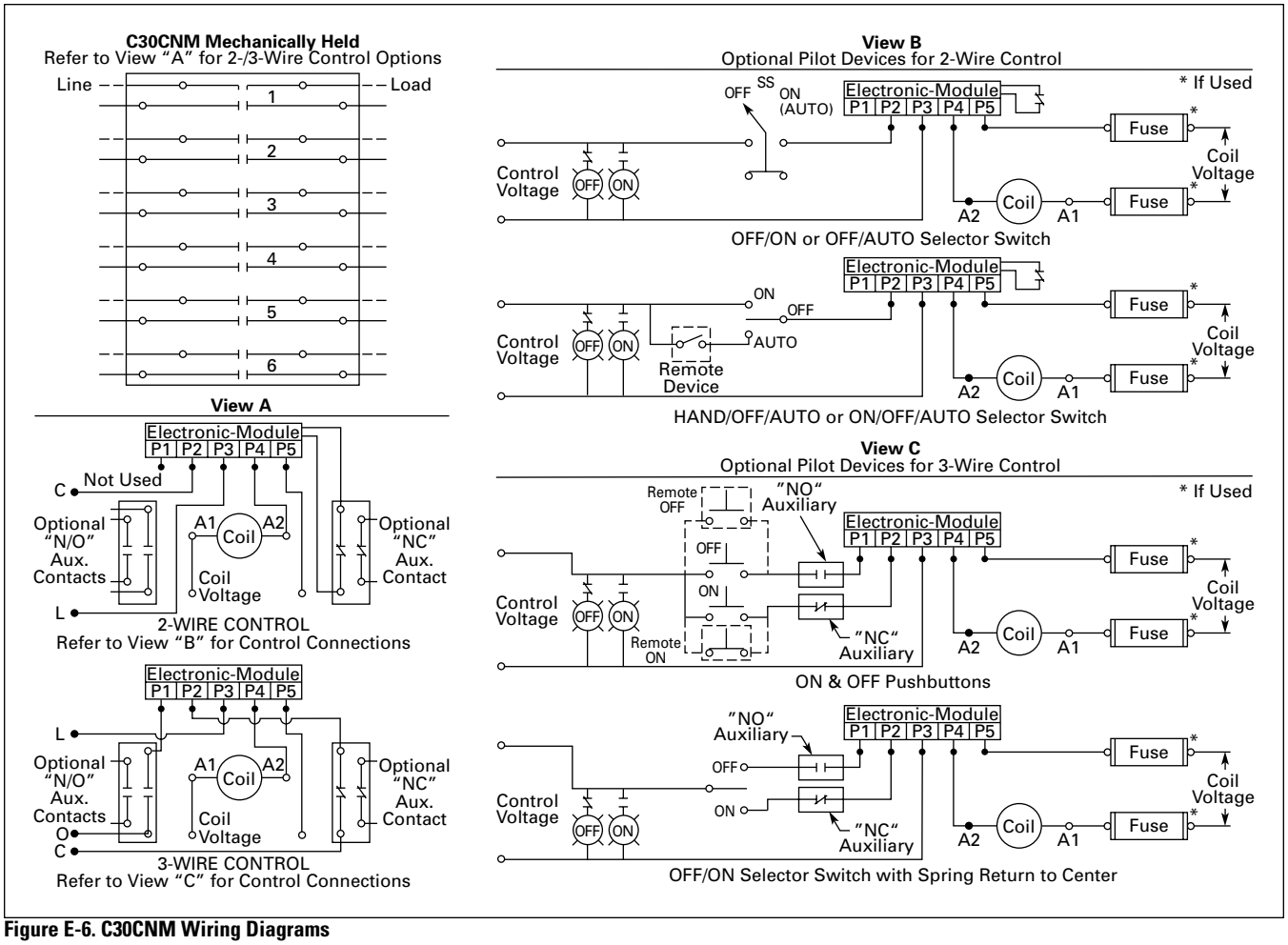
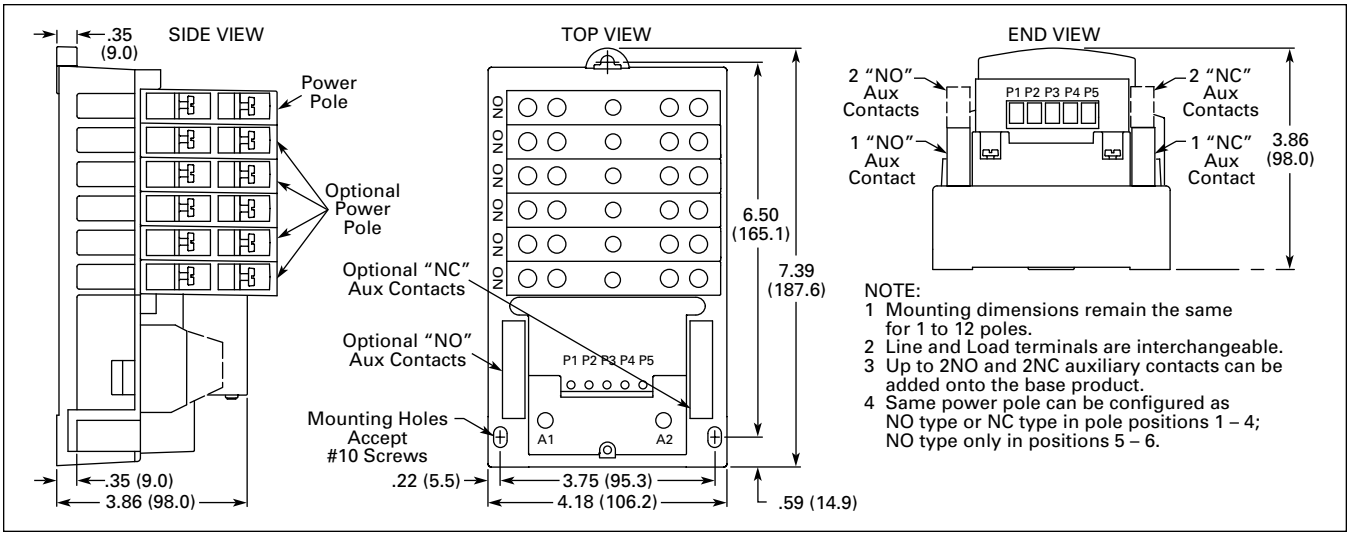


Figure E-6. C30CNM Wiring Diagrams

Dimensions



NOTE:
1 Mounting dimensions remain the same for 1 to 12 poles.
2 Line and Load terminals are interchangeable.
3 Up to 2NO and 2NC auxiliary contacts can be added onto the base product.
4 Same power pole can be configured as NO type or NC type in pole positions 1 – 4; NO type only in positions 5 – 6.

Figure E-7. Approximate Dimensions in Inches (mm)

Catalogue Number Selection

Table E-27. Type C30CN Lighting Contactors — Catalogue Numbering System

C30CN M 2 2 A A 2 A0

Product
C30CN = Open 30A Lighting Contactor

Class
E = Electrically Held **M** = Mechanically Held

No. of Normally Open Poles
0 – 12

No. of Normally Closed Poles
0 – 8

Base Coil Voltage	
A = 115 – 120V 60 Hz/110V 50 Hz	**H** = 265 – 277V 60 Hz/240V 50 Hz
B = 230 – 240V 60 Hz/220V 50 Hz	**T** = 24V 60 Hz/20V 50 Hz
C = 460 – 480V 60 Hz/440V 50 Hz	**V** = 28V 60 Hz/24V 50 Hz
D = 575 – 600V 60 Hz/550V 50 Hz	**X** = 347V 60 Hz
E = 200 – 208V 60 Hz	

Mechanically Held Control Module Voltage
A0 = 110 – 120V AC **H0** = 200 – 277V AC **T0** = 24V AC **T1** = 24V DC

Control Module Operation
2 = 2-wire **3** = 3-wire

Auxiliary Contact Installed	
2-Wire Control Module	**3-Wire Control Module**
0 = None **A** = 1NO **B** = 2NO **C** = 1NC **D** = 1NO-1NC **E** = 2NO-1NC	**0** = None **C** = 1NC **F** = 1NO **G** = 1NO-1NC

Sample Catalogue Number:	C	3	0	C	N	M	2	2	A	A	2	A	0
Digit Position:	1	2	3	4	5	6	7	8	9	10	11	12	13

Product Selection

2-Wire Mechanically Held Lighting Contactors — Standard Assembled Forms

The Standard Assembled Forms in **Table E-28** are 2-wire open mechanically held 30 amp lighting contactors with 120V 60 Hz/ 110V 50 Hz base coil voltage, 120V control module voltage, and no additional auxiliary contacts. To change the base coil voltage, auxiliary contact options or control module voltage, refer to **Tables E-29**, **E-30** and **E-31** respectively.

Table E-28. 2-Wire Mechanically Held Lighting Contactors — Standard Assembled Forms Product Selection

No. of Poles	NO	NC	Catalogue Number ①②③	Price
2	0	2	**C30CNM02A02A0**	
	1	1	**C30CNM11A02A0**	
	2	0	**C30CNM20A02A0**	
3	0	3	**C30CNM03A02A0**	
	1	2	**C30CNM12A02A0**	
	2	1	**C30CNM21A02A0**	
	3	0	**C30CNM30A02A0**	
4	0	4	**C30CNM04A02A0**	
	1	3	**C30CNM13A02A0**	
	2	2	**C30CNM22A02A0**	
	3	1	**C30CNM31A02A0**	
	4	0	**C30CNM40A02A0**	
5	0	5	**C30CNM05A02A0**	
	1	4	**C30CNM14A02A0**	
	2	3	**C30CNM23A02A0**	
	3	2	**C30CNM32A02A0**	
	4	1	**C30CNM41A02A0**	
	5	0	**C30CNM50A02A0**	
6	0	6	**C30CNM06A02A0**	
	1	5	**C30CNM15A02A0**	
	2	4	**C30CNM24A02A0**	
	3	3	**C30CNM33A02A0**	
	4	2	**C30CNM42A02A0**	
	5	1	**C30CNM51A02A0**	
	6	0	**C30CNM60A02A0**	
7	0	7	**C30CNM07A02A0**	
	1	6	**C30CNM16A02A0**	
	2	5	**C30CNM25A02A0**	
	3	4	**C30CNM34A02A0**	
	4	3	**C30CNM43A02A0**	
	5	2	**C30CNM52A02A0**	
	6	1	**C30CNM61A02A0**	
	7	0	**C30CNM70A02A0**	
8	0	8	**C30CNM08A02A0**	
	1	7	**C30CNM17A02A0**	
	2	6	**C30CNM26A02A0**	
	3	5	**C30CNM35A02A0**	
	4	4	**C30CNM44A02A0**	
	5	3	**C30CNM53A02A0**	
	6	2	**C30CNM62A02A0**	
	7	1	**C30CNM71A02A0**	
	8	0	**C30CNM80A02A0**	
9	1	8	**C30CNM18A02A0**	
	2	7	**C30CNM27A02A0**	
	3	6	**C30CNM36A02A0**	
	4	5	**C30CNM45A02A0**	
	5	4	**C30CNM54A02A0**	
	6	3	**C30CNM63A02A0**	
	7	2	**C30CNM72A02A0**	
	8	1	**C30CNM81A02A0**	
	9	0	**C30CNM90A02A0**	
10	2	8	**C30CNM28A02A0**	
	3	7	**C30CNM37A02A0**	
	4	6	**C30CNM46A02A0**	
	5	5	**C30CNM55A02A0**	
	6	4	**C30CNM64A02A0**	
	7	3	**C30CNM73A02A0**	
	8	2	**C30CNM82A02A0**	
	9	1	**C30CNM91A02A0**	
	10	0	**C30CNM100A02A0**	
11	3	8	**C30CNM38A02A0**	
	4	7	**C30CNM47A02A0**	
	5	6	**C30CNM56A02A0**	
	6	5	**C30CNM65A02A0**	
	7	4	**C30CNM74A02A0**	
	8	3	**C30CNM83A02A0**	
	9	2	**C30CNM92A02A0**	
	10	1	**C30CNM101A02A0**	
	11	0	**C30CNM110A02A0**	
12	4	8	**C30CNM48A02A0**	
	6	6	**C30CNM66A02A0**	
	8	4	**C30CNM84A02A0**	
	10	2	**C30CNM102A02A0**	
	12	0	**C30CNM120A02A0**	

① To change the base coil voltage, replace the content of Position 9 with the appropriate Code Suffix from **Table E-29**.

② To change auxiliary contact options, replace the content of Position 10 with the appropriate Code Suffix from **Table E-30**.

③ To change the control module voltage, replace the content of Positions 12-13 with the appropriate Code Suffix from **Table E-31**.

Table E-29. Base Coil Voltage (Digit 9)

Voltage	Code Suffix	Adder
115 – 120V 60 Hz/110V 50 Hz	**A**	
230 – 240V 60 Hz/220V 50 Hz	**B**	
460 – 480V 60 Hz/440V 50 Hz	**C**	
575 – 600V 60 Hz/550V 50 Hz	**D**	
200 – 208V 60 Hz	**E**	
265 – 277V 60 Hz/240V 50 Hz	**H**	
24V 60 Hz/20V 50 Hz	**T**	
28V 60 Hz/24V 50 Hz	**V**	
347V 60 Hz	**X**	

Table E-30. Auxiliary Contact Installed (Digit 10)

Control Module	Circuit	Code Suffix	Adder
2-wire	None	**0**	
	1NO	**A**	
	2NO	**B**	
	1NC	**C**	
	1NO-1NC	**D**	
	2NO-1NC	**E**	

Table E-31. Control Module Voltage (Digit 12-13)

Coil Module	Code Suffix	Adder
110 – 120V AC	**A0**	
200 – 277V AC	**H0**	
24V AC	**T0**	
12 – 24V DC	**T1**	

Discount Symbol **MC7**

3-Wire Mechanically Held Lighting Contactors — Standard Assembled Forms

The Standard Assembled Forms in **Table E-32** are 3-wire open mechanically held 30 amp lighting contactors with 120V 60 Hz/110V 50 Hz base coil voltage, 120V control module voltage, and no additional auxiliary contacts. To change the base coil voltage, auxiliary contact options or control module voltage, refer to **Tables E-33**, **E-34** and **E-35** respectively.

Table E-32. 3-Wire Mechanically Held Lighting Contactors — Standard Assembled Forms Product Selection

No. of Poles	NO	NC	Catalogue Number ①②③	Price
2	0	2	**C30CNM02A03A0**	
	1	1	**C30CNM11A03A0**	
	2	0	**C30CNM20A03A0**	
3	0	3	**C30CNM03A03A0**	
	1	2	**C30CNM12A03A0**	
	2	1	**C30CNM21A03A0**	
	3	0	**C30CNM30A03A0**	
4	0	4	**C30CNM04A03A0**	
	1	3	**C30CNM13A03A0**	
	2	2	**C30CNM22A03A0**	
	3	1	**C30CNM31A03A0**	
	4	0	**C30CNM40A03A0**	
5	0	5	**C30CNM05A03A0**	
	1	4	**C30CNM14A03A0**	
	2	3	**C30CNM23A03A0**	
	3	2	**C30CNM32A03A0**	
	4	1	**C30CNM41A03A0**	
	5	0	**C30CNM50A03A0**	
6	0	6	**C30CNM06A03A0**	
	1	5	**C30CNM15A03A0**	
	2	4	**C30CNM24A03A0**	
	3	3	**C30CNM33A03A0**	
	4	2	**C30CNM42A03A0**	
	5	1	**C30CNM51A03A0**	
	6	0	**C30CNM60A03A0**	
7	0	7	**C30CNM07A03A0**	
	1	6	**C30CNM16A03A0**	
	2	5	**C30CNM25A03A0**	
	3	4	**C30CNM34A03A0**	
	4	3	**C30CNM43A03A0**	
	5	2	**C30CNM52A03A0**	
	6	1	**C30CNM61A03A0**	
	7	0	**C30CNM70A03A0**	
8	0	8	**C30CNM08A03A0**	
	1	7	**C30CNM17A03A0**	
	2	6	**C30CNM26A03A0**	
	3	5	**C30CNM35A03A0**	
	4	4	**C30CNM44A03A0**	
	5	3	**C30CNM53A03A0**	
	6	2	**C30CNM62A03A0**	
	7	1	**C30CNM71A03A0**	
	8	0	**C30CNM80A03A0**	
9	1	8	**C30CNM18A03A0**	
	2	7	**C30CNM27A03A0**	
	3	6	**C30CNM36A03A0**	
	4	5	**C30CNM45A03A0**	
	5	4	**C30CNM54A03A0**	
	6	3	**C30CNM63A03A0**	
	7	2	**C30CNM72A03A0**	
	8	1	**C30CNM81A03A0**	
	9	0	**C30CNM90A03A0**	
10	2	8	**C30CNM28A03A0**	
	3	7	**C30CNM37A03A0**	
	4	6	**C30CNM46A03A0**	
	5	5	**C30CNM55A03A0**	
	6	4	**C30CNM64A03A0**	
	7	3	**C30CNM73A03A0**	
	8	2	**C30CNM82A03A0**	
	9	1	**C30CNM91A03A0**	
	10	0	**C30CNM100A03A0**	
11	3	8	**C30CNM38A03A0**	
	4	7	**C30CNM47A03A0**	
	5	6	**C30CNM56A03A0**	
	6	5	**C30CNM65A03A0**	
	7	4	**C30CNM74A03A0**	
	8	3	**C30CNM83A03A0**	
	9	2	**C30CNM92A03A0**	
	10	1	**C30CNM101A03A0**	
	11	0	**C30CNM110A03A0**	
12	4	8	**C30CNM48A03A0**	
	6	6	**C30CNM66A03A0**	
	8	4	**C30CNM84A03A0**	
	10	2	**C30CNM102A03A0**	
	12	0	**C30CNM120A03A0**	

① To change the base coil voltage, replace the content of Position 9 with the appropriate Code Suffix from **Table E-33**.

② To change auxiliary contact options, replace the content of Position 10 with the appropriate Code Suffix from **Table E-34**.

③ To change the control module voltage, replace the content of Positions 12-13 with the appropriate Code Suffix from **Table E-35**.

Table E-33. Base Coil Voltage (Digit 9)

Voltage	Code Suffix	Adder
115 – 120V 60 Hz/110V 50 Hz	**A**	
230 – 240V 60 Hz/220V 50 Hz	**B**	
460 – 480V 60 Hz/440V 50 Hz	**C**	
575 – 600V 60 Hz/550V 50 Hz	**D**	
200 – 208V 60 Hz	**E**	
265 – 277V 60 Hz/240V 50 Hz	**H**	
24V 60 Hz/20V 50 Hz	**T**	
28V 60 Hz/24V 50 Hz	**V**	
347V 60 Hz	**X**	

Table E-34. Auxiliary Contact Installed (Digit 10)

Control Module	Circuit	Code Suffix	Adder
3-wire	None	**0**	
	1NC	**C**	
	1NO	**F**	
	1NO-1NC	**G**	

Table E-35. Control Module Voltage (Digit 12-13)

Coil Module	Code Suffix	Adder
110 – 120V AC	**A0**	
200 – 277V AC	**H0**	
24V AC	**T0**	
12 – 24V DC	**T1**	

Discount Symbol **MC7**

60A Size

Product Description

The Cutler-Hammer® A202 Lighting Contactor from Eaton's electrical business provides a safe and convenient means for local or remote switching of relatively large tungsten, fluorescent or mercury arc lamp loads.

Application Description

- The Magnetically Latched Lighting Contactors are designed to withstand the large initial inrush currents of tungsten lamp loads without contact welding.
- The A202 Contactors are fully rated devices that do not require de-rating similar to standard motor control contactors.
- The Magnetically Latched Lighting Contactor provides effective control in applications such as office buildings, industrial plants, hospitals, stadiums, airports, etc.

Features

- Designed and tested specifically for lighting and resistive loads
- Easy to install and maintain
- No control power necessary to maintain contact closure

Operation

A permanent magnet is built into the contactor structure that will maintain the contactor in its energized state indefinitely without using control power. When energized, a DC current is applied to the latch coil, producing a magnetic field that reinforces the polarity of the permanent magnet, pulling in the contactor. The coil clearing interlock disconnects the current to the coil. In order to drop out the contactor, it is necessary to apply a field through the STOP coil in the reverse direction to the permanent magnet. This momentarily cancels the magnetic attraction and the contactor drops out.

Instructional Leaflets

IL16965 30A (2, 3, 4, 5 Poles)

IL16966 60 – 200A (2, 3, 4, 5 Poles)

Standards and Certifications

- UL Listed File # E44424, Guide NRNT
- CSA Certified File # LR39402, Class 3231-01

Technical Data and Specifications

- Terminals
  - All except 30A devices: Cu/Al
  - 30A devices: Cu only
- Ballast load: 600 AC, breaking all lines
- Tungsten lamp loads, maximum volts
  - Line-to-line: 480V AC
  - Line-to-neutral: 277V AC

Accessories

See A200 NEMA Contactor Accessories, **Page A-91 – A-93**.

Wiring Diagrams

The standard wiring of an A202 contactor can be controlled by a separate customer supplied single-pole double-throw controlling station.

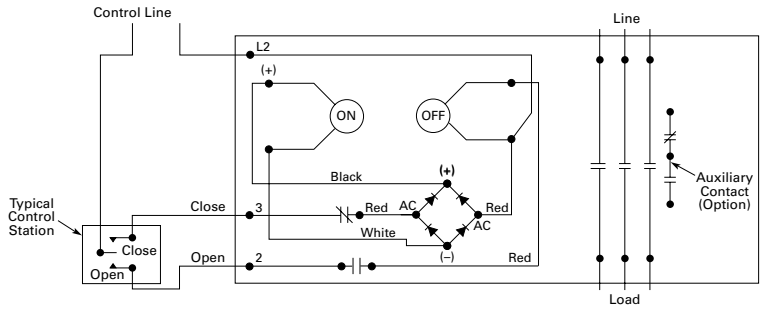


Figure E-8. Standard Wiring

Two-wire control can be accomplished with a customer supplied relay with 1NO/1NC auxiliary contacts, wire as shown.

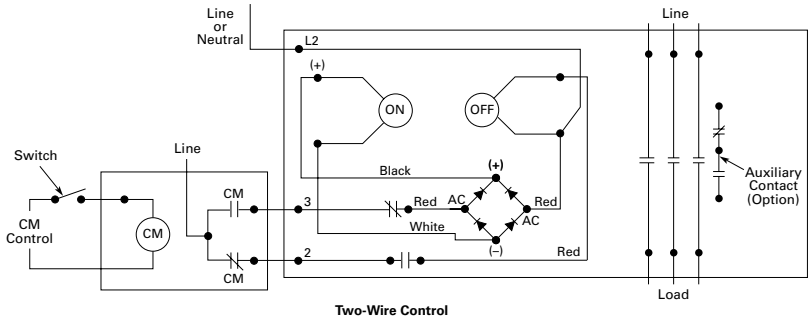


Figure E-9. Two-Wire Control

Renewal Parts

Table E-36. AC Coil Renewal Parts for A202 — Magnetically Latched

Voltage	Hz	2-, 3-, 4-Pole		5-Pole	
		Part Number	Price	Part Number	Price
30 Ampere					
110/120	50/60	**7874A93G01**		**7874A89G01**	
208/240		**7874A93G02**		**7874A89G02**	
277		**7874A93G03**		**7874A89G03**	
440/480		**7874A93G04**		**7874A89G04**	
575		**7874A93G05**		**7874A89G05**	
60 Ampere					
		2-, 3-Pole		**4-, 5-Pole**	
110/120	50/60	**7874A93G01**		**7874A87G01**	
208/240		**7874A93G02**		**7874A87G02**	
277		**7874A93G03**		**7874A87G03**	
440/480		**7874A93G04**		**7874A87G04**	
575		**7874A93G05**		**7874A87G05**	
100 and 200 Ampere					
110/120	50/60	**7874A85G01**		**7874A83G01**	
208/240		**7874A85G02**		**7874A83G02**	
277		**7874A85G03**		**7874A83G03**	
440/480		**7874A85G04**		**7874A83G04**	
550/575		**7874A85G05**		**7874A83G05**	

Table E-37. Terminals (Line and Load)

2-Pole		3-Pole		4-Pole		5-Pole	
Part Number	Price	Part Number	Price	Part Number	Price	Part Number	Price
30 Ampere							
N/A		**N/A**		**N/A**		**N/A**	
60 Ampere							
179C755G17		**179C755G16**		**179C755G17** ①		**179C755G16** **179C755G17** ②	
100 Ampere							
179C755G19		**179C755G18**		**179C755G19** ①		**179C755G18** **179C755G19** ②	
200 Ampere Model K Electrically Held							
179C755G28		**179C755G27**		**179C755G28** ①		**179C755G27** **179C755G28** ②	
200 Ampere Model J Magnetically Latched							
179C755G31		**179C755G30**		**179C755G31** ①		**179C755G30** **179C755G31** ②	

① Order quantity of two for 4-pole design.
② Group members for the 5-pole terminal represent the combination of the 2- and 3-pole number.

Table E-38. Other Accessories

Description	Size	Part Number	Price
Control Module (Rectifier)	30 – 200A	**3915B98G01**	

Arc boxes, upper base assemblies and cross bars are equivalent to the A201 series. See **Page A-91**.

Contact kits are equivalent to the A201 Model J series, with the exception of the magnetically latched 200 ampere unit. It uses Catalogue Number 672B788G07 for the 3-pole device. For other poles, consult Eaton.

Discount Symbol **MC17**

Dimensions

Table E-39. Approximate Dimensions for Non-combination Open Lighting Contactors — 2- to 12-Pole

Continuous Amperes	Number of Poles	Pole Configuration	Dimensions in Inches (mm)	
			Open Type	
			Wide A	High B
30	2 – 4		3.31 (84.1)	4.38 (111.3)
	5		4.19 (106.4)	4.38 (111.3)
	6	3 x 3	7.13 (181.1)	4.46 (113.3)
	8	4 x 4	7.13 (181.1)	4.46 (113.3)
	10	5 x 5	10.63 (270.0)	4.46 (113.3)
	12	4 x 4 x 4	12.38 (314.5)	6.88 (174.8)
60	2, 3		3.31 (84.1)	4.38 (111.3)
	4, 5		4.19 (106.4)	4.38 (111.3)
	6	3 x 3	7.13 (181.1)	4.46 (113.3)
	8	4 x 4	10.63 (270.0)	4.46 (113.3)
	10	5 x 5	10.63 (270.0)	4.46 (113.3)
	12	5 x 5 x 2	15.00 (381.0)	6.88 (174.8)
100	2, 3		4.63 (117.6)	6.63 (168.4)
	4, 5		7.25 (184.2)	6.63 (168.4)
	6	3 x 3	9.75 (247.7)	6.88 (174.8)
	8	5 x 3	12.38 (314.5)	6.88 (174.8)
	10	5 x 5	15.00 (381.0)	6.88 (174.8)
	12	5 x 5 x 2	34.13 (866.9)	27.50 (698.5)
200	2, 3		4.63 (117.6)	6.63 (168.4)
	4, 5		7.25 (184.2)	6.63 (168.4)
	6	3 x 3	9.75 (247.7)	6.88 (174.8)
	8	5 x 3	12.38 (314.5)	6.88 (174.8)
	10	5 x 5	15.00 (381.0)	6.88 (174.8)
	12	5 x 5 x 2	34.13 (866.9)	27.50 (698.5)

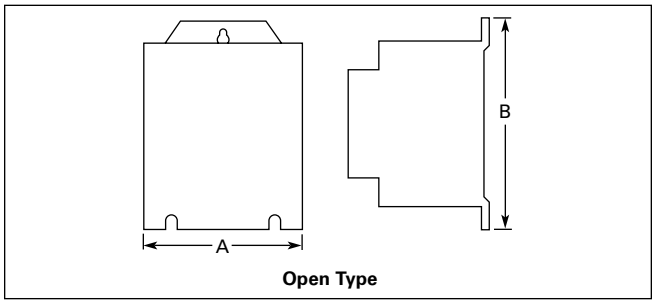


Figure E-10. Approximate Dimensions

Product Selection

When Ordering Specify

- Catalogue Number with Coil Suffix Code from the Magnet Coil Selection Table.
- Any required Accessories.

Table E-40. Latched AC Lighting Contactors ①②

Holding Circuit Auxiliary Contact or Pushbutton Station Not Included			
Continuous Amperes (Enclosed)	Number of Poles	Open Type	
		Catalogue Number ③	Price
30	2	**A202K1B_M**	
	3	**A202K1C_M**	
	4	**A202K1D_M**	
	5	**A202K1E_M**	
	6	**A202K1F_M**	
	8	**A202K1G_M**	
	10	**A202K1H_M**	
	12	**A202K1K_M**	
60	2	**A202K2B_M**	
	3	**A202K2C_M**	
	4	**A202K2D_M**	
	5	**A202K2E_M**	
	6	**A202K2F_M**	
	8	**A202K2G_M**	
	10	**A202K2H_M**	
	12	**A202K2K_M**	
100	2	**A202K3B_M**	
	3	**A202K3C_M**	
	4	**A202K3D_M**	
	5	**A202K3E_M**	
	6	**A202K3F_M**	
	8	**A202K3G_M**	
	10	**A202K3H_M**	
	12	**A202K3K_M**	
200	2	**A202K4B_M**	
	3	**A202K4C_M**	
	4	**A202K4D_M**	
	5	**A202K4E_M**	
	6	**A202K4F_M**	
	8	**A202K4G_M**	
	10	**A202K4H_M**	
	12	**A202K4K_M**	
300	2	**A202K5B_M**	
	3	**A202K5C_M**	
400	2	**A202K6B_M**	
	3	**A202K6C_M**	

① Lighting contactors are not available with DC coils.
② Contactors rated 300A and 400A are mechanically latched.
③ Underscore (_) indicates missing Code letter for Magnet Coil Selection — see Magnet Coil Selection Table.

Table E-41. Magnet Coil Selection

Coil Voltage	Catalogue Number Suffix
120V, 60 Hz	**A**
208V, 60 Hz	**B**
277V, 60 Hz	**Z**
440V/50, 480V/60	**X**
600V, 60 Hz	**E**
120V/60, 110V/50	**A**
220V/50, 240V/60	**W**
24V, 60 Hz	**I** ④

④ Available on 2- to 5-pole, 30 and 60A devices and on 2- to 3-pole 100 and 200A devices.

Discount Symbol **MC7**