

# C396 Electronic Overload

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**Note:** Supplement to Publication No. CA08102002K — Tabs A, B and C.



*C396 Electronic Overload Relays*

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**C396 Electronic Overload Relay**

## Product Description

The C396 is a self-powered, robust electronic overload designed for integrated use with Freedom NEMA, **XT** IEC, and DP contactors. The overload can also be ordered as a stand-alone device that is designed for Panel-Mounting and for use on 35 mm DIN rail. The C396 has an FLA range of 0.1 – 150 Amps with internal CTs, and up to 1500 Amps using external CTs.

## Features

- Standard Version: Selectable trip class (5, 10, 20, 30) with Selectable Manual or Auto Reset
- Broad 5:1 FLA range
- Self-Powered Design, will accept AC voltages from 12 – 690V 50/60 Hz
- Ambient Temperature Compensation
- Low Heat Generation
- Phase Loss Protection
- Phase Unbalance Protection
- Electrically isolated 1NO-1NC Contacts (Push-to-Test)
- Trip Status Indicator
- FLA range of 0.1 – 1500 Amps

## Standards and Certifications

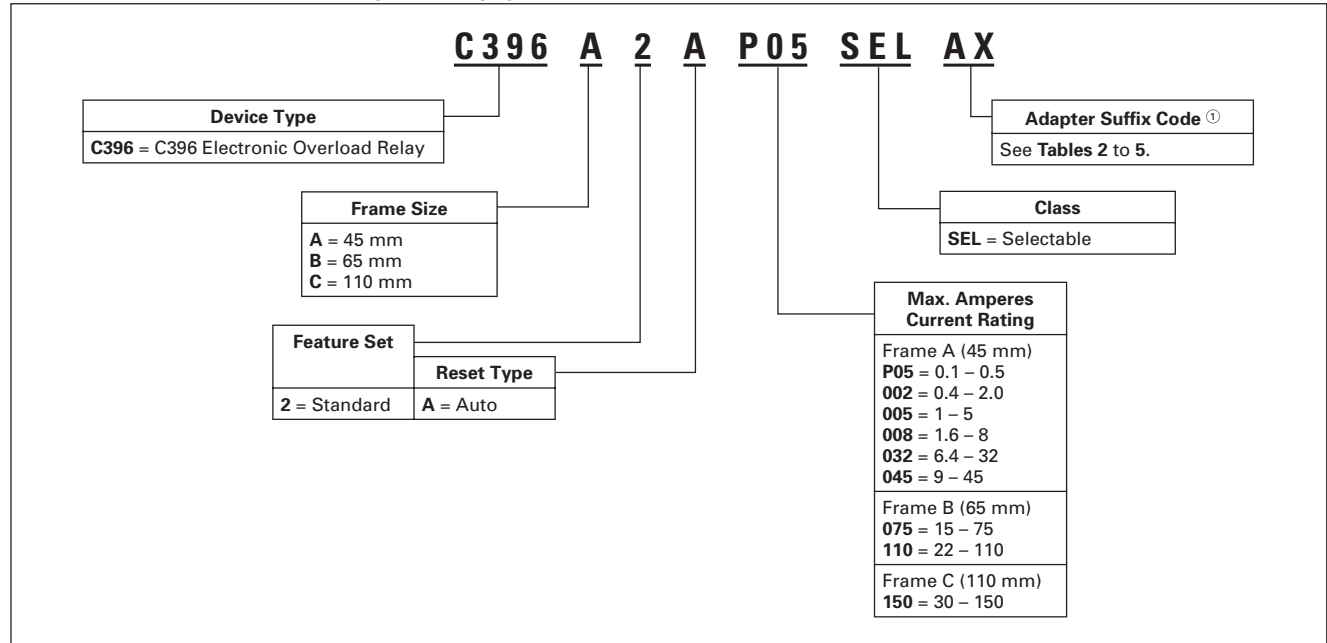
- UL Listed Components: Stand-alone, starter-mounted devices and remote reset kit.
- CSA Certified Components: Stand-alone, starter-mounted devices and remote reset kit.
- IEC EN 60947-4-1, EN 60947-5-1
- CE
- RoHS



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## Catalog Number Selection

**Table 1. C396 Electronic Overload Catalog Numbering System**



① Choose appropriate adapter based on application FLA range and contactor's frame size.

**Table 2. Stand-Alone Overload Relay Suffix Code**

FLA Range	Frame Size	Suffix
All	N/A	AX

**Table 3. X7IEC Adapter Suffix Code**

Contactor Frame Size	FLA Range (Amps)	Suffix
IEC Frame B	0.1 – 0.5 0.4 – 2.0 1 – 5 1.6 – 8 6.4 – 32	XB
IEC Frame C	0.1 – 0.5 0.4 – 2.0 1 – 5 1.6 – 8 6.4 – 32	XC
IEC Frame D	6.4 – 32 9 – 45 15 – 75	XD
IEC Frame F – G	22 – 110	XF

**Table 4. Freedom NEMA Adapter Suffix Code**

FLA Range (Amps)	Contactor Frame Size	Suffix
0.1 – 0.5	NEMA Size 00 NEMA Size 0 NEMA Size 1	FD
0.4 – 2.0	NEMA Size 00 NEMA Size 0 NEMA Size 1	FD
1 – 5	NEMA Size 00 NEMA Size 0 NEMA Size 1	F00 F0 F1
1.6 – 8	NEMA Size 00 NEMA Size 0 NEMA Size 1 NEMA Size 2	F00 F0 F1 F2
6.4 – 32	NEMA Size 0 NEMA Size 1	FB FD
9 – 45	NEMA Size 2	FG
22 – 110	NEMA Size 3	FK

**Table 5. DP Contactor Adapter Suffix Code**

FLA Range (Amps)	Contactor Frame Size	Suffix
0.1 – 0.5 0.4 – 2.0 1 – 5	15, 25, 30A	DC
1.6 – 8	15, 25, 30, 40A	DE
6.4 – 32	15, 25, 30, 40, 50A	DF
9 – 45	40, 50A	DF
15 – 75	60, 75A	DG

## Product Selection



Cat. No.  
C396A2A045SELAX



Cat. No.  
C396B2A110SELFK



Cat. No.  
C396C2A150SELAX



Cat. No.  
C396C2A150SELAX +  
C396CBAR



Cat. No.  
C396C2A150SELAX +  
C396CBAR + C396CLUG

Table 6. C396 Stand-Alone Overload Relay

FLA Range (Amps)	Description	Catalog Number	Price
<b>45 mm Overload Frame Size</b> ①			
0.1 – 0.5	—	C396A2AP05SELAX	
0.4 – 2.0	—	C396A2A002SELAX	
1 – 5	—	C396A2A005SELAX	
1.6 – 8	—	C396A2A008SELAX	
6.4 – 32	—	C396A2A032SELAX	
9 – 45	—	C396A2A045SELAX	
<b>65 mm Overload Frame Size</b> ①			
15 – 75	—	C396B2A075SELAX	
22 – 110	—	C396B2A110SELAX	
<b>110 mm Overload Frame Size</b> ②			
30 – 150	—	C396C2A150SELAX	

① Overload comes with a panel/DIN rail mounting adapter assembled. No separate mounting adapter accessory offered.

② Panel mount only! Overload comes with integrated pass-through holes for power wires. Bus Bar Kit (C396CBAR or C396CBARXT, see Table 11) and Lug Kit (C396CLUG) must be purchased separately if customer prefers not to use pass-through capability.

Table 7. Current Transformer Kits for Use with Stand-Alone Overload Relay C396A2A005SELAX ③

FLA Range (Amps)	Description	Catalog Number	Price
60 – 300	300: 5 Panel-mount CT Kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK300	
120 – 600	600: 5 Panel-mount CT Kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK600	
200 – 1000	1000: 5 Panel-mount CT Kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK1000	
300 – 1500	1500: 5 Panel-mount CT Kit with integrated, pass-through holes. Kit includes CT, bus bars, lugs and hardware to mount C396A2A005SELAX (not included).	C396CTK1500	

③ C396A2A005SELAX is not included in the current transformer kits. This item must be ordered separately.

Table 8. C396 Overload for Integrated Use with XTIEC Contactors

FLA Range (Amps)	XTIEC Contactor Frame Size / Width	Catalog Number	Price
<b>45 mm Overload Frame Size</b>			
0.1 – 0.5	B / 45 mm	C396A2AP05SELXB	
0.4 – 2.0	B / 45 mm	C396A2A002SELXB	
1 – 5	B / 45 mm	C396A2A005SELXB	
1.6 – 8	B / 45 mm	C396A2A008SELXB	
6.4 – 32	B / 45 mm	C396A2A032SELXB	
0.1 – 0.5	C / 45 mm	C396A2AP05SELXC	
0.4 – 2.0	C / 45 mm	C396A2A002SELXC	
1 – 5	C / 45 mm	C396A2A005SELXC	
1.6 – 8	C / 45 mm	C396A2A008SELXC	
6.4 – 32	C / 45 mm	C396A2A032SELXC	
6.4 – 32	D / 55 mm	C396A2A032SELXD	
9 – 45	D / 55 mm	C396A2A045SELXD	
<b>65 mm Overload Frame Size</b>			
15 – 75	D / 55 mm	C396B2A075SELXD	
22 – 110	F – G / 90 mm	C396B2A110SELXF	
<b>110 mm Overload Frame Size — Stand-Alone or Direct to XT Contactor with Indicated Kit</b>			
30 – 150	G / 90 mm	C396C2A150SELAX ④	
110 mm XT Bus Bar Kit		C396CBARXT	

④ Catalog Number shown is for Stand-Alone C396 Overload Relay. For direct connection to XT Frame G contactor, order additional XT Bus Bar Kit, C396CBARXT, shown in Tables 8 and 11. If load side lugs are required, order C396CLUG (set of 3).

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**Table 9. C396 Overload for Integrated Use with Freedom NEMA Contactors**

FLA Range (Amps)	NEMA Contactor Frame Size	Description	Catalog Number	Price
<b>45 mm Overload Frame Size</b>				
0.1 – 0.5 0.4 – 2.0	00, 0, 1 00, 0, 1	—	C396A2AP05SELF C396A2A002SELF	
1 – 5	00 0 1	—	C396A2A005SELF0 C396A2A005SELF0 C396A2A005SELF1	
1.6 – 8	00 0 1 2	—	C396A2A008SELF0 C396A2A008SELF0 C396A2A008SELF1 C396A2A008SELF2	
6.4 – 32	0 1	—	C396A2A032SELF C396A2A032SELF	
9 – 45	2	—	C396A2A045SELF	
<b>65 mm Overload Frame Size</b>				
22 – 110	3	—	C396B2A110SELF	
<b>110 mm Overload Frame Size — Stand-Alone ①</b>				
30 – 150	4	—	C396C2A150SELAX	

**Note:** For NEMA Sizes 5 – 8, refer to **Table 7**, Current Transformer Kits.

① Panel mount only! Overload comes with integrated pass-through holes for power wires. Bus Bar Kit (C396CBAR or C396CBARXT, see **Table 11**) and Lug Kit (C396CLUG) must be purchased separately if customer prefers not to use pass-through capability.






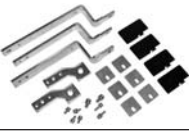




**Cat. No.  
C396A2A008SELDC**

**Table 10. C396 Overload for Integrated Use with DP Contactors by Feature Set**

FLA Range (Amps)	DP Contactor Rating	Catalog Number	Price
<b>45 mm Overload Frame Size</b>			
0.1 – 0.5 0.4 – 2.0	15, 25, 30 15, 25, 30	C396A2AP05SELDC C396A2A002SELDC	
1 – 5	15, 25, 30	C396A2A005SELDC	
1.6 – 8	15, 25, 30, 40	C396A2A008SELDE	
6.4 – 32	15, 25, 30, 40, 50	C396A2A032SELDF	
9 – 45	40, 50	C396A2A045SELDF	
<b>65 mm Overload Frame Size</b>			
15 – 75	60, 75	C396B2A075SELDG	

**Accessories**

**Table 11. C396 Electronic Overload Accessories**

	Description	Catalog Number	Price
	Reset Bar Kit assembles to the top of the overload to increase reset area.	C396ARST	
	110 mm Lug Kit ②	C396CLUG	
	110 mm Bus Bar Kit ③	C396CBAR	
	110 mm XT Bus Bar Kit ③	C396CBARXT	
 <b>C396ARST + C396RR</b> <i>Assembled to a C396 Overload Relay</i>	Remote Reset 24V DC ⑤	C396RR024DC	
	Remote Reset 24V AC ⑤	C396RR024AC	
	Remote Reset 120V AC ⑤	C396RR120AC	
	Remote Reset 240V AC ⑤	C396RR240AC	
	Mechanical Reset with E22 Flush Push-button and Mechanical Push Rod ④ Plastic Black Bezel Chrome Bezel	E22PB6N29L E22P6N29L	
	Mechanical Push Rod — for external mechanical reset ⑥	E22MRL	
	Mounting Hole Adapter Kit ⑦	E22ARK	

- ② Set of 3 lugs and hardware, 2 sets are required to wire line and load sides. Bus Bar Kit (C396CBAR or C396CBARXT) is needed to use the Lug Kit.
- ③ Bus bar kits do not include lugs. Order C396CLUG if lugs are needed (3 lugs per kit).
- ④ The operator button is blue with the letters “RESET” printed in white. The push rod is 4.72" long and can be cut to the desired length. This kit can be used alone or in conjunction with the C396 Reset Bar Kit, C396ARST, to increase the size of the reset area on the overload.
- ⑤ Reset Bar Kit (C396ARST) required to use the Remote Reset modules. Note that all Freedom Starters come with Reset Bars.
- ⑥ Must be cut to proper length — uncut 4.72 inches (119.9 mm) long.
- ⑦ Enables a 22.5 mm operator to be mounted in a 30.5 mm holes — 1/16 to 7/32 inch (1.6 to 5.6 mm) panel thickness.

## Technical Data and Specifications

**Table 12. Overload Relay Specifications**

General Description	C396_2_ Standard
<b>Protection</b>	
Thermal	1.05 x FLA: Does not trip 1.25 x FLA: Overload trip
Phase Loss	1 Phase = 0, Trip time = 3s (Hot Status)
Phase Imbalance	Max - Min / Max > 40%, Trip time = 3s (Hot Status)
Inrush Current	> 8 x Max FLA, Trip time is 0.3s (Cold Status)
<b>Trip Class</b>	
Class 5, 10, 20, 30	Selectable
<b>Reset</b>	
M / M-O A / A-O	Manual / Manual + Stop Auto / Auto + Stop Auto Reset Time = 165s
<b>Indications</b>	
Test Indicator	Yellow
Trip Indicator	Yellow
<b>PCBA</b>	
Power Sensing	3 phase
Instant Reset by Power ON	CPU reset by Power ON after 2 – 3s
Thermal memory	< 3 min.
Cold and Hot Trip Curves	Power ON > 20 min. is Hot Status
Power Consumption	< 300 mW
<b>Options</b>	
Safety Cover	Covers FLA dial, DIP switches
Remote Reset	24V DC, 24V AC, 120V AC, 240V AC

**Table 12. Overload Relay Specifications (Continued)**

General Description	C396_2_ Standard
<b>Climate Considerations</b>	
Ambient Temperature (Operating)	-25° to 65°C (-13° to 149°F) inside enclosure
Ambient Temperature (Storage / Transportation)	-40° to 80°C (-40° to 176°F)
Humidity	UL991 (H3): 20 – 95% non-condensing
Altitude (Operating)	NEMA ICS1: 2000 meters max above sea level
Pollution (Operating — External)	Pollution degree 3
Mechanical Shock Resistance (IEC/EN 68-2-17)	15g
Vibration (Lloyd's Register of Shipping, Vibration Test 2)	6g
Temperature Compensation	Continuous
<b>Voltages</b>	
Control Voltage	12 – 690V AC, 50/60 Hz
Insulation Voltage (Ui) — Main Circuit	1000V AC
Insulation Voltage (Ui) — Control Circuit	690V AC
Impulse Withstand Voltage (Uimp) VAC	6000
<b>FLA Range</b>	
45 mm Frame: C396A_	0.1 – 45A
65 mm Frame: C396B_	15 – 110A
110 mm Frame: C396C_	30 – 150A
<b>Safety</b>	
Degree of Protection	IP20 (Stand-Alone Version Only)
<b>Capacity</b>	
Control Terminal Capacity	18 – 14 AWG
Control Terminal Tightening Torque in Nm (lb-in)	0.79 (7)
<b>Load Terminal Capacity</b>	
45 mm Frame: C396A_	14 – 6 AWG
65 mm Frame: C396B_	10 – 1 AWG
110 mm Frame: C396C_	6 AWG – 250 mcm
<b>Load Terminal Tightening Torque in Nm (lb-in)</b>	
45 mm Frame: C396A_	3.2 (28)
65 mm Frame: C396B_	9.0 (80)
110 mm Frame: C396C_	22.6 (200)

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Dimensions

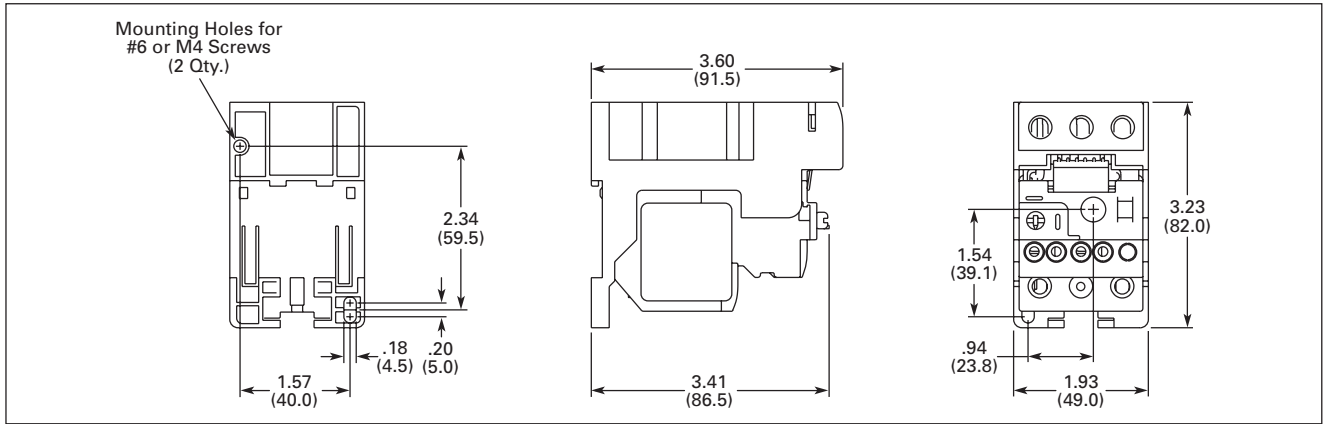


Figure 1. 45 mm Stand-Alone C396 Electronic Overload Relay — Approximate Dimensions in Inches (mm)

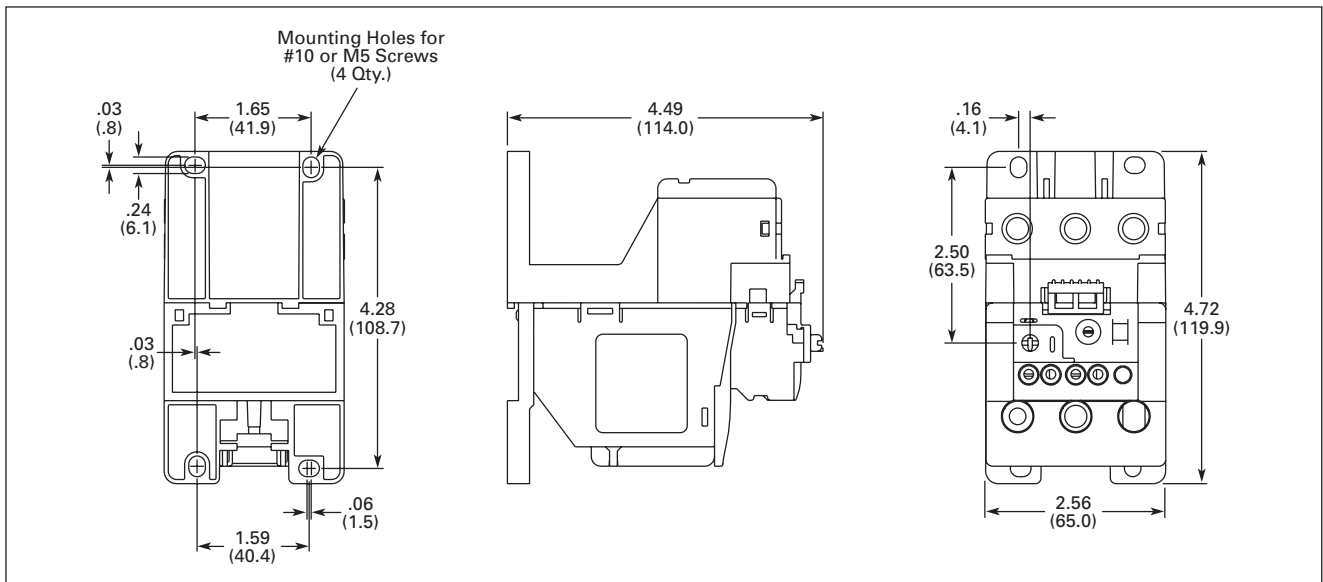
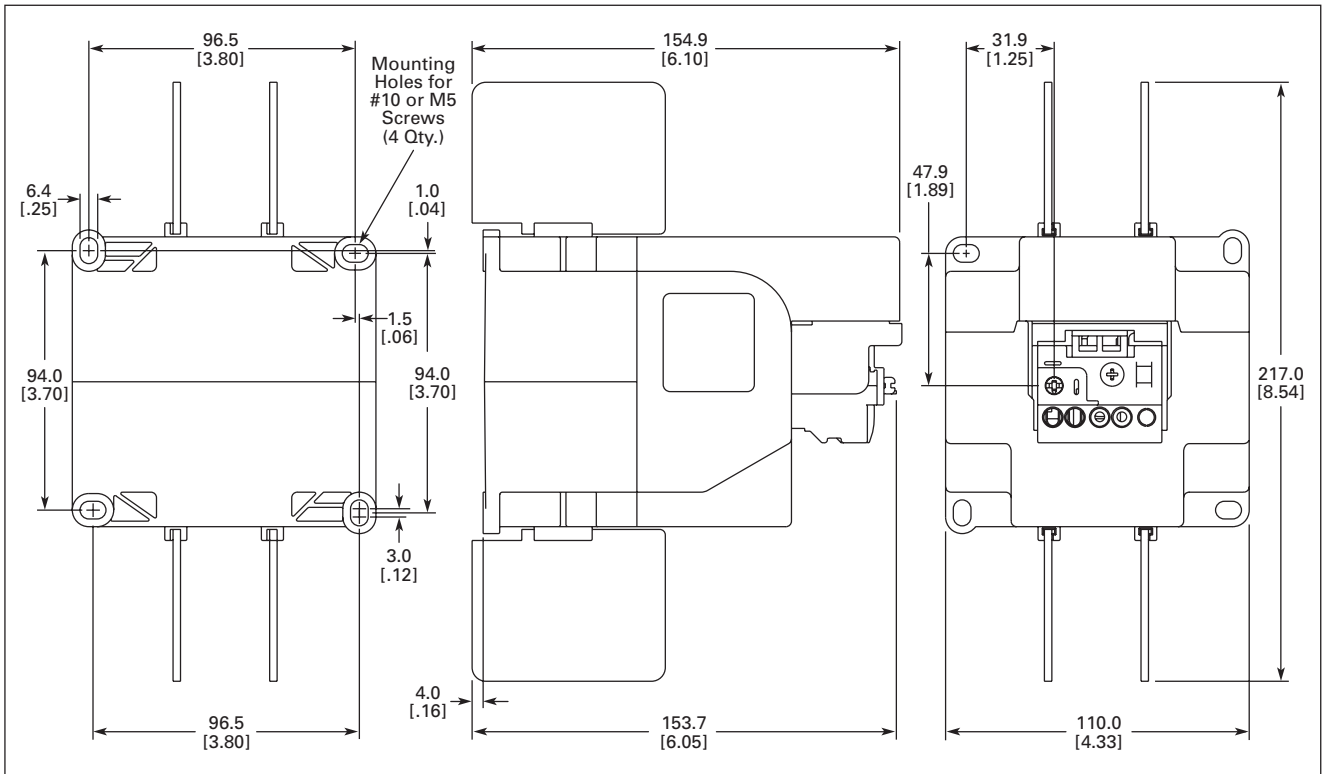
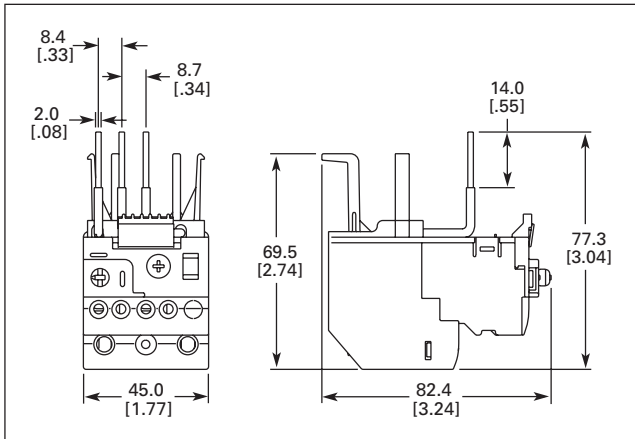


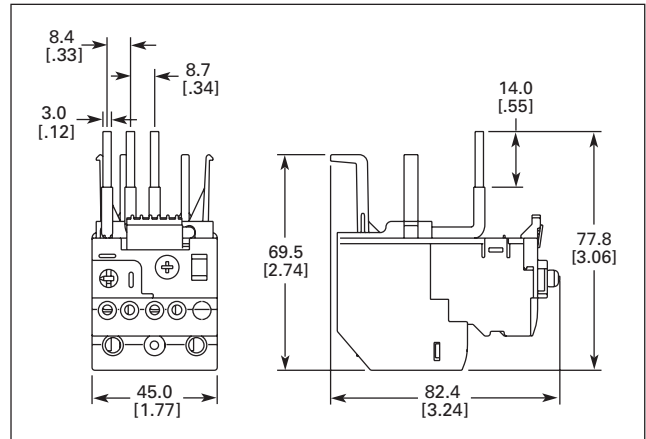
Figure 2. 65 mm Stand-Alone C396 Electronic Overload Relay — Approximate Dimensions in Inches (mm)



**Figure 3. 110 mm Stand-Alone C396 Electronic Overload Relay — Approximate Dimensions in mm [in]**



**Figure 4. 45 mm C396 (0.1 – 8A) Direct Connect to XT Frame B Contactor — Approximate Dimensions in mm [in]**



**Figure 5. 45 mm C396 (6.4 – 32A) Direct Connect to XT Frame B Contactor — Approximate Dimensions in mm [in]**



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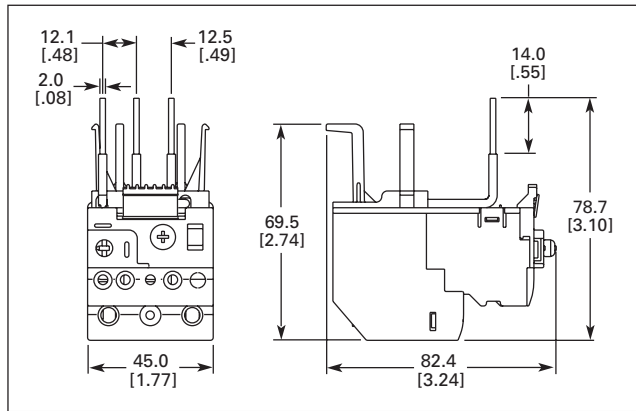


Figure 6. 45 mm C396 (0.1 – 8A) Direct Connect to XT Frame C Contactor — Approximate Dimensions in mm [in]

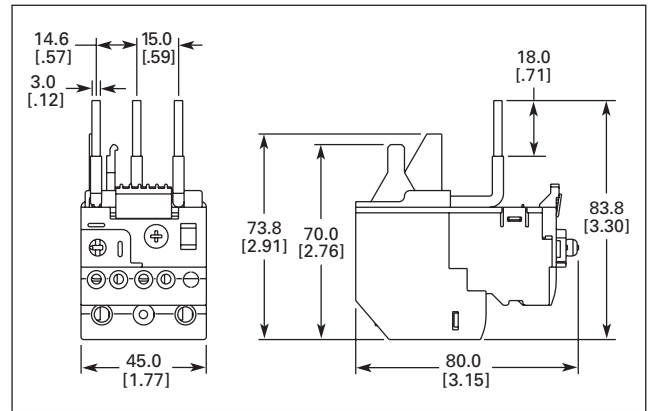


Figure 8. 45 mm C396 (6.4 – 45A) Direct Connect to XT Frame D Contactor — Approximate Dimensions in mm [in]

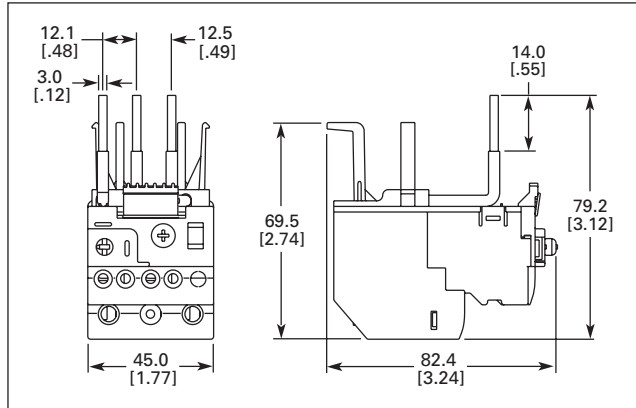


Figure 7. 45 mm C396 (6.4 – 32A) Direct Connect to XT Frame C Contactor — Approximate Dimensions in mm [in]

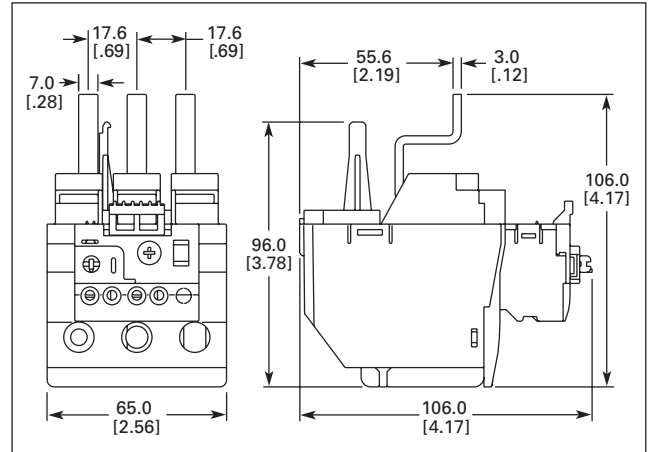
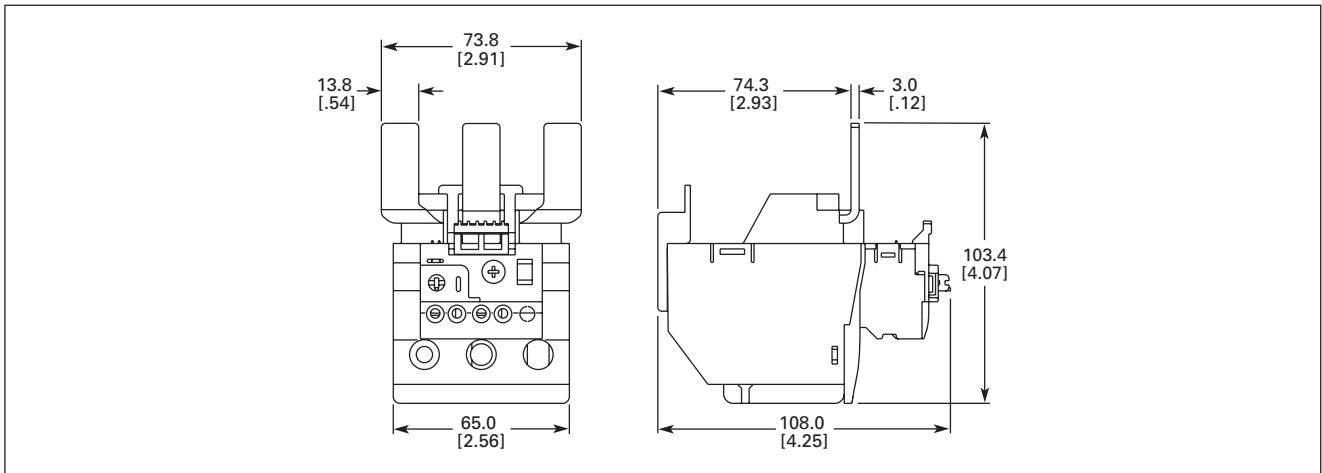
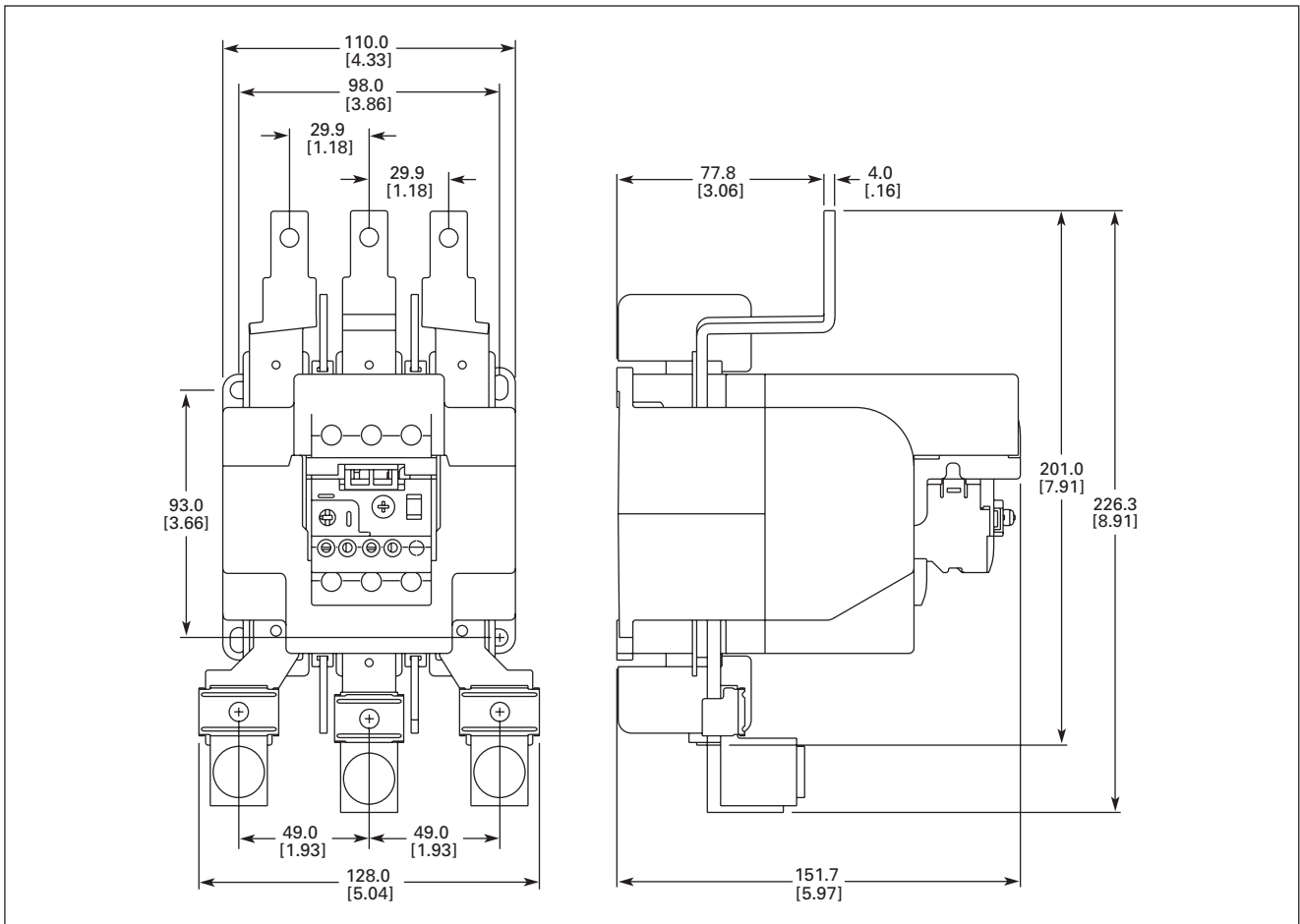


Figure 9. 65 mm C396 (15 – 75A) Direct Connect to XT Frame D Contactor — Approximate Dimensions in mm [in]



**Figure 10. 65 mm C396 (22 – 110A) Direct Connect to XT Frame F – G Contactor — Approximate Dimensions in mm [in]**



**Figure 11. 110 mm C396 (30 – 150A) + C396CBARXT Direct Connect to XT Frame G Contactor — Approximate Dimensions in mm [in]**

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**Catalog Number Selection**

**Table 13. XTIEC Contactors & Starters — Catalog Numbering System**

<b>XT CE C 007 B 01 AD P16</b>																																														
<p><b>Designation</b> XT = XT Line of IEC Control</p>																																														
<p><b>Type</b></p> <p>CE = 3-Pole FVNR IEC Contactor                  CS = 3-Pole FVNR S Series IEC Contactor                  CF = 4-Pole FVNR IEC Contactor                  CR = 3-Pole FVR IEC Contactor                  CC = IEC Capacitor Contactor                  AE = FVNR IEC Starter                  AS = FVNR S-Series IEC Starter                  AR = FVR IEC Starter</p>																																														
<p><b>Terminations</b></p> <p>Blank = Screw Terminals (6 – 65A); 5 mm (80 – 150A); No Lugs (185 – 2000A)                  C = Spring Cage Terminals (6 – 32A); Spring Cage Coil Terminals Only (185 – 500A)</p>																																														
<p><b>Current Ratings, AC-3</b></p> <table border="1"> <thead> <tr> <th>Current Rating</th> <th>Frame Size Designation</th> <th>Built-In Auxiliary Contact</th> </tr> </thead> <tbody> <tr> <td>007 = 7A 009 = 9A 012 = 12A 015 = 15A</td> <td>B = 45 mm</td> <td>01 = 1NC 10 = 1NO</td> </tr> <tr> <td>018 = 18A 025 = 25A 032 = 32A</td> <td>C = 45 mm</td> <td></td> </tr> <tr> <td>040 = 40A 050 = 50A 065 = 65A</td> <td>D = 55 mm</td> <td>00 = 0NO-0NC</td> </tr> <tr> <td>080 = 80A 095 = 95A</td> <td>F = 90 mm</td> <td></td> </tr> <tr> <td>115 = 115A 150 = 150A</td> <td>G = 90 mm</td> <td></td> </tr> <tr> <td>185 = 185A 225 = 225A 250 = 250A</td> <td>L = 140 mm</td> <td>22 = 2NO-2NC</td> </tr> <tr> <td>300 = 300A 400 = 400A 500 = 500A</td> <td>M = 160 mm</td> <td></td> </tr> <tr> <td>580 = 580A 650 = 650A 750 = 750A 820 = 820A C10 = 1000A</td> <td>N = 250 mm</td> <td></td> </tr> <tr> <td>C14 = 1400A, AC-1</td> <td>P = 260 mm</td> <td></td> </tr> <tr> <td>C16 = 1600A, AC-3 C20 = 2000A, AC-1</td> <td>R = 515 mm</td> <td></td> </tr> </tbody> </table>			Current Rating	Frame Size Designation	Built-In Auxiliary Contact	007 = 7A 009 = 9A 012 = 12A 015 = 15A	B = 45 mm	01 = 1NC 10 = 1NO	018 = 18A 025 = 25A 032 = 32A	C = 45 mm		040 = 40A 050 = 50A 065 = 65A	D = 55 mm	00 = 0NO-0NC	080 = 80A 095 = 95A	F = 90 mm		115 = 115A 150 = 150A	G = 90 mm		185 = 185A 225 = 225A 250 = 250A	L = 140 mm	22 = 2NO-2NC	300 = 300A 400 = 400A 500 = 500A	M = 160 mm		580 = 580A 650 = 650A 750 = 750A 820 = 820A C10 = 1000A	N = 250 mm		C14 = 1400A, AC-1	P = 260 mm		C16 = 1600A, AC-3 C20 = 2000A, AC-1	R = 515 mm												
Current Rating	Frame Size Designation	Built-In Auxiliary Contact																																												
007 = 7A 009 = 9A 012 = 12A 015 = 15A	B = 45 mm	01 = 1NC 10 = 1NO																																												
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C14 = 1400A, AC-1	P = 260 mm																																													
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<p><b>XTAE, XTAS and XTAR Starters Only — Maximum Overload Relay</b></p> <table border="1"> <thead> <tr> <th colspan="2">XTOB Maximum Overload Rating</th> </tr> </thead> <tbody> <tr> <td><i>Frame B</i></td> <td><i>Frame D</i></td> </tr> <tr> <td>P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 012 = 9 – 12A 016 = 12 – 16A</td> <td>010 = 6 – 10A 016 = 10 – 16A 024 = 16 – 24A 040 = 24 – 40A 057 = 40 – 57A 065 = 50 – 65A</td> </tr> <tr> <td><i>Frame C</i></td> <td><i>Frame F</i></td> </tr> <tr> <td>P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 016 = 10 – 16A 024 = 16 – 24A 032 = 24 – 32A</td> <td>035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 150 = 120 – 150A</td> </tr> <tr> <td></td> <td><i>Frame G</i></td> </tr> <tr> <td></td> <td>035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 150 = 120 – 150A</td> </tr> <tr> <td></td> <td><i>Frame L</i></td> </tr> <tr> <td></td> <td>070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 160 = 120 – 160A 220 = 160 – 220A 250 = 200 – 250A</td> </tr> </tbody> </table>			XTOB Maximum Overload Rating		<i>Frame B</i>	<i>Frame D</i>	P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 012 = 9 – 12A 016 = 12 – 16A	010 = 6 – 10A 016 = 10 – 16A 024 = 16 – 24A 040 = 24 – 40A 057 = 40 – 57A 065 = 50 – 65A	<i>Frame C</i>	<i>Frame F</i>	P16 = 0.1 – 0.16A P24 = 0.16 – 0.24A P40 = 0.24 – 0.4A P60 = 0.4 – 0.6A 001 = 0.6 – 1A 1P6 = 1.0 – 1.6A 2P4 = 1.6 – 2.4A 004 = 2.4 – 4A 006 = 4 – 6A 010 = 6 – 10A 016 = 10 – 16A 024 = 16 – 24A 032 = 24 – 32A	035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 150 = 120 – 150A		<i>Frame G</i>		035 = 25 – 35A 050 = 35 – 50A 070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 150 = 120 – 150A		<i>Frame L</i>		070 = 50 – 70A 100 = 70 – 100A 125 = 95 – 125A 160 = 120 – 160A 220 = 160 – 220A 250 = 200 – 250A																										
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<p><b>Coil Codes</b> See Table 16.</p>																																														

**Non-reversing Starters, C396 Electronic Overload**



*Frame C XT Starter with  
C396 Electronic Overload*

**Table 14. Full Voltage Non-reversing 3-Pole Starters with C396 Electronic Overload**

I <sub>e</sub> (A)		Maximum kW Ratings AC-3					Maximum 3-Phase Motor Rating						Auxiliary Contacts	Catalog Number ①②	Price	
AC-3	AC-1	3-Phase Motors 50 – 60 Hz					1-Phase hp Ratings		3-Phase hp Ratings						Standard	
		220/ 230V	380/ 400V	415V	660/ 690V	1000V	115V	230V	200V	230V	460V	575V			AC Coil	DC Coil
<b>Frame B</b>																
7	20	2.2	3	4	3.5	—	1/4	1	1-1/2	2	3	5	1NO	XTAE007B10_ _		
7	20	2.2	3	4	3.5	—	1/4	1	1-1/2	2	3	5	1NC	XTAE007B01_ _		
9	20	2.5	4	5.5	4.5	—	1/2	1-1/2	3	3	5	7-1/2	1NO	XTAE009B10_ _		
9	20	2.5	4	5.5	4.5	—	1/2	1-1/2	3	3	5	7-1/2	1NC	XTAE009B01_ _		
12	20	3.5	5.5	7	6.5	—	1	2	3	3	10 ③	10	1NO	XTAE012B10_ _		
12	20	3.5	5.5	7	6.5	—	1	2	3	3	10 ③	10	1NC	XTAE012B01_ _		
15.5	20	4	7.5	8	7	—	1	3	5	5	10 ③	10	1NO	XTAE015B10_ _		
15.5	20	4	7.5	8	7	—	1	3	5	5	10 ③	10	1NC	XTAE015B01_ _		
<b>Frame C</b>																
18	35	5	7.5	10	11	—	2	3	5	5	10 ③	15	1NO	XTAE018C10_ _		
18	35	5	7.5	10	11	—	2	3	5	5	10 ③	15	1NC	XTAE018C01_ _		
25	40	7.5	11	14.5	14	—	2	5	7-1/2	7-1/2	15	20	1NO	XTAE025C10_ _		
25	40	7.5	11	14.5	14	—	2	5	7-1/2	7-1/2	15	20	1NC	XTAE025C01_ _		
32	40	10	15	18	17	—	3	5	10	10	20	25	1NO	XTAE032C10_ _		
32	40	10	15	18	17	—	3	5	10	10	20	25	1NC	XTAE032C01_ _		
<b>Frame D</b>																
40	50	12.5	18.5	24	23	—	3	7-1/2	10	15	30	40	—	XTAE040D00_ _		
50	60	15.5	22	30	30	—	3	10	15	20	40	50	—	XTAE050D00_ _		
65	72	20	30	39	35	—	5	15	20	25	50	60	—	XTAE065D00_ _		
<b>Frame F</b>																
80	110	25	37	48	63	—	7-1/2	15	25	30	60	75	—	XTAE080F00_ _		
95	110	30	45	57	75	—	7-1/2	15	25	40	75	100	—	XTAE095F00_ _		
<b>Frame G</b>																
115	160	37	55	70	105	—	10	25	40	50	100	125	—	XTAE115G00_ _		
150	160	48	75	91	125	—	15	30	40	60	125	125	—	XTAE150G00_ _		

① Underscore ( \_ ) indicates magnet coil suffix required. See **Table 16**.  
 ② Underscore ( \_ ) indicates overload relay suffix required. See **Table 18**.  
 ③ For electrical life contactor application data see **Table 17**.

**Reversing Starters, C396 Electronic Overload**

**Table 15. Full Voltage Reversing Starters with Screw Terminals and C396 Electronic Overload**

I <sub>e</sub> (A)		Maximum kW Ratings AC-3					Maximum 3-Phase Motor Rating						Catalog Number ④⑤	Price		
AC-3		3-Phase Motors 50 – 60 Hz					1-Phase hp Ratings		3-Phase hp Ratings					Standard		
		220/ 230V	380/ 400V	415V	660/ 690V	115V	230V	200V	230V	460V	575V	AC Coil		DC Coil		
<b>Frame B</b>																
7	2.2	3	4	3.5	1/4	1	1-1/2	2	3	5	XTAR007B21_ _					
9	2.5	4	5.5	4.5	1/2	1-1/2	3	3	5	7-1/2	XTAR009B21_ _					
12	3.5	5.5	7	6.5	1	2	3	3	10	10	XTAR012B21_ _					
<b>Frame C</b>																
18	5	7.5	8	11	2	3	5	5	10	15	XTAR018C21_ _					
25	7.5	11	14.5	14	2	5	7-1/2	7-1/2	15	20	XTAR025C21_ _					
32	10	15	18	17	3	5	10	10	20	25	XTAR032C21_ _					
<b>Frame D</b>																
40	12.5	18.5	24	23	3	7-1/2	10	15	30	40	XTAR040D11_ _					
50	15.5	22	30	30	3	10	15	20	40	50	XTAR050D11_ _					
65	20	30	39	35	5	15	20	25	50	60	XTAR065D11_ _					

④ Underscore ( \_ ) indicates magnet coil suffix required. See **Table 16**.  
 ⑤ Underscore ( \_ ) indicates overload relay suffix required. See **Table 18**.

Coil Voltage Chart ..... **Page 13**  
 Dimensions ..... **Page 14**  
 Overload Relays ..... **Page 2**  
 Discount Symbol ..... **MC7**

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**Table 16. Magnet Coil Suffix**

Coil Voltage	Suffix Code
<b>Frame A – B</b>	
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
230V 50 Hz	F
24V 50/60 Hz	T
24V DC	TD
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E
190V 50 Hz, 220V 60 Hz	G
240V 50 Hz, 277V 60 Hz	H
380V 50 Hz, 440V 60 Hz	L
400V 50 Hz	N
380V 60 Hz	P
12V 50/60 Hz	R
24V 50 Hz	U
42V 50 Hz, 48V 60 Hz	W
48V 50 Hz	Y
120V DC	AD
220V DC	BD
12V DC	RD
48V DC	WD

① Frame C – D only.

② Frame L – M only.

Coil Voltage	Suffix Code
<b>Frame C – F</b>	
110V 50 Hz, 120V 60 Hz	A
220V 50 Hz, 240V 60 Hz	B
230V 50 Hz	F
24V 50/60 Hz	T
24 – 27V DC	TD
415V 50 Hz, 480V 60 Hz	C
550V 50 Hz, 600V 60 Hz	D
208V 60 Hz	E
190V 50 Hz, 220V 60 Hz	G
240V 50 Hz, 277V 60 Hz	H
380V 50 Hz, 440V 60 Hz	L
400V 50 Hz	N
380V 60 Hz	P
12V 50/60 Hz	R
24V 50 Hz	U
42V 50 Hz, 48V 60 Hz	W
48V 50 Hz	Y
110 – 130V DC	AD
200 – 240V DC	BD
12 – 14V DC	RD ①
48 – 60V DC	WD

Coil Voltage	Suffix Code
<b>Frame G</b>	
100 – 120V 50/60 Hz	A
190 – 240V 50/60 Hz	B
24V 50/60 Hz	T
24 – 27V DC	TD
480 – 500V 50/60 Hz	C
380 – 440V 50/60 Hz	L
42 – 48V 50/60 Hz	W
110 – 130V DC	AD
200 – 240V DC	BD
48 – 60V DC	WD
<b>Frame L – N</b>	
110 – 250V 40 – 60 Hz/DC	A
250 – 500V 40 – 60 Hz	C
48 – 110V 40 – 60 Hz/DC	Y
24 – 48V DC	TD ②
<b>Frame L – N, S-Series</b>	
110 – 120V 50/60 Hz	A
220 – 240V 50/60 Hz	B
<b>Frame P – R</b>	
220 – 250V 50 – 60 Hz/DC	B

**Table 17. Starter Application Data**

Catalog Prefix	AC-3	Electrical Life (Operations)
XTAE012B	12A	1 million
XTAE015B	15A	1.2 million
XTAE018C	18A	2 million

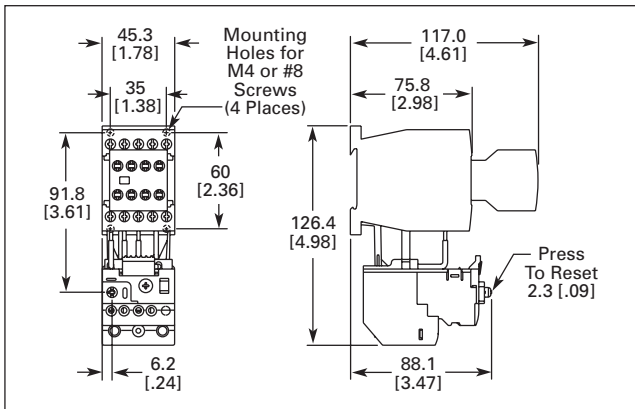
**Table 18. C396 Overload Relay Suffix**

FLA Range (Amps)	Suffix	For Use with XTIEC Contactor Frame Size / Width	Catalog Number Standard Class 5/10/20/30
	Std. Class 5/10/20/30		
<b>45 mm Overload Frame Size</b>			
0.1 – 0.5	3EP05	B / 45 mm	C396A2AP05SELXB
0.4 – 2.0	3E002	B / 45 mm	C396A2A002SELXB
1 – 5	3E005	B / 45 mm	C396A2A005SELXB
1.6 – 8	3E008	B / 45 mm	C396A2A008SELXB
6.4 – 32	3E032	B / 45 mm	C396A2A032SELXB
0.1 – 0.5	3EP05	C / 45 mm	C396A2AP05SELXC
0.4 – 2.0	3E002	C / 45 mm	C396A2A002SELXC
1 – 5	3E005	C / 45 mm	C396A2A005SELXC
1.6 – 8	3E008	C / 45 mm	C396A2A008SELXC
6.4 – 32	3E032	C / 45 mm	C396A2A032SELXC
6.4 – 32	3E032	D / 55 mm	C396A2A032SELXD
9 – 45	3E045	D / 55 mm	C396A2A045SELXD
<b>65 mm Overload Frame Size</b>			
15 – 75	3E075	D / 55 mm	C396B2A075SELXD
22 – 110	3E110	F – G / 90 mm	C396B2A110SELXF
<b>110 mm Overload Frame Size</b>			
30 – 150	3E150	G / 90 mm	C396C2A150SELAX ③

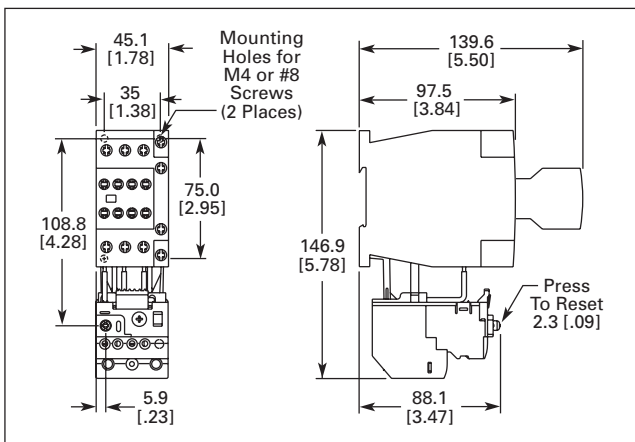
③ Catalog Number shown is for Stand-Alone C396 Overload Relay. For direct connection to XT Frame G contactor, order additional XT Bus Bar Kit, C396CBARXT, shown in Tables 8 and 11. If load side lugs are required, order C396CLUG (set of 3).

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Overload Relays ..... Page 2  
Discount Symbol ..... MC7

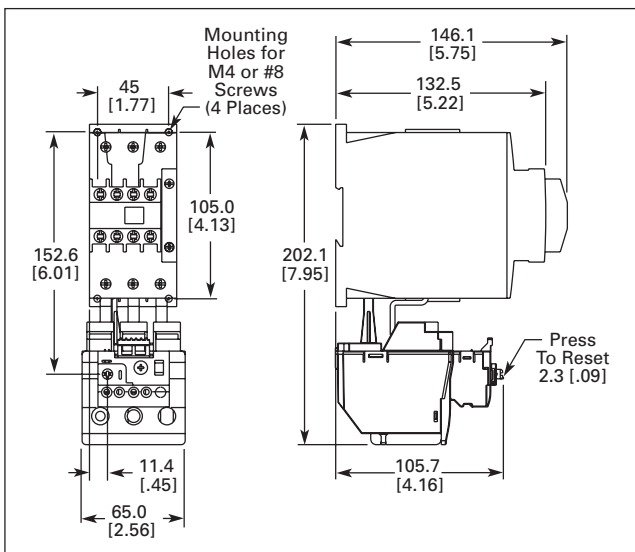
**XTAE Starters with C396 Overload Relay**



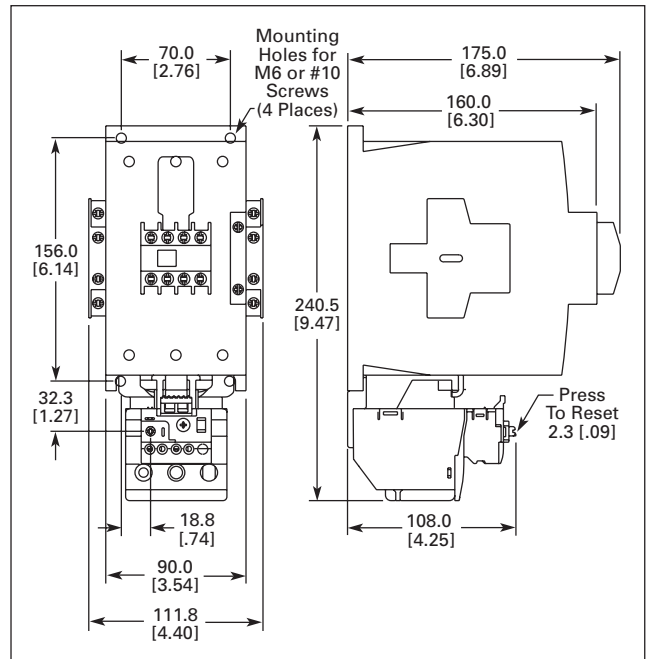
**Figure 12. Frame B, XTAE007B – XTAE012B Starters with C396 (0.1 – 15A) — Approximate Dimensions in mm [in]**



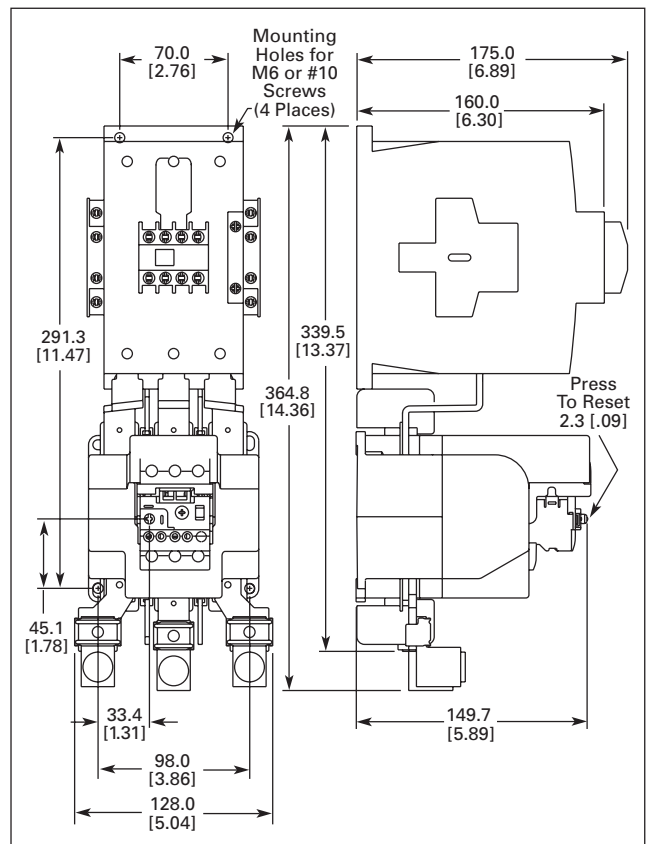
**Figure 13. Frame C, XTAE018C – XTAE032C Starters with C396 (0.1 – 32A) — Approximate Dimensions in mm [in]**



**Figure 14. Frame D, XTAE040D – XTAE065D Starters with C396 (15 – 75A) — Approximate Dimensions in mm [in]**



**Figure 15. Frame F and G, XTAE080F – XTAE115G Starters with C396 (22 – 110A) — Approximate Dimensions in mm [in]**



**Figure 16. Frame G, XTAE115G – XTAE150G Starters with C396 (30 – 150A) — Approximate Dimensions in mm [in]**

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## Catalog Number Selection

Table 19. Freedom Catalog Numbering System

A N 1 4 A N 0 A 3 E 0 0 5

**Device Type**

A = Starter  
C = Contactor

**Standard**

E = IEC  
N = NEMA

**Device Assembly Configuration**

70 = Multi-Speed  
1 = Non-reversing  
5 = Reversing

**OLR Type**

4 = Starter w/C396 Electronic Overload  
5 = Contactor only — no overload relay  
6 = Starter w/C306 Bi-Metal OLR  
7 = Starter w/C316 Bi-Metal OLR  
8 = Starter w/IT. SSOLR

**Contactor Frame Size ①**

NEMA Size	Continuous Amp Rating
A = 00	9
B = 0	18
D = 1	27
G = 2	45
K = 3	90
N = 4	135
S = 5	270
T = 6	540
U = 7	810
V = 8	1215

**NEMA Enclosure**

N = Open

*For Starters*

**Starter Mounting Option**

0 = Horizontal  
V = Vertical

**For Contactors Only**

2 = 2-pole  
3 = 3-pole  
4 = 4-pole  
5 = 5-pole

**C396 Electronic Overload FLA Range (FNVR & FVR Only)**

<i>Frame A — NEMA Size 00</i> P05 = 0.1 – 0.5A 002 = 0.4 – 2.0A 005 = 1.0 – 5.0A 008 = 1.6 – 8.0A	<i>Frame G — NEMA Size 2</i> 008 = 1.6 – 8.0A 045 = 9.0 – 45A
<i>Frame B — NEMA Size 0</i> P05 = 0.1 – 0.5A 002 = 0.4 – 2.0A 005 = 1.0 – 5.0A 008 = 1.6 – 8.0A 032 = 6.4 – 32A	<i>Frame K — NEMA Size 3</i> 110 = 22 – 110A <i>Frame N — NEMA Size 4</i> 150 = 30 – 150A <i>Frame S — NEMA Size 5 ②</i> 300 = 60 – 300A
<i>Frame D — NEMA Size 1</i> P05 = 0.1 – 0.5A 002 = 0.4 – 2.0A 005 = 1.0 – 5.0A 008 = 1.6 – 8.0A 032 = 6.4 – 32A	<i>Frame T — NEMA Size 6 ②</i> 600 = 120 – 600A <i>Frame U — NEMA Size 7 ②</i> 10C = 200 – 1000A <i>Frame V — NEMA Size 8 ②</i> 15C = 300 – 1500A

**C396 Electronic OLR Designation (FVNR & FVR Only)**

3E = Standard C396 OLR, SEL Reset, SEL Class

**C306 Bi-Metallic OLR Designation**

C = NEMA Size 00, 0  
B = NEMA Size 1, 2  
N/R = NEMA Size 3, 4 ③  
B = NEMA Size 5  
C = NEMA Size 6  
B = NEMA Size 7, 8

**AC Coil Suffix**

Suffix	Coil Volts and Hertz
A =	120/60 or 110/50
B =	240/60 or 220/50
C =	480/60 or 440/50
D =	600/60 or 550/50
E =	208/60
H =	277/60
J =	208 – 240/60 ④
K =	240/50
L =	380 – 415/50
N =	550/50
T =	24/60, 24/50 ⑤
U =	24/50
V =	32/50
W =	48/60
Y =	48/50

- ① For Contactor Only orders, add **B** to end of Catalog Number if NEMA Size 00 – 2, 6.
- ② Uses panel-mount CT with C396A2A005SELAX Overload.
- ③ Not required.
- ④ NEMA Sizes 00 and 0 only.
- ⑤ NEMA Sizes 00 and 0 only. Sizes 1 – 8 are 24/60 only.

**Product Selection**



Catalog Number AN14GN0 \_ \_ \_

**Table 20. Type AN14/AN54 NEMA — C396 Selectable Reset Electronic Overload Relay — Non-reversing and Reversing**

NEMA Size	Cont. Amp Rating	Service-Limit Current Rating <sup>⑥</sup> (Amps)	Maximum UL Horsepower <sup>⑤</sup>						3-Pole Non-reversing <sup>①②③</sup>		3-Pole Reversing <sup>①②③</sup>		Vertical Reversing <sup>①②③</sup>	
			1-Phase		3-Phase				Catalog Number	Price	Catalog Number	Catalog Number	Price	
			115V	230V	208V	240V	480V	600V						
00	9	11	1/3	1	1-1/2	1-1/2	2	2	AN14AN0 _ _ _		AN54AN0 _ _ _	—		
0	18	21	1	2	3	3	5	5	AN14BN0 _ _ _		AN54BN0 _ _ _	AN54BNV _ _ _		
1	27	32	2	3	7-1/2	7-1/2	10	10	AN14DN0 _ _ _		AN54DN0 _ _ _	AN54DNV _ _ _		
2	45	52	3	7-1/2	10	15	25	25	AN14GN0 _ _ _		AN54GN0 _ _ _	AN54GNV _ _ _		
3	90	104	—	—	25	30	50	50	AN14KN0 _ _ _		AN54KN0 _ _ _	AN54KNV _ _ _		
4 <sup>④</sup>	135	156	—	—	40	50	100	100	AN14NN0 _ _ _		AN54NN0 _ _ _	AN54NNV _ _ _		
5	270	311	—	—	75	100	200	200	AN14SN0 _ _ _		AN54SN0 _ _ _	—		
6	540	621	—	—	150	200	400	400	AN14TN0 _ _ _		AN54TN0 _ _ _	—		
7	810	932	—	—	200	300	600	600	AN14UN0 _ _ _		AN54UN0 _ _ _	—		
8 <sup>⑦</sup>	1215	1400	—	—	400	450	900	900	AN14VN0 _ _ _		AN54VN0 _ _ _	—		

- ① Underscore ( \_ ) indicates coil suffix required, see **Table 21**.
  - ② Underscore ( \_ ) indicates OLR designation required, see **Table 22**.
  - ③ Underscore ( \_ ) indicates FLA range, see **Table 23**.
  - ④ Starter is shipped unassembled. Catalog Number includes overload relay and contactor. Not a direct dimensional replacement for Size 4 Starter with C306 bi-metallic overload.
  - ⑤ Maximum horsepower rating of starters for 380V 50 Hz applications:
- | NEMA Size  | 00    | 0 | 1  | 2  | 3  | 4  | 5   | 6   | 7   | 8   |
|------------|-------|---|----|----|----|----|-----|-----|-----|-----|
| Horsepower | 1-1/2 | 5 | 10 | 25 | 50 | 75 | 150 | 300 | 600 | 900 |
- ⑥ The service-limit current ratings represent the maximum rms current, in amperes, which the controller shall be permitted to carry for protracted periods in normal service. At service-limit current ratings, temperature rises shall be permitted to exceed those obtained by testing the controller at its continuous current rating. The current rating of overload relays or trip current of other motor protective devices used shall not exceed the service-limit current rating of the controller.
  - ⑦ Common control. For separate 120V control, insert letter **D** in 7th position of listed Catalog Number. EXAMPLE: AN54VND \_ \_ \_.

**Table 21. AC Suffix Code**

Coil Volts and Hertz	Code Suffix
120/60 or 110/50	<b>A</b>
240/60 or 220/50	<b>B</b>
480/60 or 440/50	<b>C</b>
600/60 or 550/50	<b>D</b>
208/60	<b>E</b>
277/60	<b>H</b>
208 – 240/60 <sup>⑥</sup>	<b>J</b>
240/50	<b>K</b>
380 – 415/50	<b>L</b>
550/50	<b>N</b>
24/60, 24/50 <sup>⑥</sup>	<b>T</b>
24/50	<b>U</b>
32/50	<b>V</b>
48/60	<b>W</b>
48/50	<b>Y</b>

- ⑥ NEMA Sizes 00 and 0 only.
- ⑥ NEMA Sizes 00 and 0 only. Sizes 1 – 8 are 24/60 only.

**Table 22. OLR Designation**

OLR
<b>3E</b> = Standard C396 OLR, SEL Reset, SEL Class

**Table 23. C396 FLA Range (FNVR & FVR Only)**

NEMA Size	FLA Range
00	<b>P05</b> = 0.1 – 0.5A <b>005</b> = 1.0 – 5.0A <b>002</b> = 0.4 – 2.0A <b>008</b> = 1.6 – 8.0A
0	<b>P05</b> = 0.1 – 0.5A <b>008</b> = 1.6 – 8.0A <b>002</b> = 0.4 – 2.0A <b>032</b> = 6.4 – 32A <b>005</b> = 1.0 – 5.0A
1	<b>P05</b> = 0.1 – 0.5A <b>008</b> = 1.6 – 8.0A <b>002</b> = 0.4 – 2.0A <b>032</b> = 6.4 – 32A <b>005</b> = 1.0 – 5.0A
2	<b>008</b> = 1.6 – 8.0A <b>045</b> = 9.0 – 45A
3	<b>110</b> = 22 – 110A
4	<b>150</b> = 30 – 150A
5 <sup>⑩</sup>	<b>300</b> = 60 – 300A
6 <sup>⑩</sup>	<b>600</b> = 120 – 600A
7 <sup>⑩</sup>	<b>10C</b> = 200 – 1000A
8 <sup>⑩</sup>	<b>15C</b> = 300 – 1500A

- ⑩ Uses panel-mount CT with C396A2A005SELAX Overload, see **Table 7**.

Technical Data –

- Overload..... **Pages 6**
- Overload Relay..... **Pages 2**
- Dimensions ..... **Pages 18 – 20**
- Discount Symbol ..... **MC7**



May 2008

**DC Magnet Coils**

**When Ordering Specify**

**Conversion Kit for Field Assembly**

- Catalog Number

**Factory Installed DC Coil**

- For factory installed DC magnet coil on AC contactors or non-combination starters (open type only), substitute the Code Suffix from table below for the magnet coil identifier in the device Catalog Number.

EXAMPLE: For Size 0 AC contactor with a 24V DC coil, change AN16BN0AC to AN16BN0T1C.

**Application**

- Connect for separate control
- Not for use with cover control switch operators
- Use twin break, heavy-duty pilot devices.
- Designed for +10%, -20% rated voltage, continuous duty operation.

**Non-reversing Kit Consists of:**

- 1 Encapsulated DC magnet coil
- 1 NCI or NO/NCI side mounted auxiliary contact

**Note:** These kits are supplied with a NO/NCI side mounted auxiliary contact in place of the NCI contact.

- 2 Blue colored connection wires
- 1 Instruction publication

**Operation**

See next page for operation details.

**Table 24. Product Selection**

Contactor or Starter Size		Conversion Data					Complete Conversion Kit			Factory Installed	
NEMA	IEC	Volts	Magnet Coil			NCI Interlock	Catalog Number	Price	Ship Wt. Lbs. (kg)	Code Suffix	Adder
			Coil Number	Amps P.U./Seal	Watts P.U./Seal						
<b>Non-reversing — Kit includes NCI Side Mounted Auxiliary contact</b>											
00 and 0 CN35 – A, B, D D15 Relays	A – F	12	9-2988-11	6.4/.28	76.8/3.36	C320KGD1	C335KD3R1		1.0 (.5)	R1	
		24	9-2988-12	3.2/.14	76.8/3.36	C320KGD1	C335KD3T1			T1	
		48	9-2988-13	1.6/.07	76.8/3.36	C320KGD1	C335KD3W1			W1	
		120	9-2988-14	.64/.028	76.8/3.36	C320KGD1	C335KD3A1			A1	
① 00 and 0 CN35 – A, B, D D15 Relays	A – F	12	9-2988-11	6.4/.28	76.8/3.36	C320KGD2 ①	C335KD3R4		1.0 (.5)	R4	
		24	9-2988-12	3.2/.14	76.8/3.36	C320KGD2 ①	C335KD3T4			T4	
		48	9-2988-13	1.6/.07	76.8/3.36	C320KGD2 ①	C335KD3W4			W4	
		120	9-2988-14	.64/.028	76.8/3.36	C320KGD2 ①	C335KD3A4			A4	
1 and 2 CN35 – G	G – K	12	9-2990-1	15.4/.42	185/4.98	C320KGD5	C335KD4R4		1.0 (.5)	R4	
		24	9-2990-2	7.7/.21	185/4.96	C320KGD5	C335KD4T4			T4	
		48	9-2990-3	3.9/.11	185/5.04	C320KGD5	C335KD4W4			W4	
		120	9-2990-4	1.5/.041	185/4.87	C320KGD5	C335KD4A4			A4	
3 CN35 – K	L – N	12	9-3002-1	24/.40	293/4.84	C320KGD3	C335KD5R1		2.0 (.9)	R1	
		24	9-3002-2	12/.20	288/4.75	C320KGD3	C335KD5T1			T1	
		48	9-3002-3	6.1/.097	295/4.67	C320KGD3	C335KD5W1			W1	
		120	9-3002-4	2.5/.038	298/4.57	C320KGD3	C335KD5A1			A1	
4 and 5 CN35 – N, S	P – S	24	9-2026-4	18/.22	400/5.3	C320KGD3	C335KA3T1		2.5 (1.1)	T1B	
		48	9-2026-3	9/.11	400/5.2	C320KGD3	C335KA3W1			W1B	
		120	9-2026-2	3.3/.05	450/5.4	C320KGD3	C335KA3A1			A1B	
		240	9-2026-1	1.7/.02	440/4.9	C320KGD3	C335KA3B1			B1B	
<b>Reversing</b>											
00 and 0 CN35 – A, B, D D15 Relays	A – F	12	(2) 9-2988-1	6.4/.28	76.8/3.36	(2) C320KGD1	C335RD3R1 ②		1.0 (.5)	R1 ③	
		24	(2) 9-2988-2	3.2/.14	76.8/3.36	(2) C320KGD1	C335RD3T1 ②			T1 ③	
		48	(2) 9-2988-3	1.6/.07	76.8/3.36	(2) C320KGD1	C335RD3W1 ②			W1 ③	
		120	(2) 9-2988-4	.64/.028	76.8/3.36	(2) C320KGD1	C335RD3A1 ②			A1 ③	
1 and 2 CN35 – G	G – K	12	(2) 9-2990-1	15.4/.42	185/4.98	(2) C320KGD3 ④			—	R1 ③	
		24	(2) 9-2990-2	7.7/.21	185/4.96	(2) C320KGD3 ④				T1 ③	
		48	(2) 9-2990-3	3.9/.11	185/5.04	(2) C320KGD3 ④				W1 ③	
		120	(2) 9-2990-4	1.5/.041	185/4.87	(2) C320KGD3 ④				A1 ③	

① These kits are supplied with a NO/NCI side mounted auxiliary contact in place of the NCI contact.  
 ② Kit does not include mechanical interlock or crossover wiring. Two NO/NCI top mounted auxiliary contacts are supplied for electrical interlocking.  
 ③ Factory installed DC coils on NEMA contactors and starters include a NO/NC top mounted auxiliary contact on each contactor for electrical interlocking. On IEC contactors and starters, a NC top mounted auxiliary contact is supplied on each contactor for electrical interlocking.  
 ④ Available factory assembled only.

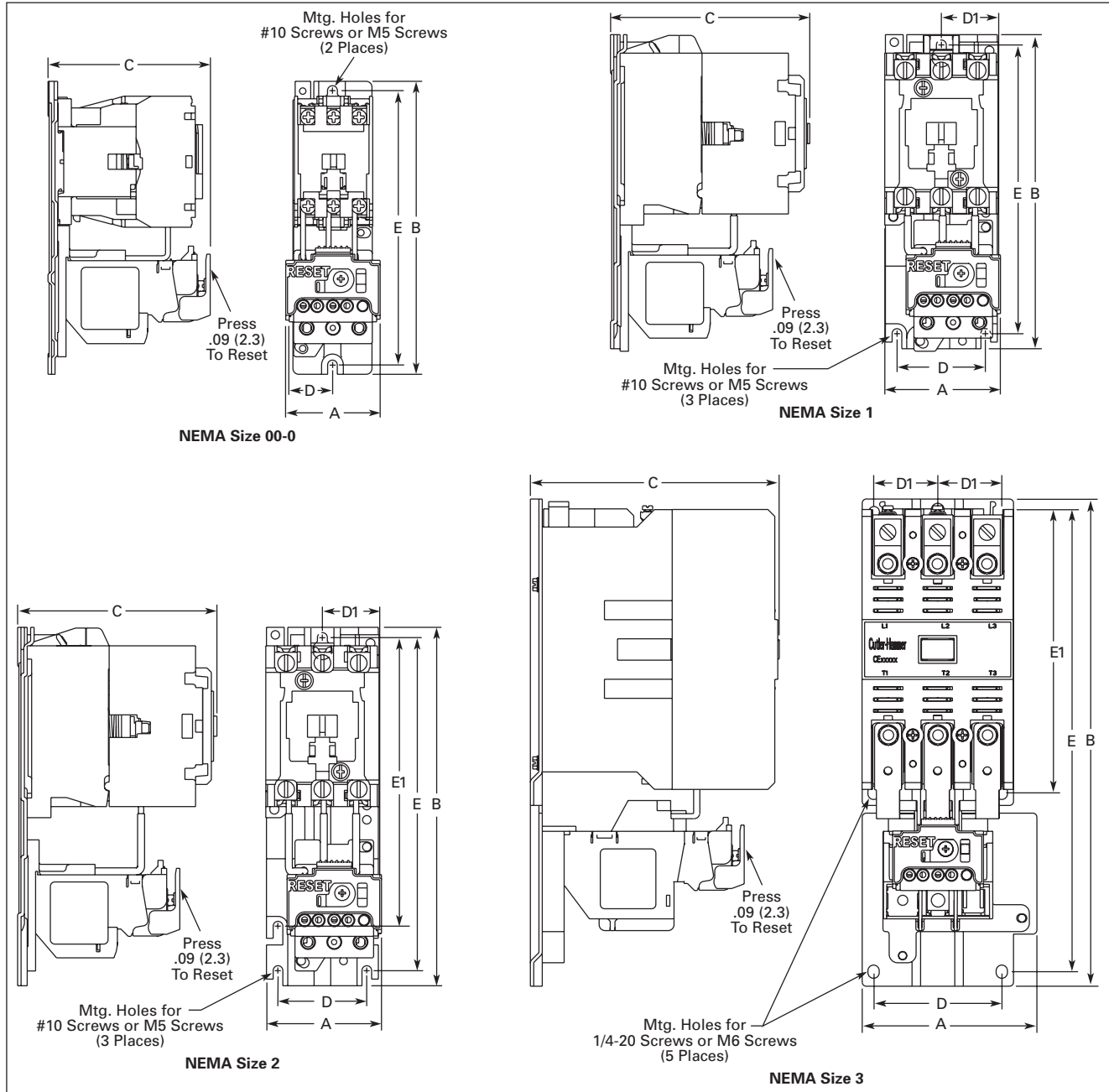
Discount Symbol ..... MC7

**Non-reversing Starters, C396 Electronic Overload**

**Table 25. Approximate Dimensions and Shipping Weights — C396 Electronic Overload**

NEMA Size	Dimensions in Inches (mm)			Mounting			
	Wide A	High B	Deep C	Wide D	High E	Wide D1	High E1
00-0	2.13 (54.0)	6.60 (167.6)	3.65 (92.8)	1.01 (25.7)	6.18 (157.0)	—	—
1	2.59 (65.9)	7.08 (179.7)	4.49 (114.0)	2.00 (50.8)	6.50 (165.1)	1.29 (32.8)	—
2	2.59 (65.9)	8.08 (205.1)	4.49 (114.0)	2.00 (50.8)	7.50 (190.5)	1.29 (32.8)	6.50 (165.1)
3	4.09 (103.9)	11.40 (289.6)	5.82 (147.9)	3.00 (76.2)	10.81 (274.6)	1.50 (38.1)	6.63 (168.3)

① Consult Eaton.



**Figure 17. Approximate Dimensions**

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Table 26. Approximate Dimensions and Shipping Weights — C396 Electronic Overload

NEMA Size	Dimensions in Inches (mm)			Mounting			
	Wide A	High B	Deep C	Wide D	High E	Wide D1	High E1
4	7.00 (177.8)	9.11 (231.4)	7.17 (182.2)	6.00 (152.4)	8.50 (215.8)	—	—
5	7.64 (194.0)	17.86 (453.7)	7.57 (192.4)	6.00 (152.4)	16.01 (406.6)	—	.66 (16.7)
6	9.47 (240.5)	21.69 (551.0)	9.89 (251.2)	3.10 (79.7)	18.00 (457.2)	3.18 (80.9)	.89 (22.5)

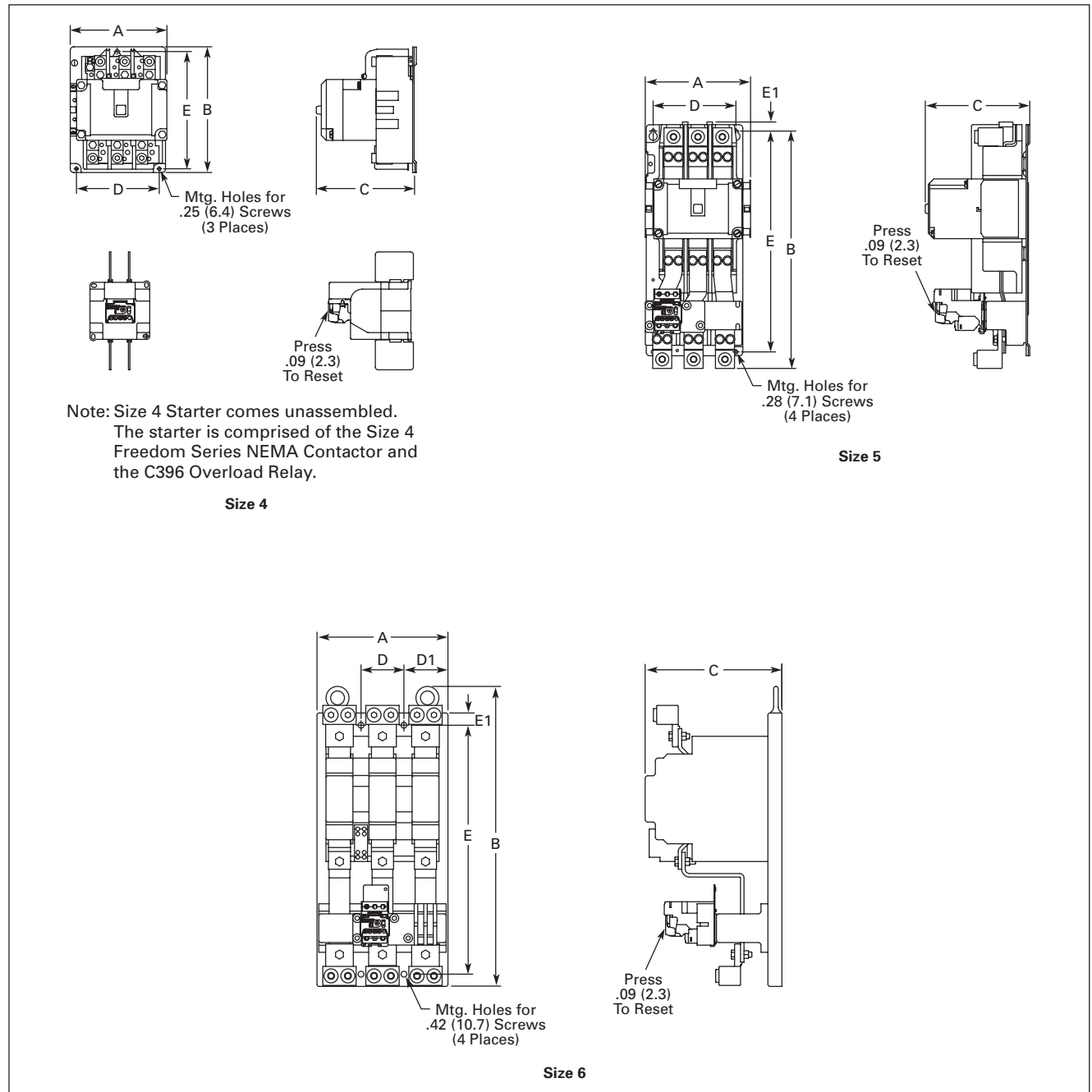
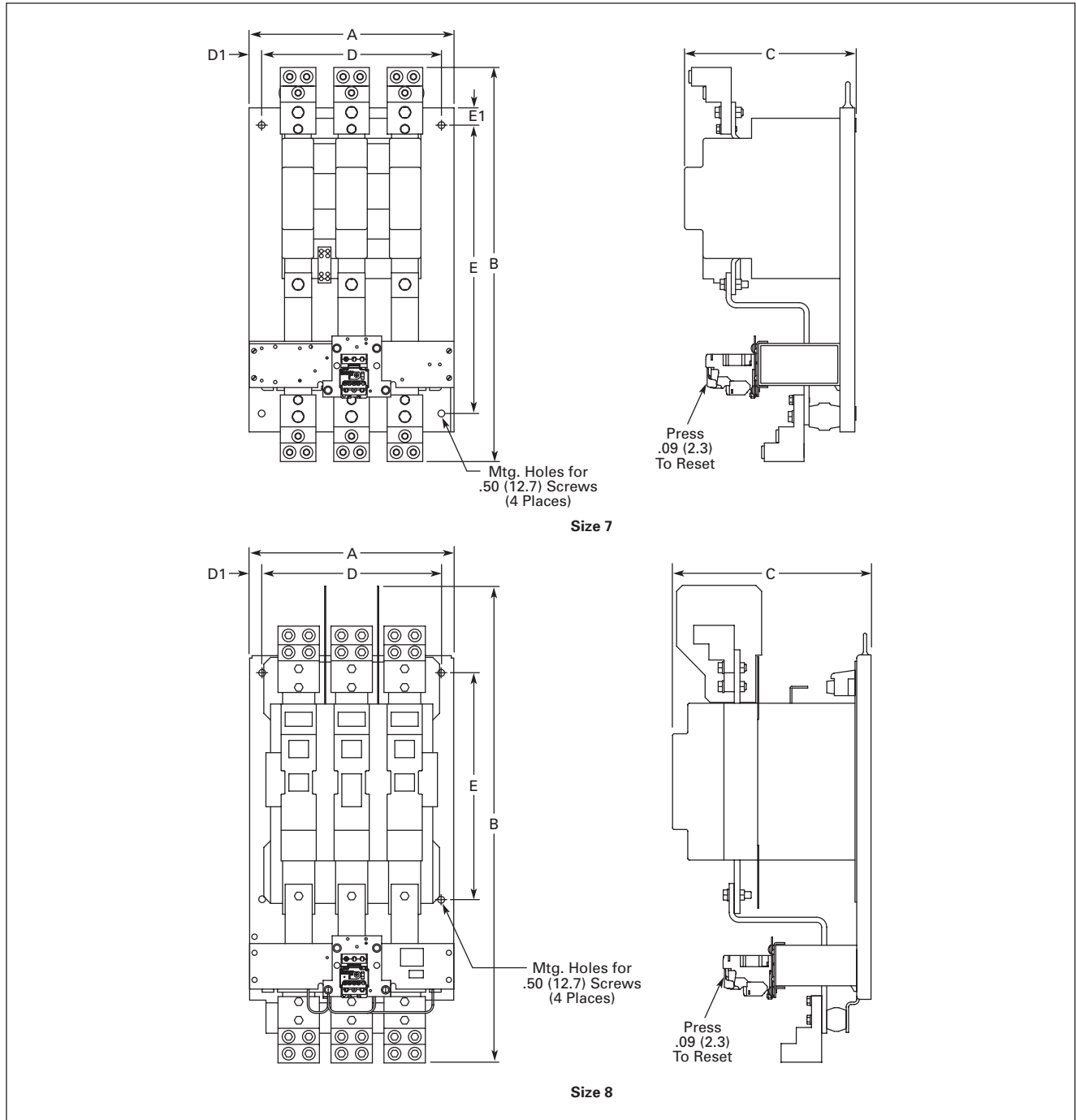


Figure 18. Approximate Dimensions

**Table 27. Approximate Dimensions and Shipping Weights — C396 Electronic Overload**

NEMA Size	Dimensions in Inches (mm)			Mounting			
	Wide A	High B	Deep C	Wide D	High E	Wide D1	High E1
7	15.11 (383.8)	29.04 (737.7)	12.63 (320.9)	13.25 (336.6)	21.25 (539.8)	.93 (23.7)	1.27 (32.4)
8	15.11 (383.8)	35.28 (895.1)	14.69 (373.0)	13.25 (336.6)	16.75 (425.5)	.93 (23.7)	—



**Figure 19. Approximate Dimensions**

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A29 Starter

**Product Description**

Cutler-Hammer® A29 and B29 Definite Purpose Starters from Eaton’s electrical business combine the features and flexibility of the C25 Definite Purpose Contactors and C396 Electronic Overload Relays.

**Features**

- Standard Version: Selectable Trip Class (5, 10, 20, 30) with Selectable Manual or Auto Reset (45 and 65 mm Frames)
- Current Adjustment Range: 5:1
- Self-Powered Design — will accept AC voltages from 12 to 690V 50/60 Hz
- Ambient Temperature Compensation
- Low Heat Generation
- Phase Loss Protection
- Phase Unbalance Protection
- Electrically isolated 1NO-1NC Contacts (Push-to-Test)
- Trip Status Indicator

**Standards and Certifications**

- UL Listed Components
- CSA Certified Components
- IEC EN 60947-4-1, EN 60947-5-1
- CE Certified Components
- RoHS Certified Components

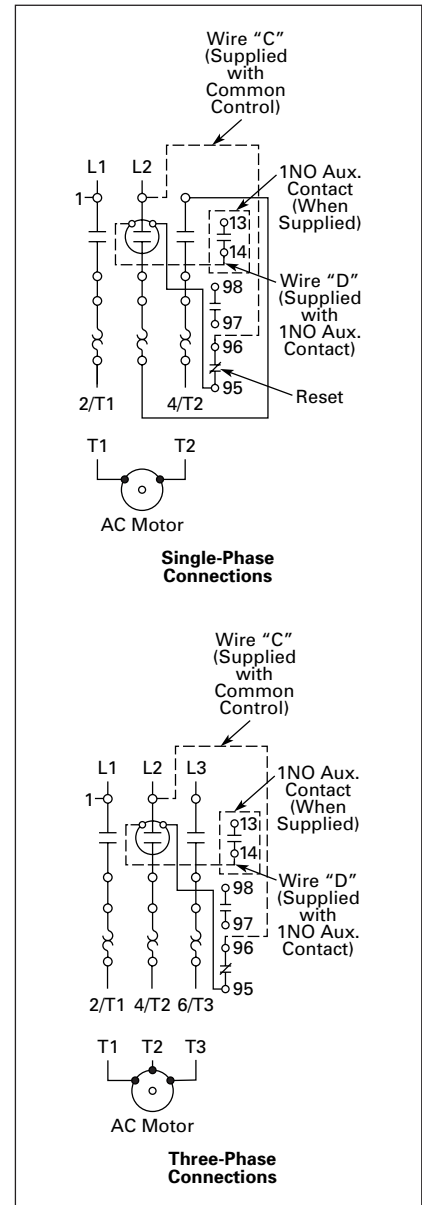
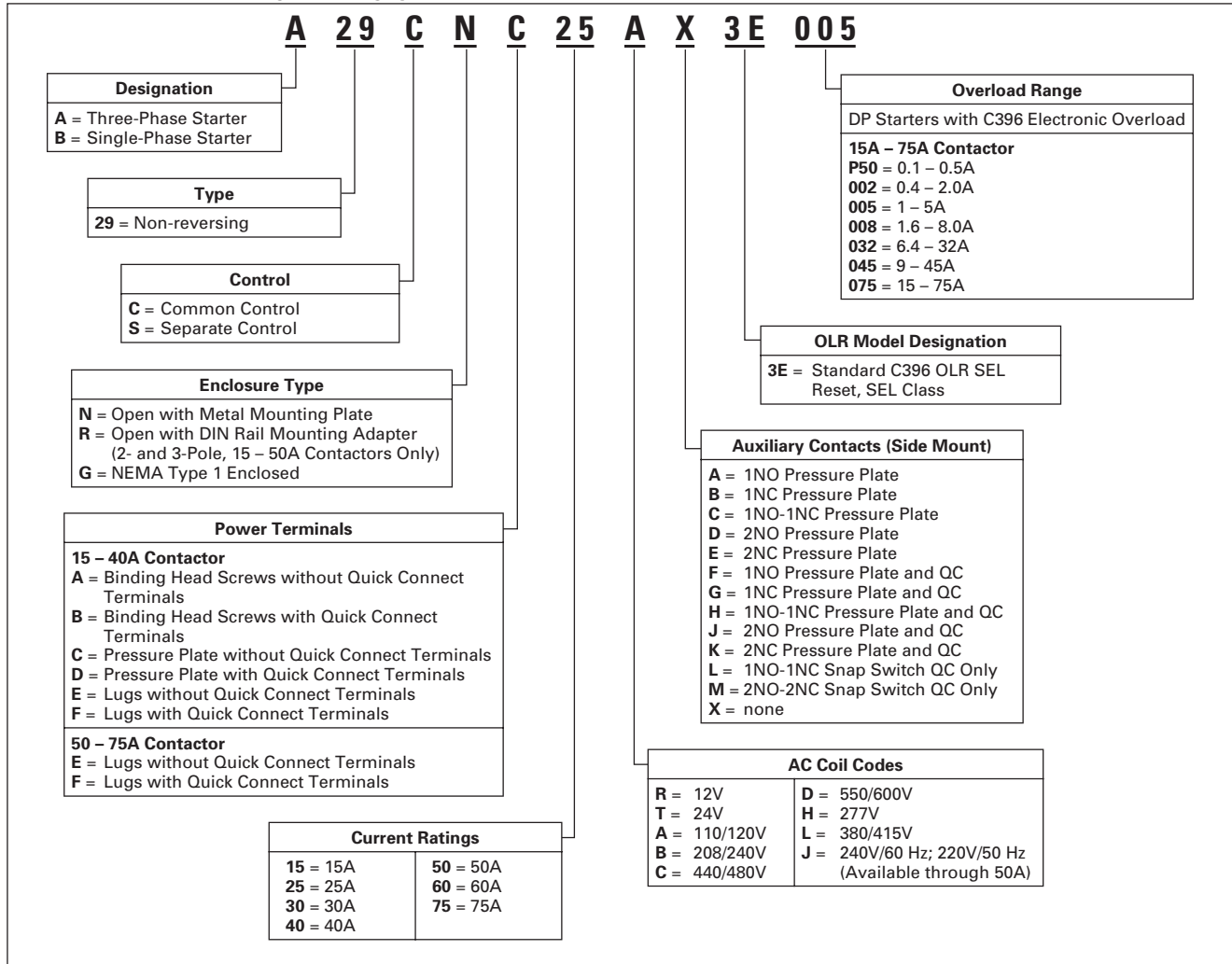


Figure 20. Starter Wiring Diagrams

**Catalog Number Selection**

Table 28. A29 and B29 DP Catalog Numbering System



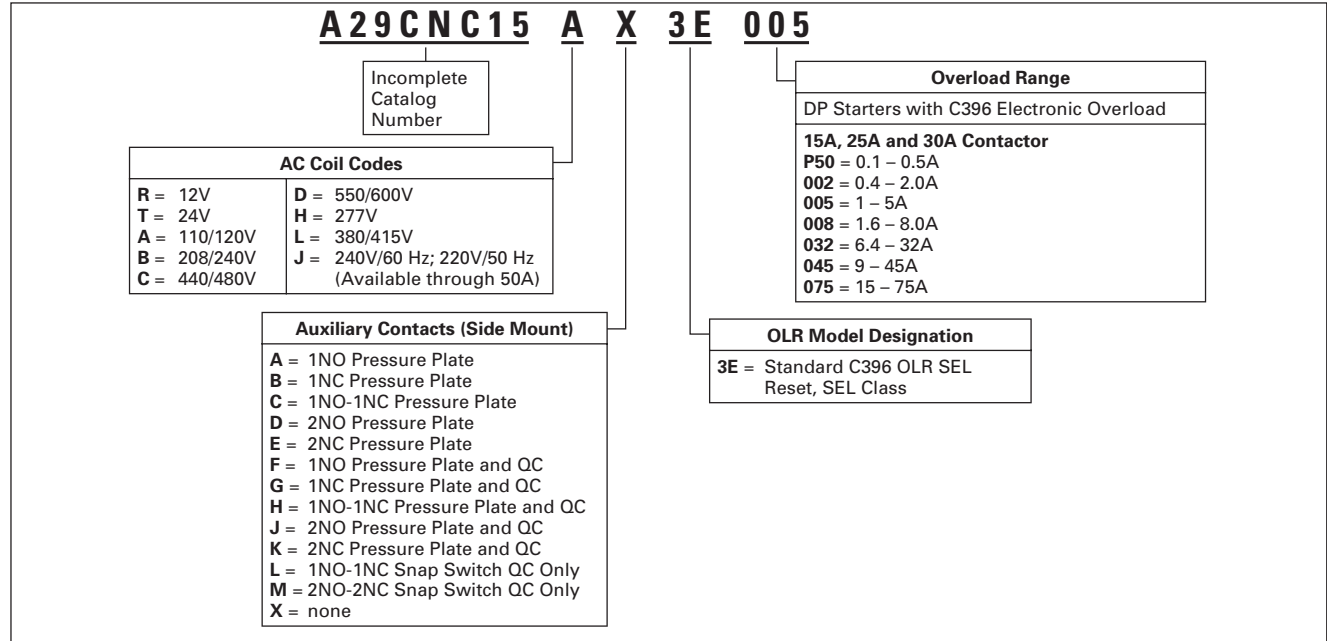
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**Product Selection**

**When Ordering Specify**

- Catalog Number plus AC Coil Code, Auxiliary Contact Code, OLR Model Designation and Overload Range Code (see Table 29).

**Table 29. Catalog Numbering System**



**Table 30. Three-Phase Starter Product Selection — Open Type**

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter	
					Catalog Number ①	Catalog Number ①	Catalog Number ①	Catalog Number ①	
15	115 230 460 575	90 90 75 60	— 3 5 5	— 2.2 3.7 3.7	A29CNC15_	A29CRC15_	A29SNC15_	A29SRC15_	
25	115 230 460 575	150 150 125 100	— 7-1/2 10 10	— 5.5 7.5 7.5	A29CNC25_	A29CRC25_	A29SNC25_	A29SRC25_	
30	115 230 460 575	180 180 150 120	— 10 15 15	— 7.5 11 11	A29CNE30_	A29CRE30_	A29SNE30_	A29SRE30_	
40	115 230 460 575	240 240 200 160	— 10 20 20	— 7.5 15 15	A29CNE40_	A29CRE40_	A29SNE40_	A29SRE40_	
50	115 230 460 575	300 300 250 200	— 15 30 30	— 11 22 22	A29CNE50_	A29CRE50_	A29SNE50_	A29SRE50_	
60	115 230 460 575	360 360 300 240	— 20 40 40	— 15 30 30	A29CNE60_	—	A29SNE60_	—	
75	115 230 460 575	450 450 375 300	— 20 50 50	— 18.5 37 37	A29CNE75_	—	A29SNE75_	—	

① Incomplete Catalog Number. Replace underscore ( \_ ) with Suffix (see Table 29).

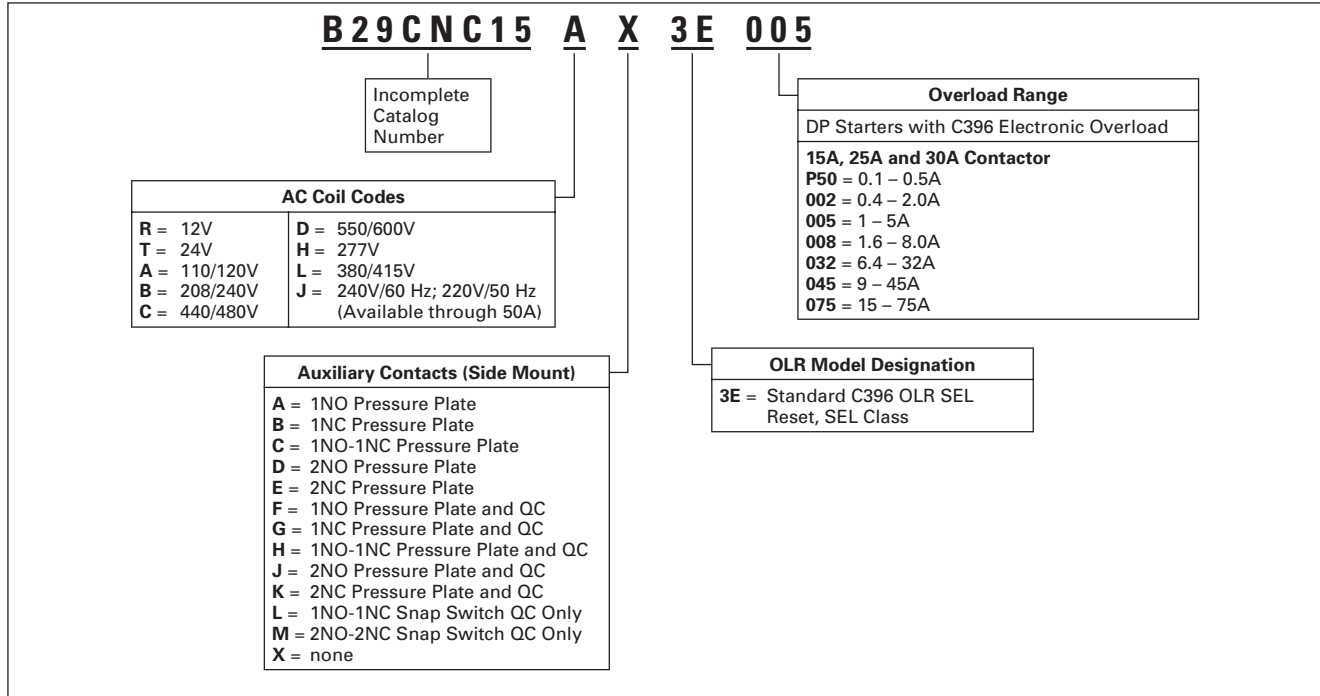
Discount Symbol ..... **MC8**

**Product Selection**

**When Ordering Specify**

- Catalog Number plus AC Coil Code, Auxiliary Contact Code, OLR Model Designation and Overload Range Code (see Table 31).

**Table 31. Catalog Numbering System**



**Table 32. Single-Phase Starter Product Selection — Open Type**

Ampere Rating			Max. Motor hp	Max. Motor kW	Common Control		Separate Control		Price		
Inductive Full Load	Line Voltage	Locked Rotor			Metal Mounting Plate	DIN Rail Adapter	Metal Mounting Plate	DIN Rail Adapter			
					Catalog Number ①	Catalog Number ①	Catalog Number ①	Catalog Number ①			
15	115	90	3/4	0.4	B29CNC15_	B29CRC15_	B29SNC15_	B29SRC15_			
	230	90								2	1.5
	460	75								—	—
	575	60								—	—
25	115	150	2	1.5	B29CNC25_	B29CRC25_	B29SNC25_	B29SRC25_			
	230	150								3	2.2
	460	125								—	—
	575	100								—	—
30	115	180	2	1.5	B29CNE30_	B29CRE30_	B29SNE30_	B29SRE30_			
	230	180								5	3.7
	460	150								—	—
	575	120								—	—
40	115	240	3	2.2	B29CNE40_	B29CRE40_	B29SNE40_	B29SRE40_			
	230	240								7-1/2	5.5
	460	200								—	—
	575	160								—	—
50	115	300	3	2.2	B29CNE45_	B29CRE45_	B29SNE45_	B29SRE45_			
	230	300								10	7.5
	460	250								—	—
	575	200								—	—

① Incomplete Catalog Number. Replace underscore ( \_ ) with Suffix (see Table 31).

Discount Symbol ..... **MC8**



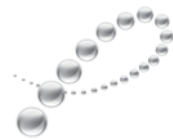
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**Table 33. C396 Replacement Overloads for Integrated Use with DP Contactors**

FLA Range (Amps)	DP Contactor Rating	Standard Class 5/10/20/30	
		Catalog Number	Price
<b>45 mm Overload Frame Size</b>			
0.1 – 0.5	15, 25, 30	C396A2AP05SELDC	
0.4 – 2.0	15, 25, 30	C396A2A002SELDC	
1 – 5	15, 25, 30	C396A2A005SELDC	
1.6 – 8	15, 25, 30, 40	C396A2A008SELDE	
6.4 – 32	15, 25, 30, 40, 50	C396A2A032SELDF	
9 – 45	40, 50	C396A2A045SELDF	
<b>65 mm Overload Frame Size</b>			
15 – 75	60, 75	C396B2A075SELDG	

Discount Symbol ..... **MC8**

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EatonCanada.ca



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Printed in Canada  
Publication No. CA03317001K  
May 2008