

Freedom full-voltage enclosed control



Non-combination full-voltage non-reversing starters

Features

- Single-phase or three-phase magnetic
- Available solid-state overload relay or interchangeable heater packs
- 600 V maximum



Combination fused disconnect non-reversing starters

Features

- Three-pole non-reversing
- Available solid-state overload relay or interchangeable heater packs
- 600 V maximum
- 100,000 rms short-circuit rating with fuses

Table 1. Non-combination full-voltage and combination fused disconnect non-reversing starters

NEMA size	Motor voltage	Maximum hp rating	Magnet coil voltage	Non-combination full voltage non-reversing starters			Combination fused disconnect non-reversing starters			Component starter (open)
				Type 1 general purpose	Type 3R outdoor	Type 12 outdoor	Type 1 general purpose	Type 3R outdoor	Type 12 outdoor	
00	200	1-1/2	120	ECN05A1AAA	ECN05A2AAA	ECN05A8AAA	ECN16A1AAB	ECN16A2AAB	ECN16A8AAB	AN16AN0AC
	230	1-1/2	120	ECN05A1AAA	ECN05A2AAA	ECN05A8AAA	ECN16A1AAB	ECN16A2AAB	ECN16A8AAB	AN16AN0AC
	460	2	120	ECN05A1AAA	ECN05A2AAA	ECN05A8AAA	ECN16A1AAC	ECN16A2AAC	ECN16A8AAC	AN16AN0AC
	575	2	120	ECN05A1AAA	ECN05A2AAA	ECN05A8AAA	ECN16A1AAC	ECN16A2AAC	ECN16A8AAC	AN16AN0AC
0	200	3	120	ECN0501AAA	ECN0502AAA	ECN0508AAA	ECN1601AAB	ECN1602AAB	ECN1608AAB	AN16BN0AC
	230	3	120	ECN0501AAA	ECN0502AAA	ECN0508AAA	ECN1601AAB	ECN1602AAB	ECN1608AAB	AN16BN0AC
	460	5	120	ECN0501AAA	ECN0502AAA	ECN0508AAA	ECN1601AAC	ECN1602AAC	ECN1608AAC	AN16BN0AC
	575	5	120	ECN0501AAA	ECN0502AAA	ECN0508AAA	ECN1601AAC	ECN1602AAC	ECN1608AAC	AN16BN0AC
1	200	7-1/2	120	ECN0511AAA	ECN0512AAA	ECN0518AAA	ECN1611AAB	ECN1612AAB	ECN1618AAB	AN16DN0AC
	230	7-1/2	120	ECN0511AAA	ECN0512AAA	ECN0518AAA	ECN1611AAB	ECN1612AAB	ECN1618AAB	AN16DN0AC
	460	10	120	ECN0511AAA	ECN0512AAA	ECN0518AAA	ECN1611AAC	ECN1612AAC	ECN1618AAC	AN16DN0AC
	575	10	120	ECN0511AAA	ECN0512AAA	ECN0518AAA	ECN1611AAC	ECN1612AAC	ECN1618AAC	AN16DN0AC
2	200	10	120	ECN0521AAA	ECN0522AAA	ECN0528AAA	ECN1621AAD	ECN1622AAD	ECN1628AAD	AN16GN0AC
	230	15	120	ECN0521AAA	ECN0522AAA	ECN0528AAA	ECN1621AAD	ECN1622AAD	ECN1628AAD	AN16GN0AC
	460	25	120	ECN0521AAA	ECN0522AAA	ECN0528AAA	ECN1621AAE	ECN1622AAE	ECN1628AAE	AN16GN0AC
	575	25	120	ECN0521AAA	ECN0522AAA	ECN0528AAA	ECN1621AAE	ECN1622AAE	ECN1628AAE	AN16GN0AC

Note: For starters with solid-state overload, see Modification Codes in **Table 2**.

Note: Starters do not include heater packs. Select one carton of three heater packs. See **Table 3**.



Powering Business Worldwide

Overload selection

Table 2. Modification codes—solid-state overload for NEMA (Freedom) starters

For solid-state overload, add R63 or R64 modification code after the base catalog number (example, **ECN0501AAA-R63/B**).

NEMA [®] size	Full load current adjustment range (A)	Selectable class 10/20/30	
		Three-phase without ground fault auto/manual reset overload	Three-phase with ground fault auto/manual reset overload
00	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
0 & 1	1–5	R63/B	R64/B
	4–20	R63/C	R64/C
	9–45	R63/D	R64/D
2	9–45	R63/D	R64/D
3	20–100	R63/E	R64/E
4	28–140	R63/F	R64/F
N/A	35–175	R63/F	R64/F
5	60–300	R63/G	R64/G
6	120–600	R63/H	R64/H

Table 3. Standard trip—class 20 heater selection

Overload relay size	Motor full load ampere rating				Catalog number (includes three heater packs)
	Dial position				
	A	B	C	D	
For use with NEMA sizes 00–0 Series C, 20 NEMA sizes 1–2 Series B					
32 A or 75 A	0.254	0.306	0.359	0.411	H2001B-3
	0.375	0.452	0.530	0.607	H2002B-3
	0.560	0.676	0.791	0.907	H2003B-3
	0.814	0.983	1.15	1.32	H2004B-3
	1.20	1.45	1.71	1.96	H2005B-3
	1.79	2.16	2.53	2.90	H2006B-3
	2.15	2.60	3.04	3.49	H2007B-3
	3.23	3.90	4.56	5.23	H2008B-3
	4.55	5.50	6.45	7.40	H2009B-3
	6.75	8.17	9.58	11.0	H2010B-3
	9.14	10.8	12.4	14.0	H2011B-3
	14.0	16.9	19.9	22.8	H2012B-3
	18.7	22.7	26.7	30.7	H2013B-3
	23.5	28.5	33.5	38.5	H2014B-3
For use with NEMA size 2 Series B					
75 A	29.0	29.0	29.0	29.0	H2015B-3
	39.6	39.6	39.6	39.6	H2016B-3
	53.9	53.9	53.9	53.9	H2017B-3
For use with NEMA sizes 3–4 Series A					
105 A	8.0	9.2	10.3	11.5	H2025-3
	11.4	12.8	14.3	15.7	H2026-3
	14.3	15.7	17.4	19.0	H2027-3
	18.0	20.2	22.3	24.5	H2018-3
	24.6	27.6	30.5	33.4	H2019-3
	33.5	37.5	41.5	45.6	H2020-3
	45.7	51.2	56.7	62.1	H2021-3
	62.2	69.7	77.1	84.6	H2022-3

Modifications

Table 4. Auxiliary contacts


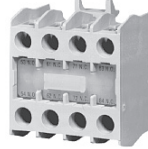
	Description	Catalog number
	Side mount	
	1NO	C320KGS1
	1NC	C320KGS2
	1NO-1NC	C320KGS3
	2NO	C320KGS4
	2NC	C320KGS5
	Top mount	
	1NO-1NC	C320KGT3
	2NO	C320KGT4
	2NC	C320KGT5
	3NO-1NC	C320KGT9
	2NO-2NC	C320KGT10
	1NO-3NC	C320KGT11

Table 5. Cover control kits

These kits may be used on combination and non-combination starters. There are provisions in both the non-combination and combination enclosures to allow for the addition of cover controls. The kits come with the pilot devices, nameplate, precut wires, and instructions for quick and easy installation. The kits are UL[®] Listed for field installation.




	Description	Catalog number
	Non-combination cover control (Box 1 and Box 2 only)	
	START/STOP pushbuttons with Red RUN pilot light (120 Vac) with Red RUN/Green OFF lights (120 Vac)	C600M1 C600M101A C600M102A
	HAND/OFF/AUTO selector switch with Red RUN pilot light (120 Vac) with Red RUN/Green OFF lights (120 Vac)	C600M12 C600M121A C600M122A
	Red RUN pilot light (120 Vac)	C600M9A
	Green OFF pilot light (120 Vac)	C600M10A
	Non-combination cover control (Box 3 and larger enclosures)	
	START/STOP pushbuttons with Red RUN pilot light (120 Vac) with Red RUN/Green OFF lights (120 Vac)	C400GK1 C400GK12A C400GK16A
	HAND/OFF/AUTO selector switch with Red RUN pilot light (120 Vac) with Red RUN/Green OFF lights (120 Vac)	C400GK3 C400GK32A C400GK36A
	Red RUN pilot light (120 Vac)	C400GK42A
	Green OFF pilot light (120 Vac)	C400GK41A
	Combination cover controls (NEMA 1, 3R, 4X & 12)	
	START/STOP pushbuttons	C400T1
	ON/OFF selector switch	C400T14
	HAND/OFF/AUTO selector switch	C400T12
	START pushbutton	C400T3
	OFF pushbutton	C400T5
	Red RUN pilot light (120 Vac)	C400T9A
	Green OFF pilot light (120 Vac)	C400T10A

Table 6. Replacement coils for starters

Coil voltage	NEMA starter size		
	00	0	1, 2
120 Vac	9-2875-1	9-2876-1	9-3285-1
208 Vac	9-2875-5	9-2876-5	9-3285-9
240 Vac	9-2875-2	9-2876-2	9-3285-2
480 Vac	9-2875-3	9-2876-3	9-3285-3

Control power transformer kits



The transformer kit consists of:

- Control transformer
- Two primary and one secondary fuse
- Wires
- Mounting instruction publication
- Transformers can be installed in oversized enclosures for non-combination units or standard combination units

For non-combination starters

Control power transformers will only fit in non-combination starters mounted in oversize enclosures.

For combination starters

Most combination starters have space for standard size (and 100 VA extra capacity) control power transformers. The panels are predrilled for mounting.

Table 7. Standard transformer sizes ①

Size	VA capacity—Freedom
0	50
1, 2	100
3	150

① Non-reversing, single contactor only.

Table 8. Control transformer kits

Both the C341 kit and standard CPT part number are shown. Products can be stocked either way; however, 14 AWG control wire and fuses will need to be added to that standard transformer for it to work.

Continuous VA	Primary 208/277 V	Primary 240/480 V, 60 Hz 220/440 V, 50 Hz	Primary 600 V, 60 Hz 550 V, 50 Hz
	Secondary 120 V, 60 Hz	Secondary 120 V, 60 Hz 110 V, 50 Hz	Secondary 120 V, 60 Hz 110 V, 50 Hz
Catalog number	Catalog number	Catalog number	Catalog number
50	C341AE C0050E3AFB	C341AC C0050E2AFB	C341AD C0050E4CFB
75	C341BE C0075E3AFB	C341BC C0075E2AFB	C341BD C0075E4CFB
100	C341CE C0100E3AFB	C341CC C0100E2AFB	C341CD C0100E4CFB
150	C341DE C0150E3AFB	C341DC C0150E2AFB	C341DD C0150E4CFB
200	C341EE C0200E3AFB	C341EC C0200E2AFB	C341ED C0200E4CFB

Note: Please see **Table 10** if you selected the open transformer for the control fuse sizes.

Table 9. CPT fuse selection

VA	Primary 480 Vac	Secondary 120 Vac
50	1/2	6/10
100	1	1-4/10
150	1-1/2	2

Table 10. Fuse chart for motor

This table is based on standard NEC[®] tables for motor full load ampere (FLA). It is assumed to be “R” or “J” class fuses.

Hp	Single-phase		Three-phase			
	120 V	240 V	208 V	230 V	460 V	600 V
1/6	8	4	—	—	—	—
1/4	10	5	—	—	—	—
1/3	12	6-1/4	—	—	—	—
1/2	15	8	4	4	2	1-4/10
3/4	20	12	5	4	2-1/2	2
1	25	15	8	6-1/4	3-2/10	2-1/2
1-1/2	30	15	10	8	4	4
2	35	20	12	10	5	4
3	—	25	15	15	8	7
5	—	40	25	25	15	10
7-1/2	—	60	35	35	20	15
10	—	—	45	40	20	20
15	—	—	—	60	30	25
20	—	—	—	—	40	30
25	—	—	—	—	50	40

Single-phase application

To convert to a single-phase motor application, an additional power wire of appropriate wire size (see **Table 11**) will need to be added to the starter. The wire will be installed from the load side of T1 to the line side of L2. Heater packs must still be installed in all three phases. Please see the photo below for an example of the additional wire.



Table 11. Single-phase wire sizing

NEMA size	AWG
00.0	#12
1	#10
2	#8

Typical questions

- What is the motor voltage?
- Single-phase or three-phase? (For single-phase, see **Table 11**)
- What is the motor horsepower?
- What is the motor full load amps? (This is for heater pack selection)
- What is the coil voltage? (For coil voltage other than 120 Vac, see **Table 6**)
- What is the enclosure rating?
- Is this a combination or non-combination starter? (Fuse sizes are shown in **Table 10**)
- Do you require a control power transformer? (See **Table 8**) (Primary and secondary fuse sizes shown in **Table 9**)
- Do you require any auxiliary contacts? (See **Table 4**)
- Do you require any indicating lights, selector switches, or pushbuttons? (See **Table 5**)

Don't forget to ask:

- Do you have all the conduit you need for the job?
- Do you need any additional wire?
- Do you need any additional fittings?

For more enclosed control offering and modifications, please see the **Enclosed Control catalog CA08100012E**, or visit **www.eaton.com**.