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Note: For more information, see CA03402001E.



IEC Size D
Cat. No. AE16DN0BC

Product Description

Non-reversing

IEC Freedom Series Starters utilize an Interchangeable Heater Pack Overload Relay which allows increased flexibility. Starters are available to cover 3-phase motors with fractional horsepower ratings up to 900 hp at 480V.

Reversing

Three-phase, full voltage magnetic starters are used primarily for reversing of 3-phase squirrel cage motors. They consist of two contactors and a single overload relay assembled together. The contactors are mechanically and electrically interlocked to prevent line shorts and energization of both contactors simultaneously.

Features

- **EN60947-4-1 IEC 947-4-1 Compliance** — International Standard for low voltage switchgear and control devices.
- UL listed and CSA certified.
- **Bimetallic Ambient Compensated Overload Relays** — available in three basic sizes covering applications up to 200 hp (100 hp Reversing) — reducing number of different contactor/overload relay combinations that have to be stocked. These overload relays feature:
 - Selectable Manual or Automatic Reset operation.
 - Interchangeable Heater Packs adjustable $\pm 24\%$ to match motor FLA and calibrated for 1.0 and 1.15 service factors. Heater packs for smaller overload relay will mount in larger overload relay — useful in derating applications such as jogging.
 - Meets UL508 Single-Phasing requirements, Class 20 or Class 10 trip time.
 - Overload trip indication.
 - Electrically isolated NO-NC contacts (pull RESET button to test).
- Long life twin break, silver cadmium oxide contacts — provide excellent conductivity and superior resistance to welding and arc erosion.
- Designed to 2,000,000 electrical and 20,000,000 mechanical operations through 20 hp at 460V. Adequate for most general duty motor control applications.

Non-reversing

- Highest horsepower rating in compact, space-saving designs, 45 mm frame rated maximum 20 hp at 460V, 65 mm frame rated maximum 50 hp, 90 mm frame rated maximum 100 hp, and 180 mm rated maximum 200 hp.
- IP20 finger protection shields available.
- Contactor and terminal markings conform to CENELEC EN50011.

- One NO right-side mounted auxiliary contact supplied as standard on Sizes A – N (on Sizes A – C, contact occupies 4th power pole — no increase in width). Sizes P – S have NO-NC.
- 45 mm open type starters, sizes A – F, have DIN rail or universal base mounting. DIN rail release mechanism conveniently located on line side of starter. A steel mounting plate is optional.
- 65 mm starters, sizes G – K; 90 mm starters, sizes L – N; and P – S 180 mm supplied with steel mounting plate as standard.
- Four basic starter frame widths — 45 mm, 65 mm, 90 mm and 180 mm — simplifying panel layout.

Reversing

- Highest horsepower rating in compact, space-saving designs. 45 mm frame rated maximum 20 hp at 460V, 65 mm frame rated maximum 50 hp, and 90 mm frame rated maximum 100 hp.
- 45 mm open type reversing starters, Sizes A – F, have DIN rail or universal base mounting. DIN rail release mechanisms conveniently located on line side of starters. A steel mounting plate is optional.
- 65 mm reversing starters, Sizes G – K, and 90 mm reversing starters, Sizes L – N, are supplied with steel mounting plate as standard.
- Sizes A – K have a wired NC top mounted electrical interlock on each contactor. Sizes L – N have one NO-NC side mounted electrical interlock on each contactor.
- A full time of snap-on accessories — top and side mounted auxiliary contacts, solid-state and pneumatic timers, etc.
- Straight-through wiring — line lugs at top, load lugs at bottom.
- Horizontal or vertical mounting on upright panel for application freedom.
- Screw type power terminals have captive, backed-out self-lifting pressure plates with \pm screws — reducing wiring time.

Product Selection

When Ordering Specify

- Select required starter by Catalog Number and replace the magnet coil alpha designation in the Catalog Number () with the proper Code Suffix from **Table 34-338** on **Page 34-272**.

- Example: for a Size B starter with a 480V/60 Hz coil, order AE16BNS0CC.
- For **DC Magnet Coils**, see Accessories, **Page 34-279**.

Table 34-335. Type AE16/AE56 Starters — Interchangeable Heater Overload Relay — 3-Pole — Non-reversing ①

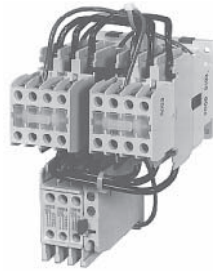
Max. UL AC-3 Ampere Rating	IEC 947 AC-1 Thermal Current 600V	Maximum kW Rating					Maximum UL Horsepower						Catalog Number	Price U.S. \$
		3-Phase					1-Phase		3-Phase					
		220V	380V	415/440V	500/550V	660V	115V	230V	208V	240V	480V	600V		
7	20	1.1	2.2	2.2	4	1.5	1/4	1/2	1-1/2	1-1/2	3	5	AE16ANS0_C	
10	20	1.5	4	4	5.5	2.2	1/2	1	2	2	5	7-1/2	AE16BNS0_C	
12	20	2.2	5.5	5.5	7.5	4	1/2	2	3	3	7-1/2	10	AE16CNS0_C	
18	32	4	7.5	7.5	11	5.5	1	3	5	5	10	15	AE16DNS0_C	
25	32	5.5	11	11	15	7.5	2	3	5	7-1/2	15	20	AE16ENS0_C	
32	32	7.5	15	15	18.5	10	2	5	7-1/2	10	20	25	AE16FNS0_C	
37	50	—	18.5	18.5	22	11	3	5	7-1/2	10	25	30	AE16GNS0_B	
44	60	11	22	22	30	15	3	7-1/2	10	15	30	40	AE16HNS0_B	
60	75	15	30	30	30	18.5	5	10	15	20	40	40	AE16JNS0_B	
73	80	18.5	37	37	37	22	5	10	20	25	50	50	AE16KNS0_B	
85	100	22	45	45	55	37	7-1/2	10	25	30	60	75	AE16LN0_	
105	135	30	55	55	75	45	10	10	30	40	75	100	AE16MN0_	
140	175	37	75	75	90	45	10	10	40	50	100	125	AE16NN0_	
170	185	45	90	90	90	45	—	—	50	60	125	125	AE16PN0_	
200	220	55	110	110	110	55	—	—	60	75	150	150	AE16RN0_	
300	315	90	160	160	160	75	—	—	75	100	200	200	AE16SN0_	
450	600	129	220	240	300	300	—	—	125	125	250	250	AE16TN0_	
550	760	160	280	315	375	375	—	—	150	150	350	350	AE16UN0_	
630	1000	220	375	—	500	500	—	—	150	200	400	400	AE16VN0_	
700	1000	220	375	—	500	500	—	—	200	250	500	500	AE16WN0_	
860	1100	270	475	—	600	600	—	—	250	300	600	600	AE16XN0_	
1215	1350	380	650	—	840	840	—	—	450	450	900	900	AE16ZN0_	

① IEC Sizes A – N, open are supplied with a NO auxiliary contact. On IEC Sizes A – C, the 4th power pole position is used as the auxiliary contact and adds no additional width. Open type Sizes A – K can be ordered with a top mounted auxiliary contact instead of a side mounted contact. To order, change the 7th digit of the listed Catalog Number from “S” to “T”. Example: AE16ANT0AC. On open type Sizes A – K, if the NO auxiliary contact is not required, drop the “S” from the listed Catalog Number. Example: AE16AN0AC. On IEC Sizes P – S, a NO-NC side mounted is standard. Sizes T – X have 2NO-2NC, Size Z has 2NO-1NC.

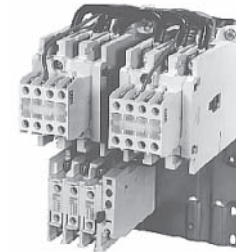
Starters — Interchangeable Heater

When Ordering Specify

- Select required starter by Catalog Number and replace the magnet coil alpha designation in the Catalog Number () with the proper Code Suffix from **Table 34-338** below.
- Example: for a Size B starter with a 480V/60 Hz coil, order AE16BNS0CC.
- For **DC Magnet Coils**, see Accessories, **Page 34-279**.



IEC Size F
Cat. No. AE56DN0BC



IEC Size G
Cat. No. AE56GN0BB

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Table 34-336. Type AE16/AE56 Starters — Interchangeable Heater Overload Relay — 3-Pole — Reversing ①

Max. UL AC-3 Ampere Rating	IEC 947 AC-1 Thermal Current 600V	Maximum kW Rating					Maximum UL Horsepower						Catalog Number	Price U.S. \$
		3-Phase					1-Phase		3-Phase					
		220V	380V	415/440V	500/550V	660V	115V	230V	208V	240V	480V	600V		
7	20	1.1	2.2	2.2	4	1.5	1/4	1/2	1-1/2	1-1/2	3	5	AE56AN0_C	
10	20	1.5	4	4	5.5	2.2	1/2	1	2	2	5	7-1/2	AE56BN0_C	
12	20	2.2	5.5	5.5	7.5	4	1/2	2	3	3	7-1/2	10	AE56CN0_C	
18	32	4	7.5	7.5	11	5.5	1	3	5	5	10	15	AE56DN0_C	
25	32	5.5	11	11	15	7.5	2	3	5	7-1/2	15	20	AE56EN0_C	
32	32	7.5	15	15	18.5	10	2	5	7-1/2	10	20	25	AE56FN0_C	
37	50	—	18.5	18.5	22	11	3	5	7-1/2	10	25	30	AE56GN0_B	
44	60	11	22	22	30	15	3	7-1/2	10	15	30	40	AE56HN0_B	
60	75	15	30	30	30	18.5	5	10	15	20	40	40	AE56JN0_B	
73	80	18.5	37	37	37	22	5	10	20	25	50	50	AE56KN0_B	
85	100	22	45	45	55	37	7-1/2	10	25	30	60	75	AE56LN0_	
105	135	30	55	55	75	45	10	10	30	40	75	100	AE56MN0_	
140	175	37	75	75	90	45	10	10	40	50	100	125	AE56NN0_	

① Sizes A – K IEC starters do not include holding circuit contacts. For factory installed NO auxiliary contacts, insert “S” (side mounted) or “T” (top mounted) after 6th digit of listed Catalog Number. Example: Change AE56AN0AC to AE56ANS0AC. For “T”, top mounted NC contact blocks are replaced with NO-NC blocks — for “S”, they are replaced with NO-NC side mounted blocks.

Table 34-337. Maximum Horsepower Rating of Starters for 380V 50 Hz Application

IEC Size	A	B	C	D	E	F	G	H
hp	3	5	5	10	10	15	20	25

IEC Size	J	K	L	M	N	P	R	S
hp	30	40	50	60	75	100	125	150

Table 34-338. AC Coil Suffixes

Coil Volts and Hertz	Code Suffix
120/60 or 110/50	A
240/60 or 220/50	B
480/60 or 440/50	C
600/60 or 550/50	D
208/60	E
277/60	H
208-240/60 ②	J
240/50	K
380-415/50	L
550/50	N
24/60, 24/50 ③	T
24/50	U
32/50	V
48/60	W
48/50	Y

② IEC Sizes A – F only.

③ IEC Sizes A – F only. Sizes G – V are 24/60 only.

For **DC Magnet Coils**, see Accessories on **Page 34-279**.