Direct-On-Line (DOL) Starters

Easy selection guide

sprecher+schuh

DOL Starters

1. Select Enclosure Type with CA7 Contactor

Select a Direct-On-Line (DOL) enclosure that includes a pre-installed CA7 contactor. Make your selection based on the motor's kilowatt (kW) rating, the required control voltage, and the operator control options available on the face cover to ensure it meets your application requirements.

	Approx. motor kW range	Contactor Type/Size	Electronic Overload Type[1)]	Control Voltage	Part Number
Insulated enclosure with green START (flush) and red STOP (extended) button	5.5	CA7-12	CEP7-1	240V AC	CAT7N5P5P240VAC
	5.5	CA7-12	CEP7-1	415V AC	CAT7N5P5P415VAC
	7.5	CA7-16	CEP7-1	240V AC	CAT7N7P5P240VAC
	7.5	CA7-16	CEP7-1	415V AC	CAT7N7P5P415VAC
Insulated enclosure with blue RESET button only	5.5	CA7-12	CEP7-1	240V AC	CAT7N5P5R240VAC
	5.5	CA7-12	CEP7-1	415V AC	CAT7N5P5R415VAC

1) Starter supplied less overload, select overload from list on page 3

Note: CT7N thermal overloads are not suitable for use in CAT7N-5.5/7.5 enclosures

2. Select Electronic Overload

To select your electronic overload, check the motor name plate for the full load current and match it to the motor current "adjustment range (A)". Also ensure the overload selected suits the CA7 contactor.

1-Phase & 3-Phase / Manual Reset / Class 10 or 20			
Approx. motor size range (kW)	Adjustment Range (A)	To suit contactor	Part Number
0.02 - 0.12	0.1 - 0.5	CA7-9 to CA7-23	CEP71EEAB
0.06 - 0.25	0.2 - 1.0	CA7-9 to CA7-23	CEP71EEBB
0.25 - 2.2	1.0 - 5.0	CA7-9 to CA7-23	CEP71EECB
1.5 - 7.5	3.2 - 16	CA7-9 to CA7-23	CEP71EEDB
2.2 - 15	5.4 - 27	CA7-9 to CA7-23	CEP71EEEB
1-Phase & 3-Phase / Auto or Manual Reset / Class 10...30			
0.02 - 0.12	0.1 - 0.5	CA7-9 to CA7-23	CEP71EFAB
0.06 - 0.25	0.2 - 1.0	CA7-9 to CA7-23	CEP71EFBB
0.25 - 2.2	1.0 - 5.0	CA7-9 to CA7-23	CEP71EFCB
1.5 - 7.5	3.2 - 16	CA7-9 to CA7-23	CEP71EFDB
2.2 - 15	5.4 - 27	CA7-9 to CA7-23	CEP71EFEB

CEP7-1 Range

- Electronic overload protection for motors up to 55kW
- Reduces stocking part numbers due to wide current adjustment range (5:1 ratio)
- Direct mounting to CA7 contactors
- Selectable trip class:
  - Class 10 & 20 via DIP switches (CEP7-1EE* only)
  - Class 10, 15, 20, 30 via dial (CEP7-1EF* only)
- Automatic (CEP7-1EF* only) and Manual reset
- Suitable for single and 3-phase applications
- Quick phase loss detection
- Reduced power consumption and heat output

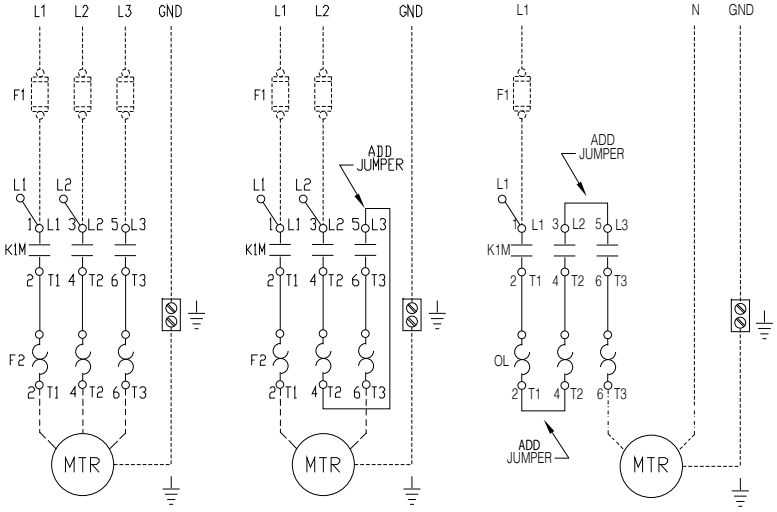
CEP7-1EE

CEP7-1EF

Wiring Diagram

CAT7N DOL Starter (using enclosure KS7-C0S1/C0S4)

Customer must provide proper branch circuit protection (F1). See the application instruction sheet - component selection tables for max. fuse size & class and applicable short circuit rating (use 75°C copper wire only).



3-Phase
Factory Wiring
(See Note-4)

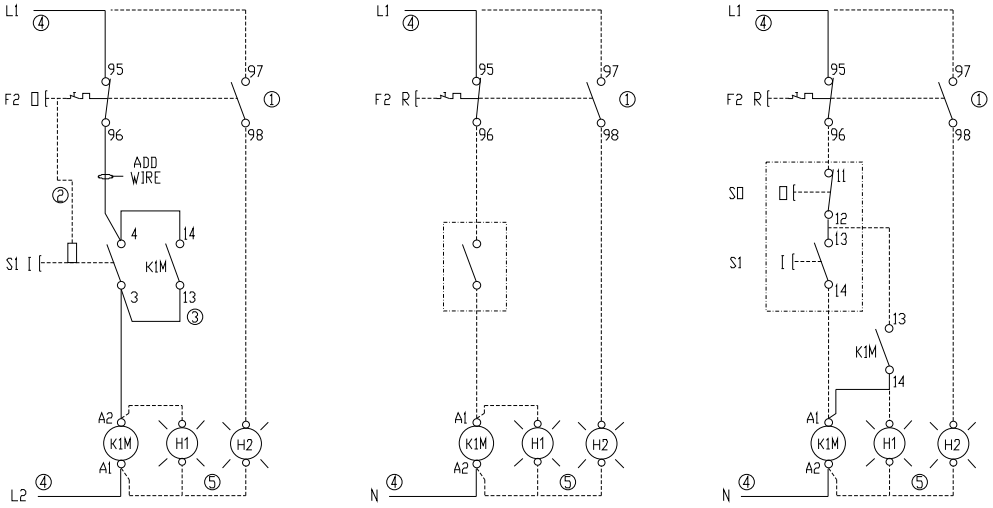
2-Phase
Factory Wiring
(See Note-4)

Single-Phase
1Ø ≤ 120V Motors

This drawing is for the following enclosures:

KS7-C0S4
with integrated START-STOP push buttons

KS7-C0S1
with integrated RESET push button



KS7-C0S4
with START-STOP push buttons

KS7-C0S1
Remote Control (Maintained)

KS7-C0S1
Remote Control (START-STOP)
(Instantaneous Control)

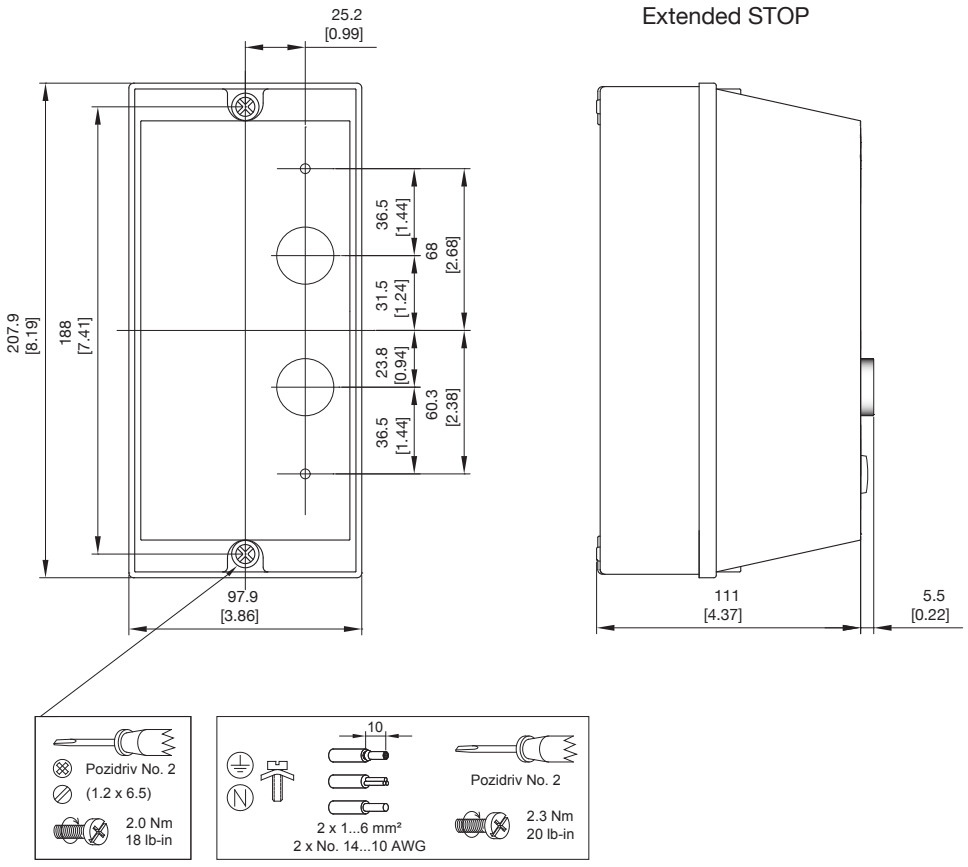
Notes:

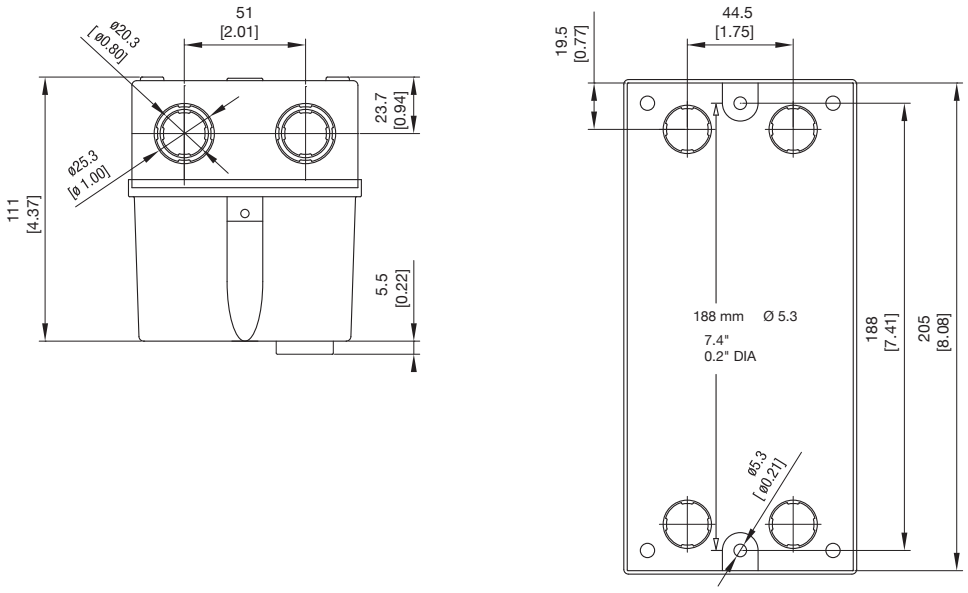
1. Mechanical latch KS7-PLA for maintained control (optional).
2. Start contact kit KS7-PCK (included) mounts on the right side with molded pre-formed jumpers.
3. Do not wire controls circuit to line side of contactor when you coil voltage is 120v or less (factory wiring standard).
4. Optional pilot lights.

Dimensions

CAT7N Enclosure KS7-C0S1/C0S4

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





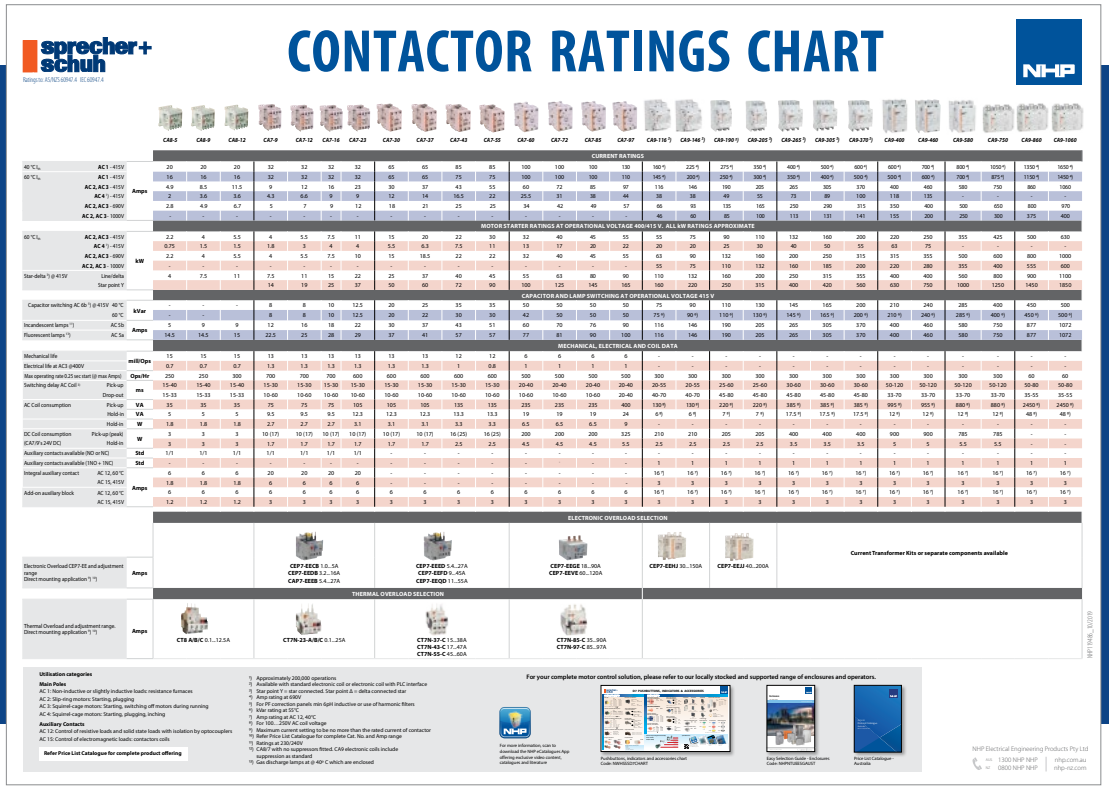
Contactor Ratings Chart

NHP have developed a ratings chart to ensure your motor control requirements are met promptly and effortlessly.

Rating Chart includes:

- Clear pictures of entire Sprecher + Schuh contactor range
- Easy look-up table for overloads matching corresponding contactor chosen
- Complete ratings (current & motor starter ratings, capacitor switching and mechanical, electrical and coil data)
- Keep the chart handy to make your selection process quick and easy

Available online at **nhp.com.au**



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Ratings to: AS/NZS 60947.4 IEC 60947.4

CONTACTOR RATINGS CHART

NHP

			CA8-5	CA8-9	CA8-12	CA7-9	CA7-12	CA7-16	CA7-23	CA7-30	CA7-37	CA7-43	CA7-55	CA7-60	CA7-72	CA7-85	CA7-97	CA9-116 [7]	CA9-146 [7]	CA9-190 [8]	CA9-205 [7]	CA9-265 [7]	CA9-305 [7]	CA9-370 [7]	CA9-400	CA9-460	CA9-580	CA9-750	CA9-860	CA9-1060
CURRENT RATINGS																												
40 °C I_u	AC-1 - 415V	Amps	20	20	20	32	32	32	32	65	65	85	85	100	100	100	130	160 [9]	225 [9]	275 [9]	350 [9]	400 [9]	500 [9]	600 [9]	600 [9]	700 [9]	800 [9]	1050 [9]	1350 [9]	1650 [9]
60 °C I_u	AC-1 - 415V		16	16	16	32	32	32	32	65	65	75	75	100	100	100	110	145 [9]	200 [9]	250 [9]	300 [9]	350 [9]	400 [9]	500 [9]	520 [9]	600 [9]	700 [9]	875 [9]	1150 [9]	1450 [9]
	AC-2, AC-3 - 415V		4.9	8.5	11.5	9	12	16	23	30	37	43	55	60	72	85	97	116	146	190	205	265	305	370	400	460	580	750	860	1060
	AC-4 [1] - 415V		2	3.6	3.6	4.3	6.6	9	9	12	14	16.5	22	25.5	31	38	44	38	38	49	55	73	89	100	118	135	-	-	-	-
	AC-2, AC-3 - 690V		2.8	4.9	6.7	5	7	9	12	18	21	25	25	34	42	49	57	66	93	135	165	250	290	315	350	400	500	650	800	970
	AC-2, AC-3 - 1000V		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46	60	85	100	113	131	141	155	200	250	300	375	400
MOTOR STARTER RATINGS AT OPERATIONAL VOLTAGE 400/415 V. ALL kW RATINGS APPROXIMATE																												
60 °C I_u	AC-2, AC-3 - 415V	kW	2.2	4	5.5	4	5.5	7.5	11	15	20	22	30	32	40	45	55	55	75	90	110	132	160	200	220	250	355	425	500	630
	AC-4 [1] - 415V		0.75	1.5	1.5	1.8	3	4	4	5.5	6.3	7.5	11	13	17	20	22	20	20	25	30	40	50	55	63	75	-	-	-	-
	AC-2, AC-3 - 690V		2.2	4	5.5	4	5.5	7.5	10	15	18.5	22	22	32	40	45	55	63	90	132	160	200	250	315	315	355	500	600	800	1000
	AC-2, AC-3 - 1000V		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	75	110	132	160	185	200	220	280	355	400	555	600
Star-delta [1] @ 415V	Line/delta		4	7.5	11	7.5	11	15	22	25	37	40	45	55	63	80	90	110	132	160	200	250	315	355	400	400	560	800	900	1100
	Star point Y					14	19	25	37	50	60	72	90	100	125	145	165	180	220	250	315	400	420	560	630	750	1000	1250	1450	1850
CAPACITOR AND LAMP SWITCHING AT OPERATIONAL VOLTAGE 415 V																												
Capacitor switching AC 6b [1] @ 415V 40 °C		kVar	-	-	-	8	8	10	12.5	20	25	35	35	50	50	50	50	75	90	110	130	145	165	200	210	240	285	400	450	500
60 °C			-	-	-	8	8	10	12.5	20	22	30	30	42	50	50	50	75 [9]	90 [9]	110 [9]	130 [9]	145 [9]	165 [9]	200 [9]	210 [9]	240 [9]	285 [9]	400 [9]	450 [9]	500 [9]
Incandescent lamps [1]	AC-5b	Amps	5	9	9	12	16	18	22	30	37	43	51	60	70	76	90	116	146	190	205	265	305	370	400	460	580	750	877	1072
Fluorescent lamps [1]	AC-5a		14.5	14.5	15	22.5	25	28	29	37	41	57	57	77	81	90	100	116	146	190	205	265	305	370	400	460	580	750	877	1072
MECHANICAL, ELECTRICAL AND COIL DATA																												
Mechanical life		mill Ops	15	15	15	13	13	13	13	13	13	12	12	6	6	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Electrical life at AC3 @400V			0.7	0.7	0.7	1.3	1.3	1.3	1.3	1.3	1.3	1	0.8	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Max operating rate 0.25 sec start @ max Amps		Ops/Hr	250	250	300	700	700	700	600	600	600	600	600	500	500	500	500	300	300	300	300	300	300	300	300	300	300	300	60	60
Switching delay AC Coil =	Pick-up	ms	15-40	15-40	15-40	15-30	15-30	15-30	15-30	15-30	15-30	15-30	15-30	20-40	20-40	20-40	20-40	20-55	20-55	25-60	25-60	30-60	30-60	30-60	50-120	50-120	50-120	50-120	50-80	50-80
	Drop-out		15-33	15-33	15-33	10-60	10-60	10-60	10-60	10-60	10-60	10-60	10-60	10-60	10-60	10-60	20-40	40-70	40-70	45-80	45-80	45-80	45-80	45-80	33-70	33-70	33-70	33-70	35-55	35-55
AC Coil consumption	Pick-up	VA	35	35	35	75	75	75	105	105	105	135	135	235	235	235	400	130 [9]	130 [9]	220 [9]	220 [9]	385 [9]	385 [9]	385 [9]	995 [9]	995 [9]	880 [9]	880 [9]	2450 [9]	2450 [9]
	Hold-in	VA	5	5	5	9.5	9.5	9.5	12.3	12.3	12.3	13.3	13.3	19	19	19	24	6 [9]	6 [9]	7 [9]	7 [9]	17.5 [9]	17.5 [9]	17.5 [9]	12 [9]	12 [9]	12 [9]	12 [9]	48 [9]	48 [9]
	Hold-in	W	1.8	1.8	1.8	2.7	2.7	2.7	3.1	3.1	3.1	3.3	3.3	6.5	6.5	6.5	9	-	-	-	-	-	-	-	-	-	-	-	-	-
DC Coil consumption	Pick-up (peak)	W	3	3	3	10 (17)	10 (17)	10 (17)	10 (17)	10 (17)	10 (17)	10 (17)	16 (25)	16 (25)	200	200	200	325	210	210	205	205	400	400	400	900	900	785	785	-	-
(CA7-9's 24V DC)	Hold-in	W	3	3	3	1.7	1.7	1.7	1.7	1.7	1.7	2.5	2.5	4.5	4.5	4.5	5.5	2.5	2.5	2.5	2.5	3.5	3.5	3.5	5	5	5.5	5.5	-	-
Auxiliary contacts available (NO or NC)		Std	1/1	1/1	1/1	1/1	1/1	1/1	1/1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Auxiliary contacts available (1NO + 1NC)		Std	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1
Integral auxiliary contact	AC 12, 60 °C	Amps	6	6	6	20	20	20	20	-	-	-	-	-	-	-	-	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]
	AC 15, 415V		1.8	1.8	1.8	6	6	6	6	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3	3	3	3	3	3
Add-on auxiliary block	AC 12, 60 °C		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]	16 [1]
	AC 15, 415V		1.2	1.2	1.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ELECTRONIC OVERLOAD SELECTION																														
Electronic Overload CEP7-EE and adjustment range. Direct mounting application [1]		Amps				CEP7-EECD 1.0...5A CEP7-EEDD 3.2...16A CAP7-EEEB 5.4...27A				CEP7-EEED 5.4...27A CEP7-EEFD 9...45A CEP7-EEQD 11...55A				CEP7-EEGE 18...80A CEP7-EEVE 80...320A				CEP7-EEMJ 30...150A		CEP7-EEJJ 40...200A		Current Transformer Kits or separate components available							
THERMAL OVERLOAD SELECTION																														
Thermal Overload and adjustment range. Direct mounting application [1]		Amps				CT8 A/B/C 0.1...12.5A				CT7N-23-A/B/C 0.1...25A				CT7N-37-C 15...38A CT7N-45-C 17...47A CT7N-55-C 45...60A				CT7N-65-C 35...90A CT7N-97-C 85...97A											

Utilisation categories

Main Poles
AC 1: Non-inductive or slightly inductive loads: resistance furnaces
AC 2: Slip-ring motors: Starting, plugging
AC 3: Squirrel-cage motors: Starting, switching off motors during running
AC 4: Squirrel-cage motors: Starting, plugging, inching

Auxiliary Contacts
AC 12: Control of resistive loads and solid-state loads with isolation by optocouplers
AC 15: Control of electromagnetic loads: contactors coils

Refer Price List Catalogue for complete product offering

1) Approximately 200,000 operations
2) Available with standard electronic coil or electronic coil with PLC interface
3) Star point Y = star connected. Star point Δ = delta connected star
4) Amp rating at 690V
5) For PF correction panels min 6pH inductor or use of harmonic filters
6) kVar rating at 55°C
7) Amp rating at AC 1.2, 40°C
8) For 160....250V AC coil voltage
9) Maximum current setting to be no more than the rated current of contactor
10) Refer Price List Catalogue for complete Cat. No. and Amp range
11) Ratings at 230/240V
12) CA87 with no suppressors fitted. CA9 electronic coils include suppression as standard
13) Gas discharge lamps at @ 40° C which are enclosed

For your complete motor control solution, please refer to our locally stocked and supported range of enclosures and operators.

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Publications, indicators and accessories Chart Code: NMVEGO2TCHART

Easy Selection Guide - Enclosures Code: NHPETGEOSEA2017

Price List Catalogue - Australia

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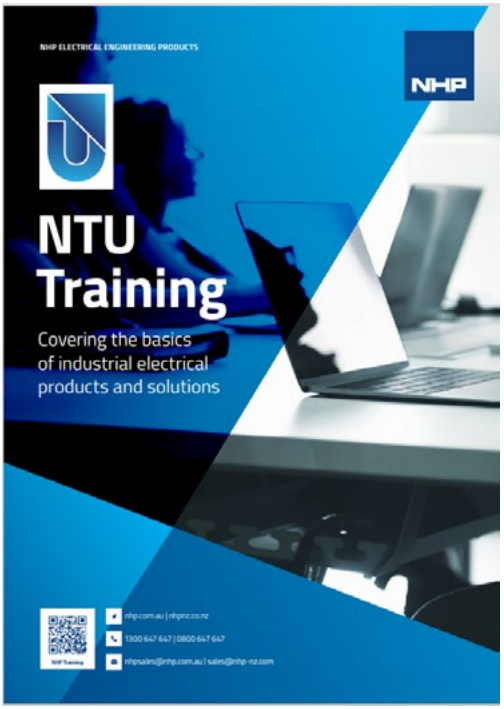
- GPOs, isolators and switches
- Electric vehicle chargers
- Surge protection
- Terminal blocks
- Emergency and exit lighting



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