NEMA Space-Savings Family of Contactors and Starters

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An Eaton Green Solution

Contactors and Starters

Product Description

The Eaton NEMA® Space-Savings line of contactors and starters includes non-reversing and reversing contactors, electronic overload relays and a variety of related accessories. Because the Space-Savings family meets IEC, UL®, CSA® and CE standards, it is the perfect product solution for applications all over the world. The compact and easy to install Space-Savings line of NEMA contactors and starters is the efficient and effective solution for customer applications from Size 0 through Size 5.

Application Description

The Space-Savings line of NEMA power control was engineered to provide highly effective control and protection for a variety of loads, including motors, compressors, pumps, resistive, capacitor banks, isolation and others.

The Space-Savings contactors are perfectly suited for use in Motor Control Center applications where bucket space sizing is critical. With both AC and DC control and flexible communication options, the Space-Savings family can be easily integrated into various customer applications.

Features and Benefits

- AC control from 120V to 600V 50/60 Hz
- 24 Vdc control
- Reversing or non-reversing contactors and starters
- XTOE self-powered electronic overload relay
- Non-reversing starters to NEMA Size 5
- Panel or DIN rail mounting to NEMA Size 2
- IP20 finger and back-of-hand proof
- Large ambient temperature range, –25 to 50°C [–13 to 122°F]
- AC and DC controlled contactors in the same compact frame
- Low power consumption AC and DC coils
- Built-in NO or NC auxiliary contacts to 32A
- Plug-in accessories for reduced installation time
- Coil replacement on NEMA Size 0–5
- Contact replacement on NEMA Size 1–5
- Integrated suppressor NEMA Size 0–4 DC operated contactors and NEMA Size 5 AC and DC operated contactors

Standards and Certifications

- IEC EN 60947
- CE approved
- UL
- CSA
- ATEX
- RoHS

CE UL CSA RoHS COMPLIANT

Catalog Number Selection

2

Space-Savings NEMA Starters with XTOE Electronic Overload Relays

A N 1 3 C N 0 1 A 5E 005

Device Type
A = Starter
C = Contactor

Standard
N = NEMA

Device Assembly Configuration
1 = Non-reversing
5 = Reversing

OLR Type
3 = Starter w/XTOE EOLR

Contactor Frame Size

	NEMA Size	Continuous Amperes
B =	0	18
C =	1C	27
D =	1	27
G =	2	45
K =	3	90
M =	4	135
S =	5	270

NEMA Enclosure
N = Open

For Starters
Starter Mounting Option
0 = Horizontal

For Contactors Only
Starter Mounting Option
10 = 1 normally open
01 = 1 normally closed
11 = 1 normally open, 1 normally closed
00 = No auxiliary contacts
22 = 2 normally open, 2 normally closed

Coil Suffix

Suffix	Volts and Hertz
A =	120/60 or 110/50
B =	240/60 or 220/50
TD =	24 Vdc

XTOE OLR Designation (FVNR and FVR only)
5E = Standard feature set SEL Reset, SEL Class (10A, 10, 20, 30)
5G = Ground fault feature set SEL Reset, SEL Class (10, 20)

XTOE FLA Range (FVNR and FVR only)
NEMA Size 0
1P6 = 0.33–1.65A
005 = 1–5A
020 = 4–20A
NEMA Size 1C/1
1P6 = 0.33–1.65A ①
005 = 1–5A
020 = 4–20A
045 = 9–45A
NEMA Size 2
045 = 9–45A
NEMA Size 3
100 = 20–100A
NEMA Size 4/4C
175 = 35–175A
NEMA Size 5
300 = 60–300A

Product Selection

Type CN13/53 Space-Savings NEMA Contactors

NEMA Contactor

Non-Reversing and Reversing

NEMA Size	Continuous Ampere Rating	Service Limit Current Rating (Amps)	Maximum UL Horsepower Single-Phase 115V	Single-Phase 230V	Three-Phase 208V	Three-Phase 240V	Three-Phase 480V	Three-Phase 600V	Three-Pole Non-Reversing ② Catalog Number	Three-Pole Reversing ② Catalog Number
0	18	21	1	2	3	3	5	5	**CN13BN010_**	—
1C	27	32	2	3	7-1/2	7-1/2	10	10	**CN13CN010_**	**CN53CN011_**
1	27	32	2	3	7-1/2	7-1/2	10	10	**CN13DN000_**	**CN53DN011_**
2	45	52	3	7-1/2	10	15	25	25	**CN13GN000_**	**CN53GN011_**
3	90	104	7.5	15	25	30	50	50	**CN13KN000_**	**CN53KN011_**
4	135	156	—	—	40	50	100	100	**CN13MN000_**	—
5 ③	270	311	—	—	75	100	200	200	**CN13SN022_**	—

Notes
① Available on Compact Size 1 starter only.
② Underscore (_) indicates coils suffix required, see Coil Suffix table above.
③ NEMA Size 5 starter available with 60-300A panel mounted CTs. Starter shipped as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).

Type AN13/53 Space-Savings Starters with XTOE Electronic Overload Relays

NEMA Starter

Non-Reversing and Reversing

NEMA Size	Continuous Ampere Rating	Service Limit Current Rating (Amps)	Maximum UL Horsepower Single-Phase 115V	Single-Phase 230V	Three-Phase 208V	Three-Phase 240V	Three-Phase 480V	Three-Phase 600V	Three-Pole Non-Reversing ①② Catalog Number ③	Three-Pole Reversing ①② Catalog Number ③
0	18	21	1	2	3	3	5	5	**AN13BN0_5E _**	**AN53BN0_5E _**
1C	27	32	2	3	7-1/2	7-1/2	10	10	**AN13CN0_5E _**	**AN53CN0_5E _**
1	27	32	2	3	7-1/2	7-1/2	10	10	**AN13DN0_5E _**	**AN53DN0_5E _**
2	45	52	3	7-1/2	10	15	25	25	**AN13GN0_5E _**	**AN53GN0_5E _**
3	90	104	—	—	25	30	50	50	**AN13KN0_5E _**	**AN53KN0_5E _**
4	135	156	—	—	40	50	100	100	**AN13NN0_5E _**	**AN53NN0_5E _**
5 ④	270	311	—	—	75	100	200	200	**AN13SN0_5E _**	**AN53SN0_5E _**

Type AN13/53 Space-Savings Starters with XTOE Ground Fault Electronic Overload Relays

NEMA Starter with Ground Fault

Non-Reversing and Reversing

NEMA Size	Continuous Ampere Rating	Service Limit Current Rating (Amps)	Maximum UL Horsepower Single-Phase 115V	Single-Phase 230V	Three-Phase 208V	Three-Phase 240V	Three-Phase 480V	Three-Phase 600V	Three-Pole Non-Reversing ①② Catalog Number ③	Three-Pole Reversing ①② Catalog Number ③
0	18	21	1	2	3	3	5	5	**AN13BN0_5G _**	**AN53BN0_5G _**
1C	27	32	2	3	7-1/2	7-1/2	10	10	**AN13CN0_5G _**	**AN53CN0_5G _**
1	27	32	2	3	7-1/2	7-1/2	10	10	**AN13DN0_5G _**	**AN53DN0_5G _**
2	45	52	3	7-1/2	10	15	25	25	**AN13GN0_5G _**	**AN53GN0_5G _**
3	90	104	—	—	25	30	50	50	**AN13KN0_5G _**	**AN53KN0_5G _**
4	135	156	—	—	40	50	100	100	**AN13NN0_5G_**	**AN53NN0_5G _**
5 ④	270	311	—	—	75	100	200	200	**AN13SN0_5G _**	**AN53SN0_5G _**

XTOE Overload FLA Range (FVNR and FVR Starters Only) Magnet Coil Suffix

NEMA Size	OLR Code	FLA Range	OLR Code	FLA Rating
0	**1P6**	0.33–1.65A	**020**	4.0–20A.
	005	1.0–5.0A	**—**	—
1C/1	**1P6** ⑤	0.33–1.65A	**020**	4.0–20A
	005	1.0–5.0A	**045**	9.0–45A
2	**—**	—	**045**	9.0–45A
	—	—	**—**	—
3	**100**	20–100A	**—**	—
4	**175**	35–175A	**—**	—
5 ④	**300**	60–300A	**—**	—

Coil Voltage	Suffix Code
Sizes 0–2	
110V 50 Hz, 120V 60 Hz	**A**
220V 50 Hz, 240V 60 Hz	**B**
24–27 Vdc	**TD**
Sizes 3, 4	
100–120V 50/60 Hz	**A**
190–240V 50/60 Hz	**B**
24–27 Vdc	**TD**
Sizes 5	
100–120V 50/60 Hz	**A**
24–48 Vdc	**TD**

Notes

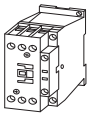
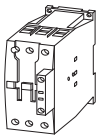
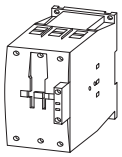
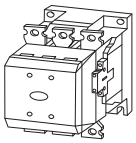
① Underscore (_) indicates coils suffix required, see Coil Suffix table above.
② Underscore (_) indicates OLR designation required, see XTOE FLA Range table above.
③ For MCC replacement needs, contact MCC Aftermarket.
④ NEMA Size 5 starter available with 60-300A panel mounted CTs. Starter shipped as an assembled unit with 1–5A C440 overload relay (C440A1A005SELAX or C440A2A005SELAX).
⑤ Not available on AN13**D**N or AN53**D**N starters.

Accessories

Auxiliary Contacts—Overview

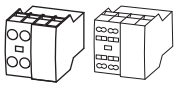
Front-mounted snap-on auxiliary contacts for Space-Savings contactors are available with screw terminals in a variety of contact configurations.

Auxiliary Contacts Possible Combinations

Frame Size	Catalog Number	Contactor	Built-In Auxiliary	Front (Top) Mount Two-Pole	Front (Top) Mount Four-Pole	Side-Mount Single-Pole	Side-Mount Two-Pole	Total Auxiliary Contacts Available
0, 1C	**CN13BN0_ – CN13CN0_**		1NO or 1NC	1	—	—	—	3
				—	1	—	—	5
				—	—	—	1	3
						—		—
1, 2	**CN13DN0_ – CN13GN0_**		—	1	—	—	2	6
				—	1	—	1	6
						—		—
3, 4	**CN13KN0_ – CN13MN0_**		—	1	—	—	2	6
				—	1	—	2	8
				—	—	—	4	8
						—		—
5	**CN13SN0**		2NO–2NC	—	—		2	8
				—	—			—

Auxiliary Contacts

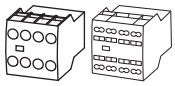
XTCEXF_



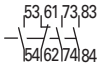
NEMA Size 0, 1C— Front (Top) Mount—Two-Pole

Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
16	2NO		5	**XTCEXFAC20**
16	1NO-1NC		5	**XTCEXFAC11** ②
16	2NC		5	**XTCEXFAC02**

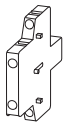
XTCEXF_



NEMA Size 0, 1C— Front (Top) Mount—Four-Pole

Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
16	4NO		5	**XTCEXFAC40** ②
16	3NO-1NC		5	**XTCEXFAC31** ②
16	2NO-2NC		5	**XTCEXFAC22** ②
16	1NO-3NC		5	**XTCEXFAC13**
16	4NC		5	**XTCEXFAC04**

XTCEXSCC11



NEMA Size 0, 1C—Side-Mount—Two-Pole

Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
10	1NO-1NC		1	**XTCEXSCC11** ③

Notes

No auxiliary contacts can be fitted between two contactors.

① Orders must be placed in multiples of package quantity listed.

② To avoid duplicate terminal numbers in contact sequence, these auxiliary contacts should only be used with contactors having a built-in 1NO contact (XTCE…B10_, XTCE…C10_).

③ Can be mounted to the left side of contactor only. Cannot be used in combination with front (top) mount auxiliary contacts or mechanical interlocks.

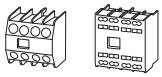
2

XTCEXF_

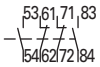
NEMA Sizes 1–4—Two-Pole

Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
16	2NO		5	**XTCEXFBG20**
16	1NO-1NC		5	**XTCEXFBG11**
16	2NC		5	**XTCEXFBG02**

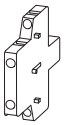
XTCEXF_



NEMA Sizes 1–4—Four-Pole

Conventional Thermal Current, Open at 60°C $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
16	4NO-0NC		5	**XTCEXFBG40**
16	3NO-1NC		5	**XTCEXFBG31**
16	2NO-2NC		5	**XTCEXFBG22**
16	2NO-2NC		5	**XTCEXFAG22**
16	1NO-3NC		5	**XTCEXFBG13**

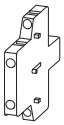
XTCEXS_



NEMA Sizes 1–4, Side Mount (Snap-On)—Two-Pole

Conventional Free Air Thermal Current, $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
10	1NO–1NC		1	**XTCEXSBN11**

XTCEXS_



NEMA Size 5, Side Mount (Screw Mount)—Two-Pole

Conventional Free Air Thermal Current, $I_{th} = I_e$, AC-1 in Amps	Contact Configuration	Circuit Symbol	Pkg. Qty. ①	Screw Terminal Catalog Number
10	1NO–1NC		1	**XTCEXSBR11** ②

Notes

No auxiliary contacts can be fitted between two contactors.

① Orders must be placed in multiples of package quantity listed.

② For replacement only. XTCEXSBR11 and XTCEXSBLR11 cannot be added onto side mount auxiliaries that come with the Size 5 contactors as standard. To add auxiliaries onto the included side auxiliaries on Size 5 contactors, use XTCEXSCR11.

Suppressors

The switching of contactor coils can generate voltage transients that may cause arching on switch contacts and/or damage electronics on the control line. Either an RC or varistor suppressor is recommended in these types of applications. All Space-Savings DC contactor coils have built-in suppression.

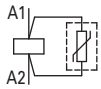
Varistor suppressors clamp the voltage transient above the maximum coil voltage and are recommended when the level of the transient is known to not exceed the coil voltage. RC suppressors slow and reduce the level of the voltage transient but do not clamp them at a specific level. The slowing of the transient can reduce electrical interference. These are recommended in applications where operating rates are high.

XTCEXVS_

Varistor Suppressor ①②

Voltage	For Use with…	Pkg. Qty. ③	Catalog Number
48–130	CN13BN0_ CN13CN0_	10	**XTCEXVSCA**
48–130	CN13DN0_ CN13GN0_	10	**XTCEXVSFA**

Contact Sequence

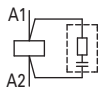


XTCEXRS_

RC Suppressor ①②

Voltage	For Use with…	Pkg. Qty. ③	Catalog Number
24–48	CN13DN0_ CN13GN0_	—	**XTCEXRSFW**
110–130		—	**XTCEXRSFA**

Contact Sequence



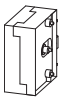
Additional Accessories

Mechanical Interlock ⑤

XTCEXML_

For Use with…	Pkg. Qty. ③	Catalog Number
CN13BN0_, CN13CN0_	1	**XTCEXMLC**
CN13DN0_, CN13GN0_	1	**XTCEXMLD**
CN13KN0_, CN13MN0_	1	**XTCEXMLG** ⑥

XTCEXMLM



CN13SN0_	1	**XTCEXMLM**

XTCEXRL_

Reversing Link Kits

For Use with…	Pkg. Qty. ③	Catalog Number
CN13BN0_, CN13CN0_	1	**XTCEXRLC**
CN13DN0_, CN13GN0_	1	**XTCEXRLD**
CN13KN0_, CN13MN0_	1	**XTCEXRLG**

Main current wiring for reversing combinations. Includes paralleling bridge and reversing bridge. Does not include mechanical interlock, see table on this page.

XTCEXTLA400

Terminal Lug Assembly

For Use with…	Pkg. Qty. ③	Catalog Number
CN13SN0_	1	**XTCEXTLA400**

For connection of: round conductor, flexible and stranded, flat strip conductor, with control circuit terminal. See **Page V5-T2-74** for terminal capacities.

XTCEXTS_

Terminal Shroud

For Use with…	Pkg. Qty. ③	Catalog Number
CN13SN0_	1	**XTCEXTS400**

Protection against direct contact with connection lugs when touched vertically from the front.

Notes

① Note dropout delay.
② For AC operated contactors, 50–60 Hz. Sizes 0–5 DC operated contactors and Size 5 AC operated contactors have a built-in suppressor circuit.
③ Orders must be placed in multiples of package quantity listed.
④ In addition to the built-in suppressor circuit for DC actuated contactors. Prevents negative breaking voltage when contactors are used in combination with a safety PLC.
⑤ For two contactors with AC or DC operated magnet system which are horizontally or vertically mounted. For Sizes 0–4, mechanical lifespan is 2.5 x 10^6 operations and the distance between contactors is 0 mm. For Size 5, mechanical lifespan is 5 x 10^6 operations and no auxiliary contact can be mounted between the mechanical interlock and the contactor—the distance between contactors is 15 mm.
⑥ XTCEXMLG and XTCEXMLN consist of an interlock element and mounting plate.

Renewal Parts

XTCERENC_

Replacement Coils

Voltage	Coil Suffix	Catalog Number
Size 0, 1C		
110/50 120/60	**A**	**XTCERENCOILCA**
220/50 240/60	**B**	**XTCERENCOILCB**
24–27 Vdc	**TD**	**XTCERENCOILCTD**
Size 1, 2		
110/50 120/60	**A**	**XTCERENCOILDA**
220/50 240/60	**B**	**XTCERENCOILDB**
24–27 Vdc	**TD**	**XTCERENCOILDTD**
Size 3, 4		
100–120V 50/60	**A**	**XTCERENCOILGA**
190–240V 50/60	**B**	**XTCERENCOILGB**
24–27 Vdc	**TD**	**XTCERENCOILGTD**
Size 5		
110–250 Vac/Vdc	**A**	**XTCERENCOILLA**
24–48 Vdc	**TD**	**XTCERENCOILLTD**

Replacement Contact Kit

For Use with…	Catalog Number
CN13DN0_, CN13GN0_	**XTCERENCONTACTD**
CN13SN0_	**XTCERENCONTACTL**

Replacement Arc Chamber

For Use with…	Catalog Number
CN13SN0_	**XTCERENARC250**

Technical Data and Specifications

Auxiliary Contacts

Description	CN13BN0_, CN13CN0_	XTCEXFAC_ XTCEXFATC_	XTCEXFCC_ XTCEXSCC_	XTCEXFAG_	XTCEXSBLN_ XTCEXSBN_ XTCEXSBNC_ XTCEXSCN_ XTCEXSCNC_
Interlocked opposing contacts with an auxiliary contact module (to IEC 60947-5 -1 Annex L)	—	Yes	Yes	Yes	Yes
Break contact (not late-break contact) suitable as a mirror contact (to IEC/EN 60947-4 -1 Annex F)	CN13BN0_, CN13CN0_	CN13BN0_, CN13CN0_	CN13BN0_, CN13CN0_	CN13DN0_, CN13GN0_	CN13DN0_, CN13GN0_, CN13SN0_
Rated impulse withstand voltage, (U_{imp}) Vac	6000	6000	6000	6000	6000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3	III/3
Rated insulation voltage, (U_i) Vac	690	690	690	690	690
Rated operational voltage, (U_e) Vac	500	500	500	500	500
Safe isolation to VDE 0106 Part 101 and Part 101(A) in Vac					
Between coil and auxiliary contacts	400	400	400	440	440
Between the auxiliary contacts	400	400	400	440	440
Rated operational current, I_e					
AC-15					
230V	6A	6A	6A	6A	6A
380/415V	4A	3A	4A	4A	4A
500V	1.5A	—	1.5A	1.5A	1.5A
DC-3 L/R ≤5 ms ①					
24V	10A	10A	10A	10A	10A
60V	6A	6A	6A	6A	6A
110V	3A	3A	3A	3A	3A
220V	1A	1A	1A	1A	1A
Conventional thermal current, I_{th}	16A	16A	16A ③	10A	10A
Control circuit reliability (at U_e = 24 Vdc, U_{min} = 17 V, I_{min} = 5.4 mA)	$<10^{-8}$, <1 failure at 100 million operations	$<10^{-8}$, <1 failure at 100 million operations	$<10^{-8}$, <1 failure at 100 million operations	$<10^{-8}$, <1 failure at 100 million operations	$<10^{-8}$, <1 failure at 100 million operations
Component lifespan, operations x 10^6 at U_e = 230V, AC-15, 3A	1.3	1.3	1.3	1.3	1.3
Short-circuit rating without welding ②					
Maximum fuse, gG/gL	10A	10A	10A	16A	16A

Notes

① Making and breaking conditions to DC-13, time L/R contact as stated.
② See fuses overlay for time/current characteristic (on request).
③ Conventional thermal current (I_{th}) of XTCEXSCC_ is 10A.

Parallel Link

Description	XTCEXPLKB	XTECXPLKC	XTCEXPLKD	XTCEXPLKG	XTCEXPLK185
Terminal capacity					
Solid (mm^2)	1–16	16	16	—	—
Flexible with ferrule (mm^2)	1 x (0.5–25) 2 x (0.5–16)	1 x (16–35)	1 x (16–120)	—	—
Stranded (mm^2)	1 x (0.5–25) 2 x (0.5–16)	1 x (16–50)	1 x (16–120)	1 x (35–300) 2 x (35–120)	—
Flat conductor—number of segments x width x thickness (mm)	6 x 9 x 0.8	—	—	2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)
Tightening torque (Nm)	4	4	14	—	—
Tools					
Pozidriv screwdriver	Size 2	Size 2	—	—	—
Hexagon socket head spanner—SW (mm)	—	—	5	6	—
Conventional thermal current					
Three-pole (I_{th}) A	50	100	180	400	—
Four-pole (I_{th}) A	60	—	—	—	—

Cable Terminal Block, Flat Cable Terminal

Description	XTCEXTLA400	XTCEXPLK185	XTCEXTFB650	XTCEXTFB820
Terminal capacity				
Stranded (mm^2)	1 x (120–300) 2 x (70–240)	—	—	—
Stranded (AWG)	1 x (250–600 kcmil) 2 x (2/0–500 kcmil)	—	—	—
Flat conductor—number of segments x width x thickness (mm)	—	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (20 x 32 x 0.5) 2 x (11 x 21 x 1)	1 x (6 x 16 x 0.8) 2 x (10 x 40 x 1) 2 x (20 x 40 x 0.5)

AC Ratings—AC-1 Operation

Description	CN13B	CN13C	CN13D	CN13G	CN13K	CN13M	CN13S
Conventional free air thermal current, three-pole, 50–60 Hz							
Open							
at 40°C (I_{th})	40A	45A	60A	80A	130A	190A	490
at 50°C (I_{th})	38A	43A	57A	71A	125A	180A	438
at 55°C (I_{th})	37A	42A	55A	68A	115A	170A	418
at 60°C (I_{th})	35A	40A	50A	65A	110A	160A	400
Enclosed	32A	36A	45A	58A	100A	144A	315
Conventional free air thermal current, single-pole (I_{th})							
Open	88A	100A	125A	162A	275A	400A	—
Enclosed	80A	90A	112A	145A	250A	360A	—

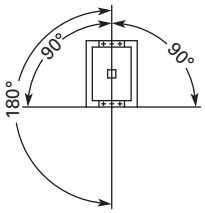
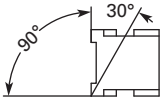
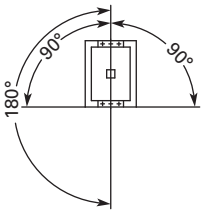
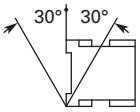
Space-Savings Contactors—NEMA Sizes 0–2

Description	Size 0 CN13BN010_	Size 1C CN13CN010_	Size 1 CN13DN000_	Size 2 CN13GN000_
General				
Standards	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS
Weights in kg [lb]				
AC operated	0.42 [0.93]	0.42 [0.93]	0.9 [2.0]	0.9 [2.0]
DC operated	0.48 [1.06]	0.48 [1.06]	1.1 [2.4]	1.1 [2.4]
Mechanical life—operations	10,000,000	10,000,000	10,000,000	10,000,000
Climatic proofing	①	①	①	①
Insulation voltage (U_i) Vac	690	690	690	690
Impulse withstand voltage (U_{imp}) Vac	8000	8000	8000	8000
Operating voltage (U_e) Vac	690	690	690	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1				
Between coil and contacts (Vac)	440	440	440	440
Between contacts (Vac)	238	440	440	440
Making capacity (amps)	238	384	560	910
Breaking capacity (amps)				
220/230V	170	320	400	650
380/400V	170	320	400	650
500V	170	320	400	650
660/690V	120	180	250	370
Short-circuit protection rating maximum fuse (amps)				
Type 2 coordination ②				
400V; gG/gL 500V	25	63	63	125
690V; gG/gL 690V	25	35	50	80
Type 1 coordination ②				
400V; gG/gL 500V	63	125	125	250
690V; gG/gL 690V	50	63	80	100
Degree of protection	IP00	IP00	IP00	IP00
Protection against direct contact when actuated from front (IEC 536)	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof
Terminal capacity main cable—screw terminals				
Solid (mm^2)	1 x (0.75–16) 2 x (0.75–10)	1 x (0.75–16) 2 x (0.75–10)	1 x (0.75–16) 2 x (0.75–10)	1 x (0.75–16) 2 x (0.75–10)
Flexible with ferrule (mm^2)	1 x (0.75–16) 2 x (0.75–10)	1 x (0.75–16) 2 x (0.75–10)	1 x (2.5–35) 2 x (2.5–25)	1 x (2.5–35) 2 x (2.5–25)
Stranded (mm^2)	1 x 16	1 x 16	1 x (16–50) 2 x (16–35)	1 x (16–50) 2 x (16–35)
Solid or stranded (AWG)	18–6	18–6	12–2	12–2
Flat conductor (number of segments x width x thickness) (mm)	—	—	2 x (6 x 9 x 0.8)	2 x (6 x 9 x 0.8)

Notes

① Damp heat, constant, to IEC 60068-2-78; damp heat, cyclic, to IEC 60 068-2-30.
② IEC 60947 Standard.

Space-Savings Contactors—NEMA Sizes 0–2, continued

Description	Size 0 CN13BN010_	Size 1C CN13CN010_	Size 1 CN13DN000_	Size 2 CN13GN000_
General, continued				
Main cable connection screw/bolt	M5	M5	M6	M6
Tightening torque				
Nm	3	3	3.3	3.3
Lb-in	26.6	26.6	29.2	29.2
Terminal capacity control circuit cable—screw terminals				
Solid (mm^2)	1 x (0.75–4) 2 x (0.75–4)	1 x (0.75–4) 2 x (0.75–4)	1 x (0.75–4) 2 x (0.75–4)	1 x (0.75–4) 2 x (0.75–4)
Flexible with ferrule (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Solid or stranded (AWG)	18–14	18–14	18–14	18–14
Control circuit cable connection screw/bolt	M3.5	M3.5	M3.5	M3.5
Tightening torque				
Nm	1.2	1.2	1.2	1.2
Lb-in	10.6	10.6	10.6	10.6
Tools				
Main and control circuit cable—screw terminals	Size 2	Size 2	Size 2	Size 2
Pozidriv screwdriver	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5	0.8 x 5.5
Standard screwdriver	1 x 6	1 x 6	1 x 6	1 x 6
Terminal capacity control circuit cable—spring cage terminals				
Solid (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Flexible (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Flexible with ferrule (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Solid or stranded (AWG)	18–14	18–14	18–14	18–14
Tools				
Main and control circuit cable—spring cage terminals				
Stripping length (mm)	10	10	10	10
Screwdriver blade width (mm)	3.5	3.5	3.5	3.5
Mounting position, AC and DC operated				
Ambient temperature				
Open	–25 to 60°C [–13 to 140°F]	–25 to 60°C [–13 to 140°F]	–25 to 60°C [–13 to 140°F]	–25 to 60°C [–13 to 140°F]
Enclosed	–25 to 40°C [–13 to 104°F]	–25 to 40°C [–13 to 104°F]	–25 to 40°C [–13 to 104°F]	–25 to 40°C [–13 to 104°F]
Ambient storage temperature	–40 to 80°C [–40 to 176°F]	–40 to 80°C [–40 to 176°F]	–40 to 80°C [–40 to 176°F]	–40 to 80°C [–40 to 176°F]
Environmental				
Mechanical shock resistance (IEC/EN 60068-2-27)				
Main contact—NO Contact	10	10	10	1
Auxiliary contact—NO Contact	7	7	7	7
Auxiliary contact—NC Contact	5	5	5	5
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3

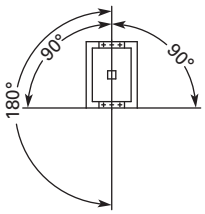
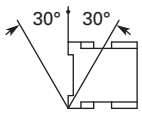
Space-Savings Contactors—NEMA Sizes 3, 4

Description	Size 3 CN13KN000_	Size 4 CN13MN000_
General		
Standards	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS	IEC/EN 60947, VDE 0660, UL, CSA, CCC, RoHS
Weights in kg [lb]		
AC operated	2 [4.41]	2 [4.41]
DC operated	2.1 [4.63]	2.1 [4.63]
Mechanical life—operations	10,000,000	10,000,000
Climatic proofing	①	①
Insulation voltage (U_i) Vac	690	690
Impulse withstand voltage (U_{imp}) Vac	8000	8000
Operational voltage (U_e) Vac	690	690
Safe isolation to VDE 0106 Part 101 and Part 101/A1		
Between coil and contacts (Vac)	690	690
Between contacts (Vac)	690	690
Making capacity (amps)	1610	2100
Breaking capacity (amps)		
220/230V	1150	1500
380/400V	1150	1500
500V	1150	1500
660/690V	1100	1200
1000V	—	—
Short-circuit protection rating maximum fuse		
Type 2 coordination ②		
400V; gG/gL 500V	250	25
690V; gG/gL 690V	25	250
Type 1 coordination ②		
400V; gG/gL 500V	250	250
690V; gG/gL 690V	250	250
Degree of protection	IP00	IP00
Protection against direct contact when actuated from front (IEC 536)	Finger and back-of-hand proof	Finger and back-of-hand proof
Terminal capacity main cable—screw terminals		
Solid (mm^2)	—	—
Flexible with ferrule (mm^2)	1 x (10–95) 2 x (10–70)	1 x (10–95) 2 x (10–70)
Stranded (mm^2)	1 x (10–95) 2 x (10–20)	1 x (10–95) 2 x (10–20)
Flat conductor (number of segments x width x thickness) (mm)	2 x (6 x 16 x 0.8)	2 x (6 x 16 x 0.8)
Solid or stranded (AWG)	8–3/0	8–3/0
Main cable connection screw/bolt	M10	M10
Tightening torque		
Nm	14	14
Lb-in	123.9	123.9

Notes

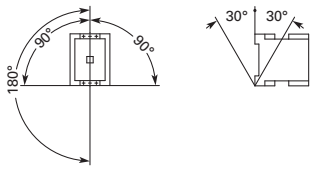
① Damp heat, constant, to IEC 60068-2-78; damp heat, cyclic, to IEC 60 068-2-30.
② IEC 60947 Standard.

Space-Savings Contactors—NEMA Sizes 3, 4, continued

Description	Size 3 CN13KN000_	Size 4 CN13MN000_
General, continued		
Terminal capacity control circuit cable—screw terminals		
Solid (mm^2)	1 x (0.75–4) 1 x (0.75–4)	1 x (0.75–4) 1 x (0.75–4)
Flexible with ferrule (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Solid or stranded (AWG)	18–14	18–14
Control circuit cable connection screw/bolt	M3.5	M3.5
Tightening torque		
Nm	1.2	1.2
Lb-in	10.6	10.6
Tools		
Main circuit cable—screw terminals		
Hexagon socket-head spanner (mm)	5	5
Control circuit cable—screw terminals	Size 2	Size 2
Pozidriv screwdriver	0.8 x 5.5	0.8 x 5.5
Standard screwdriver	1 x 6	1 x 6
Terminal capacity control circuit cable—spring cage terminals		
Solid (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Flexible (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Flexible with ferrule (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)	1 x (0.75–2.5) 2 x (0.75–2.5)
Solid or stranded (AWG)	18–14	18–14
Tools		
Control circuit cable—spring cage terminals		
Stripping length (mm)	10	10
Screwdriver blade width (mm)	3.5	3.5
Mounting position, AC and DC operated		
Ambient temperature		
Open	–25 to 60°C [–13 to 140°F]	–25 to 60°C [–13 to 140°F]
Enclosed	–25 to 40°C [–13 to 104°F]	–25 to 40°C [–13 to 104°F]
Ambient storage temperature	–40 to 80°C [–40 to 176°F]	–40 to 80°C [–40 to 176°F]
Environmental		
Mechanical shock resistance (IEC/EN 60068-2-27)		
Half-sinusoidal shock 10 ms		
Main contact—NO contact	10g	10g
Auxiliary contact—NO contact	7g	7g
Auxiliary contact—NC contact	5g	5g
Overvoltage category/pollution degree	III/3	III/3

Space-Savings Contactors—NEMA Size 5

Description	Size 5 CN13SN022_
General	
Standards	IEC/EN 60947, VDE 0660, UL, CSA
Weights in kg [lb]	6.5 [14.3]
Mechanical life—operations	10,000,000
Mechanical operating frequency (ops/hr)	
AC operated	3000
DC operated	3000
Climatic proofing	①
Insulation voltage (U_i) Vac	1000
Impulse withstand voltage (U_{imp}) Vac	8000
Operating voltage (U_e) Vac	1000
Safe isolation to VDE 0106 Part 101 and Part 101/A1	
Between coil and contacts (Vac)	500
Between contacts (Vac)	500
Making capacity (amps)	3000
Breaking capacity (amps)	
220/230V	2500
380/400V	2500
500V	2500
660/690V	2500
1000V	760
Short-circuit protection rating maximum fuse	
Type 2 coordination ②	
400V; gG/gL 500V	315
690V; gG/gL 690V	315
1000V; gG/gL 1000V	160
Type 1 coordination ②	
400V; gG/gL 500V	400
690V; gG/gL 690V	400
1000V; gG/gL 1000V	200
Degree of protection	IP00
Protection against direct contact when actuated from front (IEC 536)	Finger and back-of-hand proof with terminal shroud or terminal block
Main cable cross-section	
Flexible with cable lug (mm^2)	50–240
Stranded with cable lug (mm^2)	70–240
Solid or stranded (AWG)	1/0–250 kcmil
Flat conductor (mm)	③
Bus bar—width in mm	25
Main cable connection screw/bolt	M10
Tightening torque	
Nm	24
Lb-in	213

Description	Size 5 CN13SN022_
General, continued	
Control circuit cable cross-sections	
Solid (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)
Flexible with ferrule (mm^2)	1 x (0.75–2.5) 2 x (0.75–2.5)
Solid or stranded (AWG)	2 x (18–12)
Control circuit cable connection screw/bolt	M3.5
Tightening torque	
Nm	1.2
Lb-in	10.6
Tools	
Main cable wrench	16 mm
Control circuit cable pozidriv screwdriver	Size 2
Mounting position, AC and DC operated	
Ambient temperature	–25 to 60°C [–13 to 140°F]
Ambient storage temperature	–40 to 80°C [–40 to 176°F]
Environmental	
Mechanical shock Resistance (IEC/EN 60068-2-27)	
Half-sinusoidal shock 10 ms	
Main contact—NO contact	10g
Auxiliary contact—NO contact	10g
Auxiliary contact—NC contact	8g
Overvoltage category/pollution degree	III/3
Switching capacity, kVAR ④	
Individual compensation	
230V	—
400/420/440V	—
525V	—
690V	—
Group compensation, with choke	
230V	100
400/420/440V	190
525V	260
690V	340
Group compensation, without choke	
230V	—
400/420/440V	—
525V	—
690V	—

Notes

① Damp heat, constant, to IEC 60068-2-78; damp heat, cyclic, to IEC 60 068-2-30.
② IEC 60947 Standard.
③ Screw tightening with flat cable terminal or cable terminal blocks. See terminal capacity for cable terminal blocks.
④ When using contactors for group compensation, a minimum inductance of approx. 6 uh per capacitor must be available to limit the high inrush current peaks. This corresponds to an air-cored coil with five windings and a coil diameter of approximately 140 mm. The conductor cross-section must be selected according to the rated current per phase.