

AUTOMATION PRODUCTS

Definite purpose contactors

The complete range



Definite purpose contactors

The complete range



Applications

Type DP contactors provide high performance with flexibility and reliability, designed to match numerous applications including:

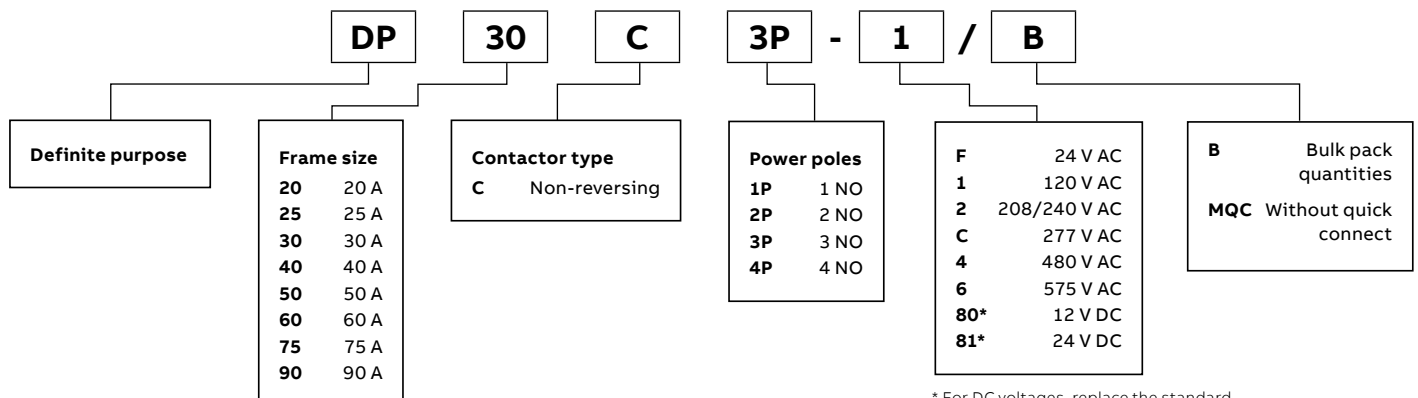
- Motors
- Power supplies
- Food service equipment
- Compressors
- Business machines
- Resistive heating
- Air conditioning
- Refrigeration equipment
- Welding

Agency approvals

- UL 508 Guide No. NLDX2, NLDX8 File # E224401
- CSA C22.2 No. 221260 (1456104) Class 3211 04 / 3211 84
- CE/Semko Certified, EN60947-4-1:2001

Features

- Available as:
 - 20 A, 25 A — 1-, 2- or 3- pole
 - 30 A — 1-, 2-, 3- or 4-pole
 - 40 A — 2-, 3- or 4-pole
 - 50 A, 60 A — 3-pole
 - 75 A, 90 A — 3-pole
- Industry standard mounting plate provides easily accessible mounting holes
- Coil terminals are provided with #6–32 screws and (1) 0.250 inch quick connect or dual 0.250 inch quick connect terminals
- Exclusive hex, slotted, Phillips #10–32 terminal screws for main terminals
- Coil is Class B (130 °C) insulation system with a wide range of voltages and 50/60 Hz ratings
- Double E magnet assembly provides optimal performance with reduced power consumption
- Snap-in auxiliary switch with 1 SPDT or 2 SPDT contacts available as an option
- 1 NO and 1 NC auxiliary contact block with 600 V AC rating available as an option
- Base assembly is made from highly arc-resistant polyester



* For DC voltages, replace the standard prefix DP with the prefix DPE.

Definite purpose contactors

20 A to 90 A



Full load amps	Number of poles	Locked rotor amps				Resistive amps	Maximum HP						Standard pack qty.	Catalog number
		240 V	480 V	600 V	Single-phase			Three-phase						
					120 V		240 V	208 V	240 V	480 V	600 V			
20	1	120	100	80	30	1	2	-	-	-	-	50	DP20C1P-1	
20	2	120	100	80	30	2	3	-	-	-	-	50	DP20C2P-1	
20	3	120	100	80	30	1.5	3	7.5	7.5	7.5	7.5	25	DP20C3P-1	
25	1	150	125	100	35	1	2	-	-	-	-	50	DP25C1P-1	
25	2	150	125	100	35	2	3	-	-	-	-	50	DP25C2P-1	
25	3	150	125	100	35	2	5	7.5	10	15	20	25	DP25C3P-1	
30	1	150	125	100	40	1	2	-	-	-	-	50	DP30C1P-1	
30	2	150	125	100	40	2	3	-	-	-	-	50	DP30C2P-1	
30	3	180	150	120	40	2	5	10	10	15	20	25	DP30C3P-1	
30	4	180	150	120	40	2	5	10	10	15	-	25	DP30C4P-1	
40	2	200	160	120	50	2	3	-	-	-	-	50	DP40C2P-1	
40	3	240	200	160	50	3	7.5	10	10	20	25	25	DP40C3P-1	
40	4	240	200	160	50	3	7.5	10	10	10	-	25	DP40C4P-1	
50	3	300	250	200	65	3	7.5	15	15	25	25	25	DP50C3P-1	
60	3	360	300	240	75	5	10	20	25	30	30	25	DP60C3P-1	
75	3	-	375	300	90	5	10	20	25	40	40	25	DP75C3P-1	
90	3	-	600	480	120	7.5	20	30	25	50	50	25	DP90C3P-1	

Catalog numbers in this chart include a 120 V AC coil. To select other coil voltages, use the chart to find the appropriate coil voltage. Replace the -1 above with the required coil voltage. For example, for a 208/240 V AC coil in a single-pole 20 A contactor, the catalog number would be DP20C2P-2.

Coil voltage selection chart, AC

Voltage	24 V AC	120 V AC	208/240 V AC	277 V AC	480 V AC	575 V AC
Suffix #	F	1	2	C	4	6

Coil voltage selection chart, DC**

Voltage	12 V DC	24 V DC
Suffix #	80	81

**For DC coils, the prefix of the catalog number changes from DP to DPE; for example, a 12 V DC coil in a 3-pole 20 A contactor would use the catalog number DPE20C3P-80.

Definite purpose contactors

Accessories

Auxiliary contact blocks for 3- and 4-pole configurations



Description	Catalog number	
	DP20 to DP40	DP50 to DP60
Form C SPDT	CADP40-10	CADP40-10
Double form C SPDT	CADP40-20	CADP40-20
Form Z SPDT (1 NO and 1 NC)**	CADP40-11	CADP40-11

** Must be the same polarity on both poles. For a complete description on contact types, please refer to page 11.

Mechanical interlock

Application	Catalog number
DP30C3P-*	VMDP-1
DP40C3P-*	VMDP-1



Protective cover

Application	Catalog number
DP20C2P-*	DP-2-AC
DP25C2P-*	DP-2-AC
DP30C2P-*	DP-2-AC

DIN-rail mounting bracket

Application	Catalog number
DP20C1P-*	DP/DIN1-2
DP25C1P-*	DP/DIN1-2
DP30C1P-*	DP/DIN1-2
DP20C2P-*	DP/DIN1-2
DP25C2P-*	DP/DIN1-2
DP30C2P-*	DP/DIN1-2

Note: Replace * with appropriate coil voltage as per previous page

Definite purpose contactors

Technical data

Contact rating of SPDT auxiliary contacts

Voltage	Current rating
125 V AC	10 A, ½ HP
120 V AC	4 A on lamp load
250 V AC	10 A, ½ HP
125 V DC	0.5 A
250 V DC	0.25 A

Contact rating of 1 NO and 1 NC auxiliary contacts

	120 V	240 V	480 V	600 V
Break (A)	3.0	1.5	0.75	0.6
Make (A)	30	15	7.5	6
Continuous (A)	10	10	10	10

DP20 to DP40, 1 and 2 poles

Coil technical data	1-pole contactors				2-pole contactors				
	V AC	24	120	208/240	277	24	120	208/240	277
Nominal coil voltage	V AC	24	120	208/240	277	24	120	208/240	277
Maximum pickup voltage	V	18	88	177	221	18	88	177	221
Minimum drop-out voltage	V	6–15	20–70	40–140	50–165	6–15	20–70	40–170	50–165
Nominal inrush at 50 Hz	VA	31	31	31	31	33	33	33	33
Nominal inrush at 60 Hz	VA	28	28	28	28	30	30	30	30
Nominal closed at 50 Hz	VA	6	6	6	6	8	8	8	8
Nominal closed at 60 Hz	VA	5	5	5	5	6.5	6.5	6.5	6.5
Maximum coil voltage	V	30	132	264	300	30	132	264	300
Nominal DC resistance	Ohms	18	420	1800	2500	11	237	1000	1600

Other specifications:

Initial dielectric strength

Between contacts and coils: 2,200 V AC

Between poles: 2,200 V AC (includes shunt)

Between open contacts: 2,200 V AC (no shunt)

Arc cover

Optional on 20–30 FLA, standard on 40 FLA

Insulation system

130 °C Class B

Temperature range

-40 °C to 65 °C

-40 °F to 150 °F

Unit weight

1-pole: 0.5 lb.

2-pole: 0.6 lb.

Power pole terminations

#10–32 screw or box lug

Wire size

#10–32 screw: #16–8 AWG

Box lug: #14–4 AWG

Recommended tightening torque

#10–32 screw: 22 in. lbs.

Box lug: 25 in. lbs.

Quick connects

Coil terminals: Dual 0.250" QC

Power terminals:

1-pole: Quad 0.250" QC

2-pole: Dual or quad 0.250" QC

Definite purpose contactors

Technical data

DP20 to DP40, 3 and 4 poles

Coil rating		3-pole contactors				4-pole contactors			
Nominal coil voltage	V AC	24	120	208/240	277	24	120	208/240	277
Nominal coil resistance	Ohms	7	180	720	900	6	150	600	750
Maximum pick-up voltage	V	18	88	177	221	18	88	177	220
Minimum drop-out voltage	V	6–15	20–70	40–140	50–165	6–15	20–70	40–140	65–185
Nominal inrush at 50 Hz	VA	65	65	65	65	62	62	62	62
Nominal inrush at 60 Hz	VA	60	60	60	60	59	59	59	59
Nominal sealed at 50 Hz	VA	7.5	7.5	7.5	7.5	9	9	9	8
Nominal sealed at 60 Hz	VA	6	6	6	6	7	7	7	6.5
Maximum coil voltage	V	30	132	264	300	30	132	264	300

Initial dielectric strength

Between contacts and coils: 2,200 V AC

Between poles: 2,200 V AC

Between open contacts: 2,200 V AC

Arc cover

Standard

Insulation system

130 °C Class B

Temperature range

-40 °C to 65 °C

-40 °F to 150 °F

Unit weight

3-pole: 1 lb.

4-pole: 1.25 lbs.

Power pole terminations

#10–32 screw or box lug

Wire size

#10–32 screw: #16–8 AWG

Box lug: #14–4 AWG

Recommended tightening torque

#10–32 screw: 22 in. lbs.

Box lug: 25 in. lbs.

Quick connects

Coil terminals: Dual 0.250" QC or #6–32 screw/0.250" QC

Power terminals: Dual 0.250" QC

Definite purpose contactors

Technical data

DP50 to DP90, 3 poles

Coil technical data		DP50 to DP60, 3 poles				75–90 FLA contactors			
Nominal coil voltage	V AC	24	120	208/240	277	24	120	208/240	277
Nominal coil resistance	Ohms	3.7	88	305	488	0.68	16.5	52	96.6
Maximum pick-up voltage	V	18	88	177	221	22	95	177	235
Minimum drop-out voltage	V	6–15	20–70	40–140	65–185	6–15	20–70	40–110	65–185
Nominal inrush at 50 Hz	VA	114	108	126	120	225	225	280	210
Nominal inrush at 60 Hz	VA	105	105	125	115	222	220	270	202
Nominal sealed at 50 Hz	VA	13	12	14	13	22	19	27	27
Nominal sealed at 60 Hz	VA	12	11	13	1	21	18	25	25
Maximum coil voltage	V	30.0	132	264	300	30	132	264	300

Initial dielectric strength

Between contacts and coils: 2,200 V AC

Between poles: 2,200 V AC

Between open contacts: 2,200 V AC

Arc cover

Standard

Insulation system

130 °C Class B

Temperature range

-40 °C to 65 °C

-40 °F to 150 °F

Unit weight

50–60 FLA: 1.4 lbs. (0.64 kg)

75–90 FLA: 3.3 lbs. (1.5 kg)

Power pole terminations

Aluminum box lug

Wire size

50–60 FLA box lug: #14–2 AWG

75–90 FLA box lug: #14–1/0 AWG

Recommended tightening torque

Box lug: 50 in. lbs.

Quick connects

Coil terminals: Dual 0.250" QC or #6–32 screw/0.250" QC

Power terminals: Dual 0.250" QC

Definite purpose contactors

Technical data

Short circuit current ratings

- Standard fault: 5 kA, 600 V AC max. at 400% of fuse and circuit breaker
- High fault: 100 kA AC

Unit configuration	FLA	Max. circuit breaker		Any listed fuse (except as noted)	
		480 Volts max.	Min. enclosure volume	600 Volts max.	Min. enclosure volume
1- and 2-pole	30	80 A	144 in. ³	60 A	96 in. ³
	40	100 A		100 A	
3- and 4-pole	30	80 A	144 in. ³	60 A	144 in. ³
	40	100 A		100 A	
HCD 3-pole, 50/60/75 FLA		150 A	256 in. ³	200 A	256 in. ³
HCD 3-pole, 75/90 FLA		225 A	1008 in. ³	200 A	1008 in. ³

For a circuit capable of delivering more than 5 kA RMS symmetrical, the enclosure must have a minimum of four fastening points or a piano hinge and two fastening points.

ARI specifications (performance)

- ARI 780/790, customer-specific
- Mechanical life (~ 1 week or 2 weeks for 2 million at ¼ second)
 - (Unloaded) 105% of nominal coil voltage
 - Minimum 500,000 cycles (½ second ON / ½ second OFF)
- Endurance (~ 1 month)
 - Make LRA (0.25 seconds)
 - Break 125% FLA (0.75 seconds)
 - 1 second ON, 9 seconds OFF
 - 50% power factor on locked rotor, 80% on full load
 - 200,000 cycles recycle (~ 2½ days)
 - Make and break locked rotor current
 - 1 second ON, 19 OFF
 - 50% power factor
 - Minimum 10,000 cycles

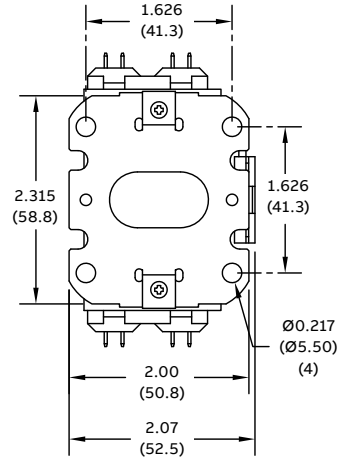
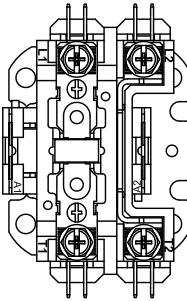
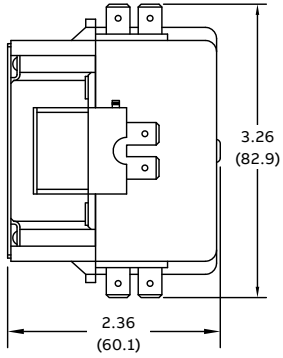
UL and CSA specifications (safety)

- UL 508 and 60947-4-1 / CSA C22.2 No. 14
- Overload
 - Make and break LRA
 - 1 second ON, 9 seconds OFF
 - 40%–50% power factor
 - 50 cycles endurance
 - Make and break FLA
 - 1 second ON, 9 seconds OFF
 - 75% to 80% power factor
 - 30,000 to 100,000 cycles

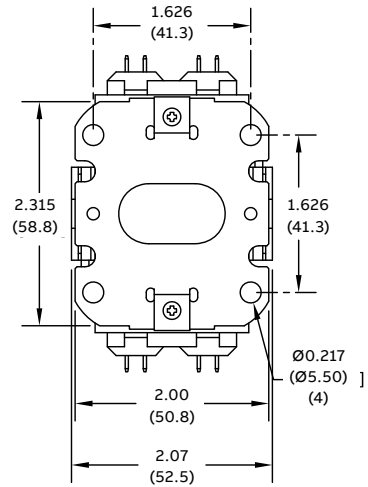
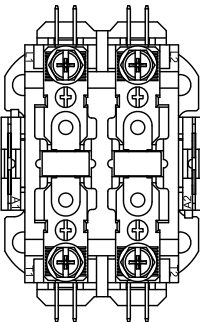
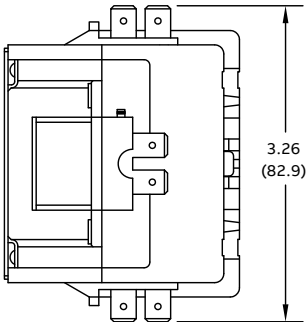
Definite purpose contactors

Approximate dimensions

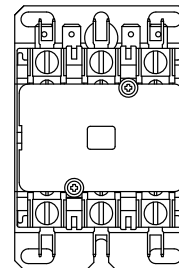
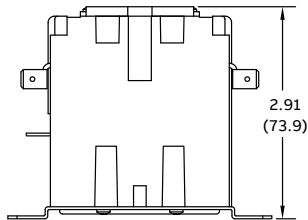
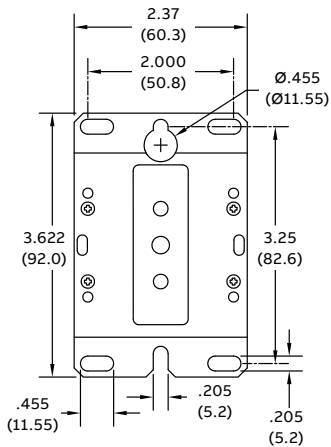
20-40 FLA 1-pole dimensions inches (mm)



20-40 FLA 2-pole dimensions inches (mm)



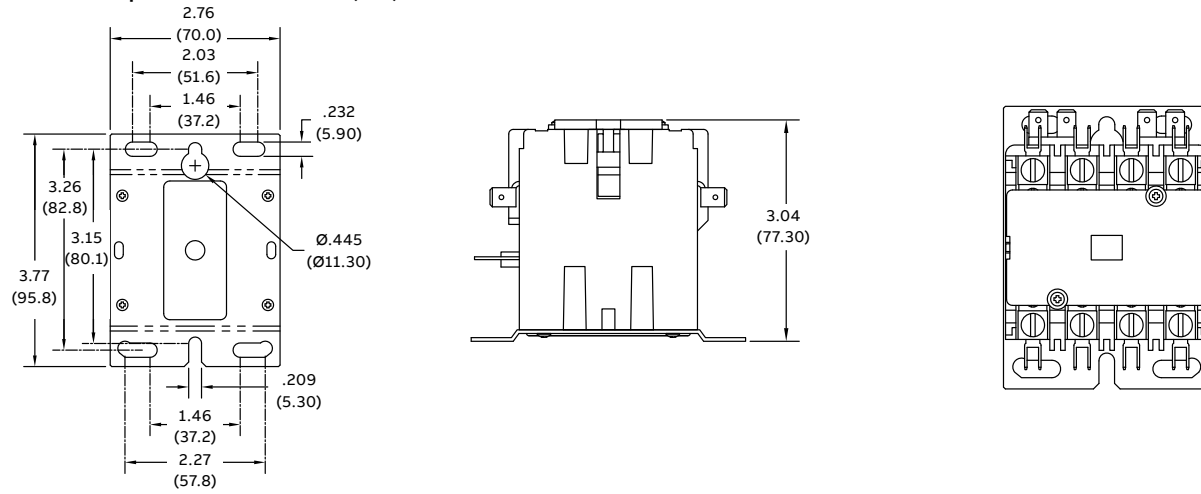
20-40 FLA 3-pole dimensions inches (mm)



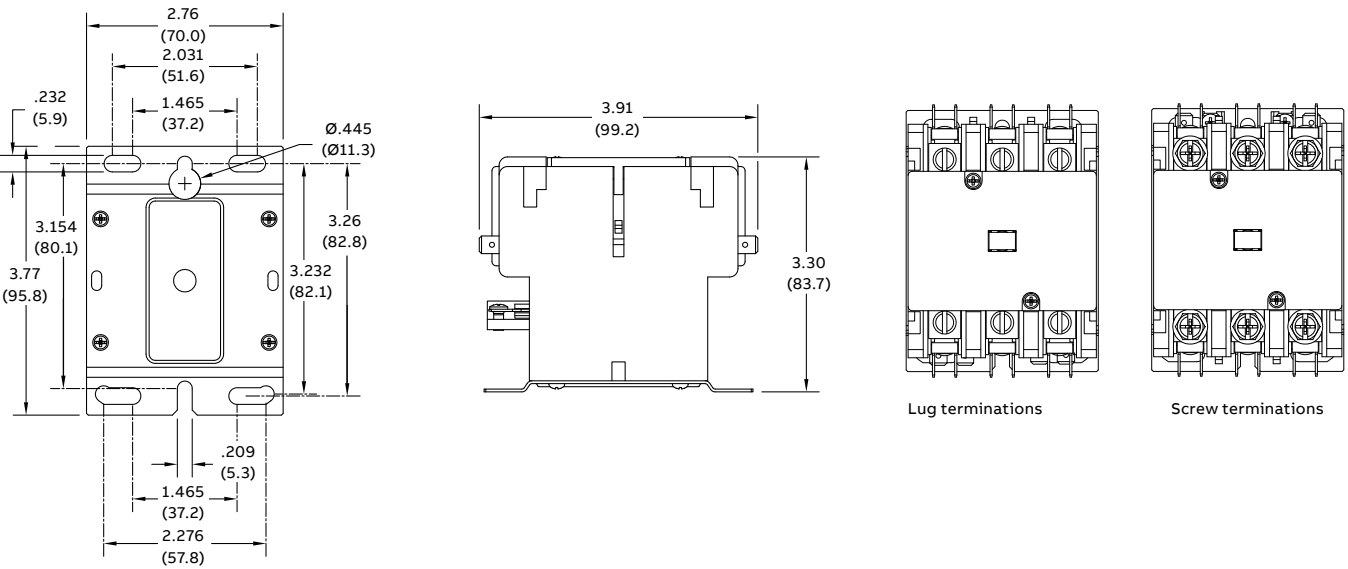
Definite purpose contactors

Approximate dimensions

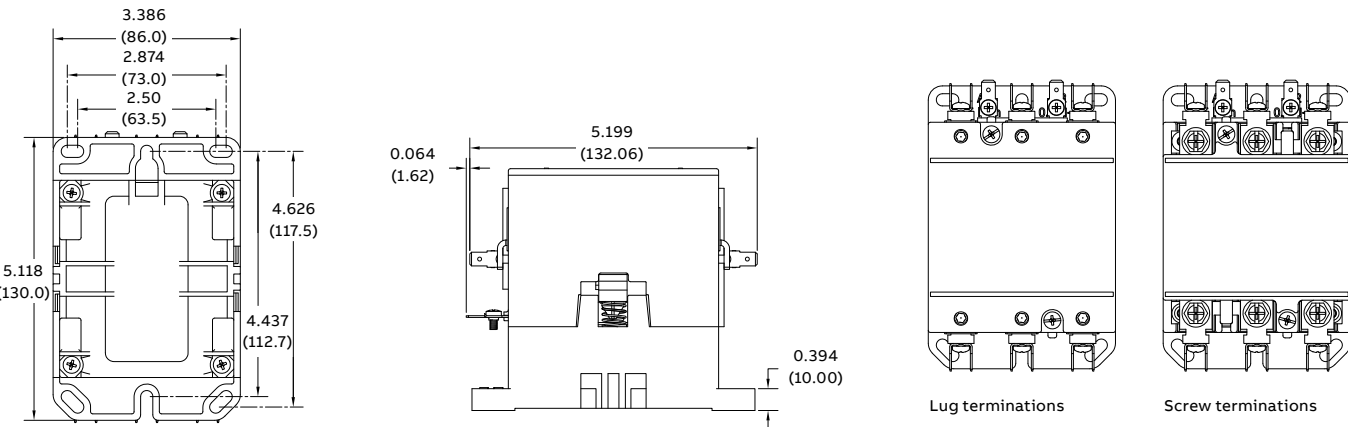
20-40 FLA 4-pole dimensions inches (mm)



50-60 FLA 3-pole dimensions inches (mm)



75-90 FLA 3-pole dimensions inches (mm)



Definite purpose contactors

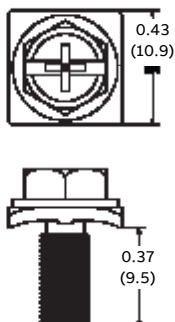
Terminal dimensions and definitions

Standard on 20–30 FLA



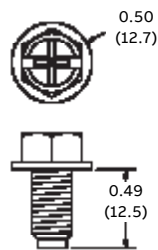
#10–32 Combination Phillips, slotted and $\frac{3}{16}$ hex washer head

Optional on 20–40 FLA not available above 40 A



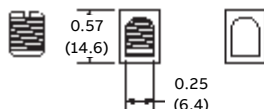
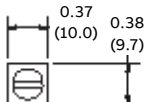
#10–32 Sems screw with pressure plate

Optional on 50–90 FLA



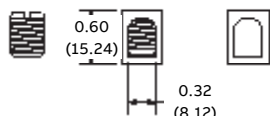
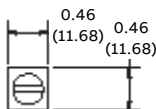
$\frac{1}{4}$ –20 Combination Phillips, slotted and $\frac{3}{8}$ hex washer head

40 FLA lug



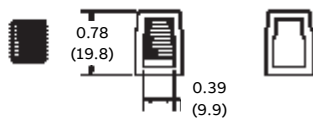
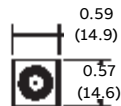
#14–4 AWG Cu 75 °C

HCC 50–60 FLA lug



#14–2 AWG Cu 75 °C

HCD 75/90 FLA lug



#14–1 AWG Cu/Al

Description of contact types (as per NEMA ICS 5, version 2010)

Form A contacts:

A contact arrangement that has single-pole, single-throw, normally open contacts. The function of this arrangement is to close a circuit when actuated.

Symbol:



Form B contacts:

A contact arrangement that has single-pole, single-throw, normally closed contacts. The function of this arrangement is to open a circuit when actuated.

Symbol:



Form C contacts:

A contact arrangement that has single-pole, double-throw contacts with three terminals, one for normally open, one for normally closed and one common. The function of this arrangement is to transfer a circuit when actuated.

Symbol:



Form Z contacts:

A contact arrangement that has single-pole, double-throw contacts with four terminals, two for normally open and two for normally closed. The function of this arrangement is to open one circuit and close the other.

Symbol:





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