

Bulletin 194E, 16...100 A

Electrical Ratings

Performance Data				16 A	25 A	32 A	40 A	63 A	80 A	100 A	Aux. Contacts	
IEC Applications												
Rated operational voltage (U_b): IEC★				[V]	690	690	690	690	690	690	690	
Rated operational voltage (U_b): UL, CSA				[V]	600	600	600	600	600	600	600	
Rated isolation voltage (U_i): IEC/UL, CSA				[V]	690/600	690/600	690/600	690/600	690/600	690/600	690/600	
Rated impulse voltage (U_{imp}): UL, CSA				[kV]	8	8	8	8	8	8	8	
Test voltage, (U) 1 minute				[kV]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Lost power per pole				[W]	0.58	1.0	1.5	1.6	2.4	3.6	5.5	0.4
Rated frequency				[Hz]	50/60	50/60	50/60	50/60	50/60	50/60	50/60	
Conventional free air thermal current I_{th} ★				[A]	25	40	50	63	75	100	120	12
Conventional enclosed thermal current I_e ★				[A]	20	32	40	50	63	80	100	10
Rated current I_g ★				[A]	16	25	32	40	63	80	100	10
AC-1/	Non-inductive or only slightly inductive loads											
AC-21A	Switching of resistive loads with slight overload											
Rated power P_e												
AC-23A	Occasional switching of 3Ø motors and other highly inductive loads (criterion for selecting main switches)	230V	[kW]	5.5	7.5	7.5	15	18.5	22	30	—	
		400V	[kW]	7.5	11	15	22	30	37	55	—	
		690V	[kW]	7.5	11	15	18.5	22	37	45	—	
AC-3	Squirrel-cage motors; starting and stopping of running motors	230V	[kW]	4	5.5	7.5	11	15	18.5	22	—	
		400V	[kW]	5.5	7.5	11	15	18.5	30	37	—	
		690V	[kW]	5.5	7.5	11	15	18.5	30	22	—	
Short circuit current (co-ordination type 2) Rated conditional short-circuit current Maximum fuse rating of circuit (type g,G) Rated short-time current I_{cw} (1 s)		400/415V	[kA]	20	20	15	20	15	30	25	—	
		[A]	20	25	35	50	63	80	100	—		
		[A]	800	900	900	1300	1300	2500	2500	—		
Rated breaking capacity AC23A (cosφ 0.45)		230V	[A]	156	296	296	484	484	780	780	—	
		400V	[A]	120	256	256	504	504	800	800	—	
		690V	[A]	70	136	136	196	196	376	376	—	
DC switching capacity		1 pole										
Rated current I_e			24/48V	[A]	20	25	32	40	63	80	100	—
			110V	[A]	5	5	6	8	10	16	20	
			220V	[A]	1	1	1	1.5	15	3	3	
			440V	[A]	0.5	0.5	0.5	0.6	0.6	0.7	0.7	
DC-21A	For resistive loads, T ≤ 1 ms U_b max = 660V	2 poles in series	96V	[A]	20	25	32	40	63	80	100	—
			110V	[A]	20	23	25	32	50	70	80	
			220V	[A]	5	5	6	8	10	16	20	
			440V	[A]	1	1	1	1.5	1.5	3	3	
			600V	[A]	0.6	0.6	0.6	0.8	0.8	1	1	
		3 poles in series	110V	[A]	20	25	32	40	63	80	100	—
			220V	[A]	13	13	15	20	28	50	63	
			440V	[A]	2.2	2.2	2.2	3.6	3.6	6.5	6.5	
			600V	[A]	1.3	1.5	1.5	2	2	3	3	
Rated power P_e		3 poles in series									—	
DC-23A, DC-3, DC-5			90V	[kW]	1	1.3	1.5	2.9	4.1	5.1		7.2
	For inductive loads, T ≤ 15 ms		110V	[kW]	1	1.1	1.3	2.2	3.3	5.5		7
220V			[kW]	0.8	0.9	1.1	1.7	2	3.5	4.4		
440V			[kW]	0.6	0.6	0.6	0.9	0.9	1.1	1.1		
600V			[kW]	0.4	0.4	0.4	0.5	0.5	0.9	0.9		

★ See standards compliance listed on [Standards Compliance](#).

Electrical Ratings, Continued

Performance Data			16 A	25 A	32 A	40 A	63 A	80 A	100 A	Aux. Contacts	
UL/CSA Applications											
Continuous current		[A]	16	25	32	40	63	80	100	—	
Heavy Pilot Duty		[AC]	A600	A600	A600	—	—	—	—	A600	
Standard Duty		[DC]	—	—	—	—	—	—	—	Q600	
Motor rating 60 Hz	Single-phase (2 poles)	120V, 1P	[FLA]	16	16	16	24	34	56	80	—
			[Hp]	1	1	1	2	3	5	7.5	
		240V, 1P	[FLA]	12	12	17	17	28	50	68	
			[Hp]	2	2	3	3	5	10	15	
		480V, 1P	[FLA]	8.5	8.5	14	21	26	34	68	
			[Hp]	3	3	5	7.5	10	15	30	
		600V, 1P	[FLA]	11.2	11.2	11.2	16	20	27	44	
			[Hp]	5	5	5	7.5	10	15	25	
Three-phase	120V, 3P	[FLA]	13.6	13.6	19.2	30.4	40	56	84	—	
		[Hp]	2	2	3	5	7.5	10	15		
	240V, 3P	[FLA]	9.6	15.2	22	28	42	68	80		
		[Hp]	3	5	7.5	10	15	25	30		
	480V, 3P	[FLA]	11	14	21	27	34	52	65		
		[Hp]	7.5	10	15	20	25	40	50		
	600V, 3P	[FLA]	11	11	17	22	27	52	52		
		[Hp]	10	10	15	20	25	50	50		

Mechanical Data

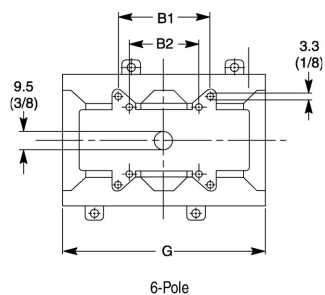
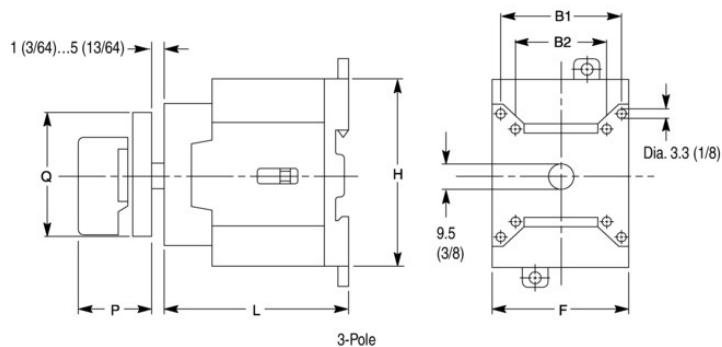
Performance Data			16 A	25...32 A	40...63 A	80...100 A	Aux. Contacts
Protection class according to IEC 529							
Motor rating 60 Hz							
handles			IP66	IP66	IP66	IP66	IP66
switch bodies			IP20	IP20	IP20	IP20	IP20
Mechanical life	[million operations]		0.2	0.2	0.2	0.2	0.2
Max wire gauges							
Terminal size per IEC 947-1			A4	A6	A7	A9	2xA2
rigid wire	1/2 conductor	[AWG] [mm2]	(1)16...10/(2)16...12 (1)1...10/(2)1...4	(1)14...8/(2)14...10 (1)1.5...16/(2)1.5...6	(1)12...4/(2)12...8 (1)2.5...25/(2)2.5...16	(1)10...1/(2)10...4 (1)4...50/(2)4...25	18...14 0.75...2.5
fine strands	1/2 conductor	[AWG] [mm2]	(1)16...8/(2)16...12 (1)1.5...6/(2)1.5...4	(1)14...8/(2)14...10 (1)1.5...10/(2)1...6	(1)12...4/(2)12...8 (1)2.5...16/(2)2.5...10	(1)10...1/(2)10...6 (1)4...35/(2)4...16	18...14 0.5...2.5
Tightening torque		[N•m]/[lb•in]	1.4/12.2	1.4/12.2	2.8/24.5	5.6/50	1/8.8

Environmental Data

Storage	-40...+80 °C (-40...+176 °F)
Operation	-25...+60 °C (-13...+140 °F)

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Front Installation Cat. No. 194E-E...



Handles		
Cat. No.	P	Q
194L-HE4A	28 (1-7/64)	48 x 48 (1-57/64 x 1-57/64)
194L-HE4I	28 (1-7/64)	48 x 48 (1-57/64 x 1-57/64)
194L-HE4S	28 (1-7/64)	48 x 62 (1-57/64 x 2-7/16)
194E-HE4N	34 (1-11/32)	54 x 54 (2-1/8 x 2-1/8)
194E-HE4G	34 (1-11/32)	54 x 54 (2-1/8 x 2-1/8)
194L-HE6A	28 (1-7/64)	64 x 64 (2-33/64 x 3-5/64)
194L-HE6I	28 (1-7/64)	64 x 64 (2-33/64 x 3-5/64)
194L-HE6S	28 (1-7/64)	64 x 78 (2-33/64 x 3-5/64)
194L-HE6N	34 (1-11/32)	67 x 67 (2-41/64 x 2-41/64)
194L-HE6G	34 (1-11/32)	67 x 67 (2-41/64 x 2-41/64)

Switch Body						
Use with Cat. No.	B1★	B2	F	H	L ‡	G
194E-E16	28 (1-7/64)	N/A	36 (1-37/64)	63 (2-31/64)	51 (2)	90 (3-35/64)
194E-E25/32	36 (1-27/64)	N/A	45 (1-25/32)	64 (2-33/64)	60 (2-3/8)	90 (3-1/2)
194E-E40/63	48 (1-57/64)	36 (1-27/64)	54 (2-1/8)	72 (2-27/32)	74 (2-29/32)	108 (4-1/4)
194E-E80/100	48 (1-57/64)	36 (1-27/64)	72 (2-27/32)	90 (3-35/64)	90 (3-35/64)	144 (5-11/16)

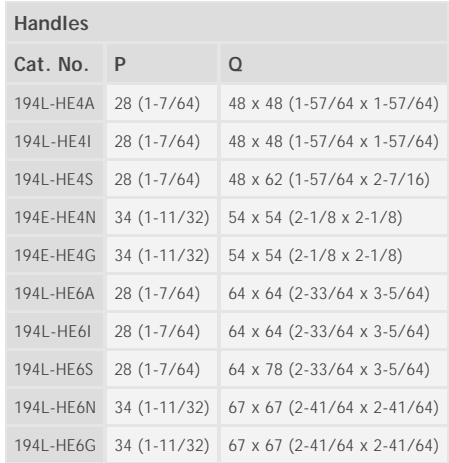
★ Does not apply to 194E-40/63A, 6-Pole Switches. Use B2 dimensions for 6-pole devices.

‡ For 6-pole switches, add 1 in. to the "L" dimension.

Cat. No. 194E-E Switch Body with Cat. No. 194L-HC4A Handle for 22.5 mm Hole Mounting Style



Base Mounting Cat. No. 194E-A...



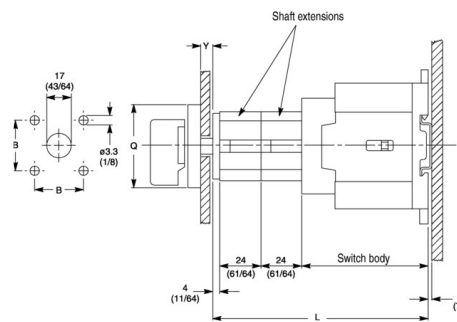
Cover Requirements				
For Use With	Y min.	X ≥	Y max.	X ≥
194E-A16	5 (13/64)	142 (5-19/32)	9.5 (3/8)	90 (3-35/64)
194E-A25/32	5 (13/64)	142 (5-19/32)	9.5 (3/8)	90 (3-35/64)
194E-A40/63	2.5 (7/64)	150 (5-29/32)	9.5 (3/8)	90 (3-35/64)
194E-A80/100	2.5 (7/64)	150 (5-29/32)	9.5 (3/8)	90 (3-35/64)

Switch Body								
Use With Cat. No.	D3	E	F1	F2	G	H	L‡	J
194E-A16	4.5 (3/16)	70 (2-49/64)	45 (1-25/32)	12.5 (31/64)	90 (3-35/64)	63 (2-31/64)	80 (3-5/32)	36 (1-27/64)
194E-A25/32	4.5 (3/16)	70 (2-49/64)	30 (1-3/16)	15 (19/32)	90 (3-1/2)	64 (2-33/64)	59 (2-5/16)	45 (1-25/32)
194E-A40/63	4.5 (3/16)	80 (3-5/32)	37 (1-15/32)	17 (43/64)	108 (4-1/4)	72 (2-27/32)	73 (2-55/64)	54 (2-1/8)
194E-A80/100	5.6 (7/32)	95 (3-3/4)	48.5 (1-29/32)	23.5 (59/64)	144 (5-11/16)	90 (3-35/64)	89 (3-1/2)	72 (2-27/32)

‡ For 6-pole switches, add 1 in. to the "L" dimension.

Base Mounting Cat. No. 194E-A...

Cat. No. 194E-A... Switch Body with Cat. No. 194L-G2853 Shaft Extension



Switch Body				
L ★	Cat. No.			
	194E-A 16	194E-A 25/32	194E-A 40/63	194E-A 80/100
With 1 shaft extension	79 (3-7/64)	88 (3-15/32)	102 (4-1/32)	118 (4-21/32)
With 2 shaft extensions	103 (4-37/64)	112 (4-27/64)	126 (4-31/32)	142 (5-19/32)
With 3 shaft extensions	127 (5)	136 (5-23/64)	150 (5-29/32)	166 (6-35/64)
With 4 shaft extensions	151 (6-61/64)	160 (6-5/16)	174 (6-55/64)	190 (7-31/64)
With 5 shaft extensions	175 (7-57/64)	184 (7-1/4)	198 (7-51/64)	214 (8-7/16)
With 6 shaft extensions	199 (8-27/32)	208 (8-13/64)	222 (8-3/4)	238 (9-3/8)

★ For 6-pole switches, add 1 in. to the "L" dimension.

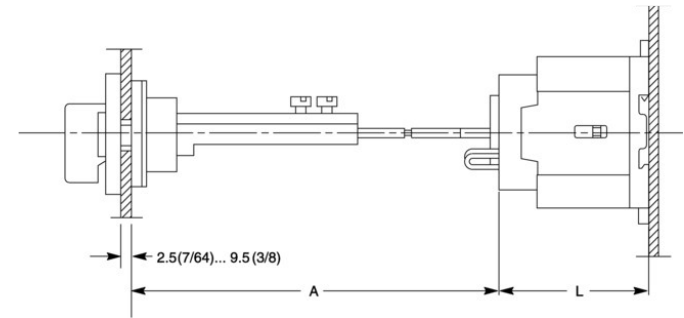
Shaft	Y
194L-G2830	2.5...9.5 (7/64...3/8)
194L-G3194	9...18 (23/64...23/32)
194L-G3195	14...23 (9/16)...(29/32)

Handles			
Type	B	Q	P
194L-HE4A	36 (1-27/64)	48 x 48 (1-57/64 x 1-57/64)	28 (1-7/64)
194L-HE4I	36 (1-27/64)	48 x 48 (1-57/64 x 1-57/64)	28 (1-7/64)
194E-HE4G	28 (1-7/64)	54 x 54 (2-1/8 x 2-1/8)	34 (1-11/32)
194E-HE4N	28 (1-7/64)	54 x 54 (2-1/8 x 2-1/8)	34 (1-11/32)
194L-HE6A	48 (1-57/64)	64 x 64 (2-33/64 x 2-33/64)	28 (1-7/64)
194L-HE6I	48 (1-57/64)	64 x 64 (2-33/64 x 2-33/64)	28 (1-7/64)
194L-HE6N	48 (1-57/64)	67 x 67 (2-41/64 x 2-41/64)	34 (1-11/32)
194L-HE6G	48 (1-57/64)	67 x 67 (2-41/64 x 2-41/64)	34 (1-11/32)

Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Base Installation Cat. No. 194E-A...

Cat. No. 194E-A Switch Body with Metal Shaft Extension



Cat. No.	A
194L-G3393	110...235 (4-11/32...9-1/4)
194L-G3394	230...350 (9-1/16...13-25/32)

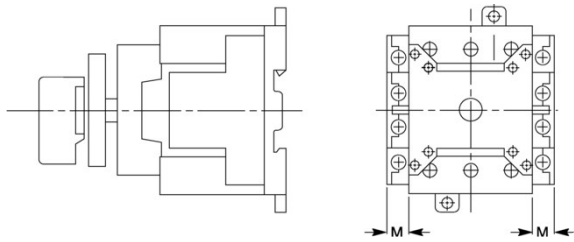
Cat. No.	L★
194E-A16	51 (2)
194E-A25/32	60 (2-3/8)
194E-A40/63	74 (2-59/64)
194E-A80/100	90 (3-35/64)

★ For 6-pole switches, add 1 in. to the "L" dimension.

Base and Front Installation

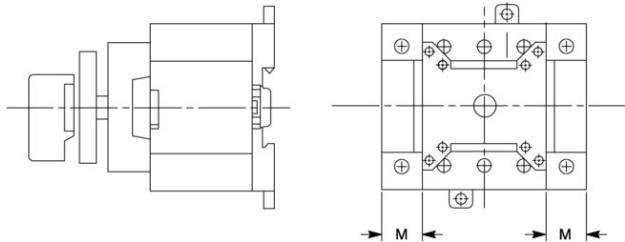
Cat. No. 194E... with Auxiliary Contact Block Installed

Contacts	M
1 N.O. + 1 N.C.	9 (23/64)
2 N.O. + 2 N.C.	18 (23/32)



Cat. No. 194E... with 4-Pole, Ground and Neutral Terminals

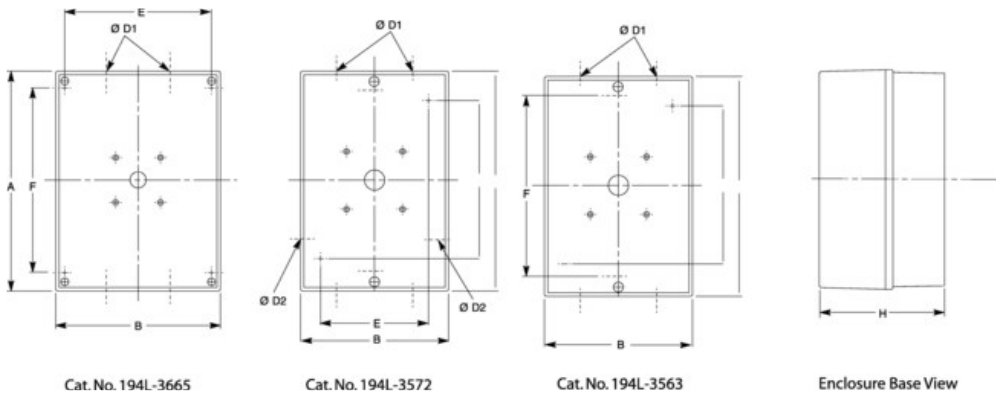
Cat. No.	M
194E-16	12.5 (31/64)
194E-25/32	14 (9/16)
194E-40/63	17.5 (11/16)
194E-80/100	22 (7/8)



Dimensions are shown in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.

Base Mounting Cat. No. 194E-A...

Thermoplastic Enclosures



Complete Switches		Enclosures		Height A	Width B	Knockouts† ØD1		Mounting Holes§		Depth H
Cat. No.	Poles	ABS	Noryl					E	F	
		Cat. No.								
194E-Y16	3 and 4	*	*	120 (4-23/32)	70 (2-3/4)	M16/M20 16/20 mm	PG11/PG16 18.5/22.5 mm	50 (1-31/32)	105 (4-9/64)	70 (2-49/65)
	6	194E-G3663	194E-G3664	180 (7-3/32)	125 (4-59/64)	M25/M30 25/30 mm	PG21/PG29 28.5/37.5 mm	On Center	145 (5-23/32)	105 (4-1/8)
194E-Y25/32	3 and 4	194L-G3572	194L-G3576	150 (5-29/32)	95 (3-3/4)	PG16/PG21 22.5/28.5 mm		60 (2-3/8)	115 (4-17/32)	86 (3-3/8)
	6	194E-G3663	194E-G3664	180 (7-3/32)	125 (4-59/64)	PG21/PG29 28.5/37.5 mm		On Center	145 (5-23/32)	105 (4-1/8)
194E-Y40/63	3 and 4	194E-G3663	194E-G3664	180 (7-3/32)	125 (4-59/64)	PG21/PG29 28.5/37.5 mm		On Center	145 (5-23/32)	105 (4-1/8)
	6	194E-G3665	194E-G3666	230 (9-1/16)	175 (6-57/64)	PG29/PG36 37.5/47.5 mm		155 (6-3/32)	195 (7-43/64)	120 (4-47/64)
194E-Y80/100	3 and 4	194E-G3665	194E-G3666	230 (9-1/16)	175 (6-57/64)	PG29/PG36 37.5/47.5 mm		155 (6-3/32)	195 (7-43/64)	120 (4-47/64)

★ Empty enclosures not available for purchase.
‡ Cat. No. 194E-A16 units have 1 knockout on each end. all others have 2 knockouts on each end. A letter "M" in the catalog number indicates metric knockouts; the unit is otherwise supplied with PG knockouts.
§ All mounting holes have a 4.2 mm (5/32 in.) diameter.

No. of Extensions	Cat. No. 194E-A 20/32...	Cat. No. 194E-A 40/63...	Cat. No. 194E-A 80/00...
With 1 extension	96 (3-25/32)	107 (4-7/32)	114 (4-31/64)
With 2 extensions	120 (4-23/32)	131 (5-5/32)	138 (5-7/16)
With 3 extensions	144 (5-43/64)	155 (6-7/64)	162 (6-3/8)
With 4♣ extensions	168 (6-39/64)	179 (7-3/64)	186 (7-21/64)
With 5♣ extensions	192 (7-9/16)	203 (8)	210 (8-17/64)
With 6♣ extensions	216 (8-1/2)	227 (8-15/16)	234 (9-7/32)

♣ When more than four modules are used, attach the first one to the switch body using the screws supplied with the extension (Cat. No. 194L-G2853).

Dimensions are shown in (millimeters) inches. Dimensions are not intended to be used for manufacturing purposes.

194E Enclosed Switches with 194R Handles

