

Control and Load Switch Specifications

Bulletin Number 194E, 194L

Topic	Page
Product Line Overview	2
194E General Specifications	3
194E Approximate Dimensions	5
194L Circuit Diagrams	13
194L General Specifications	17
Approximate Dimensions	20




Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.



				
	Bulletin 194E		Bulletin 194L	
Product Type	Inductive load-rated load switch		Inductive load-rated control/load switch	
Current Range	16...100 A		12...40 A	
Main Applications	UL, CSA ratings "suitable as at-motor disconnect"		UL, CSA ratings "suitable as at-motor disconnect"	
Functionality	<ul style="list-style-type: none"> 3- or 6-pole switch configurations for OFF-ON or changeover applications (16...100 A switches) 		<ul style="list-style-type: none"> 1- to 6-pole multifunction switch control configurations for OFF-ON, changeover, Star-Delta (Wye-Delta), reversing, ammeter, voltmeter, and step switch applications Also available in custom control configurations up to 16 circuits for any unique control switching application. 	
Mounting Styles	Front/door or base/DIN Rail mounting		Front/door or base/DIN Rail mounting	
Handles	<ul style="list-style-type: none"> Handle colors in grey/black and red/yellow and padlockable versions Legend plates available in 0-I international markings and text styles 		<ul style="list-style-type: none"> Uniformly styled handles: selector knob, disk style, rectangular style, and key-operated versions (Type 1/12, IP66) Handle colors in grey/black and red/yellow and padlockable versions Legend plates available in 0-I international markings and text styles 	
Open Switch or Enclosed	<ul style="list-style-type: none"> Open switch (large frame Bul. 194E — open style only) Enclosed: IP66 thermoplastic enclosure or UL/CSA rated enclosure 		Open switch	
UL/CSA Electrical Ratings: Rated Voltage U_e	600V AC		600V AC	
Rated Current I_e	16...100 A @ 600V		12...40 A @ 600V	
Rated Power P_e [FLA]	Varies w/ 1- or 3-phase switch, voltage		Varies w/ 1- or 3-phase switch, voltage	
Short-Circuit Ratings	5 kA		5 kA	
Switching Rate [ops/h]	120		120	
Mechanical Life [ops]	0.2 million (16...100 A switches)		1 million	
IEC Rated Current I_e				
AC-1	16...100 A @ 600V		12...40 A @ 600V	
AC-21A	16...100 A @ 600V		12...40 A @ 600V	
AC-22A	16...100 A @ 600V		12...40 A @ 600V	
Ambient Operational Temp.	-25...+60 °C (-13...+140 °F)		-25...+60 °C (-13...+140 °F)	
Ambient Enclosed Temp.	-20...+60 °C (-4...+140 °F)		-20...+60 °C (-4...+140 °F)	
Ambient Storage Temp.	-40...+80 °C (-40...+176 °F)		-40...+80 °C (-40...+176 °F)	
Protection class per IEC 529	Switch bodies: IP2		Switch bodies: IP2	
Optional Accessories	<ul style="list-style-type: none"> IP66 handles Multi-length shafts and shaft extension kits Terminal covers 		<ul style="list-style-type: none"> Multi-length shafts and shaft extension kits Terminal covers 	
Standards/Certifications	<ul style="list-style-type: none"> UL 508 CSA C22.2, No. 14 IEC 60947-3 Low Voltage Switchgear and Controlgear part 3 CE 		<ul style="list-style-type: none"> UL 508 CSA C22.2, No. 14 IEC 60947-3 Low Voltage Switchgear and Controlgear part 3 CE 	

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_g): IEC★			[V]	690	690	690	690	690	690	690	690
Rated operational voltage (U_g): UL, CSA			[V]	600	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	690/600
Rated impulse voltage (U_{imp}): UL, CSA			[kV]	8	8	8	8	8	8	8	8
Test voltage, (U_i) 1 minute			[kV]	2.5	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	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_e★											
AC-1/	Non-inductive or only slightly inductive loads	[A]	16	25	32	40	63	80	100	10	
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)			[kA]	20	20	15	20	15	30	25	—
Rated conditional short-circuit current			400/415V [A]	20	25	35	50	63	80	100	—
Maximum fuse rating of circuit (type g,G)			[A]	800	900	900	1300	1300	2500	2500	—
Rated short-time current I_{cw} (1 s)											
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											
Rated current I_e	1 pole	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	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	
DC-21A	3 poles in series	600V	[A]	0.6	0.6	0.6	0.8	0.8	1	1	
		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	
Rated power P_e	3 poles in series	600V	[A]	1.3	1.5	1.5	2	2	3	3	
		90V	[kW]	1	1.3	1.5	2.9	4.1	5.1	7.2	
		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	
DC-23A, DC-3, DC-5	For inductive loads, $T \leq 15$ ms	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 <http://ab.rockwellautomation.com/Circuit-and-Load-Protection/Disconnect-Switches/Non-Visible-Blade/194R-Fused-Non-Fused-Disconnect-Switches#specifications>