



Control and Load Switch Specifications

Bulletin Number 194E, 194L

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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.

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	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	3- or 6-pole switch configurations for OFF-ON or changeover applications (16...100 A switches)		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	- Handle colors in grey/black and red/yellow and padlockable versions - Legend plates available in 0-I international markings and text styles		- 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	- 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	- IP66 handles - Multi-length shafts and shaft extension kits - Terminal covers		- Multi-length shafts and shaft extension kits - Terminal covers
Standards/Certifications	- UL 508 - CSA C22.2, No. 14 - IEC 60947-3 Low Voltage Switchgear and Controlgear part 3 - CE		- 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_0): IEC★				[V]	690	690	690	690	690	690	690
Rated operational voltage (U_0): 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_i) 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
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
Conventional enclosed thermal current I_e ★				[A]	20	32	40	50	63	80	100
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			[A]	20	25	35	50	63	80	100	—
Maximum fuse rating of circuit (type g,G)				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	
	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	
		600V	[A]	1.3	1.5	1.5	2	2	3	3	
Rated power P_e											
DC-23A, DC-3, DC-5	3 poles in series	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	
		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>