



# SMC-3, SMC Flex, and SMC-50 Smart Motor Controller Specifications

Bulletin 150

Topic	Page
Summary of Changes	2
Overview	3
SMC Controllers	3
Control Mode Overview	4
SMC-3 Controllers	8
Catalog Number Explanation	8
Product Selection	9
Accessories	17
Specifications	19
Typical Wiring Diagrams	25
Overload Trip Curves	27
Starts per Hour Curves	28
Approximate Dimensions	30
SMC Flex Controllers	31
Catalog Number Explanation	31
Product Selection	32
Accessories	41
Specifications	44
Typical Wiring Diagrams	51
Approximate Dimensions and Shipping Weights	52

Topic	Page
SMC-50 Controllers	60
Catalog Number Explanation	60
Product Selection— SMC-50 Controller with Internal Bypass	61
Product Selection—SMC-50 Solid-state Controller	65
Accessories	75
Specifications	83
Typical Wiring Diagrams	99
Approximate Dimensions	102
Application Profiles	111
Reduced Voltage Starting	112
Solid-state Starters with SCRs	113
Industry Applications Matrix	115
Fans	118
Pumps	122
Conveyors	128
Centrifuge	132
Shock Loads	134
High-inertia Loads	136
Smart Motor Braking	141
Compressor	146
Tumbler	147
Slow Speed	150
Resistive Loads	152
Sizing and Selection Tools	158

**Table 3 - 380/400/415/460V AC SMC-3 Controllers for Use with Line-connected Motors**

Rated Voltage [V AC]	Motor Current [A] <sup>(1)</sup>	Max. kW, 50 Hz	Max. Hp, 60 Hz	Control Power	Open Type Cat. No.
380/400/415 (kW) 460 (Hp)	1...3	1.1	0.5...1.5	100...240V AC, 50/60 Hz	150-C3NBD
				24V AC/DC	150-C3NBR
	3...9	4	1.5...5	100...240V AC, 50/60 Hz	150-C9NBD
				24V AC/DC	150-C9NBR
	5.3...16	7.5	5...10	100...240V AC, 50/60 Hz	150-C16NBD
				24V AC/DC	150-C16NBR
	6.3...19	7.5	5...10	100...240V AC, 50/60 Hz	150-C19NBD
				24V AC/DC	150-C19NBR
	8.3...25	11	7.5...15	100...240V AC, 50/60 Hz	150-C25NBD
				24V AC/DC	150-C25NBR
	10...30	15	7.5...20	100...240V AC, 50/60 Hz	150-C30NBD
				24V AC/DC	150-C30NBR
	12.3...37	18.5	10...25	100...240V AC, 50/60 Hz	150-C37NBD
				24V AC/DC	150-C37NBR
	14.3...43	22	10...30	100...240V AC, 50/60 Hz	150-C43NBD
				24V AC/DC	150-C43NBR
	20...60	30	15...40	100...240V AC, 50/60 Hz	150-C60NBD
				24V AC/DC	150-C60NBR
	28.3...85	45	25...60	100...240V AC, 50/60 Hz	150-C85NBD
				24V AC/DC	150-C85NBR
27...108	55	50...75	100...240V AC, 50/60 Hz	150-C108NBD	
			24V AC/DC <sup>(2)</sup>	150-C108NBR	
34...135	75	60...100	100...240V AC, 50/60 Hz	150-C135NBD	
			24V AC/DC <sup>(2)</sup>	150-C135NBR	
67...201	95...110	75...150	100...240V AC, 50/60 Hz	150-C201NBD	
			24V AC/DC <sup>(2)</sup>	150-C201NBR	
84...251	95...132	100...200	100...240V AC, 50/60 Hz	150-C251NBD	
			24V AC/DC <sup>(2)</sup>	150-C251NBR	
106...317	95...160	125...250	100...240V AC, 50/60 Hz	150-C317NBD	
			24V AC/DC <sup>(2)</sup>	150-C317NBR	
120...361	110...200	250...300	100...240V AC, 50/60 Hz	150-C361NBD	
			24V AC/DC <sup>(2)</sup>	150-C361NBR	
160...480	160...250	300...400	100...240V AC, 50/60 Hz	150-C480NBD	
			24V AC/DC <sup>(2)</sup>	150-C480NBR	

(1) Motor FLA rating must fall within specified current range for unit to operate properly.

(2) Separate 120V or 240V single phase is required for fan operation.

**Table 4 - 500/575V AC SMC-3 Controllers for Use with Line-connected Motors**

Rated Voltage [V AC]	Motor Current [A] <sup>(1)</sup>	Max. kW, 50 Hz	Max. Hp, 60 Hz	Control Power	Open Type Cat. No.
500 (kW) 575 (Hp)	1...3	1.5	0.75...2	100...240V AC, 50/60 Hz	150-C3NCD
				24V AC/DC	150-C3NCR
	3...9	5.5	3...7.5	100...240V AC, 50/60 Hz	150-C9NCD
				24V AC/DC	150-C9NCR
	5.3...16	7.5	5...10	100...240V AC, 50/60 Hz	150-C16NCD
				24V AC/DC	150-C16NCR
	6.3...19	11	7.5...15	100...240V AC, 50/60 Hz	150-C19NCD
				24V AC/DC	150-C19NCR
	8.3...25	15	7.5...20	100...240V AC, 50/60 Hz	150-C25NCD
				24V AC/DC	150-C25NCR
	10...30	18.5	10...25	100...240V AC, 50/60 Hz	150-C30NCD
				24V AC/DC	150-C30NCR
	12.3...37	22	15...30	100...240V AC, 50/60 Hz	150-C37NCD
				24V AC/DC	150-C37NCR
	14.3...43	22	15...40	100...240V AC, 50/60 Hz	150-C43NCD
				24V AC/DC	150-C43NCR
	20...60	37	20...50	100...240V AC, 50/60 Hz	150-C60NCD
				24V AC/DC	150-C60NCR
	28.3...85	55	30...75	100...240V AC, 50/60 Hz	150-C85NCD
				24V AC/DC	150-C85NCR
	27...108	75	60...100	100...240V AC, 50/60 Hz	150-C108NCD
				24V AC/DC <sup>(2)</sup>	150-C108NCR
	34...135	90	75...125	100...240V AC, 50/60 Hz	150-C135NCD
				24V AC/DC <sup>(2)</sup>	150-C135NCR
	67...201	75...132	100...200	100...240V AC, 50/60 Hz	150-C201NCD
				24V AC/DC <sup>(2)</sup>	150-C201NCR
	84...251	90...160	125...250	100...240V AC, 50/60 Hz	150-C251NCD
				24V AC/DC <sup>(2)</sup>	150-C251NCR
106...317	100...200	200...300	100...240V AC, 50/60 Hz	150-C317NCD	
			24V AC/DC <sup>(2)</sup>	150-C317NCR	
120...361	132...250	200...350	100...240V AC, 50/60 Hz	150-C361NCD	
			24V AC/DC <sup>(2)</sup>	150-C361NCR	
160...480	200...315	250...500	100...240V AC, 50/60 Hz	150-C480NCD	
			24V AC/DC <sup>(2)</sup>	150-C480NCR	

(1) Motor FLA rating must fall within specified current range for unit to operate properly.

(2) Separate 120V or 240V single phase is required for fan operation.

## For use with Delta-connected Motors



Use the SMC Estimation Wizard and SMC Thermal Estimation Wizard to confirm that the SMC controller selection meets the application requirements. See [Sizing and Selection Tools](#) for more information. For additional assistance, visit [rok.auto](http://rok.auto) or contact Industrial Controls Technical Support by email at [raictechsupport@ra.rockwell.com](mailto:raictechsupport@ra.rockwell.com) or by phone at +1 440-646-5800.

Table 5 - 200/208V AC SMC-3 Controllers for Use with Delta-connected Motors

Rated Voltage [V AC]	Motor Current [A] <sup>(1)</sup>	Max. kW, 50 Hz	Max. Hp, 60 Hz	Control Power	Open Type Cat. No.
200/208	1.7...5.1	—	1	100...240V AC, 50/60 Hz	150-C3NBD
		—		24V AC/DC	150-C3NBR
	5.1...16	—	1.5...3	100...240V AC, 50/60 Hz	150-C9NBD
		—		24V AC/DC	150-C9NBR
	9.1...27.6	—	3...7.5	100...240V AC, 50/60 Hz	150-C16NBD
		—		24V AC/DC	150-C16NBR
	10.9...32.8	—	3...10	100...240V AC, 50/60 Hz	150-C19NBD
		—		24V AC/DC	150-C19NBR
	14.3...43	—	3...10	100...240V AC, 50/60 Hz	150-C25NBD
		—		24V AC/DC	150-C25NBR
	17.3...52	—	5...10	100...240V AC, 50/60 Hz	150-C30NBD
		—		24V AC/DC	150-C30NBR
	21...64	—	7.5...20	100...240V AC, 50/60 Hz	150-C37NBD
		—		24V AC/DC	150-C37NBR
	25...74	—	7.5...20	100...240V AC, 50/60 Hz	150-C43NBD
		—		24V AC/DC	150-C43NBR
	34.6...104	—	15...30	100...240V AC, 50/60 Hz	150-C60NBD
		—		24V AC/DC	150-C60NBR
	50...147	—	15...40	100...240V AC, 50/60 Hz	150-C85NBD
		—		24V AC/DC	150-C85NBR
47...187	—	20...60	100...240V AC, 50/60 Hz	150-C108NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C108NBR	
59...234	—	20...75	100...240V AC, 50/60 Hz	150-C135NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C135NBR	
116...348	—	75...100	100...240V AC, 50/60 Hz	150-C201NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C201NBR	
145...435	—	100...150	100...240V AC, 50/60 Hz	150-C251NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C251NBR	
183...549	—	100...200	100...240V AC, 50/60 Hz	150-C317NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C317NBR	
208...625	—	125...200	100...240V AC, 50/60 Hz	150-C361NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C361NBR	
277...831	—	200...300	100...240V AC, 50/60 Hz	150-C480NBD	
	—		24V AC/DC <sup>(2)</sup>	150-C480NBR	

(1) Motor FLA rating must fall within specified current range for unit to operate properly.

(2) Separate 120V or 240V single phase is required for fan operation.

Table 6 - 230V AC SMC-3 Controllers for Use with Delta-connected Motors

Rated Voltage [V AC]	Motor Current [A] <sup>(1)</sup>	Max. kW, 50 Hz	Max. Hp, 60 Hz	Control Power	Open Type Cat. No.	
230	1.7...5.1	0.25...1.1	1	100...240V AC, 50/60 Hz	150-C3NBD	
				24V AC/DC	150-C3NBR	
	5.1...16	1.1...4	1...5	1...5	100...240V AC, 50/60 Hz	150-C9NBD
					24V AC/DC	150-C9NBR
	9.1...27.6	2.2...7.5	3...7.5	3...7.5	100...240V AC, 50/60 Hz	150-C16NBD
					24V AC/DC	150-C16NBR
	10.9...32.8	2.2...7.5	3...10	3...10	100...240V AC, 50/60 Hz	150-C19NBD
					24V AC/DC	150-C19NBR
	14.3...43	4...11	3...15	3...15	100...240V AC, 50/60 Hz	150-C25NBD
					24V AC/DC	150-C25NBR
	17.3...52	4...15	5...15	5...15	100...240V AC, 50/60 Hz	150-C30NBD
					24V AC/DC	150-C30NBR
	21...64	5.5...18.5	7.5...20	7.5...20	100...240V AC, 50/60 Hz	150-C37NBD
					24V AC/DC	150-C37NBR
	25...74	5.5...22	7.5...25	7.5...25	100...240V AC, 50/60 Hz	150-C43NBD
					24V AC/DC	150-C43NBR
	34.6...104	7.5...30	15...40	15...40	100...240V AC, 50/60 Hz	150-C60NBD
					24V AC/DC	150-C60NBR
	50...147	15...45	20...50	20...50	100...240V AC, 50/60 Hz	150-C85NBD
					24V AC/DC	150-C85NBR
	47...187	55	20...60	20...60	100...240V AC, 50/60 Hz	150-C108NBD
					24V AC/DC <sup>(2)</sup>	150-C108NBR
	59...234	75	25...75	25...75	100...240V AC, 50/60 Hz	150-C135NBD
					24V AC/DC <sup>(2)</sup>	150-C135NBR
	116...348	110	75...125	75...125	100...240V AC, 50/60 Hz	150-C201NBD
					24V AC/DC <sup>(2)</sup>	150-C201NBR
	145...435	132	100...150	100...150	100...240V AC, 50/60 Hz	150-C251NBD
					24V AC/DC <sup>(2)</sup>	150-C251NBR
183...549	160	125...200	125...200	100...240V AC, 50/60 Hz	150-C317NBD	
				24V AC/DC <sup>(2)</sup>	150-C317NBR	
208...625	200	150...250	150...250	100...240V AC, 50/60 Hz	150-C361NBD	
				24V AC/DC <sup>(2)</sup>	150-C361NBR	
277...831	250	200...300	200...300	100...240V AC, 50/60 Hz	150-C480NBD	
				24V AC/DC <sup>(2)</sup>	150-C480NBR	

(1) Motor FLA rating must fall within specified current range for unit to operate properly.

(2) Separate 120V or 240V single phase is required for fan operation.

**Table 7 - 380/400/415/460V AC SMC-3 Controllers for Use with Delta-connected Motors**

Rated Voltage [V AC]	Motor Current [A] <sup>(1)</sup>	Max. kW, 50 Hz	Max. Hp, 60 Hz	Control Power	Open Type Cat. No.
380/400/415 (kW) 460 (Hp)	1.7...5.1	0.55...2.2	0.5...2	100...240V AC, 50/60 Hz	150-C3NBD
				24V AC/DC	150-C3NBR
	5.1...16	2.2...7.5	2...7.5	100...240V AC, 50/60 Hz	150-C9NBD
				24V AC/DC	150-C9NBR
	9.1...27.6	4...11	5...15	100...240V AC, 50/60 Hz	150-C16NBD
				24V AC/DC	150-C16NBR
	10.9...32.8	4...15	5...15	100...240V AC, 50/60 Hz	150-C19NBD
				24V AC/DC	150-C19NBR
	14.3...43	5.5...22	7.5...20	100...240V AC, 50/60 Hz	150-C25NBD
				24V AC/DC	150-C25NBR
	17.3...52	7.5...22	7.5...30	100...240V AC, 50/60 Hz	150-C30NBD
				24V AC/DC	150-C30NBR
	21...64	7.5...30	10...40	100...240V AC, 50/60 Hz	150-C37NBD
				24V AC/DC	150-C37NBR
	25...74	11...37	10...50	100...240V AC, 50/60 Hz	150-C43NBD
				24V AC/DC	150-C43NBR
	34.6...104	15...55	20...75	100...240V AC, 50/60 Hz	150-C60NBD
				24V AC/DC	150-C60NBR
	50...147	22...75	25...100	100...240V AC, 50/60 Hz	150-C85NBD
				24V AC/DC	150-C85NBR
	47...187	90	40...125	100...240V AC, 50/60 Hz	150-C108NBD
				24V AC/DC <sup>(2)</sup>	150-C108NBR
	59...234	132	50...150	100...240V AC, 50/60 Hz	150-C135NBD
				24V AC/DC <sup>(2)</sup>	150-C135NBR
	116...348	160	150...250	100...240V AC, 50/60 Hz	150-C201NBD
				24V AC/DC <sup>(2)</sup>	150-C201NBR
	145...435	250	200...350	100...240V AC, 50/60 Hz	150-C251NBD
				24V AC/DC <sup>(2)</sup>	150-C251NBR
183...549	315	250...450	100...240V AC, 50/60 Hz	150-C317NBD	
			24V AC/DC <sup>(2)</sup>	150-C317NBR	
208...625	355	300...500	100...240V AC, 50/60 Hz	150-C361NBD	
			24V AC/DC <sup>(2)</sup>	150-C361NBR	
277...831	450	350...700	100...240V AC, 50/60 Hz	150-C480NBD	
			24V AC/DC <sup>(2)</sup>	150-C480NBR	

(1) Motor FLA rating must fall within specified current range for unit to operate properly.

(2) Separate 120V or 240V single phase is required for fan operation.