

Standard Features								
Selectable Start Times	2, 5, 10, 15, 20, 25, or 30 s							
Selectable Initial Torque	0%, 25%, 35%, and 65% of locked rotor torque							
Selectable Current Limit	150%, 250%, 350%, and 450% of full load current							
Selectable Kick Start — 450% FLA	0, 0.5, 1.0, or 1.5 s							
Selectable Soft Stop	Off, 100%, 200%, or 300% of the start time setting when wired							
Electrical Ratings								
	UL/CSA/NEMA			IEC				
Power Circuit	Rated Operation Voltage	200...480V AC 200...600V AC			200...480V~ — 400V~			
	Rated Insulation Voltage	600V AC			500V~ — 500V~			
	Dielectric Withstand	2200V AC			500V~			
	Repetitive Peak	200...480V AC: 1400V 200...600V AC: 1600V			2500V~			
	Operating Frequency	50/60 Hz			200...480V~: 1400V			
		1...37 A	—		500V~: 1600V			
		43...60 A	—		50/60 Hz			
	Utilization Category		85 A	—		AC-53b: 3.5-15:3585		
			108 A	—		AC-53b: 4.5-30:1770		
			135 A	—		AC-53b: 4.5-30:3570		
		201...251 A	—		AC-53b: 3.5-30: 1770			
		317...480 A	—		AC-53b: 3.5-30: 1770			
Number of Poles	Equipment designed for 3-phase only							
Rated Impulse Voltage	6 kV							
DV/DT Protection	1000V/μs							
Overvoltage Category	III							
	Type 1							
SCPD Performance	Non-Time Delay		Thermal Magnetic Circuit Breaker		High Capacity Time Delay Class CC/J/L			
SCPD List†	Max. Standard Available Fault	Max. Standard Fuse (A)*	Max. Standard Available Fault	Max. Circuit Breaker (A)	Max. Standard Available Fault	Max. Fuse (A)		
Line Device Operational Current Rating (A)	3	5 kA	12	5 kA	12	70 kA	6	
	9	5 kA	30	5 kA	30	70 kA	15	
	16	5 kA	60	5 kA	60	42 kA	30	
	19	5 kA	70	5 kA	70	42 kA	40	
	25	5 kA	100	5 kA	100	42 kA	50	
	30	5 kA	110	5 kA	110	42 kA	60	
	37	5 kA	125	5 kA	125	42 kA	60	
	43	10 kA	150	10 kA	150	70 kA	90	
	60	10 kA	225	10 kA	225	70 kA	125	
	85	10 kA	300	10 kA	300	70 kA	175	
	108	18 kA	400	18 kA	300	70 kA	200	
	135	18 kA	500	18 kA	400	70 kA	225	
	201	18 kA	600	18 kA	600	70 kA	350	
	251	30 kA	700	30 kA	700	70 kA	400	
	317	30 kA	800	30 kA	800	69 kA	500	
	361	42 kA	1000	30 kA	1000	69 kA	600	
	480	42 kA	1200	30 kA	1200	69 kA	800	
	Delta Device Operational Current Rating (A)	5.1	5 kA	12	5 kA	12	70 kA	6
		16	5 kA	30	5 kA	30	70 kA	15
		27.6	5 kA	60	5 kA	60	42 kA	30
32.8		5 kA	70	5 kA	70	42 kA	40	
43		5 kA	100	5 kA	100	42 kA	50	
52		5 kA	110	5 kA	110	42 kA	60	
64		5 kA	125	5 kA	125	42 kA	60	
74		10 kA	250	10 kA	250	70 kA	150	
104		10 kA	400	10 kA	300	70 kA	200	
147		10 kA	400	10 kA	400	70 kA	200	
187		18 kA	600	18 kA	500	70 kA	300	
234		18 kA	700	18 kA	700	70 kA	400	
348		18 kA	1000	18 kA	1000	70 kA	600	
435		30 kA	1200	30 kA	1200	69 kA	800	
549		30 kA	1600	30 kA	1600	69 kA	1000	
625		42 kA	1600	30 kA	1600	69 kA	1200	
831	42 kA	1600	30 kA	1600	69 kA	1600		

* Non-time delay fuses (K5).

† Consult local codes for proper sizing of short circuit protection.

Electrical Ratings				
		UL/CSA/NEMA	IEC	
Rated Operational Voltage (+10%, -15%)		100...240V AC, 24V AC/DC	100...240V~, 24V AC/DC	
Rated Insulation Voltage		250V	250V~	
Rated Impulse Voltage		—	4 kV	
Dielectric Withstand		1500V AC	2000V~	
Overvoltage Category		—	III*	
Operating Frequency		50/60 Hz	50/60 Hz	
Input onstate voltage minimum, during start (IN1, IN2)		85V AC, 19.2V DC / 19.2V AC		
Input onstate current (IN1, IN2)		9.8 mA @120V AC/19.6 mA @ 240V AC, 7.3 mA @ 24V AC/DC		
Input offstate voltage maximum (IN1, IN2)		40V AC, 17V DC / 12V AC		
Input offstate current @ input offstate voltage (IN1, IN2)		<10 mA, <12 mA		
Control Circuit	3...37 A	215 mA @ 120V AC / 180 mA @ 240V AC, 800 mA @ 24V DC / 660 mA @ 24V AC		
	43...85 A	200 mA @ 120V AC / 100 mA @ 240V AC, 700 mA @ 24V AC/DC		
	Control Power with Fan, during start		Fan Power	Control Power
		108...135 A	20 VA	200 mA @ 120V AC / 120 mA @ 240V AC, 600 mA @ 24V AC/DC
		201...251 A	40 VA	
317...480 A	60 VA			
Control Power without Fan, during start	3...37 A	205 mA @ 120V AC / 145 mA @ 240V AC, 705 mA @ 24V DC / 580 mA @ 24V AC		
		Controller Rating (A)	Steady State Heat Dissipation (W)	Overload Current Range (A)
		3	11	1...3
		9	12	3...9
		16	14	5.3...16
		19	15	6.3...19
		25	17	9.2...27.7
		30	19	10...30
		37	24	12.3...37
Steady State Heat Dissipation and Overload Current Range		43	34	14.3...43
		60	50	20...60
		85	82	28.3...85
		108	62	27...108
		135	75	34...135
		201	129	67...201
		251	147	84...251
		317	174	106...317
		361	194	120...361
		480	239	160...480

Auxiliary Contacts			
		UL/CSA/NEMA	IEC
Rated Operational Voltage		250V AC/30V DC	250V~/30V DC
Rated Insulation Voltage		250V	250V~
Rated Impulse Voltage		—	4 kV
Dielectric Withstand		1500V AC	2000V~
Overvoltage Category		—	III*
Operating Frequency		50/60 Hz	50/60 Hz
Utilization Category		D300/D300	AC-15/DC
TB-97, -98 (OVLD/Fault)	Type of Control Circuit	Electromagnetic relay	
	Number of Contacts	1	
	Type of Contacts	Normally Open (N.O.)	
	Type of Current	AC/DC	
	Rated Operational Current (max.)	0.6 A @ 120V~ and 0.3 A @ 240V~	
	Conventional Thermal Current I_{th}	1 A	
	Make/Break VA	432/72	
TB-13, -14 (Normal/Up-to-Speed)	Type of Control Circuit	Electromagnetic relay	
	Number of Contacts	1	
	Type of Contacts	Normally Open (N.O.)	
	Type of Current	AC/DC	
	Rated Operational Current (max.)	0.6 A @ 120V~ and 0.3 A @ 240V~	
	Conventional Thermal Current I_{th}	1 A	
	Make/Break VA	432/72	

*Overvoltage category II, when either control or auxiliary circuit is wired to a SELV or PELV circuit.

Electrical Ratings			
Side-Mount Auxiliary Contacts			
	UL/CSA/NEMA	IEC	
Rated Operational Voltage	250V AC/30V DC	250V AC/30V DC	
Rated Insulation Voltage	250V	250V AC	
Rated Impulse Voltage	—	4 kV	
Dielectric Withstand	1500V AC	2000V AC	
Overvoltage Category	—	III*	
Operating Frequency	50/60 Hz	50/60 Hz	
TB-23, -24 (Normal/Up-to-Speed) TB-33, -34 (Normal/Up-to-Speed)	Utilization Category	C300/R150	
	Type of Control Circuit	Electromagnetic relay	
	Number of Contacts	1	
	Type of Contacts	Normally Open (N.O.)	
	Type of Current	AC/DC	
	Rated Operational Current (max.)	1.5 A @ 120V AC, 0.75A @ 240V AC, 1.17 A @ 24V DC	
	Conventional Thermal Current I_{th}	2.5 A	
	Make/Break VA	1800/180V AC, 28V DC (resistive)	
	Type of Control Circuit	B300/R300	AC-15/DC-13
	Type of Control Circuit	Electromagnetic relay	
TB-11, -12 (Normal/Up-to-Speed)	Number of Contacts	1	
	Type of Contacts	Normally Open (N.O.)	
	Type of Current	AC/DC	
	Rated Operational Current (max.)	3 A @ 120V AC, 1.5A @ 240V AC, 1.17 A @ 24V DC	
	Conventional Thermal Current I_{th}	5 A	
	Make/Break VA	3600/360 V AC, 28V DC (resistive)	

*Overvoltage category II, when either control or auxiliary circuit is wired to a SELV or PELV circuit.

Environmental	
Operating Temperature Range	-5...50 °C (23...122 °F) (open) -5...40 °C (23...104 °F) (enclosed)
Storage and Transportation Temperature Range	-25...85 °C (-13...185 °F)
Altitude	2000 m (6560 ft)
Humidity	5...95% (non-condensing)
Pollution Degree	2
Type of Protection	IP2X

Mechanical Ratings			
Resistance to Vibration	Operational	1.0 G Peak, 0.15 mm (0.006 in.) displacement	
	Non-Operational	2.5 G Peak, 0.38 mm (0.015 in.) displacement	
Resistance to Shock	Operational	15 G	
	Non-Operational	30 G	
Line Power Terminals	Cable Size	3...37 A	2.5...25 mm ² (14...4 AWG) 2.3...2.8 N•m (20...25 in-lbs)
		43...85 A	2.5...95 mm ² (14...3/0 AWG) 11.3...12.4 N•m (100...110 in-lbs)
	Tightening Torque	108...135 A	23 N•m (200 in-lbs)
		201...251 A	Two M10 x 1.5 diameter holes per power pole
		317...480 A	Two M12 x 1.75 diameter holes per power pole
		3...37 A	2.5...16 mm ² (14...6 AWG) 2.3...2.5 N•m (20...22.5 in-lbs)
Load Power Terminals	Cable Size	43...85 A	2.5...50 mm ² (14...1 AWG) 11.3...12.4 N•m (100...110 in-lbs)
		108...135 A	23 N•m (200 in-lbs)
	Tightening Torque	201...251 A	Two M10 x 1.5 diameter holes per power pole
		317...480 A	Two M12 x 1.75 diameter holes per power pole
		3...37 A	2.5...16 mm ² (14...6 AWG) 2.3...2.5 N•m (20...22.5 in-lbs)
		43...85 A	2.5...50 mm ² (14...1 AWG) 11.3...12.4 N•m (100...110 in-lbs)
Control Terminals	Cable Size Tightening Torque	All	0.2...2.5 mm ² (24...14 AWG) 0.5...0.9 N•m (4.4...8.0 in-lbs)
Other			
EMC Emission Levels	Conducted Radio Frequency Emissions	—	Class A
	Radiated Emissions	—	Class A
EMC Immunity Levels	Electrostatic Discharge	4 kV Contact and 8 kV Air Discharge	8 kV Air Discharge
	Radio Frequency Electromagnetic Field	—	Per EN/IEC 60947-4-2
	Fast Transient	—	Per EN/IEC 60947-4-2
	Surge Transient	—	Per EN/IEC 60947-4-2