

Technical Specifications

Category	Specification							
Protection	Drive	200...208V	240V	380/400V	480V	600V Frames 0...4	600/690V Frames 5...6	
	AC Input Overvoltage Trip:	285V AC	285V AC	570V AC	570V AC	716V AC	818V AC	
	AC Input Undervoltage Trip:	120V AC	138V AC	233V AC	280V AC	345V AC	345V AC	
	Bus Overvoltage Trip:	405V DC	405V DC	810V DC	810V DC	1013V DC	1162V DC	
	Bus Undervoltage Shutoff/Fault:	153V DC	153V DC	305V DC	305V DC	381V DC	437V DC	
	Nominal Bus Voltage:	281V DC	324V DC	540V DC	648V DC	810V DC	932V DC	
	All Drives							
	Heat Sink Thermistor:	Monitored by microprocessor overtemp trip						
	Drive Overcurrent Trip Software Overcurrent Trip: Hardware Overcurrent Trip:	200% of rated current (typical) 220...300% of rated current (dependent on drive rating)						
	Line transients:	up to 6000 volts peak per IEEE C62.41-1991						
Control Logic Noise Immunity:	Showering arc transients up to 1500V peak							
Power Ride-Thru:	15 milliseconds at full load							
Logic Control Ride-Thru:	0.5 seconds minimum, 2 seconds typical							
Ground Fault Trip:	Phase-to-ground on drive output							
Short Circuit Trip:	Phase-to-phase on drive output							
Electrical	Voltage Tolerance:	See page 12 for full power and operating range						
	Input Frequency Tolerance:	47...63 Hz						
	Input Phases:	Three-phase input provides full rating for all drives. Single-phase operation possible on certain drives and provides 50% of rated current (see Installation Instructions for details). Frames 0...7: Drive can be supplied as 6 pulse or 18 pulse in an engineered package.						
	Displacement Power Factor:	0.98 across entire speed range						
	Efficiency:	97.5% at rated amps, nominal line volts						
	Maximum Short Circuit Rating:	200,000 Amps symmetrical						
	Actual Short Circuit Rating:	Determined by AIC rating of installed fuse/circuit breaker						
	Drive to Motor Power Ratio Minimum Maximum	Recommended not less than 1:2 ratio Recommended not greater than 2:1 ratio						

Category	Specification		
Control	Method:	Sine coded PWM with programmable carrier frequency. Ratings apply to all drives (refer to the <i>Derating Guidelines</i> in the PowerFlex Reference Manual). The drive can be supplied as 6 pulse or 18 pulse in a configured package.	
	Carrier Frequency:	2, 4, 8, and 10 kHz. Drive rating based on 4 kHz. See the Input Protection Device tables in the Installation Instructions for exceptions.	
	Output Voltage Range:	0 to rated motor voltage	
	Output Frequency Range:	Standard Control – 0 to 400 Hz., Vector Control – 0 to 420 Hz	
	Frequency Accuracy		
	Digital Input:	Within $\pm 0.01\%$ of set output frequency	
	Analog Input:	Within $\pm 0.4\%$ of maximum output frequency	
	Frequency Control:	Speed Regulation - w/Slip Compensation (Volts per Hertz Mode)	0.5% of base speed across 40:1 speed range, 40:1 operating range 10 rad/sec bandwidth
		Speed Regulation - w/Slip Compensation (Sensorless Vector Mode)	0.5% of base speed across 80:1 speed range, 80:1 operating range 20 rad/sec bandwidth
		Speed Regulation - w/Feedback (Sensorless Vector Mode)	0.1% of base speed across 80:1 speed range, 80:1 operating range 20 rad/sec bandwidth
	Speed Control:	Speed Regulation - w/o Feedback (Vector Control Mode)	0.1% of base speed across 120:1 speed range, 120:1 operating range 50 rad/sec bandwidth
		Speed Regulation - w/Feedback (Vector Control Mode)	0.001% of base speed across 120:1 speed range, 1000:1 operating range, 250 rad/sec bandwidth
	Torque Regulation:	Torque Regulation - w/o Feedback $\pm 5\%$, 600 rad/sec bandwidth	
		Torque Regulation - w/Feedback $\pm 2\%$, 2500 rad/sec bandwidth	
	Selectable Motor Control:	Sensorless Vector with full tuning. Standard V/Hz with full custom capability. PF700 adds Vector Control.	
	Stop Modes:	Multiple programmable stop modes including - Ramp, Coast, DC-Brake, Ramp-to-Hold and S-curve.	
	Accel/Decel:	Two independently programmable accel and decel times. Each time may be programmed from 0...3600 seconds in 0.1 second increments.	
Intermittent Overload:	110% Overload capability for up to 1 minute, 150% Overload capability for up to 3 seconds.		
Current Limit Capability:	Proactive Current Limit programmable from 20...160% of rated output current. Independently programmable proportional & integral gain.		
Motor Overload Protection			
Frames 0...6 Standard Control:	PowerFlex 700 drives with standard control, identified by an N, A, or B in position 15 of the catalog number, only provide Class 10 motor overload protection according to NEC article 430. They do not provide speed sensitive overload protection, thermal memory retention and motor over-temperature sensing according to NEC article 430.126 (A) (2). If such protection is needed in the end-use product, it must be provided by additional means.		
Frames 0...6 Vector Control:	PowerFlex 700 drives with vector control, identified by a C or D in position 15 of the catalog number, provide class 10 motor overload protection according to NEC article 430 and motor over-temperature protection according to NEC article 430.126 (A) (2). UL 508C File E59272.		
Frames 7...10 Vector Control:	Class 10 motor overload protection according to NEC article 430 and motor over-temperature protection according to NEC article 430.126 (A)(2). UL 508C File E59272.		

Category	Specification						
Control (continued)	Digital/Analog Input Latency	Signal		Motor Control	Latency		
					Min.	Max	Typical
		Digital Input	Start	FVC	8.4 ms	10.4 ms	8.4 ms
				SVC	9.2 ms	16.0 ms	9.2 ms
			Stop	FVC	10.0 ms	12.4 ms	10.4 ms
				SVC	10.0 ms	12.0 ms	10.4 ms
		Analog Input	Torque 4 kHz PWM	FVC	772 μ s	1.06 ms	840 μ s
			Torque 2 kHz PWM	FVC	1.008 ms	1.46 ms	1.256 ms
			Speed	FVC	4.6 ms	8.6 ms	4.8 ms
			Speed	SVC	4.8 ms	12.4 ms	6.4 ms
Encoder	Type:	Incremental, dual channel					
	Supply:	12V, 250 mA. 12V, 10 mA minimum inputs isolated with differential transmitter, 250 kHz maximum.					
	Quadrature:	90°, \pm 27 degrees at 25 degrees C.					
	Duty Cycle:	50%, +10%					
	Requirements:	Encoders must be line driver type, quadrature (dual channel) or pulse (single channel), 8...15V DC output (4...6V DC when jumpers are in 5V position), single-ended or differential and capable of supplying a minimum of 10 mA per channel. Maximum input frequency is 250 kHz. The Encoder Interface Board accepts 12V DC square-wave with a minimum high state voltage of 7.0V DC. With the jumpers in the 5V position, the encoder will accept a 5V DC square-wave with a minimum high state voltage of 3.0V DC. In either jumper position, the maximum low state voltage is 0.4V DC.					

Pollution Degree Ratings According to EN 61800-5-1

Pollution Degree	Description
1	No pollution or only dry, non-conductive pollution occurs. The pollution has no influence.
2	Normally, only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation is to be expected, when the drive is out of operation.
3	Conductive pollution or dry non-conductive pollution occurs, which becomes conductive due to condensation, which is to be expected.
4	The pollution generates persistent conductivity caused, for example, by conductive dust, rain or snow.