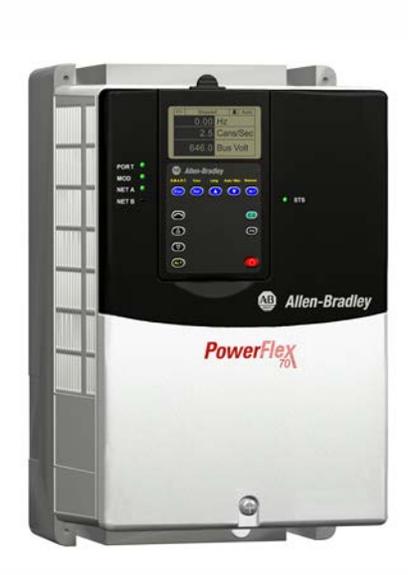


# PowerFlex 70 Adjustable Frequency AC Drive



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Table 22 - Specifications 20AB9P6A0AYNNNC0

Category	Specification						
Protection	Drive	200... 208V	240V	380/400	480V	600V	690V
	AC input overvoltage trip	247V AC	285V AC	475V AC	570V AC	690V AC	
	AC input undervoltage trip	120V AC	138V AC	233V AC	280V AC	345V AC	
	Bus overvoltage trip	405V DC	405V DC	810V DC	810V DC	1013V DC	
	Bus undervoltage output shutoff	300V DC	300V DC	407V DC	407V DC	508V DC	
	Bus undervoltage fault level	160V DC	160V DC	300V DC	300V DC	375V DC	
	Nominal bus voltage	281V DC	324V DC	540V DC	648V DC	810V DC	
	All Drives						
	Heat sink thermistor	Monitored by microprocessor overtemp trip					
	Drive overcurrent trip						
	Software current limit	20...160% of rated current					
	Hardware current limit	200% of rated current (typical)					
	Instantaneous current limit	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						
Environment	Altitude	1000 m (3300 ft) max without derating					
	Maximum surrounding air temperature without derating						
	IP20, NEMA/UL Type 1 flange mount	0...50 °C (32...122 °F) 0...50 °C (32...122 °F)					
	IP66, NEMA/UL Type 4X/12 (indoor)	0...40 °C (32...104 °F)					
	Cooling fan operation						
	Frames A and C	Fan operates when power is applied.					
	Frames B, D, and E	Fan operates when power is applied and in Run condition.					
	Storage temperature (all const.)	-40...70 °C (-40...158 °F)					
	Atmosphere	<b>Important:</b> Drive <b>must not</b> be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors, or dust. If the drive is not going to be installed for a period of time, store the drive where it is not exposed to a corrosive atmosphere.					
	Relative humidity	5...95% non-condensing					
	Shock	15 g peak for 11 ms duration (±1.0 ms)					
	Vibration	0.152 mm (0.006 in.) displacement, 1 g peak					
	Surrounding environment						
Pollution degree:							
Pollution degree 1 and 2	All enclosures are acceptable for pollution degree 1 and 2.						
Pollution degree 3 and 4	An enclosure that meets or exceeds IP54, NEMA/UL Type 12, is required for pollution degree 3 and 4.						
See <a href="#">Table 23 on page 41</a> for descriptions of pollution degree rating.							

Table 23 - 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 a temporary conductivity, caused by condensation, is expected when the drive is out of operation.
3	Conductive pollution or dry non-conductive pollution occurs, that becomes conductive due to condensation, and is expected.
4	The pollution generates persistent conductivity caused, for example, by conductive dust, rain, or snow.

**Table 24 - Specifications (continued)**

Category	Specification	
<b>Electrical</b>	Voltage tolerance	-10% of minimum, +10% of maximum. See <a href="#">page 121</a> 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 provides 50% of rated current.
	Displacement power factor (all drives)	0.98 across speed range.
	Efficiency	97.5% at rated amps, nominal line volts.
	Maximum short circuit rating	200,000 amps symmetrical.
	Max short circuit current rating (by using the recommended fuse or circuit breaker type)	Maximum short circuit current rating to match specified fuse/circuit breaker capability.
	Drive to motor power ratio Minimum Maximum	Recommended not less than 1:2 ratio Recommended not greater than 2:1 ratio
<b>Control</b>	Method	Sine coded PWM with programmable carrier frequency. Ratings apply to all drives.
	Carrier frequency	2, 3, 4, 5, 6, 7, 8, 9, and 10 kHz <b>Standard</b> . 2, 4, 8, and 12 kHz <b>EC</b> . Drive rating based on 4 kHz.
	Output voltage range	0 to rated motor voltage
	Output frequency range	0...400 Hz <b>Standard</b> . 0...500 Hz <b>EC</b> .
	Frequency accuracy Digital input Analog input	Within $\pm 0.01\%$ of set output frequency. Within $\pm 0.4\%$ of maximum output frequency.
	Frequency control - speed regulation	with slip compensation (V/Hz mode) 0.5% of base speed across 40:1 speed range 40:1 operating range 10 rad/sec bandwidth
		with slip compensation (Sensorless Vector mode) 0.5% of base speed across 80:1 speed range 80:1 operating range 20 rad/sec bandwidth
		with feedback (Sensorless Vector mode) <b>EC</b> 0.001% of base speed across 40:1 speed range 0.1% of base speed across 80:1 speed range 80:1 operating range 20 rad/sec bandwidth
	Speed control - speed regulation	without feedback (Vector Control mode) <b>EC</b> 0.1% of base speed across 120:1 speed range 120:1 operating range 30 rad/sec bandwidth
		with feedback (Vector Control mode) <b>EC</b> 0.001% of base speed across 120:1 speed range 1000:1 operating range 125 rad/sec bandwidth
	Torque regulation	without feedback +/-10% <b>EC</b>
		with feedback +/-5% <b>EC</b>
	Selectable motor control	Sensorless Vector with full tuning. Standard V/Hz with full custom capability and vector control.
	Stop modes	Multiple programmable stop modes including - Ramp, Coast, DC-Brake, Fast Brake, Ramp-to-Hold and S-curve.
	Accel/Decel	Two independently programmable accel and decel times. Each time can 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 and integral gain.
Motor overload protection	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.	

**Table 24 - Specifications (continued)**

Category	Specification	
Encoder	Type	Incremental, dual channel
	Supply	5V/12V Configurable $\pm 5\%$
	Quadrature	$90^\circ \pm 27^\circ$
	Duty cycle	50% +10%
	Requirements	Encoders must be line driver type, quadrature (dual-channel) or pulse (single-channel), single-ended or differential and capable of supplying a minimum of 10 mA per channel. The encoder interface board accepts 5V or 12V DC square-wave with a minimum high state voltage of 3.5V DC (5V mode) and 7.0V DC (12V mode). Maximum low state voltage is 1V DC (for both 5V and 12V modes). Maximum input frequency is 250 kHz.