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PRODUCT PROFILE

PowerFlex® 700L AC Drive High Performance and High Power with Liquid Cooled Power Structure

The PowerFlex 700L AC Drive offers either PowerFlex 700 Vector Control or 700S control on a fully regenerative, liquid-cooled power structure. This powerful combination offers great performance and high power capabilities in a small package along with energy savings and low harmonics. The PowerFlex 700L AC Drive is a flexible, high-performance drive available as a panel mount unit or in a cabinet mount design.

Integrated Line Regenerative Braking For Precise Control and Energy Savings

The Liquid-Cooled AC drive features regenerative braking which is ideal for precise, high-response speed and position control, continuous holdback, rapid deceleration and stopping of high inertia loads. Instead of wasting energy with resistor braking technology, regenerative braking actually puts the energy back into the system to be used by other equipment.

Improved Power Quality with Regenerative Rectifier

- Compact and cost-effective means to achieve compliance with CE and IEEE 519 harmonic limits.
- Drives actively control power factor regardless of motor speed which reduces input line currents and minimizes the size of upstream devices

Compact Size

The PowerFlex Liquid-Cooled AC drive features a patented liquid-cooled heatsink design to transfer over 80% of the drive heat loss to the liquid coolant, resulting in the best drive power-to-size ratio in the market. The integral active converter and line filter translate to a fully regenerative drive that's over 60% smaller than typical air-cooled units.



PowerFlex 700L Liquid Cooled AC Drive, Frame 2 (300HP/200kW), Panel Mount Design

PowerFlex 700L Liquid Cooled AC Drive Frame 3B shown (650-881HP/485-657kW), Complete Drive Cabinet

Protect your System from Power Disturbances

Integrated active converter and line-side filter allow "input voltage boost"

- Maintains consistent system performance in the event of power dips or other power quality issues
- Provides full 480V AC to the motor even when operating on 380V AC power lines

Communications

The Allen-Bradley PowerFlex family of drives utilizes Rockwell Automation's NetLinx Open Network Architecture. This provides the common set of features and services for DeviceNet™, ControlNet™ and EtherNet/IP™ networks resulting in lower total cost of ownership. Users can easily manage information from shop floor to top floor and seamlessly integrate their complete system as they control, configure and collect data.

- PowerFlex drives offer internal communication options helping the user to cost-effectively assemble highly integrated applications. Options include: DeviceNet, ControlNet, Universal Remote I/O, and other open communications including Profibus™ and Interbus-S.
- Status indicators for all internal communications options are visible on the cover for easy set-up and monitoring of drive communications.

Premier Integration with PowerFlex Drives

For simplified AC drive start-up and reduced development time, we've integrated Allen-Bradley® PowerFlex® drive configuration with RSLogix5000™ software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.



Advanced Features of the PowerFlex 700S AC Drive Control

- Integrated position loop for applications from simple indexing to electronic line shaft configurations
- High performance SynchLink™ fiber optic link for drive-to-drive coordination
- DriveLogix™, the embedded Logix engine, provides true programmability within an industry standard programming environment
- Permanent Magnet Control capability allows you to solve high speed positioning applications with the use of servo motors.

High Protection Class Available

Rockwell Automation simplifies installation and start-up by allowing users to order drive packages that combine operator interface, control, communications, and power options in protected enclosures. These protection classes include IP54 (NEMA/UL Type 12) and IP66 (NEMA/UL Type 4X).

Because heat lost from the drive is transferred to the liquid coolant, cabinets can be completely enclosed and placed directly into dusty, dirty and outdoor environments. In addition, the heat exchanger can be located apart from the drive to simplify cooling of the drive equipment room.

Proven Performance with PowerFlex AC Drives

PowerFlex® AC drives offer outstanding performance that is easier to use than any other drive in its class. Designed for applications with requirements ranging from the simplest speed control to the most demanding torque control. The 700L drive is available with either PowerFlex 700 Vector Control or PowerFlex 700S Control. (Frame 2 available in 700 Vector Control only)

- Outstanding open or closed loop speed regulation for applications ranging from fans and pumps to precise winder control
- Excellent torque production and tight torque regulation for demanding applications like extruders, web process and test stands.
- Fast update times of torque inputs are suitable for high performance applications

- All of this flexibility is possible through multiple control modes: V/Hz control, Sensorless Vector, Vector Control with FORCE™ Technology and Permanent Magnet Control (700S control only)

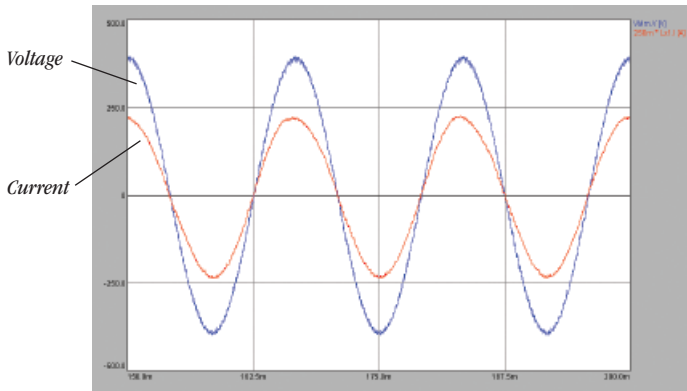
Easy-To-Use

- Simplified programming with full-featured LCD Human Interface Module (HIM), multi-line and multi-lingual display
- Effortless configuring and tuning of the drive with S.M.A.R.T™ start and detailed assisted start-up routines in the LCD HIM
- Straight forward programming, configuration, monitoring and troubleshooting are easier with PC software tools, such as DriveExplorer™, DriveTools™ SP and RSLogix™ 5000

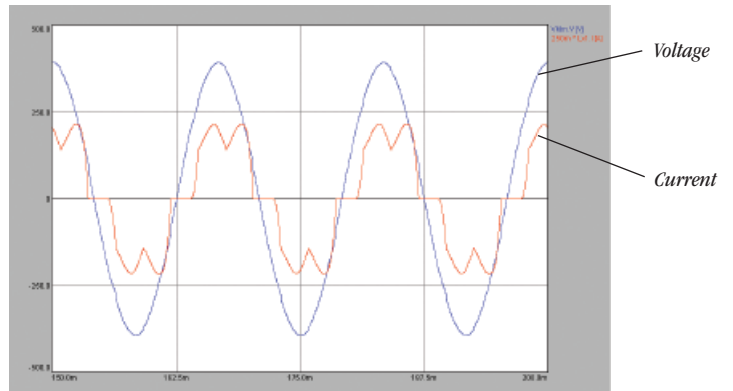
Target Applications

For applications where small size, high performance and reliability are key the PowerFlex 700L has the additional advantage of regenerative braking for precise control and energy savings, along with low harmonics for improved power quality.

- Automotive Test Stands
- Hoists
- Centrifuges
- Lumber-Lathes and Saw Carriages
- Ski Lifts
- Water/Wastewater Pumps
- Paper Machines
- Mining Applications



Typical current and voltage waveforms for a PowerFlex 700L regenerative active converter ($I_{THD} = 3-5\%$)



Typical current and voltage waveforms for a non-regenerative converter (6-Pulse) ($I_{THD} = 30-50\%$ with DC choke)

Improved Power Quality Meets IEEE 519 Limits

Drive models including the integrated active converter and line-side filter meet all IEEE 519 and CE harmonic limits. The drives also actively control their operating power factor regardless of motor speed and load. This helps reduce input line currents and maximizes the utilization of upstream devices. Operation of the integrated active converter and

line-side filter also allow "input voltage boost" operation, providing full 480VAC to the motor, even when operating on 380VAC power lines. This voltage boost also helps protect critical processes from the potentially disruptive effects of input voltage dips and sags.

Liquid to Liquid Heat Exchanger

The PowerFlex 700L Liquid to Liquid Heat Exchanger provides customers a cost effective, standard cooling loop solution for use with the PowerFlex 700L drive. The liquid to liquid heat exchanger utilizes a heat transfer plate to transfer heat from one liquid to another and does not require a stable water supply from the user.



PRODUCT SPECIFICATIONS

400V AC Ratings (AC Input/AC Output)

480V AC Ratings (AC Input/AC Output)

Frame	PWM Freq.	Output Power		Output Current (with 400V AC Induction Motor)						PWM Freq.	Output Power		Output Current (with 480V AC Induction Motor)					
				40°C Plant Floor Ambient; 40°C Cooling Water									40°C Plant Floor Ambient; 40°C Cooling Water					
		HP (kW)		Cont.	110% 1 min.	150% 3 sec.	Cont.	150% 1 min.	200% 3 sec.		HP (kW)		Cont.	110% 1 min.	150% 3 sec.	Cont.	150% 1 min.	200% 3 sec.
kHz	ND	HD	ND	ND	ND	HD	HD	HD	kHz	ND	HD	ND	ND	ND	HD	HD	HD	
2	4	268 (200)	200 (150)	360	396	540	264	396	540	4	300 (224)	235 (175)	360	396	540	264	396	540
3A	4	500 (370)	365 (270)	650	715	975	475	715	975	4	600 (445)	440 (325)	650	715	975	475	715	975
3B	4	960 (715)	700 (525)	1250	1375	1875	915	1375	1875	4	1150 (860)	845 (630)	1250	1375	1875	915	1375	1875

600V AC Ratings (AC Input/AC Output)

690V AC Ratings (AC Input/AC Output)

Frame	PWM Freq.	Output Power		Output Current (with 600V AC Induction Motor)						PWM Freq.	Output Power		Output Current (with 690V AC Induction Motor)					
				40°C Plant Floor Ambient; 40°C Cooling Water									40°C Plant Floor Ambient; 40°C Cooling Water					
		HP (kW)		Cont.	110% 1 min.	150% 3 sec.	Cont.	150% 1 min.	200% 3 sec.		HP (kW)		Cont.	110% 1 min.	150% 3 sec.	Cont.	150% 1 min.	200% 3 sec.
kHz	ND	HD	ND	ND	ND	HD	HD	HD	kHz	ND	HD	ND	ND	ND	HD	HD	HD	
3A	4	465 (345)	345 (255)	425	470	640	315	470	640	4	475 (355)	350 (260)	380	420	570	280	420	570
3B	4	870 (650)	640 (480)	800	885	1200	590	885	1200	4	881 (657)	650 (485)	705	780	1060	520	780	1060

Watts Loss @ Rated Load, Speed and PWM Carrier Frequency

Frame Size	Voltage	PWM Freq.	Watts Loss						Total Air	Total Liquid
			Filter Section	Power Section			Complete Drive			
			Into Air	Into Air	Into Liquid	Total	Total Air	Total Liquid		
2	400V	4kHz	N/A	N/A	N/A	N/A	1500	7900		
	480V	4kHz					1500	7900		
3A	400V	4kHz	4000	1000	10,500	11,500	5000	10,500		
	480V	4kHz	4000	1000	11,500	12,500	5000	11,500		
	600V	4kHz	4000	1200	10,500	11,700	5200	10,500		
	690V	4kHz	4000	1200	12,000	13,200	5200	12,000		
3B	400V	4kHz	7800	2000	21,000	23,000	9800	21,000		
	480V	4kHz	7800	2000	23,000	25,000	9800	23,000		
	600V	4kHz	7800	2400	21,000	23,400	10,200	21,000		
	690V	4kHz	7800	2400	24,000	26,400	10,200	24,000		

Dimensions

Frame	Dimensions			
	Width mm (in)	Depth mm (in)	Height mm (in)	Weight kg (lbs)
2. ♦	423.8 (16.68)	566.1 (22.29)	930.9 (36.6)	186 (410)
3A ♦	1200 (47.2)	600* (23.6)	2092 (82.4)	950 (2090)
3B ♦	1600 (63.0)	800* (31.5)	2286 (90)	1361 (3000)

♦ IP00, Open Style Panel Mount

♦ IP20, NEMA 1 Complete Drive Cabinet

* Add 233mm (9.2 in) for disconnect handle

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