PowerFlex® 750-Series AC Drives

Allen-Bradley

Cost-effective Solution Designed for Ease of Use, Integration & Application Flexibility

The Allen-Bradley® PowerFlex 750-Series of AC Drives is aimed at maximizing your investment and improving productivity. Whether your need is for a general purpose or high performance application, the PowerFlex 750-Series offers more selection for control, communications, safety and supporting hardware options than any other drives in their class.

Leading the Class

- Simplified integration into the Logix environment reduces development time and related costs
- Cost effective solutions with standard features including DeviceLogix control, predictive diagnostics, embedded Ethernet port, embedded I/O, and safety options
- Reduce unnecessary add-ons with the slot based architecture that allows PowerFlex 750-Series drives to be built to suit application requirements
- Prevent unplanned downtime with predictive diagnostics and built-in protection features to help protect your investment
- Gain additional flexibility with packaging options to meet environmental protection requirements, high power cabinet and commonly used power options required for high power applications
- Help protect personnel and equipment with safety solutions up to and including PLe/SIL CL3, Cat 3 and Cat 4

The PowerFlex 750-Series is a robust family of AC drives that provide ease of use, flexibility, and performance for a variety of industrial applications. The PowerFlex 753 provides general purpose control for applications ranging up to 350 Hp and 250 kW. The PowerFlex 755 provides maximum flexibility and performance ranging up to 700 Hp and 450 kW.

Maximize your productivity by taking advantage of the following key features offered in the PowerFlex 750-Series:

Communications – The PowerFlex 750-Series supports a variety of network protocols to ease integration into your architecture. The PowerFlex 755 features standard embedded Ethernet communication, allowing you to easily configure, control and collect drive data over EtherNet/IP networks.

Integrated Motion on EtherNet/IP – The PowerFlex 755 AC Drive with Integrated Motion allows you to use a single software package – RSLogix 5000 (V19) - for complete system support, including simplified configuration, programming, commissioning, diagnostics and drive maintenance.

Predictive Diagnostics – Allows the PowerFlex 750-Series to keep track of information that affects the life of its cooling fans, relay outputs and can be programmed to monitor the run time hours for machine or motor bearings. PowerFlex 755 drives 315 kW/400 Hp and larger have additional standard protection features.

Option Cards – Each drive has a slot-based architecture allowing you to build the drive to suit your application. Supported hardware control options are common for the series to help reduce your inventory and spare parts requirements.

Safe Torque-Off and Safe Speed Monitor – These safety options provide a choice for safety levels depending on your application requirements.

I/O – The PowerFlex 750-Series offers option cards for additional analog and discrete I/O. The PowerFlex 753 comes with built-in I/O that can also be easily expanded with option cards.

DeviceLogix™ – Controls outputs and manages status information locally within the drive allowing you to operate the drive independently or complimentary to supervisory control.

Packaging – Factory and field installable enclosure options are available to meet most environmental requirements.

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PowerFlex 753 AC Drive

The PowerFlex 753 is ideal for general purpose applications. Embedded I/O along with three option slots for safety, feedback, communications and additional I/O makes drive a flexible, cost-effective solution.

PowerFlex 755 AC Drive

PowerFlex 755 is ideal for applications requiring advanced positioning, higher performance, or a higher power range. The PowerFlex 755 is easily integrated with the embedded Ethernet port and has five option slots to support additional options for feedback, I/O, safety, communications, and auxiliary 24V DC control power.

For applications requiring system level motion coordination using ControlLogix, the PowerFlex 755 supports Integrated Motion on EtherNet/IP using the complete suite of motion instructions in RSLogix 5000.

	PowerFlex 753	PowerFlex 755
400/480V	0.75…250 kW/1…350 Hp	0.75...450 kW/1...700 Hp
DeviceLogix Control Technology	✓	✓
Predictive Diagnostics	✓	✓
Safety Options: Safe Torque-Off, Safe Speed Monitor	✓	✓
Assisted Start-Up, HIMs Drive Software: DriveTools™, DriveExplorer™, RSLogix™ 5000	✓	✓
Option Slots	3	5
Communications	Option modules available for: • EtherNet/IP™ • ControlNet™ • DeviceNet™ • And a variety of industrial networks	Embedded Ethernet port standard Option modules available for: • ControlNet • DeviceNet • Additional modules to support variety of industrial networks
I/O	Embedded I/O standard • 3 Digital Inputs, 1 Relay Output, 1 Transistor Output, 1 Analog Input, 1 Analog Output, 1 PTC Input • Option cards for additional I/O	1 Digital Input standard • Option cards for additional I/O
Motor Types	• Induction	• Induction • Permanent Magnet Motors
Positioning	• Indexing	• Indexing • PCaming • Electronic Gearing • Position/Speed Profiling • Multi-Axis and Kinematics with RSLogix 5000 (v19)
Feedback	• Incremental	• Incremental • EnDat, Hiperface, SSI and BiSS
Integration with Logix	• Add-On-Profiles	• Add-On-Profiles • Motion Instruction Sets with RSLogix 5000 (v19)
Application Sets	Oil Well • Pump Jack & Pump Off Fibers • PJump & Traverse	Lifting • Torqprove Oil Well • Pump Jack & Pump Off Fibers • PJump & Traverse
Conformal Coating	✓	✓
ROHS Compliant Materials	✓	✓

Maximize Your Investment and Help Improve Productivity

Control

- Drive control modes include adjustable voltage, speed, torque, and position in one product to support multiple application types
- Selectable high-performance motor control algorithms with Force Technology includes flux vector, permanent magnet motor, sensorless, and V/hz to support multiple motor types

  Motor Types Include: Induction and permanent magnet motors (Allen-Bradley MPL and some third party PM motors)
- DeviceLogix embedded control technology
- Application Sets: Pump Jack and Pump Off for oil well applications; PJumping and traversing for Fiber applications; and TorqProve for lifting applications
- AC or DC common bus configurations for stand alone or multiple drive solutions
- Multiple preset speeds with programmable control through digital inputs, communications, or DeviceLogix

Position Control

- Integrated position loop for homing, indexing, electronic gearing, position and velocity profiling, and PCAMing

Feedback

- Universal feedback, Encoder, and Dual Encoder feedback options
- Universal Feedback option includes multiple feedback interfaces to support a wide range of applications. Interfaces supported are Incremental, EnDat and Hiperface for Stegmann and Heidenhain high resolution feedback, SSI and BiSS for rotary and linear applications
- Automatic feedback loss switchover to encoder and encoderless in speed mode

Communications

- Built-in Ethernet port on the PowerFlex 755
- With the PowerFlex 750 communication adapter you can use existing PowerFlex communication modules
- Network protocols include: EtherNet/IP, ControlNet, DeviceNet, Remote I/O, RS485 DF1, PROFIBUS DP, Interbus, Modbus/TCP, Bluetooth, CANopen, RS485 HVAC

Hardware

- Slot based structure for control and selectable I/O, feedback, communication and safety options
- Auxiliary control power available
- Pull-apart terminal blocks for easy wiring
- Zero Stacking or side-by-side mounting of drives in panels
- Noise and voltage suppression characteristics, reduces installation concerns for noise-sensitive environments
- Standard conformal coating hardware
- The PowerFlex 755 315 kW/400 Hp and above is designed with a roll in/out inverter and converter for improved serviceability

I/O

- Built-in I/O on the PowerFlex 753 and option cards available for 24V DC and 115V AC
- Additional cards combining analog and discrete I/O available
- I/O features include analog loss detection, timed outputs, and PTC input

Real-Time Clock

- Can be set locally or by a remote controller
- Programmable month, day, year, and local time zone in HH:MM:SS

Programming and Commissioning

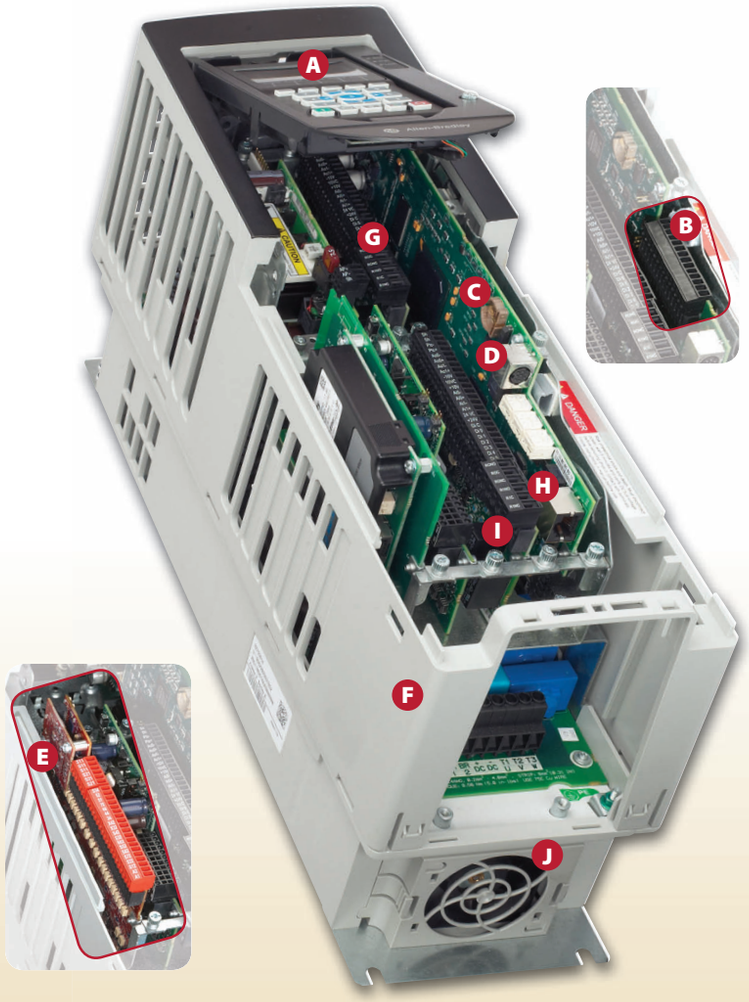
- LCD Human Interface Module (HIM) features an assisted start-up utility to reduce start-up time and allows easy configuring and tuning of the drive
- Software tools to assist with programming, configuration, monitoring, and troubleshooting: RSLogix 5000, DriveTools, and DriveExplorer
- Simplified configuration, programming, commissioning and diagnostics using embedded instructions in RSLogix 5000 (v19) for PowerFlex 755

Standards

- To meet the needs of customers worldwide, the PowerFlex 750-Series meets material restrictions specified in the ROHS directive




PowerFlex 750-Series AC Drive



- **A** High definition LCD display allows for six lines of text for more meaningful explanations of parameters and events
- **B** Standard I/O on the PowerFlex 753 provides a cost effective solution
- **C** Real time clock provides time stamped events vs. run time data
- **D** Additional DPI for expanded programming capability
- **E** Increase safety performance levels with the Safe Speed Monitor option card which includes an embedded safety relay
- **F** Packaging options to meet application requirements
- **G** DeviceLogix embedded control technology provides function block programming for stand-alone control of basic applications
- **H** Easily configure, control, and collect drive data with standard embedded Ethernet port on the PowerFlex 755
- **I** Slot based mechanical architecture to support additional options for I/O, feedback, safety, communications and auxiliary power supply
- **J** Easily assessable heat sink and internal fans

e-Tools

RSLogix™ 5000 — Add-on-Profiles

For simplified AC drive start-up and reduced development time, we've integrated Allen-Bradley PowerFlex drive configuration with RSLogix 5000 software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.

RSLogix 5000 — Integrated Motion

Use a single software package - RSLogix 5000 (V19) - for simplified drive configuration, programming, commissioning, diagnostics and maintenance. An extensive set of embedded instructions provides a broad range of basic and advanced motion functionality which are common to both a PowerFlex 755 and Kinetix servo drives.

DriveTools™ SP Software Suite

A powerful PC based software suite, for programming, configuring, and troubleshooting.

- DriveExecutive™ – for online/offline configuration and management of drives and drive peripherals.
- DriveObserver™ – for real-time trending of drive information.

DriveExplorer™ Software

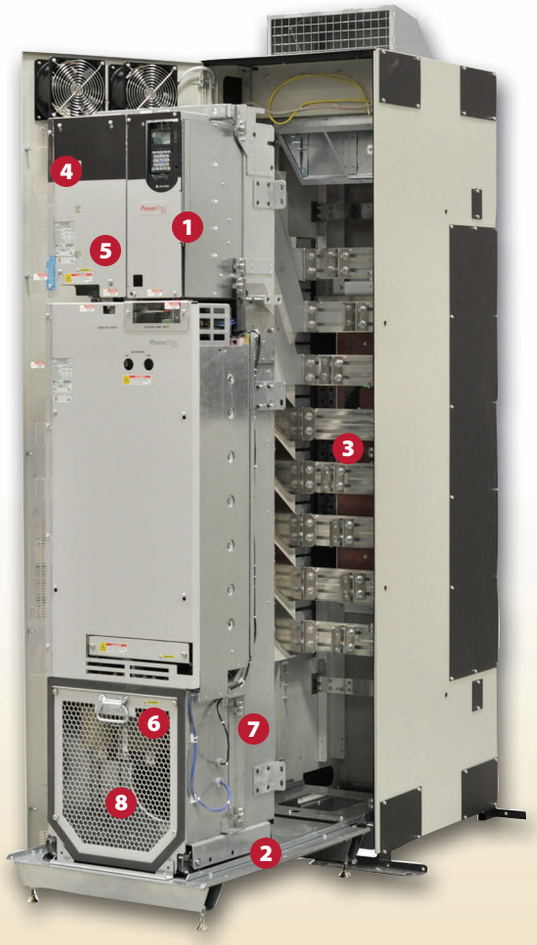
Allen-Bradley DriveExplorer software is an easy-to-use, cost effective online programming tool designed for Microsoft® Windows™ 2000/XP/VISTA operating systems. It provides the user with the means to monitor and configure PowerFlex drive and communication adapter parameters.

PowerFlex 755 AC Drive

315…450 kW / 400…700 Hp at 400/480V

In addition to all the options and benefits available in the PowerFlex 750-Series, the PowerFlex 755 drives 315 kW/400 Hp and larger offer added benefits for maintenance and installation flexibility.

1. Control pod is common with smaller ratings providing embedded Ethernet port and 5 slots for option modules, and can be remote mounted (up to 23 m) for hassle free access to low voltage control
2. Roll in/out design makes the drive easy to install and service by allowing complete removal from cabinet, providing generous room for wiring behind the drive. Power wiring stays connected while unit is rolled out
3. Adjustable terminals provide flexibility for wiring preferences such as top or bottom entry
4. Integrated fusing eliminates need for separately mounted drive short circuit protection. Status is reported from the drive to ease troubleshooting
5. Replaceable surge protector reduces downtime after incoming transient voltage events. Status is reported from the drive to ease troubleshooting
6. Integrated DC link inductor enhances protection from power system events, and reduces input harmonics
7. Sealed cooling channel uses external air for main cooling, reducing contamination exposure for electronics
8. Modular construction allows fast and easy replacement of parts (e.g. main blower, capacitor assembly, circuit boards), minimizing production downtime



PowerFlex 755 Frame 8

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PowerFlex Accelerator Toolkit

The PowerFlex Accelerator Toolkit contains a variety of tools to help you easily design, install, operate and maintain a drive system. Download the tool at: www.ab.com/go/iatools

Motion Analyzer

For applications requiring more than a constant load and steady speed, Motion Analyzer software can help by handling the necessary complex calculations. Motion Analyzer features an easy-to-use format which can reduce design risk for speed and positioning applications that include PowerFlex Drives or Kinetix servo drives. Download the tool at www.rockwellautomation.com/go/imcmotion

Safety

The PowerFlex 750-Series is available with two Safety options:
1. Safe Torque-Off option or
2. Safe Speed Monitor option.

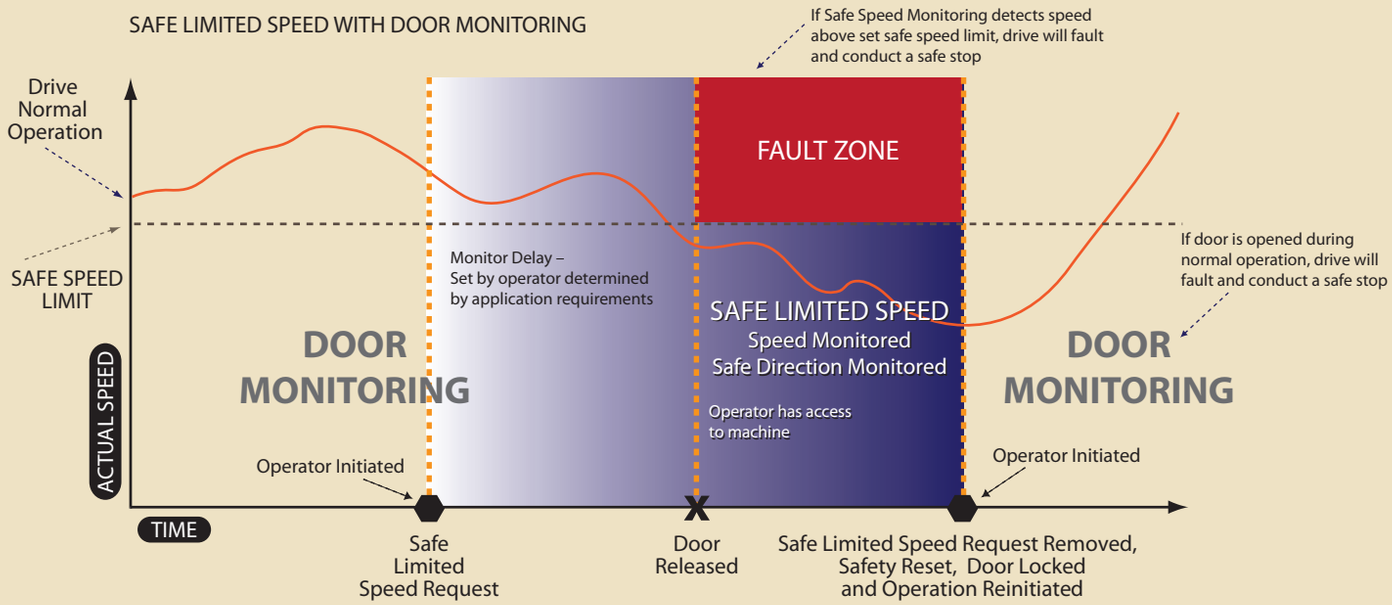
Safe Torque-Off is ideal for safety related applications requiring removal of rotational power to the motor without removing power from the drive. Safe Torque-Off functionality offers the benefit of quick start-up after a demand on the safety system and helps reduce wear from repetitive start-up and provides safety ratings up to and including SIL CL3, PLe, and CAT 3.

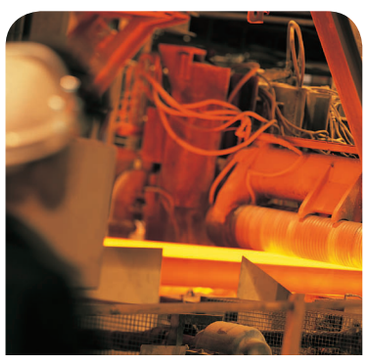
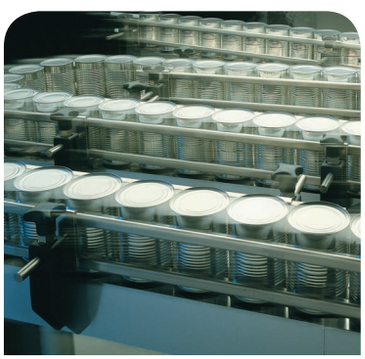
The Safe Speed Monitor provides a solution for applications that can benefit from access to a safety zone while there is limited motion. In addition, the Safe Speed Monitor has an integrated monitoring relay to save additional panel space installation labor. This option carries a safety rating up to and including SIL CL3, PLe, and Cat 4. With the Safe Speed Monitor option you can safely monitor and control the speed of your application which allows operators to perform process or maintenance work without stopping the machine.

These safety options can help provide reduced downtime paired with an increase in productivity while protecting your personnel and equipment.

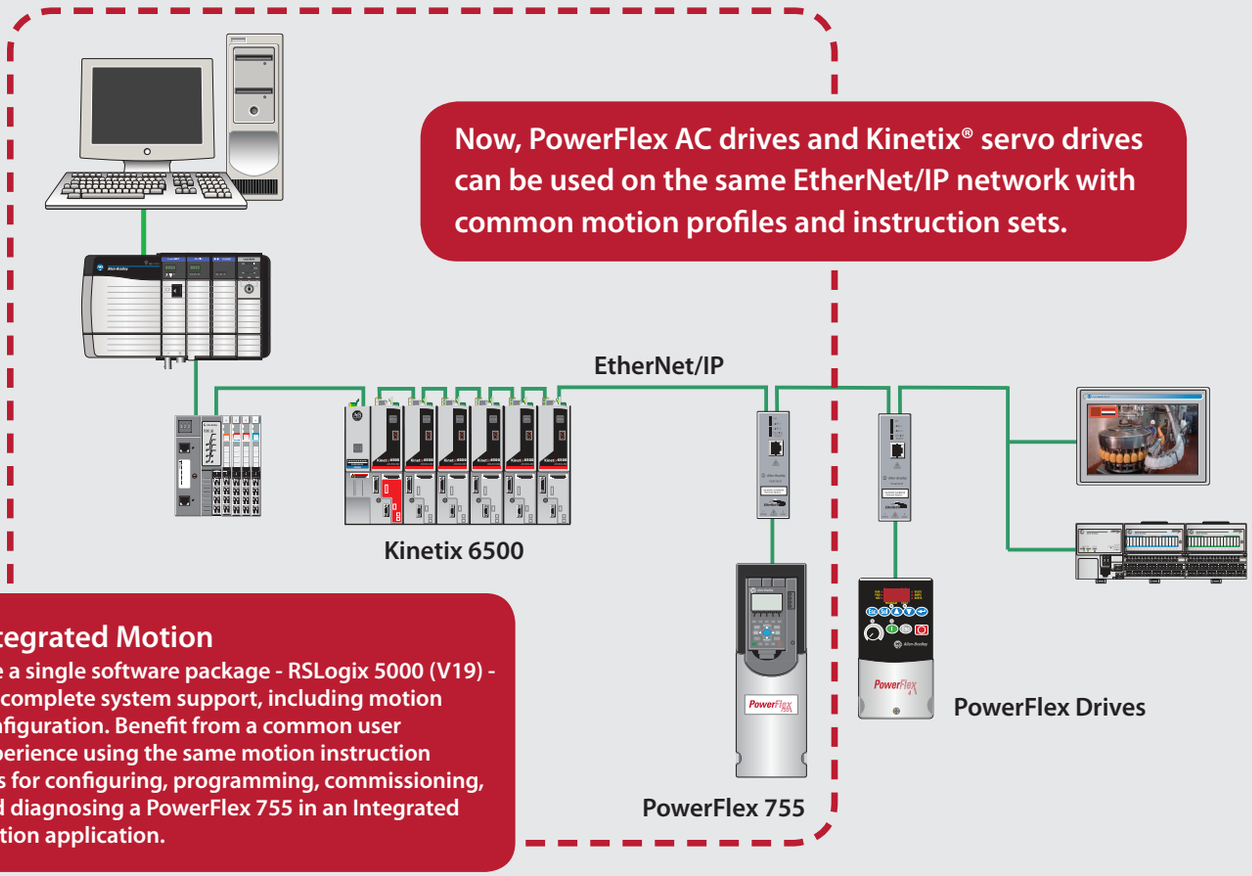
The Safe Speed Monitor option provides the following functionality:

- Safe Torque-Off
- Stop Categories 0, 1 and 2
- Safe Stop
- Safe Limited Speed
- Safe Maximum Speed
- Safe Maximum Acceleration
- Safe Direction
- Zero Speed Monitoring
- Door Control and Monitoring
- Enabling switch input




Integrated Motion on EtherNet/IP™



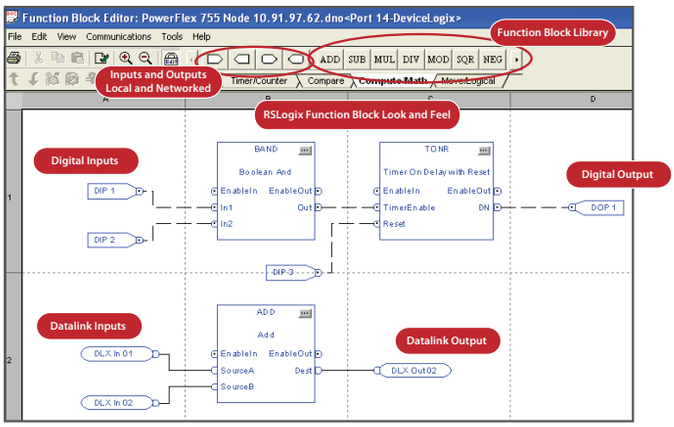
DeviceLogix™ Control Technology

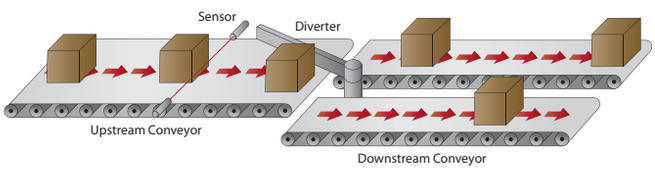
DeviceLogix control technology provides you with the flexibility to customize a drive to more closely match your application needs. DeviceLogix controls outputs and manages status information locally within the drive allowing you to operate the drive independently or complimentary to supervisory control helping to improve system performance and productivity.

You can use the PowerFlex 750-Series DeviceLogix to:

- Speed reaction time by processing in the drive – which reduces dependency on network throughput
- Provide scaling, selector switches, or other data manipulations not already built into the drive
- Read inputs/write outputs and exclusively control the drive
- Provide an option for decision making if communication is lost with main controller
- Control other PowerFlex drives via a Peer-to-Peer EtherNet/IP network

DeviceLogix is easily programmed via: RSLogix 5000, DriveExplorer v 6.01, and DriveTools SP v 5.01





PowerFlex 753 and PowerFlex 755 AC Drive Specifications

Frame/Rating Cross-Reference						
Frame[1]	400V AC (540V DC) Input			480V AC (650V DC) Input		
	Amps	Normal Duty kW	Heavy Duty kW	Amps	Normal Duty HP	Heavy Duty HP
2	2.1	0.75	0.75	2.1	1	1
	3.5	1.5	1.5	3.4	2	2
	5	2.2	2.2	5	3	3
	8.7	4	4	8	5	5
	11.5	5.5	5.5	11	7.5	7.5
	15.4	7.5	5.5	14	10	7.5
	22	11	7.5	22	15	10
3	30	15	11	27	20	15
	37	18.5	15	34	25	20
	43	22	18.5	40	30	25
4	60	30	22	52	40	30
	72	37	30	65	50	40
5	85	45	37	77	60	50
	104	55	45	96	75	60
6	140	75	55	125	100	75
	170	90	75	156	125	100
	205	110	90	186	150	125
	260	132	110	248	200	150
7	302	160	132	302	250	200
	367	200	160	361	300	250
	456	250	200	415	350	300

1 Frame ratings based on Open Type Cabinet mount enclosures.

PowerFlex 755 AC Drive Specifications 315 kW/400 Hp and Above

380…400V AC, Three-Phase Drives												
Frame	Light Duty				Normal Duty				Heavy Duty			
	Output Amps			kW / Hp	Output Amps			kW / Hp	Output Amps			kW / Hp
	Cont.	1 Min.	3 Sec.	kW	Cont.	1 Min.	3 Sec.	kW	Cont.	1 Min.	3 Sec.	kW
8	540	594	–	315	460	506	693	250	385	578	693	200
	585	644	–	315	540	594	821	315	456	684	821	250
	612	673	–	355	567	624	851	315	472	708	851	250
	750	825	–	400	650	715	975	355	540	810	975	315
	796	876	–	450	750	825	1125	400	585	878	1125	315
	832	915	–	450	770	847	1155	400	642	963	1155	355
480V AC, Three-Phase Drives												
	Cont.	1 Min.	3 Sec.	Hp	Cont.	1 Min.	3 Sec.	Hp	Cont.	1 Min.	3 Sec.	Hp
8	485	534	–	400	430	473	666	350	370	555	666	300
	545	600	–	450	485	534	745	400	414	621	745	350
	590	649	–	500	545	600	818	450	454	681	818	350
	710	781	–	600	617	679	926	500	485	728	926	400
	765	842	–	650	710	781	1065	600	545	818	1065	450
	800	880	–	700	740	814	1110	650	617	926	1110	500

Input Specifications

- 3-Phase Voltage: 380-480V +/- 10%
- Frequency: 47 – 63 Hz
- Logic Control Ride Through: 0.5 seconds

Output Specifications

- Voltage: Adjustable from 0V to rated motor
- Frequency Range: 0 – 650 Hz

Dimensions

Approximate Dimensions Millimeters (Inches)			
Frame	Height	Width	Depth
2	424.20 (16.7)	134.50 (5.30)	212.00 (8.35)
3	454.00 (17.87)	190.00 (7.48)	212.00 (8.35)
4	474.00 (18.66)	222.00 (8.74)	212.00 (8.35)
5	550.00 (21.65)	270.00 (10.63)	212.00 (8.35)
6	665.50 (26.20)	308.00 (12.13)	346.40 (13.64)
7	881.50 (34.70)	430.00 (16.93)	350.00 (13.78)
8	2245 (88.38)	600 (23.62)	600 (23.62)*
8	2245 (88.38)	600 (23.62)	800 (31.49)*

* Frame 8 is available in 600mm and 800mm depths to provide options based on cable entry and exit requirements. See publication PFLEX-SG002 or 750-TD001 for selection information.

Enclosure & Ambient Operating Temperatures

Enclosure Rating	Temperature Range	Drive
Open Type Cabinet Mount IP00/IP20 & NEMA/UL Open Type	0-50˚ C (32-122˚ F)	Frames 2-7
Extra Protection Flange Mount Front: IP00/IP20 & NEMA/UL Open Type Back: IP66 & NEMA/UL Type 4X	0-50˚ C (32-122˚ F) 0-40˚ C (32-104˚ F)	Frames 2-7
Extra Protection Wall Mount IP54 & NEMA/UL Type 12	0-40˚ C (32-104˚ F)	Frames 2-7
NEMA 1 Kit converts Open Type to NEMA/UL Type	0-40˚ C (32-104˚ F)	Frames 2-7
IP20 & NEMA/UL Type 1 MCC Style	0-40˚ C (32-104˚ F)	Frame 8

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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