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 multi-drive system applications, 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

- 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
- Improve drive control and efficiency with DeviceLogix control
- Prevent unplanned downtime with predictive diagnostics that track information relating to the life of the drive and motor
- Help protect personnel and equipment with safety solutions up to and including PLe/SIL3 Cat 3 and Cat 4

The PowerFlex 750-Series is made up of the PowerFlex 753 operating at 0.75…250 kW / 1…350 Hp and the PowerFlex 755 operating from 7.5…250 kW / 10…350 Hp at 400/480V AC and 540/650V DC.

The PowerFlex 750-Series provides a common set of features and options to help you maximize your investment and improve your productivity.

DeviceLogix™ – Embedded control technology that supports the manipulation of discrete outputs and drive control functions, while using discrete inputs and drive status information onboard the drive.

Predictive Diagnostics – Allows the PowerFlex 750-Series to keep track of information that affects the life of its cooling fans and relay outputs. The drive can also be programmed to monitor the run time hours for machine or motor bearings.

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 both products, 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.

Communications – The PowerFlex 750-Series supports a variety of network protocols. The PowerFlex 755 comes with a built-in Ethernet port. Ethernet can easily be added to the PowerFlex 753 with a communication module.

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.

Packaging – Factory and field installable enclosure options are available to meet most environmental requirements: Open Type and Flange Mount options to support Cabinet Mount requirements, Extra Protection Wall Mount for harsh environments, and supporting debris hoods and conduit plate kits.

Standard Power Structure – The PowerFlex 750-Series share a common power structure to provide the same physical footprint and power range no matter what PowerFlex 750 -Series drive is used.

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

	PowerFlex 753	PowerFlex 755
400/480V	0.75…250 kW / 1…350 Hp	7.5…250 kW / 10…350 Hp
DeviceLogix Control Technology	✓	✓
Predictive Diagnostics	✓	✓
Safety Options: Safe Torque-Off, Safe Speed Monitor	✓	✓
Assisted Start-Up, HIMs Drive Software: DriveTools, DriveExplorer, RSLogix5000	✓	✓
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
Feedback	• Incremental	• Incremental • EnDat, Hiperface, SSI and BiSS
Integration with Logix	• Add-On-Profiles	• Add-On-Profiles
Application Sets	Oil Well • Pump Jack & Pump Off Fibers • PJump & Traversing	Lifting • Torqprove
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 motor (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

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
- Flash upgradeable

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

Above picture represents a PowerFlex 755 with an optional plate.

- **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

PowerFlex Enhanced Human Interface Module (HIM)

The enhanced HIM module for the PowerFlex family of drives offers added functionality and improved ease of use making drive programming easier than before. Take advantage of the simplified operation and reduced keystrokes from the redesigned keypad, more structured navigation, and assisted start-up utility. The high-definition LCD display allows for six lines of text providing you with more meaningful explanations of parameters and events. The backlight on this display also flashes to help signal an event that requires attention. The HIM is currently available in nine languages and language is defined within the HIM firmware, so symbols and abbreviations appear in the selected language. This new HIM is compatible with the entire PowerFlex family of drives and is available in NEMA 1 and NEMA 4 versions.

e-Tools

RSLogix™ 5000

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.

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 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.

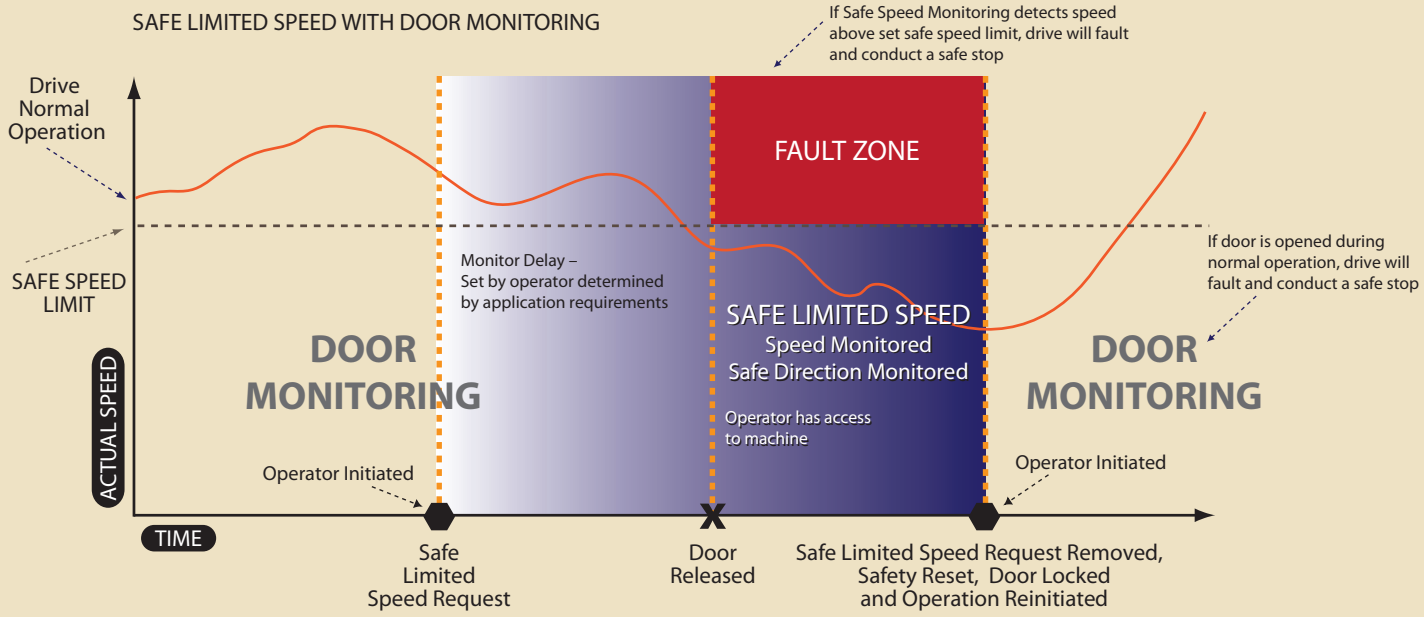
Safe Torque-Off is ideal for safety related applications requiring removal of rotational power to the motor without shutting down the drive. Safe Torque-Off functionality offers the benefit of quick start-up after a demand on the safety system and helps reduce wear from repetitive start-up and provides safety ratings up to and including PLe/SIL3 and CAT 3.

In applications where the speed needs to be controlled and monitored, the Safe-Speed Monitor option for the PowerFlex 750-Series combines Safe Torque-Off capability with integrated safety relay functionality and the Safe-Speed Control technology in one hardware option to provide safety ratings up to and including PLe/SIL3 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.

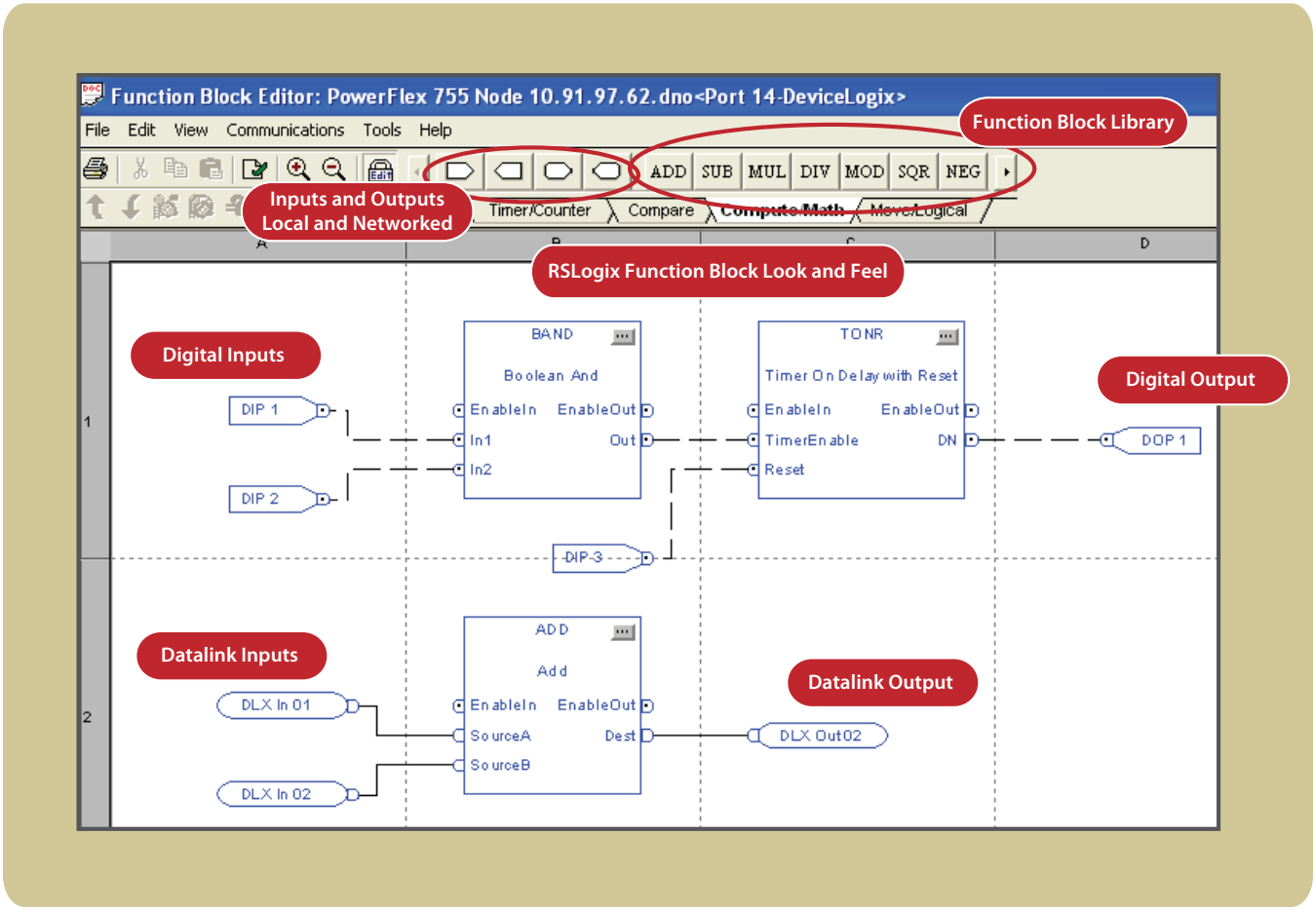
The Safe Speed Monitor option provides the following functionality:

- 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






DeviceLogix™ Control Technology

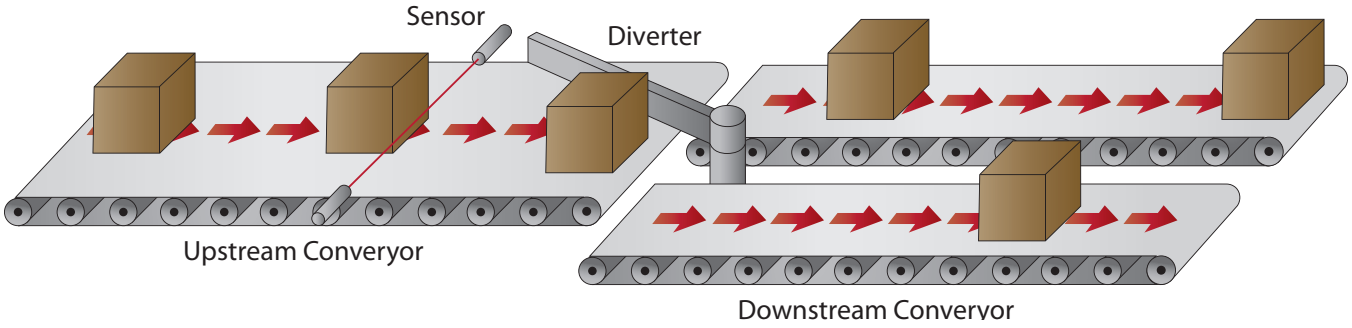


DeviceLogix control technology provides you with the flexibility to customize a drive to more closely match your application needs. DeviceLogix controls outputs and manages status information locally within the drive allowing you to operate the drive independently or complimentary to supervisory control 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[2]	0.75	2.1	1[2]	1
	3.5	1.5[2]	1.5	3.4	2[2]	2
	5	2.2[2]	2.2	5	3[2]	3
	8.7	4[2]	4	8	5[2]	5
	11.5	5.5[2]	5.5	11	7.5[2]	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. See User Manual for more specifics on Flange Mount and NEMA 12 ratings (www.literature.rockwellautomation.com/idc/groups/literature/documents/um/750-um001_-en-p.pdf)*

[2] *Contact your local sales representative for availability of the PowerFlex 755 in these power ranges*

Standards

- CE
  - EMC EN61800-3
  - Low Voltage EN61800-5-1
- UL
- cUL
- C-Tick
- TUV FS
- SEMI F47
- ROHS
- GOST-R

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
- Instantaneous Over Current Trip: 220 – 300% based on drive rating

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)

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)	All Frames, All Ratings
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)	All Frames, All Ratings All Frames, All Ratings
Extra Protection Wall Mount IP54 & NEMA/UL Type 12	0-40° C (32-104° F)	Frames 2-5
NEMA 1 Kit converts Open Type to NEMA/UL Type	0-40° C (32-104° F)	All Frames, All Ratings

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