

FanMaster™ Energy Saving Package

Saving Energy Can Be Easy

Constant Volume Air Handling Upgrade Package

Providing you with an easy upgrade to your Heating, Ventilation and Air Conditioning (HVAC) equipment, the Allen-Bradley FanMaster™ energy saving package converts a constant volume air handler to variable air flow without changes to your existing mechanical and controls systems.

- Convert a constant-volume HVAC air handler to variable air flow with the FanMaster package and PowerFlex® AC drives.*
 - Temperature variations remain similar to temperatures present in your current air handling system
- Distribute heating and cooling BTUs in the same proportion as the original system design, using less fan energy
- Demand ventilation control of Carbon Dioxide
 - Minimizes outside air while providing good air quality
 - Lower heating and cooling energy consumption costs
- Calculate potential savings for your specific application, not just industry averages
- Run fans at optimal speed using the patent pending algorithms

True Energy Savings Potential

The FanMaster package offers a variety of solutions to fit your needs:

- Web-based Calculator
 - Download this calculator to see potential energy savings using data for your specific geographical region
www.rockwellautomation.com/go/fancalc
- FanMaster Energy Saving Package
 - See your potential energy savings without having to rewire your building automation system

Contact your local distributor or Rockwell Automation sales person to start saving today (www.rockwellautomation.com).

* PowerFlex® 400, PowerFlex® 70 with enhanced control, PowerFlex® 700 with vector control and PowerFlex® 753 AC Drives



Energy Savings

Constant volume HVAC applications are an ideal spot for potential energy savings using variable frequency drives (VFDs). Moving air in HVAC applications typically involves a motor running at full speed. With the motors as the driving force behind HVAC applications, improving your motor control performance and efficiency will mean better production efficiency. With variable frequency drives you can see a measurable impact on energy use and operational efficiency. The FanMaster energy saving package is designed to deliver more energy savings at a fraction of the cost when compared to a traditional hardware retrofit solution.

Help reduce your overall energy savings by using a product that will not interfere with your existing HVAC system. The FanMaster energy saving package is product, developed by a company founded on controlling motors. Saving energy can be easy.

LISTEN.
THINK.
SOLVE.™

Product Selection

FanMaster™ Energy Saving Package for Supply and Return Fans (PowerFlex AC Drive not included)

120V AC Input			
Description	Includes	Enclosure	Cat. No.
FanMaster Energy Saving Package	(1) Carbon Dioxide Transmitter, (1) Damper Blade Position Indicator, (2) Duct Insertion Temperature Transmitters, (1) Controller and (1) Touchscreen Operator Interface. This unit controls the PowerFlex AC Drive.	NEMA/UL Type 1	23-FanM-AA1AHUH
		NEMA/UL Type 4	23-FanM-AE1AHUH

PowerFlex® Packaged Drives Capability

Allen-Bradley® PowerFlex family of drives offers a broad range of control modes to fit virtually any motor control requirement. With the combination of features, options and packaging for application versatility, the PowerFlex family of AC drives has a solution to meet your application demands.

- Designed to meet end-user demands for flexibility, space savings and ease-of-use
- Offers a wide range of built-in features allowing for seamless HVAC building system integration

PowerFlex® 400 AC Drive

- Cost-effective solution for speed control in variable torque fan applications
- Ideal for mechanical fan and pump systems

Ratings:

200...240V: 2.2...37 kW / 3.0...50 Hp / 12...145 A

380...480V: 2.2...250 kW / 3.0...350 Hp / 6...460 A

Available as a stand-alone PowerFlex 400 AC drive and in a wide configuration of packaged drives (see below)



PowerFlex 400 AC Drive

PowerFlex 400 AC Drive Packages

Catalog Number Explanation

23C – **D** **038** **A** **1** **0** **3** **N** **N** **B** **A** **N** **N** **-LR**

a *b* *c* *d* *e* *f* *g* *h* *i* *j* *k* *l* *m* *n*

<i>a</i> Drive	
Code	Type
23C	PowerFlex 400

<i>b</i> Voltage Rating		
Code	Voltage	Phase
X	208V ac	3
D	480V ac	3

<i>c1</i> Rating			
208V, 60Hz Input			
Code	Amps *	kW (Hp)	Frame
012	12	2.2 (3.0)	C
017	16.8	3.7 (5.0)	C
024	24	5.5 (7.5)	C
033	30.8	7.5 (10)	C
049	46.2	11 (15)	D
065	64	15 (20)	D
075	75	18.5 (25)	D
090	88	22 (30)	D
120	114	30 (40)	E
145	143	37 (50)	E

* Configured drive amp ratings may differ from stand-alone drive ratings. Configured drives sized per NEC motor amps.

<i>c2</i> Rating			
460V, 60Hz Input			
Code	Amps *	kW (Hp)	Frame
6P0	4.8	2.2 (3.0)	C
010	7.6	4.0 (5.0)	C
012	11	5.5 (7.5)	C
017	14	7.5 (10)	C
022	21	11 (15)	C
030	27	15 (20)	C
038	34	18.5 (25)	D
045	40	22 (30)	D
060	52	30 (40)	D
072	65	37 (50)	E
088	77	45 (60)	E
105	96	55 (75)	E
142	124	75 (100)	E
170	156	90 (125)	F
208	180	110 (150)	F
260	240	132 (200)	G
310	302	160 (250)	G
370	361	200 (300)	H
460	414	250 (350)	H

* Configured amp ratings may differ from standalone drive ratings. Configured drives sized per NEC motor amps.

<i>d</i> Enclosure	
Code	Enclosure
A	NEMA/UL Type 1
H	NEMA/UL Type 12 with Fan and Filter
X	NEMA/UL Type 3R ‡
E	NEMA/UL Type 4 ‡

‡ Designed for maximum ambient temperature of 40° C with no direct sunlight exposure.

<i>e</i> HIM	
Code	Interface Module
1	Fixed Keypad

<i>f</i> Emission Class	
Code	Rating
0	Not Filtered

<i>g</i> Communication Slot	
Code	Version
3	RS485
B	BACnet Adapter
C	ControlNet Adapter
D	DeviceNet Adapter
E	EtherNet/IP Adapter
L	LonWorks Adapter
P	PROFIBUS DP Adapter

<i>h</i> Rating	
Code	Rating
N	Reserved

<i>i</i> Rating	
Code	Rating
N	Reserved

<i>j</i> Package	
Code	Description
A	Main Input Disconnect
B	3 Contactor Full Feature Bypass with Disconnect
C	3 Contactor Basic Bypass with Disconnect *
M	Main Input Circuit Breaker ▶
N	3 Contactor Full Feature Bypass with Circuit Breaker ▶

* Available only with NEMA/UL Type 1 enclosure (Position d = A).

▶ Available with all ratings in NEMA/UL Type 12, 3R, or 4 enclosures (Position d = H, X, or E) and 160-250 kW (250-350 Hp) ratings in NEMA/UL Type 1 enclosures (Position d = A).

<i>k</i> Control	
Code	Description
A	Single Motor

<i>l</i> Rating	
Code	Rating
N	Reserved

<i>m</i> Rating	
Code	Rating
N	Reserved

<i>n</i> Options	
Code	Description
-LR	3% Input Line Reactor §
-E5	Space Heater – Local Power ※
-AB	Auto Bypass
-DC	Damper Control
-PE	PE Input

§ 3% Input Line Reactor not available for all package styles. Consult product selection tables for additional detail.

※ Available with NEMA/UL Type 3R and 4 enclosures only.

PowerFlex® 70 AC Drive with Enhanced Control

- Offers a compact package of power, control and operator interface
- Designed to meet the demands for space, simplicity and reliability
- Provides a broad spectrum of features, allowing you to easily integrate it into your architecture and configure it for most application needs

Ratings:

200...240V: 0.37...18.5 kW / 0.5...25 Hp / 2.2...70 A

380...480V: 0.37...37 kW / 0.5...50 Hp / 1.1...72 A

500...600V: 0.37...37 kW / 0.5...50 Hp / 0.9...52 A

Available as a stand-alone PowerFlex 70 AC drive with enhanced control, and in a wide configuration of packaged drives (see below)



PowerFlex 70 AC Drive



PowerFlex 70 AC Drive Packages with Enhanced Control

Catalog Number Explanation

1-3	4	5-7	8	9	10	11	12	13	14	15	16	17	18	19
21V	D	2P1	A	3	A	Y	N	A	R	C	0	B	N	-LR
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>	<i>k</i>	<i>l</i>	<i>m</i>	<i>n</i>	<i>o</i>

Drive	
Code	Type
21V	PowerFlex 70 Drive with enhanced control

Voltage Rating		
Code	Voltage	Phase
X	208V AC	3
D	480V AC	3
E	600V AC	3

Normal Duty Rating			
Code	Amps	Frame	kW (HP)
4P2	4.8	B	0.75 (1.0)
6P8	7.8	B	1.5 (2.0)
9P6	11	B	2.2 (3.0)
015	17.5	C	4.0 (5.0)
022	25.3	D	5.5 (7.5)
028	32.2	D	7.5 (10)
042	43	D	11 (15)

Normal Duty Rating			
480V, 60Hz Input			
Code	Amps	Frame	kW (HP)
2P1	2.1	B	0.75 (1.0)
3P4	3.4	B	1.5 (2.0)
5P0	5.0	B	2.2 (3.0)
8P0	8.0	B	4.0 (5.0)
011	11	C	5.5 (7.5)
014	14	C	7.5 (10)
022	22	D	11 (15)
027	27	D	15 (20)
034	34	D	18.5 (25)
040	40	D	22 (30)
052	52	E	30 (40)
065	65	E	37 (50)

Normal Duty Rating			
600V, 60Hz Input			
Code	Amps	Frame	kW (HP)
3P9	3.9	B	2.2 (3.0)
6P1	6.1	B	4.0 (5.0)
9P0	9.0	C	5.5 (7.5)
011	11	C	7.5 (10)
017	17	D	11 (15)
022	22	D	15 (20)
027	27	D	18.5 (25)
032	32	D	22 (30)
041	41	E	30 (40)
052	52	E	37 (50)

Enclosure	
Code	Type
A	NEMA/UL Type 1

HIM	
Code	Operator Interface
0	Blank Cover
3	Full Numeric LCD
5	Prog. Only LCD

Documentation	
Code	Type
A	User Manual

Brake IGBT	
Code	Brake IGBT ‡
Y	Yes

‡ Brake IGBT is standard on PowerFlex 70 Frames B, C, D and E.

Internal Brake Resistor	
Code	Resistor
Y	Yes †
N	No

† Brake resistor only available for PowerFlex 70: 208V Frames B, C & D, 480V Frames B, C & D, 600V Frames B and C.

Emission	
Code	CE Filter
A	Yes
N*	No

* PowerFlex 70 600V ratings only.

Communication Slot	
Code	Version
B	BACnet®
C	ControlNet™ (Coax)
D	DeviceNet™
E	EtherNet/IP™
H	RS485 HVAC
I	Interbus™
L	LonWorks®
P	PROFIBUS™ DP
Q	ControlNet™ (Fiber)
R	Remote I/O
S	RS485 DF1
N	None

Control & I/O		
Code	Control	I/O Volts
C	Enhanced	24V DC

Feedback	
Code	Feedback
0	None

Package	
Code	Description
A	Main Input Disconnect
B	3 Contactor Full Feature Bypass with Disconnect
C	3 Contactor Basic Bypass with Disconnect

Reserved	
Code	Description
N	Reserved

Options	
Code	Description
LR	Input Line Reactor ▶

▶ Only available with Package Code A and B drives 1.0...10 HP @ 208V, 1.0...25 Hp @ 480V and 3.0...25 HP @ 600V.

PowerFlex® 700 AC Drive with Vector Control

The PowerFlex 700 AC drive with vector control offers outstanding performance in an easy-to-use drive that covers a wide range of horsepower ratings. This drive is designed to control three-phase induction motors in applications with requirements ranging from the simplest speed control to the most demanding torque control.

Ratings:

200...240V: 0.37...75 kW / 0.5...100 Hp / 2.2...260 A

380...480V: 0.37...500 kW / 0.5...700 Hp / 1.1...875 A

500...600V: 0.75...132 kW / 1...150 Hp / 1.7...144 A

690V: 45...132 kW / 50...150 Hp / 52...142 A



PowerFlex 700 AC Drive
with Vector Control

PowerFlex® 753 AC Drive

Designed for general purpose applications, the PowerFlex 753 AC drive offers multiple options and features, including simple integration. The PowerFlex 753 comes standard with built-in I/O making it a cost effective solution ideal for OEMs and system integrators looking to reduce engineering costs, deliver machines to market faster and meet end user demand for more productive and safer machines.

Ratings:

380...480V: 0.75...250 kW / 1...350 Hp / 2.1...456 A



PowerFlex 753 AC Drive

Consult the factory for specific configuration information for the PowerFlex 700 AC drive with vector control and PowerFlex 753 AC drive packages.

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www.rockwellautomation.com

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