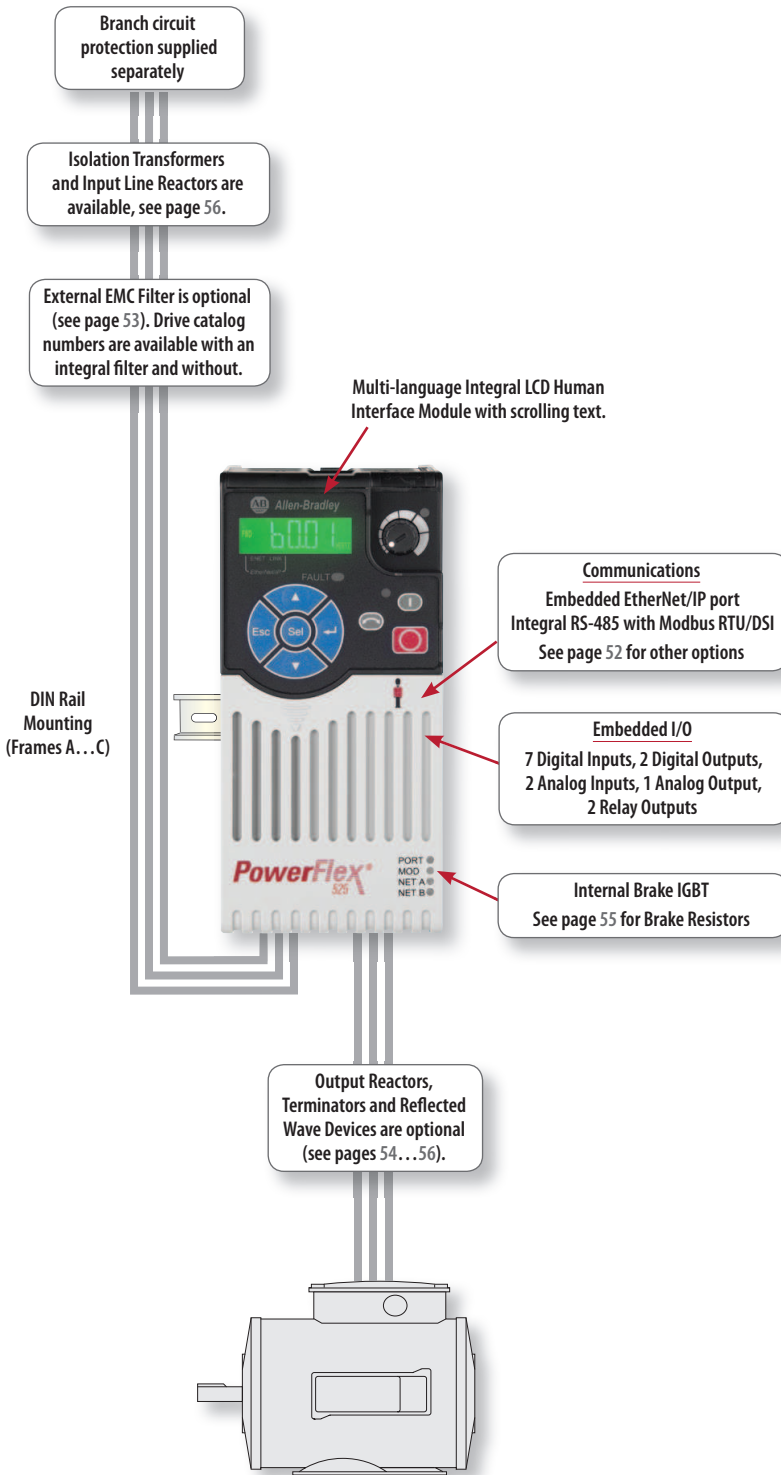


# PowerFlex 525 AC Drive

PowerFlex 525 AC drives feature an innovative, modular design offering fast and easy installation and configuration. These cost-effective compact drives come with embedded EtherNet/IP™ communications, safety, USB configuration and a high ambient operating temperature capability. PowerFlex 525 AC drives also provide a variety of motor control algorithms including volts per hertz, sensorless vector control and closed loop velocity vector control, making these drives ideal for a vast array of applications.



## PowerFlex 525 AC Drive at a glance

### Ratings

100...120V:	0.4...1.1 kW / 0.5...1.5 Hp / 2.5...6 A
200...240V:	0.4...15 kW / 0.5...20 Hp / 2.5...62.1 A
380...480V:	0.4...22 kW / 0.5...30 Hp / 1.4...43 A
525...600V:	0.4...22 kW / 0.5...30 Hp / 0.9...32 A

### Motor Control

- V/Hz Control
- Sensorless Vector Control
- Closed Loop Velocity Vector Control
- Permanent Magnet Motor Control <sup>⚡</sup>

### Enclosures

- IP20, NEMA/UL Type Open
- IP30, NEMA/UL Type 1 (with optional kit)

### Safety

Safe Torque-Off PLd/SIL2 Cat 3 (meets ISO 13849-1)

### Additional Features

- Modular design eases installation
- Operating temperatures from -20 °C (-4 °F) up to 50 °C (122 °F). Up to 70 °C (158 °F) with current derating and optional control module fan kit.
- Embedded EtherNet/IP port
- Option for dual port EtherNet/IP adapter which supports DLR functionality. DeviceNet and PROFIBUS DP adapters also available.
- Embedded Safe Torque-Off PLd/SIL2 Cat 3
- LCD HIM with multi-language support
- MainsFree™ Programming via USB
- Configure using Connected Components Workbench Software
- Add-on Profiles for Studio 5000™ Logix Designer Software
- Automatic Device Configuration
- Economizer motor control for energy savings
- Application specific parameter groups
- Simple positioning control with optional encoder card
- Conformal coating to IEC 60721 3C2 standards

### Certifications

- ACS 156
- ATEX
- C-Tick
- c-UL, UL
- CE
- EPRI/SEMI F47
- GOST-R
- KCC
- Lloyd's Register
- RoHS
- TÜV FS ISO/EN13849-1 (EN954-1)

### Options

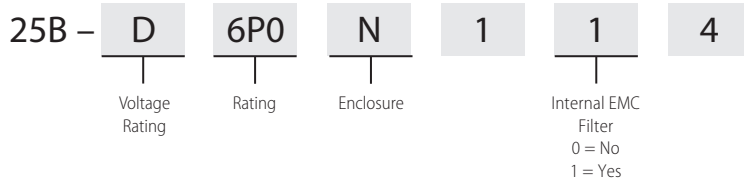
See pages 52...56

<sup>⚡</sup> Permanent magnet motor control is scheduled for a future firmware release.

## Additional Information

PowerFlex 520-Series Technical Data, publication 520-TD001  
 PowerFlex 520-Series User Manual, publication 520-UM001

## Catalog Number Explanation



## Product Selection

### 100...120V AC, Single-Phase Input, Three-Phase Output Drives, 50/60 Hz

Drive Ratings						No Filter	with Integral EMC Filter
Normal Duty		Heavy Duty		Output Current	Frame Size	Cat. No.	Cat. No.
kW	Hp	kW	Hp	A			
0.4	0.5	0.4	0.5	2.5	A	25B-V2P5N104	–
0.75	1	0.75	1	4.8	B	25B-V4P8N104	–
1.1	1.5	1.1	1.5	6	B	25B-V6P0N104	–

### 200...240V AC, Single-Phase Input, Three-Phase Output Drives, 50/60 Hz

Drive Ratings						No Filter	with Integral EMC Filter ‡
Normal Duty		Heavy Duty		Output Current	Frame Size	Cat. No.	Cat. No.
kW	Hp	kW	Hp	A			
0.4	0.5	0.4	0.5	2.5	A	25B-A2P5N104	25B-A2P5N114
0.75	1	0.75	1	4.8	A	25B-A4P8N104	25B-A4P8N114
1.5	2	1.5	2	8	B	25B-A8P0N104	25B-A8P0N114
2.2	3	2.2	3	11	B	25B-A011N104	25B-A011N114

‡ This filter is suitable for use with cable lengths up to 10 meters (32.8 feet) for C2 spec and 20 meters (65.6 feet) for C3 spec.

### 200...240V AC, Three-Phase, 50/60 Hz

Drive Ratings						No Filter	with Integral EMC Filter
Normal Duty		Heavy Duty		Output Current	Frame Size	Cat. No.	Cat. No.
kW	Hp	kW	Hp	A			
0.4	0.5	0.4	0.5	2.5	A	25B-B2P5N104	–
0.75	1	0.75	1	5	A	25B-B5P0N104	–
1.5	2	1.5	2	8	A	25B-B8P0N104	–
2.2	3	2.2	3	11	A	25B-B011N104	–
4	5	4	5	17.5	B	25B-B017N104	–
5.5	7.5	5.5	7.5	24	C	25B-B024N104	–
7.5	10	7.5	10	32.2	D	25B-B032N104	–
11	15	11	15	48.3	E	25B-B048N104	–
15	20	11	15	62.1	E	25B-B062N104	–

## 380...480V AC, Three-Phase, 50/60 Hz

Drive Ratings						No Filter	with Integral EMC Filter ‡
Normal Duty		Heavy Duty		Output Current	Frame Size	Cat. No.	Cat. No.
kW	Hp	kW	Hp	A			
0.4	0.5	0.4	0.5	1.4	A	25B-D1P4N104	25B-D1P4N114
0.75	1	0.75	1	2.3	A	25B-D2P3N104	25B-D2P3N114
1.5	2	1.5	2	4	A	25B-D4P0N104	25B-D4P0N114
2.2	3	2.2	3	6	A	25B-D6P0N104	25B-D6P0N114
4	5	4	5	10.5	B	25B-D010N104	25B-D010N114
5.5	7.5	5.5	7.5	13	C	25B-D013N104	25B-D013N114
7.5	10	7.5	10	17	C	25B-D017N104	25B-D017N114
11	15	11	15	24	D	25B-D024N104	25B-D024N114
15	20	11	15	30	D	25B-D030N104	25B-D030N114
18.5	25	15	20	37	E	25B-D037N114 §	25B-D037N114
22	30	18.5	25	43	E	25B-D043N114 §	25B-D043N114

‡ This filter is suitable for use with cable lengths up to 10 meters (32.8 feet) for C2 spec and 20 meters (65.6 feet) for C3 spec.

§ With EMC filter.

## 525...600V AC, Three-Phase, 50/60 Hz

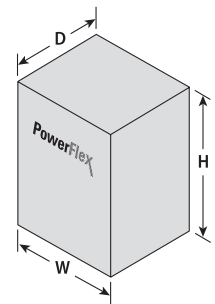
Drive Ratings						No Filter	with Integral EMC Filter
Normal Duty		Heavy Duty		Output Current	Frame Size	Cat. No.	Cat. No.
kW	Hp	kW	Hp	A			
0.4	0.5	0.4	0.5	0.9	A	25B-E0P9N104	—
0.75	1	0.75	1	1.7	A	25B-E1P7N104	—
1.5	2	1.5	2	3	A	25B-E3P0N104	—
2.2	3	2.2	3	4.2	A	25B-E4P2N104	—
4	5	4	5	6.6	B	25B-E6P6N104	—
5.5	7.5	5.5	7.5	9.9	C	25B-E9P9N104	—
7.5	10	7.5	10	12	C	25B-E012N104	—
11	15	11	15	19	D	25B-E019N104	—
15	20	11	15	22	D	25B-E022N104	—
18.5	25	15	20	27	E	25B-E027N104	—
22	30	18.5	25	32	E	25B-E032N104	—

## Approximate Dimensions and Weights

Dimensions are in mm (in.) - weights are in kg (lb)

## IP20, NEMA/UL Type Open

Frame	H	W	D	Weight
A	152.0 (5.98)	72.0 (2.83)	172.0 (6.77)	1.10 (2.4)
B	180.0 (7.08)	87.0 (3.42)	172.0 (6.77)	1.60 (3.5)
C	220.0 (8.66)	109.0 (4.29)	184.0 (7.24)	2.30 (5.1)
D	260.0 (10.23)	130.0 (5.11)	212.0 (8.34)	3.20 (7.1)
E	300.0 (11.81)	185.0 (7.28)	279.0 (10.98)	12.90 (28.4)



# PowerFlex 520-Series Options

## Human Interface Modules and Accessories

Description	Cat. No.
Remote (Panel Mount) LCD Display, Digital Speed Control, CopyCat Capable. Includes 2.0 meter cable. IP66, NEMA Type 4X/12 - Indoor Use Only.	22-HIM-C2S ♣
Remote Handheld, LCD Display, Full Numeric Keypad, Digital Speed Control, CopyCat Capable. Includes 1.0 meter cable. IP30, NEMA Type 1. Panel mount with optional Bezel Kit.	22-HIM-A3
Bezel Kit. Panel Mount for LCD Display, Remote Handheld Unit. IP30, NEMA Type 1. Includes a 22-RJ45CBL-C20 cable.	22-HIM-B1
DSI HIM Cable (DSI HIM to RJ45 cable)	
1.0 Meter (3.3 Feet)	22-HIM-H10
2.9 Meter (9.5 Feet)	22-HIM-H30

♣ The 22-HIM-C2S is smaller than the 22-HIM-C2 and cannot be used as a direct replacement.

## Communication Option Kits

Description	Cat. No.
DeviceNet™ Communication Adapter	25-COMM-D
EtherNet/IP™ Communication Adapter - Dual Port	25-COMM-E2P
PROFIBUS™ DP Communication Adapter	25-COMM-P
Serial Converter Module (RS485 to RS232). Provides serial communication via DF1 protocol for use with DriveExplorer and DriveExecutive™ software. Includes DSI to RS232 serial converter, 1203-SFC serial cable, 22-RJ45CBL-C20 cable, and DriveExplorer Lite CD.	22-SCM-232
Serial Cable. 2.0 meter with a locking low profile connector. Connects the serial converter to a 9-pin sub-miniature D female computer connector.	1203-SFC
Serial Null Modem Adapter. Use when connecting the serial converter to DriveExplorer on a handheld PC.	1203-SNM
Universal Serial Bus™ (USB) Converter includes 2m USB, 20-HIM-H10 and 22-HIM-H10 Cables.	1203-USB
DSI Cable. 2.0 meter RJ45 to RJ45 cable, male to male connectors.	22-RJ45CBL-C20
Splitter Cable. RJ45 one to two port splitter cable.	AK-U0-RJ45-SC1
Terminal Block. RJ45 two position terminal block (6 pieces) with two 120 Ohm terminating resistors (loose).	AK-U0-RJ45-TB2P
Terminating Resistors. 120 Ohm resistor embedded in an RJ45 connector (2 pieces).	AK-U0-RJ45-TR1
DSI External Communications Kit. External mounting kit for 22-COMM Communication Adapters.	22-XCOMM-DC-BASE
External Communications Kit Power Supply Optional 100...240V AC Power Supply for External DSI Communications Kit.	20-XCOMM-AC-PS1
Compact I/O Module (3 Channel)	1769-SM2

## IP30, NEMA/UL Type 1 Conversion Kit

Description	Frame	Cat. No.
Converts IP20 drive to IP30, NEMA/UL Type 1 enclosure	A	25-JBAA
	B	25-JBAB
	C	25-JBAC
	D	25-JBAD
	E	25-JBAE

## Other Options

Description	Frame	Cat. No.
EMC Grounding Plate	A	25-EMC1-FA
	B	25-EMC1-FB
	C	25-EMC1-FC
	D	25-EMC1-FD
	E	25-EMC1-FE
Mounting Adapter Plate, Bulletin 160 AC Drive to PowerFlex 525	A	25-MAP-FA
	B	25-MAP-FB
Incremental Encoder for PowerFlex 525	All	25-ENC-1
Control Module Fan Kit for 70 °C operation and/or horizontal drive mounting.	A...D	25-FAN1-70C
	E	25-FAN2-70C

## EMC Filters (Required to Meet CE Certification)

Drive Ratings				Cat. No.
Input Voltage	kW	Hp	Frame	
100...120V, Single-Phase, 50/60 Hz	0.2	0.25	A	25-RF011-AL
	0.4	0.5	A	25-RF023-BL
	0.75	1	B	
	1	1.5	B	
200...240V, Single-Phase, 50/60 Hz	0.2	0.25	A	25-RF011-AL
	0.4	0.5	A	25-RF023-BL
	0.75	1	A	
	1.5	2	B	
	2.2	3	B	
200...240V, Three-Phase 50/60 Hz,	0.2	0.25	A	25-RF014-AL
	0.4	0.5	A	25-RF021-BL 25-RF027-CL 25-RF035-DL 25-RF056-EL
	0.75	1	A	
	1.5	2	A	
	2.2	3	A	
	3.7	5	B	
	5.5	7.5	C	
	7.5	10	D	
	11	15	E	
	15	20	E	
380...480V, Three-Phase 50/60 Hz	0.4	0.5	A	25-RF7P5-AL
	0.75	1	A	25-RF014-BL 25-RF018-CL 25-RF033-DL 25-RF039-EL
	1.5	2	A	
	2.2	3	A	
	3.7	5	B	
	5.5	7.5	C	
	7.5	10	C	
	11	15	D	
	15	20	D	
	18.5	25	E	
22	30	E		
525...600V, Three-Phase, 50/60 Hz	0.4	0.5	A	25-RF8P0-BL
	0.75	1	A	25-RF014-CL 25-RF027-DL 25-RF029-EL
	1.5	2	A	
	2.2	3	A	
	3.7	5	B	
	5.5	7.5	C	
	7.5	10	C	
	11	15	D	
	15	20	D	
	18.5	25	E	
22	30	E		

## Control Module

Description	Frame	Cat. No.
PowerFlex 523 Control Module (includes control module front cover)	All	25A-CTM1
PowerFlex 525 Control Module (includes control module front cover)	All	25B-CTM1

Power Modules <sup>§</sup>

Input Voltage	Ratings				No Filter Cat No.	with Integral EMC Filter Cat No.
	Normal Duty		Heavy Duty			
	kW	Hp	kW	Hp		
100...120V AC, Single-Phase, 50/60 Hz	0.2	0.25	0.2	0.25	25-PM1-V1P6	—
	0.4	0.5	0.4	0.5	25-PM1-V2P5	—
	0.75	1	0.75	1	25-PM1-V4P8	—
	1.5	2	1.5	2	25-PM1-V6P0	—
200...240V AC, Single-Phase, 50/60 Hz	0.2	0.25	0.2	0.25	25-PM1-A1P6	25-PM2-A1P6
	0.4	0.5	0.4	0.5	25-PM1-A2P5	25-PM2-A2P5
	0.75	1	0.75	1	25-PM1-A4P8	25-PM2-A4P8
	1.5	2	1.5	2	25-PM1-A8P0	25-PM2-A8P0
200...240V AC, Three-Phase, 50/60 Hz	2.2	3	2.2	3	25-PM1-A011	25-PM2-A011
	0.2	0.25	0.2	0.25	25-PM1-B1P6	—
	0.4	0.5	0.4	0.5	25-PM1-B2P5	—
	0.75	1	0.75	1	25-PM1-B5P0	—
	1.5	2	1.5	2	25-PM1-B8P0	—
	2.2	3	2.2	3	25-PM1-B011	—
	4	5	4	5	25-PM1-B017	—
	5.5	7.5	5.5	7.5	25-PM1-B024	—
	7.5	10	7.5	10	25-PM1-B032	—
	11	15	11	15	25-PM1-B048	—
380...480V AC, Three-Phase, 50/60 Hz	15	20	11	15	25-PM1-B062	—
	0.4	0.5	0.4	0.5	25-PM1-D1P4	25-PM2-D1P4
	0.75	1	0.75	1	25-PM1-D2P3	25-PM2-D2P3
	1.5	2	1.5	2	25-PM1-D4P0	25-PM2-D4P0
	2.2	3	2.2	3	25-PM1-D6P0	25-PM2-D6P0
	4	5	4	5	25-PM1-D010	25-PM2-D010
	5.5	7.5	5.5	7.5	25-PM1-D013	25-PM2-D013
	7.5	10	7.5	10	25-PM1-D017	25-PM2-D017
	11	15	11	15	25-PM1-D024	25-PM2-D024
	15	20	11	15	25-PM1-D030	25-PM2-D030
525...600V AC, Three-Phase, 50/60 Hz	18.5	25	15	20	—	25-PM2-D037
	22	30	18.5	25	—	25-PM2-D043
	0.4	0.5	0.4	0.5	25-PM1-E0P9	—
	0.75	1	0.75	1	25-PM1-E1P7	—
	1.5	2	1.5	2	25-PM1-E3P0	—
	2.2	3	2.2	3	25-PM1-E4P2	—
	4	5	4	5	25-PM1-E6P6	—
	5.5	7.5	5.5	7.5	25-PM1-E9P9	—
	7.5	10	7.5	10	25-PM1-E012	—
	11	15	11	15	25-PM1-E019	—
15	20	11	15	25-PM1-E022	—	
18.5	25	15	20	25-PM1-E027	—	
22	30	18.5	25	25-PM1-E032	—	

§ Includes power module front cover (Frames B...E only).

**Accessories**

Description	Frame	Cat. No.
Power Module Front Cover	B	25-PMFC-FB
	C	25-PMFC-FC
	D	25-PMFC-FD
	E	25-PMFC-FE
PowerFlex 523 Control Module Front Cover	All	25A-CTMFC1
PowerFlex 525 Control Module Front Cover	All	25B-CTMFC1
Heatsink Fan Replacement Kit	A	25-FAN1-FA
	B	25-FAN1-FB
	C	25-FAN1-FC
	D	25-FAN1-FD
	E	25-FAN1-FE
Power Terminal Guard	A	25-PTG1-FA
	B	25-PTG1-FB
	C	25-PTG1-FC
	D	25-PTG1-FD
	E	25-PTG1-FE

**Terminators**

Description ★	Cat. No.
for use with 3.7 kW (5 Hp) and below drives	1204-TFA1
for use with 1.5 kW (2 Hp) and up drives	1204-TFB2

★ For selection information, refer to Appendix A of the Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication Drives-IN001.

**Reflected Wave Reduction Modules**

Voltage	kW	Hp	Cat. No.	
380 . . . 480V AC	2.2 . . . 4	3 . . 5	1321-RWR8-DP	
	4	5	1321-RWR12-DP	
	5.5	7.5	1321-RWR18-DP	
	7.5	10	1321-RWR25-DP	
	11	15	1321-RWR25-DP	
	15	20	1321-RWR35-DP	
	18.5	25	1321-RWR45-DP	
	22	30	1321-RWR55-DP	
	500 . . . 600V AC	4	5	1321-RWR8-EP
		5.5	7.5	1321-RWR12-EP
7.5		10	1321-RWR18-EP	
11		15	1321-RWR25-EP	

**Reflected Wave Reduction Module with Common Mode Choke**

Description ★	Cat. No.
17A with Common Mode Choke	1204-RWC-17-A

★ For selection information, refer to Appendix A of the Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication Drives-IN001.

## Dynamic Brake Resistors

Voltage	Drive Rating		Minimum Resistance	Resistance	Cat. No. ‡ §
	kW	Hp	Ohms, ±10%	Ohms, ±5%	
100...120V, 50/60 Hz, Single-Phase	0.4	0.5	60	91	AK-R2-091P500
	0.75	1	60	91	AK-R2-091P500
	1.1	1.5	48	91	AK-R2-091P500
200...240V, 50/60 Hz, Single-Phase	0.4	0.5	60	91	AK-R2-091P500
	0.75	1	60	91	AK-R2-091P500
	1.5	2	48	91	AK-R2-091P500
	2.2	3	32	47	AK-R2-047P500
200...240V, 50/60 Hz, Three-Phase	0.4	0.5	60	91	AK-R2-091P500
	0.75	1	60	91	AK-R2-091P500
	1.5	2	60	91	AK-R2-091P500
	2.2	3	32	47	AK-R2-047P500
	3.7	5	19	47	AK-R2-047P500
	5.5	7.5	19	30	AK-R2-030P1K2
	7.5	10	15	30	AK-R2-030P1K2
	11	15	15	15	AK-R2-030P1K2 ♣
380...480V, 50/60 Hz, Three-Phase	0.4	0.5	97	360	AK-R2-360P500
	0.75	1	97	360	AK-R2-360P500
	1.5	2	97	360	AK-R2-360P500
	2.2	3	97	120	AK-R2-120P1K2
	4.0	5	77	120	AK-R2-120P1K2
	5.5	7.5	55	120	AK-R2-120P1K2
	7.5	10	55	120	AK-R2-120P1K2
	11	15	50	60	AK-R2-120P1K2 ♣
	15	20	50	60	AK-R2-120P1K2 ♣
	18.5	25	30	40	AK-R2-120P1K2 △
500...600V, 50/60 Hz, Three-Phase	0.4	0.5	120	360	AK-R2-360P500
	0.75	1	120	360	AK-R2-360P500
	1.5	2	120	360	AK-R2-360P500
	2.2	3	120	120	AK-R2-120P1K2
	3.7	5	82	120	AK-R2-120P1K2
	5.5	7.5	65	120	AK-R2-120P1K2
	7.5	10	65	120	AK-R2-120P1K2
	11	15	65	60	AK-R2-120P1K2 ♣
	15	20	65	60	AK-R2-120P1K2 ♣
	18.5	25	60	60	AK-R2-120P1K2 ♣
	22	30	38	40	AK-R2-120P1K2 △

‡ Resistors listed are rated 5% duty cycle.

§ Use of Rockwell Automation resistors is recommended. The resistors listed have been carefully selected for optimizing performance in a variety of applications. Alternative resistors may be used, however, care must be taken when making a selection. Refer to the PowerFlex Dynamic Braking Resistor Calculator, publication PFLEX-AT001.

♣ Requires two resistors wired in parallel.

△ Requires three resistors wired in parallel.

**Line Reactors - 3% Impedance**

Voltage	Drive Ratings			IP00 ★ (NEMA/UL Open Type)	IP11 ★ (NEMA/UL Type 1)
	kW	Hp	Amps	Cat. No.	Cat. No.
200...240V, 60 Hz, Three-Phase	0.4	0.5	4.0	1321-3R4-B	1321-3RA4-B
	0.75	1	8.0	1321-3R8-B	1321-3RA8-B
	1.5	2	8.0	1321-3R8-A	1321-3RA8-A
	2.2	3	12	1321-3R12-A	1321-3RA12-A
	3.7	5	17.5	1321-3R18-A	1321-3RA18-A
	5.5	7.5	24	1321-3R25-A	1321-3RA25-A
	7.5	10	33	1321-3R35-A	1321-3RA35-A
	11	15	49	1321-3R45-A	1321-3RA45-A
	15	20	65	1321-3R55-A	1321-3RA55-A
380...480V, 60 Hz, Three-Phase	0.4	0.5	2.0	1321-3R2-B	1321-3RA2-B
	0.75	1	4.0	1321-3R4-C	1321-3RA4-C
	1.5	2	4.0	1321-3R4-B	1321-3RA4-B
	2.2	3	6.0	1321-3R8-C	1321-3RA8-C
	4.0	5	10.5	1321-3R8-B	1321-3RA8-B
	5.5	7.5	12	1321-3R12-B	1321-3RA12-B
	7.5	10	17	1321-3R18-B	1321-3RA18-B
	11	15	22	1321-3R25-B	1321-3RA25-B
	15	20	30	1321-3R35-B	1321-3RA35-B
	18.5	25	38	1321-3R35-B	1321-3RA35-B
	22	30	45.5	1321-3R45-B	1321-3RA45-B
500...600V, 60 Hz, Three-Phase	0.75	1	2.0	1321-3R2-B	1321-3RA2-B
	1.5	2	4.0	1321-3R4-C	1321-3RA4-C
	2.2	3	4.0	1321-3R4-B	1321-3RA4-B
	4.0	5	8.0	1321-3R8-C	1321-3RA8-C
	5.5	7.5	12	1321-3R12-B	1321-3RA12-B
	7.5	10	12	1321-3R12-B	1321-3RA12-B
	11	15	18	1321-3R18-B	1321-3RA18-B
	15	20	25	1321-3R25-B	1321-3RA25-B
	18.5	25	35	1321-3R35-C	1321-3RA35-C
22	30	35	1321-3R35-B	1321-3RA35-B	

★ Catalog numbers listed are for 3% impedance. 5% impedance reactor types are also available. Refer to 1321 Power Conditioning Products Technical Data, publication 1321-TD001.