

1321 Power Conditioning Products

Don't Ignore the Cost of Power Line Disturbance



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Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001	Basic information needed to properly wire and ground PWM AC drives.
Safety Guidelines for the Application, Installation and Maintenance of Solid State Control, publication SGI-1.1	General guidelines for the application, installation, and maintenance of solid-state control.

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

For Allen-Bradley Drives Technical Support:

Title	Online at...
Allen-Bradley Drives Technical Support	www.ab.com/support/abdrives or call (1) 262.512.8176

Product Overview

Allen-Bradley reactors help keep equipment running longer by absorbing many of the power line disturbances which can shut down your drive. Allen-Bradley isolation transformers can provide both voltage change and isolation for your variable speed drive. These designs are harmonic compensated and IGBT protected to assure optimum performance in the presence of harmonics.



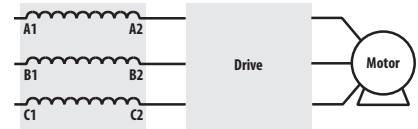
1321-3R, 1321-3RA, and 1321-3RB Series Line Reactors

Applying Allen-Bradley Line Reactors

At the Input of the Drive

At the input of a drive, line reactors help protect against surges or spikes on the incoming power lines and help reduce harmonic distortion.

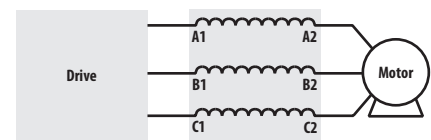
- Eliminate Nuisance Tripping
- Improve True Power Factor
- Extend Semiconductor Life
- Reduce Voltage Notching
- Reduce Harmonic Distortion
- Meet IEEE-519 or EN-61800



At the Output of the Drive

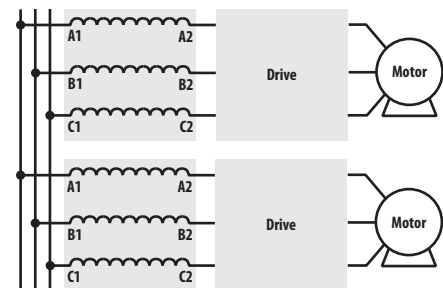
In long motor lead applications, Allen-Bradley load reactors located between the drive and motor help reduce dv/dt and motor terminal peak voltages. The use of a load reactor also helps protect the drive from surge currents caused by rapid changes in the load.

- Protect Motors from Long Lead Effects
- Reduce Surge Currents
- Reduce Output Voltage dv/dt
- Reduce Motor Temperature
- Extend Semiconductor Life
- Reduce Audible Motor Noise



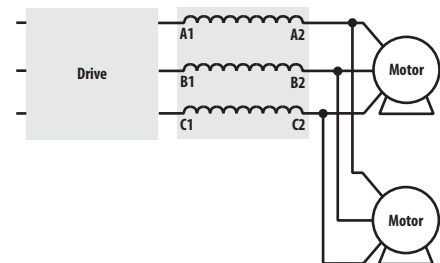
With Multiple Drives

Multiple drives on a common power line should each have their own line reactor. Individual line reactors provide filtering between each drive to help reduce any crosstalk while providing optimum surge protection for each drive.



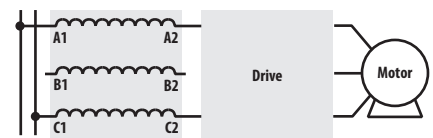
With Multiple Motors

When more than one motor is controlled by a single drive, a single line reactor can typically be used between the drive and all the motors. Size the line reactor based on the total motor/load horsepower.



With Single-Phase Input

A three-phase reactor can be used for single-phase applications by routing each of the two input power conductors to the outside two coils, and leaving the center coil disconnected. The sum of the inductance of the two coils is the total inductance applied to the circuit. Contact Rockwell Automation Technical Support for assistance in specifying the proper reactor.



Selecting the Correct Impedance Rating

Why is the Right Impedance Rating Important?

Selecting the correct impedance rating is critical for your job. An impedance value too low may not limit peak current. Too high of an impedance may reduce input voltage. Allen-Bradley line reactors offer two impedance ratings.

3% Impedance Rated Reactors to Reduce Nuisance Trips

Allen-Bradley line reactors rated at 3% are typically sufficient to absorb line spikes and motor current surges and will help prevent nuisance tripping of drive and circuit breakers in most applications.

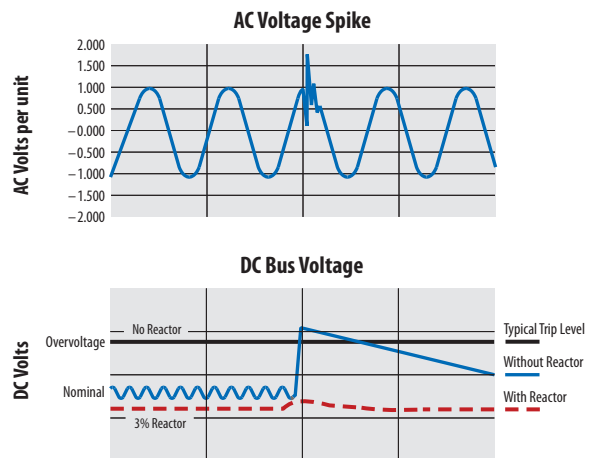
5% Impedance Rated Reactors to Reduce Harmonic Content

Allen-Bradley reactors rated at 5% are best for reducing harmonic current and frequencies. These line reactors help comply with IEEE-519 (not normally used as load reactors).

Voltage Spike Protection

Voltage spikes on AC power lines can cause elevation of the DC bus voltage which may cause the drive to trip on an overvoltage condition.

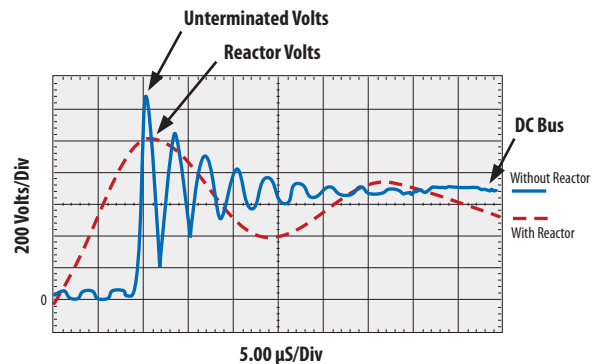
3% impedance reactors are very effective at protecting drives against voltage spikes and nuisance tripping. Allen-Bradley line reactors absorb these line spikes protecting the drive from nuisance tripping and damage.



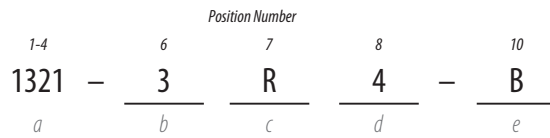
Motor Protection

Allen-Bradley load reactors can help protect motors from high peak voltages.

For IGBT drive applications with long drive-to-motor lead lengths, Allen-Bradley load reactors can help protect against fast dv/dt rise times.



Catalog Number Explanation



a

Product	
Code	Type
1321	1321 Power Component

b

Phases	
Code	Description
3	Three-Phase

c

Device	
Code	Description
R	Reactor, Open
RA, RB	Reactor, NEMA 1
RAB	Reactor, NEMA 1, Cabinet Style 2 Only

d

Fundamental Amps	
Code	Amps
1	1
2	2
4	4
8	8
12	12
18	18
25	25
35	35
45	45
55	55
80	80
100	100
130	130
160	160
200	200
250	250
320	320
400	400
500	500
600	600
750	750
850	850
1000	1000

e

Inductance Rating	
Code	Description
A	Each reactor current rating has four inductance ratings also available. See the IP00 dimension table.
B	
C	
D	

Common Specifications

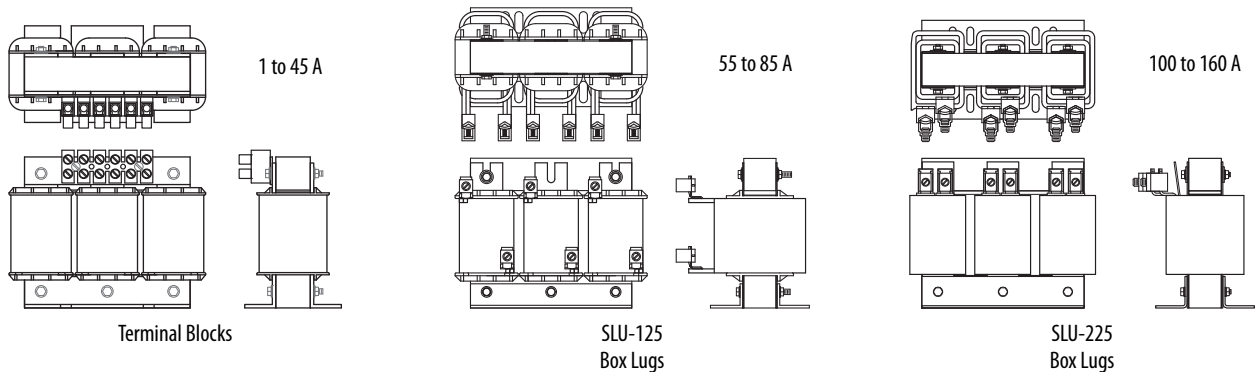
Specification		Rating
Material	Enclosures	IP11 (NEMA/UL Type 1) – Sheet steel in accordance with UL, NEMA requirements
		IP00 (Open) or IP20 (Open – with finger safe terminals)
	Terminations	1...45 Amp (fundamental) Ratings – Finger guard IP20 terminal block
		80...160 Amp (fundamental) Ratings – Solid copper box lugs
200...400 Amp (fundamental) Ratings – Copper tab terminals ⁽¹⁾		
	401 Amps and above – Copper tab terminals ⁽¹⁾	
Harmonic Compensation	All line reactors are compensated for the additional currents and high frequencies caused by the presence of harmonics	
General Protection	Impedance	3% or 5% based on the fundamental current ratings
	Overload Rating	200% of fundamental current for 30 minutes 300% of fundamental current for 1 minute
	dv/dt Protection	Meets NEMA MG-1, part 31
Electrical	Max. Rated Voltage	600V AC (units with terminal blocks) 690V AC (units with box lugs or tab terminals)
	Max. Switching Freq.	20 kHz
	Fundamental Frequency	Line/Load - 50/60 Hz
	Temperature Rise	135 °C average
	Dielectric Strength	3000 Volts rms (4243 volts peak)
	Inductance Curve (Typical)	100% at 100% current 100% at 150% current 50% at 350% current (minimum)
	Inductance Tolerance	±10%
	Insulation System	Class N (200 °C)
	Impregnation	High bond strength solventless epoxy, 200 °C, UL94HB recognized
Environmental	Ambient Temperature	45 °C (maximum)
	Altitude	1000 meters (3280 feet)
Agency Approvals	UL-508	File E180243 Component Listed (1...2400 amps) File E180243 UL Listed NEMA Type 1 units (1...2400 amps) Note: Short Circuit rating not required under Exception No.1 of UL508A SB4.2.1 effective 4/25/06
	CSA C22.2, Class N, 200 °C	File LR29753-13 CSA Certified (1...2400 amps) File E66214, Type 200-18, UL Recognized Insulation System
	CE	TUV certified to EN61558-2-20:2000

(1) For applications with reactors rated 200 Amps or more, cable-style connections are recommended.

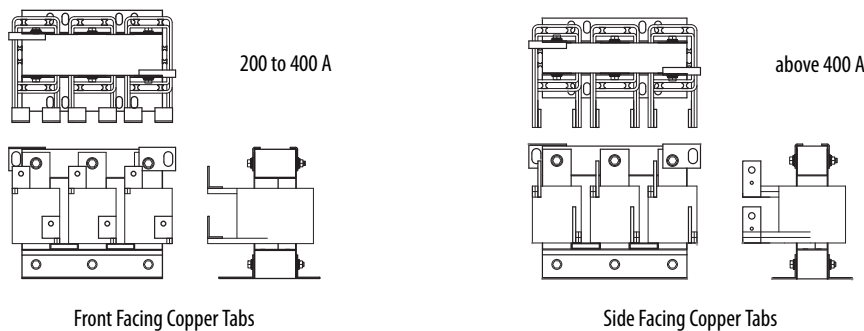
Termination

Allen-Bradley reactors rated 45 Amps (fundamental) and below are supplied with an integral-mounted terminal block. Reactors rated from 55 to 160 Amps (fundamental) are supplied with box lugs. Reactors rated 200 to 400 Amps (fundamental) are supplied with front facing copper tabs for cable connections. Above 400 Amps (fundamental), side facing copper tabs are used for cable connections. The '3R' and '3RA' designations for the 1321 line reactors indicate the following: 3R = Open Enclosure Line Reactor and 3RA = NEMA 1 Enclosure Line Reactor.

Typical Termination Types and Specifications



Reactor Catalog Number		Termination	Max/Min Wire Size	Max Torque
IP00 (Open) or IP20	IP11 (NEMA/UL Type 1)	Type	mm ² (AWG)	N·m (lb·in)
1321-3R1-A to 1321-3R8-D	1321-3RA1-A to 1321-3RA8-D	20 A Terminal Block	2.1/0.3 (14/22)	0.51 (4.5)
1321-3R12-A to 1321-3R35-B	1321-3RA12-A to 1321-3RA35-B	65 A Terminal Block	16.0/0.3 (5/22)	1.81 (16)
1321-3R35-C to 1321-3R45-C	1321-3RA35-C to 1321-3RA45-C	85 A Terminal Block	21.2/0.8 (4/18)	2.26 (20)
1321-3R55-A to 1321-3R80-C	1321-3RA55-A to 1321-3RA80-C	SLU-125 Box Lug	50.0/10.0 (0/6)	5.09 (45)
1321-3R100-A to 1321-3R160-C	1321-3RA100-A to 1321-3RA160-C	SLU-225 Box Lug	120.0-27.0 (0000/2)	16.95 (150)

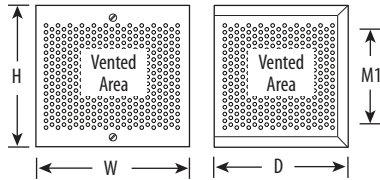


Reactor Catalog Number		Termination	Contact Surface (H x W)	Hole Diameter	Thickness
IP00 (Open) or IP20	IP11 (NEMA/UL Type 1)	Type	mm (in.)	mm (in.)	mm (in.)
1321-3R200-A to 1321-3R200-C	1321-3RA200-A to 1321-3RA200-C	Front Facing Copper Tab	41.3 x 25.4 (1.63 x 1.0)	10.36 (0.408)	3.18 (0.125)
1321-3RB250-B to 1321-3RB250-C	1321-3RAB250-A to 1321-3RAB250-C		57.2 x 19.1 (2.25 x 0.75)	10.31 (0.406)	4.75 (0.187)
1321-3RB320-B to 1321-3R400-C	1321-3RAB320-A to 1321-3RA400-A		44.5 x 38.1 (1.75 x 1.5)	10.31 (0.406)	3.18 (0.125)
1321-3R500-A to 1321-3R500-C	1321-3RA500-A to 1321-3RA500-C	Side Facing Copper Tab	44.5 x 38.1 (1.75 x 1.5)	10.31 (0.406)	3.18 (0.125)
1321-3R600-A to 1321-3R600-C	1321-3RA600-A to 1321-3RA-600-C		76.2 x 38.1 (3.00 x 1.5)	13.49 and 6.35 (0.531 and 0.25)	6.35 (0.25)
1321-3R750-A to 1321-3R750-C	1321-3RA750-A to 1321-3RA850-C		44.5 x 38.1 (1.75 x 1.5)	10.31 (0.406)	3.18 (0.125)
1321-3R850-B to 1321-3R1000-C	1321-3RA850-B to 1321-3RA1000-C		44.5 x 38.1 (1.75 x 1.5)	10.31 (0.406)	3.18 (0.125)

Mounting Dimensions and Weights

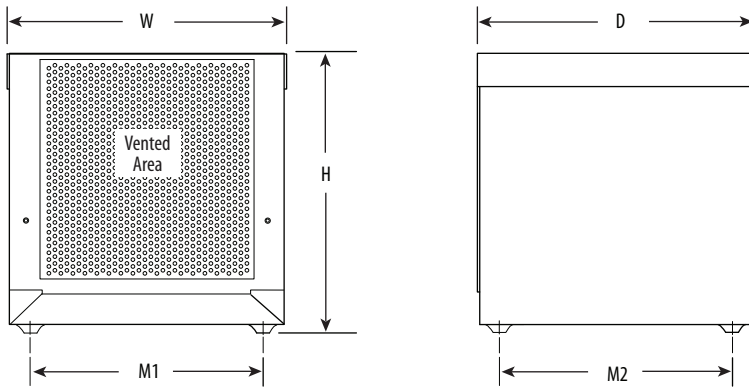
IMPORTANT The dimensions and weights provided on the following pages are for estimating purposes only. Conduit entry locations for floor mounted enclosures are the responsibility of the installer. Contact your Allen-Bradley Sales Office if certified drawings are required for planning and installation.

IP11 (NEMA/UL Type 1)



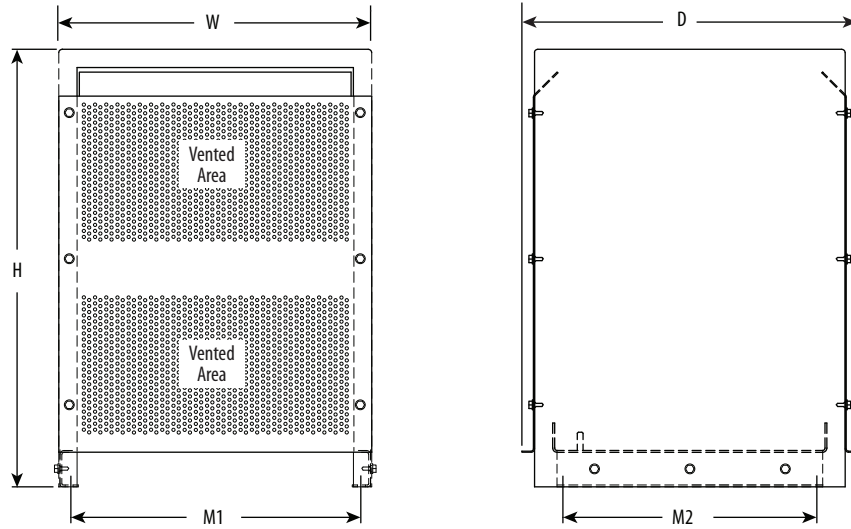
Cabinet 1 – Wall Mounted

Catalog Number 1321- ...	Unit	Dimensions in mm (in.) and Weights in kg (lb)				
		H	W	D	M1	Weight (Cabinet Only)
3RA1-A to 3RA18-B	Cabinet 1	203 (8.0)	203 (8.0)	152 (6.0)	140 (5.5)	3.2 (7)



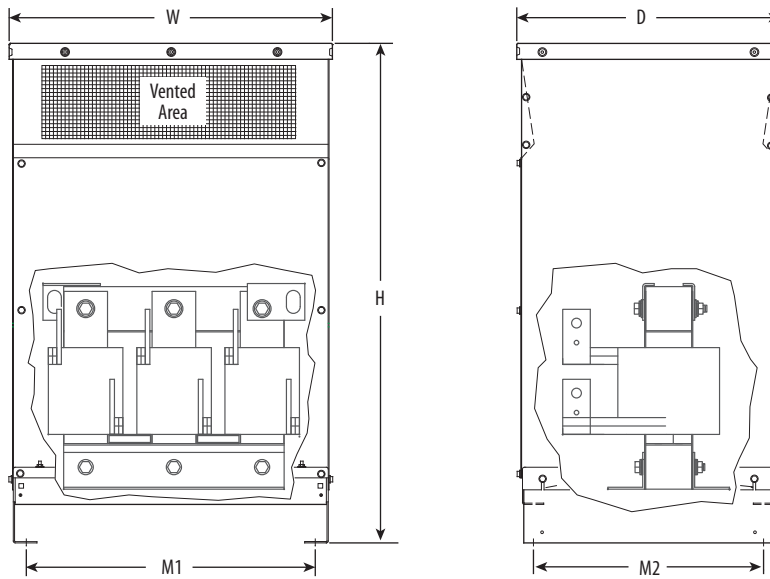
Cabinet 2 – Floor Mounted

Catalog Number 1321- ...	Unit	Dimensions in mm (in.) and Weights in kg (lb)					
		H	W	D	Feet M1	Feet M2	Weight (Cabinet Only)
3RA18-C to 3RAB250-A	Cabinet 2	330 (13.0)	336 (13.2)	332 (13.1)	279 (11.0)	279 (11.0)	8.2 (18)



Cabinet 3 – Floor Mounted

Catalog Number 1321- ...	Unit	Dimensions in mm (in.) and Weights in kg (lb)					
		H	W	D	Feet M1	Feet M2	Weight (Cabinet Only)
3RA250-B to 3RA500-A	Cabinet 3	610 (24.0)	429 (16.9)	467 (18.4)	406 (16.0)	343 (13.5)	12.2 (27)

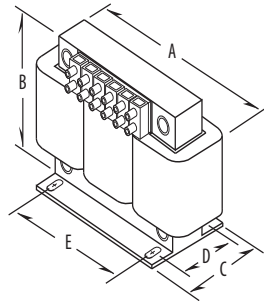


Cabinet 4 and Cabinet 5 – Floor Mounted

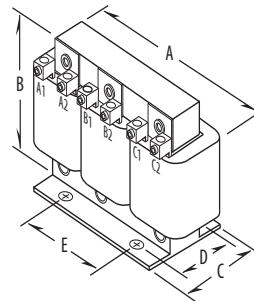
Catalog Number 1321- ...	Unit	Dimensions in mm (in.) and Weights in kg (lb)					
		H	W	D	Feet M1	Feet M2	Weight ⁽¹⁾ (Cabinet Only)
3RA500-B to 3RA600-C	Cabinet 4	1194 (47.0)	674 (26.6)	633 (24.9)	592 (23.3)	552 (21.8)	72.1 (159)
3RA750-A to 3RA850-B 3RA850-C to 3RA1000-C	Cabinet 5	1194 (47.0)	776 (30.6)	633 (24.9)	694 (27.3)	552 (21.8)	72.1 (159)

(1) For total weight - add enclosure weight to specific reactor weight.

IP00/Open



IP00 /Open, 45 Amps (fundamental) and Below



IP00/Open, 80 Amps (fundamental) and Above

Sizing Guidelines

Fundamental amps are used for sizing the reactor to be equal to or slightly higher than the total motor FLA. Sizing reactors to drive ampere ratings alone may result in mis-sizing the reactor.

Catalog Number	Fundamental Amps	Inductance - mH (Based on Fundamental Amps)	Watts Loss	Dimensions in mm (in.) and Weight in kg (lb)					
				A	B	C	D ⁽¹⁾	E	Weight
1321-3R1-A	1	100.0	14	112 (4.40)	104 (4.10)	79 (3.10)	60 (2.35)	37 (1.44)	1.8 (4)
1321-3R1-B		50.0	14.8	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R1-C		36.0	12	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.4 (3)
1321-3R1-D		18.0	5	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.4 (3)
1321-3R2-A	2	12.0	7.5	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R2-B		20.0	11.3	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R2-C		32.0	16	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R2-D		6.0	10.7	112 (4.40)	104 (4.10)	64 (2.50)	44 (1.73)	37 (1.44)	1.4 (3)
1321-3R4-A	4	3.0	14.5	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R4-B		6.5	20	112 (4.40)	104 (4.10)	71 (2.80)	50 (1.98)	37 (1.44)	1.8 (4)
1321-3R4-C		9.0	20	112 (4.40)	104 (4.10)	86 (3.40)	60 (2.35)	37 (1.44)	2.3 (5)
1321-3R4-D		12.0	21	112 (4.40)	104 (4.10)	86 (3.40)	66 (2.60)	37 (1.44)	2.7 (6)
1321-3R8-A	8	1.5	19.5	152 (6.00)	121 (4.75)	76 (3.00)	53 (2.10)	51 (2.00)	3.2 (7)
1321-3R8-B		3.0	29	152 (6.00)	121 (4.75)	76 (3.00)	53 (2.10)	51 (2.00)	3.6 (8)
1321-3R8-C		5.0	25.3	152 (6.00)	121 (4.75)	86 (3.40)	67 (2.62)	51 (2.00)	5.0 (11)
1321-3R8-D		7.5	28	152 (6.00)	121 (4.75)	86 (3.40)	63 (2.48)	51 (2.00)	5.9 (13)
1321-3R12-A	12	1.25	26	152 (6.00)	127 (5.00)	84 (3.30)	53 (2.10)	51 (2.00)	4.1 (9)
1321-3R12-B		2.5	31	152 (6.00)	127 (5.00)	84 (3.30)	53 (2.10)	51 (2.00)	4.5 (10)
1321-3R12-C		4.2	41	152 (6.00)	127 (5.00)	99 (3.90)	70 (2.75)	51 (2.00)	8.2 (18)
1321-3R18-A	18	0.8	36	152 (6.00)	135 (5.30)	81 (3.20)	53 (2.10)	51 (2.00)	4.1 (9)
1321-3R18-B		1.5	43	152 (6.00)	135 (5.30)	89 (3.50)	63 (2.48)	51 (2.00)	5.5 (12)
1321-3R18-C		2.5	43	206 (8.10)	155 (6.10)	102 (4.00)	66 (2.60)	76 (3.00)	7.3 (16)
1321-3R25-A	25	0.5	48	183 (7.20)	147 (5.80)	89 (3.50)	60 (2.35)	76 (3.00)	5.0 (11)
1321-3R25-B		1.2	52	183 (7.20)	147 (5.80)	89 (3.50)	60 (2.35)	76 (3.00)	6.4 (14)
1321-3R25-C		1.8	61	183 (7.20)	147 (5.80)	109 (4.30)	79 (3.10)	76 (3.00)	9.1 (20)
1321-3R35-A	35	0.4	49	183 (7.20)	147 (5.80)	102 (4.00)	66 (2.60)	76 (3.00)	6.4 (14)
1321-3R35-B		0.8	54	183 (7.20)	147 (5.80)	102 (4.00)	70 (2.75)	76 (3.00)	7.3 (16)
1321-3R35-C		1.2	54	229 (9.00)	188 (7.40)	119 (4.70)	80 (3.16)	76 (3.00)	14.0 (30)

Table continued on next page.

Catalog Number	Fundamental Amps	Inductance - mH (Based on Fundamental Amps)	Watts Loss	Dimensions in mm (in.) and Weight in kg (lb)					
				A	B	C	D ⁽¹⁾	E	Weight
1321-3R45-A	45	0.3	54	229 (9.00)	188 (7.40)	119 (4.70)	80 (3.16)	76 (3.00)	10.0 (22)
1321-3R45-B		0.7	62	229 (9.00)	188 (7.40)	119 (4.70)	80 (3.16)	76 (3.00)	13.0 (28)
1321-3R45-C		1.2	65	229 (9.00)	185 (7.30)	135 (5.30)	93 (3.66)	76 (3.00)	18.0 (39)
1321-3R55-A	55	0.25	64	229 (9.00)	185 (7.30)	135 (5.30)	80 (3.16)	76 (3.00)	11.0 (24)
1321-3R55-B		0.5	67	229 (9.00)	178 (7.00)	135 (5.30)	80 (3.16)	76 (3.00)	12.0 (26)
1321-3R55-C		0.85	71	229 (9.00)	178 (7.00)	152 (6.00)	99 (3.91)	76 (3.00)	16.0 (35)
1321-3R80-A	80	0.2	82	229 (9.00)	183 (7.20)	160 (6.30)	88 (3.47)	92 (3.63)	11.3 (25)
1321-3R80-B		0.4	86	229 (9.00)	183 (7.20)	165 (6.50)	88 (3.47)	92 (3.63)	14.9 (33)
1321-3R80-C		0.7	96	274 (10.80)	216 (8.50)	173 (6.80)	106 (4.16)	92 (3.63)	28.0 (61)
1321-3R100-A	100	0.15	94	229 (9.00)	185 (7.30)	165 (6.50)	84 (3.30)	92 (3.63)	13.1 (29)
1321-3R100-B		0.3	84	229 (9.00)	185 (7.30)	173 (6.80)	93 (3.66)	92 (3.63)	16.8 (37)
1321-3R100-C		0.45	108	274 (10.80)	210 (8.30)	156 (6.20)	106 (4.16)	92 (3.63)	34.0 (74)
1321-3R130-A	130	0.1	108	229 (9.00)	178 (7.00)	118 (4.70)	80 (3.16)	76 (3.00)	13.1 (29)
1321-3R130-B		0.2	180	229 (9.00)	183 (7.20)	173 (6.80)	93 (3.66)	92 (3.63)	19.5 (43)
1321-3R130-C		0.3	128	279 (11.00)	216 (8.50)	156 (6.20)	106 (4.16)	92 (3.63)	29.0 (64)
1321-3R160-A	160	0.075	116	229 (9.00)	183 (7.20)	173 (6.80)	80 (3.16)	92 (3.63)	18.6 (41)
1321-3R160-B		0.15	149	274 (10.80)	211 (8.30)	152 (6.00)	88 (3.47)	92 (3.63)	23.0 (50)
1321-3R160-C		0.23	138	292 (11.50)	216 (8.50)	229 (9.00)	119 (4.69)	92 (3.63)	30.0 (67)
1321-3R200-A	200	0.055	124	229 (9.00)	191 (7.50)	185 (7.30)	106 (4.16)	76 (3.00)	17.2 (38)
1321-3R200-B ⁽¹⁾		0.110	168	229 (9.00)	191 (7.50)	211 (8.30)	112 (4.41)	76 (3.00)	24.5 (54)
1321-3R200-C ⁽¹⁾		0.185	146	274 (10.80)	211 (8.30)	254 (10.00)	150 (5.91)	92 (3.63)	45.4 (100)
1321-3RB250-B ⁽¹⁾	250	0.090	231	274 (10.80)	216 (8.50)	229 (9.00)	131 (5.16)	117 (4.60)	36.3 (80)
1321-3RB250-C ⁽¹⁾		0.150	219	366 (14.40)	284 (11.20)	262 (10.30)	148 (5.82)	117 (4.60)	57.0 (125)
1321-3RB320-A ⁽¹⁾	320	0.040	224	274 (10.80)	229 (9.00)	211 (8.30)	131 (5.16)	117 (4.60)	36.3 (80)
1321-3RB320-B ⁽¹⁾		0.075	264	274 (10.80)	229 (9.00)	254 (10.00)	149 (5.88)	117 (4.60)	46.3 (102)
1321-3RB320-C ⁽¹⁾		0.125	351	366 (14.40)	286 (11.30)	267 (10.50)	181 (7.13)	117 (4.60)	72.6 (160)
1321-3RB400-A ⁽¹⁾	400	0.030	231	274 (10.80)	254 (10.00)	254 (10.00)	131 (5.16)	117 (4.60)	38.1 (84)
1321-3RB400-B ⁽¹⁾		0.060	333	381 (15.00)	286 (11.30)	292 (11.50)	172 (6.76)	117 (4.60)	53.5 (118)
1321-3RB400-C ⁽¹⁾		0.105	293	366 (14.40)	286 (11.30)	318 (12.50)	184 (7.26)	117 (4.60)	67.6 (149)
1321-3R500-A ⁽¹⁾	500	0.025	266	274 (10.80)	229 (9.00)	267 (10.50)	140 (5.50)	117 (4.60)	42.2 (93)
1321-3R500-B ⁽¹⁾		0.050	340	366 (14.40)	292 (11.50)	292 (11.50)	172 (6.76)	117 (4.60)	53.5 (118)
1321-3R500-C ⁽¹⁾		0.085	422	366 (14.40)	292 (11.50)	338 (13.30)	248 (9.76)	117 (4.60)	95.3 (210)
1321-3R600-A ⁽¹⁾	600	0.020	307	366 (14.40)	292 (11.50)	254 (10.00)	134 (5.26)	117 (4.60)	54.4 (120)
1321-3R600-B ⁽¹⁾		0.040	414	366 (14.40)	286 (11.30)	305 (12.00)	203 (8.00)	117 (4.60)	79.4 (175)
1321-3R600-C ⁽¹⁾		0.065	406	366 (14.40)	286 (11.30)	381 (15.00)	235 (9.26)	117 (4.60)	122.5 (270)
1321-3R750-A ⁽¹⁾	750	0.015	427	366 (14.40)	292 (11.50)	279 (11.00)	168 (6.63)	183 (7.20)	63.5 (140)
1321-3R750-B ⁽¹⁾		0.029	630	366 (14.40)	292 (11.50)	318 (12.50)	204 (8.01)	183 (7.20)	86.2 (190)
1321-3R750-C ⁽¹⁾		0.048	552	366 (14.40)	368 (14.50)	356 (14.00)	235 (9.26)	183 (7.20)	120.2 (265)
1321-3R750-E ⁽¹⁾		0.060	810	366 (14.40)	368 (14.50)	381 (15.00)	276 (10.88)	183 (7.20)	147.4 (325)
1321-3R850-A ⁽¹⁾	850	0.015	799	451 (17.80)	394 (15.50)	368 (14.50)	191 (7.50)	183 (7.20)	88.0 (195)
1321-3R850-B ⁽¹⁾		0.027	756	451 (17.80)	394 (15.50)	394 (15.50)	208 (8.20)	183 (7.20)	98.0 (215)
1321-3R850-C ⁽¹⁾		0.042	758	451 (17.80)	400 (15.80)	445 (17.50)	208 (8.20)	183 (7.20)	143.0 (315)
1321-3R1000-B ⁽¹⁾	1000	0.022	964	514 (20.25)	425 (16.80)	330 (13.00)	216 (8.50)	183 (7.20)	185.0 (408)
1321-3R1000-C ⁽¹⁾		0.038	960	514 (20.25)	425 (16.80)	381 (15.00)	273 (10.76)	183 (7.20)	267.2 (589)

(1) Removable lifting rings are supplied with the unit.

1321 Reflective Wave Reduction (RWR) Devices

Description of Reflected Wave Phenomenon

The inverter section of a drive does not produce sinusoidal voltage, but rather a series of voltage pulses created from the DC bus. These pulses travel down the motor cables to the motor and then reflected back to the drive. The reflection is dependant on the rise time of the drive output voltage, cable characteristics, cable length and motor impedance. If the voltage reflection is combined with another subsequent pulse, peak voltages can be at a destructive level. A single IGBT drive output may have reflected wave transient voltage stresses of up to twice (2 pu or per unit) the DC bus voltage between its own output wires. Multiple drive output wires in a single conduit or wire tray further increase output wire voltage stress between multi-drive output wires that are touching. Drive #1 may have a (+) 2 pu stress while drive #2 may simultaneously have a (-) 2 pu stress.

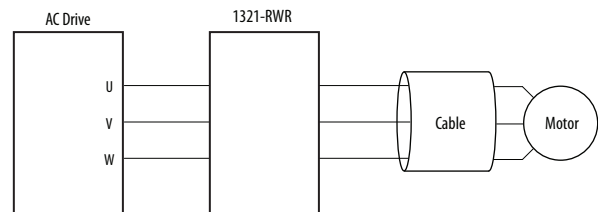
For more details, see the Wiring and Grounding Guidelines for PWM Drives, publication DRIVES-IN001.

Applying RWR Devices

At the Output of the Drive

In long motor lead applications, an Allen-Bradley 1321 RWR located between the drive and motor helps to reduce dv/dt and motor terminal peak voltages. The use of an RWR device also helps protect the drive from surge currents caused by rapid changes in the load.

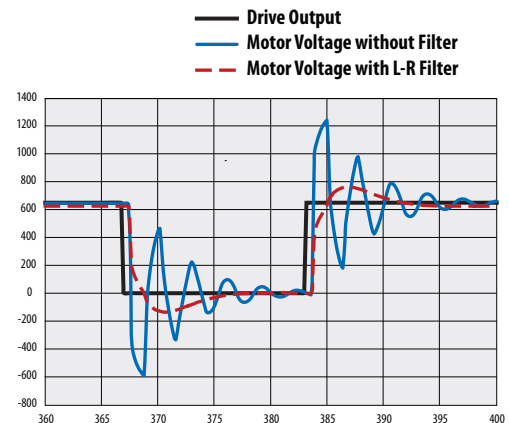
- Protect Motors from Long Lead Effects
- Reduce Output Voltage dv/dt
- Extend Semiconductor Life
- Reduce Surge Currents
- Reduce Motor Temperature
- Reduce Audible Motor Noise



Motor Protection

Allen-Bradley Reflective Wave Reduction devices can help protect motors from high peak voltages.

For IGBT drive applications with long drive-to-motor lead lengths, Allen-Bradley RWR devices can help protect against fast dv/dt rise times.



Catalog Number Explanation

IMPORTANT 1321-RWR products replace existing 1204-RWR products. However, 1204-RWRC modules (RWR and Common Mode Choke assembly) are still available.

1-8	Position	9	11	12
1321 – RWR	8	–	D	P
<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	

<i>a</i>		<i>b2</i>		<i>c</i>		<i>d</i>	
Product		Rating		Voltage Rating		Enclosure	
Code	Type	600V AC		Code	Voltage	Code	Description
1321-RWR	Reflective Wave Reduction Device	Fundamental Amps		D	400/480V AC	P	Panel Mount
<i>b1</i>		8	8	E	600V AC	A	NEMA/UL Type 1 *
Rating		12	12				
400-480V AC		18	18				
Code	Fundamental Amps	25	25				
8	8	35	35				
12	12	45	45				
18	18	55	55				
25	25	80	80				
35	35	100	100				
45	45	130	130				
55	55	160	160				
80	80	200	200				
100	100	250	250				
130	130	320	320				
160	160						
200	200						
250	250						
320	320						

* Not available

Specifications

Specification	Rating	
Material	Enclosures	IP00 (Open)
	Terminations	1...45 Amp (fundamental) Ratings – Finger guard IP20 terminal block
		80...160 Amp (fundamental) Ratings – Solid copper box lugs
		200...400 Amp (fundamental) Ratings – Copper tab terminals ⁽¹⁾
	401 Amps and above – Copper tab terminals ⁽¹⁾	
Harmonic Compensation	All line reactors are compensated for the additional currents and high frequencies caused by the presence of harmonics	
General Protection	Impedance	3%
	Overload Rating	300% of fundamental current for (1) minute
IGBT Protection	First turn triple insulated offering protection up to 16 kV	16,000 Volts per microsecond dv/dt protection 20 kHz maximum switching frequency
Electrical	Max. Rated Voltage	600V AC, 50/60 Hz frequency
	Max. Switching Freq.	4 kHz
	Temperature Rise	115 °C
	Dielectric Strength	4000 Volts rms (5600 volts peak)
	Inductance Curve	100% at 100% current, 100% at 150% current, 50% at 350% current
	Insulation System	Class H (180 °C or better)
	Impregnation	High bond strength epoxy impregnation, 4000V high dielectric strength
Environmental	Ambient Temperature	45 °C
	U.L. Listed	UL-508 - IP00, IP20, and IP11
	International	Conforms to VDE 0550
	CE	Not certified

(1) For applications with Reflective Wave Reduction devices rated 200 Amps or more, cable-style connections are recommended.

Termination

Allen-Bradley 1321 RWR devices rated 45 Amps (fundamental) and below are supplied with an integral mounted terminal block. Devices rated from 55 to 160 Amps (fundamental) are supplied with box lugs. Devices rated 200 to 400 Amps (fundamental) can be supplied with box lugs or copper tabs. Above 400 Amps (fundamental), solid copper tabs are used.

Approximate Dimensions, Weights, Wire Size and Terminal Blocks

The dimensions and weights provided on the following page is for estimating purposes only. Contact your Allen-Bradley Sales Office if certified drawings are required for planning and installation.

RWR Catalog No. x = D (400V), E (600V)	Fund. Amps	Cont. Amps	Wire Size	Watts Loss		Figure (see page 15)	Dimensions mm (in.)					Weight kg (lb)
			mm ² (AWG)	400V	600V		A	B	C	D	E	
1321-RWR8-xP	8	12	2.5...4.0 (14...12)	389	536	1	282.6 (11.13)	298.5 (11.75)	171.5 (6.75)	7.4 (0.29)	7.4 x 11.6 (0.29 x 0.46)	4.8 (10.5)
1321-RWR12-xP	12	18	2.5...4.0 (14...12)	391	406	1	282.6 (11.13)	298.5 (11.75)	174.6 (6.88)	7.4 (0.29)	7.4 x 11.6 (0.29 x 0.46)	5.7 (12.5)
1321-RWR18-xP	18	27	2.5...4.0 (14...12)	403	551	1	282.6 (11.13)	298.5 (11.75)	174.6 (6.88)	7.4 (0.29)	7.4 x 11.6 (0.29 x 0.46)	7.3 (16)
1321-RWR25-xP	25	37.5	6.0 (10)	412	562	1	282.6 (11.13)	298.5 (11.75)	193.7 (7.63)	7.4 (0.29)	7.4 x 11.6 (0.29 x 0.46)	7.7 (17)
1321-RWR35-xP	35	52.5	10.0...16.0 (8...6)	414	429	1	282.6 (11.13)	298.5 (11.75)	193.7 (7.63)	7.4 (0.29)	7.4 x 11.6 (0.29 x 0.46)	8.8 (19.5)
1321-RWR45-xP	45	67.5	16.0 (6)	422	572	2	319.1 (12.56)	392.1 (15.44)	158.8 (6.25)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	17.5 (38.5)
1321-RWR55-xP	55	82.5	25.0 (4)	427	577	2	320.7 (12.63)	392.1 (15.44)	158.8 (6.25)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	18.4 (40.5)
1321-RWR80-xP	80	120	35.0...50.0 (2...1/0)	446	341	2	322.3 (12.69)	395.3 (15.56)	177.8 (7.00)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	20.4 (45)
1321-RWR100-xP	100	150	50.0...70.0 (1/0...2/0)	444	339	2	320.7 (12.63)	393.7 (15.50)	187.3 (7.38)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	22.5 (49.5)
1321-RWR130-xP	130	195	70.0...120.0 (2/0...4/0)	630	495	2	317.5 (12.50)	390.5 (15.38)	187.3 (7.38)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	24.5 (54)
1321-RWR160-xP	160	240	120.0 (4/0)	599	464	3	355.6 (14.00)	438.2 (17.25)	250.8 (9.88)	10.5 (0.41)	10.3 x 25.8 (0.41 x 1.02)	30.8 (68)
1321-RWR200-xP	200	300	120.0...185.0 (4/0...350 MCM)	618	612	2	317.5 (12.50)	393.7 (15.50)	214.3 (8.44)	10.5 (0.41)	10.3 x 17.9 (0.41 x 0.70)	29.9 (66)
1321-RWR250-xP	250	375	185.0 (350 MCM)	681	546	3	358.8 (14.13)	439.8 (17.31)	225.4 (8.88)	10.5 (0.41)	10.3 x 25.8 (0.41 x 1.02)	41.7 (92)
1321-RWR320-DP	320	480	240.0 (500 MCM)	489	NA	3	358.8 (14.13)	438.2 (17.25)	250.8 (9.88)	10.5 (0.41)	10.3 x 25.8 (0.41 x 1.02)	52.2 (115)

1321-RWR Assembly Components

400/480V			
Reactor	Resistor		Wire Size (AWG)
	Ohms	Watts	
1321-3R8-B	50	250	14...12
1321-3R12-B	50	250	14...12
1321-3R18-B	50	250	14...12
1321-3R25-B	50	250	10
1321-3R35-B	50	250	8...6
1321-3R45-B	50	250	6
1321-3R55-B	50	250	4
1321-3R80-B	50	250	2...1/0
1321-3R100-B	50	250	1/0...2/0
1321-3R130-B	50	300	2/0...4/0
1321-3R160-B	50	300	4/0
1321-3R200-B	50	300	4/0...350 MCM
1321-3RB250-B	50	300	350 MCM
1321-3R320-B	50	300	500 MCM

600V			
Reactor	Resistor		Wire Size (AWG)
	Ohms	Watts	
1321-3R8-B	50	375	14...12
1321-3R12-B	50	375	14...12
1321-3R18-B	50	375	14...12
1321-3R25-B	50	375	10
1321-3R35-B	50	375	8...6
1321-3R45-B	50	375	6
1321-3R55-B	50	375	4
1321-3R80-B	50	375	2...1/0
1321-3R100-B	50	375	1/0...2/0
1321-3R130-B	50	420	2/0...4/0
1321-3R160-B	50	420	4/0
1321-3R200-B	50	420	4/0...350 MCM
1321-3RB250-B	50	420	350 MCM

Dimension Reference

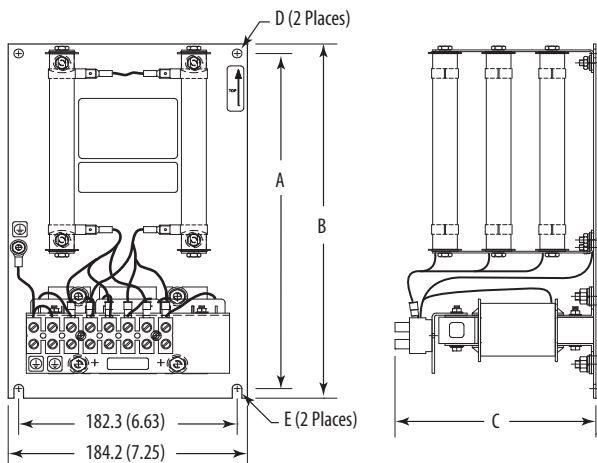


Figure 1

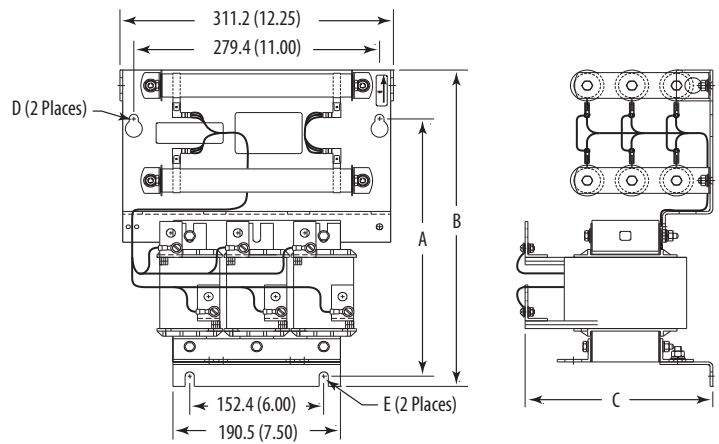


Figure 2

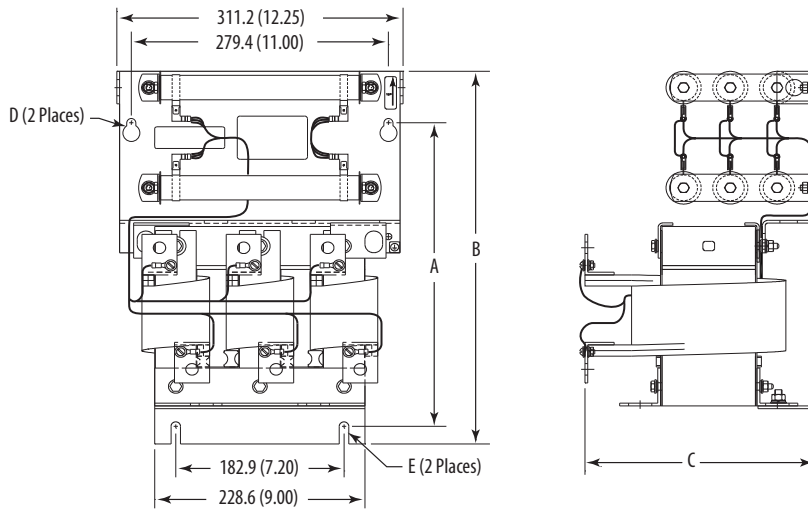
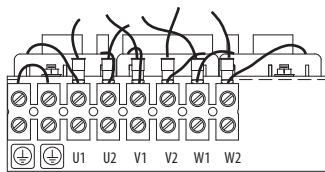
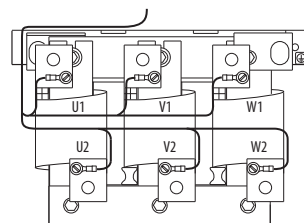


Figure 3

Terminal Block Details



Details for Figure 1

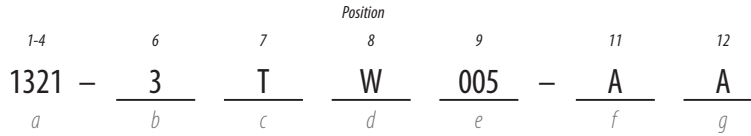


Details for Figure 2 and Figure 3

1321-3TH/3TW Series Three-Phase Isolation Transformers

Allen-Bradley 1321 Isolation Transformers are designed to meet the standard horsepower, voltage ratings and harmonics of the Allen-Bradley variable speed drives.

Catalog Number Explanation



a

Product	
Code	Type
1321	Power Component

b

Phases	
Code	Description
3	Three-Phase

c

Device	
Code	Description
T	Transformer

d

Mounting	
Code	Description
W	Wall
H	Floor

e

Rating	
Code	kVA
005	5
007	7.5
011	11
014	14
020	20
027	27
034	34
040	40
051	51
063	63
075	75
093	93
118	118
145	145
175	175
220	220
275	275
330	330
440	440
550	550
660	660
770	770
880	880

f

Primary Voltage	
Code	Voltage
A	230V AC
B	460V AC
C	575V AC
X	208V AC

g

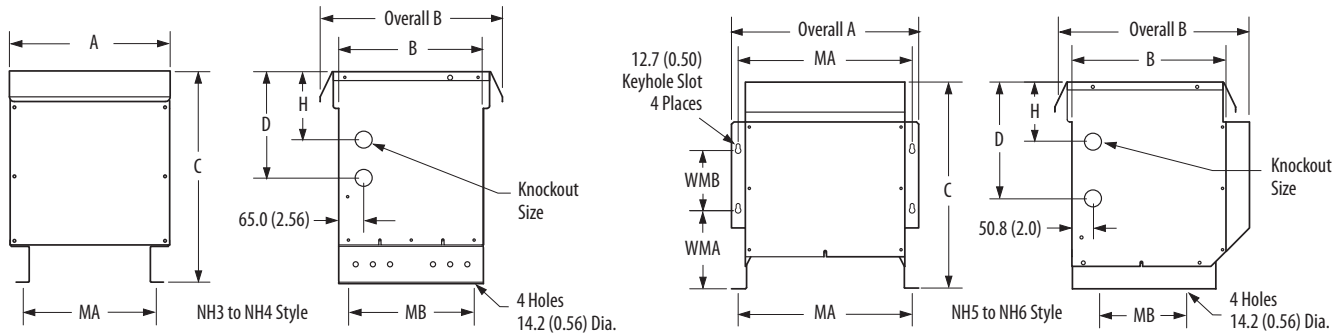
Secondary Voltage	
Code	Voltage
A	230V AC
B	460V AC
C	575V AC
X	208V AC

Specifications

Specification		Rating
Electrical	General	Delta primary, wye secondary, 60 Hz, aluminum wound, neutral terminal available for customer use
	Standard Voltage Taps	5.0 . . . 175 kVA, 1 . . . 5.0% FCAN & FCBN
		220 . . . 880 kVA, 1 . . . 2.5% FCAN & FCBN
	Insulation System	Class 220
		150 °C rise over 40 °C ambient
Peak 40 °C ambient with 30 °C 24-hour average		
Efficiency	98% (2% losses)	
Environmental	Elevation	Up to 1000 meters. Above 1000 meters, consult factory for derating
	U.L. Listed	File E112313
Construction	Enclosure	NEMA/UL Type 3R (IP32)
		Heavy duty ventilated enclosure with metal screens protecting all vents and finished in ANSI 61 grey
	Termination	Transformers up to 75kVA have integral high and low voltage lugs installed, suitable for copper or aluminum cable installation
	Conduit Entry	Standard knockouts on all enclosures
	Mounting	5 . . . 51 kVA units suitable for either floor or wall mounting. 63 . . . 75 kVA units suitable for floor, wall or ceiling mounting with mounting kit 1321-3TWM2 (Style NH3). Larger units are floor mount only
General	Impedance	4 . . . 6% impedance (nominal)
	Short Circuit Capability	Meets UL short circuit withstand capability
	Overload Rating	Windings designed to withstand overcurrent of 150% of rated load for 60 Seconds or 200% of rated load for 30 Seconds
	Duty Cycle	(1) start every (2) hours
	Thermostats	Thermostats with 1 N.C. contact in each coil, wired in series and integral on all units
	K Factor	4
	Custom Options (consult factory for operating information)	50 Hz units
		Electrostatic shield (60dB attenuation typical)
NEMA/UL Type 2 or IP20 (NEMA/UL Type 1)		
Core and coil construction (open)		
		Additional HP or kVA sizes, voltages, extra primary taps, copper wound units, and so forth

Approximate Mounting Dimensions

IP32, NEMA/UL Type 3R - Styles NH3 through NH4

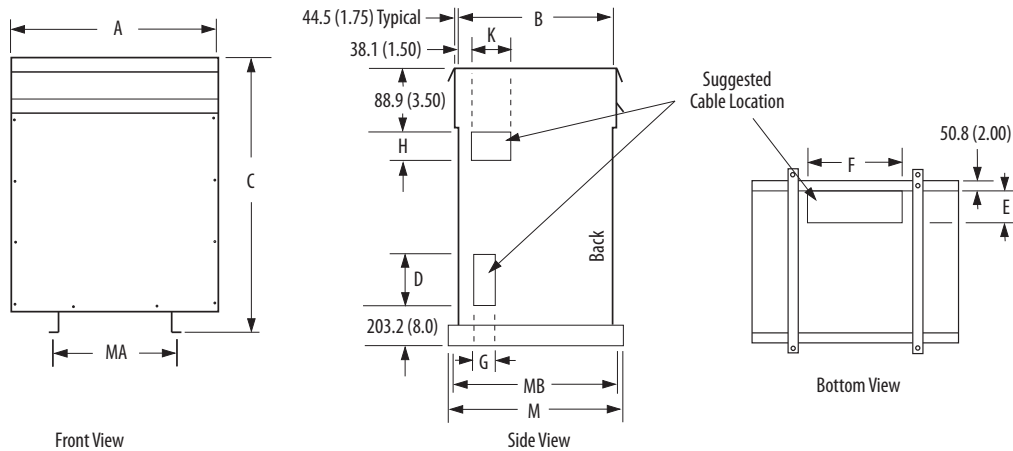


Dimensions in mm (in.)

Style	A	Overall A	B	Overall B	C	D	H	K	MA	MB	WMB	WMA
NH3	660.4 (26.00)	—	533.4 (21.00)	635.0 (25.00)	66.0 (38.00)	609.6 (24.00)	355.6 (14.00)	50.8 x 76.2 (2.00 x 3.00)	546.1 (21.50)	482.6 (19.00)	—	—
NH4	812.8 (32.00)	—	647.7 (25.50)	749.3 (29.50)	68.0 (41.00)	609.6 (24.00)	304.8 (12.00)	50.8 x 76.2 (2.00 x 3.00)	596.9 (23.50)	596.9 (23.50)	—	—
NH5 ⁽¹⁾	425.5 (16.75)	492.8 (19.40)	381.0 (15.00)	513.1 (20.20)	546.1 (21.50)	304.8 (12.00)	152.4 (6.00)	35.1 x 44.4 (1.38 x 1.75)	457.2 (18.00)	228.6 (9.00)	177.8 (7.00)	184.4 (7.26)
NH6 ⁽¹⁾	546.1 (21.50)	607.1 (23.90)	495.3 (19.50)	730.3 (28.75)	730.3 (28.75)	431.8 (17.00)	215.9 (8.50)	35.1 x 44.4 (1.38 x 1.75)	577.9 (22.75)	228.6 (9.00)	203.2 (8.00)	247.1 (9.73)

(1) Enclosure Styles NH1 and NH2 are replaced by NH5 and NH6 for 1321-3TH005 through 1321-3TH051 transformer ratings.

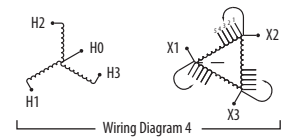
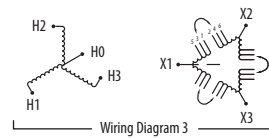
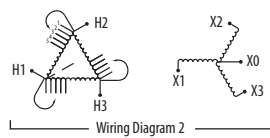
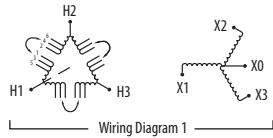
IP32, NEMA/UL Type 3R - Styles NJ1 through NJ6



Dimensions in mm (in.)

Style	A	B	C	D	E	F	G	H	K	M	MA	MB
NJ1	1003.3 (39.50)	762.0 (30.00)	1308.1 (51.50)	254.0 (10.00)	190.5 (7.50)	546.1 (21.50)	203.2 (8.00)	165.1 (6.50)	342.9 (13.50)	863.6 (34.00)	609.6 (24.00)	812.8 (32.00)
NJ2	1239.1 (48.50)	836.6 (34.00)	1498.6 (59.00)	330.2 (13.00)	215.9 (8.50)	635.0 (25.00)	228.6 (9.00)	215.9 (8.50)	393.7 (15.50)	965.2 (38.00)	698.5 (27.50)	914.4 (36.00)
NJ3	1308.1 (51.50)	990.6 (39.00)	1676.4 (66.00)	406.4 (16.00)	241.3 (9.50)	800.1 (31.50)	254.0 (10.00)	292.1 (11.50)	457.2 (18.00)	1092.2 (43.00)	863.6 (34.00)	1041.4 (41.00)
NJ6	1625.6 (64.00)	1016.0 (40.00)	1727.2 (68.00)	406.4 (16.00)	266.7 (10.50)	952.5 (37.50)	279.4 (11.00)	292.1 (11.50)	457.2 (18.00)	1117.6 (44.00)	1016.0 (40.00)	1066.8 (42.00)

Wiring Diagrams, Ratings and Weights



kVA	Catalog Number	Style	Primary Voltage	Secondary Voltage	Wiring Diagram	Weight kg (lb)
5	1321-3TW005-AA	NH5	230	230	1	63.5 (140)
	1321-3TW005-AB	NH5	230	460	3	63.5 (140)
	1321-3TW005-AC	NH5	230	575	3	63.5 (140)
	1321-3TW005-BA	NH5	460	230	1	63.5 (140)
	1321-3TW005-BB	NH5	460	460	1	63.5 (140)
	1321-3TW005-BC	NH5	460	575	3	63.5 (140)
	1321-3TW005-CA	NH5	575	230	1	63.5 (140)
	1321-3TW005-CB	NH5	575	460	1	63.5 (140)
	1321-3TW005-CC	NH5	575	575	1	63.5 (140)
	1321-3TW005-XX	NH5	208	208	1	63.5 (140)
40	1321-3TW040-AA	NH6	230	230	2	145.2 (320)
	1321-3TW040-AB	NH6	230	460	4	145.2 (320)
	1321-3TW040-AC	NH6	230	575	4	145.2 (320)
	1321-3TW040-BA	NH6	460	230	2	145.2 (320)
	1321-3TW040-BB	NH6	460	460	2	145.2 (320)
	1321-3TW040-BC	NH6	460	575	4	145.2 (320)
	1321-3TW040-CA	NH6	575	230	2	145.2 (320)
	1321-3TW040-CB	NH6	575	460	2	145.2 (320)
	1321-3TW040-CC	NH6	575	575	2	145.2 (320)
	51	1321-3TW051-AA	NH6	230	230	2
1321-3TW051-AB		NH6	230	460	4	190.5 (420)
1321-3TW051-AC		NH6	230	575	4	190.5 (420)
1321-3TW051-BA		NH6	460	230	2	190.5 (420)
1321-3TW051-BB		NH6	460	460	2	190.5 (420)
1321-3TW051-BC		NH6	460	575	4	190.5 (420)
1321-3TW051-CA		NH6	575	230	2	190.5 (420)
1321-3TW051-CB		NH6	575	460	2	190.5 (420)
1321-3TW051-CC		NH6	575	575	2	190.5 (420)
63		1321-3TH063-AA	NH3	230	230	2
	1321-3TH063-AB	NH3	230	460	4	244.9 (540)
	1321-3TH063-AC	NH3	230	575	4	244.9 (540)
	1321-3TH063-BA	NH3	460	230	2	244.9 (540)
	1321-3TH063-BB	NH3	460	460	2	244.9 (540)
	1321-3TH063-BC	NH3	460	575	4	244.9 (540)
	1321-3TH063-CA	NH3	575	230	2	244.9 (540)
	1321-3TH063-CB	NH3	575	460	2	244.9 (540)
	1321-3TH063-CC	NH3	575	575	2	244.9 (540)

kVA	Catalog Number	Style	Primary Voltage	Secondary Voltage	Wiring Diagram	Weight kg (lb)
75	1321-3TH075-AA	NH3	230	230	2	263.1 (580)
	1321-3TH075-AB	NH3	230	460	4	263.1 (580)
	1321-3TH075-AC	NH3	230	575	4	263.1 (580)
	1321-3TH075-BA	NH3	460	230	2	263.1 (580)
	1321-3TH075-BB	NH3	460	460	2	263.1 (580)
	1321-3TH075-BC	NH3	460	575	4	263.1 (580)
	1321-3TH075-CA	NH3	575	230	2	263.1 (580)
	1321-3TH075-CB	NH3	575	460	2	263.1 (580)
	1321-3TH075-CC	NH3	575	575	2	263.1 (580)
	93	1321-3TH093-AA	NH3	230	230	2
1321-3TH093-AB		NH3	230	460	4	285.8 (630)
1321-3TH093-AC		NH3	230	575	4	285.8 (630)
1321-3TH093-BA		NH3	460	230	2	285.8 (630)
1321-3TH093-BB		NH3	460	460	2	285.8 (630)
1321-3TH093-BC		NH3	460	575	4	285.8 (630)
1321-3TH093-CA		NH3	575	230	2	285.8 (630)
1321-3TH093-CB		NH3	575	460	2	285.8 (630)
1321-3TH093-CC		NH3	575	575	2	285.8 (630)
118		1321-3TH118-AA	NH3	230	230	2
	1321-3TH118-AB	NH3	230	460	4	328.9 (725)
	1321-3TH118-AC	NH3	230	575	4	328.9 (725)
	1321-3TH118-BA	NH3	460	230	2	328.9 (725)
	1321-3TH118-BB	NH3	460	460	2	328.9 (725)
	1321-3TH118-BC	NH3	460	575	4	328.9 (725)
	1321-3TH118-CA	NH3	575	230	2	328.9 (725)
	1321-3TH118-CB	NH3	575	460	2	328.9 (725)
	1321-3TH118-CC	NH3	575	575	2	328.9 (725)
	145	1321-3TH145-AA	NH4	230	230	2
1321-3TH145-AB		NH4	230	460	4	408.2 (900)
1321-3TH145-AC		NH4	230	575	4	408.2 (900)
1321-3TH145-BA		NH4	460	230	2	408.2 (900)
1321-3TH145-BB		NH4	460	460	2	408.2 (900)
1321-3TH145-BC		NH4	460	575	4	408.2 (900)
1321-3TH145-CA		NH4	575	230	2	408.2 (900)
1321-3TH145-CB		NH4	575	460	2	408.2 (900)
1321-3TH145-CC		NH4	575	575	2	408.2 (900)

Table continued on next page.

kVA	Catalog Number	Style	Primary Voltage	Secondary Voltage	Wiring Diagram	Weight kg (lb)
175	1321-3TH175-AA	NH4	230	230	2	453.6 (1000)
	1321-3TH175-AB	NH4	230	460	4	453.6 (1000)
	1321-3TH175-AC	NH4	230	575	4	453.6 (1000)
	1321-3TH175-BA	NH4	460	230	2	453.6 (1000)
	1321-3TH175-BB	NH4	460	460	2	453.6 (1000)
	1321-3TH175-BC	NH4	460	575	4	453.6 (1000)
	1321-3TH175-CA	NH4	575	230	2	453.6 (1000)
	1321-3TH175-CB	NH4	575	460	2	453.6 (1000)
	1321-3TH175-CC	NH4	575	575	2	453.6 (1000)
220	1321-3TH220-AA	NJ1	230	230	2	589.7 (1300)
	1321-3TH220-AB	NJ1	230	460	4	589.7 (1300)
	1321-3TH220-AC	NJ1	230	575	4	589.7 (1300)
	1321-3TH220-BA	NJ1	460	230	2	589.7 (1300)
	1321-3TH220-BB	NJ1	460	460	2	589.7 (1300)
	1321-3TH220-BC	NJ1	460	575	4	589.7 (1300)
	1321-3TH220-CA	NJ1	575	230	2	589.7 (1300)
	1321-3TH220-CB	NJ1	575	460	2	589.7 (1300)
	1321-3TH220-CC	NJ1	575	575	2	589.7 (1300)
275	1321-3TH275-AA	NJ1	230	230	2	680.4 (1500)
	1321-3TH275-AB	NJ1	230	460	4	680.4 (1500)
	1321-3TH275-AC	NJ1	230	575	4	680.4 (1500)
	1321-3TH275-BA	NJ1	460	230	2	680.4 (1500)
	1321-3TH275-BB	NJ1	460	460	2	680.4 (1500)
	1321-3TH275-BC	NJ1	460	575	4	680.4 (1500)
	1321-3TH275-CA	NJ1	575	230	2	680.4 (1500)
	1321-3TH275-CB	NJ1	575	460	2	680.4 (1500)
	1321-3TH275-CC	NJ1	575	575	2	680.4 (1500)
330	1321-3TH330-AA	NJ1	230	230	2	771.1 (1700)
	1321-3TH330-AB	NJ1	230	460	4	771.1 (1700)
	1321-3TH330-AC	NJ1	230	575	4	771.1 (1700)
	1321-3TH330-BA	NJ1	460	230	2	771.1 (1700)
	1321-3TH330-BB	NJ1	460	460	2	771.1 (1700)
	1321-3TH330-BC	NJ1	460	575	4	771.1 (1700)
	1321-3TH330-CA	NJ1	575	230	2	771.1 (1700)
	1321-3TH330-CB	NJ1	575	460	2	771.1 (1700)
	1321-3TH330-CC	NJ1	575	575	2	771.1 (1700)
440	1321-3TH440-AA	NJ2	230	230	1	907.2 (2000)
	1321-3TH440-AB	NJ2	230	460	3	907.2 (2000)
	1321-3TH440-AC	NJ2	230	575	3	907.2 (2000)
	1321-3TH440-BA	NJ2	460	230	1	907.2 (2000)
	1321-3TH440-BB	NJ2	460	460	1	907.2 (2000)

kVA	Catalog Number	Style	Primary Voltage	Secondary Voltage	Wiring Diagram	Weight kg (lb)
440	1321-3TH440-BC	NJ2	460	575	3	907.2 (2000)
	1321-3TH440-CA	NJ2	575	230	1	907.2 (2000)
	1321-3TH440-CB	NJ2	575	460	1	907.2 (2000)
	1321-3TH440-CC	NJ2	575	575	1	907.2 (2000)
550	1321-3TH550-AA	NJ2	230	230	1	1134.0 (2500)
	1321-3TH550-AB	NJ2	230	460	3	1134.0 (2500)
	1321-3TH550-AC	NJ2	230	575	3	1134.0 (2500)
	1321-3TH550-BA	NJ2	460	230	1	1134.0 (2500)
	1321-3TH550-BB	NJ2	460	460	1	1134.0 (2500)
	1321-3TH550-BC	NJ2	460	575	3	1134.0 (2500)
	1321-3TH550-CA	NJ2	575	230	1	1134.0 (2500)
	1321-3TH550-CB	NJ2	575	460	1	1134.0 (2500)
	1321-3TH550-CC	NJ2	575	575	1	1134.0 (2500)
660	1321-3TH660-AA	NJ3	230	230	1	1360.8 (3000)
	1321-3TH660-AB	NJ3	230	460	3	1360.8 (3000)
	1321-3TH660-AC	NJ3	230	575	3	1360.8 (3000)
	1321-3TH660-BA	NJ3	460	230	1	1360.8 (3000)
	1321-3TH660-BB	NJ3	460	460	1	1360.8 (3000)
	1321-3TH660-BC	NJ3	460	575	3	1360.8 (3000)
	1321-3TH660-CA	NJ3	575	230	1	1360.8 (3000)
	1321-3TH660-CB	NJ3	575	460	1	1360.8 (3000)
	1321-3TH660-CC	NJ3	575	575	1	1360.8 (3000)
770	1321-3TH770-AA	NJ3	230	230	1	1587.6 (3500)
	1321-3TH770-AB	NJ3	230	460	3	1587.6 (3500)
	1321-3TH770-AC	NJ3	230	575	3	1587.6 (3500)
	1321-3TH770-BA	NJ3	460	230	1	1587.6 (3500)
	1321-3TH770-BB	NJ3	460	460	1	1587.6 (3500)
	1321-3TH770-BC	NJ3	460	575	3	1587.6 (3500)
	1321-3TH770-CA	NJ3	575	230	1	1587.6 (3500)
	1321-3TH770-CB	NJ3	575	460	1	1587.6 (3500)
	1321-3TH770-CC	NJ3	575	575	1	1587.6 (3500)
880	1321-3TH880-AA	NJ6	230	230	1	1678.3 (3700)
	1321-3TH880-AB	NJ6	230	460	3	1678.3 (3700)
	1321-3TH880-AC	NJ6	230	575	3	1678.3 (3700)
	1321-3TH880-BA	NJ6	460	230	1	1678.3 (3700)
	1321-3TH880-BB	NJ6	460	460	1	1678.3 (3700)
	1321-3TH880-BC	NJ6	460	575	3	1678.3 (3700)
	1321-3TH880-CA	NJ6	575	230	1	1678.3 (3700)
	1321-3TH880-CB	NJ6	575	460	1	1678.3 (3700)
	1321-3TH880-CC	NJ6	575	575	1	1678.3 (3700)

1321-Mxxx Common Mode Chokes

1321-Mxxx Common Mode Chokes can be installed with the following Allen-Bradley AC drives.

- PowerFlex® 4-Class
- PowerFlex® 520-Series
- PowerFlex® 7-Class
- PowerFlex® 750-Series
- 1305
- 1336 PLUS™
- 1336 PLUS™ II
- 1336 IMPACT™
- 1336 FORCE™

When installed at the drive output the common mode choke helps to guard against interference with other electrical equipment (Programmable Controllers, sensors, analog circuits, and so forth). In addition, reducing the PWM carrier frequency reduces the effects and lowers the risk of common mode noise interference.

Catalog Number Explanation

Position	
1-4	6
1321	M 009
a	b c

a		b		c	
Product		Device		Current Rating	
Code	Type	Code	Description	Code	Amps
1321	Power Component	M	Common Mode Choke	001 *	1
				009	9
				048	48
				055	55
				180	180
				670	670

* Same core as 1321-M009. Can be used in place of the M009, M048, or M180 if the terminal block and windings typical of those ratings are not desired.

Ratings

PowerFlex AC Drives

Choke Type	Used With	Ratings	Catalog Number
Open Style, 1A	All PowerFlex Drives	Communication Cables, Analog Signal Cables, and so forth	1321-M001
Open Style, 9A (with terminal strip)	PowerFlex 4M/4/40/40P	0.2...1.1 kW (0.25...2 HP), 100...115V 0.2...1.5 kW (0.25...2 HP), 200...240V 0.4...2.2 kW (0.5...3 HP), 380...480V	1321-M009
	PowerFlex 400	2.2 kW (3 HP) 400...480V	
	PowerFlex 520-Series	0.2...1.1 kW (0.25...1.5 HP), 100...120V 0.2...1.1 kW (0.25...2 HP), 208...240V 0.4...2.2 kW (0.5...3 HP), 400...480V	
	PowerFlex 7-Class	0.3...2.2 kW (0.5...3 HP), 208...230V 0.4...4 kW (0.5...5 HP), 400...480V	
	PowerFlex 750-Series	0.75...4 kW (0.5...5 HP), 400...480V	
Open Style, 48A	PowerFlex 4M/4/40/40P	2.2...7.5 kW (3...10 HP), 200...240V 2.2...11 kW (3...15 HP), 380...480V 2.2...11 kW (3...15 HP), 600V	1321-M048
	PowerFlex 400	2.2...11 kW (3...15 HP), 200...240V 4...22 kW (5...30 HP), 380...480V	
	PowerFlex 520-Series	0.2...14 kW (3...20 HP), 200...240V 4...22 kW (5...30 HP), 400...480V 5.5...22 kW (7.5...30 HP), 600V	
	PowerFlex 7-Class	2.2...11 kW (3...15 HP), 208...240V 4...22 kW (5...30 HP), 400...480V 5.5...37 kW (10...40 HP), 600V	
	PowerFlex 750-Series	5.5...22 kW (7.5...30 HP), 400...480V 5.5...37 kW (7.5...40 HP), 600...690V	

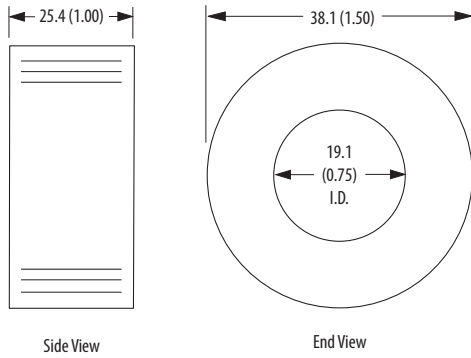
Choke Type	Used With	Ratings	Catalog Number
Open Style, 55A	PowerFlex 7-Class	14 kW (20 HP), 208...240V 22...30 kW (30...40 HP), 400...480V 45 kW (50 HP), 600V	1321-M055
	PowerFlex 750-Series	22...30 kW (30...40 HP), 400...480V 45 kW (50 HP), 600...690V	
Open Style, 180A	PowerFlex 7-Class	14...44 kW (20...60 HP), 208...240V 30...110 kW (40...150 HP), 400...480V 45...132 kW (50...150 HP), 600V	1321-M180
	PowerFlex 750-Series	30...90 kW (40...125 HP), 400...480V 45...132 kW (50...150 HP), 600...690V	
Open Style, 670A	PowerFlex 7-Class	55...75 kW (75...100 HP), 208...240V 149...373 kW (200...500 HP), 400...480V 149...522 kW (200...700 HP), 600V	1321-M670
	PowerFlex 750-Series	110...447 kW (150...600 HP), 400...480V 149...597 kW (200...800 HP), 600...690V	

Allen-Bradley Legacy AC Drives

Choke Type	Used With	Ratings	Catalog Number
Open Style, 1A	All Legacy Drives	Communication Cables, Analog Signal Cables, and so forth	1321-M001
Open Style, 9A (with terminal strip)	1305, 1336 PLUS, and 1336 PLUS II	0.37...2.2 kW (0.5...2 HP), 230V 0.37...3.7 kW (0.5...5 HP), 480V	1321-M009
	1336 IMPACT	0.37...3.7 kW (0.5...5 HP), 480V	
	1336 FORCE	0.75 kW (1 HP), 230V 0.75...2.2 kW (1...3 HP), 480 and 600V	
Open Style, 48A	1336 PLUS and 1336 PLUS II	2.2...11 kW (3...15 HP), 230V 5.5...22 kW (7.5...30 HP), 480V 0.75...30 kW (1...40 HP), 600V	1321-M048
	1336 IMPACT	5.5...22 kW (7.5...30 HP), 480V 5.5...30 kW (7.5...40 HP), 600V	
	1336 FORCE	2.2...11 kW (3...15 HP), 230V 2.2...22 kW (3...30 HP), 480V 0.75...30 kW (1...40 HP), 600V	
Open Style, 55A	1336 PLUS II	14 kW (20 HP), 230V 22...30 kW (30...40 HP), 480V 45 kW (50 HP), 600V	1321-M055
	1336 IMPACT	22...30 kW (30...40 HP), 480V 45 kW (50 HP), 600V	
Open Style, 180A	1336 PLUS and 1336 PLUS II	15...45 kW (20...60 HP), 230V 30...112 kW (40...150 HP), 480V 37...112 kW (50...150 HP), 600V	1321-M180
	1336 IMPACT	30...112 kW (40...150 HP), 480V 37...93 kW (50...125 HP), 600V	
	1336 FORCE	15...45 kW (20...60 HP), 230V 30...112 kW (40...150 HP), 480V 37...112 kW (50...150 HP), 600V	
Open Style, 670A	1336 PLUS and 1336 PLUS II	56...93 kW (75...125 HP), 230V 112...448 kW (150...600 HP), 480V 149...448 kW (200...600 HP), 600V	1321-M670
	1336 IMPACT	112...448 kW (150...600 HP), 480V 149...448 kW (200...600 HP), 600V	
	1336 FORCE	56...93 kW (75...125 HP), 230V 112...448 kW (150...600 HP), 480V 149...448 kW (200...600 HP), 600V	

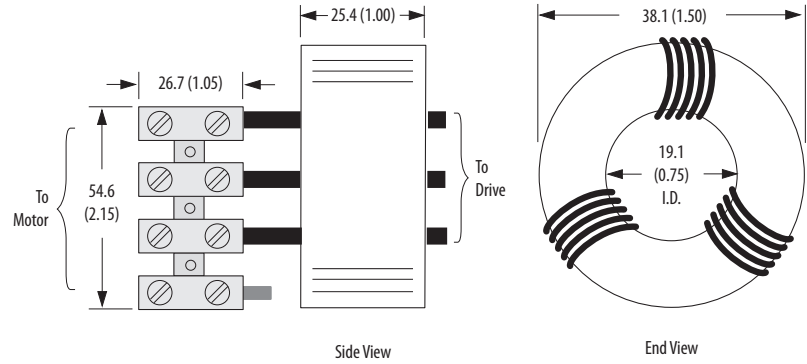
Approximate Mounting Dimensions

1321-M001 Choke Assembly



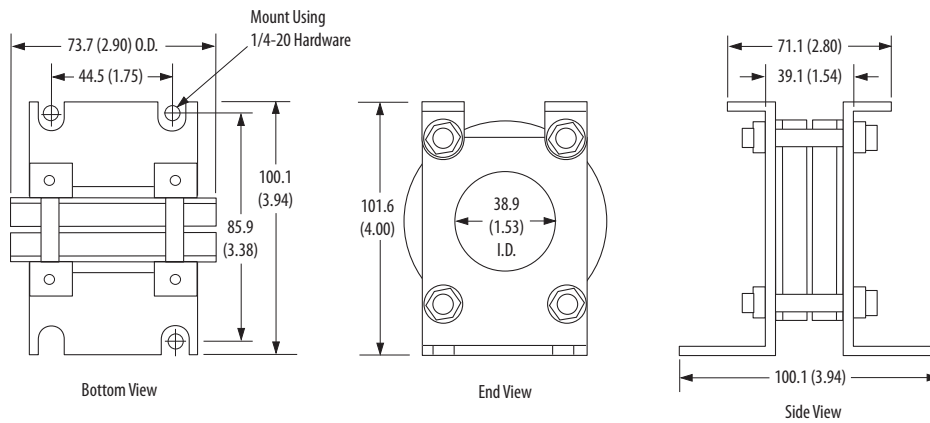
Dimensions in mm (inches)

1321-M009 Choke Assembly



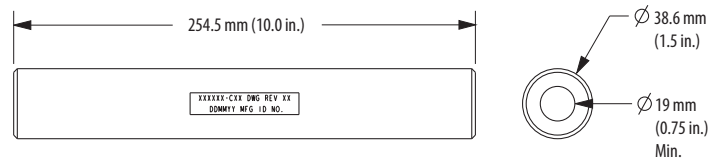
Dimensions in inches (mm)

1321-M048 Choke Assembly



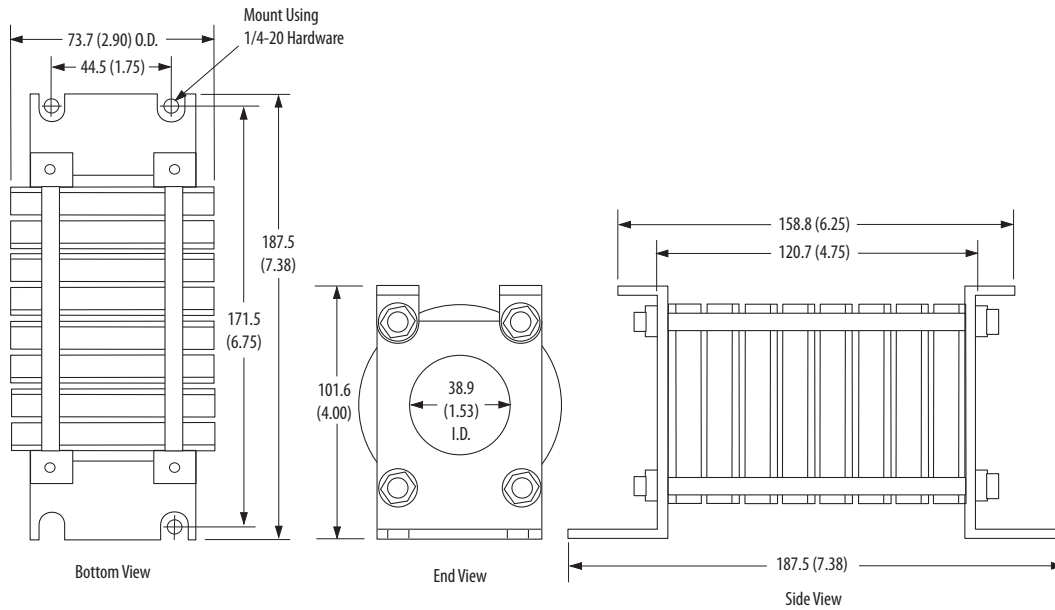
Dimensions are in mm (in.)

1321-M055 Choke Assembly

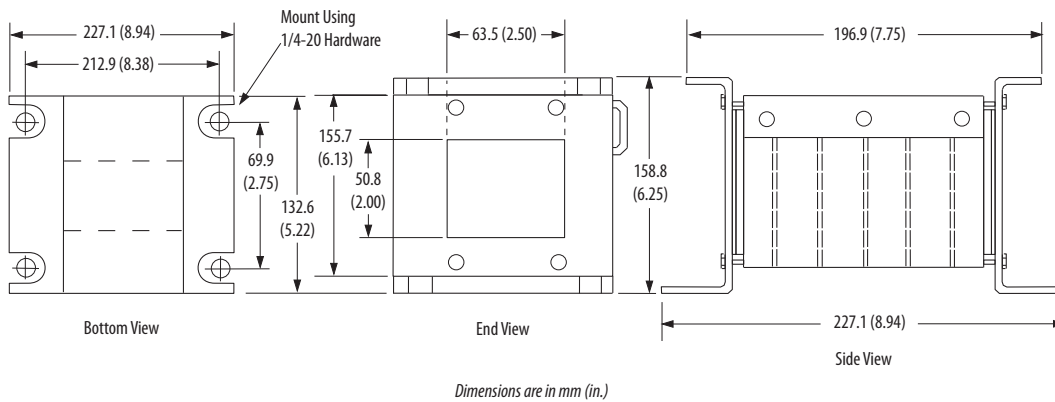


Dimensions in mm (inches)

1321-M180 Choke Assembly



1321-M670 Choke Assembly



1321-DC DC Link Chokes

1321-DC DC Link Chokes can be installed with Frame C PowerFlex 40 and all PowerFlex 400 drives. Add DC Link Chokes in series with the internal DC Bus to:

- Reduce AC Input Line Harmonics
- Help meet IEEE-519 limits
- Absorb Voltage/Current Spikes
- Reduce AC Ripple on DC Bus
- Reduce dV/dT and dI/dT rates
- Solve nuisance overvoltage tripping
- Reduce DC Bus Transient Overvoltage

Catalog Number Explanation

¹⁻⁴ ⁶ ⁷ ⁹
Position
 1321 – DC 12 – 1
a *b* *c* *d*

<i>a</i> Product	
Code	Type
1321	Power Component

<i>b</i> Device	
Code	Description
DC	DC Link Choke

<i>c</i> Current Rating	
Code	Amps
9	9
12	12
18	18
25	25
32	32
40	40

<i>d</i> Inductance Rating	
Code	Description
1	Each DC Link Choke current rating may have more than one inductance rating. Refer to <i>Ratings</i> on page 26 for specific values.
2	
3	
4	

Specifications

Specification	Rating
General	UL-508 component recognized (File E180243)
	1000 Volts DC maximum
	For ripple frequency of 300 Hz or 360 Hz
	50 °C temperature rise
	Suitable for 40 °C ambient temperature
	Class B insulation system (130 °C)
	Suitable for ripple current of 10% peak-to-peak
	Touchsafe terminals in many ratings

Special Features

- Solid copper box lug type terminals on most sizes
- Specially constructed and epoxy impregnated for low noise
- Customized ratings also available - contact the factory for custom mounting, inductance, current or ripple requirements

Ratings

Catalog Number	Type	DC Amps	mH	Watts	Lug Size	Torque
1321-DC9-2	Open Style	9	3.22	7	22-14	4.5
1321-DC12-1	Open Style	12	1	5	22-14	4.5
1321-DC12-2	Open Style	12	2.1	7	18-4	20
1321-DC18-1	Open Style	18	0.65	5	18-4	20
1321-DC18-4	Open Style	18	3.75	17	18-4	20
1321-DC25-4	Open Style	25	1.75	13	18-4	20
1321-DC32-1	Open Style	32	0.85	11	18-4	20
1321-DC32-2	Open Style	32	1.62	14	18-4	20
1321-DC32-3	Open Style	32	2.68	21	18-4	20
1321-DC40-2	Open Style	40	0.75	15	18-4	20
1321-DC40-4	Open Style	40	2	29	18-4	20

Approximate Mounting Dimensions

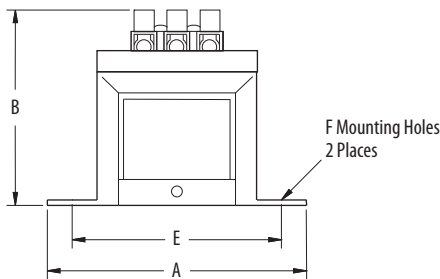


Figure 1

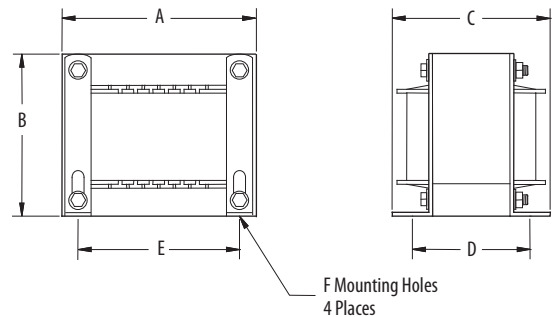
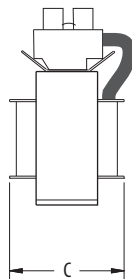


Figure 2

Catalog Number	Figure	Dimensions in mm (in.)					
		A	B	C	D	E	F
1321-DC9-2	1	95.3 (3.75)	82.6 (3.25)	50.8 (2)	(NA)	79.5 (3.13)	47.5 DIA. (0.187 DIA.)
1321-DC12-1	1	95.3 (3.75)	82.6 (3.25)	44.5 (1.75)	(NA)	79.5 (3.13)	47.5 DIA. (0.187 DIA.)
1321-DC12-2	2	96.8 (3.81)	114.3 (4.5)	71.6 (2.82)	50.8 (2)	79.5 (3.13)	5.2 x 8.3 (0.203 x 0.328)
1321-DC18-1	1	95.3 (3.75)	82.6 (3.25)	50.8 (2)	(NA)	79.5 (3.13)	47.5 DIA. (0.187 DIA.)
1321-DC18-4	2	117.6 (4.63)	133.4 (5.25)	101.6 (4)	63.5 (2.5)	95.3 (3.75)	5.2 x 8.3 (0.203 x 0.328)
1321-DC25-4	2	96.8 (3.81)	114.3 (4.5)	76.2 (3)	63.5 (2.5)	79.5 (3.13)	5.2 x 8.3 (0.203 x 0.328)
1321-DC32-1	2	96.8 (3.81)	114.3 (4.5)	84.3 (3.32)	63.5 (2.5)	79.5 (3.13)	5.2 x 8.3 (0.203 x 0.328)
1321-DC32-2	2	117.6 (4.63)	133.4 (5.25)	108.0 (4.25)	76.2 (3)	95.3 (3.75)	5.2 x 8.3 (0.203 x 0.328)
1321-DC32-3	2	117.6 (4.63)	133.4 (5.25)	133.4 (5.25)	101.6 (4)	95.3 (3.75)	5.2 x 8.3 (0.203 x 0.328)
1321-DC40-2	2	96.8 (3.81)	114.3 (4.5)	95.3 (3.75)	76.2 (3)	79.5 (3.13)	5.2 x 8.3 (0.203 x 0.328)
1321-DC40-4	2	165.1 (6.5)	166.4 (6.55)	152.4 (6)	85.9 (3.38)	134.9 (5.31)	7.1 x 13.2 (0.28 x 0.52)

Notes:

Important User Information

Solid-state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (publication [SGI-1.1](#) available from your local Rockwell Automation sales office or online at <http://www.rockwellautomation.com/literature/>) describes some important differences between solid-state equipment and hard-wired electromechanical devices. Because of this difference, and also because of the wide variety of uses for solid-state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

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