

DC2 DC Drives for 1/4 thru 2 Hp PMDC and Shunt Wound Motors

1/4-2 Hp 115/230 VAC 1 Phase 50/60 Hz.

Applications: General purpose industrial use with Permanent Magnet or Shunt Wound DC Motors.

Features: General purpose industrial use available in open chassis, plate style, NEMA 12 or NEMA 4/4X. Operates from either local or remote operator controls for added mounting flexibility, (Note: reversing drives are local control only). All models have a single, surface mount design, printed circuit board. Jumper reconnection for Line voltage, Horsepower, Feedback, "S" curve, and Zero speed. Adjustments for Min and Max speed, Current Limit, IR drop Compensation, and Accel/Decel rate. 20:1 constant torque speed range, 30:1 constant torque speed range with tachometer feedback. DC2 Models 40, 50, 70, 80, and 90 have start/stop and speed input capability for basic applications. DC2 Models 71 and 91 come complete with forward-braking-reverse switch for simple reversing applications. Instrument Interface models, DC2-42, 52, 72, 82, and 92 feature automatic/manual operation from either grounded or ungrounded 4-20 mA or 1-10 volt DC reference, (automatic), or speed potentiometer, (manual). Model DC2-43 provides torque control using armature current feedback for applications requiring control of applied torque or tension. Model DC2-54 and DC2-74 combine torque control with instrument interface capability. Models DC2-40, DC2-50, DC2-80, and DC2-99 feature a basic speed control with start/stop and run/jog. Model DC2-98 combines basic speed control with start/stop, run/jog and forward-braking-reverse capability.



1/4 - 1Hp @ 115 VAC 90 VDC Armature, 50 VDC Field ^(a)
1/2 - 2Hp @ 230 VAC 180 VDC Armature, 100 VDC Field ^(a)

Regulator Type	Catalog Number	List Price	Mult. Sym.
Open Chassis, DC2 Series 40			
Basic Regulator	DC2-40U	330	VS3DC
Basic Regulator with Instrument Interface ^(b)	DC2-42U	405	VS3DC
Torque Regulator	DC2-43U	370	VS3DC
Plate Controller, DC2 Series 50 ^(c)			
Basic Regulator	DC2-50U	275	VS3DC
Basic Regulator with Instrument Interface ^(b)	DC2-52U	300	VS3DC
Torque Regulator with Instrument Interface ^(b)	DC2-54U	300	VS3DC
NEMA 12 Enclosure with Operator Control, DC2 Series 70			
Basic Regulator	DC2-70U	375	VS3DC
Basic Regulator with Reversing	DC2-71U ^(d)	485	VS3DC
Basic Regulator with Instrument Interface ^(b)	DC2-72U	460	VS3DC
Torque Regulator with Instrument Interface ^(b)	DC2-74U	520	VS3DC
Easy Clean NEMA 4/4X/12 Enclosure, DC2 Series 80			
Without Operator Control			
Basic Regulator with Run/Jog	DC2-80U	375	VS3DC
Basic Regulator with Instrument Interface ^(b)	DC2-82U	460	VS3DC
Easy Clean NEMA 4/4X/12 Enclosure, DC2 Series 90			
With Operator Control			
Basic Regulator	DC2-90U	395	VS3DC
Basic Regulator with Run/Jog	DC2-99U	450	VS3DC
Basic Regulator with Reversing	DC2-91U ^(d)	510	VS3DC
Basic Regulator with Instrument Interface ^(b)	DC2-92U	510	VS3DC
Basic Regulator with Reversing and Run/Jog	DC2-98U ^(d)	550	VS3DC

NOTE: Conduit hole plugs are standard on NEMA 12K designs. Conduit hubs are standard on NEMA 4/12 designs only. Conduit hubs for either design can be ordered through Renewal Parts by referencing Reliance Part Number 608826-2A.

^(a) Jumper selection for 115VAC / 90 VDC or 230 VAC / 180 VDC.

^(b) Instrument Interface units also provide auxiliary control relay contact rated 0.6 Amps @ 125 VAC for customer use.

^(c) DC2 Series 50 Drive must be mounted to a metal surface 18" by 18" to meet 1hp @115 VAC and 2HP @ 230 VAC or an optional heat sink (HS1-50) can be purchased.

^(d) Switch reversing DC2 models include as standard an installed line fuse.

A transformer is mandatory for tachometer feedback operation using the Type RE-020 20.8 VDC/1000 RPM tachometer (Model Number R20E8000). The Type RE-007 (Model Number R07E1210) fully-isolated 7 VDC/1000 tachometer does not require an isolation transformer. Consult Instruction Manual D2-3231 for other recommended and mandatory use of isolation transformers.

DC2 Accessories

Catalog Number	Description	List Price	Mult. Sym.
HS1-50	External Heatsink Kit for DC2-50 Series	100	VS3DC

Customer Installed Fuse Kits

The DC2 Drives are not supplied with line fuses. If needed, order the model number Fuse Kit below to match the DC2 drive selected.

Drive	DC2-Series	Kit Model Number	List Price	Mult. Sym.
Open Chassis	40	F1DC2000	48	VS3DC
Plate Chassis	50	F2DC2000	100	VS3DC
NEMA 12K	70	F2DC2000	100	VS3DC
NEMA 4/12	80, 90	F2DC2000	100	VS3DC

Mounting Dimensions

Drive Style	Outside		Mounting		
	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)	Height Inches (mm)	Width Inches (mm)
Enclosed DC2 Series 70, 80, and 90	10.125 (260)	5.0 (128)	5.5 (141)	9.625 (247)	5.0 (128)
Open Chassis DC2 Series 40	7.875 (200)	5.0 (128)	4.875 (125)	7.375 (188)	5.0 (128)
Plate Style, Open Chassis DC2 Series 50	6.25 (159)	6.0 (152)	2.5 (64)	6.25 (159)	6.0 (152)

HVAC Motors

Farm Duty Motors

Definite Purpose Motors

Brake Motors

200 & 575 Volt Motors

IEC Frame Motors

50 Hertz Motors

Inverter/Vector Motors & Controls

DC Motors and Controls

Soft Start & Dynamic Brakes

DC3 DC Drives Fractional to 2HP for Non-Regen and Regen Applications

115/230 VAC 1 Phase 50/60 Hz.

Applications: General purpose industrial use with Permanent Magnet or Shunt Wound DC Motors.

Features: DC3 drives are available in plate style, NEMA 1 or NEMA 4X/12. Non-Regen and Regen types available to fill many applications. Every DC3 product carries UL, cUL, and CE certification labels. Plate drives are designed for mounting and integration into cabinets/enclosures. Plate models also include a 10K ohm speed pot for customer use.

Standard Specifications:

- AC line voltage variation – ±10% of selected input.
- AC line input frequency variation – 48 to 62 Hz.
- Output voltage – 0 to 90 VDC @ 115 VAC input, and 0 to 180 VDC @ 230 VAC input.
- Overload Capacity – 150% for 1 minute.
- Ambient temperature – -10°C to 55°C plate style. -10°C to 45°C enclosed.
- Elevation – 1000 meters without derating. (Derate 1% for every 90 meters above 1000 m)



DC3N Non-Regenerative DC Drives 1/8 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature 1/4 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp – Rating		Model Number	“Non-Isolated” Controller Selection – DC3N Chassis Model – 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet DC Motors Only						
115 VAC Input	230 VAC Input		Chassis Type	Rated AC Line (Amps)	Input KVA	DC Armature Voltage	Rated Armature Current (Amps)	Mult. Sym.	List Price
1/8 to 1/2	—	DC3N-12D-00-010-AN	Plate	4.5 to 7.8	0.5 to 0.9	90	2.7 to 5.0	VS3DC	93
1/2 to 1.0	—		Plate	7.8 to 13	0.9 to 1.5	90	5.0 to 10*		
—	1/2 to 1.0		Plate	2.6 to 7.0	0.6 to 1.6	180	1.4 to 5.0		
—	1.0 to 2.0		Plate	7.0 to 12	1.6 to 2.8	180	5.0 to 9.2 *		

NOTE: * Requires addition of Heatsink Kit Option: DC3N-HS-00 List Price: \$98.00.
External isolated reference source, 90 VDC Armature: 0-1.4 VDC reference and 180 VDC: 0-2.8 VDC reference.
Instruction manual D2-3451

DC3N Plate Style Overall Dimensions

Height Inches (mm)	Width Inches (mm)	Length Inches (mm)
1.60 (41)	4.30 (109)	3.58 (91)

HVAC Motors

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DC3N Non-Regenerative DC Drives



1/8 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature
1/4 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp Rating		Model Number	"Non-Isolated" Controller Selection – DC3N Enclosed Models – 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet DC Motors Only						
115 VAC Input	230 VAC Input		Enclosure Type	Rated AC Line (Amps)	Input KVA	DC Armature Voltage	Rated Armature Current (Amps)	Mult. Sym.	List Price
1/8 to 1/2	—	DC3N-12D-01-010-AN	NEMA 1	4.5 to 7.8	0.5 to 0.9	90	2.7 to 5.0	VS3DC	231
1/2 to 1.0	—		NEMA 1	7.8 to 13	0.9 to 1.5	90	5.0 to 10 **		
—	1/2 to 1.0		NEMA 1	2.6 to 7.0	0.6 to 1.6	180	1.4 to 5.0		
—	1.0 to 2.0		NEMA 1	7.0 to 12	1.6 to 2.8	180	5.0 to 9.2 **		
1/8 to 1/2	—	DC3N-12D-4X-010-AN	NEMA 4X/12	4.5 to 7.8	0.5 to 0.9	90	2.7 to 5.0		333
1/2 to 1.0	—		NEMA 4X/12	7.8 to 13	0.9 to 1.5	90	5.0 to 10		
—	1/2 to 1.0		NEMA 4X/12	2.6 to 7.0	0.6 to 1.6	180	1.4 to 5.0		
—	1.0 to 2.0		NEMA 4X/12	7.0 to 12	1.6 to 2.8	180	5.0 to 9.2		

NOTE: ** Requires addition of Heatsink Kit Option: DC3N-HS-01 List Price: \$124.00
 External isolated reference source, 90 VDC Armature: 0-1.4 VDC reference and 180 VDC: 0-2.8 VDC reference
 Instruction manual D2-3451

DC3N Non-isolated Enclosed Style Overall Dimensions

Enclosure Style	Overall		
	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)
NEMA 1	8.00 (203)	6.00 (152)	3.46 (88)
NEMA 4X/12	8.20 (208)	6.90 (175)	4.50 (114)
Heatsink	Height Inches (mm)	Width Inches (mm)	Length Inches (mm)
DC3N-HS-00	1.0 (25)	4.40 (112)	6.90 (175)
DC3N-HS-01	1.0 (25)	7.78 (198)	6.90 (175)

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DC3N Non-Regenerative DC Drives



1/8 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature
1/4 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp Rating		Model Number	"Isolated" Controller selection - DC3N Chassis and Enclosed- 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet and Shunt wound DC Motors						
115 VAC Input	230 VAC Input		Enclosure Type	Rated AC Line (Amps)	DC Armature Voltage	Rated Armature Current (Amps)	Motor Field Voltage	Mult. Sym.	List Price
1/4 to 1	—	DC3N-12D-00-010-AI	Plate	4.5 to 13	90	2.7 to 10	50/100	VS3DC	269
—	1/2 to 2		Plate	3.7 to 12	180	2.5 to 9.2	100/200		
1/4 to 1	—	DC3N-12D-4X-010-AI	NEMA 4X/12	4.5 to 13	90	2.7 to 10	50/100		368
—	1/2 to 2		NEMA 4X/12	3.7 to 12	180	2.5 to 9.2	100/200		

NOTE: Instruction manual D2-3452

DC3N "isolated" Plate and Enclosed Style Overall Dimensions

Enclosure Style	Overall		
	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)
Plate	4.46 (113)	6.90 (175.26)	1.80 (46)
NEMA 4X/12	10.2 (260)	6.90 (175.26)	5.51 (140)

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Soft Start & Dynamic Brakes

DC3R Regenerative DC Drives



1/4 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature

1/2 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp Rating		Model Number	"Non-Isolated" Controller selection - DC3R Chassis model - 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet and Shunt wound DC Motors						
115 VAC Input	230 VAC Input		Chassis Type	Rated AC Line (Amps)	DC Armature Voltage	Rated Armature Current (Amps)	Motor Field Voltage	Mult. Sym.	List Price
1/4 to 1/2	—	DC3R-12D-00-010-AN	Plate	4.2 to 7.5	90	2.7 to 5.0	50/100	VS3DC	368
1/2 to 1.0	—		Plate	7.5 to 12.1	90	5.0 to 10 ***	50/100		
—	1/2 to 1.0		Plate	3.8 to 6.7	180	2.5 to 5.0	100/200		
—	1.0 to 2.0		Plate	6.7 to 11.7	180	5.0 to 9.2***	100/200		
Hp Rating		Model Number	"Isolated" Controller selection - DC3R Chassis model - 115/230 VAC, 1 Phase, 50/60 Hz						
115 VAC Input	230 VAC Input		Chassis Type	Rated AC Line (Amps)	DC Armature Voltage	Rated Armature Current (Amps)	Motor Field Voltage	Mult. Sym.	List Price
1/4 to 1/2	—	DC3R-12D-00-010-AI	Plate	4.2 to 7.5	90	2.7 to 5.0	50/100	VS3DC	482
1/2 to 1.0	—		Plate	7.5 to 12.1	90	5.0 to 10***	50/100		
—	1/2 to 1.0		Plate	3.8 to 6.7	180	2.5 to 5.0	100/200		
—	1.0 to 2.0		Plate	6.7 to 11.7	180	5.0 to 9.2***	100/200		

NOTE: ***Requires addition of Heatsink Kit Option DC3R-HS-00. List Price, \$149.00

Drive instruction manual D2-3453

DC3R Isolation Board Option instruction manual D2-3454

DC3R "Non-isolated" and "isolated" Plate Style Overall Dimensions

Style	Height Inches (mm)	Width Inches (mm)	Length Inches (mm)
Non-isolated	1.86 (47)	4.75 (120)	8.90 (226)
Isolated	3.12 (78)	4.75 (120)	8.90 (226)
Heatsink			
DC3R-HS-00	1.0 (25)	6.9 (175)	9.78 (248)

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IEC Frame Motors

50 Hertz Motors

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DC Motors and Controls

Soft Start & Dynamic Brakes

DC3R Regenerative DC Drives



1/4 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature
1/2 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp Rating		Model Number	"Non-Isolated" Controller selection - DC3R Enclosed - 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet and Shunt wound DC Motors						
115 VAC Input	230 VAC Input		Chassis Type	Rated AC Line (Amps)	DC Armature Voltage	Rated Armature Current (Amps)	Motor Field Voltage	Mult. Sym.	List Price
1/4 to 1.0	—	DC3R-12D-4X-010-AN	NEMA 4X/12	4.2 to 12.1	90	2.7 to 10	50/100	VS3DC	625
—	1/2 to 2.0		NEMA 4X/12	3.8 TO 11.7	180	2.5 TO 9.2	100/200		

NOTES: Instruction manual D2-3453

DC3R Enclosed Style NEMA 4X/12 Overall Dimensions

Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)
10.2 (260)	6.90 (175.26)	5.51 (140)

DC3R Regenerative DC Drives



1/4 - 1Hp @ 115 VAC, 1-Ph, 50/60 Hz, 90 VDC Armature
1/2 - 2Hp @ 230 VAC, 1-Ph, 50/60 Hz, 180 VDC Armature

Hp Rating		Model Number	"Non-Isolated" Controller selection - DC3R Chassis model - 115/230 VAC, 1 Phase, 50/60 Hz For the Operation of Permanent Magnet and Shunt wound DC Motors						
115 VAC Input	230 VAC Input		Chassis Type	Rated AC Line (Amps)	DC Armature Voltage	Rated Armature Current (Amps)	Motor Field Voltage	Mult. Sym.	List Price
1/4 to 1/2	—	DC3R-12D-4X-010-DN	NEMA 4X/12	4.2 to 7.5	90	2.7 to 5.0	50/100	VS3DC	791
1/2 to 1.0	—		NEMA 4X/12	7.5 to 12.1	90	5.0 to 10	50/100		
—	1/2 to 1.0		NEMA 4X/12	3.8 to 6.7	180	2.5 to 5.0	100/200		
—	1.0 to 2.0		NEMA 4X/12	6.7 to 11.7	180	5.0 to 9.2	100/200		

NOTES: Instruction manual D2-3455

DC3RD Enclosed Style NEMA 4X/12 Overall Dimensions

Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)
10.2 (260)	6.90 (175)	5.50 (140)