

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

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)

Series 19H Digital DC Controls

**5 thru 75Hp
5 thru 300 Hp**

**180-264 VAC - 50/60 Hz
340-528 VAC - 50/60 Hz**



Applications: Constant torque applications. New installations, replacements and original equipment manufacturers (OEM).

Features: Chassis mounting, built-in armature or encoder feedback, high peak currents.

Design Specifications

- Three phase, full wave SCR armature control
- High peak overload, 250-300% (depending on rating)
- Selectable operating modes: Keypad; Standard Run, 15 Speed, Bipolar speed/torque; Serial; Process follower mode.
- Analog meter outputs
- Buffered encoder output
- 9 isolated inputs
- Chassis mounting

Operator Keypad

- Digital Speed Control
- Forward/Reverse Command
- Motor RUN and JOG
- Local/Remote Key
- Stop Command (coast or external DB to stop)
- 32 Character alpha-numeric display
- Remote mount to 100 feet from control
- NEMA 4X enclosure on keypad

Environmental and Operating Conditions

- Input Frequency - 50 or 60 Hz \pm 5%
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet max without derate

Protective Features

- Control Input over and under voltage
- Encoder, tach or resolver loss
- Torque proving
- Selectable manual or automatic restart at power loss
- Digital display for fault conditions

Motor Feedback

- 1024 PPR standard (with quadrature)
- Power output: +5VDC, 300 mA max
- Max frequency: 1 MHz
- Optional feedback: tachometer or resolver through expansion board

Output Ratings	Voltage	DC - 0-1.3 times VAC input	
	Input Ratings	Frequency	50 or 60 Hz \pm 5%
		Voltage	200-240 VAC \pm 10%; 380-480 VAC \pm 10%
Control Spec.	Phase	Three phase	
	Impedance	5% maximum	
	Control Method	Full wave-uni-directional DC control, NEMA type C	
	Speed Setting	0-5VDC, 0-10VDC, 4-20 mA, digital via keypad, optional RS232/422/485	
	Accel/Decel	0-3600 seconds (decel-coast or controlled by external DB resistors) - no S-curve decel	
	Minimum Speed	0-maximum speed	
	Maximum Speed	0-5000 RPM	
Field Power Supply	Motor Matching	Automatic tuning to motor with manual override	
	Type	Voltage limited, current regulated full wave single phase	
	Voltage	0 to 10-85% of AC line Input in DC volts	
	Current	0.1-15 Amps maximum-standard, 0.1-40 amps maximum-optional	
	Field Economy Level	OFF, 25-100%	
Motor Feedback	Field Forcing Level	100-125% (hoist modes only)	
	Feedback Type	Armature or incremental encoder coupled to motor shaft	
	Pulses/Rev	60-65535 selectable, 1024 standard	
	Voltage Output	2 channel in quadrature, 5VDC differential	
	Marker Pulse	Required for position orientation	
	Power Input	5VDC, 300 mA maximum	
Protective Functions	Maximum Frequency	1 MHz	
	Optional Feedback	Tachometer or resolver via expansion board	
	Control Trip	Missing control power, over current armature over voltage, motor overspeed over temperature (motor & control), field loss, encoder tach or resolver loss, phase loss, motor overload and overcurrent	
	Fusing	Standard input line, armature and field power supply fuses	
LCD Display	External Output	LED indicator for trip conditions, 4 assignable logic outputs - 30VDC Max, 2 assignable analog outputs 0-5VDC	
	Running	Motor RPM, output current, voltage (selectable)	
	Setting	Parameter values for setup and review	
Ambient Conditions	Trip	Separate message for each trip, last 31 trips retained in memory	
	Temperature	0-40°C for UL listing	
	Cooling	Forced air included when required	

NOTE: Use of DC tach for feedback requires DC Tachometer Interface Board, catalog number EXB006A01. Other expansion boards are available, see pages 275-276.

Series 19H Digital DC Controls continued...

Hp	Input Volt	Armature Output Current		Catalog Number	List Price	Mult. Sym.	Chassis Size
		Amps Cont	Amps Peak				
230 Volt Input - 240 VDC Output							
5	230	20	40	BC19H205-CO	5005	E1	A
10	230	40	80	BC19H210-CO	5005	E1	A
15	230	60	120	BC19H215-CO	5378	E1	A
20	230	75	150	BC19H220-CO	5814	E1	B
25	230	100	200	BC19H225-CO	6124	E1	B
40	230	140	280	BC19H240-CO	7853	E1	C
50	230	180	360	BC19H250-CO	8444	E1	C
60	230	210	420	BC19H260-CO	9330	E1	C
75	230	270	540	BC19H275-CO	10117	E1	C
460 Volt Input - 500 VDC Output							
10	460	20	40	BC19H410-CO	5097	E1	A
20	460	40	80	BC19H420-CO	5097	E1	A
30	460	60	120	BC19H430-CO	5503	E1	A
40	460	75	150	BC19H440-CO	5950	E1	B
50	460	100	200	BC19H450-CO	6262	E1	B
75	460	140	280	BC19H475-CO	8257	E1	C
100	460	180	360	BC19H4100-CO	8818	E1	C
125	460	210	419	BC19H4125-CO	9701	E1	C
150	460	270	540	BC19H4150-CO	10502	E1	C
200	460	350	875	BC19H4200-CO	12876	E1	D
300	460	500	1000	BC19H4300-CO	17256	E1	D

OPTIONS: See pages 275-276 for optional Expansion Boards including Tachometer Feedback, RS-232, RS-422, RS-485, Resolver, Interface, etc. 40 Amp field power supply. FPS40BC1920

Dimensions in/(mm)

Size	Hp	Outside			Mounting		Ap'x Shpg. Wgt.
		Height	Width	Depth	Height	Width	
A	ALL	20.60/(523.2)	11.00/(279.4)	9.87/(250.7)	18.00/(457.2)	10.25/(260.4)	39
B 230V	ALL	25.70/(652.8)	11.00/(279.4)	9.84/(249.9)	23.87/(606.3)	10.25/(260.4)	67
B 460V	ALL	26.75/(679.5)	11.00/(279.4)	9.84/(249.9)	24.94/(633.5)	10.25/(260.4)	69
C 230V	40-60	26.50/(673.1)	11.75/(298.5)	10.63/(270.0)	23.90/(607.0)	10.25/(260.4)	80
C 460V	75-100	27.25/(692.2)	11.75/(298.5)	10.63/(270.0)	24.65/(626.1)	10.25/(260.4)	84
C 230V	75	33.00/(838.2)	11.75/(298.5)	10.63/(270.0)	23.90/(607.6)	10.25/(260.4)	94
C 460V	125-200	33.75/(857.3)	11.75/(298.5)	10.63/(270.0)	24.65/(626.1)	10.25/(260.4)	97
D	ALL	43.80/(1112.5)	16.87/(428.5)	12.43/(315.7)	39.25/(997.0)	13.75/(349.3)	272

HVAC Motors

Farm Duty Motors

Definite Purpose Motors

Brake Motors

200 & 575 Volt Motors

IEC Frame Motors

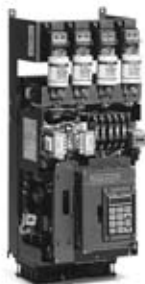
50 Hertz Motors

Inverter/Vector Motors & Controls

DC Motors and Controls

Soft Start & Dynamic Brakes

Series 20H Line Regenerative Digital DC Controls



**5 thru 75Hp
5 thru 300 Hp**

**180-264 VAC - 50/60 Hz
340-528 VAC - 50/60 Hz**

Applications: Constant torque applications. New installations, replacements and original equipment manufacturers (OEM).

Features: Chassis mounting, built-in armature or encoder feedback. High peak current.

Design Specifications

- Three phase, full wave, four quadrant SCR armature control.
- Peak overload capacity of 250-300% (depending on rating)
- Selectable operating modes: Keypad, Standard Run, 15 Speed, Bipolar speed/torque, Serial, Bipolar Hoist, 7 Speed Hoist, process follower
- Motor shaft orient to encoder marker or external switch closure (encoder feedback)
- 15 preset speeds (7 in Hoist Mode.)

Operator Keypad

- Digital Speed Control
- Forward/Reverse Command
- Motor RUN and JOG
- Local/Remote Key
- Stop Command
- 32 Character alpha-numeric display
- Remote mount to 100 feet from control
- NEMA 4X enclosure on keypad

Environmental and Operating Conditions

- Input frequency - 50 or 60Hz $\pm 5\%$
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet max without derate

Protective Features

- Torque proving
- Selectable manual or automatic restart at power loss
- Digital display for fault conditions

Motor Feedback

- Power output: +5VDC, 300 mA max
- Positioning: Buffered encoder pulse train output for position loop control
- Optional feedback: tachometer or resolver through expansion board

Output Ratings	Voltage	DC 0-1.13 times VAC input
Input Ratings	Frequency	50 or 60 Hz $\pm 5\%$
	Voltage	200-240 VAC $\pm 10\%$; 380-480 VAC $\pm 10\%$
	Phase	Three phase
Control Spec.	Impedance	5% maximum
	Control Method	Full wave-bi-directional regenerative DC control, NEMA type C
	Speed Setting	$\pm 5\text{VDC}$, 0-5VDC, $\pm 10\text{VDC}$, 0-10VDC, 4-20 mA, digital via keypad, optional RS232/422/485
	Accel/Decel	0-3600 seconds or s-curve
	Minimum Speed	0-maximum speed
	Maximum Speed	0-5000 RPM
	Motor Matching	Automatic tuning to motor with manual override
Field Power Supply	Type	Voltage limited, current regulated full wave single phase
	Voltage	0 to 10-85% of AC line Input in DC volts
	Current	0.1-15 Amps maximum-standard, 0.1-40 amps maximum-optional
	Field Economy Level	OFF, 25-100%
	Field Forcing Level	100-125% (hoist modes only)
Motor Feedback	Feedback Type	Armature or incremental encoder coupled to motor shaft
	Pulses/Rev	60-65535 selectable, 1024 standard
	Voltage Output	2 channel in quadrature, 5VDC differential
	Marker Pulse	Required for position orientation
	Power Input	5VDC, 300 mA maximum
	Maximum Frequency	1 MHz
	Positioning	Optional buffered encoder pulse train output for position loop controller
	Optional Feedback	Tachometer or resolver via expansion board
	Protective Functions	Control Trip
Fusing		Standard input line, armature and field power supply fuses
External Output		LED indicator for trip conditions, 4 assignable logic outputs - 30VDC Max, 2 assignable analog outputs 0-5VDC
LCD Display	Running	Motor RPM, output current, voltage (selectable)
	Setting	Parameter values for setup and review
	Trip	Separate message for each trip, last 31 trips retained in memory
Ambient Conditions	Temperature	0-40°C for UL listing
	Cooling	Forced air included when required

NOTE: Use of DC tach for feedback requires DC Tachometer Interface Board, catalog number EXB006A01. Other expansion boards are available, see pages 275-276.

Series 20H Line Regenerative Digital DC Controls

Hp	Input Volt	Armature Output Current		Catalog Number	List Price	Mult. Sym.	Chassis Size
		Amps Cont	Amps Peak				
230 Volt Input - 240 VDC Output							
5	230	20	60	BC20H205-CL	5832	E1	A
10	230	40	120	BC20H210-CL	5832	E1	A
15	230	60	150	BC20H215-CL	5832	E1	A
20	230	75	190	BC20H220-CL	6112	E1	B
25	230	100	250	BC20H225-CL	6883	E1	B
40	230	140	420	BC20H240-CL	8928	E1	C
50	230	180	480	BC20H250-CL	9660	E1	C
60	230	210	540	BC20H260-CL	10215	E1	C
75	230	270	680	BC20H275-CL	12531	E1	C
460 Volt Input - 500 VDC Output							
5, 7.5, 10	460	20	60	BC20H410-CL	6137	E1	A
15, 20	460	40	120	BC20H420-CL	6137	E1	A
25, 30	460	60	150	BC20H430-CL	6335	E1	A
40	460	75	190	BC20H440-CL	6615	E1	B
50	460	100	250	BC20H450-CL	7336	E1	B
60, 75	460	140	420	BC20H475-CL	10150	E1	C
100	460	180	480	BC20H4100-CL	10953	E1	C
125	460	210	530	BC20H4125-CL	12214	E1	C
150	460	270	680	BC20H4150-CL	13359	E1	C
200	460	350	875	BC20H4200-CL	16061	E1	D
250	460	420	1050	BC20H4250-CL	20114	E1	D
300	460	510	1250	BC20H4300-CL	22034	E1	D

OPTIONS: See pages 275-276 for optional expansion Boards including Tachometer Feedback, RS-232, RS-422, RS-485, Resolver, Interface, etc.
40 Amp field power supply. FPS40BC1920

Dimensions in/(mm)

Size	Hp	Outside Height	Width	Depth	Mounting		Ap'x Shpg. Wgt.
					Height	Width	
A	ALL	20.60/(523.2)	11.00/(279.4)	9.87/(250.7)	18.00/(457.2)	10.25/(260.4)	39
B 230V	ALL	25.70/(652.8)	11.00/(279.4)	9.84/(249.9)	23.87/(606.3)	10.25/(260.4)	67
B 460V	ALL	26.75/(679.5)	11.00/(279.4)	9.84/(249.9)	24.94/(633.5)	10.25/(260.4)	69
C 230V	40-60	26.50/(673.1)	11.75/(298.5)	10.63/(270.0)	23.90/(607.0)	10.25/(260.4)	80
C 460V	75-100	27.25/(692.2)	11.75/(298.5)	10.63/(270.0)	24.65/(626.1)	10.25/(260.4)	84
C 230V	75	33.00/(838.2)	11.75/(298.5)	10.63/(270.0)	23.90/(607.6)	10.25/(260.4)	94
C 460V	125-200	33.75/(857.3)	11.75/(298.5)	10.63/(270.0)	24.65/(626.1)	10.25/(260.4)	97
D	ALL	43.80/(1112.5)	16.87/(428.5)	12.43/(315.7)	39.25/(997.0)	13.75/(349.3)	272

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