

A flexible, reliable and affordable drive for 1/4 through 2 HP DC applications

DC2 drives combine application flexibility, compact size and reliability into an affordable adjustable speed package that delivers the performance you need for a wide range of industrial applications.



The DC2 drive is equipped with a range of application adjustments including a single jumper reconnection to quickly and easily match the drive to incoming power. Motor horsepower selection, the choice of either armature voltage or speed feedback signals, and the choice of 7 VDC or 20.8 VDC/1000 RPM tachometer feedback is just as simple. Other application adjustments allow you to tailor drive performance to meet your requirements.

A number of standard model number drives are available, which provide features for specific applications. These specific features include reversing, run/jog, process signal input of either 4-20 mA or 0-10 volts or a torque regulator to control shaft torque or web tension.

STANDARD FEATURES

- Available in either open chassis, totally enclosed NEMA 12 or NEMA 4/4X construction.
- Operates from either local or remote operator controls for added mounting flexibility.⁽¹⁾
- All circuitry - sequencing, regulator and terminals - packaged on a single, accessible surface mount design printed circuit board.

- Jumper reconnections adapt standard drives to match:
 - Line voltage, either 115 or 230 VAC, 50 or 60 Hz
 - Motor horsepower, from 1/4 through 2
 - Desired feedback, either armature voltage or motor driven DC tachometer for non-reversing models only
 - Tachometer requirements: 7 VDC or 20.8 VDC per 1000 RPM designs
 - "S" curve or linear acceleration
 - Zero speed operation
 - Application adjustments tailor drive performance to your needs:
 - Separately adjustable maximum and minimum speeds set speed limits
 - Adjustable current limit protects machinery, wiring and drive
 - Adjustable IR drop compensation improves speed regulation when using armature voltage feedback
 - Adjustable acceleration and deceleration rates for smooth starts, stops and speed changes
 - Armature voltage, tachometer or armature current feedback
 - 20:1 constant torque speed range
 - 30:1 constant torque speed range with tachometer feedback
 - Power cube contains all power semi-conductors for reliability and improved maintenance time
 - Full-wave, half-control power conversion with back diode for efficient power conversion, smooth armature current waveforms and cool motor operation over wide operating speed ranges
 - Built-in half-wave field supply for operation of wound field motors
 - Built-in surge suppressor helps protect semiconductors from line transients for better reliability
 - Relay in control circuit prevents automatic restarting after power outage
 - Run/Off switching arrangement allows positive disconnect of the motor from the plant line on a "Stop" command
 - Two years from date of manufacture/one year in service full exchange warranty eliminates troubleshooting and returns you quickly to operation
 - NEMA 4 Controls are F.D.A./U.S.D.A. approved, white epoxy finish on drive and motor
- ⁽¹⁾ Reversing units are local control only

DC2 DRIVES FOR SPECIFIC APPLICATIONS

Standard model numbered DC2 drives provide just the right drive for those special applications.

- Models DC2-40, DC2-50, DC2-70, DC2-80, DC2-90 and DC2-95 come with start/stop and speed input capability for basic applications.
- Model DC2-71 and DC2-91 come complete with forward-dynamic braking-reversing switch for simple reversing applications.
- Instrument Interface Models, DC2-42, DC2-52, DC2-72, DC2-82, DC2-92 and DC2-97 feature automatic/manual operation from either a grounded or ungrounded
- 4-20 mA or 0-10 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.
- Models DC2-54 and DC2-74 combine torque control with instrument interface capabilities.
- 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-dynamic braking-reversing capability.

SERVICE CONDITIONS

Elevation: Up to 3300 feet (1000 meters)

Ambient Temperature

- Enclosed Models: 32°F to 104°F
- (0°C to 40°C)
- Chassis Models: 32°F to 131°F (0°C to 55°C)

AC Line Voltage Variation: +10% rated voltage

AC Frequency: 48 to 62 Hz

Atmosphere: Non-Condensing Relative Humidity 5 to 95%

APPLICATION DATA

Service Factor: 1.0

Maximum Load: 150% for 1 minute

Speed Regulation:

- Voltage Feedback: 2-5% (95% load change)
- Tachometer Feedback: 1% (95% load change)

Speed Range: 20:1 with armature voltage Feedback: 30:1 with tachometer feedback

Feedback and reference potentiometer circuits are not isolated from main power. Isolation transformers are mandatory for tachometer feedback operation using a type RE020 20.8 VDC/1000 RPM tachometer (Model R20E8000). Consult instruction manual D2-3231 for other recommended or mandatory uses of isolation transformers and complete application information.

ADJUSTMENTS

Maximum Speed (Percent of rated): under 50 to 100%

Minimum Speed (Percent of rated): under 5 to 50%

Current Limit (Percent of rated): adjustable to 150%

Acceleration Rate: 0.3 to 40 seconds linear

Deceleration Rate: 0.3 to 40 seconds linear

IR Drop Compensation: 5 to 10%

Drive Ratings

Motor HP	115 VAC INPUT					
	230 VAC INPUT					
	Rated AC Line (Amps) ⁽¹⁾	Input KVA	DC Armature Voltage	Rated Armature Current (Amps)	Available Field Voltage	Rated Field Current (Amps)
1/4	3.1	0.36	90	2.5	50	2
	-	-	-	-	-	-
1/3	4.2	0.48	90	3.7	50	2
	-	-	-	-	-	-
1/2	6.2	0.71	90	5	50	2
	3.1	0.71	180	2.5	100	2
3/4	9.4	1	90	7.5	50	2
	4.7	1	180	3.7	100	2
1 ⁽²⁾	12.5	1.4	90	10	50	2
	6.2	1.4	180	5	100	2
1-1/2	-	-	-	-	-	-
	9.4	2.2	180	7.5	100	2
2 ⁽²⁾	-	-	-	-	-	-
	12.5	2.9	180	10	100	2

(1) Includes motor field current

(2) DC2 Series 50 designs must be mounted to a metal plate 18" x 18" to meet 1 HP @ 115 VAC and 2 HP @ 230 VAC, or an optional heat sink (HS1-50) can be purchased.

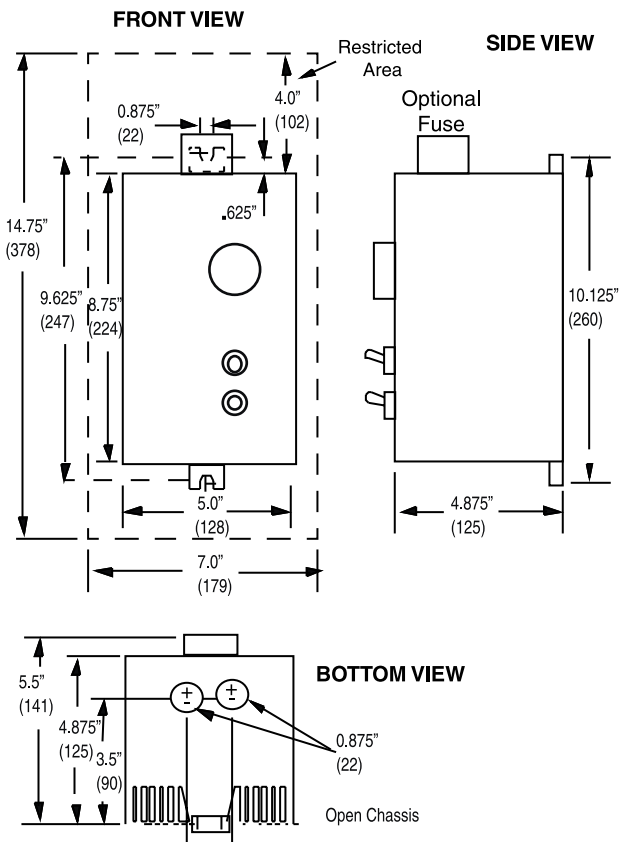
APPLICATION MATRIX

Here are some basic guidelines for selecting an appropriate DC2 drive based on the type of application involved.

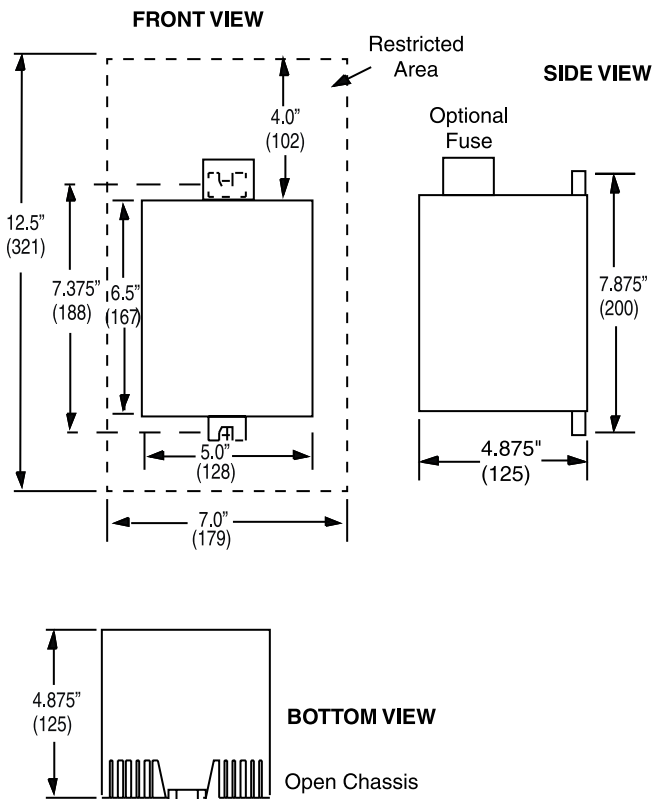
Application	Enclosure		
	Chassis	NEMA 12	NEMA 4/4X/12
Agitators			√
Bottling Machines		√	√
Conveyors	√	√	√
Exercise Machines	√		
Extruders	√		√
Feeders	√	√	√
Indexers	√	√	
Material Handling	√	√	√
Metering Pumps	√	√	√
Mixers		√	√
Ovens			√
Packaging Machines	√	√	√
Printing Presses	√	√	√
Processing Machines			√
Pumps		√	√
Robotics	√	√	
Screen Presses	√	√	
Take-Ups	√	√	
Tapping Machines	√	√	
Welding Positioners	√		

All dimensions in inches (mm)

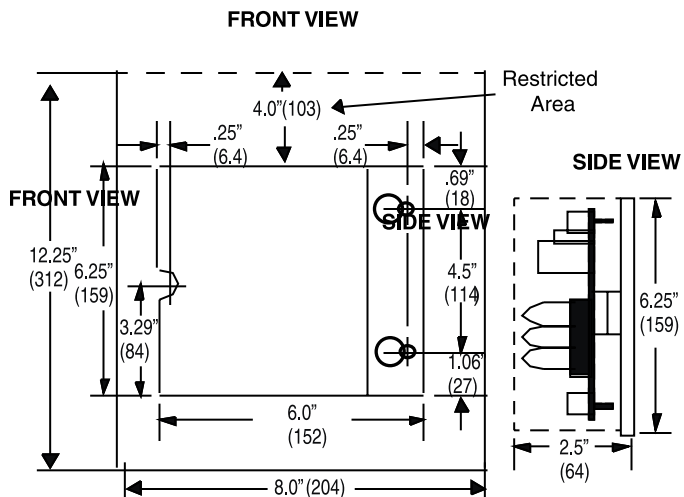
**Enclosed Design
(DC2 Series 70, 80 and 90)**



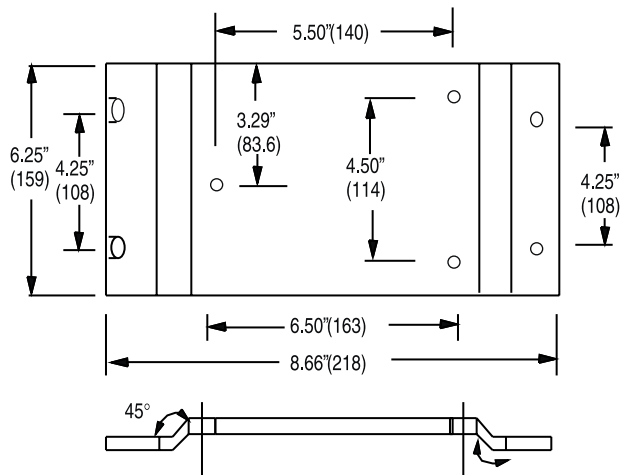
**Open Chassis Design
(DC2 Series 40)**



**Plate-style Open Chassis
(DC2 Series 50)**



**HS1-50 Heat Sink
(For DC2 Series 50 Drives)**



PRICING

1/4-1 HP @ 115 VAC 90 VDC ARMATURE, 50 VDC FIELD ^{(1) (3)}

1/2-2 HP @ 230 VAC 180 VDC ARMATURE, 100 VDC FIELD ^{(1) (3)}



Regulator Type Less Fuse Kit	Open Chassis	Plate Controller ⁽³⁾	NEMA 12 Enclosure With Operator Control	Easy Clean NEMA 4/4X/12 Enclosure	
				Without Operator Control	With Operator Control
Basic Regulator with Linear Accel. Model Number					
List	* DC2-40U \$330	* DC2-50U \$275	* DC2-70U \$375	* DC2-80U \$375	* DC2-90U \$395
Basic with Run/Jog and Linear Accel. Model Number					
List	* DC2-40U \$330	* DC2-50U \$275	N/A	* DC2-80U \$375	* DC2-99U \$450
Basic and Reversing with Linear Accel. Model Number					
List	N/A	N/A	* DC2-71U ⁽⁴⁾ \$485	N/A	* DC2-91U ⁽⁴⁾ \$510
Basic Instrument Interface with Linear Accel. and Decel. Model Number ⁽²⁾					
List	* DC2-42U \$405	* DC2-52U \$300	* DC2-72U \$460	* DC2-82U \$460	* DC2-92U \$510
Basic and Reversing with Run/Jog and Linear Accel.					
List	N/A	N/A	N/A	N/A	* DC2-98U ⁽⁴⁾ \$550
Torque Regulator with Linear Accel. Model Number					
List	* DC2-43U \$370	N/A	N/A	N/A	N/A
Torque Regulator and Instrument Interface with Linear Accel. and Decel. Model Number ⁽²⁾					
List	N/A	* DC2-54U \$300	* DC2-74U \$520	N/A	N/A

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.

MODIFICATION/KITS

Customer-Installed Fuse Kits

The DC2 product line as standard comes without line fuses. If they are not to be supplied by the user, order the model number Fuse Kit below to match the DC2 drive you have selected.

Drive	DC2 Series	Kit Model Number	Kit List
Open Chassis	40	* F1DC2000	\$65
Plate Chassis	50	* F2DC2000	100
NEMA 12K	70	* F2DC2000	100
NEMA 4/12	80, 90	* F2DC2000	100

- (1) Jumper selection for 115 VAC / 90 VDC or 230 VAC / 180 VDC.
- (2) Instrument Interface units also provide auxiliary control relay contact rated 0.6 Amps @ 125 VAC for customer use.
- (3) DC2 Series 50 Drive must be mounted to a metal surface 18" by 18" to meet 1 HP @ 115 VAC and 2 HP @ 230 VAC or an optional heat sink (HS1-50) can be purchased.
- (4) Switch reversing DC2 models include as standard an installed line fuse.

Heat Sink Kit

For DC2-50 Series	* HS1-50
List	\$100

* Normally carried in stock

Isolation Transformers

See page D-188 for selection and pricing of isolation transformers. Note: 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.

Remote Operator Controls

Reliance offers a variety of remote operator control stations. Refer to page D-185 for selection and pricing information.

PRODUCT PUBLICATIONS

Data Sheets

DC2 Drive: D-2885

Instruction Manual

All DC2 Drives: D2-3231
Fuse Kit: D2-3250

DISCOUNT VS-3DC