

# A versatile, reliable single-phase chassis DC drive for non-regenerative (1/4-5 HP) and regenerative (1/4 - 7-1/2 HP) applications



*With FlexPak Plus DC Drives you get the standard features you need and the options and modification kits to meet your specific application variables.*

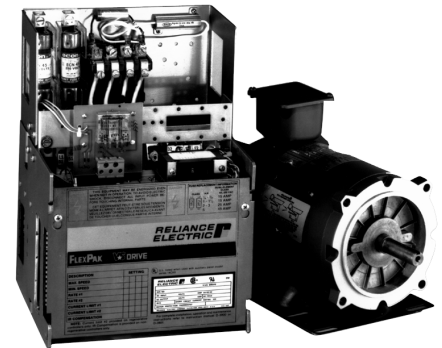
FlexPak Plus Drives feature proven electronic components which significantly improve drive functions, reliability and overall performance. These include custom Large Scale Integrated (LSI) circuits and a modular Power Cube that's doubly protected by AC line fuses and a MOV surge suppressor. A relay prevents uncontrolled restarts after power outages.

FlexPak Plus drives are available immediately from the largest stock of adjustable speed drives in the industry. A variety of modification kits to tailor these drives to your specific application requirements can be installed quickly by your Reliance Authorized Distributor, or your own personnel or at the factory.

## STANDARD FEATURES

- Compact, open-chassis design
- Application versatility with optional kit selection. Kits plug into controller quickly and easily.
- Easy installation and service
- 50/60 Hz for worldwide application
- Full-wave, full-control conversion for smooth, efficient operation and high performance.

- Isolated voltage and current feedbacks for drive reliability and versatility.
- Fully regenerative, four-quadrant models provide contactorless reversing as well as hold-back torque capability through 7-1/2 HP.
- PowerMatched with Reliance DC motors for optimum performance.
- Field supply for motor shunt field (2 - 7-1/2 HP).
- Minimum and maximum speed, acceleration rate, deceleration rate, current limit and IR compensation are easily adjustable for increased application flexibility.
- Power semi-conductors are contained in easily replaceable power cubes to speed service and maintenance.
- Built-in surge suppressor helps protect semi-conductors from line transients for higher reliability.
- Relay in control circuit prevents automatic restarting after power outage.
- Current limit control protects the drive and driven machine from damaging current or torque levels for improved reliability.
- Motor armature contactor disconnects power to the drive motor.



- Armature loop DC circuit breaker protects equipment against inverting faults (regenerative controllers only).
- Auxiliary panel provides fused AC line protection and motor armature contactor to disconnect power to the drive motor.
- Remote Operator Adapter Kit for buffering and filtering of external signals when drive is operated by remote control.

## AVAILABLE OPTIONS

- Dynamic Braking Kit
- Tachometer Feedback Kit allows speed regulation to 0.5% with 95% load change with specified tachometer. (Standard on regenerative drives)
- Reversing Contactor Kit (Non-regenerative drives)
- Automatic Reversing Kit (Non-regenerative controllers only)
- Voltage Follower Kit allows the drive to follow an external DC voltage signal.
- Instrument Interface/Preset Speed Kit for applications where drive speed is controlled by a process controller over a speed range, or when an adjustable preset speed is desired.

## MORE OPTIONS

- Field Supply Kit for applications requiring the use of a wound field DC motor. (Standard on 2-7.5 HP drives)
- Test Meter Adapter Kit for measuring drive and regulator signal voltages with a voltmeter.
- Auxiliary Contact Kit
- Torque Taper Kit for winder applications. (Non-regenerative drives only)
- Separate NEMA rated types 1, 3R, 4, 4X and 12 operator control stations available for remote operation of the drive (located in section D7-1).

## Service Conditions

Elevation: Up to 3300 feet (1000 meters)

Ambient Temperatures: 32°F to 131°F (0°C to 55°C)

Atmosphere: Non-condensing relative humidity 5% to 95%

AC Line Voltage Variation:  $\pm 10\%$  of rated voltage

AC Frequency: 48 to 62 Hz

## Application Data

Service Factor: 1.0

Maximum Load: 150% for 1 minute

Speed Regulation (95% load change):

- Voltage Feedback: 1-2%
- Tachometer Feedback: 1% or 0.5%\*

Speed Range

- Voltage Feedback: 20:1
- Tachometer Feedback: 30:1

## ADJUSTMENTS

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

Minimum Speed (Percent of rated): 10 to 50%

Current Limit (Percent of rated): 10 to 150%

IR Drop Compensation: 0 to 12%

Acceleration Rate:  
0.5 to 30 seconds linear

Deceleration Rate:  
0.5 to 30 seconds linear

\*Depending on tachometer used.

## ENGINEERING DATA

### Drive Ratings

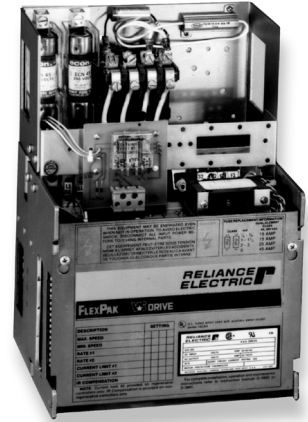
Motor HP	115 VAC Input					
	230 VAC Input					
	Rated AC Line (Amps) <sup>(1)</sup>	Input KVA	DC Armature Voltage	Rated Armature Current (Amps)	Available Field Voltage <sup>(2)</sup>	Available Field Current (Amps) <sup>(2)</sup>
1/4	3.5	.40	90	2.5	100	3.0
	-	-	-	-	-	-
1/3	5.2	.60	90	3.7	100	3.0
	-	-	-	-	-	-
1/2	7.0	.81	90	5.0	100	3.0
	3.5	.81	180	2.5	200	3.0
3/4	10.5	1.20	90	7.5	100	3.0
	5.2	1.20	180	3.7	200	3.0
1	-	-	-	-	-	-
	7.0	1.61	180	5.0	200	3.0
1-1/2	-	-	-	-	-	-
	10.5	2.42	180	7.5	200	3.0
2	-	-	-	-	-	-
	14.0	3.22	180	10.0	200	3.0
3	-	-	-	-	-	-
	21.0	4.83	180	15.0	200	3.0
5	-	-	-	-	-	-
	35.0	8.05	180	25.0	200	3.0
7-1/2	-	-	-	-	-	-
	48.0	11.04	180	36.0	200	3.0

- (1) Includes Motor Field Current.  
 (2) Stated with optional Field Supply Kit. Standard on 2 - 7-1/2 HP models.

## SINGLE-PHASE FLEXPAC PLUS DRIVES

### Ordering instructions for chassis drives

1. Select model number and price drive from selection chart below.
2. Select model number and price remote operator controls from D-145.
3. Select and price kit options from pages D-109 through D-113.



### Drive Selection Chart

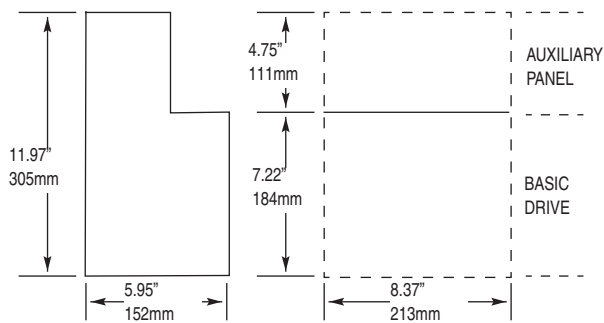
HP	AC Input (volts) 50/60 Hz	Drive Rating		Non-regenerative Drive <sup>(2)</sup>		Regenerative Drive <sup>(2)</sup>	
		DC Output (Volts)		Chassis with Auxiliary Panel		Chassis with Auxiliary Panel	
		Armature	Field	Model Number	List	Model Number	List
1/4-3/4	115	90	(1)	14C101 ◇	\$815	14C106 ◇	\$1,415
1/2 - 1-1/2	230	180	(1)	14C102 ◇	865	14C107 ◇	1,415
2-3	230	180	100/200	14C103 ◇	990	14C108 ◇	1,635
5	230	180	100/200	14C104 ◇	1,435	14C109 ◇	1,695
7-1/2	230	180	100/200	-	-	14C111 ◇	2,535

(1) If a wound field motor is used also order field supply kit 14C237 and Add \$53 List (unmounted) or \$128 List

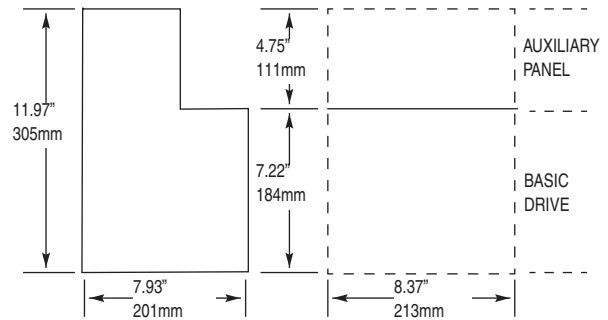
(2) Includes a model 14C220 remote operator adapter kit, installed.

## DIMENSIONS

NON-REGENERATIVE DRIVE



REGENERATIVE DRIVE



◇ Normally carried in stock

DISCOUNT VS-3DC

## MinPak Plus PRODUCT PUBLICATIONS

### Non-Regenerative Drives

Data Sheet, 1/4-5 HP, 1-Phase: D-2625

Instruction Manual containing wiring diagrams and dimensions for drive and kits, 1/4-5 HP, 1-Phase: D-3838

### Regenerative Drives

Data Sheet: D-2625

Instruction manual containing wiring diagrams and dimensions for controller and kits: D-3899

## FlexPak Plus PRODUCT PUBLICATIONS

### Non-Regenerative Drives

Data Sheet, Single-Phase: D-2652

Instruction Manual containing wiring diagrams and dimensions for drive and kits, 1/4-5 HP, Single-Phase: D-3900

### Regenerative Drives

Data Sheet: D-2652

Instruction manual containing wiring diagrams and dimensions for drive and kits: D-3901

## INSTRUCTION MANUALS FOR KITS

Kit Name	Model Number	I/M	Single-Phase			
			MinPak Plus Non-Regen	FlexPak Plus Non-Regen	MinPak Plus Regen	FlexPak Plus Regen
Auxiliary "M" Contact	14C219	D2-3383	√	√	√	√
Dancer Follower Kit	14C230	D-3966	√	√	√	√
Dynamic Braking	14C214-14C216	D2-3378	√	√	√	√
Field Supply Kit	14C228	D2-3380	√			
Field Supply Kit	14C238	D2-3381			√	
Field Supply Kit	14C237	D2-3382		√		√
Inst. Interface Kit	14C222	D-3967	√	√	√	√
Remote Operator Adapter Kit	14C220	D-3979	√		√	
Test Meter Adapter Kit	14C225	D-3970	√	√	√	√
Voltage Follower Kit	14C223	D-3971	√	√	√	√
Automatic Reversing Kit	14C226	D2-3384	√	√		
Double Pole Disconnect	14C210-14C213	D2-3385	√			
Reversing Contactor Kit	14C217-14C218	D2-3377	√			
Reversing Contactor Kit	14C293	D2-3293		√		
Tach Feedback Kit	14C221	D-3969	√	√		
Torque Taper Kit	14C224	D2-3386	√	√		
Local Operator Control	14C200-14C208	D-3977	√		√	
Accessory Mounting Bracket	14C209	D2-3379	√			