V★S
DRIVES

FlexPak® Plus D-C Drive

Single-Phase
Non-Regenerative: 1/4-5 HP
Regenerative: 1/4-7 1/2 HP

Versatile and reliable chassis design for D-C adjustable speed drive applications.

This low horsepower V★S Drive package combines many technological advances in drive design with application versatility never before available from stock single-phase drives. Its chassis design makes it easy to mount in standard NEMA enclosures.

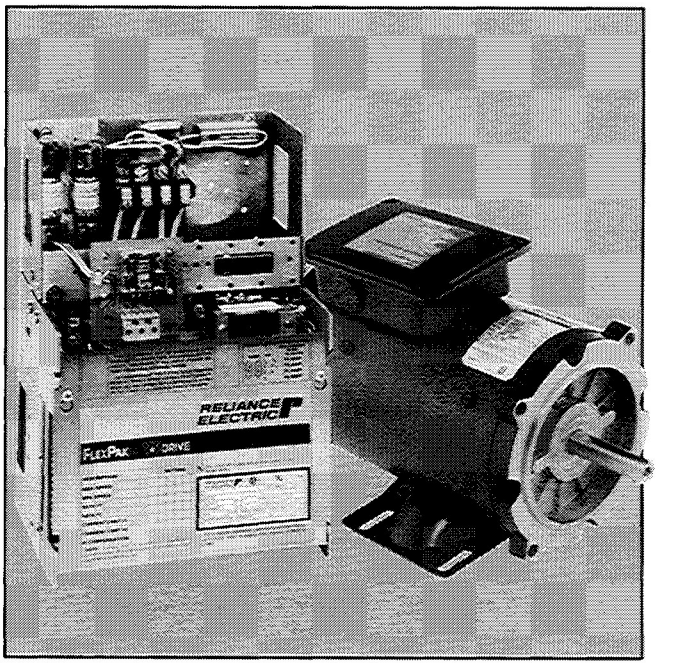
With FlexPak Plus D-C V★S Drives you get the standard features you need and the options and modification kits to meet your specific application variables. What's more, you get them from stock.

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 a circuit breaker and MOV surge suppressor. A relay prevents uncontrolled restarts after power outages.

FlexPak Plus controllers 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, your own personnel or at the factory.

Standard open chassis enclosures are designed to accommodate any combination of kits – one, two or all of them – using only a screwdriver. Optional NEMA rated types 1, 3R, 4, 4X and 12 operation controls are available for remote operation.

Every FlexPak Plus Drive package comes complete with a Reliance Electric D-C Motor. Choose from a broad selection of permanent magnet or wound field designs with the right base speed and enclosure to meet your requirements.



Standard Features

- Compact, open-chassis design
- Application versatility with optional kit selection. Kits plug into controller quickly and easily.
- Increased performance capabilities
- 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.
- Power matched with Reliance D-C motors for optimum performance.
- Field supply for motor shunt field (2–5 HP).
- Minimum and maximum speed, acceleration rate, deceleration rate, current limit and IR compensation are easily adjustable for increased application flexibility.

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FlexPak Plus Means More Flexibility

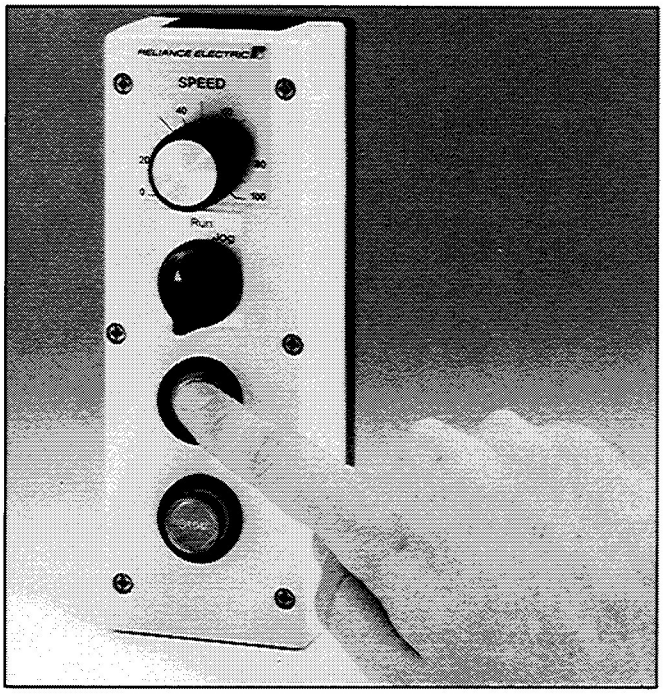
More Standard Features

- 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 D-C circuit breaker protects equipment against inverting faults (regenerative controllers only).
- Auxiliary panel provides fused A-C 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.

Easy Installation and Service

FlexPak Plus Drives are designed for easy installation to save time and money and provide years of dependable service. Wire entry is made directly to incoming power terminations. Sufficient space has been allowed around all power terminals to assure working room and fast, easy installation of plug-in kits.

Keeping these drives operating reliably and long is simplicity itself. Modular construction makes troubleshooting easy, so components can be removed for repair or replacement in minutes. All leads disconnect quickly and simply by means of plug connectors. All replaceable components are easily accessible without groping around or fighting other components.



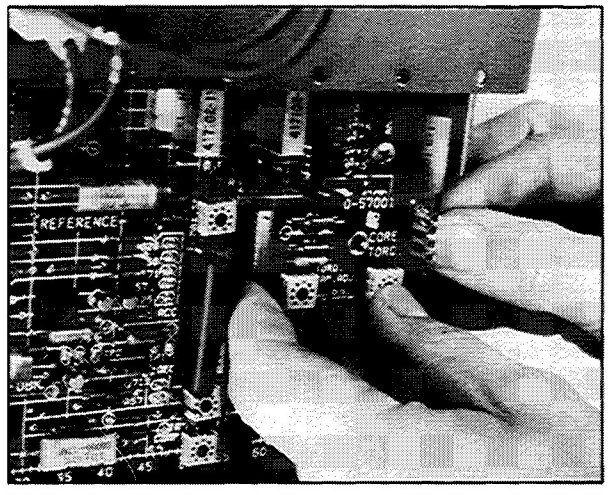
Optional remote operator's control station provides versatile control in enclosure rated for NEMA 1, 3R, 4, 4X and 12 duty.

Plug-In Kit Versatility

Optional Features

All modification kits and accessories are UL listed and available CSA certified.

- Dynamic Braking Kit for applications requiring quick motor stops.
- Reversing Contactor Kit provides fast change of motor rotation by selector switch. (Non-regenerative controllers)
- Tachometer Feedback Kit for applications requiring accuracy of speed regulation to 0.5% with 95% load change with specified tachometer. (Standard on regenerative controllers)
- Voltage Follower Kit allows the drive to follow an external D-C 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.
- Field Supply Kit for applications requiring the use of a wound field D-C motor. (Standard on 3 and 5 HP controllers)
- Test Meter Adapter Kit for measuring controller and regulator signal voltages with a voltmeter.
- Automatic Reversing Kit provides an automatic reverse-direction capability. (Non-regenerative controllers only)
- Auxiliary Contact Kit for applications where an interconnection with external signaling devices is required or desired.
- Torque Taper Kit for changing speed-torque relationship to allow motor speed decrease as the load increases. (Non-regenerative controllers only)
- Separate NEMA rated types 1, 3R, 4, 4X and 12 operator control stations available for remote operation of the drive.
- Controller available CSA certified.

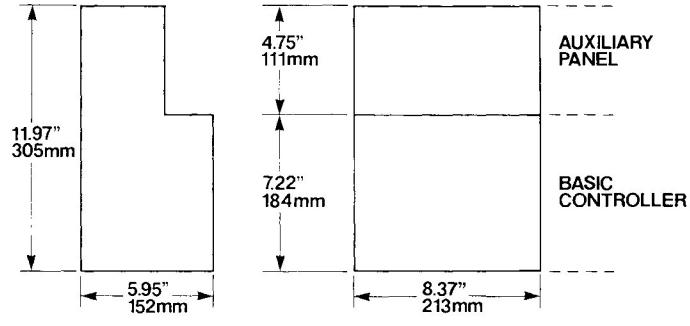


Sufficient work room around all power terminals assures fast, easy installation of plug-in kits.

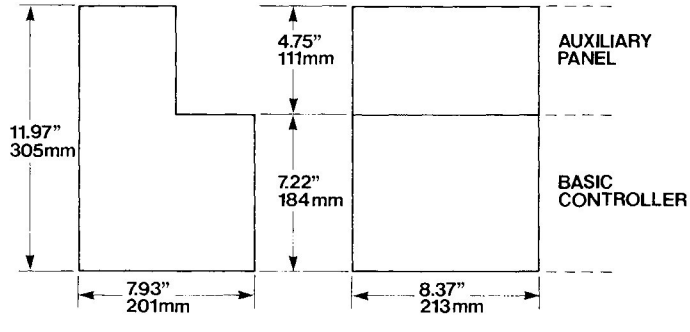
Engineering Data

Dimensions in Inches and Millimeters

Non-Regenerative Controller



Regenerative Controller



FlexPak Plus D-C Drives

Controller Selection

Drive Rating		Non-Regenerative Controller		Regenerative Controller	
HP	A-C Input (Volts)	With Aux. Panel	Without Aux. Panel	With Aux. Panel	Without Aux. Panel
1/4–3/4	115	14C101	14C50	14C106	14C660
1/2–1-1/2	230	14C102	14C51	14C107	14C61
2–3	230	14C103	14C52	14C108	14C62
5	230	14C104	14C53	14C109	14C63
7-1/2	230	–	–	14C111	–

(1) Includes Motor Field Current

(2) Stated with optional Field Supply Kit. Standard on 2, 3 and 5 HP models.

Controller Ratings

Motor HP	115 Volt A-C Input / 230 Volt A-C Input					
	Rated A-C Line (1) Amperes	Input KVA	D-C Armature Voltage	Rated Armature Current (Amperes)	Available Field Voltage (2)	Available Field Current (Amperes) (2)
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

Service Conditions

Elevation ..... Up to 3300 feet (1000 meters)
Ambient Temperatures .... 32°F to 131° (0°C to 55°C)
Atmosphere ..... Non-condensing relative humidity 5% to 95%
A-C Line Voltage Variation ..... ±10% of rated voltage
A-C 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) 1-2%
  Tachometer Feedback (2) ..... 1% or 0.5%
Speed Range
  Voltage Feedback (1) 20:1
  Tachometer Feedback (2) 30:1

(1) Non-regenerative controllers

(2) Standard on regenerative controllers

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

Note: This material is not intended to provide operational instructions. Appropriate Reliance Electric Industrial Company instruction manuals and precautions should be studied prior to installation, operation or maintenance of equipment.

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