FlexPak 3000 Power Module Drive

The easy-to-use three-phase digital DC drive for regenerative and non-regenerative applications from 5 to 400 HP

The FlexPak 3000 Power Module digital DC drive is ideal for configured drive applications in which maximum wiring and panel flexibility is required. The Power Module design is also ideal for offshore destinations where the systems integrator or OEM requires country-specific fusing and magnetics.

FlexPak 3000 Power Modules with Optional OIM

Simple: All control, signal and power field wiring is readily accessible through supplied terminal boards to streamline installation. Setup configuration and operation can be accomplished using the optional OIM (Operator Interface Module) or CS3000 configuration software.

Optional: In order to give the user the most flexible and lowest cost solution, the OIM (Operator Interface Module) is an option for the FlexPak 3000 Power Module drive. This interface, with its large graphics display and keypad allows for easy setup and troubleshooting using plain text. Diagnostic and status information as well as help text are displayed and entered in one of five languages easily selected through the keypad. A "Quick-Start" menu combines with self-tuning of the speed and current loops to ensure quick, straightforward drive setup and startup.

Compact: Extensive use of molded parts allows for a high density power module without compromising the accessibility of options and circuits. This European-style Power Module drive package (IP00) does not include a contactor, control transformer, or fusing, allowing it to be customized and configured into a much smaller panel space. This FlexPak 3000 Power Module packaging also makes it ideal for retrofitting older analog drives such as the MaxPak Plus. Retrofits are an ideal application because most older analog drives had all of the mechanical hardware mounted separately on the panel. With the FlexPak 3000 Power Module, existing hardware, such as contactors, control transformers, and fusing can be reused, providing significant cost savings.

Flexible: The FlexPak 3000 Power Module drive is ideal for offshore destinations where the systems integrator or OEM can select the magnetics and fuses common to the country of destination. The FlexPak 3000 Power Module drive is not burdened with the cost of supporting multiple fuse ratings or control transformer ratings in order to be a global drive. Similar to the standard FlexPak 3000 drive, the FlexPak 3000 Power Module drive can also be modified with standard kits to satisfy a wide array of applications without burdening the customer with unnecessary features. The FlexPak 3000 Power Module model uses all of the same kits as the standard FlexPak 3000 drive model.

Standard Features

AC Supply

- 50/60 Hz AC line frequency input
- Phase-insensitive AC line input
- Interface control for either an AC or DC contactor

Power Section

- Full-wave, full-control 6-SCR power conversion for smooth, efficient operation and high performance
- IP00 power module construction
- Non-regenerative or regenerative (required for reversing) configurations available
- Capable of 150% full-load current for 1 minute
- Rated ambient temperature at nominal current: 40°C

FlexPak 3000 Power Module Drive

More Standard Features

Analog Signals (12-bit resolution)

- 0-10 VDC manual speed reference
- User selectable +10 volt or 4-20 mA speed reference
- Two 0-10 VDC analog outputs that are user-configurable
- Speed feedback from analog DC tachometer (250 VDC maximum input)

Digital Signals

- Coast stop, auto/manual, forward/ reverse, jog, run and stop inputs
- Motor thermostat diagnostic input
- Brush wear diagnostic input or OCL (Outer Control Loop) enable
- Customer interlock diagnostic input
- Drive running contact output
- Drive alarm contact output
- Drive fault contact output

Other Significant Standard Features

- Field Current Regulator based on unit-type Amp rating
  - 4 A (25-60 A Ratings)
  - 10 A (150-450 A Ratings)
  - 12 A (800 A Rating)
- Self-tuning of speed and current loops without disconnecting the field
- Field (current) loss protection
- User selectable stop modes
  - Coast
  - Current limit
  - Ramp

Optional Drive Mounted Operator Interface Module "OIM" Features

- Complete operator controls for run, stop, jog forward, control source select, and fault log.
- "Quick Start" sequence for easy, complete drive set up
- Large, easy-to-read LCD display provides the following:
  - Built-in digital metering which is selectable in units proportional to speed or current such as FPM (feet per minute), percent load, or other user defined units
  - Display text in any of the following languages:
    - English
    - German
    - French
    - Spanish
    - Italian
    - Code
- Monitoring of multiple parameter values in a single display such as speed and load
- Adjustments and monitoring using on-screen menus and full, non-abbreviated text
- Drive status display indicators:
  - Drive fault
  - Drive alarm
  - Interlocks are o.k.
  - Drive ready
  - Drive running
  - Current/torque limit
- Extensive Diagnostics (with recommended corrective action displayed)
  - AC line voltage high/low alarm
  - Motor brush wear alarm
  - Loss of AC line synchronization fault
  - Failed SCR fault
  - Motor thermostat fault
  - Control thermostat fault
  - Drive (inverse time) overload fault
  - Drive IET (instantaneous electronic trip) fault
  - Tachometer loss fault
  - Overspeed fault
  - Field current loss fault
  - Network communication fault

Other Optional Features

- Remote mountable OIM kit for mounting in cabinet doors
- Dynamic braking kits available for customer panel mount
- Enhanced field supply kit provides for the following:
  - Electronic field trim
  - Field economy
  - 240 VDC field on 230 VAC drives
  - 230 VAC drive can be set for field voltages 103 VDC-259 VDC
  - 460 VAC drive can be set for field voltages 207 VDC-515 VDC
- Pulse encoder feedback kit provides .01% speed regulation via digital pulse encoder speed feedback
- AC tachometer feedback kit for use with existing motor-mounted AC tachometers
- I/O expansion card expands drive capability to do dancer follower functions, outer control loops, external MOP, preset speeds, analog or frequency output signals, HP/KW output signals, and speed or current level detector outputs

Other Optional Features con't

- 115 VAC control circuit interface for separate mounting on chassis drives or mounted on enclosed drives
- AutoMax network interface option card
- DeviceNet™ communication option card
- ControlNet™ communication option card(1)
- Profibus™ communication option card(1)
- Interbus-S™ communication option card(1)
- CS3000 Windows-based configuration executive for upload/ download, compare, monitor and drive control capability. PC-Scope feature available on V4 and higher drives.

(1) Contact Reliance for availability

Service Conditions

- Standard altitude: to 3300 feet (1000 meters)
- Standard ambient temperature - 0-40°C (32°F to 104°F)
- Nominal AC line voltage range: 200 to 460 VAC
- AC line voltage variation: ±10%
- AC line frequency: 48/62 Hz
- AC line distribution system KVA capacity(2)
- FlexPak 3000 drives are 50/60 Hz
- Atmosphere: Non-condensing relative humidity 5 to 90% at 20°C

Overload Capacities

- Maximum load: 150% for one minute

Efficiency and Power Factor

- Power factor at rated load and speed: 88%
- Efficiency of power module at rated speed and rated load: 98.6%
- Efficiency of drive including motor is typically 85%

Speed Range(3)

- Operator's speed adjustment: 0 to rated speed
- Specification speed range: 100:1 based on top speed and tachometer

(2) Consult manual for drive KVA and impedance requirements.
(3) Dependent on top speed and pulse encoder used.
5PY = 30:1
RD120-1 and -2 = 70:1
RL1024 = 100:1

Instruction Manual

- D2-3475

Speed Regulation

Regulation Arrangement	Speed Change with 95% Load Change	Speed Change from All Other Variables
Armature Voltage w/ IR Compensation	2-3%	15%
Closed Loop		
w/ 5PY tachometer(4)	1%	2%
w/ RD120-1 encoder(5)	0.01%	0.01%
w/ RD120-2 encoder(5)	0.01%	0.01%
w/ RL1024 encoder(5)	0.01%	0.01%

(4) Standard DC tachometer interface included with drive; no pulse encoder feedback kit required.
(5) Optional pulse encoder feedback interface kit required; model number 907FK0101.

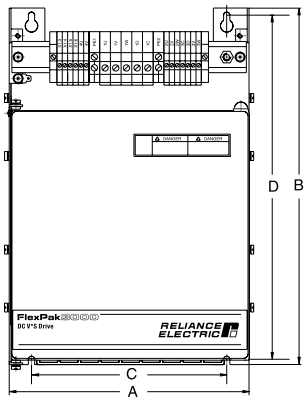
Drive Selection

FlexPak 3000 Power Module drives can support 200-460 VAC line input voltages. The customer must select and provide the appropriate fusing, control transformer, and contactor for the desired line input voltage.

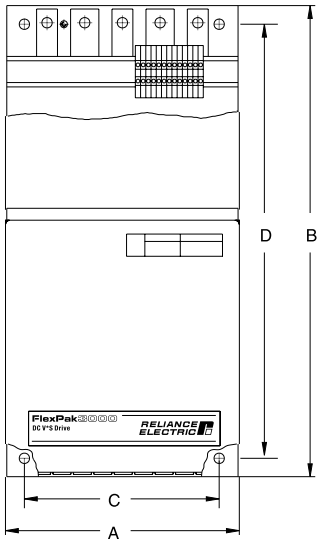
HP @ 230 VAC (1)	HP at 460 VA (1)	Nom. Current Rating (2)	Unit Type Current Rating (3)	Model Numbers Non-Regenerative / Regenerative	Rated Field Current (Amps)
5	10	20	25	20FN8742 / 20FR8742	4
10	29	50	60	50FN8742 / 50FR8742	4
30	75	125	150	125FN8742 / 25FR8742	10
50	125	208	250	200FN8742 / 200FR8742	10
100	200	375	450	375FN8742 / 375FR8742	10
150	400	667	800	650FN8742 / 650FR8742	12

(1) HP based on 40°C ambient & 230/460 VAC line input voltage at nominal rating. Derate at 1.5% per deg.C above 40°C.
(2) Nominal current rating is 100% continuous operation with 50% overload capability.
(3) Unit-type current rating based on maximum continuous operation without overload.
Note: All ratings are based on 40°C Ambient

FlexPak 3000 Power Module Dimensions



Typical 20, 50, and 125 Amp power module dimension outline. See instruction manual D2-3475 for details.



Typical 208, 375, and 667 Amp power module dimension outline. See instruction manual D2-3475 for details.

Model Numbers Non-Regenerative / Regenerative	A	B	C	D	Depth	Weight
20FN8742 / 20FR8742	269 mm (10.6“)	400 mm (15.8”)	219 mm (8.62”)	386 mm (15.2”)	287mm (11.3“)	10 kg (22 lb)
50FN8742 / 50FR8742	269 mm (10.6“)	400 mm (15.8”)	219 mm (8.62”)	386 mm (15.2”)	287mm (11.3“)	10 kg (22 lb)
125FN8742 / 125FR8742	269 mm (10.6“)	428 mm (16.9”)	219 mm (8.62”)	386 mm (15.2”)	287mm (11.3“)	14 kg (31 lb)
200FN8742 / 200FR8742	270 mm (10.6”)	550 mm (21.7”)	220 mm (8.66”)	500 mm (19.68”)	337mm (13.3”)	40 kg (42 lb)
375FN8742 / 375FR8742	270 mm (10.6”)	550 mm (21.7”)	220 mm (8.66”)	500 mm (19.68”)	337mm (13.3”)	40 kg (42 lb)
650FN8742 / 650FR8742	306 mm (12.1”)	660 mm (26.0”)	266 mm (10.47”)	636 mm (25.0”)	436 mm (17.2”)	83 kg (183 l b)

This document located at:
http://www.reliance.com/drives

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

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