

# KBDF

## Digital AC Drive with CSP™\* IP20 Enclosure

### Primary Features

Horsepower 1/8 to 5 HP  
115/230/460 VAC - 1ph & 3ph Input  
Output 230/460 VAC - 3ph  
Starting Torque 200%  
Ultra Bright Digital Display with LED Status Indicators  
Class "A" (CE) RFI Filter\*\*

### GFCI Compatible

Contains proprietary software which prevents GFCI circuit breakers and outlets from tripping\*\*\*.

### Benefits

#### Saves Time

Easy to Install and Simple to Operate  
Does not require commissioning  
With CSP™ you are up and running in less than 10 minutes.

#### Motors Last Longer

Proprietary CL Software  
Provides overload protection, prevents motor burnout and eliminates nuisance tripping.  
UL approved as an electronic overload protector for motors.

#### Energy Saving

Uses only the power the application requires.  
Replacing constant speed with variable speed will significantly reduce energy costs.

#### Customization for OEM's

When an off the shelf drive does not meet your needs, KB will work with you to provide a custom drive solution, Ready to Use, "Out-of-the-Box."  
Customization includes: Pre-calibrating or programming of a stock control, adding a custom label or branding, custom software, PLC functions or designing a new control.

\*CSP™ = Common Sense Programming. Parameters are organized into easy-to-understand intuitive groups.

\*\*Order "F" suffix for built in filter. KBDF-24F.

\*\*\*Use program function F0.04 to set the drive for GFCI operation (may increase audible motor noise).



## Additional Features

### Sensorless Flux Vector Control

Flux Vector Compensation with Static Auto-Tune provides excellent speed regulation with high torque loads throughout the entire speed range. Auto energy saving at light loads. Smooth motor torque.

### Local/Remote Operation

When used with process control, the Local/Remote key can be used to switch from process control to manual control if a process fault occurs.

### Electronic Inrush Current Limit (EICL™) Protection

Eliminates harmful inrush AC line current during power up.

### Inputs/Outputs

Seven isolated multi-function inputs with sink or source mode control logic, two analog inputs, two multi-function output relays and one analog output.

### Built-in Potentiometer

Sets motor speed in lieu of keypad.

### Ride-Through

Provides smooth recovery to the previous set speed during a momentary power loss.

### Holding Torque at Zero Speed

Resists motor shaft rotation when the drive is in "Stop" mode.

### Regeneration Protection

Eliminates tripping due to high bus voltage caused by rapid deceleration of high inertial loads.

### Undervoltage and Overvoltage Protection

Shuts down the drive if the AC line input voltage goes above or below the operating range.

### Short Circuit Protection

Shuts down the drive if a short circuit occurs at the motor (phase-to-phase).

## Drive Options

### Memory Module

The Memory Module can store up to four programs for cloning and archiving. The drive can also store up to four programs.

### IODF Input/Output Multi-Function Expansion Module

Adds up to 5 points of additional I/O.

### Drive-Link™ Programming Kit

Allows PC programming.

### Modbus Serial Communication Module

See instruction manual for complete description.



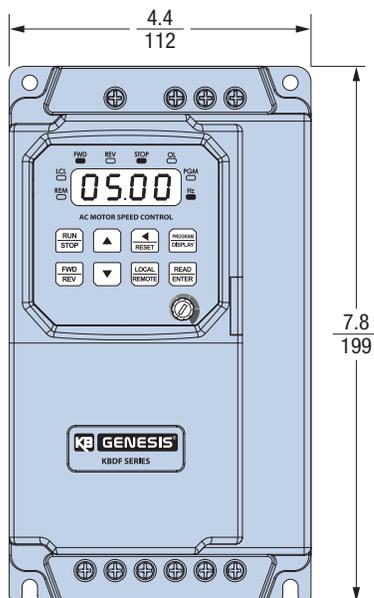
## Applications

- Actuators • Air Cleaners • Amusement Rides
- Ball Pitching Machines • Blowers • Boat Lifts
- Bowling Alley Lane Cleaners • CNC • Conveyors
- Door and Gate Openers • Drilling • Duct Cleaners
- Dumbwaiters • Elevators and Hoists
- Exercise Equipment • Fabric Processing • Fans
- Feeders • Film Processing • Floor Cleaning
- Food Processing • Garment Cutting
- Grinding and Polishing • Hoppers • Horse Walkers
- HVAC • Indexers • Irrigation • Laminating
- Lift Station Pumps • Machine Tools
- Medical • Milling • Mixers • Oven Conveyors
- Packaging • Paint Blenders, Shakers, and Sprayers
- Paper Handling • Portable Equipment Used with GFCIs
- Pottery Wheels • Printing
- Pumps • Range Hoods • Sandblasting • Saws
- Sewing • Stretch Wrap • Textile • Treadmills
- Therapeutic Vibrators • Washing Machines
- Wave Soldering • Web Processing • Wheelchair Lifts
- Whole House Vacuums and Attic Fans
- Wire Feeders • Wood and Metal Lathes and Cutters
- Winders and Unwinders

Visit [kbelectronics.com](http://kbelectronics.com)

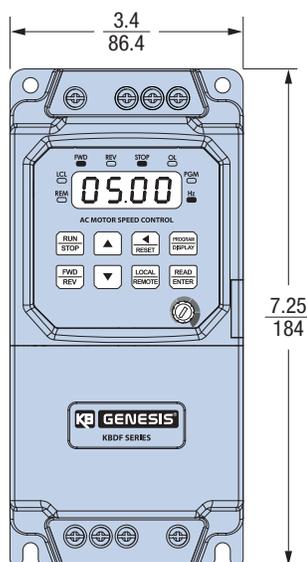
to learn about Build-A-Drive™, KB's New AC Inverter Program.

## Case "B" – (Inches/mm)



Maximum Depth:  $\frac{6.1}{155}$

## Case "A" – (Inches/mm)



Maximum Depth:  $\frac{5.1}{130}$

## Ratings

## 115 VAC 1-Phase Input • 230 VAC 3-Phase Output

Model No.	Ratings		Net Weight		Case
	HP, (kW)	Amps	Lbs.	kg	
KBDF-13	0.5, (0.37)	2.4	2.8	1.27	A
KBDF-14	1, (0.75)	4.0	2.8	1.27	
KBDF-16	1.5, (1.2)	5.5	2.8	1.27	

## 115/230 VAC 1-Phase Input • 230 VAC 3-Phase Output

Model No.	Ratings		Net Weight		Case
	HP, (kW)	Amps	Lbs.	kg	
KBDF-23D	0.5, (0.37)	2.4	2.8	1.27	A
KBDF-24D	1, (0.75)	4.0	2.8	1.27	
KBDF-27D*	2, (1.5)	6.7	2.8	1.27	

\*115 VAC Rating: 1.5 HP, (1.13 kW), 5.5 Amps

## 230 VAC 1-Phase Input • 230 VAC 3-Phase Output

Model No.	Ratings		Net Weight		Case
	HP, (kW)	Amps	Lbs.	kg	
KBDF-23**	0.5, (0.37)	2.4	2.8	1.27	A
KBDF-24**	1, (0.75)	4	2.8	1.27	
KBDF-27**	2, (1.5)	6.7	2.8	1.27	
KBDF-29 (1P)	3, (2.25)	9	4.2	1.93	B

## 230 VAC 1\* and 3-Phase Input • 230 VAC 3-Phase Output

Model No.	Ratings		Net Weight		Case
	HP, (kW)	Amps	Lbs.	kg	
KBDF-29**	3, (2.25)	9	4.2	1.93	B

\*Rated 2 HP (1.5 kW), 6.7 Amps with 1-Phase input.

## 460 VAC 3-Phase Input • 460 VAC 3-Phase Output

Model No.	Ratings		Net Weight		Case
	HP, (kW)	Amps	Lbs.	kg	
KBDF-42**	1, (0.75)	2.0	4.2	1.93	B
KBDF-45**	3, (2.25)	5.5	4.2	1.93	
KBDF-48**	5, (3.75)	8.3	4.2	1.93	

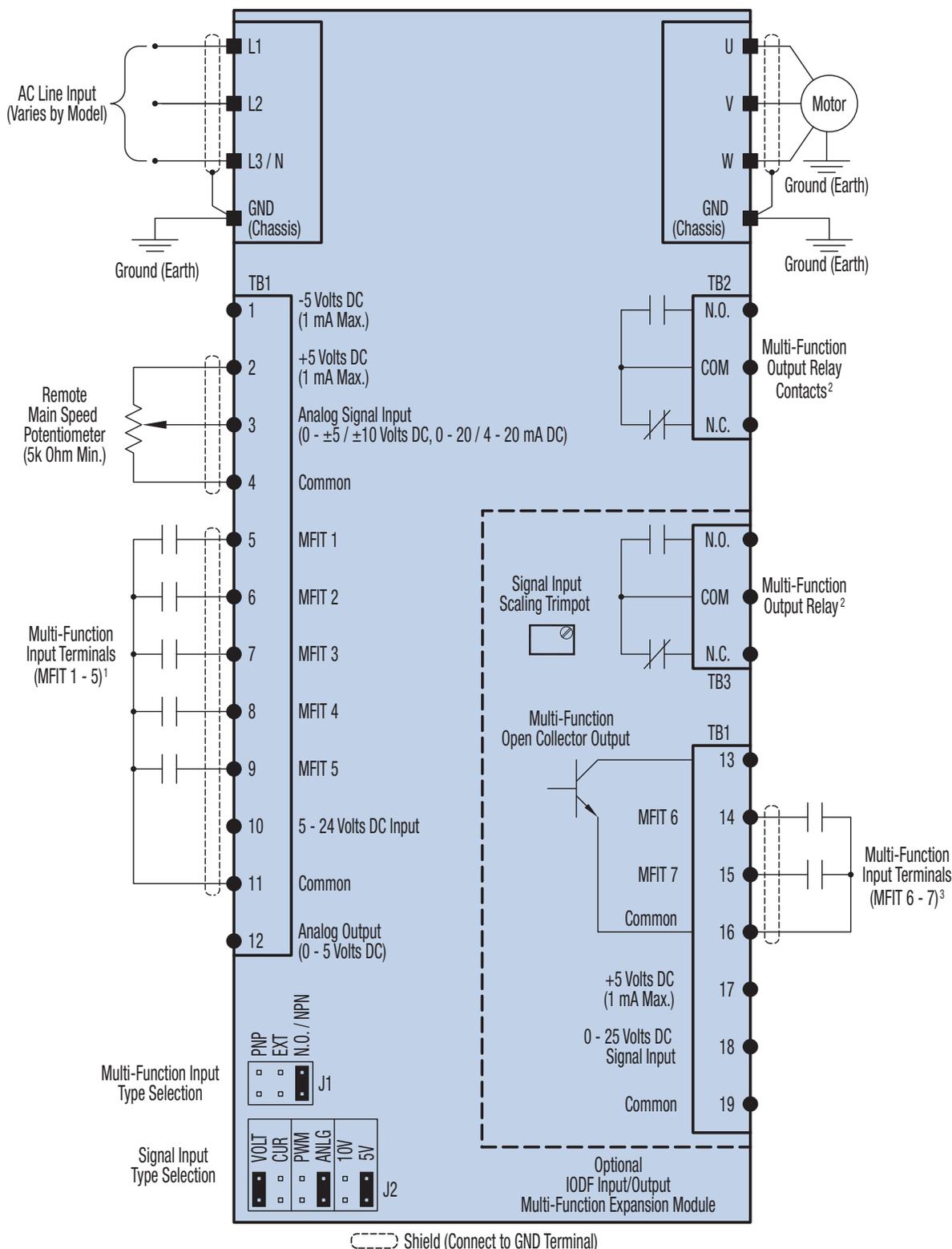
\*\*Order "F" Suffix for Built-In Class "A" (CE) RFI (EMI) AC Line Filter. Ex. KBDF-24F

## Specifications

Maximum Load (% of Current Overload for 2 Minutes)	150
Switching Frequency (kHz)	8, 10, 12, 14, 16
Output Frequency Resolution (Hz)	0.06
Minimum Output Frequency to Motor (Hz)	0.3
Acceleration Time (Seconds)	0.1 – 180.0
Deceleration Time (Seconds)	0.3 – 180.0
Speed Range (Ratio)	50:1
Speed Regulation (30:1 Speed Range, 0 – Full Load) (% Base Speed)	2.5
Stalled Motor Trip Time (Seconds)	6
Braking	Regenerative*
Operating Temperature Range (°C / °F)	0 – 40 / 32 – 104
Storage Temperature (°C / °F)	-25 – +85 / -13 – +185

\*DC Injection Braking - Programmable via keypad.

# General Connection Diagram



**Notes:** 1. Multi-Function Input Terminals (MFIT 1 – 5 on TB1 of the drive) are factory set for N.O. Contacts or NPN Transistors (J1 set to the “N.O. / NPN” position), which use the internal power supply. For NPN Transistors, which use an external power supply (5 – 24 Volts DC), set Jumper J1 to the “EXT” position. For PNP Transistor circuits, which use the internal power supply or an external power supply (5 – 24 Volts DC), set Jumper J1 to the “PNP” position. 2. Multi-Function Output Relay Contact Ratings: 1 Amp at 30 Volts DC, 0.5 Amp at 125 Volts AC, and 0.25 Amp at 250 Volts AC. 3. Multi-Function Input Terminals (MFIT 6 – 7 on TB4 of the IODF) only accept N.O. Contacts or NPN Transistors (which use the internal power supply).