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.

Visit kbelectronics.com
to learn about Build-A-Drive™, KB’s New AC Inverter Program.

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

KB Electronics, Inc.

Automation and Control
### Ratings

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>HP (kW)</th>
<th>Amps</th>
<th>Lbs.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBDF-13</td>
<td>9623</td>
<td>0.5 (0.37)</td>
<td>2.4</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>KBDF-14</td>
<td>9624</td>
<td>1 (0.75)</td>
<td>4.0</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>KBDF-16</td>
<td>9625</td>
<td>1.5 (1.2)</td>
<td>5.5</td>
<td>2.8</td>
<td>1.27</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>HP (kW)</th>
<th>Amps</th>
<th>Lbs.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBDF-23D</td>
<td>9673</td>
<td>0.5 (0.37)</td>
<td>2.4</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>AKBDF-24D</td>
<td>9674</td>
<td>1 (0.75)</td>
<td>4.0</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>KBDF-27D*</td>
<td>9675</td>
<td>2 (1.5)</td>
<td>6.7</td>
<td>2.8</td>
<td>1.27</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>HP (kW)</th>
<th>Amps</th>
<th>Lbs.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBDF-23**</td>
<td>9688</td>
<td>0.5 (0.37)</td>
<td>2.4</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>AKBDF-24**</td>
<td>9689</td>
<td>1 (0.75)</td>
<td>4.0</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>KBDF-27**</td>
<td>9690</td>
<td>2 (1.5)</td>
<td>6.7</td>
<td>2.8</td>
<td>1.27</td>
</tr>
<tr>
<td>KBDF-29 (1P)</td>
<td>9700</td>
<td>3 (2.25)</td>
<td>9.0</td>
<td>4.2</td>
<td>1.93</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>HP (kW)</th>
<th>Amps</th>
<th>Lbs.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBDF-29**</td>
<td>9641</td>
<td>3 (2.25)</td>
<td>9.0</td>
<td>4.2</td>
<td>1.93</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Part No.</th>
<th>HP (kW)</th>
<th>Amps</th>
<th>Lbs.</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBDF-42**</td>
<td>9642</td>
<td>1 (0.75)</td>
<td>2.0</td>
<td>4.2</td>
<td>1.93</td>
</tr>
<tr>
<td>KBDF-45**</td>
<td>9643</td>
<td>3 (2.25)</td>
<td>5.5</td>
<td>4.2</td>
<td>1.93</td>
</tr>
<tr>
<td>KBDF-48**</td>
<td>9644</td>
<td>5 (3.75)</td>
<td>8.3</td>
<td>4.2</td>
<td>1.93</td>
</tr>
</tbody>
</table>

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

### Specifications

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

*DC Injection Braking - Programmable via keypad.
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).