KBWA Hybrid Drive™
A Digital AC Drive with Analog Interface

KBWA-22D Non-Vented NEMA 1 / IP 50 Enclosure
KBWA-23D Vented NEMA 1 / IP 20 Enclosure

Primary Features
Horsepower 1/8 to 1/2 HP*
Input 115 and 230 VAC - 1ph
Output 230 VAC - 3ph
Starting Torque 200%
Front Panel Power On/Off Switch

GFCI Compatible
With factory programming, allows the equipment to operate with Ground Fault Circuit Interruption circuit breakers or outlets.

Benefits
Saves Time
Easy to Install and Simple to Operate
Does not require programming or commissioning.
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 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, we 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.

*Lower horsepower models available (KBWA-21D, 2P3D, 2P6D).

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
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.

Electronic Inrush Current Limit (EICL™) Protection
Eliminates harmful inrush AC line current during power up.

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).

Trimpot Adjustments
Min. Speed, Max. Speed, Accel, Decel, Current Limit, Slip Comp.

Jumper Selections
AC Line Input Voltage, 50Hz/60Hz, Motor Frequency, 1X/2X Motor RPM, Automatic/Manual Start Mode, Forward/Reverse Speed Select.

Drive Option

Supplied Forward-Stop-Reverse Switch
Provides motor reversing and stop functions.

Drive Input Voltage Settings

<table>
<thead>
<tr>
<th>Drive Set for 208/230 Volt AC Line Input (J3 Not Installed) (Factory Setting)</th>
<th>Drive Set for 115 Volt AC Line Input (J3 Installed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Drive Set for 208/230 Volt AC Line Input" /></td>
<td><img src="image2" alt="Drive Set for 115 Volt AC Line Input" /></td>
</tr>
</tbody>
</table>

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.  
kbelectronics.com  • info@kbelectronics.com

Automation and Control

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Specifications

Maximum Load (% of Current Overload for 2 Minutes) 150
Switching Frequency (kHz) 8
Output Frequency Resolution (Hz) 0.06
Minimum Output Frequency to Motor (Hz) 0.3
Acceleration Time (Seconds) 0.3 – 20
Deceleration Time (Seconds) 0.3 – 20
Speed Range (Ratio) 60:1
Speed Regulation (30:1 Speed Range, 0 – Full Load) (% Base Speed) 2.5
Stalled Motor Trip Time (Seconds) 6
Braking Regenerative*
Operating Temperature Range (ºC / ºF) 0 – 40 / 32 – 104
Storage Temperature (ºC / ºF) -25 – +85 / -13 – +185

*DC Injection Braking – requires factory programming.

Ratings

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Enclosure</th>
<th>Part No.</th>
<th>Ratings HP (kW)</th>
<th>Amps</th>
<th>Net Weight Lbs.</th>
<th>Net Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBWA-22D</td>
<td>NEMA 1 / IP 50</td>
<td>9926</td>
<td>1/4 (0.19)</td>
<td>1.5</td>
<td>1.58</td>
<td>0.72</td>
</tr>
<tr>
<td>KBWA-23D</td>
<td>NEMA 1 / IP 20</td>
<td>9946</td>
<td>1/2 (0.37)</td>
<td>2.4</td>
<td>1.58</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Notes: 1) Rated 1.3 Amps on 115 VAC input. 2) Rated 2.2 Amps on 115 VAC input.

Dimensions – (Inches/mm)

Model KBWA-23D Vented NEMA 1 / IP 20 Shown

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Control Layout

Adjustable Trimpots
- COMP: Slip Compensation
- ACC: Acceleration
- DEC: Deceleration
- MIN: Minimum Speed
- MAX: Maximum Speed
- CL: Current Limit

Diagnostic LEDs
- Status (ST): Green/Yellow/Red
- Power On (PWR): Green

Terminals P1, P2, P3
- To Factory Installed
- Main Speed Potentiometer

CON2 (F-S-R)
- Remove Jumper to Install Forward-Stop-Reverse Switch
  (Supplied)

Terminals L1A, L2A, L1B, L2B
- To Factory Installed
- On/Off AC Line Switch

CON1 (A/M)
- Automatic Start Mode:
  Jumper Installed
  (Factory Setting)
- Manual Start Mode:
  Jumper Removed
  [Forward-Stop-Reverse Switch
  (Supplied) Must be Installed]

J1 (50/60 Hz)
- 60 Hz: For 60 Hz Motors
  (Factory Setting)
- 50 Hz: For 50 Hz Motors

J2 (X1/X2)
- X1: For 50/60 Hz Motors
  (Factory Setting)
- X2: For 50/60 Hz Motors
  Operated at 100/120 Hz

J3 (115V, 208/230V)
- Drive is Factory Set for
  208/230 Volt AC Line Input
- J3 Not Installed