

# KBIC®

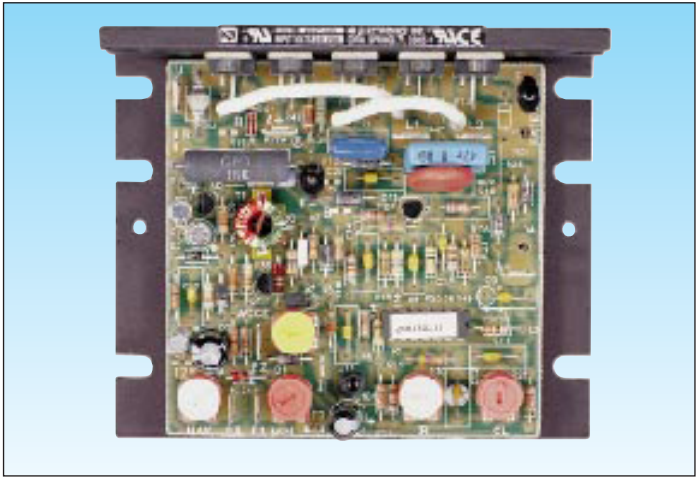
Variable Speed DC Motor Controls  
For Shunt Wound, PM and AC/DC Motors

1/100 – 1½ Hp @ 115 VAC – 50/60 Hz<sup>▲</sup>

1/50 – 3 Hp @ 230 VAC – 50/60 Hz<sup>▲</sup>

## TYPICAL APPLICATIONS

- Conveyors • Packaging Machines • Feeders
- Welding Positioners • Pumps
- Machine Tools • Exercise Equipment
- Screening and Printing Equipment



## STANDARD FEATURES

- Plug-in Horsepower Resistor® (see chart) allows a single model to be used on a wide range of motors
- MOV Transient Protection
- Trimpots: MIN, MAX, ACCEL, IR & CL
- Voltage Following
- Inhibit™ and Auto Inhibit®
- Dual Voltage Capable on 230V “D” and “DS” Models

## OPTIONAL FEATURES

- Auxiliary Heatsink (P/N 9861) extends rating of basic control
- Barrier Terminal Accessory Kit (P/N 9863)
- AC Line & Armature Fuse Kit (P/N 9849)
- Dial Plate & Knob Kit (P/N 9832)

## SPECIFICATIONS

Speed Range (Ratio) .....	50:1
Load Regulation (% Base Speed)	
(0 – Full Load, 50:1 Speed Range) .....	1*
Line Voltage Regulation (% Base Speed)	
(At Full Load, ± 15% Line Variation) .....	1/2*
Control Linearity (% Speed vs. Dial Rotation) .....	2
CL/Torque Range (% Full Load) .....	0 – 300
Accel Time Range (Secs.) .....	.5 – 4.0
Min. Speed Trimpot Range	
(% Full Speed) .....	0 – 30*
Max. Speed Trimpot Range (% Full Speed) .....	50 – 140*
Max. Allow. Amb. Temp.	
(At Full Rating, °C/°F) .....	45/113

<sup>▲</sup> Maximum rating indicated is with Auxiliary Heatsink. For maximum rating without Auxiliary Heatsink see Electrical Rating Chart.

<sup>\*\*</sup> Performance is for 90V PM motors on 115 VAC and 180V PM motors on 230 VAC.

## DESCRIPTION

The KBIC® full-wave DC motor speed controls are designed for applications demanding excellent performance, high reliability and low cost. Although compact in size (only 4.30" x 3.64" x 1.25"), these controls offer better than 2% regulation over a 50:1 speed range. The controls are fabricated with components which have proven reliability, including MOV transient protection, which is used to protect the power bridge. Integrated circuitry is used to provide a non-complicated design with superior load and line voltage regulation. Electronic current limiting (CL) protects the motor and control against overloads by limiting the maximum level of output current. Acceleration start (adjustable from .5 to 4 seconds) provides a smooth start each time the AC power is applied.

A unique feature of the KBIC® controls is the Plug-in Horsepower Resistor®. It eliminates the need for recalibrating IR Comp and Current Limit when the control is used on various horsepower motors. Additional versatility is achieved by using the Auxiliary Heatsink (optional) which is used to double the horsepower rating of each model. The output of the control is a linear function of potentiometer rotation. The KBIC® can also be operated in a voltage following mode by supplying an *isolated* analog signal (0 – 9VDC) to the input terminals P2 (+) and F-. The controls are terminated as standard with Q-D terminals. A Barrier Terminal Accessory Kit is available which incorporates both line and armature fuses.

The Inhibit™ circuit (terminals I1 and I2) is provided to electronically disconnect the armature output voltage. Another standard feature is Auto Inhibit®. This circuit prevents false starts and high surge currents when cycling the KBIC® control with the AC line.

A variety of models are provided with choices of voltage and current ratings. Model KBIC-240D operates on both 115 and 230 VAC to provide 0 – 90 and 180 VDC output. Model KBIC-240DS operates on both 115 and 230 VAC to provide 0 – 90 VDC output. Included with the controls are a 5K remote potentiometer, mounting hardware and operating instructions.

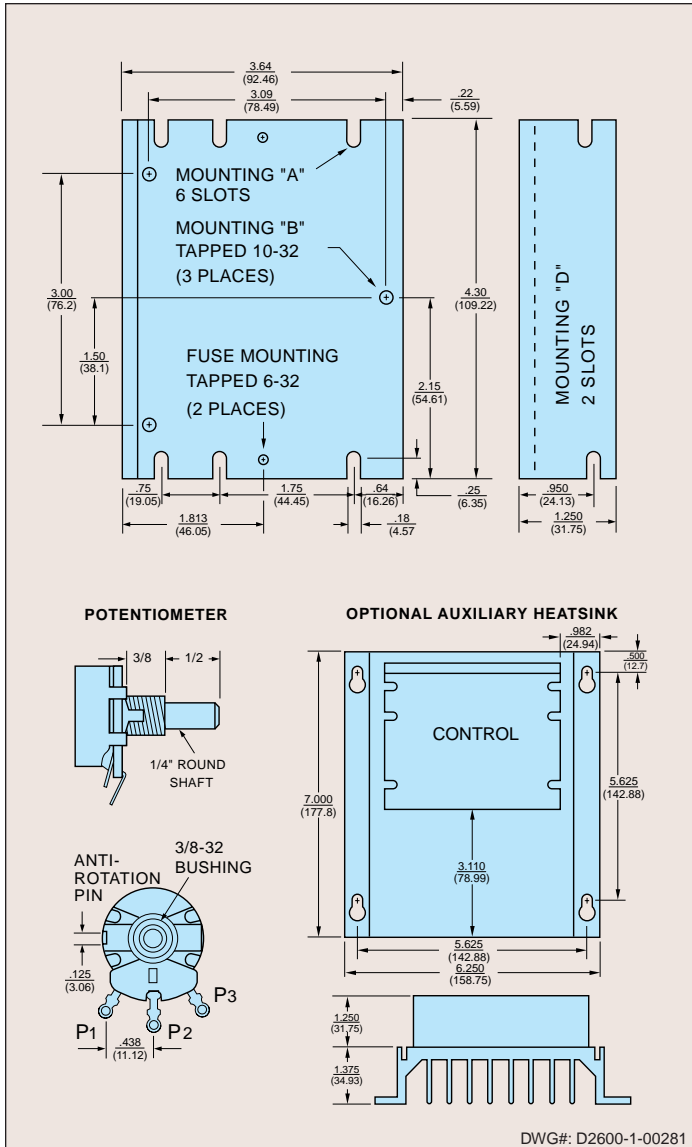
\* CE Compliance Requires KBRF-200A RFI Filter



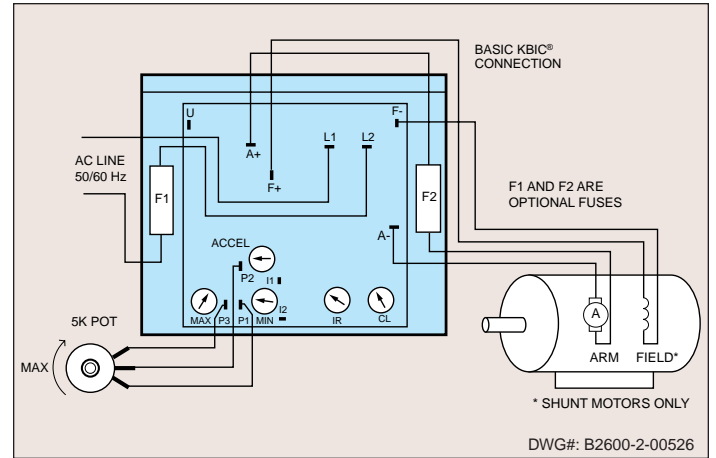
## ELECTRICAL RATINGS

Model Number	KB Part Number	AC Line Voltage (VAC) ±15% 50/60 Hz	Motor Voltage (VDC)	Rating Without Auxiliary Heatsink			Rating With Auxiliary Heatsink			Field Voltage (Shunt Wound Motor Only) (VDC)
				Max AC Load Current (RMS Amps)	Max DC Load Current (Avg. Amps)	Maximum Horsepower [Hp, (KW)]	Max AC Load Current (RMS Amps)	Max DC Load Current (Avg. Amps)	Maximum Horsepower [Hp, (KW)]	
KBIC-120	9429	115	0 - 90	9.0	6.0	0.5, (0.4)	18.0	12.0	1, (.75)	50, 100
KBIC-125	9433	115	0 - 90	12.0	8.0	0.75, (0.6)	24.0	16.0	1.5, (1.1)	50, 100
KBIC-240	9428	230	0 - 180	9.0	6.0	1, (.75)	18.0	12.0	2, (1.5)	100, 200
KBIC-225	9432	230	0 - 180	12.0	8.0	1.5, (1.1)	24.0	16.0	3, (2.3)	100, 200
KBIC-240D	9464	115	0 - 90	9.0	6.0	0.5, (0.4)	18.0	12.0	1, (.75)	50, 100
		230	0 - 180			1, (.75)			2, (1.5)	
KBIC-240DS	9423	115 / 230	0 - 90	9.0	6.0	0.5, (0.4)	18.0	12.0	1, (.75)	100

### MECHANICAL SPECIFICATIONS INCHES [mm]



### CONNECTION DIAGRAM



### PLUG-IN HORSEPOWER RESISTOR® CHART

Motor Horsepower Range**		Plug-in-Horsepower Resistor® Resistance Value (ohms)
Armature Voltage 90 - 130 VDC	Armature Voltage 180 VDC	
1/100 - 1/50	1/50 - 1/25	1.0
1/50 - 1/30	1/25 - 1/15	.51
1/30 - 1/20	1/15 - 1/10	.35
1/20 - 1/12	1/10 - 1/6	.25
1/12 - 1/8	1/6 - 1/4	.18
1/8 - 1/5	1/4 - 1/3	.1
1/4	1/2	.05
1/3	3/4	.035
1/2	1	.025
3/4*	1½*	.015
1*	2*	.01
1½*	3*	.006

\* Use with Auxiliary Heatsink - see Electrical Ratings.  
 \*\* For overlapping motor horsepower range use lower value Plug-in Horsepower Resistor®.

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