

# KBLC™

## Variable Speed DC Motor Controls For Shunt Wound and PM Motors

1/100 – 1 HP<sup>1</sup> @ 115 VAC – 50/60 Hz  
1/50 – 2 HP<sup>1</sup> @ 230 VAC – 50/60 Hz

### TYPICAL APPLICATIONS

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



Model KBLC-120 Shown

### STANDARD FEATURES

- Plug-in Horsepower Resistor® – Allows a single KBLC model to be used on a wide range of motor horsepower without recalibration. (Supplied separately).
- MOV Transient Protection
- Trimpots: MIN, MAX, ACCEL, IR, CL
- Voltage Following
- Auto Inhibit®, Inhibit™

### ACCESSORIES

- **Potentiometer Kit (Part No. 9111)** – 5K ohm
- **Auxiliary Heat Sink (Part No. 9861)** – Doubles the Horsepower rating of the control.
- **Dial Plate and Knob Kit (Part No. 9832)** – Contains a 1¼" diameter set screw knob and a 2" x 2¼" "0-100" scale dial plate.
- **Barrier Terminal Accessory Kit (Part No. 9863)** – When used with the Auxiliary Heat Sink, it converts the quick-connect terminals of the KBLC™ to a barrier terminal block and provides fusing.
- **Barrier Terminal Board (Part No. 9884)** – Converts the quick-connect terminals of the KBLC™ to a barrier terminal block. Contains PC board mounted line and armature fuse holders. Plugs onto the quick-connect terminals of the KBLC™.
- **SI-5 Signal Isolator (Part No. 9443)** – Provides isolation between the non-isolated signal sources or a main speed potentiometer, and the KBLC™. Plugs onto the quick-connect terminals of the KBLC™.
- **KBRF-200A RFI Filter (Part No. 9945C)** – Provides RFI and EMI suppression. Complies with CE Directive 89/336/EEC (EN55011) relating to the EMC Class A Industrial Standard. Rated 24 Amps at 115/230 Volts AC, 50/60 Hz.

### SPECIFICATIONS

Speed Range (Ratio) .....	50:1
Load Regulation (0 – Full Load, 50:1 Speed Range) (% Base Speed) .....	1 <sup>4</sup>
Line Voltage Regulation (at Full Load, ± 15% Line Variation) (% Speed) .....	0.5 <sup>4</sup>
Control Linearity (% Speed vs. Dial Rotation) .....	2
CL/Torque Range (% Full Load) .....	0 – 200
ACCEL Time Range (Secs.) .....	0.5 – 4
MIN Speed Trimpot Range (% Full Speed) .....	.0 – 30 <sup>4</sup>
MAX Speed Trimpot Range (% Full Speed) .....	50 – 120 <sup>4</sup>
Maximum Allowable Ambient Temperature (at Full Rating) (°C/°F) .....	45/113

### DESCRIPTION

The KBLC™ 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 0.5 to 4 seconds) provides a smooth start each time the AC power is applied.

A unique feature of the KBLC™ control 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 Heat Sink (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 KBLC™ can also be operated in a voltage following mode by supplying an isolated analog signal (0 – 7 VDC) to the input terminals P2 (+) and F-. If an isolated input signal is not available, the optional Barrier Terminal Board Signal Isolator can be used.

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 reduce the armature output voltage to zero. Another standard feature is Auto Inhibit®. This circuit prevents false starts and high surge currents when cycling the KBLC™ control with the AC line.

A variety of models are provided with choices of voltage and current ratings. Model KBLC-240D operates on both 115 and 230 VAC to provide 0 – 90 and 180 VDC output. Model KBLC-240DS operates on both 115 and 230 VAC to provide 0 – 90 VDC output. Included with the controls are full installation and operating instructions.

#### Notes:

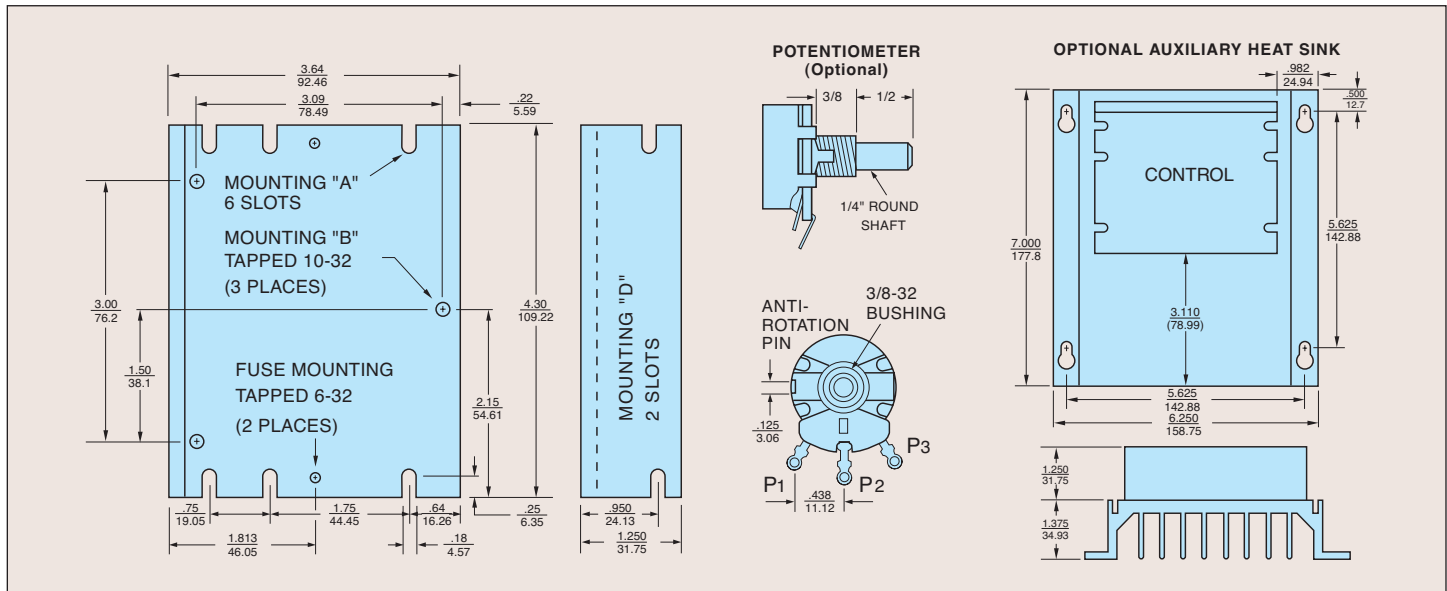
1. Rating indicated is with Auxiliary Heat Sink. For maximum rating without Auxiliary Heat Sink see Electrical Rating Chart.
2. CE compliance requires KBRF-200A RFI Filter (or equivalent) and proper wiring practices.
3. A Plug-In Horsepower Resistor® must be installed for control to operate.
4. Performance is for 90V PM motors on 115 VAC and 180V PM motors on 230 VAC.

## ELECTRICAL RATINGS

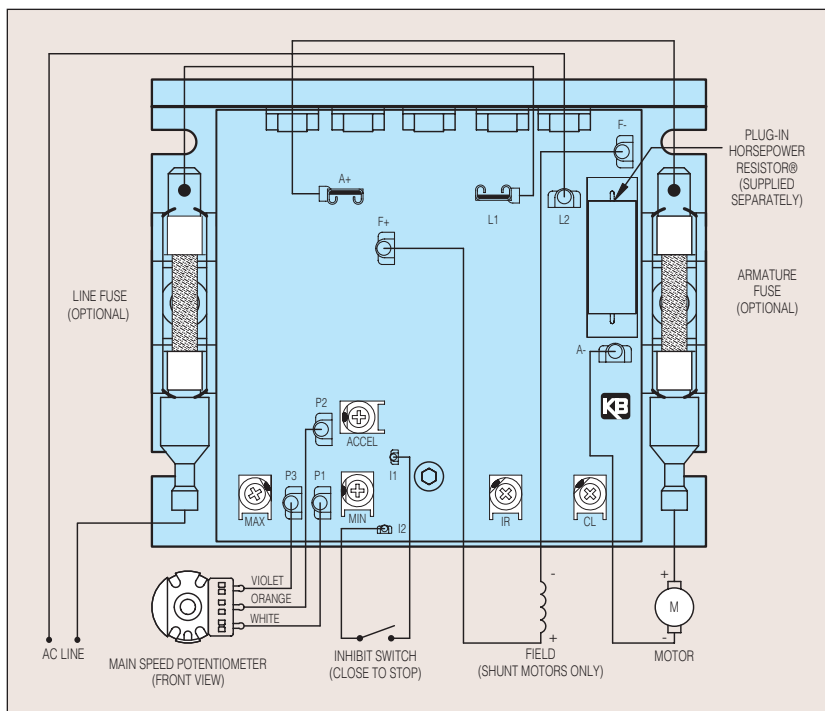
Model Number	Part Number	AC Line Voltage (VAC) ±15% 50/60 Hz	Motor Voltage (VDC)	Rating Without Auxiliary Heat Sink			Rating With Auxiliary Heat Sink			Field Voltage (Shunt Wound Motors Only) (VDC)
				Max AC Load Current (RMS Amps)	Max DC Load Current (Avg. Amps)	Maximum Horsepower HP, (kW)	Max AC Load Current (RMS Amps)	Max DC Load Current (Avg. Amps)	Maximum Horsepower HP, (kW)	
KBLC-120	9109	115	0 – 90	9.0	6.0	0.5, (0.37)	18.0	12.0	1.0, (0.75)	50, 100
KBLC-240	9110	230	0 – 180	9.0	6.0	1.0, (0.75)	18.0	12.0	2.0, (1.50)	100, 200
KBLC-240D	9112	115	0 – 90	9.0	6.0	0.5, (0.37)	18.0	12.0	1.0, (0.75)	50, 100
		230	0 – 180			1.0, (0.75)			2.0, (1.50)	100, 200
KBLC-240DS	9116	115/230	0 – 90*	9.0	6.0	0.5, (0.37)	18.0	12.0	1.0, (0.75)	100

\*Step-Down Operation.

## MECHANICAL SPECIFICATIONS (Inches / mm)



## CONNECTION DIAGRAM



## PLUG-IN HORSEPOWER RESISTOR® & FUSE SELECTION CHART

Motor Horsepower Range*		Plug-in Horsepower Resistor®		Recommended Fuse Size (Amps)	
Armature Voltage 90 – 130 VDC	Armature Voltage 180 VDC	Value	KB P/N	Line	Armature
1/100 – 1/50	1/50 – 1/25	1.0	9833	12	1/3
1/50 – 1/30	1/25 – 1/15	.51	9834	12	1/2
1/30 – 1/20	1/15 – 1/10	.35	9835	12	3/4
1/20 – 1/12	1/10 – 1/6	.25	9836	12	1 1/4
1/12 – 1/8	1/6 – 1/4	.18	9837	12	2
1/8 – 1/5	1/4 – 1/3	.1	9838	12	2 1/2
1/4	1/2	.05	9839	12	4
1/3	3/4	.035	9840	12	5
1/2	1	.025	9841	12	8
3/4**	1 1/2**	.015	9842	15	12
1**	2**	.01	9843	25	15

\* For overlapping motor horsepower range use lower value Plug-in Horsepower Resistor®.

\*\*Use with Auxiliary Heat Sink – see Electrical Ratings.



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