KBMG SERIES

ULTRACOMPACT REGENERATIVE DRIVE

FULL-WAVE • 4-QUADRANT • IP-20
SCR Bidirectional Variable Speed and Torque Control
for PM and DC Shunt Motors

Models KBMG-21D, 212D cover:
1/50 – 1 HP[1] @ 115 VAC – 50/60 Hz
1/25 – 2 HP[1] @ 230 VAC – 50/60 Hz

CE[2]

• Conveyors • Indexers • Feeders • Positioners
• Textile Equipment • Packaging Machinery
• Web Control • Converting Machinery

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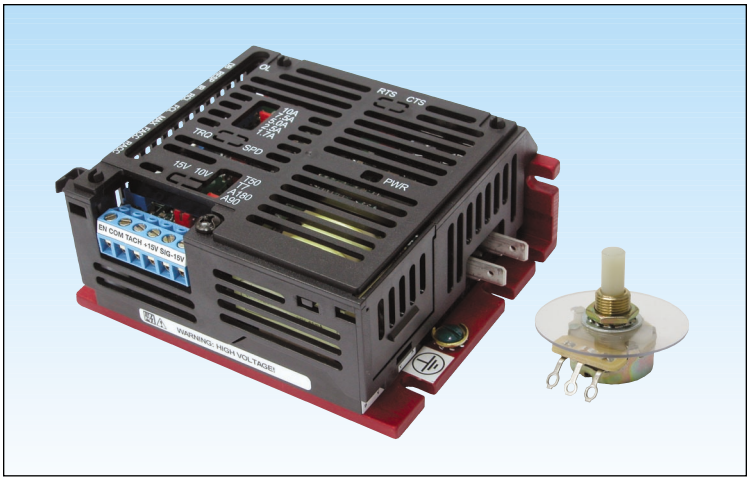


STANDARD FEATURES

- **Jumper Selectable Features**
  Operation Mode: Speed, Torque
  AC Line Voltage (VAC – 50/60 Hz): 115, 230
  DC Armature Voltage (VDC): 90, 180
  Tach-generator Voltage (VDC/1000 RPM): 7, 50
  DC Current Output Ranges (ADC): (0.17 – 1.0, 1.7 – 10[1])
  Analog Input Voltage (VDC): 0 to ±10, 0 to ±15
  Enable: Coast to Stop (CTS), Regenerate to Stop (RTS)
- **Trimpot Adjustments**
  Dead Band (DB) • Response (RESP) • IR Compensation (IR)
  Forward Current Limit (FCL) • Reverse Current Limit (RCL)
  Maximum Speed (MAX) • Forward Acceleration (FACC)
  Reverse Acceleration (RACC)
- **LEDs**
  Power On (PWR ON) • Overload (OL)

SPECIFICATIONS

AC Line Input Voltage (VAC ±10%, 50/60 Hz)	115 or 230
AC Line Frequency (Hz)	50/60
Armature Voltage Range 115 VAC Line (VDC)	0 to ± 90
Armature Voltage Range 230 VAC Line (VDC)	0 to ± 90, 0 to ± 180
Field Voltage at 115 VAC Line (VDC)	100 / 50
Field Voltage at 230 VAC Line (VDC)	200 / 100
Maximum Load Capacity (% for 2 Minutes)	150
Ambient Temperature Operating Range (ºC)	0 to 50
Speed Range (Ratio)	50:1
Armature Feedback Load Regulation (% Base Speed)	±1[3]
Tach-generator Feedback Load Regulation (% Set Speed)	±1[3]
AC Line Regulation (% Base Speed)	±0.5[3]
KBMG-21D Current Ranges (Amps DC)	0.17, 0.25, 0.5, 0.75, 1.0
KBMG-212D Current Ranges (Amps DC)	1.7, 2.5, 5.0, 7.5, 10[1]
Forward Accel (FACC) and Reverse Accel (RACC) Range (Sec.)	0.1 to 15
Dead Band Range (% Base Speed)	0 to ±5
Max Speed Trimpot Range (% Base Speed)	55 to 110[3]
IR Comp Range at 115 VAC Line (VDC @ Full Load)	0 to 20
IR Comp Range at 230 VAC Line (VDC @ Full Load)	0 to 40
Forward CL (FCL) and Reverse CL (RCL) Range (% Range Setting)	0 to 175
Voltage Following Input Range (VDC)[4]	0 to ±10, 0 to ±15
Voltage Following Linearity (% Base Speed)	±0.5

Notes:
1. Maximum rating indicated is with Auxiliary Heat Sink (Part No. 9861). 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.** Performance is for 90V PM motors on 115 VAC and 180V PM motors on 230 VAC. **4.** Requires isolated input or SIMG Signal Isolator (Part No. 8832).

DESCRIPTION

The KBMG are ultracompact, full-wave regenerative drives capable of operating DC PM or Shunt motors in a bidirectional mode. Its (4) quadrant operation provides forward and reverse torque in both speed directions. This allows the control to maintain constant speed with overhauling loads and provides rapid reversing and controlled braking. Because of its excellent controllability and response time, the KBMG can replace servos in many applications. The control is factory set for armature feedback, which provides up to 1% load regulation over a motor base speed of 50:1. Tach-generator feedback is also provided for superior load regulation if required. A simple jumper setting converts the KBMG to a torque control. In this mode, motor torque rather than motor speed is controlled.

An important feature of the drive is the factory-calibrated, built-in, selectable motor current jumper. It eliminates the need to recalibrate IR Comp and Current Limit for most applications.

The control contains an Enable function that can be used to start and stop the motor electronically via a contact closure. Through a jumper selection, the motor can be controlled to rapidly "regenerate to stop" or to "coast to stop."

KB's exclusive Auto Inhibit® circuit provides safe, smooth starting even during rapid cycling of the AC line. The Overspeed Protect Circuit prevents failure of the power bridge in extreme overhauling conditions. Reliability of the KBMG is further enhanced with the use of a high speed current limit circuit and MOV transient protection. LED's, which can be used for diagnostics, are provided for power on and motor overload. A rugged extruded aluminum heat sink ensures enhanced heat transfer, which provides a higher control rating while maintaining cooler running SCR's. The KBMG contains a finger-safe cover to meet the IP-20 Standard.

Power connections to the KBMG are made via quick connect terminals and signal input connections are made via a removable barrier terminal block. A 5k remote potentiometer and full operating instructions are supplied.

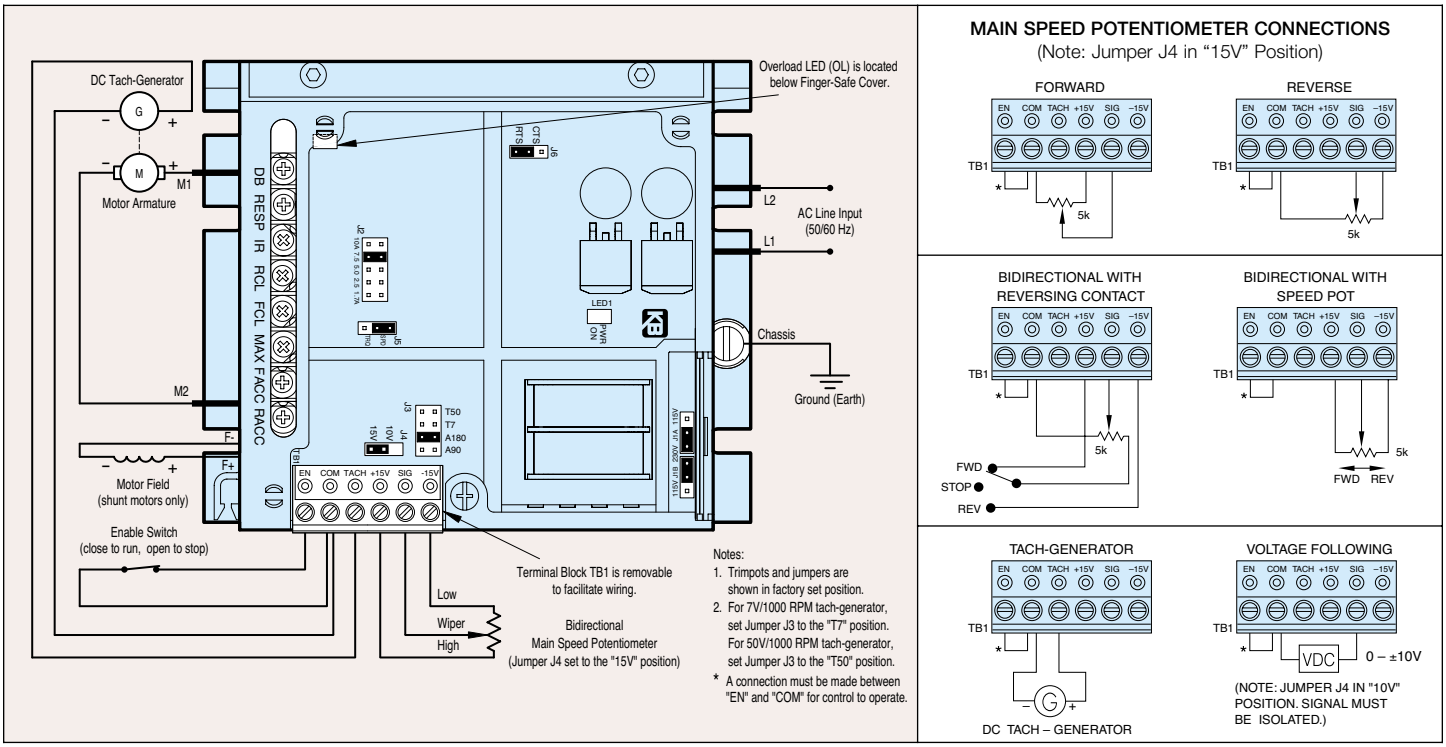
ACCESSORIES

- **Auxiliary Heat Sink (Part No. 9861) –** Increases the control rating to 1 HP at 90 VDC and 2 HP at 180 VDC. Dimensions (L x W x H approx.): 7.0" x 6.3" x 1.9".
- **SIMG Bipolar Signal Isolator (Part No. 8832) –** Allows a non-isolated signal source to be used.
- **Multi Speed Board (Part No. 8833) –** Provides discrete preset speeds which can be controlled from a PLC.
- **DIN Rail Mounting Kit (Part No. 9995) –** Converts control to standard DIN Rail Mounting.

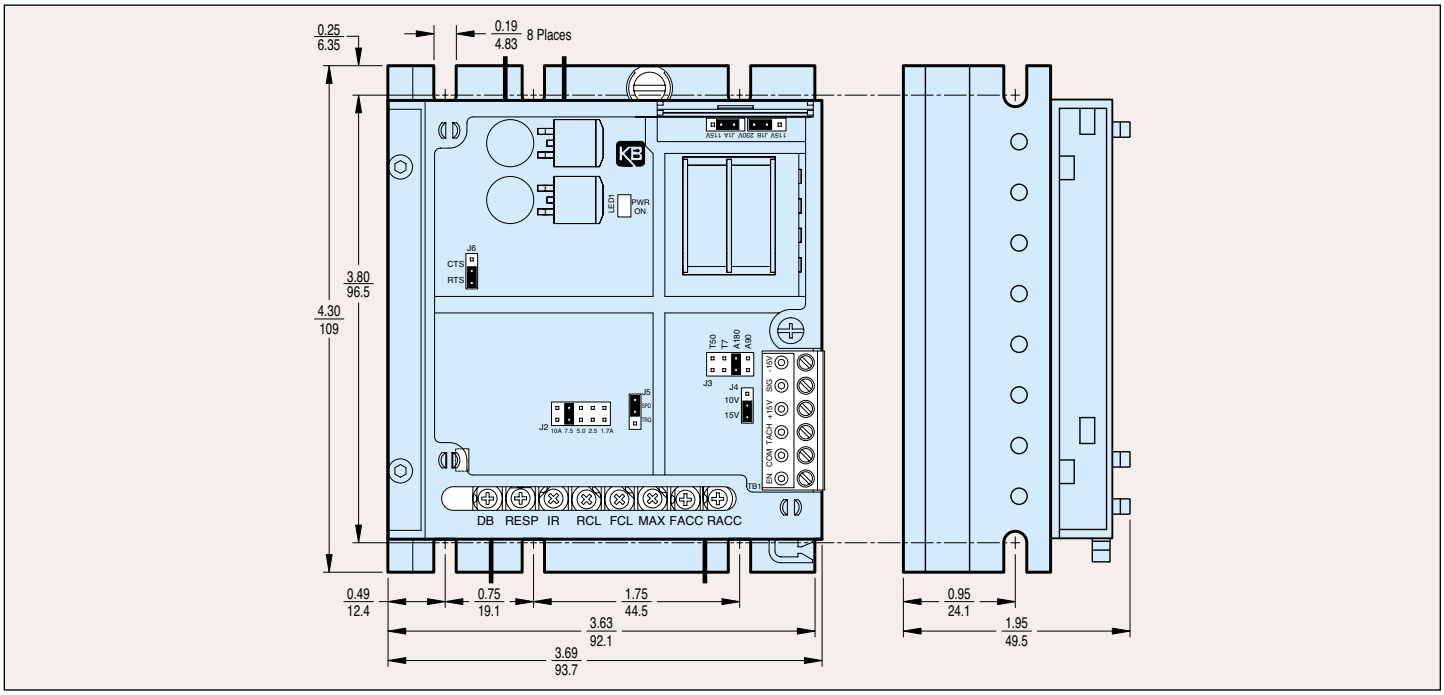
ELECTRICAL RATINGS

Model	Part No.	AC Line Voltage (VAC) ±10% 50/60 Hz	Motor Voltage (VDC)	Maximum Rating Without Auxiliary Heat Sink			Maximum Rating With Auxiliary Heat Sink		
				AC Line Current (RMS Amps)	DC Load Current (Avg. Amps)	Horsepower HP, (kW)	AC Line Current (RMS Amps)	DC Load Current (Avg. Amps)	Horsepower HP, (kW)
KBMG-21D	8830	115	0 – ±90	1.5	1.0	.075, (.06)	—	—	—
		208/230	0 – ±180	1.5	1.0	.15, (.11)	—	—	—
KBMG-212D	8831	115	0 – ±90	12.0	8.0	.75, (.6)	16.0	11.0	1.0, (.75)
		208/230	0 – ±180	12.0	8.0	1.5, (1.1)	16.0	11.0	2.0, (1.50)

CONNECTION DIAGRAMS



MECHANICAL SPECIFICATIONS (Inches / mm)



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