

KBWM™

VARI-DRIVE NEMA-1

SCR Variable Speed DC Motor Control

For Permanent Magnet (PM),
Shunt Wound Motors and
Magnetic Particle Clutches

TWO MODELS COVER

1/100 - 1/3 Hp @ 90VDC
1/50 - 3/4 Hp @ 180 VDC



- Model KBWM-120 for 115 VAC line with 90 VDC motors (P/N 9380)
- Model KBWM-240 for 230 VAC line with 180VDC motors (P/N 9381)

STANDARD FEATURES

- Plug-in Horsepower Resistor[®] automatically calibrates IR Comp. and Current Limit (CL).
- AC line and armature[^] fusing.
- Rugged all-metal NEMA 1 enclosure.
- AC line ON/OFF switch with “power on” indicator lamp.
- Patented KBMM™ speed control module prevents demagnetization of PM motors.

[^] Proper size Plug-in Horsepower Resistor[®] and armature fuse must be installed for control to operate – distributor supplied.

ARMATURE FUSE SELECTION CHART

90 VDC Motor	180 VDC Motor	Approx. DC Motor Current (amps)	Fuse Rating (AC amps)
Horsepower			
1/100	1/50	.1	2/10
1/50	1/25	.2	3/10
1/30	1/15	.3	1/2
1/20	1/10	.5	3/4
1/15	1/8	.7	1
1/10	1/5	1.0	1 1/2
1/8	1/4	1.3	2
1/6	1/3	1.7	3
1/4	1/2	2.5	4
1/3	3/4	3.3	5

SPECIFICATIONS

Speed Range (Ratio)	50:1
Load Regulation – Armature Feedback (0 – Full Load, 50:1 Speed Range) (% Base Speed)	1*
Line Voltage Regulation (at Full Load, ± 10% Line Variation) (% Base Speed)	1/2*
Control Linearity (% Speed vs. Dial Rotation)	2
CL/Torque Range (% Full Load)	0 – 200
Accel Time Range (0 – Full Speed) (Secs.)	.2 – 10

* CE Compliance Requires KBRF-200A RFI Filter

DESCRIPTION

The KBWM™ Vari-Drive™ adjustable speed SCR control for DC motors offers proven reliability in a rugged all-metal NEMA-1 enclosure. The Vari-Drives are equipped with the ultimate KBMM™ speed control module. They are specifically designed for fractional horsepower permanent magnet (PM) DC motors. Two models are offered. The KBWM-120 is designed for 115 VAC input and is rated 1/100 - 1/3Hp at 90 VDC. For motors rated 1/50 - 3/4 Hp at 180 VDC use Model KBWM-240.

KB's exclusive Plug-in Horsepower Resistor[®] automatically presets the drive's IR Comp and CL circuits for safe operation on various motors. Although factory calibrated, internal trimpots for Min, Max, IR, CL, Accel and Decel can be used to fine-tune the KBWM™ for specific applications. Connections to the control are via a barrier terminal block. By changing the orientation of the front cover, the wiring can be brought in either from the bottom or the top of the control.

Motor failure due to demagnetization is eliminated by the patented ultra-fast Direct-Fed™ current limit circuit. The controls contain AC line and armature* fusing, which provide protection against catastrophic failure. Auto-Inhibit[®], a KB exclusive, allows the drive to be turned on and off rapidly using the AC line without damage to the control and/or motor. The internal CL LED is a diagnostic indicator that lights when the motor is overloaded.

A conveniently located front panel lighted rocker switch controls AC line input power to the drive.

*Plug-in Horsepower Resistor[®] and armature fuse supplied separately.

Decel Time Range (Full – 0 Speed)(Secs.)	.2 – 10
Min. Speed Trimpot Range (% Full Speed)	0 – 30*
Max. Speed Trimpot Range (% Full Speed)	50 – 120*
IR Comp. Trimpot Range (at Specified Full Load) (Volts)....	0 – 24
Max. Allowable Ambient Temperature at Full Rating (°C/°F)	50/122

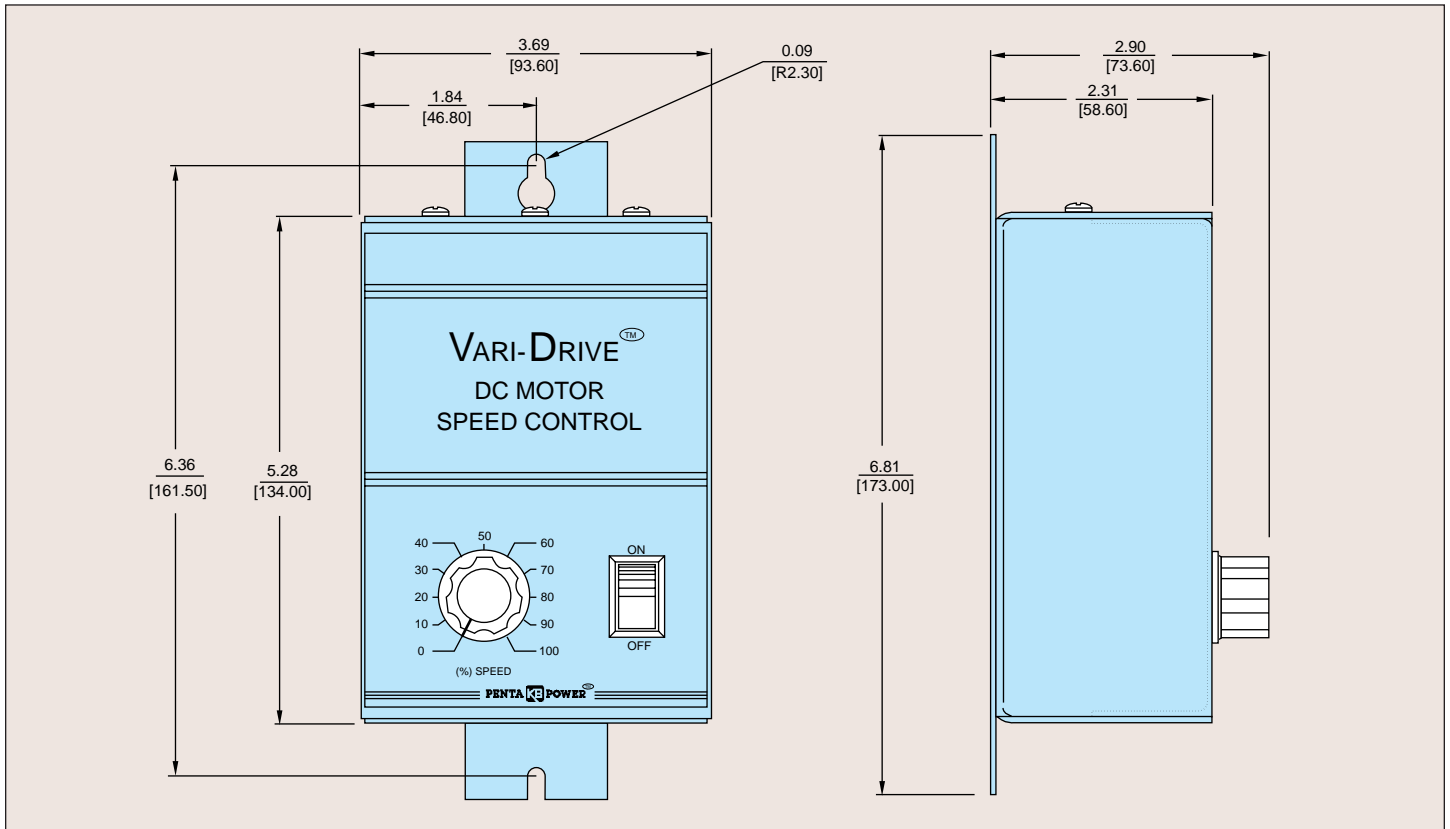
*Performance is for SCR rated PM motors only. Lower performance can be expected with other motor types. Factory setting is for 3% load regulation.

ELECTRICAL RATINGS

Model Number	KB Part No.	Input Line Voltage (VAC - 50/60 Hz)	Armature Voltage (VDC)	Maximum AC Load Current (RMS AMPS)	Maximum DC Load Current (DC Amps)	Maximum Power (Hp) [KW]
KBWM-120	9380	115	0 - 90	5.0	3.5	1/3 [.25]
KBWM-240	9381	230	0 - 180	5.0	3.5	3/4 [.50]

MECHANICAL SPECIFICATIONS

INCHES
[mm]



PLUG-IN HORSEPOWER RESISTOR[®] CHART ⁽¹⁾

Motor Horsepower ⁽²⁾		Motor Current (DC Amps)	Plug-in Horsepower Resistor [®] Value (ohms)	Individual Plug-in Horsepower Resistor [®] Part No.
Armature Voltage 90VDC	Armature Voltage 180VDC			
1/100	1/50	.1	1.0	9833
1/50	1/25	.2	.51	9834
1/30, 1/25	1/15	.35	.35	9835
1/20	1/10	.5	.25	9836
1/15, 1/12	1/6	.8	.18	9837
1/10, 1/8, 1/6	1/4	1.3	.1	9838
1/4	1/2	2.5	.05	9839
1/3	3/4	3.3	.035	9840

Notes: (1) Motor horsepower and armature current must be specified in order to select correct Plug-in Horsepower Resistor[®].
 (2) For motor horsepower not indicated use lower ohm value Plug-in Horsepower Resistor[®].

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