

KBPC-240D

PENTA-DRIVE™

NEMA-4X, IP-65

Variable Speed-Torque SCR DC Motor Control
for Shunt Wound and PM Motors

ONE MODEL COVERS:

1/50 – 1 Hp @ 115 VAC – 50/60 Hz

1/25 – 2 Hp @ 230 VAC – 50/60 Hz

Washdown and Watertight
for Indoor and Outdoor Use



STANDARD FEATURES

- Electronic Overload Protection
 - Built-in Armature Fusing[▲]
 - LED's for "Power On," "Overload" and "Stop"
 - Electronic Start-Stop
- [▲] Fuse supplied separately

JUMPER SELECTABLE FEATURES

- Control Mode: **Speed**, Torque
- DC Current Output (ADC): 2.5, 5.0, 7.5, **10**
- AC Line Voltage (VAC-50/60 Hz): 115, **230**
- DC Armature Voltage (VDC): 90, **180**
- Feedback Type: **Armature**, Tachometer
- Tachometer Voltage[▲] (VDC): **7**, 20/30, 50
- Timed Current Limit: **TCL**, NTCL

Bold figure indicates factory setting. [▲] Per 1,000 RPM

TRIMPOT ADJUSTMENTS

- Minimum Speed (MIN)
- Current Limit (CL)
- Acceleration (ACCEL)
- Timed Current Limit (TCL)
- Maximum Speed (MAX)
- IR Compensation (IR)
- Deceleration (DECEL)
- Jog Speed (JOG)[▲]

[▲] Used with Run-Stop-Jog option.

OPTIONAL FEATURES

- Forward-Brake-Reverse Switch with hesitation feature (P/N 9339). Includes switch and prewired dynamic brake resistor.
- Run-Stop-Jog Switch (P/N 9340)
- Signal Isolator, KBSI-240D (P/N 9431)
- On/Off AC Line Switch (P/N 9341)
- White Case (FDA) (P/N 9342)
- Electronic Pot, KBEP-240D (P/N 9108)
- Anti Plug Reversing Module (P/N 9378)
- Auto/Manual Kit (P/N 9377)

* CE Compliance Requires KBRF-200A RFI Filter

DESCRIPTION

The KBPC Series NEMA-4X (IP-65) SCR DC Motor Speed and Torque Control is designed for applications requiring washdown watertight integrity. Its housing is ruggedly constructed of die cast aluminum which is protected with an acrylic coating for the ultimate in corrosion resistance. All switches are sealed with rubber boots and the main speed potentiometer contains a shaft seal.

The KBPC state-of-the-art electronics include short circuit and transient protection to provide the ultimate in reliability. Electronics overload protection is also provided which prevents motor burnout and demagnetization of PM motors. The control can be operated in either the speed or torque mode via a jumper selection. The current range, which is also jumper selectable, eliminates the necessity for calibration of IR compensation and current limit for most applications. The KBPC also contains jumper selections for AC line voltage (230/115), DC armature voltage (180/90) and feedback type (armature/tachometer).

Standard features include Armature Fusing, Electronic Start/Stop and LED Indicator Array for "Power On," "Stop" and "Overload."

Although the KBPC is factory set for most applications, a variety of trimpots allows adjustment of the following parameters: MIN and MAX speed, Acceleration, Deceleration, Current Limit, IR Comp, and Timed Current Limit. The drive offers the ultimate in flexibility with the availability of several customer installed options. These include: Anti Plug Reversing Module, Forward-Brake-Reverse with Hesitation Feature, Run Stop-Jog, On/Off AC Line Switch, Input Signal Isolation, and Electronic Potentiometer. A complete instruction manual is included.

SPECIFICATIONS

Parameter	Specification	Factory Setting
AC Line Voltage Regulation (% Base Speed)	±0.5	—
Current Ranges (ADC)	2.5, 5, 7.5, 10	10
ACCEL and DECEL Ranges (Seconds)	0.1–15	1
MIN SPEED Range (% Base Speed)	0–30	0
MAX SPEED Range (% Base Speed)	60–140	100
IR COMP Range at 115 VAC Line (VDC)	0–15	4
IR COMP Range at 230 VAC Line (VDC)	0–30	8
CL Range (% Range Setting)	0–200	150
TIMED CL Range (Seconds)	0.5–15	7
Voltage Following Linearity (% Base Speed)	± 0.5	—
AC Line Voltage (VAC ± 10%, 50/60 Hz)	115 or 230	230

Parameter	Specification	Factory Setting
Horsepower Range at 115 VAC Line (Hp) [kw]	1/50–1, [.015–.75]	—
Horsepower Range at 230 VAC Line (Hp) [kw]	1/25–2, [.03–1.5]	—
Armature Voltage Range at 115 VAC Line (VDC)	0–130*	—
Armature Voltage Range at 230 VAC Line (VDC)	0–220*	180
Field Voltage at 115 VAC Line (VDC)	100/50**	—
Field Voltage at 230 VAC Line (VDC)	200/100**	—
Ambient Temperature Range (°C)	0–50	—
Speed Range (Ratio)	50:1	—
Load Regulation, Arm. Feedback (% Base Speed)	± 1	—
Load Regulation, Tach. Feedback (% Set Speed)	± 1	—

NOTES: *Maximum recommended output voltage is 90 VDC for 115 VAC and 180 VDC for 230 VAC. Exceeding these output voltages may cause a reduction in load regulation performance.

**For shunt wound motor with lower voltage field, use L1 and F1 connection.

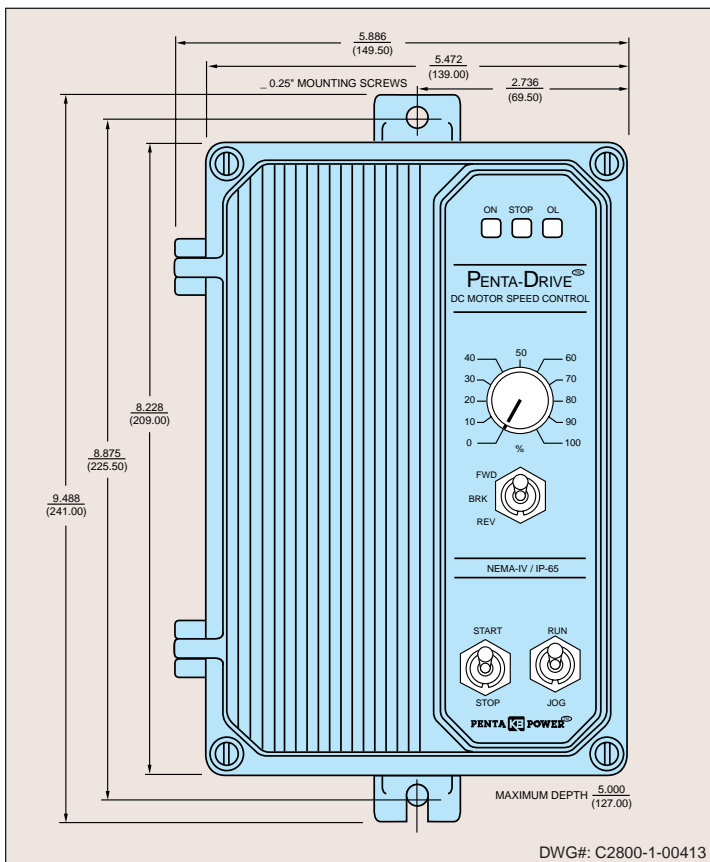
ELECTRICAL RATINGS

Model Number	KB Part Number	AC Line Voltage (VAC) ± 10% 50/60 Hz	Motor Voltage (VDC)	Max. AC Load Current (RMS Amps)	Max. DC Load Current (DC Amps)	Maximum Horsepower Hp, (KW)	Field Voltage** (Volts DC)	
							Terminals F1, F2	Terminals F1, L1
KBPC-240D	9338 (Black)	115/230	0 – 130	15.0	10.2	1, (.75)	100	50
	9342 (White)		0 – 180	15.0	10.2	2, (1.5)	200	100
			0 – 130*					

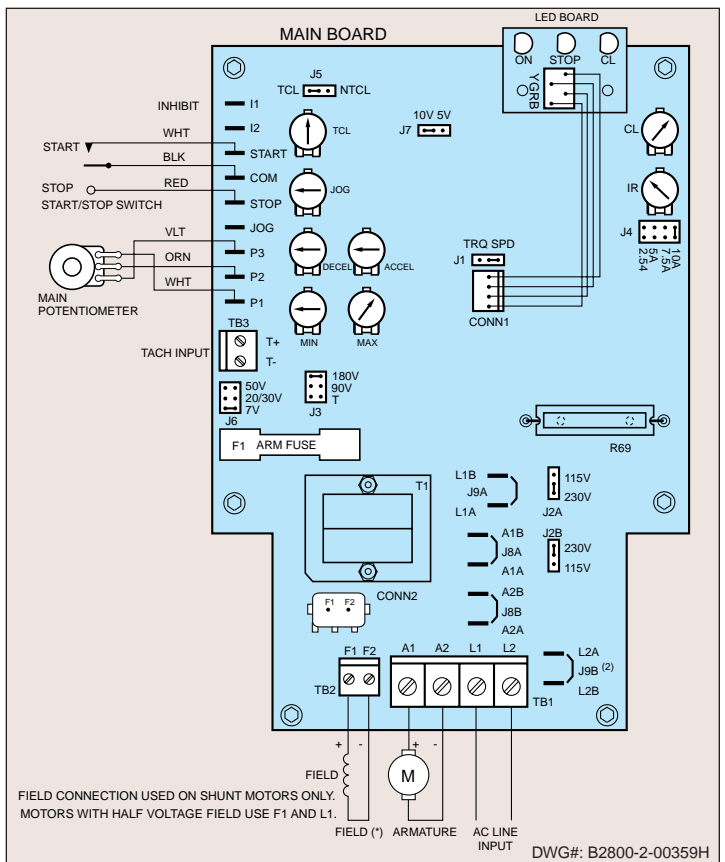
*Stepdown operation (90 VDC motors with 230 VAC input) can cause a reduction in motor performance. **Shunt motors only

MECHANICAL SPECIFICATIONS

INCHES
[mm]



CONNECTION DIAGRAM



© 1998 KB Electronics, Inc.

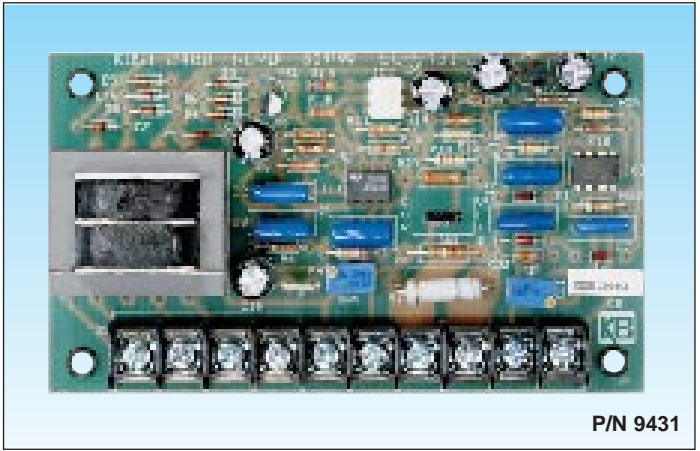


KB ELECTRONICS, INC.
 12095 NW 39th Street, Coral Springs, FL 33065-2516
 (954) 346-4900 • FAX (954) 346-3377
 Outside Florida Call TOLL FREE (800) 221-6570
 www.kbelectronics.com

KBSI-240D

SIGNAL ISOLATOR

Provides an Isolated Interface
Between Non-Isolated Signal Sources
and Variable Speed
Motor Controls



STANDARD FEATURES

- Accepts Voltage or Current Inputs
- Operates on 115/230 VAC 50/60 Hz
- Multi-turn Trimpots for MIN & MAX

SPECIFICATIONS

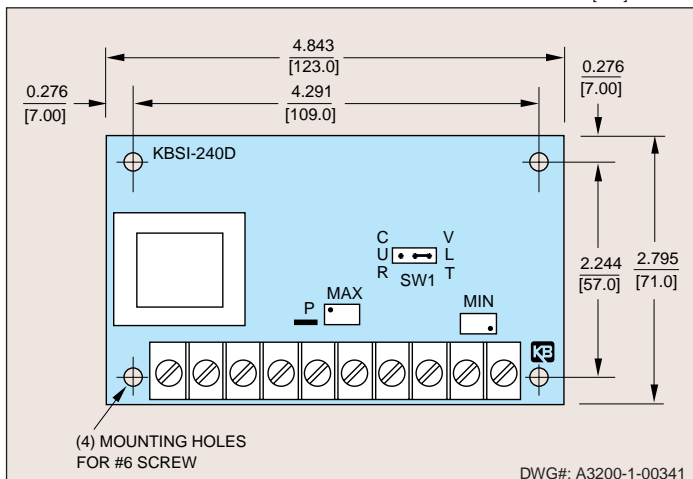
AC Power Requirements115 or 230 VAC, 50/60Hz ⁽¹⁾
Signal Input Voltage ⁽²⁾0 – 25, 0 – 120, 0 – 550 VDC
Signal Input Current ⁽²⁾1 – 5, 4 – 20, 10 – 50 mA ⁽³⁾
Maximum Output Voltage10 Volts
Maximum Output Current10 mA
Range of “MIN” Trimpot± 3 Volts
Range of “MAX” Trimpot 0 – 2 Times the Input Voltage
With a Maximum of 10 Volts
Linearity ⁽⁴⁾± .1%
Temperature Drift ⁽⁴⁾4 mV Per °C
Temperature Operating Range0 – 50 °C

Notes:

1. To achieve full specifications, input voltage must be within ± 10% of nominal.
2. Floating (non-grounded) or grounded input signal may be used.
3. To change from 4–20 mA to 1–15 mA remove (use cutters) R3A. To convert to 10–50 mA, add a 150 ohm 1W resistor across terminals “5” and “6”.
4. Specifications are based on an output of 10 volts.

MECHANICAL SPECIFICATIONS

INCHES
[mm]



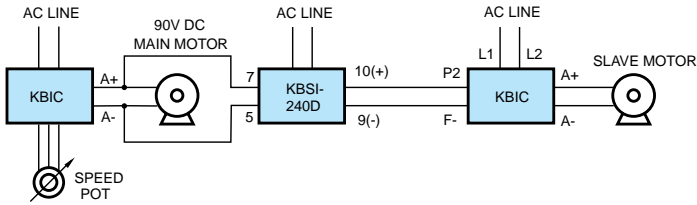
DESCRIPTION

The KBSI-240D Signal Isolator is used to isolate and condition DC voltage and current signals which are derived from transducers, microprocessors, motors and process controllers. The output of the Signal Isolator is connected to the input of any variable speed motor control with a voltage following input. The maximum output voltage of the Isolator is 10 volts, which is a linear function of the input signal.

The KBSI-240D is versatile since it can accommodate a wide range of input voltages (0 – 25, 0 – 120 and 0 – 550 VDC) and, in addition, a wide range of input current signals (4 – 20 mA, 10 – 50 mA and 1 – 5 mA). The built-in Voltage Current (“VLT/ CUR”) jumper is used to change the Signal Isolator from a voltage to a current input. In the current mode, the unit is factory calibrated so that a 4 – 20 mA input yields a 0 – 9 VDC output. The KBSI can also be controlled with a 5K ohm potentiometer in lieu of a signal input. The control is supplied with two multi-turn trimpots (MIN and MAX) which are used to scale the input and output signals to the desired level. The KBSI-240D can be powered with either a 115 or 230 VAC 50/60Hz power source. A complete instruction manual is supplied with each control.

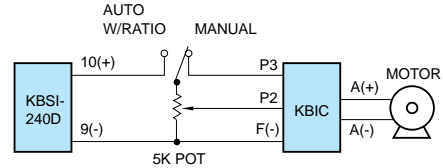
APPLICATION BLOCK DIAGRAMS

Master/Slave Voltage Following System



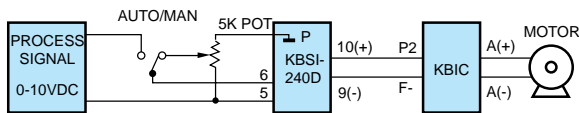
DWG#: B2600-2-00527

Process Control with Auto (Ratio Pot)/Manual Switch



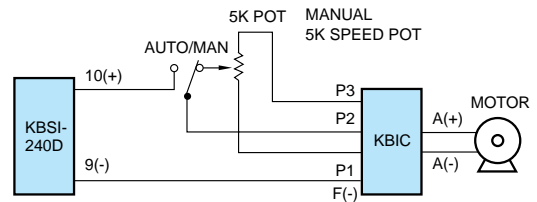
DWG#: B2600-2-00527

Auto/Manual Operation with Potentiometer on KBSI Input



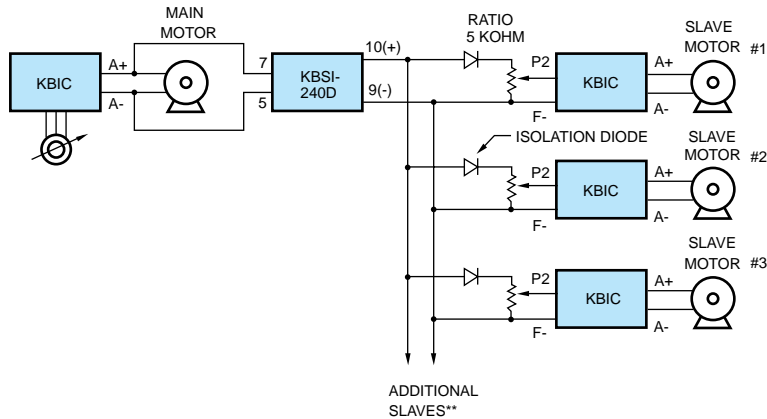
DWG#: B2600-2-00527

Process Control with Auto/Manual Switch



DWG#: B2600-2-00527

Master/Multiple Slave Voltage Following System



DWG#: B2600-2-00527

© 1998 KB Electronics, Inc.



KB ELECTRONICS, INC.
 12095 NW 39th Street, Coral Springs, FL 33065-2516
 (954) 346-4900 • FAX (954) 346-3377
 Outside Florida Call TOLL FREE (800) 221-6570
 www.kbelectronics.com