DC Drive Selection Guide

KB Electronics, Inc.

- **All models can be customized for OEM's: Ready to Use, "Out-of-the-Box."**
- **A wide variety of factory installed options add versatility to the drives while maintaining low cost.**

KB Electronics, Inc.
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Designed and Assembled in USA

KBIC SCR Drive – Chassis

The KBIC Series of DC Drives consist of six models rated for 1/100 to 3 horsepower motors. All models can be used on a wide range of motor horsepower by inserting a Plug-In Horsepower Resistor®*, which is required to operate the drive. Speed range is 50:1 with load regulation of 1%. These chassis drives include MOV transient protection, trimpot adjustments for MIN, MAX, ACCEL, IR, CL, and a 5k ohm potentiometer. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Auxiliary Heat Sink (P/N 9861), Barrier Terminal Kit (P/N 9863) Barrier Terminal Board (P/N 9884), SI-5 Signal Isolator (P/N 9443), Combination Fuse kit (P/N 9849). AC line and Armature fuse supplied separately.

**Plug-In Horsepower Resistor® supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1/2	0.37	115	KBIC-120	9429	9	0 – 90	6	0.58	0.26	A
3/4	0.56	115	KBIC-125	9433	12	0 – 90	8			
1	0.75	208/230	KBIC-240	9428	9	0 – 180	6			
1½	1.13	208/230	KBIC-225	9432	12	0 – 180	8			
1/2	0.37	115	KBIC-240D	9464	9	0 – 90	6			
1	0.75	208/230				0 – 90, 180				
1/2	0.37	115	KBIC-240DS	9423	9	0 – 90	6			
		208/230								
Ratings with Auxiliary Heat Sink (P/N 9861)										
1	0.75	115	KBIC-120	9429	18	0 – 90	12	2.5	1.14	B
1½	1.13	115	KBIC-125	9433	24	0 – 90	16			
2	1.5	208/230	KBIC-240	9428	18	0 – 180	12			
3	2.25	208/230	KBIC-225	9432	24	0 – 180	16			
1	0.75	115	KBIC-240D	9464	18	0 – 90	12			
2	1.5	208/230				0 – 90, 180				
1	0.75	115	KBIC-240DS	9423	18	0 – 90	12			
		208/230								

KBMM SCR Drive – Chassis

The KBMM Series of DC Drives consist of three models rated for 1/100 to 3 horsepower motors. This chassis full-wave DC motor control is the ultimate in reliability and performance. The drive contains Direct-Fed™ CL that helps protect the SCR power bridge against direct shorts and prevents demagnetization of PM motors. 25 Amp SCRs and AC line and armature fusing* further enhance reliability. A Plug-in Horsepower Resistor®* is required to operate the drive and eliminates the need for recalibration when used over a wide range of motor horsepower. Features include an AC line fuse holder and an Armature fuse holder, MOV transient protection, trimpot adjustments for MIN, MAX, ACCEL, DECEL, IR, CL, and a 5k ohm potentiometer. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Auxiliary Heat Sink (P/N 9861), Barrier Terminal Kit (P/N 9883), Barrier Terminal Board (P/N 9897), Finger Safe Cover (P/N 9564), and SI-6 Signal Isolator (P/N 9444).

**Plug-In Horsepower Resistor®, AC line fuse and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
3/4	0.56	115	KBMM-125	9449	12	0 – 90	8	0.58	0.26	A
1½	1.13	208/230	KBMM-225	9450	12	0 – 180	8			
3/4	0.56	115	KBMM-225D	9451	12	0 – 90	8			
1½	1.13	208/230				0 – 90, 180				
Ratings with Auxiliary Heat Sink (P/N 9861)										
1½	1.13	115	KBMM-125	9449	24	0 – 90	16	2.5	1.14	B
3	2.25	208/230	KBMM-225	9450	24	0 – 180	16			
1½	1.13	115	KBMM-225D	9451	24	0 – 90	16			
3	2.25	208/230				0 – 90, 180				

1. See Page 8.

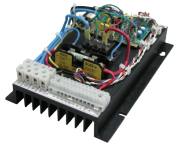
KBCC SCR Drive – Chassis

The KBCC Series of DC Drives consist of two models rated for 1/100 to 3 horsepower motors. These chassis drives utilize the KBMM speed control to provide a low-cost, reliable SCR drive. Features include KBMM plus the Auxiliary Heat Sink and Barrier Terminal Block with a supplied AC line fuse and an Armature fuse holder. This drive requires a Plug-in Horsepower Resistor®* to operate. The controls are ruggedly constructed and contain a 5k ohm potentiometer. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

**Plug-In Horsepower Resistor® and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1½	1.13	115	KBCC-125	9936	24	0 – 90	16	2.74	1.25	C
3	2.25	208/230	KBCC-225	9938		0 – 180				

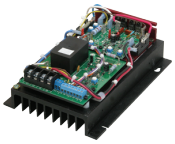
KBCC-255 SCR Drive – Chassis



The KBCC-255 is designed for 5 HP DC Shunt and PM motors. It is built on a rugged aluminum chassis and uses the KBMM™ speed control. The drive contains Direct-Fed™ CL that helps protect the SCR power bridge against direct shorts and prevents demagnetization of PM motors. The unit contains a 42 Amp power bridge and armature and control fusing, which enhance reliability. Features include an armature or tach feedback, supplied Armature fuse and trimpots for MIN, MAX, IR Comp, CL, Linear ACCEL, DECEL, and a 5k ohm speed potentiometer. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current* (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
5	3.75	208/230	KBCC-255	9940	38	0 – 180	26	3.85	1.75	D

KBCC "R" SCR Drive "Relay Reversing" – Chassis



The KBCC "R" chassis control consists of two models rated for 1/100 to 3 HP. It is designed to provide anti-plug "instant" reversing, solid state dynamic braking and rapid cycling. It combines all of the features of the KBCC™ control with the features of the KB APRM®. The APRM® eliminates contact arcing by allowing armature switching to take place only when current levels are near zero. Specific functions that can be performed by the KBCC-R™ are Run-Brake, Forward-Brake-Reverse, Run-Stop and Forward-Reverse (instant reverse). This drive requires a Plug-In Horsepower Resistor® to operate and includes an AC Line fuse and an Armature fuse holder.* This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

**Plug-In Horsepower Resistor® and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current* (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1½	1.13	115	KBCC-125R	9937	24	0 – 90	16	4.00	1.82	E
3	2.25	208/230	KBCC-225R	9924		0 – 180				

KBCC-240D SCR Drive – Chassis

The KBCC-240D DC drive is rated for 1/100th to 2 horsepower motors. The exclusive Short Circuit and Timed Current Limit (TCL) circuitry prevents motor burnout and demagnetization of PM motors. Features include a selectable motor current eliminates unnecessary calibration the of IR and CL trimpots. Other selectable features are: Input Voltage, Output Voltage, Current Range, Input Signal, Armature or Tachometer Feedback, and Tachometer Voltage. Trimpot adjustments include: MIN, MAX, ACCEL, DECEL, IR, CL and TCL. Standard features include an Armature fuse, Electronic Start-Stop, and diagnostic LED Indicator Array for "power on", "stop" and "overload." This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1	0.75	115	KBCC-240D	9947	15	0 – 90	10.2	2.68	1.22	F
2	1.5	208/230				0 – 90, 180				

1. See Page 8.

KBPB SCR Drive "Relay Reversing" – Chassis

The KBPB Series of DC Drives consist of two models rated for 1/100 to 3 horsepower motors. These chassis drives are a compact version of the KBCC "R"-suffix control. The APRM® is mounted directly to the rear of the KBMM speed control. Built-in terminal blocks and its small size make the control ideal for installation where space is at a premium. The KBPB is equipped with a built-in dynamic brake resistor, ACCEL and DECEL trimpots, and includes a 5k ohm potentiometer This control provides functions identical to that of the KBCC-R. This drive requires a Plug-in Horsepower Resistor® to operate and includes an AC line fuse and an Armature fuse holder.* This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Option: Auxiliary Heat Sink (P/N 9861).

**Plug-In Horsepower Resistor® and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
3/4	0.56	115	KBPB-125	8900	12	0 – 90	8	1.38	0.63	G
1½	1.13	208/230	KBPB-225	8901	12	0 – 180	8			
Ratings with Auxiliary Heat Sink (P/N 9861)										
1½	1.13	115	KBPB-125	8900	24	0 – 90	16	3.31	1.50	H
3	2.25	208/230	KBPB-225	8901	24	0 – 180	16			

KBMG SCR Drive "Regen Reversing" – Chassis

The KBMG Series of DC Drives consist of two models rated for 1/100 to 2 horsepower motors. This chassis ultra-compact, full-wave regenerative drive is 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. Jumper selections include: Input AC Line Voltage, Armature Current, Motor Armature Voltage, Analog Input Voltage, Control Mode (Speed or Torque) and Coast to Stop (CTS) or Regenerate to Stop (RTS). 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. LEDs, which can be used for diagnostics, are provided for power on and motor overload. Power connections are made via quick connect terminals and signal input connections are made via a removable terminal block. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Auxiliary Heat Sink (P/N 9861), Bipolar Signal Isolator (P/N 8832), Multi-Speed Board (P/N 8833).

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1/12	0.06	115	KBMG-21D	8830	1.5	0 – 90	1	0.98	0.44	I
1/6	0.11	208/230				0 – 90, 180				
3/4	0.56	115	KBMG-212D	8831	12	0 – 90	8			
1½	1.13	208/230				0 – 90, 180				
Ratings with Auxiliary Heat Sink (P/N 9861)										
1	0.75	115	KBMG-212D	8831	16	0 – 90	11	2.92	1.33	J
2	1.5	208/230				0 – 90, 180				

1. See Page 8.

KBRG SCR Drive "Regen Reversing" – Chassis

The KBRG Series of DC Drives consist of three models rated for 1/100 to 5 horsepower DC, Permanent Magnet and Shunt motors. These are full-wave regenerative controls, which allows forward and reverse torque in both speed directions. Features include armature and tachometer feedback, built-in horsepower selection, an AC Line fuse, and an Armature fuse. Trimpots adjustments for Fwd CL, Rev CL, IR Comp, Resp, Max Spd, Offset, Deadband, Fwd Accel, Rev Accel, Timed Current Limit (TCL), and two torque modes. LED indicators for power on, current limit, Fwd Enable, and Rev Enable. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

The KBRG-255 is designed specifically for 5 HP shunt wound and PM DC motors. It is similar to the KBRG-225D (3 HP); however, the SCR ratings and heat sink size have been enhanced.

Option: KBRG SI-4X Bipolar Signal Isolator* (P/N 8801).

**All models except the KBRG-212D.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
3/4	0.56	115	KBRG-212D	8819	12	0 – 90	7.5	1.1	0.5	K
1½	1.13	208/230				0 – 90, 180				
1	0.75	115	KBRG-240D	8802	16	0 – 90	12.2	3.00	1.36	L
2	1.5	208/230				0 – 90, 180				
1½	1.13	115	KBRG-225D	8800	24	0 – 90	16	5.00	2.27	M
3	2.25	208/230				0 – 90, 180				
5	3.75	208/230	KBRG-255	8821	38	0 – 180	25	5.85	2.67	N

KBWD PWM Drive – Chassis

The KBWD Series of DC Drives provide a low cost alternative for pulse-width-modulated (PWM) control applications. Their compact size allows for direct replacement of SCR drives. Standard features include a 5k potentiometer, instantaneous short circuit protection and under voltage protection. This drive requires a Plug-in Horsepower Resistor®*, which eliminates the need for IR Comp and CL calibration. If signal isolation is required, please see models KBWS-22D and -25D. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Combination Fuse kit (P/N 9849). AC line and Armature fuse supplied separately.

**Plug-In Horsepower Resistor®. See page 12.*

Maximum HP**		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1/3	0.25	115	KBWD-13	8609	6	0 – 130	3	0.62	0.28	O
1/2	0.37	115	KBWD-16	8607	10	0 – 130	5	0.70	0.32	

KBWS PWM Drive – Chassis

The KBWS PWM Series of DC Drives are designed to operate PWM and SCR rated Permanent Magnet motors. They operate at a high motor efficiency with quiet motor operation. The KBWS uses pulse-by-pulse current sensing, to prevent demagnetization, short and control damage due to commutator arcing. The controls contain an AC line inrush current limiter (ICL) which reduces AC line surge currents during startup. The drives contain built-in isolation for all inputs. This includes: Signal Voltage, Main Speed Potentiometer, Inhibit Circuit and +5VDC Power Supply. This drive requires A Plug-In Horsepower Resistor®* to operate* and contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Combination Fuse kit (P/N 9849). AC line and Armature fuse supplied separately.

**Plug-In Horsepower Resistor®. See page 12.*

Maximum HP**		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1/3	0.25	115	KBWS-22D	9492	4	0 – 90, 130	2.5	0.64	0.29	P
3/4	0.56	208/230				0 – 180, 220				
1/3	0.25					0 – 90, 130				
3/4	0.56	115	KBWS-25D	9493	8	0 – 90, 130	5	0.70	0.32	Q
1½	1.13	208/230				0 – 180, 220				
3/4	0.56					0 – 90, 130				

***Horsepower ratings are for PWM rated motors. For SCR rated motors, the maximum horsepower rating is reduced by 20%.*

1. See Page 8.

KBWT PWM Drive – Chassis

The KBWT series Pulse-Width Modulated (PWM) DC Drives are rated for 1/100 to 21/5 horsepower motors. This chassis drive series consists of five models that are designed for high current applications. Several models are offered, which provide the user a choice of input voltage and output current. An important feature of these chassis drives is its active bridge circuitry, which limits inrush current during AC line startup and prevents control runaway due to a shorted output transistor. The KBWT also contains Timed Current Limit (TCL) which provides motor burnout protection. The drive also contains a Potentiometer Safety Circuit (PSC), which prevents motor rotation unless the signal input is first set to zero when power is applied. Features include an Armature fuse holder.* This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

**Armature fuse supplied separately. See page 12.*

Maximum HP**		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
3/4	0.56	115	KBWT-16	8614	8.5	0 – 130	6	1.57	0.71	R
1½	1.13	208/230	KBWT-26	8615	8.5	0 – 260	6			
1⅕	0.9	115	KBWT-110	8603	15	0 – 130	8.5	2.9	1.32	S
1½	1.13	115	KBWT-112	8612	18	0 – 130	10.5			
2⅕	1.7	208/230	KBWT-210	8610	15	0 – 260	8.5	3.12	1.42	

***Horsepower ratings are for PWM rated motors. For SCR rated motors, the maximum horsepower rating is reduced by 20%.*

KBWM SCR Drive – NEMA 1

The KBWM Series of DC Drives consist of two models rated for 1/100 to 3/4 horsepower motors and is a compact version of the Multi Drive™ (KBMD) in a NEMA 1 enclosure. This unidirectional SCR drive utilizes the KBMM speed control module, which prevents motor failure due to demagnetization. It requires a Plug-in Horsepower Resistor® to operate and includes an AC line fuse and an Armature fuse holder.* This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line and a terminal block to facilitate wiring.

**Plug-In Horsepower Resistor® and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
1/3	0.25	115	KBWM-120	9380	5	0 – 90	3.5	1	0.45	T
3/4	0.56	208/230	KBWM-240	9381	5	0 – 90, 180	3.5			

KBMD SCR Drive – NEMA 1

The Model KBMD-240D, also called Multi-Drive™, is rated for 1/100 to 2 horsepower motors and is an SCR drive in a NEMA 1 enclosure. It utilizes the KBMM speed control for its electronics. It handles both 115 and 208/230 Volts AC line inputs by setting the built-in Dual Voltage Switch. The single model can be used on a wide range of motor horsepower by inserting the appropriate a Plug-In Horsepower Resistor®, which is required to operate this drive. It includes an AC line fuse and an Armature fuse holder.* This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Auxiliary Heat Sink (P/N 9861), Forward-Brake-Reverse Switch Kit** (P/N 9860).

**Plug-In Horsepower Resistor® and Armature fuse supplied separately. See page 12.*

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.	Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW							Lbs.	kg	
3/4	0.56	115	KBMD-240D	9370	12	0 – 90	8	2	0.9	U
1½	1.13	208/230				0 – 180				
Ratings with Auxiliary Heat Sink (P/N 9861)										
1	0.75	115	KBMD-240D	9370	16	0 – 90	11	3.92	1.78	V
2	1.5	208/230				0 – 90, 180				

***For KBMD-240D with built-in Forward-Brake-Reverse Switch, order Part No. 9371.*

1. See Page 8.

KBPC SCR Drive – NEMA 4X / IP 65

The KBPC Series of DC Drives consist of four models and is rated for 1/100th to 3 horsepower motors. These drives are housed in heavy duty NEMA 4X / IP 65 die-cast aluminum washdown/watertight enclosures for indoor or outdoor use The exclusive Short Circuit and Timed Current Limit (TCL) circuitry prevents motor burnout and demagnetization of PM motors. Features, such as a selectable motor current, eliminates unnecessary calibration the of IR and CL trimpots. Other selectable features are: Input Voltage, Output Voltage, Current Range, Input Signal, Armature or Tachometer Feedback, and Tachometer Voltage. Trimpot adjustments include: MIN, MAX, ACCEL, DECEL, IR, CL and TCL. Standard features include an Armature fuse, Electronic Start-Stop, and diagnostic LED Indicator Array for "power on", "stop" and "overload." This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

The KBPC-225D contains all of the features of the KBPC-240D except it does not contain an Armature fuse.

Options: Signal Isolator (P/N 9431), ON/OFF AC Line Switch (P/N 9341), Run-Stop-Jog Switch (P/N 9340), Auto/Manual Switch (P/N 9377), Forward-Brake-Reverse Switch (P/N 9339), Anti-Plug Reversing Module (P/N 9379).

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.		Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW			Black	White*				Lbs.	kg	
1	0.75	115	KBPC-240D	9338	9342	15	0 – 90	10.2	4.6	2.1	W
2	1.5	208/230					0 – 90, 180				
1½	1.13	115	KBPC-225D	9391	9392	22	0 – 90	15			
3	2.25	208/230					0 – 90, 180				

KBPW PWM Drive – NEMA 4X / IP 65

The KBPW-240D DC Drive is a Pulse-Width Modulated (PWM) control in a NEMA 4X / IP 65 washdown/watertight enclosure for indoor or outdoor use. It is designed to operate Permanent Magnet and Shunt Wound motors from 1/100 to 2 horsepower. This provides high motor efficiency, whisper quiet operation along with less motor heating. This allows for a smaller, less costly motor to be used in most applications. A unique feature of the KBPW-240D is its active bridge, which substantially reduces the AC line surge current during cycling of the AC line. This allows the control to be turned on and off rapidly without damage to critical components. The active bridge is coupled with a failsafe circuit that will shut down the control if the main power transistor shorts, preventing a dangerous high-speed runaway condition. Motor burnout is prevented with the Timed Current Limit circuit (TCL). This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: Signal Isolator (P/N 9431), ON/OFF AC Line Switch (P/N 9341), Run-Stop-Jog Switch (P/N 9340), Forward-Brake-Reverse Switch (P/N 9339), Anti-Plug Reversing Module (P/N 9379).

Maximum HP**		AC Line Voltage (50/60 Hz)	Model Number	Part No.		Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW			Black	White*				Lbs.	kg	
1	0.75	115	KBPW-240D	8401	8402	11.5	0 – 90, 130	7.5	4.6	2.1	W
2	1.5	208/230					0 – 90, 130				
							0 – 180, 260				

KBRC SCR Drive "Regen Reversing" – NEMA 4X / IP 65

The KBRC-240D DC Drive is a Full-Wave Regenerative Drive in a NEMA 4X / IP 65 washdown/watertight enclosure for indoor or outdoor use. It is designed to operate Permanent Magnet and Shunt Wound DC motors from 1/100 to 2 horsepower, in a bidirectional mode. It provides 4-quadrant operation, which provides forward and reverse torque in both speed directions and Timed Current Limit (TCL) which provides motor burnout protection. The KBRC-240D can be operated from a two or three wire start/stop circuit or can be started from the AC line. A set of dedicated normally open or normally closed relay contacts are provided, which are activated via the start/stop circuit. Main features of the KBRC-240D include speed or dual torque control modes. In addition, Regenerate-to-Stop (RTS) or Coast-to-Stop (CTS) modes can be selected. This drive also contains Auto Inhibit® which provides a smooth, safe start during rapid switching of the AC line.

Options: SIRC Bipolar Signal Isolator (P/N 8842), KBRC Forward-Stop-Reverse Switch (P/N 9485), On/Off AC Line Switch (P/N 9486), KBRC Auto/Manual Switch (P/N 9487).

Maximum HP		AC Line Voltage (50/60 Hz)	Model Number	Part No.		Max. AC Line Current (Amps AC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code[1]
HP	kW			Black	White*				Lbs.	kg	
1	0.75	115	KBRC-240D	8840	8841	15	0 – 90	11	4.6	2.1	W
2	1.5	208/230					0 – 90, 180				

**FDA approved (white cases only). **Horsepower ratings are for PWM rated motors. For SCR rated motors, the maximum horsepower rating is reduced by 20%.*

1. See Page 8.

KBBC DC/DC Drive – Chassis

The KBBC series of battery powered variable speed controls are designed for PM and Series Wound DC motors from 1/100 to 4* horsepower. The chassis and Microcontroller design provides superior performance and ease of tailoring to specific applications. Operating in a regenerative mode, precise and efficient control is obtained using state-of-the-art MOSFET technology. The KBBC contains standard features such as current limit, short circuit protection, speed potentiometer fault detector, over-temperature sensing, reverse polarity protection and undervoltage/overvoltage protection. The KBBC can be controlled in several ways, such as single-ended or wigwag speed potentiometer and 0 - 5 Volts DC signal following. The controls contain a built-in heat sink that also serves as a mounting base.

Maximum HP		Nominal Battery Voltage (Volts DC)	Model Number	Part No.	Max. DC Input Current (Amps DC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code
HP	kW							Lbs.	kg	
1/2	0.37	12	KBBC-24M	9500	40	0 – 12	40	1	0.45	X
1	0.75	24				0 – 24				
1/2	0.37	12	KBBC-44M	9501	40	0 – 12	40			
1	0.75	24				0 – 24				
1½	1.13	36				0 – 36				
2	1.5	48				0 – 48				

**Peak Duty Operation (7 seconds): 4 HP (3 kW), 80 Amps DC.*

KBSL DC/DC Drive – Chassis

The KBSL-200 is specifically designed for OEM lift applications. The Pulse Width Modulated (PWM) DC Drive provides forward and reverse operation for 3/4 to 1* horsepower Permanent Magnet and Series Wound DC motors. The drive provides continuous duty operation to 22 Amps and peak duty operation (for 7 seconds) to 33 Amps with a 24 Volt DC input. The 16 kHz PWM allows for high motor efficiency and quiet operation.

Standard features include an audible annunciator to provide indication of drive and remote control operations; a power control relay to automatically connect and disconnect power from the battery to the drive; and quick-connect terminals, connectors, and removable terminal blocks to facilitate wiring. Selectable jumpers are provided for Preset Speeds, Start-Up Delay Time, Remote Control ID, and optional Brake Enable.

Options: Ten built-in programmable functions and user defined logic inputs for applications requiring PLC, limit switches, latching circuits, key switch, emergency stop, sensors, actuators, etc. Infrared remote control provides operation of the drive from up to 50 feet (15.25 m).

Maximum HP		Nominal Battery Voltage (Volts DC)	Model Number	Part No.	Max. DC Input Current (Amps DC)	Voltage Range (Volts DC)	Max. Load Current (Amps DC)	Net Weight		Dim. Ref. Code
HP	kW							Lbs.	kg	
3/4	0.56	24	KBSL-200	9902	22	0 – 24	22	1.14	0.52	Y

**Peak Duty Operation (7 seconds): 1 HP (3 kW), 33 Amps DC.*

Dimensions (W x L x D)

Ref. Code	Inches	Millimeters
A	4.3 x 3.63 x 1.25	109 x 92 x 32
B	6.25 x 7 x 2.63	159 x 178 x 67
C	6.25 x 7 x 4	159 x 178 x 102
D	6.25 x 10 x 3.5	159 x 254 x 89
E	6.25 x 9 x 4	159 x 229 x 102
F	6.25 x 7 x 3	159 x 178 x 76
G	4.88 x 4.25 x 5	124 x 108 x 127
H	6.25 x 7 x 6.5	159 x 178 x 165
I	4.3 x 3.63 x 1.75	109 x 92 x 45

Ref. Code	Inches	Millimeters
J	6.25 x 7 x 3.13	159 x 178 x 79
K	4.75 x 7 x 1.7	120 x 178 x 43
L	7.7 x 10 x 2.57	196 x 254 x 65
M	7.7 x 10 x 3.4	196 x 254 x 87
N	7.7 x 12 x 3.4	196 x 305 x 87
O	4.3 x 3.63 x 2.5	109 x 92 x 64
P	4.3 x 3.63 x 2.2	109 x 92 x 56
Q	4.3 x 3.63 x 3.17	109 x 92 x 81
R	7 x 5 x 2	178 x 127 x 51

Ref. Code	Inches	Millimeters
S	6.75 x 7 x 3.25	172 x 178 x 83
T	3.7 x 6.8 x 2.9	94 x 173 x 74
U	5.1 x 7 x 4	129 x 178 x 102
V	6.25 x 7 x 5.35	159 x 178 x 136
W	6 x 9.5 x 5	150 x 241 x 127
X	4.1 x 6.26 x 1.67	104 x 159 x 43
Y	6 x 4.45 x 2.25	152 x 113 x 57

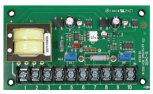
Speed Control Accessories

Combination Fuse Kit Part No. 9849

The AC Line/Armature Fuse Block Kit consists of two fuse blocks suitable for 1/4" x 1-1/4" 3AG type fuses (fuses supplied separately). Also included are (2) 6x32 screws for mounting and red and black leads with Q-D terminals.

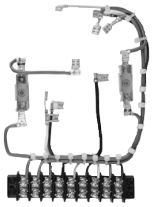
Models where used: KBIC, KBWD, KBWS.

KBSI-240D Signal Isolator Part No. 9431



The Model KBSI-240D Signal Isolator provides an isolated interface between non-isolated signals and KB motor speed controls. The maximum output voltage of the KBSI is 10 Volts DC, which is a linear function of the input. The unit is versatile, since a single model accepts a wide range of voltages (0-25, 0-120 and 0-550 Volts DC) and current signals (1-5, 4-20 and 10-50mA); multi-turn trimpots are provided for MIN and MAX. The KBSI can be operated from either 115V or 208/230 Volts AC, 50/60Hz.

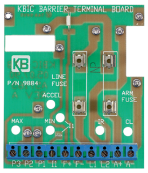
Models where used: All controls.



Barrier Terminal Kits Part Nos. 9863, 9883

The Barrier Terminal Accessory Kit converts a standard KBIC® or KBMM from 1/4" Q-D terminals to barrier terminals. It installs easily with its preformed wiring harness and is compatible with KB's 7" Auxiliary Heat Sink. The Kit contains AC line and Armature fuse holders (fuses supplied separately).

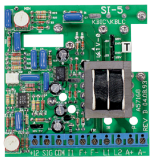
Models where used: KBIC (9863), KBMM (9883).



Barrier Terminal Boards Part Nos. 9884, 9897

The Barrier Terminal Boards easily convert a standard control with quick-connect terminals to barrier terminals with AC line and armature fuse holders (fuses supplied separately). The Barrier Terminal Board installs directly over the control by mating the Q-D terminals. A separate .110" jumper wire can be used to connect to the I1 Inhibit terminal.

Models where used: KBIC (9884), KBMM (9897).



SI-5 & SI-6 Signal Isolators Part Nos. 9443, 9444

The Signal Isolators convert a standard control to an isolated input. By using external resistors, the input signal can be changed to 0-100VDC, 0-200VDC and 4-20mA. The output voltage is 0-10VDC which can be rescaled with the built-in MIN and MAX trimpots. Selectable AC line jumpers allow the SI-5 to be used either with 115 or 208/230 Volts AC controls. Installation is made by simply mating the unit to the speed control with the built-in quick-connect terminals.

Models where used: KBIC, SI-5 (9443) and KBMM, SI-6 (9444).

Finger Safe Cover Part No. 9564

The Finger Safe Cover converts the KBMM from an "open chassis" to the IP-20 standard. Constructed of high temperature ABS, it installs easily with the two screws provided. Note: the AC line and armature fuse holders must be removed before installing the Finger Safe Cover.

Model where used: KBMM.

KBRG SI-4X Bipolar Signal Isolator Part No. 8801

The SI-4X provides complete electrical isolation between input voltage signals which are derived from programmable controllers, transducers and digital/analog converters and the KBRG. The Module contains two input ranges (±25, ±250 VDC) which are jumper selectable. The input/output ratio can be scaled via the included "ZERO" and "MAX" trimpots. The SI-4X installs easily onto the KBRG chassis.

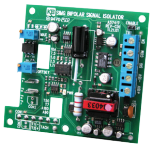
Models where used: All KBRG models except KBRG-212D.

SIRC Bipolar Signal Isolator Part No. 8842

The SIRC is used with the KBRC-240D to isolate, amplify and condition DC voltage signals from any source (tach-generators, transducers, PLCs and potentiometers). It also provides an isolated input to control motor direction and an isolated power supply for transducer or potentiometer operation.

Model where used: KBRC.

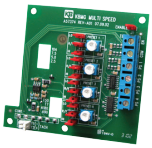
SIMG Bi-Polar Signal Isolator Part No. 8832



The SIMG is used to isolate, amplify, and condition DC voltage signals from any source (power supplies, motors, tach-generators, transducers, and potentiometers) to control the KBMG Series of Regenerative Drive. Input connections (+15V, -15V, SIG, COM, and EN) are made with a barrier terminal block and are isolated from AC line and motor wiring. The SIMG is factory calibrated to accept a signal input voltage of -10V to +10V DC. OFFSET and MAX trimpots are provided in order to recalibrate the SIMG for a specific application.

Model where used: KBMG.

KBMG-MSB Multi-Speed Board Part No. 8833



The KBMG Multi-Speed Board provides 4-user selectable preset speeds to control a motor connected to the KBMG Series Regenerative Drive. A preset (PS 1, PS 2, PS 3, PS 4) is selected with a contact closure or open collector. Motor direction is set by the position of Jumper R/F (reverse/forward) which is provided for each preset. Connections to the Multi-Speed Board are made with a barrier terminal block. A connector is available for a tach-generator, if required.

Model where used: KBMG.

Forward-Brake-Reverse Switch Part No. 9339, 9860

The Forward-Brake-Reverse Switch Kit is designed to mount in the cover of the KBPC, KBPW and KBMD speed controls. It includes a “hesitation” feature which is designed to eliminate “plug reversing” which will prevent damage to the motor. A dynamic brake resistor is included, providing for up to 3 cycles per minute.

Models where used: KBPC and KBPW (9339), KBMD (9860).

APRM-PC Anti Plug Reversing Module, with Reversing Switch Part No. 9378

The APRM-PC is designed to provide anti-plug “instant” reversing and solid state dynamic braking for the KBPC and KBPW controls. The APRM-PC mounts inside the front cover of the control. It connects using the wiring harness (provided) with QD terminals and includes a three position Forward-Brake-Reverse switch which also mounts on the cover.

Models where used: KBPC-240D and KBPW-240D.

Run-Stop-Jog Switch Kit Part No. 9340

The Run-Stop-Jog Switch provides selection between the Main Speed Potentiometer setting or a momentary jog speed, which can be used to index a machine into position.

Models where used: KBPC and KBPW.

KBRC Forward-Stop-Reverse Switch Kit Part No. 9485

The Forward-Stop-Reverse Switch assembly is designed for installation on the front cover of the and is used to provide electronic reversing for the KBRC-240D.

Model where used: KBRC.

On/Off AC Line Switch Kit Part Nos. 9341, 9486

The Power On/Off Switch assembly is designed to provide a positive AC line power disconnect. It can be installed in lieu of, or in addition to, the factory installed Start/Stop Switch assembly.

Models where used: KBPC-240D and KBPW-240D, P/N 9341 – KBRC, P/N 9486 .

Auto/Manual Switch Kit Part No. 9377

The Auto/Manual Switch Kit provides the ability to select the control’s speed reference from either the Main Speed Potentiometer or a remote signal when used with the optional Signal Isolator (Part No. 9431). The switch mounts in the Brake switch position, and a separate AUTO-MANUAL label is included.

Models where used: KBPC and KBPW.

KBRC Auto/Manual Switch Kit Part No. 9487

The Auto/Manual Switch assembly is designed for installation on the front cover of the KBRC-240D. It is used to select either the Main Speed Potentiometer for “manual operation” or a remote voltage following analog signal for “automatic operation.” It is suggested that the SIRC Bipolar Signal Isolator option (Part No. 8842) be used with the Auto/Manual Switch assembly to provide signal isolation between the signal source and the KBRC-240D.

Model where used: KBRC.

7” Auxiliary Heat Sink Part No. 9861

The Auxiliary Heat Sink is used to increase the rating of several KB control models. It is constructed of black anodized aluminum and has keyhole slots to facilitate mounting. When used with the KBIC® and KBMM™ models, the Auxiliary Heat Sink has provision for mounting the Barrier Terminal Accessory Kit.

Models where used: KBIC, KBMM, KBPB, KBMG-212D and KBMD.

Din Rail Mounting Kit Part No. 9995

The DIN Rail Mounting Kit consists of a mounting plate and two mounting clips. This accessory makes it possible to mount any “L” bracket control onto a DIN rail. The kit can be attached on the short side or long side of the “L” bracket. When used on the long side, it allows for either horizontal or vertical mounting of the control. For short side mounting, only one clip is used.

Models where used: All controls.

Potentiometer Kits Part Nos. 9111, 9114, and 9831

The Potentiometer Kits consist of a 5k ohm linear potentiometer with mounting hardware and front panel insulator. Part No. 9111 contains a conductive plastic element and is fitted with a nylon shaft and isolated brass mounting bushing. Part No. 9114 is the same as Part No. 9111 except that it contains an On/Off Switch. Part No. 9831 contains a 5 watt rated wire wound potentiometer with excellent linearity.

Models where used: All controls.

Knob & Dial Kits Part Nos. 9832 (Large) and 9115 (Small)

Two Knob/Dial Kits are available. Both contain black knobs with silver inserts. Dial Plates are .040” aluminum with 3/8” mounting hole. Dimensions (L x W approx.): large dial plate: 2.25” x 2.06”, small dial plate: 1.62” x 1.50”.

Models where used: All controls.

KBRF-200A CE Approved AC Line Filter (Class A) Part No. 9945

The KBRF-200A is an RFI filter used to suppress electronic interference caused by motor speed controls to within acceptable levels as determined by the CE Council Directive 89/336/EEC relating to EMC. Rated 24 Amps AC Maximum – 115/230 VAC, 50/60 Hz. CE approved meets (Class A) industrial.

Models where used: All controls.

KBRF-250 CE Approved AC Line Filter (Class A) Part No. 9509

The KBRF-250 is an RFI filter used to suppress electronic interference caused by motor speed controls. The KBRF-250 is primarily designed as an integral mounting base for speed controls with industry standard mounting requirements such as the KBVF Series Inverter, PWM DC Speed Controls, and SCR Speed Controls. Installation is easily accomplished with quick-connect terminals. It is housed in a plated steel case which is to be grounded with the external ground screw or mounting tab. Rated 10 Amps at 230 Volts AC. CE approved meets (Class A) industrial.

Models where used: KBIC, KBMM, KBWD, KBWS, KBMG.

KBRF-300 CE Approved AC Line Filter (Class B) Part No. 9484

The KBRF-300 is an RFI filter used to suppress electronic interference caused by motor speed controls to within acceptable levels as determined by the CE Council Directive 89/336/EEC relating to EMC. Rated 16 Amps at 115 or 208/230 Volts AC – 115/230 VAC, 50/60 Hz. CE approved meets (Class B) residential.

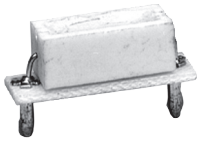
Models where used: All controls.

KBRF-350 CE Approved AC Line Filter (Class B) Part No. 9511

The KBRF-350 is an RFI filter used to suppress electronic interference caused by motor speed controls. The KBRF-350 is primarily designed as an integral mounting base for speed controls with industry standard mounting requirements such as the KBVF Series Inverter, PWM DC Speed Controls, and SCR Speed Controls. Installation is easily accomplished with quick-connect terminals. It is housed in a plated steel case which is to be grounded with the external ground screw or mounting tab. Rated 10 Amps at 230 Volts AC. CE approved meets (Class B) residential.

Models where used: KBIC, KBMM, KBWD, KBWS, KBMG.

KB Plug-In Horsepower Resistor® Selection Chart



Motor Characteristics SCR Controls (KBIC, KBMM, KBPB, KBCC, KBWM, KBMD)			Plug-In Horsepower Resistor® Ordering Information			Motor Characteristics PWM Controls (KBWD, KBWS)				
Armature Voltage		Motor Current (Amps DC)	Plug-In Horsepower Resistor Value (Ohms)	Individual Plug-In Horsepower Resistor Part No.	Reorder Kit 50 pcs. per Value Part No.	SCR Rated Motor Horsepower @ 90 VDC	SCR Rated Motor Horsepower @ 180 VDC	PWM Rated Motor Horsepower @ 130 VDC	PWM Rated Motor Horsepower @ 200 VDC	Motor Current (Amps DC)
90 – 130 VDC	180 VDC									
Motor Horsepower Range										
—	—	—	2	9949	9950	1/100 – 1/50	1/50 – 1/25	1/50 – 1/25	1/25 – 1/20	.2
1/100 – 1/50	1/50 – 1/25	.1 – .2	1	9833	9885	1/30 – 1/20	1/15 – 1/10	1/20 – 1/15	1/8 – 1/6	.4
1/50 – 1/30	1/25 – 1/15	.2 – .3	.51	9834	9886	1/15 – 1/10	1/6 – 1/5	1/12 – 1/8	1/6 – 1/4	.7 – 1
1/30 – 1/20	1/15 – 1/10	.3 – .5	.35	9835	9887	—	—	—	—	—
1/20 – 1/12	1/10 – 1/6	.5 – .7	.25	9836	9888	1/8 – 1/6	1/4 – 1/3	1/6 – 1/4	1/3 – 1/2	1.3 – 2
1/12 – 1/8	1/6 – 1/4	.7 – 1	.18	9837	9889	1/4	1/2	1/3	3/4	2.5
1/8 – 1/6	1/4 – 1/3	1.2 – 1.8	.1	9838	9890	1/3 – 1/2	3/4 – 1	1/2 – 3/4	1 – 1½	3.3 – 6
1/4	1/2	2.5	.05	9839	9891	3/4 – 1	—	1 – 1½	—	7.5 – 10
1/3	3/4	3.3	.035	9840	9892	—	—	—	—	—
1/2	1	5	.025	9841	9893	—	—	—	—	—
3/4	1 – 1/2	7.5	.015	9842	9894	—	—	—	—	—
1	2	10	.01	9843	9895	—	—	—	—	—
1½	3	15	.006	9850	9896	—	—	—	—	—

KB Fuse Selection Chart

90 VDC Motor	180 VDC Motor	Motor Current	Fuse Rating (AC Amps)	Individual Fuse Part No.	Reorder Kit 100 Pcs. per Value Part No.
Horsepower					
1/30	1/15	.33	1/2	9736	9871
1/20	1/10	.5	3/4	9737	9872
1/15	1/8	.65	1	9738	9873
1/12	1/6	.85	1¼	9739	9874
1/8	1/4	1.3	2	9740	9875
1/6	1/3	1.7	2½	9741	9876
1/4	1/2	2.5	4	9742	9877
1/3	3/4	3.3	5	9743	9878
1/2	1	5	8	9744	9879
3/4	1½	7.5	12	9745	9880
1	2	10	15	9746	9881
1½	3	15	25	9747	9882

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