

# KBBW Series

## Battery Powered DC/DC Low Voltage Motor Speed Control

Rated for 12 and 24 Volt DC Permanent Magnet Motors  
from Subfractional thru 1/2 HP (0.37 kW) Continuous Duty

### Typical Applications

- Carts • Feeders • Solar Pumps • Hoists • Pitching Machines
- Boat Lifts • Polishers • Light Duty Conveyors • Portable Pumps
- Electric Boats • Chemical Feeders • Metering Pumps • Salt Spreaders



### Standard Features

**Plug-In Horsepower Resistor®:** Automatically calibrates the IR Compensation and Current Limit settings when used on various horsepower motors. Supplied separately by your distributor.

**Short Circuit Protection:** Prevents drive failure if a short circuit occurs at the motor.

**Undervoltage Protection:** Shuts down the drive if the input voltage goes below the lower limit of the operating range. The drive will resume operation when the input voltage returns.

**Quick-Connect Terminals:** Battery, Motor, and Inhibit.

**Inhibit Circuit:** Can be used to stop and start the drive electronically with a switch or contact.\*

**Signal Inputs:** 5 k $\Omega$  potentiometer (supplied), 0-5 Volt DC analog signal, or PWM microprocessor output signal.

### Trimpot Adjustments

Minimum Speed (MIN)	Maximum Speed (MAX)	Acceleration (ACCEL)
Deceleration (DECEL)	Current Limit (CL)	IR Compensation (IR)

### Optional Accessory

**Auxiliary Heat Sink Kit (Part No. 9142):** Increases the drive's current rating from 14 Amps DC to 20 Amps DC.



Model KBBW-12 (Part No. 9140)

Model KBBW-22 (Part No. 9141)

### Description

The KBBW Series of Pulse Width Modulated (PWM) DC/DC motor speed controls provide excellent dynamic response to load variations. The efficient PWM waveform produces an almost pure DC current to the motor (form factor <1.05), which provides low audible motor noise and long brush life. Pulse-by-pulse current limit provides short circuit protection and prevents control damage due to shorted motors. Excellent load regulation is achieved with armature feedback.

The Plug-In Horsepower Resistor® (supplied separately) eliminates the need for recalibrating the IR Compensation and Current Limit settings when the control is used on various horsepower motors. Quick-connect terminals are standard for all connections to the drive. Adjustable trimpots allow the drive to be tailored to specific applications. The Inhibit Circuit can be used to stop and start the drive electronically with a switch or contact.

The 5 k $\Omega$  potentiometer (supplied), a 0-5 Volt DC analog signal, or a PWM microprocessor output signal can be used to control motor speed. The optional Auxiliary Heat Sink Kit (Part No. 9142) increases the drive's current rating from 14 Amps DC to 20 Amps DC.

### General Performance Specifications

Model KBBW-12 Input Voltage Range (Volts DC)	10 – 15
Model KBBW-22 Input Voltage Range (Volts DC)	20 – 30
Model KBBW-12 Output Voltage Range (Volts DC)	0 – 12**
Model KBBW-22 Output Voltage Range (Volts DC)	0 – 24**
Speed Range (Ratio)	50:1
Operating Frequency (kHz)	>16
Form Factor (RMS/Average Amps)	<1.05
Input Regulation (% Base Speed)	0.5
Load Regulation (% Base Speed)	1***
Minimum Speed Trimpot (MIN) Range (% Base Speed)	0 – 30
Maximum Speed Trimpot (MAX) Range (% Base Speed)	60 – 100
Acceleration Trimpot (ACCEL) Range (Seconds)	0.1 – 10
Deceleration Trimpot (DECEL) Range (Seconds)	0.1 – 10
Current Limit Trimpot (CL) Range (% Range Setting)	0 – 200
IR Compensation Trimpot (IR) Range (% Rating)	0 – 30
Analog Input Voltage (Voltage Following) (Volts DC)	0 – 5
Main Speed Potentiometer (1/4 Watt) ( $\Omega$ )	5k
Operating Temperature Range ( $^{\circ}$ C / $^{\circ}$ F)	0 – 40 / 32 – 104
Operating Humidity Range (% Relative, Non-Condensing)	0 – 95
Storage Temperature ( $^{\circ}$ C / $^{\circ}$ F)	-25 – +85 / -13 – +185

\*See Safety Warning on page 2. \*\*The maximum output voltage is nominally 0.5 Volts DC less than the input voltage. \*\*\*Based on a motor having linear IR Compensation characteristics.

### Electrical Ratings\*

Model Number	Part Number	Input Voltage (Volts DC)	Rating without Auxiliary Heat Sink		Rating with Auxiliary Heat Sink	
			Maximum Continuous Load Current (Amps DC)	Maximum Horsepower HP (kW)	Maximum Continuous Load Current (Amps DC)	Maximum Horsepower HP (kW)
KBBW-12	9140	12	14	1/6 (0.12)	20	1/4 (0.18)
KBBW-22	9141	24	14	1/3 (0.25)	20	1/2 (0.37)

\*Suggested Fuse or Circuit Breaker Rating: 20 Amps for 14 Amps load current and 25 Amps for 20 Amps load current.

### Plug-In Horsepower Resistor® Chart\*

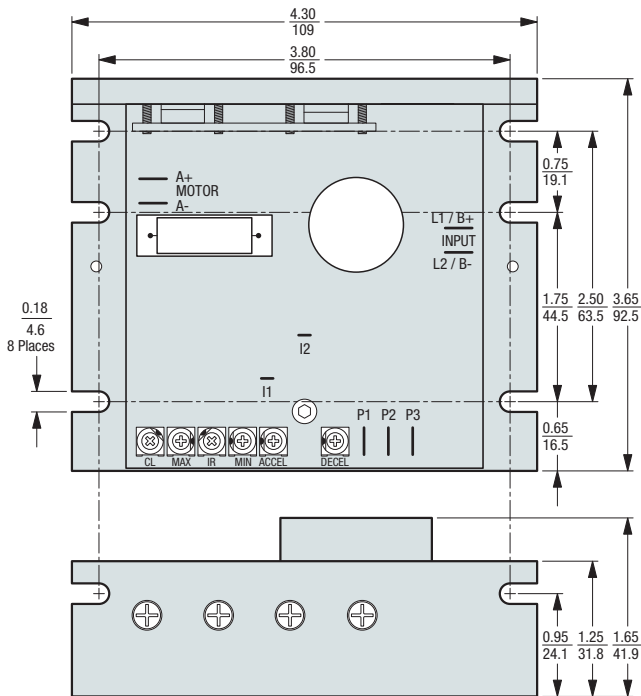
Motor Current (Amps DC)	Plug-In Horsepower Resistor®		Motor Horsepower – HP (kW)	
	$\Omega$	KB Part No. (Individual)	Model KBBW-12	Model KBBW-22
20	0.006	9850	1/4 (0.18)	1/2 (0.37)
14	0.01	9843	1/6 (0.12)	1/3 (0.25)
10	0.015	9842	1/8 (0.09)	1/4 (0.18)
6	0.025	9841	1/14 (0.05)	1/7 (0.11)

\*For a motor current that is not listed on the chart, use the next lower value Plug-In Horsepower Resistor®. Supplied separately by your distributor.

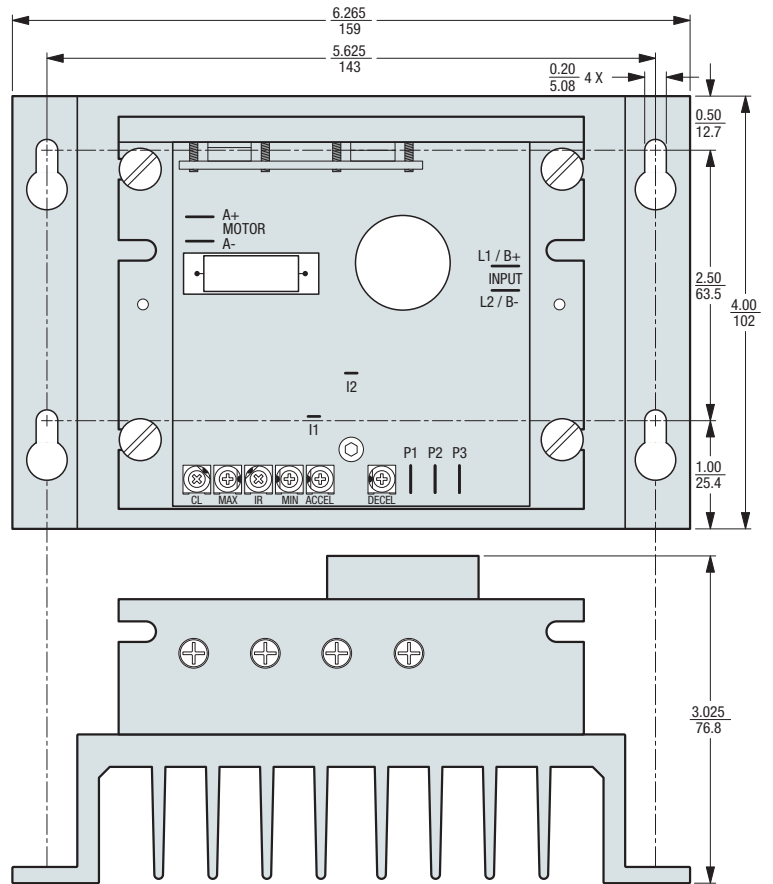


### Mechanical Specifications (Inches/mm)

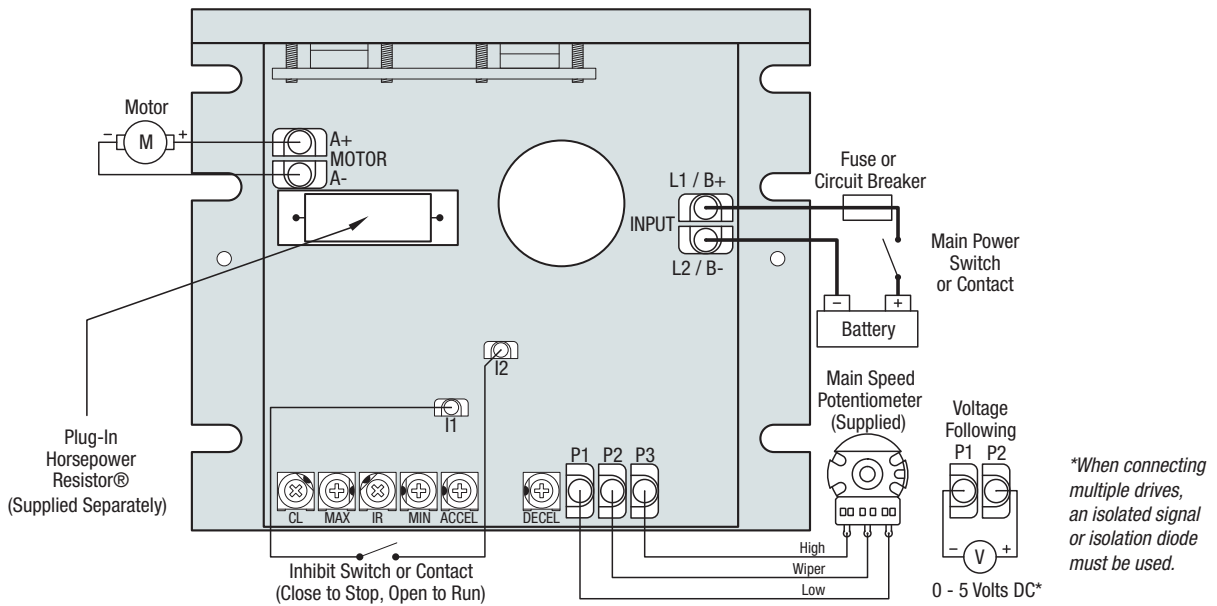
Without Optional Auxiliary Heat Sink



With Optional Auxiliary Heat Sink



### General Connections Diagram and Control Layout



**Warning!** Inhibit is never to be used as a safety disconnect since it is not fail-safe. Disconnect the DC input power for this purpose.

Represented by:



**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  
 info@kbelectronics.com • www.kbelectronics.com