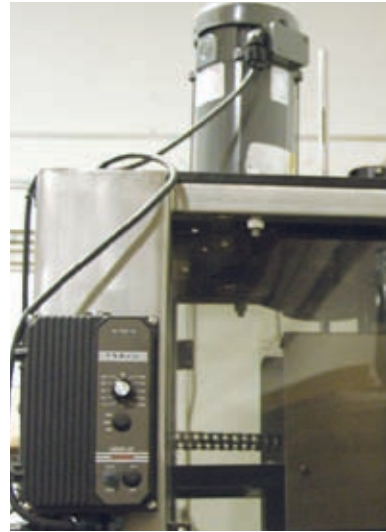


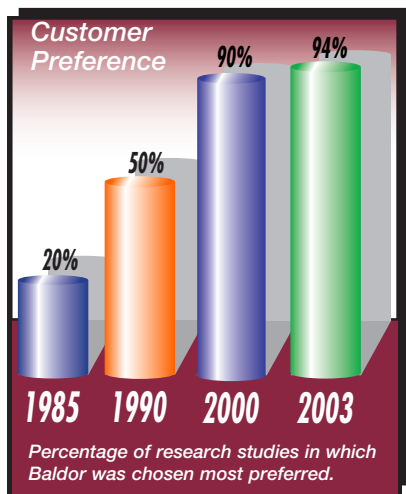
# Baldor DC Controls Fractional - 5 Hp



**BALDOR**

## Why Baldor?

For over 85 years, Baldor has strived to provide customers with the best value and reliability in industrial electric motors. That dedication shows in customer preference for Baldor motors. To be considered as the most preferred...



**Baldor offers the industry's broadest line of stock products.** Save valuable time with just one call to Baldor. We offer more than 7,000 stock motors, drives and gearboxes.

**Energy-efficiency leader.** We began lowering the energy consumption of our motors in the 1920s, long before others were even talking about it. Today, our expansive line of Super-E® premium-efficient motors ranges from 1 through 1250 Hp. Baldor's Super-E® line offers customers the highest overall efficiency levels in the industry.



**Baldor products are available at more locations than any other brand.**

Our 35 district offices across North America offer immediate availability of Baldor products to thousands of distributors.

**Continuous innovation to improve reliability.** Baldor leads the motor industry in applying new technologies to improve motor reliability. Recent improvements to the line of Severe Duty motors are further proof that Baldor is the leader in motors for process industry applications. These improvements are explained in detail in the following pages.

**Industry's shortest lead times/Flexible manufacturing.**

Baldor has the industry's shortest lead times on custom motors – just ten working days. Our unique FLEX FLOW™

manufacturing process lets us produce any order in any quantity, quickly and efficiently.



**Industry's best information.** Only Baldor offers customers so many choices for product information with a wide variety of catalogs and product brochures, a CD-ROM electronic catalog, the Baldor Web site ([www.baldor.com](http://www.baldor.com)), or you may talk to a Baldor customer service person at one of our sales offices.

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## Baldor DC Controls for a Variety of Applications

Baldor DC Drives provide exceptional value with features you might not expect to find on miniature controls. From 1/100 Hp up to 5 Hp in both 115V and 230V inputs, we've got you covered for operating standard 90V-130V or 180Vdc motors. All mini-DC drives can operate Permanent Magnet or Shunt Wound DC motors. These DC drives are offered in open frame packages, NEMA 1 packages, and NEMA 4X washdown ratings.

“One-way” controls offer an economical solution when the motor rotates in one direction, and only needs to control speed. Additional mechanical switches and dynamic brakes (resistors) are used if reverse direction is required by the application. If the load requires torque regulation, also known as tensioning, our line of regenerative controls offers the solution. Regenerative controls are convenient for overhauling loads where the energy can be returned back to the power grid instead of dissipated through a braking resistor. These controls use electronics to reverse direction instead of hand switches, thus providing longer life than the mechanical alternatives. Best of all, each and every solution shown here is in stock and available for delivery, today!

Current Limit features of the drive are offered by either plug-in Horsepower Resistors<sup>®</sup> or by jumper selections. By using Horsepower Resistors<sup>®</sup>, the current scaling can be adjusted and one control can be used for many different motor load ratings.

The acceleration, deceleration, current limits, and other features are adjusted using 270° potentiometers which are easy to configure, eliminating the need to remember and maintain sets of parameters. A potentiometer adjustment tool is provided by Baldor. A Speed potentiometer is included with every control, whether mounted to the control in an enclosed unit, or externally on an open chassis unit.



## NEMA 1 Enclosed DC Controls for PMDC and Shunt Wound Motors

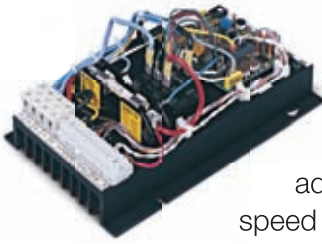


NEMA 1 Enclosed controls are Baldor's most popular miniature series of DC drives. These controls offer a speed potentiometer and ON/OFF switch mounted to the control cover. The controls are ready to go simply by connecting the line leads, motor leads, and the correct Horsepower Resistor<sup>®</sup>. Available from 1/100 Hp to 1 Hp, and when equipped with an optional heat sink offered by Baldor, these controls can be upgraded to 2 Hp. Standard features include acceleration, deceleration, current limit, IR comp and min/max speed potentiometers. Accessories, such as a Forward-Brake-Reverse Switch, or an Electronic Potentiometer can be used with the control.

Hp Range	Catalog Number	Approximate Shipping Weight Lbs.	Input Voltage
1/100-1/3	BC138	1	115
1/50-3/4	BC139	1	230
1/100-2 (1)	BC140	3	115/230
1/100-2 (1)	BC140-FBR	3	115/230

**NOTE:** (1) To achieve 1 Hp at 115V and 2 Hp at 230V requires BC143 heat sink. See page 4 for accessories.

## One Way – Open Chassis Mount Controls



One Way Open Chassis Mount controls featuring open construction for use in panels begin at 1/100 Hp and extend to 5 Hp. These controls are ready for either Permanent Magnet (PM) or Shunt Wound DC motors. The control features adjustable acceleration, deceleration, current limit, IR comp, minimum and maximum speed potentiometers. They also feature an anti-demagnetization circuit to protect PM motors. Packaged with these controls are line and armature fuses along with the appropriate Horsepower Resistor® or jumper selection. They are UL and cUL approved. Open Chassis mount controls offer the most economical solution when selecting a miniature DC control.



Hp Range	Catalog Number	Approximate Shipping Weight Lbs.	Input Voltage
1/100 - 1 1/2 (2)	BC141	1	115
1/100 - 3 (2)	BC142	2	230
1/100 - 1 1/2 (2) 1/50-3 (2)	BC142-6	1	115/230
5	BC155	5	230

**NOTE:** Above controls include 5k speed potentiometer.  
(2) 1-1.5 Hp at 115 Volts and 2-3 Hp at 230 Volts, requires BC143 Heat sink kit.  
BC155 Includes integral heat sink.

## One Way DC Control Accessories



**BC24-LF – AC Line Filter** for use with CE applications like those found in European countries.



**BC147 – Barrier Terminal board.** Converts the quick connect terminals to a terminal block.



**BC143 – External Heatsink** for BC140, BC140-FBR, BC141, BC142. Allows the HP rating to be doubled and provides longer life to the control by providing a better cooling method to the control.



**BC148 – Replacement Potentiometer Kit.** Panel mount 5Kohm/3W potentiometer.



**BC144 – Forward-Brake-Reverse Kit for BC140.** Provides a means of reversing the motor and braking to a stop with built-in dynamic braking resistor.



**BC149 – Knob and Dial Kit.** Used along with the BC148, provides a knob and indicator plate for panels.



**BC151 – Electronic Speed Potentiometer.** Replaces the standard analog potentiometer with two digital inputs that increase and decrease speed.



**BC145 – Signal Isolator Board.** Provides analog input isolation from non-isolated sources. Input voltage can be 0-25Vdc or 0-250Vdc (jumper selectable). Also contains an isolated enable input.



**BC152 – Barrier Terminal Board with Signal Isolator** for BC141 and BC142. Provide a simple means of isolating the analog inputs along with providing a 12V source to be used for transducers or other analog devices.



**BC146 – Current Sensing Relay/Overload Protector.** Provides an adjustable current sensing relay with N.O. and N.C. contacts rated at 230V/5A.



**BC218 - DIN Rail Mounting kit.** Provides a means of mounting the control onto DIN Rail. Can be used on BC141, BC142, and BC204.

## NEMA 4X Controls – One Way and Regenerative



One Way and Regenerative controls are available in NEMA 4X enclosures to handle high-pressure washes and noncorrosive environments. They are offered in both black or FDA approved white paint for food processing environments. These controls have LED diagnostics for Start/Stop and Fault conditions, and are offered from 1/2 Hp up to 3 Hp. Accessories, including electronic FWD-BRK-REV switches and Analog Isolation kits, are available.

Hp Range	Catalog Number	Description Input Voltage / Max. Hp	Approximate Shipping Weight Lbs.	Input Voltage
<b>NEMA 4X SCR (black)</b>				
1/4-2	BC154	120V - 1 Hp, 230V - 2 Hp	5	115/230
3	BC160	230V - 3 Hp	3	230
<b>NEMA 4X Washdown Duty SCR (white)</b>				
1/4-2	BCWD140	120V - 1 Hp, 230V - 2 Hp	6	115/230
<b>NEMA 4X Washdown Duty Line Regen SCR (black)</b>				
1/8-2	BC254	120V - 1 Hp, 230V - 2 Hp (5)	5	115/230
<b>NEMA 4X Washdown Duty PWM DC (black) (6)</b>				
1/4-2	BC354	120V - 1 Hp, 230V - 2 Hp	5	115/230

**NOTE:** (5) See page 7 for BC254 accessories.

(6) Output current is 7.5 amps; Output voltage is 140VDC for 115VAC input - 280VDC for 230VAC input. Motors designed for these voltages will give the best performance.

## NEMA 4X Control Accessories



**BC153 – Electronic Forward Dynamic Brake Reverse Kit** for BC154 and BC354 controls. Provides anti-plug instant reverse and solid state dynamic braking. The circuitry senses armature voltage and permits armature switching to take place only when current levels are near zero. This eliminates contact arcing normally associated with relay reversing circuits. Braking is achieved via an electronic circuit utilizing an SCR and brake resistor. An LED indicates when the BC153 is in the brake mode. Operation is made via a SPDT switch with center off. Wiring is made via quick-connect terminals.



**BC156 – Mechanical Forward Dynamic Brake Reverse Switch** for BC154 and BC354 controls.

The F-B-R switch assembly is designed to provide reversing and dynamic braking. The switch contains a special hesitation action which prevents the operator from switching instantaneously from forward to reverse (or reverse to forward). This eliminates the possibility of "instant reversing" which could damage the motor and control. After switching from forward to brake the switch lever must be released by the operator before it can be switched into reverse. In the brake position the output of the control is extinguished via an inhibit circuit and a dynamic brake resistor is applied across the armature.



**BC157 – Run/Jog Switch** for BC154, BC160, BC354. A toggle switch provides a means of switching from Run Mode to Jog Mode.



**BC158 – Auto/Manual Installation Kit** for BC145 Signal Isolator for models BC154, BC160, BC354. Allows input signal to be switched from on-board Potentiometer to remote signal that is being conditioned by the signal isolator.



**BC159 – AC Line Switch Kit** for BC154, BCWD140, BC254, BC354. Provides a disconnect from the AC line voltage. Note: These drives are factory shipped with the BC159 installed. This is only used for spare parts.

## Line Regen – Open Chassis Mount



Line Regen Open Chassis Mount controls feature open construction for use in panels beginning at 1/100 Hp and extend to 5 Hp. These controls are ready for either Permanent Magnet (PM) or Shunt Wound DC motors. The control features adjustable acceleration, deceleration, current limit, IR comp, minimum and maximum speed potentiometers. They also feature an anti-demagnetization circuit to protect PM motors. Packaged with these controls are line and armature fuses along with the appropriate Horsepower Resistor® or jumper selection. They are UL and cUL approved. Open Chassis mount controls offer the most economical solution when selecting a miniature DC control.

Hp Range	Catalog Number	Description Input Voltage / Max. Hp	Approximate Shipping Weight Lbs.	Input Voltage
<b>Line Regen SCR</b>				
1/8-2 (7)	BC204	120V 1 Hp, 230V 2 Hp	3	115/230
1/4-2	BC200	120V 1 Hp, 230V 2 Hp	4	115/230
1/4-3	BC201	120V 1-1/2 Hp, 230V 3 Hp	1	115/230
5	BC203	230V 5 Hp	1	230
<b>NEMA 4X Washdown Duty Line Regen SCR</b>				
1/8-2	BC254	120V - 1 Hp, 230V - 2 Hp	5	115/230

**NOTE:** (7) 1 Hp at 115 volts and 2 Hp at 230 volts requires BC143 heatsink kit.

## Accessory for BC200, BC201 and BC203



**BC212 – Bipolar signal isolator board.** Provides analog input isolation from non-isolated sources. Input voltage can be 0-25Vdc or 0-250Vdc (jumper selectable). Also contains an isolated enable input.



## Accessories for BC204



### **BC143 – External Heat Sink for BC204.**

Allows the Hp rating to be doubled and provides longer life to the control by providing a better cooling method to the power devices.



### **BC215 – Bipolar signal isolator board.**

Provides analog input isolation from non-isolated sources. Input voltage can be 0-25Vdc or 0-250Vdc (jumper selectable). Also contains an isolated enable input.



### **BC216 – Multispeed Board.**

Provides four (4) user selectable preset speeds via a contact closure or open collector. The motor speed for each preset is adjustable via trimpot settings. Motor direction is set by the switch position (forward/reverse) which is provided for each preset.



### **BC218 – DIN Rail Mounting kit.**

Provides a means of mounting the control onto Din Rail. Note: Also can be used on BC141, BC142.

## Accessories for BC254



### **BC245 – Signal Isolator board.**

Provides analog input isolation from non-isolated sources. Input voltage can be 0-25Vdc or 0-250Vdc (jumper selectable). Also contains an isolated enable input.



### **BC253 – FWD/STOP/BRK/REV switch.**

Provides a mechanical method to change motor direction.



### **BC 258 – Auto/manual switch**

Allows input signal to be switched from on-board Potentiometer to remote signal that is being conditioned by the signal isolator.



### **BC259 – AC Line switch.**

Provides a disconnect from the AC line voltage. Note: These drives are factory shipped with the BC259 installed. This is only used for spare parts.

## NEMA Enclosed DC Control Specifications

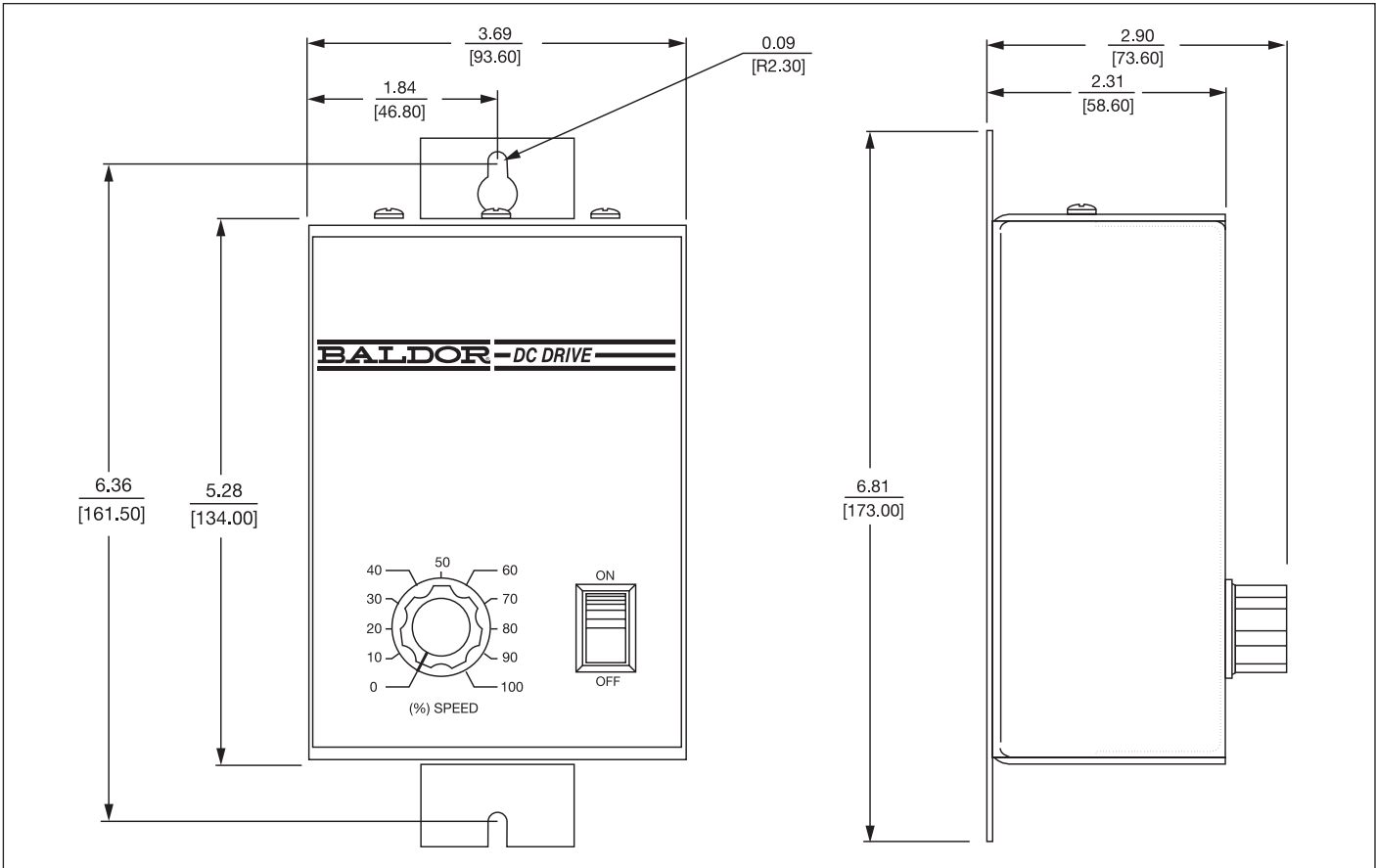
Features	Catalog Number					
	BC138	BC139	BC140 or BC140-FBR	BC154	BC160	BCWD140
Enclosure	NEMA 1	NEMA 1	NEMA 1	NEMA 4X	NEMA 4X	NEMA 4X Washdown
Control Type	NEMA K	NEMA K	NEMA K	NEMA K	NEMA K	NEMA K
AC Line Input	115	230	115 230	115 230	230	115 230
DC Armature Voltage Nominal	90	180	90 180	90 180	180	90 180
Shunt Field Power Supply Voltage - DC	50/100	100/200	50/100 100/200	50/100 100/200	100/200	50/100 100/200
Rated Horsepower Range	1/100 - 1/3	1/50-3/4	1/100-1 1/50-2	1/50-1 1/25-2	3	1/50-1 1/25-2
External Heat Sink (BC143) Required	No	No	1 Hp 2Hp	Not Required	Not Required	Not Required
Speed Range (Motor May Be 20: 1 Constant Torque)	50:1	50:1	50:1	50:1	50:1	50:1
Adjustable Acceleration Time	Yes	Yes	Yes	Yes	Yes	Yes
Adjustable Deceleration Time	Yes	Yes	Yes	Yes	Yes	Yes
Minimum Speed Adjustable	Yes	Yes	Yes	Yes	Yes	Yes
Maximum Speed Adjustable	Yes	Yes	Yes	Yes	Yes	Yes
Current Limit Adjustable	Yes	Yes	Yes	Yes	Yes	Yes
Adjustable Current Limit and Trip Out Type	No	No	No	Timed or Non-Timed	Timed or Non-Timed	Timed or Non-Timed
Control Of Speed or Torque	Speed	Speed	Speed	Speed or Torque	Speed or Torque	Speed or Torque
IR Compensation Adjustable	Yes	Yes	Yes	Yes	Yes	Yes
Tachometer Feedback Input	No	No	No	Yes	Yes	Yes
Plug-In Horsepower Resistor ®	Required	Required	Required	N/A	N/A	N/A
UL & cUL Listing, CE	Yes	Yes	Yes	Yes	Yes	Yes
AC Line Fuse	Included	Included	Included	External	External	External
DC Armature Fuse	Included with Hp Resistor	Included with Hp Resistor	Included with Hp Resistor	Not Supplied with Control	External	Not Supplied with Control
<b>Options</b>						
AC Line Switch	Standard	Standard	Standard	Opt - BC159	No	Standard
Forward/Brake/Reverse Switch	No	No	Opt-BC144	Opt-BC156	No	Standard
Mechanical	No	No	No	Opt-BC153	No	Opt-BC153
Electronic						
Run/Jog Switch	No	No	No	Opt-BC157	Opt-BC157	Standard
Input Signal				Internal Mount	Internal Mount	External Mount
Following Mode Capability	No	No	Opt-BC145	Opt-BC145	Opt-BC145	Opt-BC145
Current (1-5, 4-20, 20-50mA)			Opt-BC145	Standard	Standard	Standard
Voltage (0-25,0-120, VDC)				(0-5,0-10 VDC)	(0-5,0-10 VDC)	(0-5,0-10 VDC)
Electrical Connection To Control Barrier Terminal Block	Standard	Standard	Standard	Standard	Standard	Standard
Current Sensing Relay/Overload Protector	No	No	Opt - BC146	Standard	Standard	Standard
Electronic Speed Potentiometer	No	No	Opt-BC151	Opt-BC151	Opt-BC151	Opt-BC151
AC Line Filter for CE	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF

## Chassis Mount DC Control Specifications

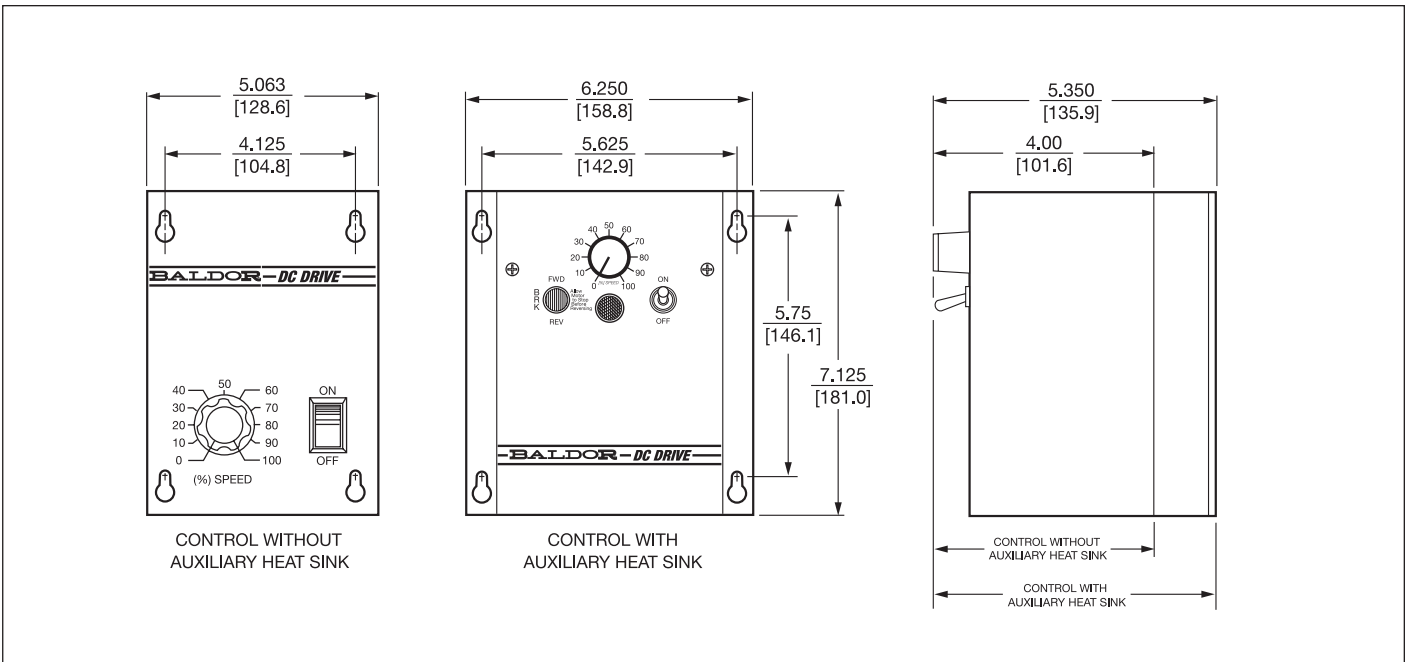
Features	Catalog Number							
	BC141	BC142	BC142-6	BC155	BC204	BC200	BC201	BC203
Enclosure	Chassis	Chassis	Chassis	Chassis	Chassis	Chassis	Chassis	Chassis
Control Type	NEMA K	NEMA K	NEMA K	NEMA K	Regenerative	Regenerative	Regenerative	Regenerative
AC Line Input	115	230	115 230	230	115 230	115 230	115 230	230
DC Armature Voltage Nominal	90	180	90 180	180	90 180	90 180	90 180	180
Shunt Field Power Supply Voltage - DC	50/100	100/200	50/100 100/200	50/100 100/200	50/100 100/200	50/100 100/200	100/200	100/200
Rated Horsepower Range	1/100-1.5	1/50-3	1/100-1 1/2 1/50-3	5	1/8-1 1/4-2	1/4-1 1/2-2	1/4-1-1/2 1/2-3	5
External Heat Sink (BC143) Required	1 Hp-Up	2 Hp-Up	1/2 Hp-Up 1 Hp-Up	Not Required	90V-1Hp 180V-2Hp	Not Required	Not Required	Not Required
Speed Range (Motor may be 20:1 Constant Torque)	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1
Adjustable Acceleration	Yes	Yes	Yes	Yes	Yes Fwd & Rev	Yes Fwd & Rev	Yes Fwd & Rev	Yes Fwd & Rev
Adjustable Deceleration	Yes	Yes	Yes	Yes	Regen	Regen	Regen	Regen
Min.. Speed Adjustable	Yes	Yes	Yes	Yes	No	No	No	No
Max. Speed Adjustable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjustable Current Limit and Tripout Type	Non Timed	Non Timed	Non Timed	Non Timed	Non Timed	Timed	Timed	Timed
Control of Speed or Torque	Speed	Speed	Speed	Speed Torque	Speed or Torque	Speed or Torque	Speed or Torque	Speed or Torque
IR Compensation Adjustment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tachometer Feedback Input	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plug-in Horsepower Resistor®	Required	Required	Required	N/A	N/A	N/A	N/A	N/A
UL & cUL Listing, CE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AC Line Fuse	Included	Included	Included	External	External	Included	Included	External
DC Armature Fuse	Included with Hp Resistor	Included with Hp Resistor	Included with Hp Resistor	Included with Hp Resistor	External	Included with Hp Resistor	Included with Hp Resistor	External
<b>Options</b>								
Input Signal Following Mode Capability Current (1-5,4-20,20-50 mA) Voltage (0-25, 0-120, VDC) 0-25, 0-120, VDC)	Opt-BC145 Opt-BC145 No	Opt-BC145 Opt-BC145 No	Opt-BC145 Opt-BC145 No	Opt-BC145 Std 0-10 VDC No	No Std Opt BC215 with BC214	No Std 0-±10 VDC Opt-BC212	No Std 0-±10 VDC Opt-BC212	No Std 0-±10VDC Opt-BC212
Electrical Connection To Control Push-On Quick Connects Barrier Terminal Block	Standard Opt-BC147	Standard Opt-BC147	Standard Opt-BC147	No Standard	Standard N/A	No Standard	No Standard	No Standard
Current Sensing Relay/ Overload Protector	Opt-BC146	Opt-BC146	Opt-BC146	Opt-BC146	N/A	Standard	Standard	Standard
Regenerative Accel / Decel Board	No	No	No	No	No	Opt BC211	Opt BC211	Opt BC211
Electronic Speed Potentiometer	Opt BC151	Opt BC151	Opt BC151	Opt BC151	Opt BC151	Opt BC151	Opt BC151	Opt BC151
AC Line Filter for CE	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF	Opt-BC24-LF

## Dimension Diagrams

### BC138, BC139

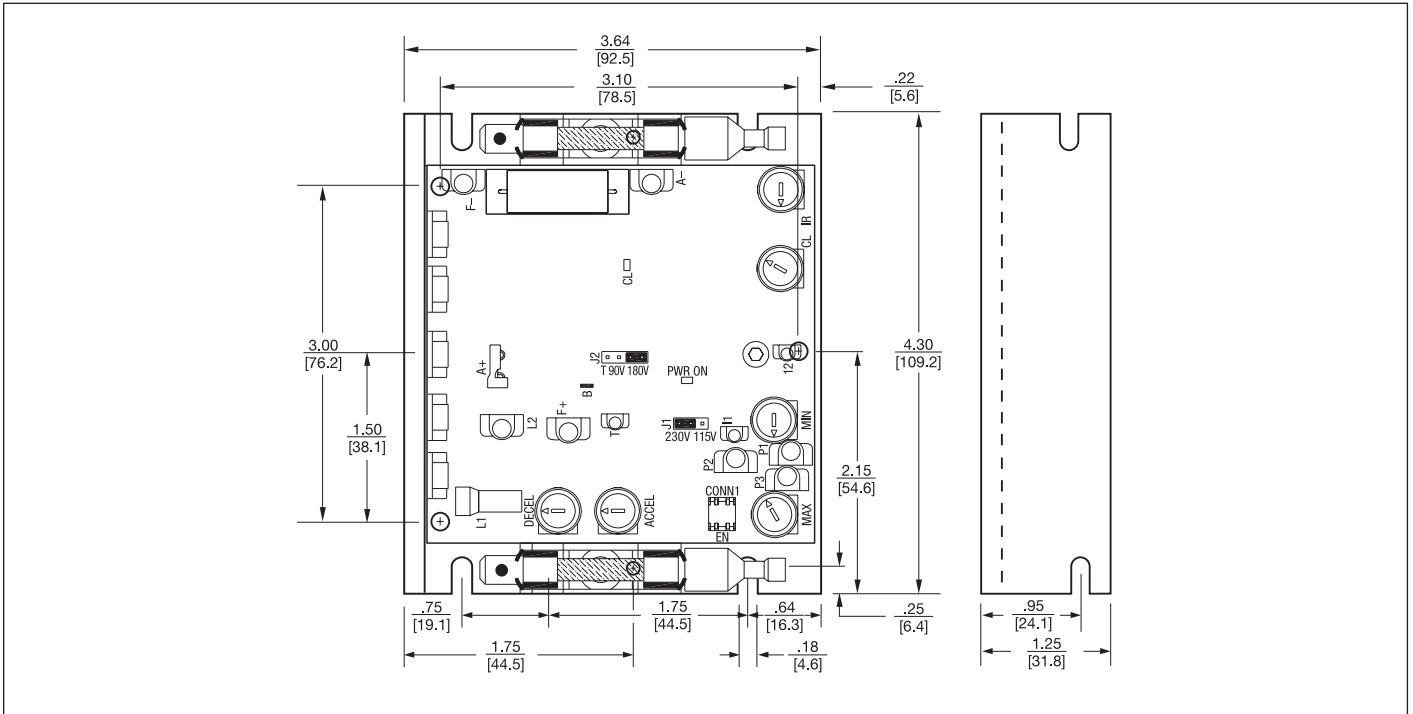


### BC140, BC140-FBR

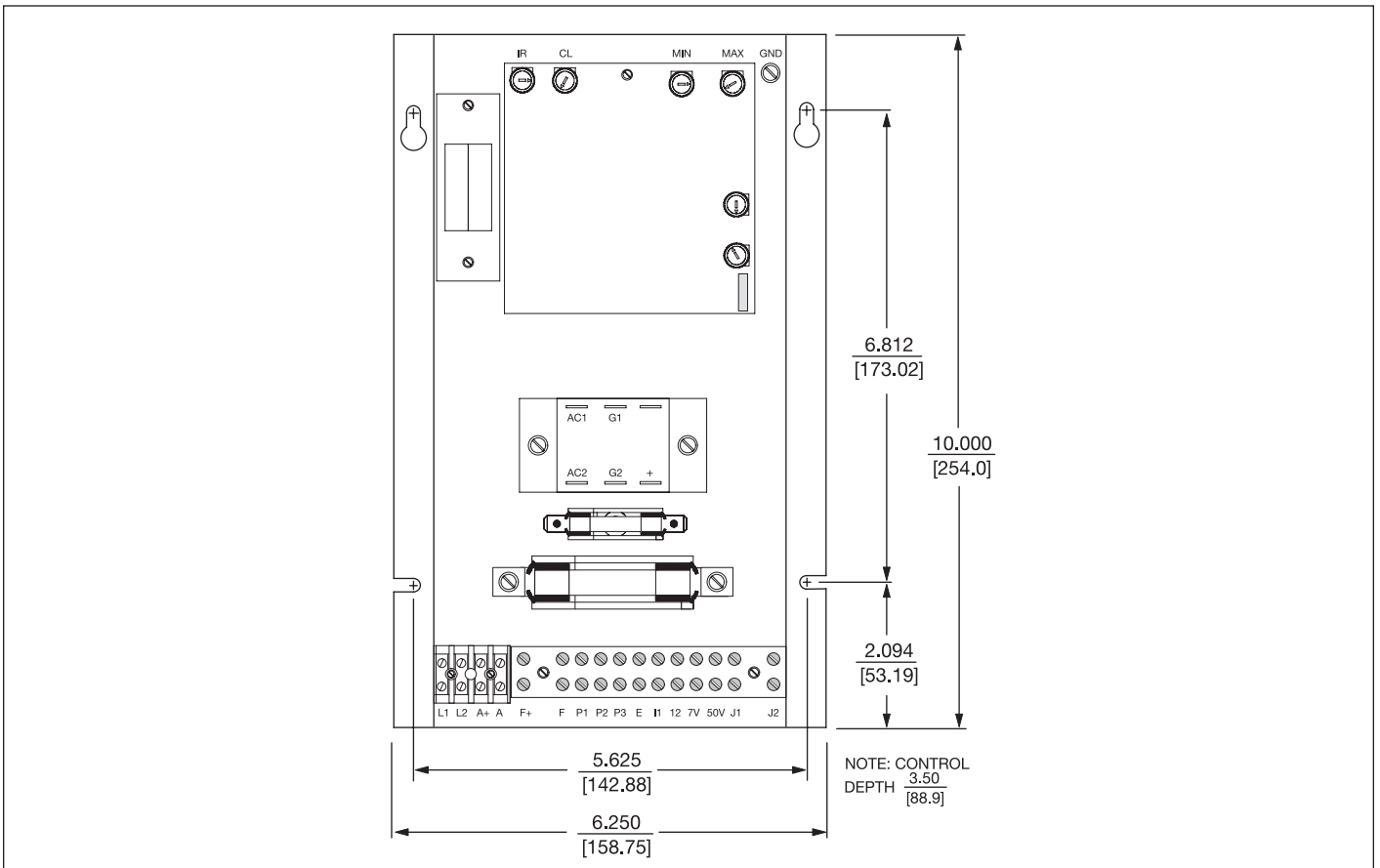


## Dimension Diagrams

### BC141, BC142, BC142-6

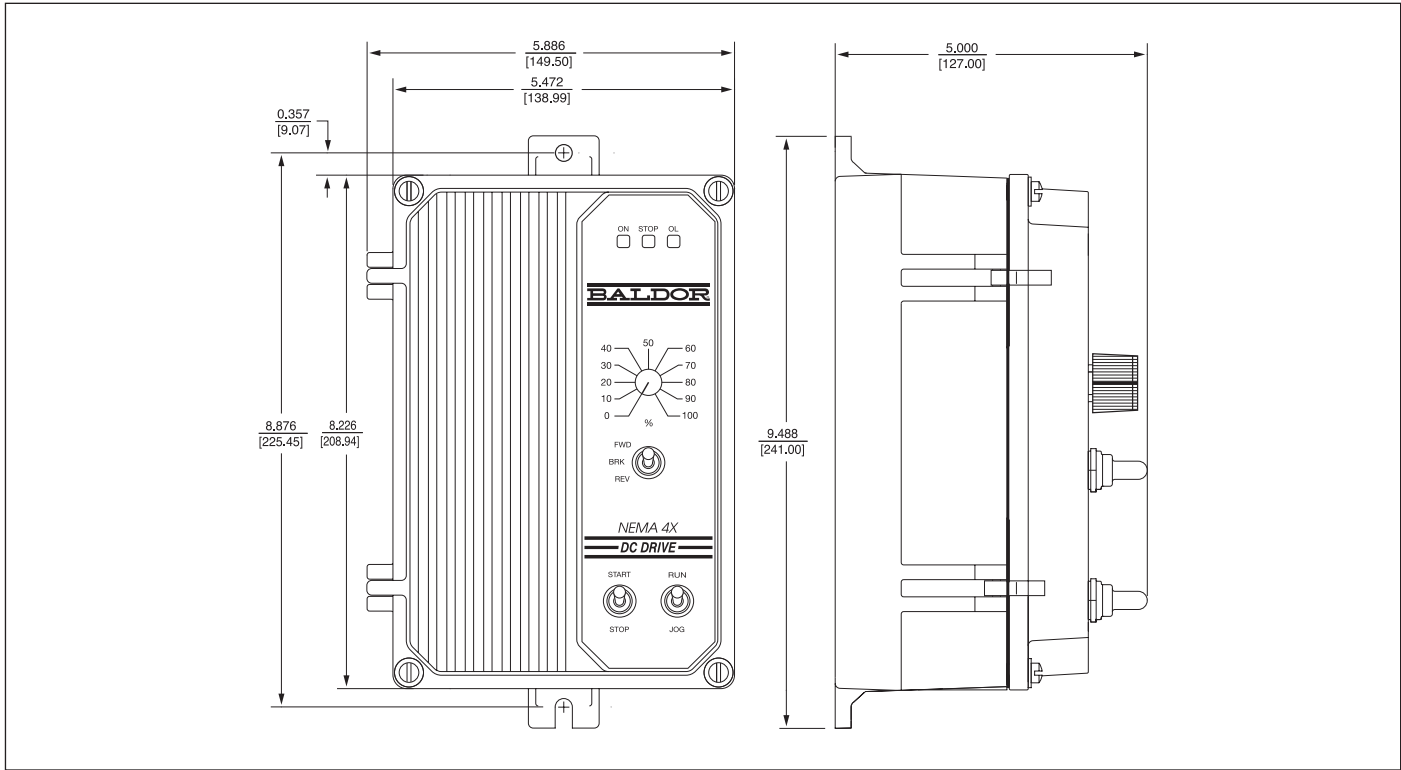


### BC155

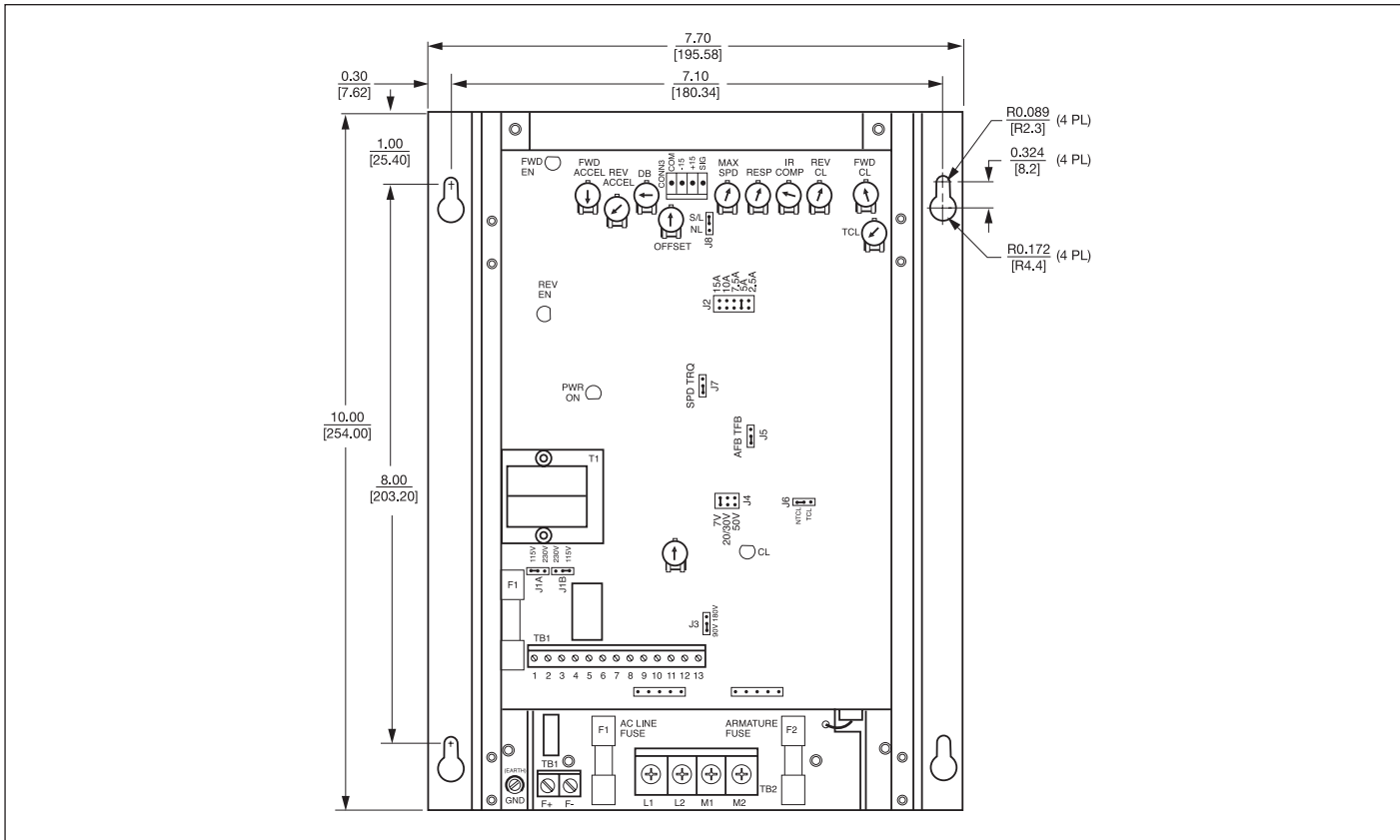


## Dimension Diagrams

### BC154, BCWD140, BC160, BC254 and BC254

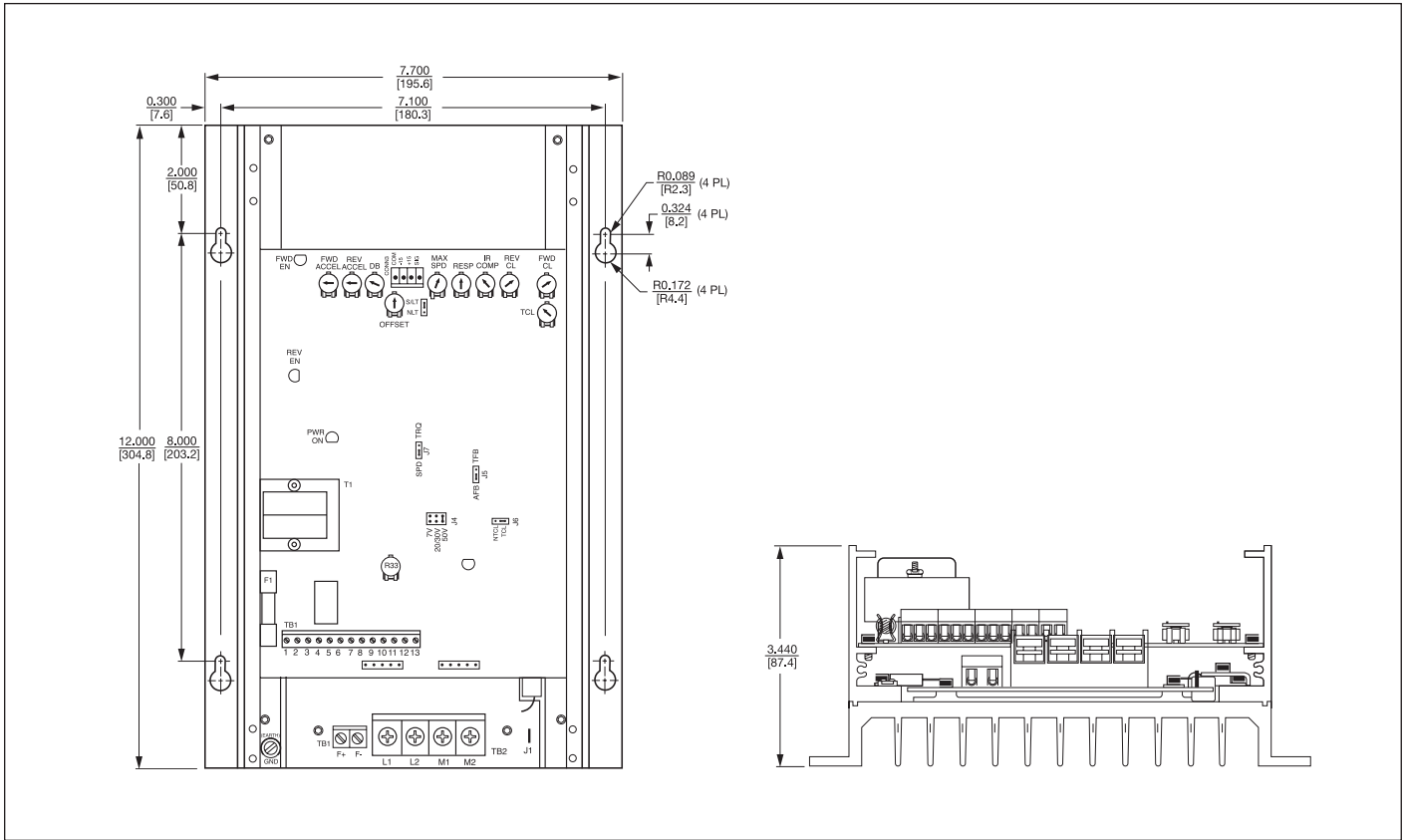


### BC200, BC201



# Dimension Diagrams

## BC203



## BC204

