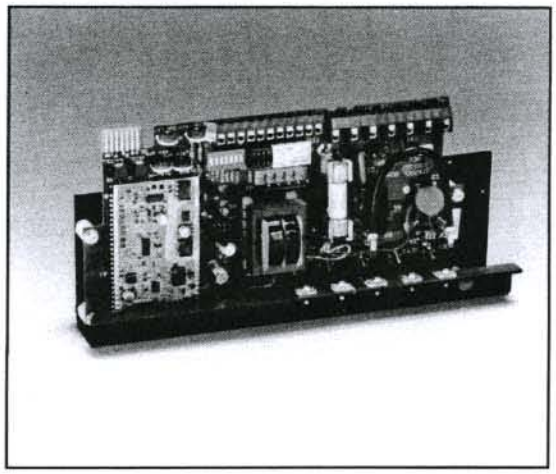
βETAplus

Angle Bracket Chassis Single-Phase Adjustable Speed DC Motor Controller 1/6–2 HP



Boston Gear BETAplus Series Controllers are high quality, economically priced, general purpose controllers that feature static conversion of AC line power to regulated DC for adjustable speed armature control of shunt wound and permanent magnet DC motors. This controller features the extensive use of miniature components in a high technology, surface mount assembly providing enhanced reliability and significantly expanded features. Using DIP switches for the selection of voltage, horsepower and modifiable features along with an Isolated Regulator circuit make these an ideal choice for a broad range of industrial applications. These controllers are furnished on a unique "angle bracket" heatsink/mounting bracket which allows for close proximity mounting, requiring only two screws. The compact package is designed for a wide range of OEM applications and panel builders.

Standard Features

- UL Listed/CSA Approved
- 115/230 VAC Dual Input*
- Dual Voltage Field Supply*
- Transient Protected
- 50 or 60 Hz Operation
- Suitable for Pushbutton Control
- Line Starting*
- Hybrid Circuit Board
- Surface-Mounted Miniature Components
- Customer Run Contact (Isolated)
- Static (Contactorless) Run-Stop Models
- Optional Armature Contactor Control–Includes Dynamic Braking Resistor
- Cermet Potentiometers for Stability
- Ferrite Noise Filters
- 1/6 thru 2 HP*
- Control Transformer
- Adjustable Linear Acceleration
- Adjustable Linear Deceleration
- CEMF Feedback with IR Compensation
- Power Loss Interlock Circuit
- Full Wave Conversion – 4-SCR Bridge
- DC Tach. Feedback Circuit*
- Motor Overload Protection
- Speed/Torque Mode*
- External Signal Input, with Isolation*
- Overcurrent LED Indicator
- "Power On" LED Indicator
- DIP Switch Configuration*
- Jumper Selectable HP & Voltage

* = User-choice selection or adjustment

Ratings

Chassis ..... 1/6 thru 1 HP @ 115 VAC
1/2 thru 2 HP @ 230 VAC
Service Factor 1.0
Duty ..... Continuous
Overload Capacity (Armature).. 150% for 1 min.

Run Speed Potentiometer..... 5 K ohms 1/2 W
Reference Power Supply..... 10 VDC
AC Line Fuse, Interrupting Capacity..... 100,000 Amperes

Operating Voltages

Power Source (single phase)	Output VDC		Control Reference Voltage*	Magnetic Control Voltage
	Armature	Field		
115V, 50 or 60 Hz	0-90	50/100	0–5 VDC 0–10 VDC 4–20 mA	24 VDC
230V, 50 or 60 Hz	0-180	100/200		

*Choice of one

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Operating Conditions

Line Voltage: ..... 115/230 –1–50/60 (±10%)

Line Freq. Variation: ..... ±2 Hz

Ambient Temp.: ..... Chassis: 0° to 55° C (32°–131°F)

Altitude: ..... 3300 ft. (1000 meters) maximum

Relative Humidity: ..... 0–95%, non-condensing

Performance

Speed Range: ..... 0 to Base Speed

Speed Range at Specified Regulation: ..... 50:1 (Standard IR Comp.)
200:1 (with Tach. Feedback)

Regulation Method	Variable				Speed Range
	Load Change 95%	Line Voltage ±10%	Field Heating Cold/Normal	Temperature ±10°C	
Voltage Feedback with IR Compensation	2%	±1%	5–12%	±2%	50:1
Tach Feedback(1)	0.5%	±1%	0.2%	±2%	200:1

(1) Unidirectional Models Only

Efficiencies: ..... Controller - 99%
Drive & Motor - 85%

Displacement Power Factor: ..... 87% at rated load and speed

Adjustments

Accel. Time: ..... 0.2–30 sec

Decel. Time: ..... 0.2–30 sec

Min. Speed: ..... 0–40% of Base Speed

Max. Speed: ..... 50–100% of Base Speed

IR (Load) Compensation: ..... 0–100% of Rated Load

Current Limit: ..... 0–150% of Full Load Torque

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Model Types and Selection

Consisting of three models, the BETAplus offers a basic run/stop unit with the choice of additional armature contactor assemblies. All models require the use of remote operator controls.

ORDER BY CATALOG NUMBER OR ITEM CODE

Item Code	Catalog Number	Line Voltage HP Range (i)		Construction	Function			Operator's Controls
		115 VAC	230 VAC	Open Chassis	Run/ Stop	Arm. Cont. Run/Stop W/DB	Arm. Cont. Rev. W/DB	Remote
57898	RBS2C	1/6-1	1/2-2	X	X			X
57899	RBS2CU			X		X		X
57903	RBS2CM			X			X	X

(i) Note: All units are shipped calibrated for the maximum horsepower ratings shown. Units may be calibrated for other standard ratings by changing the position of a jumper. Units are connected for 230 VAC and are easily reconnected for 115 VAC input.

Electrical Data

Component			Ratings							
Rated Horsepower (HP)			**1/6**	**1/4**	**1/3**	**1/2**	**3/4**	**1**	**1-1/2**	**2**
Rated Kilowatts (kW)			**0.124**	**0.187**	**0.249**	**0.373**	**0.560**	**0.746**	**1.120**	**1.492**
1-Phase AC Input (Full-Load)	Line Amps	115 VAC	3.9	5.0	6.0	8.7	12.4	15.8	–	–
		230 VAC	–	–	–	4.2	5.9	8.8	12.6	15.8
	KVA		0.48	0.58	0.71	1.00	1.40	2.00	3.00	4.00
DC Output (Full-Load)	Motor Armature Amps	90V	2.0	2.8	3.5	5.4	8.1	10.5	–	–
		180V	–	–	–	2.6	3.8	5.5	8.2	11.6
	Motor Field Amps (Maximum)	All	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Full-Load Torque (lb-ft) with 1750 RPM Base Speed Motors			0.5	0.75	1.0	1.5	2.2	3.0	4.5	6.0
Minimum Transformer KVA for Voltage Matching or Isolation			0.5	0.75	0.75	1.0	1.5	2.0	3.0	5.0

BETAplus Angle Bracket Chassis Modifications

The many standard features of these controllers include selectable functions and adjustable performance characteristics.

Once line voltage and HP selections have been made, these controllers are "ready to run" on most applications using the factory-set adjustments.

Fine Tuning by the user is readily accomplished on those jobs where load and/or speed requirements dictate that such is necessary.

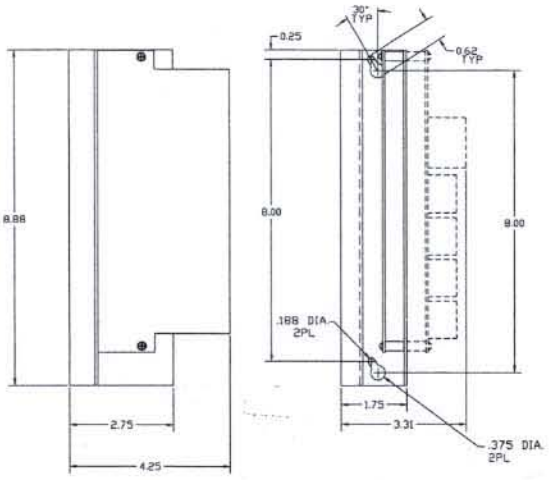
For large orders, user-specified calibrations and adjustments can be set-up at the factory level, if so desired.

The following modifications and options are useful additions to this line of controllers:

Option	Code	Description
18E	S	Torque-regulated drive
24	S	DC Tachometer feedback
LS	S	Line starting
21A	K	10-Turn Speed adjust potentiometer; analog dial
21B	K	10-Turn Speed adjust potentiometer; digital dial
LR	M	Limit Switch Reversing; CM models only.
25	S	External DC input 0–5 VDC; 0–10 VDC & 4–20 mA

Code: K = Field Kit
M = Modifiable feature of standard controller
S = Selectable in standard controller by dip switch

Dimensions



Approx. Weight (lbs.)

RBS2C	0.9
RBS2CU RBS2CM	1.7

NOTE: BETAplus controllers are UL Listed (File No. 60207) and CSA approved (File No. LR19781).

Distributed by:

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