

Motor Speed Controls

Our motion controls are precisely engineered to provide maximum performance from our motors and gearmotors. Choose a Bodine gearmotor and speed control and get our extended 2-year system warranty.



AC Pacesetter™ Inverter Duty Three Phase Motor Speed Controls

Basic Three-Phase Chassis AC Motor Speed Control



- Speed control via external speed pot or external 0-5 VDC analog signal (isolation required)
- Adjusts current limit, max. speed, min. speed, decel. time, accel. time, and slip compensation
- Output freq. selectable between 0-60 Hz and 0-120 Hz.
- Connector for remote direction control
- Connector for remote momentary start switch
- Protection against overload, overvoltage, undervoltage, and short circuit
- UL Listed, CE
- See page 47 for reference dimensions

Three-Phase AC Output Power				Input Power		Model Number
HP	Motor V	Motor Amps	Hz	V	Hz	
1/2	230	2.4	0-120	115	50 / 60	2982
1/2		2.4		230		2983
1/2		2.4		115 / 230		2984
1		4		115 / 230		2987

NEMA 4X/IP-65 Enclosed AC Motor Speed Control



- LED status indicators provide indication of the drive's status and operating mode
- GFCI compatible
- F-B-R (Forward-Brake-Reverse), Start/Stop, and On/Off switches
- Motor current selection
- More than 200% starting torque
- Overvoltage and undervoltage
- Run/Fault relay output contacts turn equipment on/off and signal stop mode if a fault has occurred.
- No remote operation
- cULus

Three-Phase AC Output Power				Input Power		Model Number
HP	Motor V	Motor Amps	Hz	V	Hz	
1	230	3.6	0-120	115 or 208/230	50 / 60	2999

NEMA-1/IP-40 Enclosed AC Motor Speed Control



- Run/Fault relay output contacts turn equipment on/off and signal stop mode if a fault has occurred.
- Barrier terminal blocks facilitate wiring
- Motor overload (I^2t) with RMS current limit
- Electronic inrush current limit
- Regeneration eliminates tripping due to bus overvoltage
- Overvoltage and undervoltage
- No remote operation
- Built-in line filter for CE compliance
- cULus, CE

Three-Phase AC Output Power				Input Power		Model Number
HP	Motor V	Motor Amps	Hz	V	Hz	
1	230	3.6	0-120	115 or 208/230	50 / 60	2998

Type UPM | Unfiltered SCR Motor Speed Control (NEMA-4 Enclosure)

- Operates from 115 Volt AC or 230 Volt AC line
- Designed to drive 90 Volt DC or 130 Volt DC motors
- Switchable output for 0-90 Volt DC or 0-180 Volt DC
- Back EMF feedback maintains better than 2% speed regulation
- Dip switches to easily calibrate control for different motor sizes
- NEMA 4 enclosure for wet or dirty environments
- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, deceleration time, and speed regulation
- Speed can be adjusted manually using speed pot on front of enclosure
- Terminal block inside enclosure for quick line and motor connection
- Line fuses inside enclosure
- Line filter inside enclosure to reduce conducted EMI
- cURus, CE, RoHS



HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
1/5 @ 90V 1/3 @ 180V	115 / 230	90 or 130 @ 115 VAC 180 @ 230 VAC	2.1	4.2	1.4	UPM-3318E4	1865

Type WPM | Filtered PWM DC Basic Speed Control (Chassis, IP-00)

- Models 0780-0784 operate from 115 Volt AC line, 50/60 Hz
- Models 0786-0789 operate from a DC power supply or a battery
- 115V models: filtered DC output for cooler motor operation, longer brush life, lower audible noise, and wider speed range
- Back EMF feedback maintains better than 1% speed regulation
- Dip switches to easily calibrate control for different motor sizes
- Two diagnostic LEDs indicate when power is on and when current output is at limit set by TORQ pot
- Five on-board user-adjustable pots for torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation
- Speed can be adjusted manually using a remote 10k speed pot (included with control)
- Connections for optional user-supplied inhibit switch
- cURus, RoHS



WPM Chassis Control (115 V model with terminal block)

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number	
							1/4 in. QC tab	Terminal Block
WPM Chassis Filtered PWM DC Control (115 V Models)								
1/4	115	90 or 130	2.0	2.5	1.0	WPM-2109C	0780	0783
7/16			3.2	5			0781	0784
WPM Chassis PWM DC Control (12 and 24 V Models)								
1/12 @1250 rpm	1/6 @2500 rpm	(VDC) 12-14	15	35	1.0	WPM-2137C	—	0787
—	1/3		24-35				17	0786
—	1/3	24	14	—	—	—	0788	0789



WPM Chassis Control (12 or 24 V models)

Type WPM | Filtered PWM DC Basic Speed Control (NEMA-1, IP-40)

- Filtered DC output
- Designed to drive 90 Volt DC or 130 Volt DC motors
- Dip switches to easily calibrate control
- Model 0794: includes F-B-R (forward-brake-reverse) switch
- Line voltage compensation minimizes speed drift
- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation
- Manual speed adjustment
- Terminal block inside enclosure
- Back EMF feedback maintains better than 2% speed regulation
- Factory installed AC line cable
- cURus, RoHS



WPM Enclosed Control (Speed only)

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
WPM Enclosed Filtered PWM DC Control							
1/4	115	90 or 130	2.0	2.5	1.0	WPM-2109E1	0790
7/16			3.2	5			WPM-2137E1
WPM Enclosed Filtered PWM DC Speed and Direction Control							
7/16 @ 90 V 5/8 @ 130 V	115	90 or 130	3.7	7.1	1.0	WPM-2148E1	0794



WPM Enclosed Control (With Direction Switch)

For control accessories see page 37. See page 47 for reference dimensions.

Type FPM | Filtered SCR DC Basic Speed Control



- Designed to drive 90 Volt DC or 130 Volt DC motors
- Dip switches to easily calibrate control
- Line voltage and temperature compensation
- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation.
- Back EMF feedback maintains better than 2% speed regulation
- 10k Ohm remote speed pot and 24" connecting wire supplied with each control
- Connections for optional user-supplied inhibit switch
- Terminal block
- Plug-in connector for speed pot and optional user supplied inhibit switch
- Flexibility in adding plug-in interface boards
- Built-in line and motor fuseholders (both fuses supplied)
- UR, CSA, RoHS

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
1/17	115	90 or 130	0.5	1	1.0	FPM-0810C	0810
1/6			1.25	2.5		FPM-0830C	0830
1/3			2.3	4.6		FPM-0850C	0850

Type FPM | Filtered SCR DC Basic Speed Control (NEMA-12 Enclosure)



- Designed to drive 90 Volt DC or 130 Volt DC motors
- Dip switches to easily calibrate control
- Line voltage and temperature compensation
- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation.
- Manual speed adjustment
- Terminal block inside enclosure
- Back EMF feedback maintains better than 2% speed regulation.
- Fuse holders for line and motor inside enclosure (both fuses supplied)
- UR, CSA, RoHS

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
FPM Enclosed Filtered SCR DC Controls NEMA 12, Basic Speed Control							
1/17	115	90 or 130	0.5	1	1.0	FPM-0815E	0815
1/6			1.25	2.5		FPM-0835E	0835
1/3			2.3	4.6		FPM-0855E	0855

Type FPM | Filtered SCR DC Basic Speed and Direction Control (NEMA-12 Enclosure)



- Filtered DC output for different motor sizes.
- Designed to drive 90 Volt DC or 130 Volt DC motors
- Line voltage and temperature compensation
- Dynamic braking for quick stops
- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation
- Manual speed adjustment
- Rotary switch on enclosure for direction
- Terminal block inside enclosure for motor connection
- Back EMF feedback maintains better than 2% speed regulation
- Fuse holders for line and motor inside enclosure (fuses included)
- UR, CSA, RoHS

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
FPM Enclosed Filtered SCR DC Controls NEMA 12, Speed and Direction Control							
1/17	115	90 or 130	0.5	1	1.0	FPM-0818E	0818
1/6			1.25	2.5		FPM-0838E	0838
1/3			2.3	4.6		FPM-0858E	0858

Type FPM | Filtered SCR DC Remote Speed Control (NEMA-12 Enclosure)

- Designed to drive 90 Volt DC or 130 Volt DC motors
- Dip switches to easily calibrate control
- Line voltage and temperature compensation

- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, and speed regulation
- Speed can be adjusted manually
- Terminal block inside enclosure

- Back EMF feedback maintains better than 2% speed regulation
- Fuse holders for line and motor inside enclosure (both fuses supplied)
- UR, CSA, RoHS



HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Remote Signal	Product Type	Model Number
FPM Enclosed Filtered SCR DC Controls NEMA 12, Remote Speed Control								
1/17			0.5	1		Analog	FPM-0816E	0816
1/6	115	90 or 130	1.25	2.5	1.0	Analog	FPM-0836E	0836
1/3			2.3	4.6		Analog	FPM-0856E	0856

Type UPM | Unfiltered SCR DC Remote Speed Control

- Designed to drive 90 Volt DC or 130 Volt DC motors
- Switchable output for 0-90 Volt DC or 0-180 Volt DC.
- Back EMF feedback maintains better than 2% speed regulation.
- Dip switches to easily calibrate control

- Two diagnostic LEDs indicate when power is on and when current output is at limit set by TORQ pot
- Six on-board user-adjustable pots for torque limit, minimum speed limit, maximum speed limit, acceleration time, deceleration time and speed regulation

- Speed can be adjusted manually using a remote 10K speed pot (included with control)
- Unfiltered drive draws lower AC line current than comparable SCR filtered controls
- Connections for optional user-supplied inhibit switch
- cURus, CE, RoHS



HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number	
							1/4 in. QC tab	Terminal Block
UPM Unfiltered SCR DC Controls Chassis, Basic Speed Control								
1/5 @ 90 V	115/230	90 or 130 @ 115 VAC 180 @ 230 VAC	2.1	4.2	1.6	UPM-3318C	0865	0866
1/3 @ 180 V								

Type UPM | NEMA-1 Unfiltered SCR Basic Speed Control (NEMA-1 Enclosure)

- Designed to drive 90 Volt DC or 130 Volt DC motors
- Line voltage compensation minimizes speed drift
- Back EMF feedback maintains better than 2% speed regulation.
- Dip switches to easily calibrate control

- Trim pots on PC board to adjust torque limit, minimum speed limit, maximum speed limit, acceleration time, deceleration time, and speed regulation
- Two diagnostic LEDs indicate when power is on and when current output is at limit set by TORQ pot

- Manual speed adjustment
- Terminal block inside enclosure
- Unfiltered drive draws lower AC line current than comparable SCR filtered controls
- Connections for optional user-supplied inhibit switch
- cURus, RoHS



HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
UPM Enclosed Unfiltered SCR DC Controls NEMA 1, Basic Speed Control							
1/5	115	90 or 130	2.1	4.2	1.6	UPM-3318E1	0867

Type ABL | Low Voltage PWM BLDC Speed and Direction Control (Chassis, IP-00)



Models 3904, 3905 and 3907

- Ideal for portable, battery operated applications
- On-board speed potentiometer for manual adjustment
- Accepts 0-5 VDC analog signal for remote operation
- Unique Smart Reverse™ circuit provides quick reversing and prevents motor plugging
- Dynamic braking for quicker stops
- 12 pulse/revolution tach output provides indication of motor speed
- Models 3904, 3905 and 3907: Logic output indicates control shutdown due to a motor overload
- Speed can be adjusted manually or by remote control over a range of 30:1
- 10k Ohm remote speed pot supplied with each control
- Inherent closed loop system maintains a 2% maximum change in motor speed from 0-100% of rated load when operated at rated speed
- cURus, RoHS
- 60° commutation is standard

HP Rating	Input V (VDC)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
Chassis Low Voltage PWM BLDC (24 V Models)							
1/6	24-35	24	10	13.5	1.0	ABL-3905C	3905
3/8			20	30		ABL-3907C	3907
Chassis Low Voltage PWM BLDC (12 V Model)							
Contact Factory	12-14	12	20	30	1.0	ABL-3907C	3904
Compact Chassis Low Voltage PWM BLDC (12 and 24 V Models)							
1/4	12-14	12	20	30	1.0	ABL-3906C	3908
3/8	24-35	24	18	27			3909
Compact Chassis Low Voltage PWM BLDC (24 V Model) 120° Commutation							
3/8	24-35	24	18	27	1.0	ABL-3919C	3919



Models 3908, 3909 and 3919

Type ABL | Filtered SCR BLDC Speed and Direction Control (Chassis, IP-00)



- Unique Smart Reverse™ circuit for remote control of motor direction
- Dynamic braking for quicker stops
- 12 pulse/revolution tach output
- Green LED indicates AC power on
- Red LED indicates control shutdown due to a fault condition
- Speed can be adjusted manually
- 10k Ohm remote speed pot supplied with each control
- DIP switches set the current limit
- Five onboard user-adjustable pots for torque limit, minimum speed limit, maximum speed limit, acceleration time, and deceleration time
- Fuse holders for line and motor fuses (fuses included)
- Inherent closed loop system maintains a 1% maximum change in motor speed from 0-100% of rated load when operated at rated speed
- UR, CSA, RoHS

HP Rating (@ rpm)	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
3/8@2500	115	130	3	6	1.0	ABL-3911C	3911
1/3@10,000						ABL-3921C	3921

Type ABL | Filtered SCR BLDC Speed/Direction Control (NEMA-12 Enclosure)



- Unique Smart Reverse™ circuit allows remote control of motor direction
- Dynamic braking for quicker stops
- 12 pulse/revolution tach output provides indication of motor speed
- Internal: Red LED indicates control shutdown due to a fault condition
- Speed can be adjusted manually
- DIP switches set the current limit
- Inherent closed loop system maintains a 1% maximum change in motor speed from 0-100% of rated load when operated at rated speed
- Fuse holders for line and motor fuses (fuses included)
- UR, CSA, RoHS

HP Rating (@ rpm)	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
3/8@2500	115	130*	3	6	1.0	ABL-3912E	3912
1/3@10,000						ABL-3913E	3913

* for brushless motors and controls

Type ABL | Unfiltered SCR BLDC Speed and Direction Control (Chassis, IP-00)



- Lower cost alternative to model 3911
- Unique Smart Reverse™ circuit
- 12 pulse/revolution tach output
- Green LED indicates AC power on
- Red LED indicates control shutdown due to a fault condition
- Speed can be adjusted manually
- 10k Ohm speed pot supplied with each control
- DIP switches set the current limit so that the same control model can drive any size Bodine motor
- Inherent closed loop system maintains a 1% maximum change in motor speed from 0-100% of rated load when operated at rated speed
- UR, CSA, RoHS

HP Rating	Input V (VAC, 50/60 Hz)	Motor Rating (VDC)	Continuous Output Current (Amps)	Peak Output Current (Amps)	FF	Product Type	Model Number
3/8	115	90	3	6	1.6	ABL-3910C	3910



Shaft Kits for type 3F/H, 5L/H and GB/H hollow shaft gearmotors

Model No.	Description
0910	Shaft kit for type 3F/H gearmotors, 1/2 inch diameter, single shaft
0920	Shaft kit for type 3F/H gearmotors, 1/2 inch diameter, double shaft
0912	Shaft kit for type 5L/H gearmotors, 5/8 inch diameter, single shaft
0922	Shaft kit for type 5L/H gearmotors, 5/8 inch diameter, double shaft
0917	Shaft kit for type GB/H gearmotors, 3/4 inch diameter, single shaft
0927	Shaft kit for type GB/H gearmotors, 3/4 inch diameter, double shaft
0928	Shaft Kit for type 5L/H gearmotors, 5/8 inch to 3/4-inch diameter, single shaft
0950	Cover kit for type 3F/H gearmotors
0951	Cover kit for type 5L/H and GB/H gearmotors
0955	Flange mount kit for 3F/H gearmotors
0956	Flange mount kit for 5L/H and GB/H gearmotors

Encoder Shaft Kit for type 22B4-60P planetary gearmotors

0964	Encoder Shaft Kit, 3/8 inch diameter
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Cover kits type 3F/H (left), types 5L/H and GB/H (right)

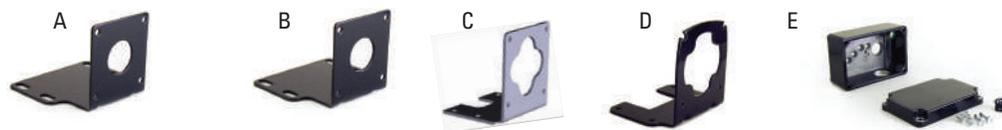
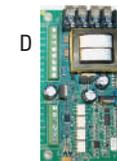


Flange mount kits type 3F/H (left), types 5L/H and GB/H (right)



Encoder Shaft Kit

Item	Model No.	Description
—	0888	Analog Interface Board for use with model 0810, 0830, and 0850 controls. Allows control to accept a variable voltage or current signal from user's host controller to automatically control motor speed. Inputs are optically isolated.
—	0890	Electronic Direction and Braking Board, F-B-R Kit , for use with model 0810, 0830, and 0850 controls. Allows user to change motor direction and to dynamically brake motor to a quick stop. Inputs are not optically isolated. This kit includes one F-B-R board, one cable and connector, mounting hardware, and two additional braking resistors.
—	0893	Local/Remote Switch for use with model 0810, 0830, and 0850 controls when used with accessory model 0888. Allows user to switch between automatic and manual operation.
—	0895	Switch Sealing Kit upgrades NEMA-12 brushless DC and PMDC enclosed controls to IP-44 rating.
A	3981	Cable Kit for stock 34B/FV INTEGRAMotors. Length: six feet (3 cables: power, logic and encoder).
B	3982	Extension Cable for model 3910, 3911, 3921 and 3912 controls. Extends the cable between the motor and control by six feet. Both ends are equipped with circular connections for easy connection between model 3983 cable assembly or encased control and the motor. Length: six feet.
C	3983	Connection Cable Assembly for connecting model 3910, 3921 and 3911 chassis controls to stock 130 V motors. One end of the cable is equipped with a circular connector, the other end is equipped with quick disconnects for phase leads, and a molded connector for the commutation leads. Length: 6 feet.
D	3984	Analog Interface And Isolation Module for model 3910, 3911, 3921 and 3912 controls. Provides Analog interface and isolates controls from system controller input signals which may be at different potentials.
—	43300260	Speed Potentiometer Kit for use with FPM controls. Contains 10k Ohm potentiometer, hardware, wire and connector for manually regulating motor speed.
—	43300270	Fuse and Speed Potentiometer Kit for use with model 3910 control. Contains potentiometer for manually regulating motor speed and various fuses to cover the range of motors and gearmotors which can be used with the control.



Metric "L" Brackets

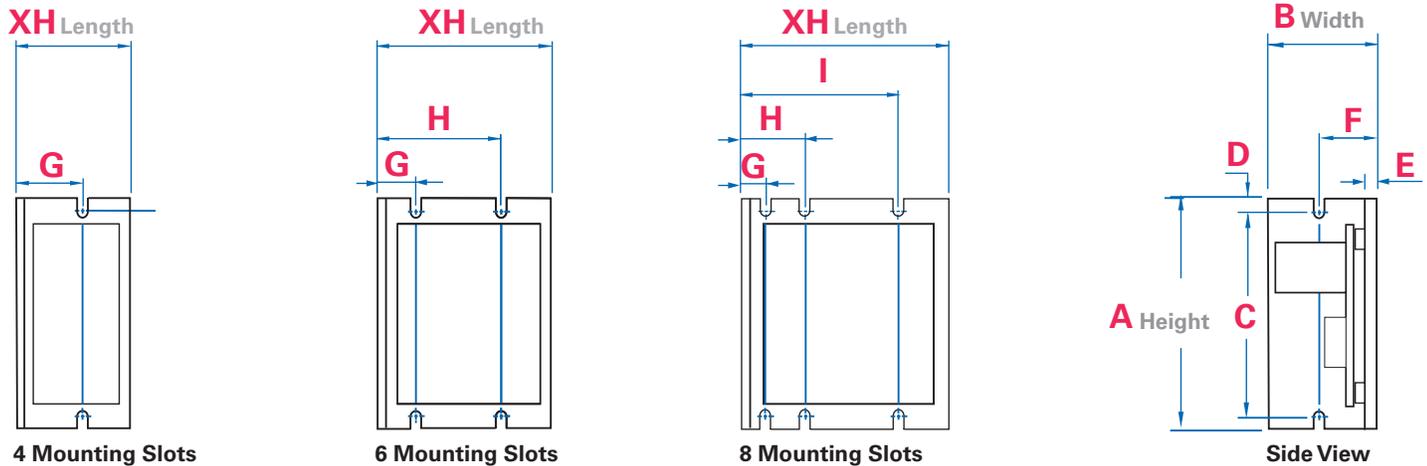
Item	Model No.	Description
A	0990	Metric Kit for 24A
B	1968	Metric Kit for 33A motors, and type D and Z gearmotors
C	1970	Metric Kit for type W gearmotors
D	1969	Metric Kit for E, F and FX gearmotors (will not fit 48R-F or 48R-FX)
—	—	no "L" bracket kits are available for 34R and 34R-Z gearmotors

Metric Motor and Gearmotor Kits

Item	Model No.	Description
E	1982	Metric die cast terminal box kit for 30R motors and gearmotors
E	1984	Metric die cast terminal kit with terminal block for 33A, 34R, 42A and 42R motors and gearmotors. For 90/130, 130V and 180VDC models only.

Chassis Control Dimensions

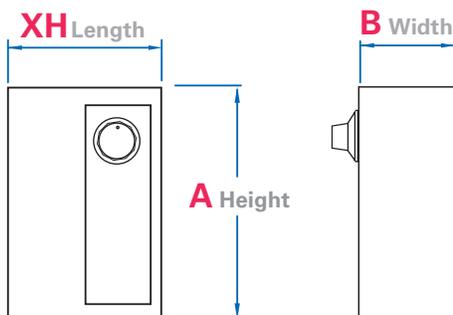
Dimensions (in inches) are for reference only. For CAD drawings and specs, visit bodine-electric.com.



Chassis Models

	Model Number	Description	XH Length	A Height	B Width	C Slot Height	D Slot Center to Edge	E Heat Sink Thickness	F Side Slot to Edge	G Slot 1 to Edge	H Slot 2 to Edge	I Slot 3 to Edge
AC Inverter	2982, 2983, 2984	8 mounting slots	3.87	4.30	2.66	3.80	.25	—	.950	.485	1.235	2.985
	2987	6 mounting slots- no side slots	4.30	4.67	4.96	—	—					
(DC) WPM	see website	6 mounting slots	3.64	4.30	1.75	3.80	.25	.90	.95	.50	3.00	—
(DC) UPM	see website		3.64	4.30	1.50	3.80	.25	.90	.95	.50	3.00	—
(DC) FPM	0810		4.75	6.00	1.25	5.50	.25	—	.94	1.13	3.63	—
(DC) FPM	0830, 0850		5.00	9.25	2.14	8.25	.38	—	—	1.31	3.81	—
(BLDC) ABL	3911, 3921	6 mounting slots	5.50	8.00	2.63	7.50	.25	.188	.117	1.25	42.5	—
(BLDC) ABL	3904, 3905, 3907	4 mounting slots	3.90	8.00	2.25	7.50	.25	.188	1.283	2.25	—	—
Low Voltage	3908, 3909	6 mounting slots	3.25	5.25	1.30	5.05	.10	.125	.65	.75	2.75	—

Enclosed Control Dimensions



Enclosed Models

	Model Number	Description	XH Length	A Height	B Width
NEMA 4X/1P-65	2999	AC Inverter	5.51	9.53	5.97
NEMA 1/1P-40	2998	AC Inverter	4.95	7.00	4.15
NEMA 1	2996	AC Inverter	7.116	4.96	5.672
NEMA 1	0790, 0791, 0794	DC	7.12	3.92	3.74
NEMA 12	see website	DC/BLDC	6.16	8.44	3.94