



LEESON Speedmaster® DC controls are general purpose drives designed for use with permanent magnet type direct current motors. NEMA 1 enclosed drives are suitable for most industrial applications, with the NEMA 4X enclosures best suited for washdown or outdoor installations or for extremely dusty applications. Chassis only units are available for building into equipment, machinery or existing enclosures. Most controls have a dual voltage switch allowing the control to be used on 115 or 230 volt, single phase, 50/60 Hertz service. However, the proper voltage motor should be selected for use with the power supply input, i.e., 90 volt DC motors for 115 volt input or 180 volt motors for 230 volt input service. Installation and adjustment instructions are included.

SCR/Thyristor drives are available in unidirectional and electro-mechanical type reversing styles for NEMA frame ratings and sub-fractional HP sizes.

The MM23000D Difference

The MM23000D Series SCR drives are dual voltage (115 or 230 VAC) and in the industry standard "MM" footprint (3.58" x 4.30"). NEMA 1 and 4X enclosures round out the MM23000D family.

This series is more resilient to vibration and comes with another feature, a user-selectable inhibit circuit. The user can adjust the function of the inhibit with jumper pins. The MM23000D Series drives can inhibit with either open or closed contacts. They can also inhibit to either minimum set speed or stop.

All MM23000D Series drives come with LEDs to let the user know when the power is on (green) or if the motor has reached the current limit (red). For applications that require control of a DC motor in the 1/20 to 2 HP range, the MM23000D is an excellent solution.

Features:

- **Industry Standard Footprint:** Full wave, single quadrant SCR drives in the industry standard "MM" footprint (3.58" x 4.30").
- **Enclosures Available:** MM23000D Series is available in a NEMA 1 enclosure for simple mounting and user operation, or 4X enclosure for more industrial applications.
- **Separate Calibrations:** Calibration trimmer pots for: minimum speed, maximum speed, current limit, acceleration, deceleration, and IR compensation.
- **Multiple LED Indicators:** LEDs indicating current limit (red) and power (green).
- **Speed Regulation:** Speed regulation maintains speed within 1% of the base speed within a speed range of 60:1.
- **Adjustable Inhibit:** Open or close contacts to stop or rotate motor at a minimum speed.

CHASSIS MOUNT • EC2

Everything needed for driving a 90VDC brush motor with no frills. Features small footprint but standard mounting, 1% speed regulation, user easily sets min/max speed, IR comp, current limit and accel/decel. Requires a speed reference signal from a wired 10K OHM potentiometer or a 0-6VDC isolated signal. Stop/start is available through inhibit terminals causing motor to coast to a stop; opening terminals causes the motor to accelerate to set speed. Typical applications: Conveyors, Materials Handling, Packaging/Sorting/Printing and other OEM machinery.



HP Range 115 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/8 to 1/2	5*	EC2	\$89	A	1
1/4 to 1	10	EC2 (with heatsink)	141	A	1

* For 3/4 and 1HP - 115V or 1.5 and 2HP - 230V Heat Sink #223-0159 required.

CHASSIS MOUNT with speed pot

115 VAC	HP Range 230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	1/20 to 1/4	1.5	MM23012D	\$195	A	1
1/8 to 1	1/4 to 2	10*	MM23002D	184	A	1
1/8 to 1	1/4 to 2	10*	MM23001C*	184	A	1
Heat Sink*			223-0159	52	A	1

* Heat Sink #223-0159 required above 5 amps.

* Has field supply for shunt wound motor control.

NEMA 1

115 VAC	HP Range 230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	1/20 to 1/8	1.5	MM23112D	\$369	A	5
1/8 to 1	1/4 to 2	10 +	MM23102D	372	A	5
Heat Sink+			223-0174	75	A	1

+ Heat Sink #223-0174 required above 5 amps.

NEMA 1 • REVERSING

115 VAC	HP Range 230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	1/10 to 1/4	1.5	MM23212D	\$477	A	5
1/8 to 1+	1/4 to 2*	10	MM23202D	510	A	5
Heat Sink+			223-0174	75	A	1

+ For 3/4 and 1HP - 115V or 1.5 and 2HP - 230V Heat Sink #223-0174 required.

NEMA 4X

115 VAC	HP Range 230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/8 to 1	1/4 to 2	10	174102*	\$397	A	6
1/20 to 1/8	1/10 to 1/4	1.5	MM23412D	489	A	7
1/8 to 1	1/4 to 2	10	MM23402D	499	A	7
1.5	3	15	174709	1359	A	8

* Plastic enclosure

NEMA 4X • REVERSING

115 VAC	HP Range 230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/8 to 1	1/4 to 2	10	174107**	\$514	A	7

** Plastic enclosure - Drive does not have dynamic braking. Motor must be at zero speed before reversing.

PWM CONTROLS
XL Series

XL Series filtered pulse-width-modulated (PWM) variable-speed DC drives provide exceptional performance. They output nearly pure DC power to brush-type motors ranging from 1/20 to 3 HP. Drives accept 120 or 240 VAC input to output 0 to 130 or 240 VDC, respectively, resulting in higher speeds from standard 90 or 180 VDC SCR duty motors. This innovative technology lets users operate many low voltage motors with only minor calibration adjustments.

MOSFET power devices switch at 22 kHz, which is above the audible range, to provide fast circuit response and a constant 1.05 form factor over the entire 100:1 speed range. Highly efficient XL drives provide cool, quiet motor operation with extended brush life and low maintenance. For convenience, the drives have a cage-clamp terminal block to make wiring easy.

The **MMXL Series** is a full-featured PWM drive reduced down to the standard MM footprint (4.30" x 3.64"). It has all the features of the XL Series, with added optional isolation to the speed circuit and the inhibit circuit in the "-PCM" model. This means that the speed can be controlled with any 0-5 VDC signal and many drives can be inhibited with a single contact closure. The auto ranging power supply allows the user to apply 120 or 240 VAC without adjusting any switches. The full-featured MMXL is one of the smallest PWM drives on the market today!



Features:

- **Pulse Width Modulation:** 1.05 form factor at any speed in a 100:1 speed range. This means a decrease in motor temperature and brush maintenance. Allows for higher output voltage, thus faster motor speed.
- **16.5kHz Switching Frequency:** Beyond the audible range providing faster circuit response and low form factor.
- **On-Board Diagnostics:** A green LED indicates a powered drive; a red LED indicates current limit.
- **Adjustable Trimmer Pots:** Accel. & decel. (0.5 - 6 seconds), IR Comp, current limit, min. & max. speed trimmer pots for application-specific calibration.
- **Isolation Option:** Isolated input circuit for speed and inhibit. Any 0 - 5 VDC will control speed and a single contact closure can inhibit many drives ("-PCM").
- **MM Footprint:** One of the smallest full-featured PWM drives on the market (4.30" x 3.64").

CHASSIS MOUNT

HP Range 115 VAC	HP Range 230 VAC	Output Voltage DC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/4	1/10 to 1/2	0-130/0-240	2	MMXL02-D240AC	\$325	A	2.5
1/20 to 1/4	1/8 to 1/3	0-130/0-240	3	XL3025A	320	A	1.8
1/20 to 1/4	1/8 to 1/3	0-130/0-240	15	XL3300A†	320	A	1.8
1/4 to 1/2	1/4 to 1	0-130/0-240	5	XL3050A	360	A	2.0
1/4 to 1/2	1/2 to 1	0-130/0-240	5	MMXL05-D240AC	348	A	3.2
1/4 to 1	1/2 to 2	0-130/0-240	10*	XL3200A	534	A	2.5
1/4 to 1	1 to 2	0-130/0-240	10^	MMXL10-D240AC	383	A	3.9
Isolation option#				"-PCM"	70	A	
Heat Sink*				223-0271	119	A	1
Heat Sink^				223-0159	52	A	1

^ Requires #223-0159 above 5 amps.
* Requires #223-0271 above 5 amps.
Add the designation "-PCM" to the end of an MMXL control — for pricing add the list of the -PCM to the list of the control.
† This item provides 0-120% jog speed (% of rated)

XP Series

Specifically designed for the original equipment manufacturer (OEM), XP Series DC motor speed drives provide high performance at a low cost. These drives are well suited for XL drive candidates who do not need full XL features. XP drives are versatile. They can accept any AC voltage between 70 and 130 VAC. XP drives contain a unipolar power supply, which enables the drive to accept DC (100-160 VDC), unlike typical transformer coupled drives. Depending on your application needs, these drives will provide speed control for motors ranging from 1/20 through 1 HP.



CHASSIS MOUNT

HP Range 115 VAC	HP Range 230 VAC	Output Voltage DC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/4	—	0-130	2	XP02-115AC	\$244	A	1.77
1/4 to 1/2	—	0-130	5	XP05-115AC	279	A	2.36
1/2 to 1	—	0-130	10^	XP10-115AC	302	A	2.88
Heat Sink^				223-0159	52	A	1

^ Requires #223-0159 above 5 amps.

NEMA 1 & NEMA 4X • ENCLOSED

The C4XL series are dual voltage, high performance PWM NEMA 4X enclosed drives for 1/20-2hp DC brushed motors. PWM technology allows the drives to yield a constant 1.05 form factor over the 100:1 speed range resulting in smooth, quiet, cool and low maintenance motor operation. Enclosure protects the drive from accidental contact, liquids falling objects and corrosive agents.

HP Range 115 VAC	HP Range 230 VAC	Output Voltage DC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/40 to 1/8	1/40 to 1/4	-	3	M1740008	\$247	A	5
1/20 to 1/3	1/8 to 1/2	0-130/0-240	3	C4XL3025	670	A	5
1/4 to 1	1/4 to 2	0-130/0-240	10	C4XL3200A	771	A	5



REGENERATIVE CONTROLS • CHASSIS MOUNT

CHASSIS MOUNT MMRG Series

The MMRG Series is one of the smallest full-wave four-quadrant drives on the market today. These full-featured, compact drives match brush-type DC motors ranging from 1/20 to 2 HP. The MMRG Series provides all the performance of a full size, four quadrant, regenerative variable speed drive and has our popular MM23001 footprint. This drive will maintain motor speed with smooth motoring and braking torque, and allow high-duty cycle reversing and braking. It has an adjustable current limit, 1% of base speed regulation, and can regulate within a 50:1 speed range (open loop).



MMRGD Series

As above with three different braking modes on the MMRGD: regenerative brake, regenerative decelerate, and coast. Calibrating the MMRGD can be done easily with trimmer pots for minimum speed, maximum speed, forward acceleration, reverse acceleration, forward torque, reverse torque, and IR compensation. The MMRGD has LEDs to let the user know when the power is on (green), if the drive is running in either forward or reverse direction (amber), or if the motor has reached the current limit in either the forward direction or reverse direction (red).



CHASSIS MOUNT with speed pot

115 VAC	HP Range	230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	...	...	3 (5 [†])	MMRG31U	\$499	A	1
1/20 to 1/8	1/10 to 1/4	...	3	MMRGD03-D230AC²	499	A	1
1/8 to 1/2	...	...	5	RG51UA	409	A	1
1/8 to 1	1/4 to 2+	...	10+	RG60U	347	A	1
1/8 to 1	...	...	10 (15 [‡])	MMRG30U	523	A	1
	1/4 to 2+	...	10+	MMRG40U	442	A	1
1/8 to 1	1/4 to 2	...	10+	RG60U-T³	437	A	1
1/8 to 1	1/4 to 2	...	10+	RG60U-PCM⁴	407	A	1
1/8 to 1	1/2 to 2	...	10+ (15 [‡])	MMRGD10-D230AC²	523	A	1
1/4 to 1	1/2 to 2	...	10 [^]	RG500UA	588	A	1
Heat Sink+				223-0159	52	A	1
Heat Sink [^]				223-0235	119	A	1

- [†] Requires #223-0159 above 5 amps.
- [^] Requires #223-0235 above 7 amps.
- ¹ 1/2 wave rectified - 1.57 form factor
- ² Regenerative decelerate, LED - power, run, current limit
- ³ The Torque/Velocity option card gives added capability to the RG60U-T allowing control of torque or speed in either the forward or reverse directions. Selection of torque or speed mode requires a dry contact relay or switch closure. Torque control of a regen drive allows the user to control overhauling loads and the ability to perform basic open loop web tensioning and wind-up applications.
- ⁴ The -PCM adder board includes isolation that allows this drive to be controlled from an isolated, non-isolated, or grounded control source, examples include 0 to 10 VDC, 0 to +/- 10 VDC, or 4-20 mA.
- # peak current

AC/DC Speed Control

REGENERATIVE CONTROLS • ENCLOSED

NEMA 1 C1RGD Series

The C1RGD Series is our low-cost solution for NEMA 1 reversing and regenerative applications. The dual voltage C1RGD not only brakes and reverses brush motors on the fly, but also has more features than any other regenerative drive Minarik has manufactured before. There are three different braking modes on the C1RGD: regenerative brake, regenerative decelerate, and coast. Calibrating the C1RGD can be done easily with trimmer pots for minimum speed, maximum speed, forward acceleration, reverse acceleration, forward torque, reverse torque, and IR compensation. The C1RGD has LEDs to let the user know when the power is on (green).



115 VAC	HP Range	230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	1/10 to 1/4	...	3(6 [†])	C1RGD03-D230AC	\$568	A	5
1/8 to 1	1/2 to 2 [^]	...	10(20 [†])	C1RGD10-D230AC	568	A	5
Heat Sink [^]				223-0174	75	A	1

- [†] Requires #223-0174 above 5 amps.
- # peak current

NEMA 4X • RG Series

RG510 and 500 features: speed pot, and forward, brake reverse switch in a NEMA 4x enclosure. The RG501 and RG511 drives have a forward and a reverse main speed potentiometer, so independent speeds for each direction are easily set. Stop, run, reverse, or jog the motor by pressing a button on the membrane panel. This allows for easy control of motor direction and will reverse a motor without contactors, switches, brake resistors or inhibit plugs. The drives have adjustable current limit, 1% base speed regulation, and can regulate within a 50:1 speed range (open loop). With the tachogenerator feedback, the speed regulation improves to 0.1% of base speed within a 60:1 speed range (closed loop). For inching and basic positioning applications, the JOG pushbutton will allow the motor to JOG in either direction with independently adjustable forward and reverse speeds.



115 VAC	HP Range	230 VAC	Output Amps	Catalogue Number	List Price	Disc. Sym.	App. Wgt.
1/20 to 1/8	1/10 to 1/4	...	3	RG510A	\$1045	A	7
1/20 to 1/8	1/10 to 1/4	...	3	RG511A³	1352	A	7
1/4 to 1	1/2 to 2	...	10	RG500A	1125	A	7
1/4 to 1	1/2 to 2	...	10	RG501A³	1502	A	7

³ Membrane panel with jog, stop, run, reverse - forward and reverse main speed pot

M1 SERIES



The M1 series is a very compact drive rated up to 1/2hp (1hp with heatsink). The M1 has a chip that can be factory pre-programmed for customer trimmer pot ranges. The M1 includes the inhibit function, a jumper to calibrate for smaller motors 1/15 to 1/8HP),

six trimmer pots and a wide IR compensation range. Extremely compact size and programmability make the M1 perfect for both OEM's and users.

Model	Input Voltage (VAC)	Output Voltage (VDC)	Max Output Current	Form Factor	HP Rating	List Price
M1	115	0-90VDC	10*	1.37	1/15-1@90VDC	\$176

* Needs heatsink model #223-0159 above 5 amps maximum Hp without heat sink is 1/2 Hp.

M2 SERIES • RATIOING DRIVE • TWO DRIVES IN ONE



The M2 series provides the power of two drives in one. Independently control two different DC motors in speed or torque control. In the speed control mode, you can run the two motors independently or in ratio to each other. In ratio mode, the drive

replaces two drives and a master/follower card too. The M2 drive is micro processor based and can be customized without hardware changes.

Model	Input Voltage (VAC)	Output Voltage (VDC)	Max Output Current	Form Factor	HP Rating	Total Hp rating on both sides	List Price
M2	115	0-90VDC	5*	1.37	1/15-1/2	5/8	\$233
M2 W/heatsink	115	0-90VDC	10*	1.37	1/15-1	1 1/2	278

* Needs heatsink model #223-0159 above 5 amps.

PCM SERIES • CHASSIS W/ ISOLATION



The PCM20000A series are SCR isolated open chassis drives for 1/20 to 2Hp brushed motors. The drives integrate isolation allowing them to accept external analog process control signals. Users can operate

the drives in manual mode using normal potentiometer operation or in signal mode where drive output is proportional to an external signal output.

Model	Input Voltage (VAC)	Output Voltage (VDC)	Max Output Current	Field Supply	HP Rating	Signal Input	List Price
PCM21010A	115	0-90	2	None	1/20-1/8 @ 90VDC	0-10VDC	\$300
PCM21000A	115	0-90	10.0*	None	1/4-1* @90VDC	0-10VDC	297
PCM22000A	230	0-180	10.0*	None	1/2-2* @180VDC	0-10VDC	259
PCM23001A	115/230	0-90 or 0-180	10	50/100/200 (1 amp)	1/8-1 @ 90VDC 1/4-2 @180VDC	0-10VDC or 4-20 mA	407

* Needs heatsink model #223-0159 above 5 amps.

PCM SERIES • ENCLOSED W/ ISOLATION



The PCM23400A series are SCR isolated NEMA 4X closed drives for 1/20 to 2HP DC brushed motors. These full-waved rectified drives are a cost effective solution for variable speed, process control applications

requiring protection from washdown, dirt and other corrosive elements. For added versatility, these drives have integrated isolation.

Model	Input Voltage (VAC)	Output Voltage (VDC)	Max Output Current	Field Supply	HP Rating	Signal Input	List Price
PCM23411A	115/230	0-90 or 0-180	3	50/100/200 (1 amp)	1/20-1/8 @ 90VDC 1/8-1/4 @180VDC	0-10VDC or 4-20 mA	\$717
PCM23401A	115/230	0-90 or 0-180	10	50/100/200 (1 amp)	1/8-1 @ 90VDC 1/4-2 @180VDC	0-10VDC or 4-20 mA	1011



DC ADJUSTABLE SPEED DRIVES SIGNAL PROCESSORS

CLOSED LOOP CONTROLS - MD Series

A compact, programmable DC speed control with digital closed loop feedback and LED display for DC motors rated to 2 HP. An on-board micro-processor with non-volatile memory, coupled with sophisticated internal software, makes the Micro-Drive the ultimate value in accuracy and control.



Friendly front-panel field programming permits customizing the MD for specific applications. The MD can be set to display the target speed directly in RPM, FPM, GPM, process time, or any other engineering unit. Programmable parameters include maximum and minimum set speed, decimal points, operating mode (master or follower), and the constant which takes into account motor gear ratios.

Features:

- **User-friendly** programming from the front panel with parameter lockout capability
- **Programming buttons have adjustable rate and mode;** linear or non-linear
- **Display is programmable** for any engineering unit of measure
- **Display options include** zero-blanking, decimal point positions, and intensity
- **Custom front panel** artwork available
- **Easy panel mounting** with 2 or 4 bolts (supplied)
- **NEMA 4X Rating** (faceplate with supplied gasket)
- **Universal power supply** supports any AC voltage input from 85 - 265 VAC
- **Programmable user output** supporting up to 230 VAC @ 5A
- **Multiple operational modes:** Rate, Time, Follower Options

Catalogue Number	Size	HP Range	Input (AC)	Output (DC)	List Price
MD10P	1/8 DIN	.15A-1/2	120V	0-90V	\$881
		1/8-1	240V	0-180V	
MD3P	1/4 DIN	1/4-1	120V	0-90V	1188
		1/4-2	240V	0-180V	

CLOSED LOOP CONTROLS - DLC Series

The DLC600 precisely controls your closed loop application speed. The DLC600's dual voltage capability line allows it to replace both Minarik's DLC300 (115 VAC), DLC400 (230 VAC) and DLC500 (230 VAC). An encoder or proximity switch, Hall effect sensor, or electromagnetic pickup can provide the necessary feedback. Any engineering units, from revolutions per minute to widgets per day, can be used to display and program the speed. The large 4-digit LED display allows you to easily see exactly what speed you are running. When it comes to low-cost closed loop control, the DLC600 is your solution.



Features:

- **Excellent Speed Regulation:** 0.05% speed regulation of set speed provides tight control throughout a 200:1 speed range.
- **Pushbutton Programming:** Three front panel pushbuttons provide quick and easy programming.
- **4-Digit LED Display:** 0.5 inch (13 mm) wide digits for good visibility.
- **Programmable Decimal Point:** Makes specific application readouts easy.
- **Inhibit Terminal:** A low voltage, dry contact closure on the inhibit terminal will reduce the output to zero.
- **Selectable Feedback Devices:** Controls accept magnetic pick-up, Hall effect, inductive proximity sensor or encoder input.
- **+5 VDC or +12 VDC (10 mA) Power Supply:** Provides power to feedback devices.

Catalogue Number	List Price	Disc. Sym.	Line Voltage	AC Line Power	Feedback Sources	Max. Ref. Voltage	Power Supply Voltage for F/B Devices	Speed Regulation	Feedback Freq. Range	App. Wgt. (lbs.)
DLC600	\$636	A	115 or 230V 50/60 HZ	5.5 watts	<ul style="list-style-type: none"> • Hall Effect • Electromagnetic Pick-up • 5 or 12 VDC NPN-type encoder or proximity switch • Encoder 	+10 VDC	+5 VDC or +12 VDC	0.05%	10-3000 HZ	1

DIGITAL RATE INDICATOR - VT8 SERIES • DUAL VOLTAGE

The VT8 Series is a great choice in a digital tachometer.

The VT8 Series provides a simple and accurate readout for any object that has an optical encoder, magnetic pickup, or anything else that can generate a frequency related to what you wish to measure.



There are four modes to choose from: tachometer mode for speed in any engineering unit, time-in-process for indicating the duration of an application, the inverse of speed (such as minutes per revolution), and basic totalizer for counting the frequency of the speed sensor.

Features:

- **Four Operating Modes:**
 - 1) speed of application or multiple,
 - 2) time-in-process indicating duration of application,
 - 3) the inverse speed (i.e., minutes per revolution)
 - 4) number of counts received from feedback device.
- **Selectable Feedback Devices:** Displays accept magnetic pickup, Hall effect, inductive proximity sensor or encoder input.
- **+5 VDC (5CmA) or +12 VDC (25mA):** Provided to power feedback device.
- **Wide Frequency Range:** Accepts 0 - 20,000 Hz from feedback device.
- **Easy to Read Display:** 4-digit LED display is 0.7" (17.5 mm).

Catalogue Number	List Price	Disc. Sym.	Line Voltage	Feedback Sources	Feedback Freq. Range	Power Supply Voltage for F/B Devices	App. Wgt. (lbs.)
VT8-D230AC	\$425	A	115/230 VAC	<ul style="list-style-type: none"> • Hall Effect • Electromagnetic Pick-up 	0-20,000 HZ	+5 VDC or +12 VDC	1

HALL EFFECT PICK UP • PU-E SERIES



The PU-E Series pick-up is an economical and reliable way to monitor motor speed. Its patented design provides ease of installation in otherwise difficult to reach areas.

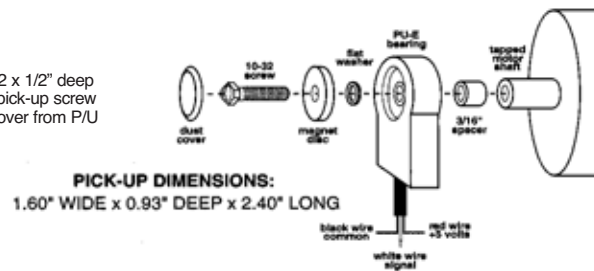
The PU-E pick-up operates at a 5 to 24 volt level producing a sharp square wave output, which may be fed into Dart's field programmable tachometer, closed-loop control, counter, or most other digital devices.

The PU-E pick-up series also includes a quadrature model to monitor both motor speed and direction by providing two square wave output signals approximately 90° out-of-phase.

Model	Pulses/Rev	List Price
PU-2E	1	\$188
PU-4E	2	188
PU-10E	5	188

Mounting Procedure

1. Tap motor shaft 10-32 x 1/2" deep
2. Remove red cap on pick-up screw
3. Remove back dust cover from P/U
4. See illustration



MAGNETIC PICK-UP KITS

Magnetic pick-ups (digital velocity transducers) are used to provide shaft speed information for digital rate indicators (VT8 Series) and digital velocity servos (DLC600).

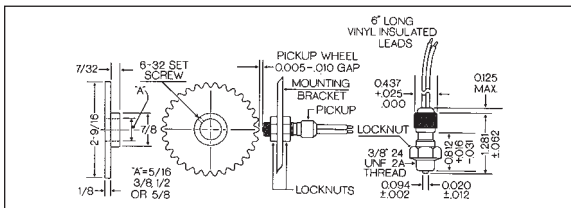
Magnetic pick-ups are generally used in high speed shaft applications where the pick-up is directly monitoring motor shaft speed.

MODEL PK1 - LIST PRICE \$295

This versatile kit includes a magnetic pick-up, 30 tooth pick-up wheel, and four different hubs. The hubs have 5/16", 3/8", 1/2" and 5/8" bore sizes to quickly accommodate various sized shafts.

The PK1 can be used to directly monitor shaft speed or to monitor another shaft that has a direct relationship to the prime mover.

Minimum RPM is 40.

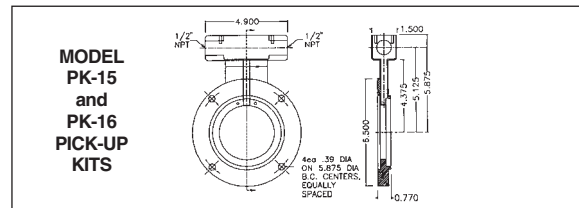


MODELS PK15 - LIST PRICES \$409 and PK16 - \$443

These kits are provided with a magnetic pick-up mounted in a convenient NEMA C face adapter ring and a 60 tooth pick-up wheel.

The PK15 has a 5/8" diameter hub for use with 56C face motors, while the PK16 has a 7/8" diameter hub for use with 143TC or 145TC frame motors.

The PK15 and PK16 are for mounting directly to C face motors between the motor and the load. Minimum RPM is 40.



DISCOUNT SYMBOL A

8 CHANNEL MASTER SPEED CONTROL



A reliable, economical master speed control unit for operating multiple variable speed drives from a single 5K master potentiometer or field selectable DC voltage range of 0-5 through 0-25 VDC OR 0-25 through 0-200 VDC input (grounded or ungrounded). Drives may be controlled to maintain identical speeds or individually pre-set proportional speeds with respect to the MSC speed setting.

Catalogue No.	List Price
MSC38A	\$779.00

DIGITAL SPEED POT

A microprocessor based digital speed potentiometer that can directly replace a conventional 3-wire analog speedpot or motorized speedpot for most AC and DC drives. The desired set speed is entered into the large 1/2 inch red LED display through the convenient front-panel interface...and display units are now programmable for virtually any unit of measure.



The DP4 Series is ideal for new equipment as well as for retrofitting most AC or DC drive systems where precise, repeatable speed setting and digital readout are desired. The DP4 is also ideal in applications where high vibration and other environmental factors can cause normal speed pot settings to drift.

Catalogue No.	List Price
DP4	\$548.00

AC/DC Speed Control

FOOT SWITCH/POTENTIOMETER

The VARIOR is a foot-operated potentiometer. It is built for variable speed applications where the operator is working in a hands-free mode. It is CSA approved and features a 10K pot.



Description	Catalogue Number	List Price
Foot Operated Speed Pot	174650	\$444

PROCESS CONTROL MODULE - PCM 4

The PCM4 card is a compact and cost-effective solution for process control applications. Powered by 115 or 230 VAC, the PCM4 uses Burr Browne Technology to isolate and condition incoming DC voltage signals from process controllers, motors, transducers, microprocessors or any signal. Typically, the output of the PCM4 connects to the input of a motor drive; hence, incompatible devices safely couple to yield a higher level of automation. Integrating this isolation card allows drives to follow any non-isolated external voltage or current analog process control signal.



Dip-switch selectable, the PCM4 can follow any input voltage signal, grounded or ungrounded, from -250 to +250 VDC, and any input current signal from 1 to 50 mA. In response to the input, the PCM4 outputs an isolated bipolar signal from -12 to +12 VDC @ 10 mA. Linearity of 0.01% yields precise results. High resolution multi-turn pots lets users scale the output to within millivolts of the input or any desired proportion within the range of the output. Users may elect to control devices in manual mode using normal potentiometer operation rather than from an external signal input.

Specifications	Catalogue No.	PCM4
	List Price	\$290
Input Voltage (AC/1ph)	115 or 230V	
Output Voltage Max. (DC)	±10V	
Output Current Max. (DC)	10mA	
Weight (lbs.)	.75	