

# Digital SCR Drives

Dart Controls is the exclusive provider of Digital DC drives to the market. The Dart MicroDrive is a microprocessor-based closed loop DC SCR drives offering an integrated, programmable digital display.

Originally developed for the conveyor pizza oven, MicroDrives have found broad application across many industries. Of particular value to the OEM designer / plant operator is the integrated drive, display, and logic controller functionality all in one unit.

The MicroDrive comes in two styles depending on the application - the **MD Series** (for continuous applications) and the **MD Plus Series** (for start/stop or applications requiring rapid drive response time).

The programmable display is of particular value to the machine/ process operator, providing drive speed information in meaningful engineering units (GPM, FPM, MM:SS, % of Master, etc.)

Both the MD and the MD Plus Series come in panel mount and stand alone enclosed versions. Each may be configured in three modes - Rate, Time and Follower. Follower mode allows for two or more motors to operate at speeds in proportion to each other - a common need in blending, batch and synchronized material feed and handling applications. Many times the logic controller functionality built into the MicroDrive can eliminate the need for a PLC and its custom programming.

The MD Plus offers the additional benefit of a velocity loop PID control algorithm; 4-20mA process signal follower and industrial serial communication. Development will continue on the MD Plus to offer additional serial communication protocols, additional program management tools and a Graphic User Interface (GUI) for both configuration and control.

The Dart MicroDrive is a prime example of how a customer need evolved into a successful, innovative drive product.



MD50E



MD50P



MD10P



PU-E Series  
Performance-matched  
for use with the MD Series



# MD Series Features + Specifications

- Dual Voltage 120/240 VAC, 50/60Hz
  - Full HP rated - no auxiliary heat sink required
  - 85-250VAC line voltage operating range
  - Closed loop -  $\pm 0.1\%$  regulation\*
  - Encoder required - See Dart PU Series
  - Barrier terminal strip - optional plug terminal strip
  - Full wave bridge supply
  - Configurable Minimum & Maximum speed
  - Configurable Linear Acceleration and Deceleration
  - Programmable display units
  - Non-volatile memory retains custom programming
  - Program lockout safety feature
  - Custom user program memory storage & retrieval
  - -10° to +45°C ambient temperature
  - 100:1 speed range
  - Overload capacity: 200% for one minute
  - Transient voltage protection
  - Configurable alarms with Form C relay output
  - Inhibit circuit—permits low power start & stop
  - Suitable for wash down applications
- \* Sensor PPR/application dependent

Model	Width	Length	Depth	Weight
MD10P/ MD40P <sup>1</sup>	3.62 in [9.19 cm]	1.66 in [4.21 cm]	4.63 in [11.75 cm]	1.32 lb [0.60 kg]
MD3P/ MD50P <sup>2</sup>	3.62 in [9.19 cm]	3.50 in [8.88 cm]	4.63 in [11.75 cm]	2.17 lb [0.98 kg]
MD3E/ MD50E	5.13 in [13.03 cm]	7.40 in [18.80 cm]	3.90 in [9.91 cm]	2.19 lb [0.99 kg]

1 – Front bezel is 4.54 x 2.29 in. 2 - Front bezel is 4.54 x 4.18 in.



Optimized for use with  
the Dart PU Series Speed Sensor

Base Model [MD Series] <sup>1</sup>						Options					
Model	Supply Voltage	Motor Voltage	Current	HP	Body	-P	-1	OPT3	-9	OPT51	-420
MD10P	120 VAC	90 VDC	5 ADC	1/8-1/2	P	F	F	✓	F	N/A	N/A
	240 VAC	180 VDC		1/4-1							
MD3P	120 VAC	90 VDC	10 ADC	1/8-1	P	F	F	✓	F	N/A	N/A
	240 VAC	180 VDC		1/4-2							
MD3E	120 VAC	90 VDC	10 ADC	1/8-1	E	F	F	✓	F	N/A	N/A
	240 VAC	180 VDC		1/4-2							

Base Model [MD Plus Series] <sup>2</sup>						Options					
Model	Supply Voltage	Motor Voltage	Current	HP	Body	-P	-1	OPT3	-9	OPT51	-420
MD40P*	120 VAC	90 VDC	5 ADC	1/8-1/2	P	N/A	N/A	✓	N/A	✓	✓
	240 VAC	180 VDC		1/4-1							
MD50P*	120 VAC	90 VDC	10 ADC	1/8-1	P	N/A	N/A	✓	N/A	✓	✓
	240 VAC	180 VDC		1/4-2							
MD50E*	120 VAC	90 VDC	10 ADC	1/8-1	E	N/A	F	✓	N/A	✓	✓
	240 VAC	180 VDC		1/4-2							

P – Panel mount  
E – NEMA 4 enclosed

✓ - Option is available  
F – Option is available as Factory Installed only

N/A – Option Not available

\* PU-40 sensor is recommended for these models

1 - A minimum 500 and maximum 50,000 pulses/min sensor feedback for proper operation

2 - A minimum 500 and maximum 600,000 pulses/min sensor feedback for proper operation

## Option Description:

- P: Plug-style terminal strip for ability to remove all wires / harness connection easily
- 1: Provision for external set of Up/Dn push buttons
- OPT3: Option card that boosts signal from 2-wire (non-powered) magnetic proximity sensors
- 9: Blank front bezel overlay (all references to Dart removed) - '9' models only
- OPT51: RS485 Serial Communication card. Factory installed in MD50E - field installed only in MD40P and MD50P
- 420: 4-20mA isolated input/output card. Factory installed only MD50E; factory or field installed MD40P/MD50P. Does NOT supply loop power