

MICROPUMP®

A Unit of IDEX Corporation

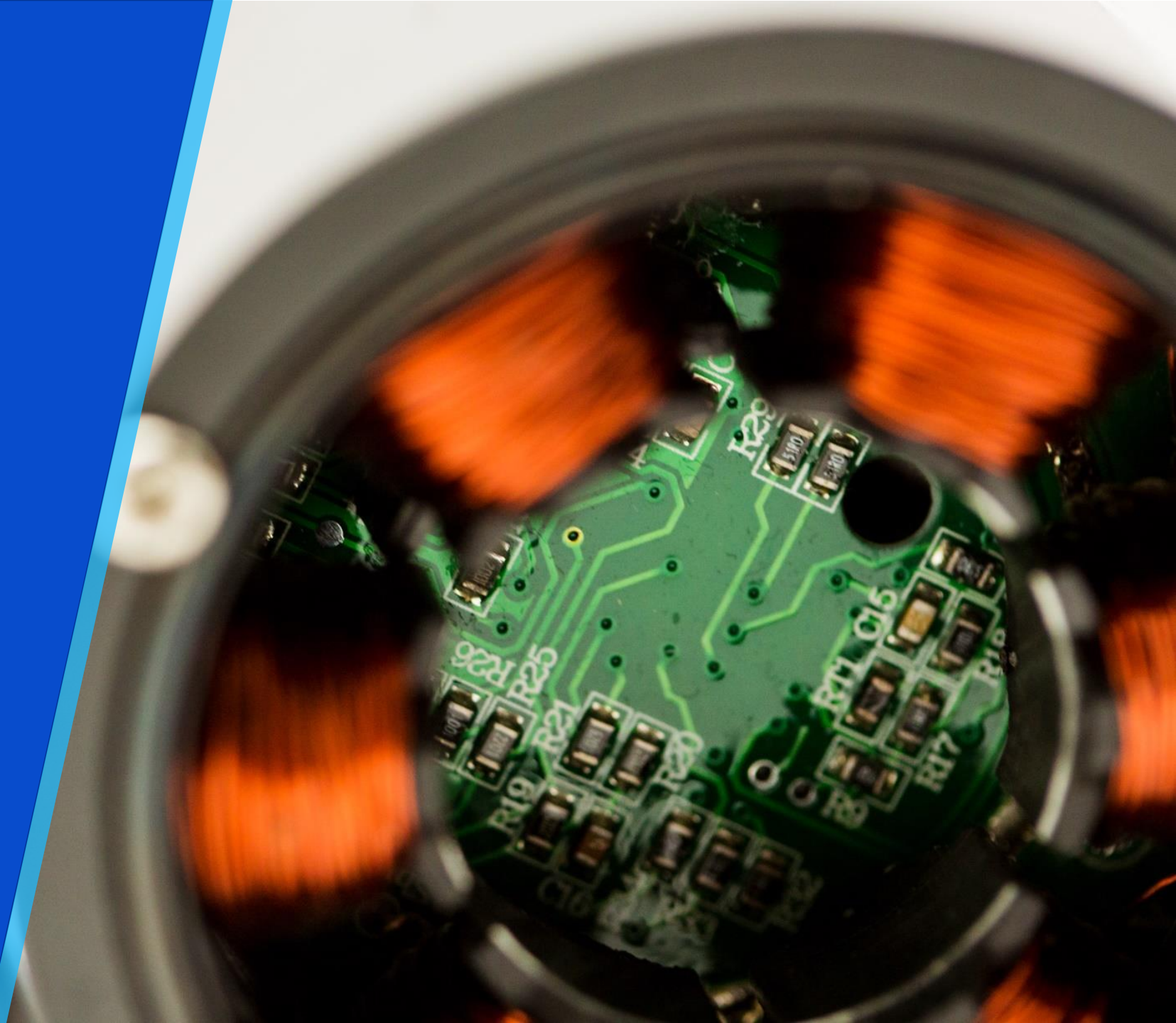
EagleDrive™ Sales Training

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Micropump's new EagleDrive is the next generation of integrated electromagnetic drive.

EagleDrive EL



EagleDrive MS



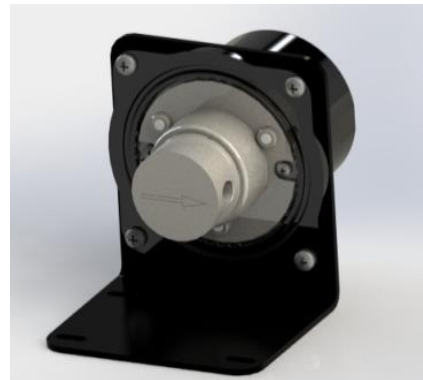
What is it?

Available for the following pumps

EagleDrive EL



GJ and GJR Series



GB Series

EagleDrive MS



CA Series



GA Series



GJ Series

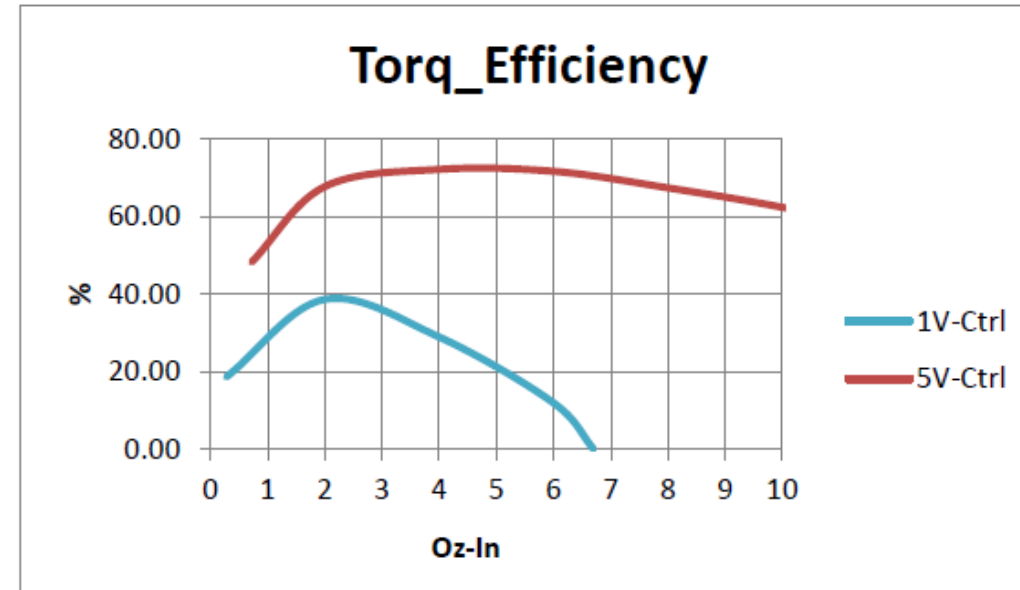
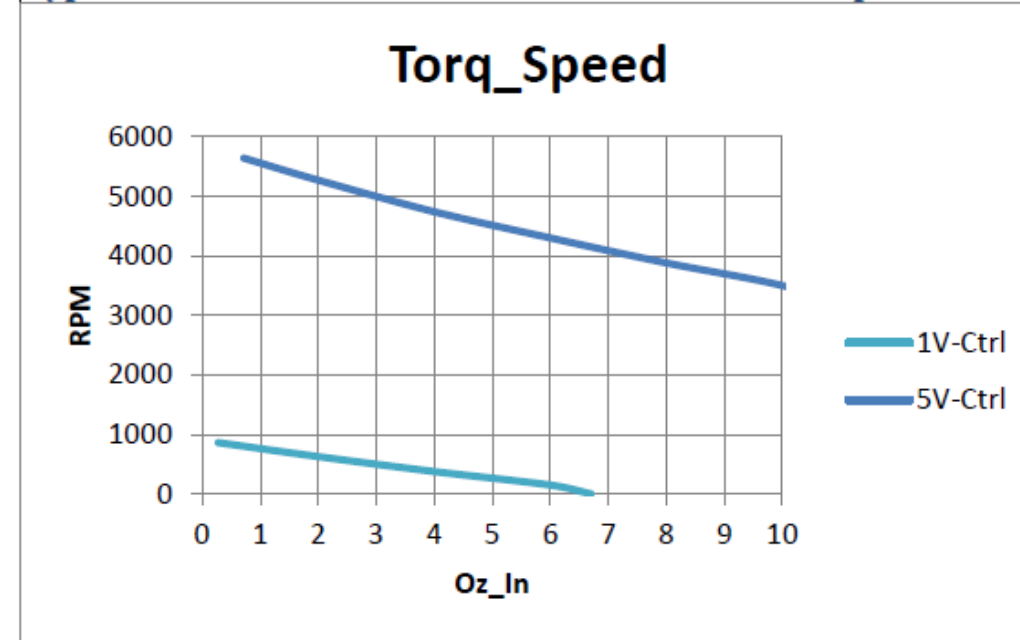
What is it?

Key Features & Benefits

- Increased torque and power for higher flow rates
- Newest surface mounted electronics technology
 - Increased functionality in same package size
 - Improved reliability under extreme temperature and vibration
 - Enabled higher efficiency motor performance
 - Avoids component obsolescence
- Built-in microprocessor control adds fault signals and tachometer output allows easy system integration
- IP55 - static seals to eliminate electronics contamination

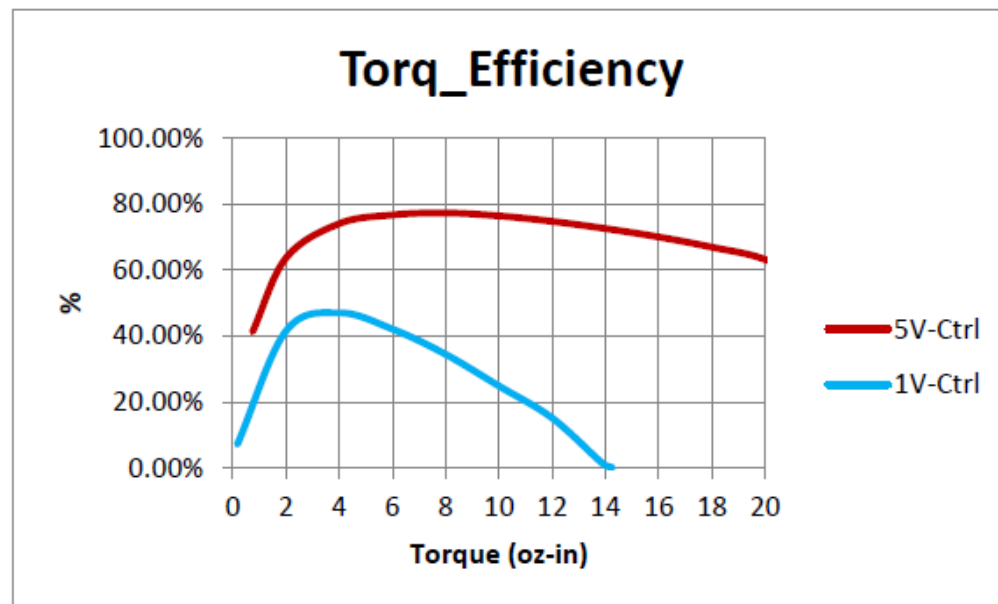
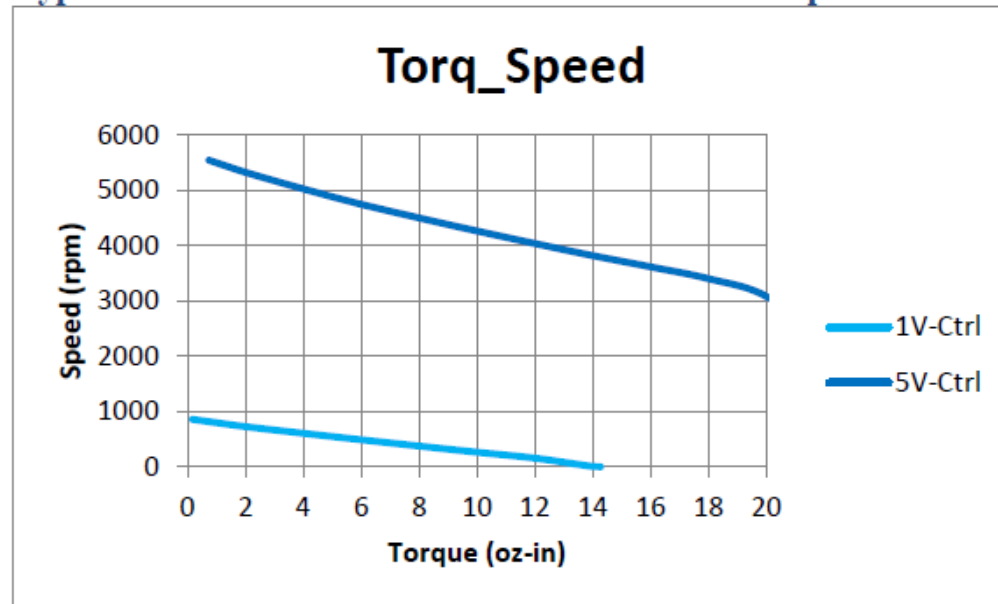
Key Features & Benefits

Typical 24V Performance Model MS at Room Temperature



Key Features & Benefits

Typical 24V Performance Model EL at Room Temperature



Interface

- Power Supply Requirements
 - Power Input:
 - Nominal 24VDC; it can accept a range of 10-38 VDC.
 - Power supply required
- Flying Leads
 - 0-5V with eight leads:
 - Power (red),
 - Ground (black)
 - Shield (bare)
 - Control input (white)
 - Tach out (green)
 - Forward/reverse (orange)
 - 2x Fault out (blue+brown)

Interface

Fault outputs

- Active low microprocessor outputs, driven with 5.6kohm pull-up resistors to the internal 5V, should be monitored with a high impedance device ($R_{load} > 100\text{kohms}$)
- $V_{high} = 5 \pm 0.25\text{Vdc}$ $V_{low} = 0.09 \pm 0.09\text{Vdc}$ 1 kohm impedance low state, 6.6 kohm output impedance hi state
- Fault signals are V_{low} when:
 - Supply under voltage, decreasing below approximately 8 V, $\sim 0.5\text{V}$ hysteresis
 - Over temperature, temperature increasing above 170°C , 15°C max hysteresis
 - Logic fault, error conditions on the Hall sensors (i.e. pump not installed correctly)
 - Internal component failure (internal short or open connection as follows)
 - Short from any of the motor phase connections to ground
 - Short from any of the motor phase connections to the mains supply
 - Short across motor phase windings
 - Open condition in the internal motor phase connection
- Fault 1=0, Fault 2=1: Low load Current. This can occur at any RPM below 800.

Materials of Construction

- Drive Materials
 - Both EagleDrive models are manufactured with a Ryton® housing incorporating mounting flanges or bosses. Standard drive cables are sealed with a Nylon® pull-relief fitting.
 - The standard drive cable jacket material is PVC.

Mounting Options



- The model EL has a square flange integrated into the drive housing for the flange mount. In addition to the flange mount, a bracket mount is also available.

Mounting Options

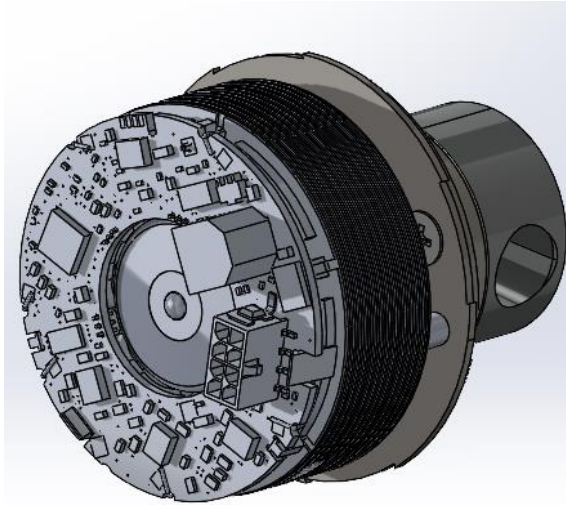


- The model MS comes standard with a smaller foot mount bracket attached. This bracket can be removed if mounting to the plastic housing is desired.

Mounting Options



- Both models are available open-frame, without housing or cable for optimum OEM installations.



Open-frame connector mates with:
Molex Micro Fit 3.0 per Product Specification PS-43045 Tyco Electronics Micro MATE-N-LOK per Product Specification 108-1836 Contact plating: 15µin or 30 µin gold on contact area (100 µin matte tin on solder tails)

Safety

- Thermal trip
 - The thermal limit is reached when the drive housing temperature reaches 135°C - the drive will automatically shutdown.
 - The drive will automatically start up back up when the drive housing temperature reaches 120°C
- Current Limit
 - EL drive current limit is 2.90A
 - MS drive current limit is 1.90A
- Locked rotor
 - At lock-rotor condition, both drives limit at less than 1.2A
 - A locked rotor operation at full load current in greater than 70°C ambient temperature conditions can result in winding temperatures greater than UL 1004 limits. To reduce risk of exceeding winding temperature limits we recommend always monitoring the tachometer signal and commanding stop if the pump shows a locked rotor condition lasting more than one minute.

Safety

- Enclosure Rating

- The EagleDrive is rated to IP55 (dust and water jetting protected).

- Suitable Environments

- The EagleDrive is rated to a maximum ambient environment of 85°C. This maximum must take into account the temperature of the pumped fluid.

Regulatory & Compliance

- UL listing
 - The EagleDrive does not carry UL certification, it does however use UL listed materials.
- EU Safety Compliance
 - The EagleDrive is CE compliant. The drive has passed testing per the LVD, EMC and Machinery directives.

Key
Components

Key Electronic Components

COMPONENT TYPE	MANUFACTURER	MFG P/N
SOLID TANTALUM CAP	AVX	TPSC686K016R0200
ELECTROLYTIC CAP	PANASONIC	EEHZC1H101P
ZENER DIODE	VISHAY	BZT52B3V3-E3-18
SCHOTTKY DIODE	DIODES INC	BAS70-04-7-F
ZENER DIODE	PANASONIC	DZ2J047M0L
TVS DIODE	LITTLEFUSE	SMAJ40A
BLDC CONTROLLER	ALLEGRO	A3931KJP-T
MOSFET	IRC	IRF7351PBF
HALL SENSOR	MELEXIS	US2881LUA
RECTIFIER	VISHAY	SS8P6C-M3/86A
TRANSISTOR	ZETEX	FCX1053ATA
MICROCONTROLLER	FREESCALE	MC9S08QD4MSC
OP AMP	TI	OPA322AIDBVR