

## EnduraMax 75s Series Brushless Integrated Motor-Drives 75 mm (2.95-inch) BLDC Motor with Integrated Digital Drive

Allied Motion's EnduraMax 75s series are 75 mm (2.95 in) diameter integrated brushless DC motor-drives intended for unidirectional, open-loop speed control in commercial/industrial applications.

The EnduraMax 75s is ideal for mobile HVAC systems, liquid and gas pumps, fans and blowers, conveyors, and similar applications.

The cost-effective EnduraMax 75s is a compact, high power density integrated motor-drive that generates 40% more power than an equivalently sized DC brush motor. This coupled with its quieter operation, longer life, and no need of brush maintenance makes the EnduraMax 75s the right choice to replace DC motors in equipment modernizations or new designs.

With rated winding voltages of 12 and 24 VDC, and continuous power output up to 228 W, EnduraMax 75s models are especially suited for battery-fed applications. They offer excellent performance, very long service life, and high reliability.

Options for the EnduraMax 75s include alternate speed control configurations, a wash-down version and alternate shaft configurations. As always with Allied Motion products, custom design versions are available to exactly match application requirements.

### Features & Benefits

- Three standard models rated up to 228 W continuous output power (option H); up to 300 W with air-over
- Standard winding voltages of 12 and 24 VDC are ideal for battery-fed applications
- Continuous torque of up to 0.72 Nm (102 oz-in) and rated speed up to 4000 RPM
- IP44 protection level
- High temperature Class F (155 °C) winding
- 5/16-inch cold-rolled steel shaft
- Heavy-duty ball bearings
- All-digital integrated drive for precise, drift-free speed control
- Drive electronics protection, including reverse voltage and over temperature

### Options & Accessories

- Additional heatsink for higher power capability (option H)
- 9 mm or 10 mm diameter shaft
- Potentiometer or PWM signal speed command (option P)
- Customized shaft, and/or mounting to match application requirements
- Sealed ball bearings
- Stainless steel shaft
- IP56 wash-down version with shaft seal
- Customized leads/connector to match application requirements



- Compact integrated brushless DC motor-drive for unidirectional speed control applications
- Continuous output up to 0.72 Nm (102 oz-in), 0.29 HP, and 215 W
- Rated speed up to 4000 RPM

# Brushless DC Motor-Drive

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### SPECIFICATIONS



	MB-EMU-75-2x		MB-EMU-75-5x		MB-EMU-75-8x	
<b>Winding Code ("x" in model number)</b>	Q	R	Q	R	Q	R
<b>DC Input Voltage [VDC ± 25%]</b>	12	24	12	24	12	24
<b>Continuous Torque [Nm (oz-in)]</b>	0.21 (29)	0.4 (56)	0.25 (35)	0.41 (58)	0.26 (37)	0.53 (75)
<b>Continuous Torque with Option H [Nm (oz-in)]</b>	0.29 (41)	0.44 (62)	0.37 (52)	0.58 (82)	0.38 (54)	0.72 (102)
<b>Peak Torque [Nm (oz-in)]<sup>(1)</sup></b>	0.69 (98)	0.92 (130)	0.74 (105)	0.90 (128)	0.91 (129)	1.19 (169)
<b>Rated Speed [RPM]</b>	4025	3663	3894	3991	3176	3005
<b>Rated Speed with Option H [RPM]</b>	3720	3553	3645	3766	3011	2846
<b>No-load Speed [RPM]</b>	4600	4575	4275	4500	3450	3450
<b>Continuous Output Power [W (HP)]<sup>(2)</sup></b>	86 (0.12)	152 (0.2)	101 (0.14)	171 (0.23)	87 (0.12)	167 (0.22)
<b>Continuous Output Power with Option H [W (HP)]<sup>(2)</sup></b>	113 (0.15)	163 (0.22)	140 (0.19)	228 (0.31)	120 (0.16)	215 (0.29)
<b>DC Input Current [ADC]</b>	10	8.2	11.2	8.8	9.6	8.8
<b>DC Input Current with Option H [ADC]</b>	13.8	9.1	15.3	12	13.7	11.5
<b>Motor Rotor Inertia [E-5 kg-m<sup>2</sup> (oz-in-sec<sup>2</sup>)]</b>	1.65 (0.00234)		2.61 (0.0037)		3.51 (0.005)	
<b>Weight [kg (lb)]</b>	0.86 (1.9)		1.13 (2.5)		1.41 (3.1)	
<b>Amplifier Type</b>	PWM (15 kHz) single-quadrant control					
<b>Command Input</b>	Standard: 0 to +5.5 VDC, CW shaft direction viewed from shaft end Option P: Potentiometer or PWM speed control					
<b>Speed / Status Output</b>	<ul style="list-style-type: none"> <li>• Open collector, sink up to 50 mA, pull-up to 30 V</li> <li>• Speed monitor: 1.0 msec pulse 3 times per motor revolution</li> <li>• Bus fault: 50% duty-cycle at 10 Hz; over temperature fault: 25% duty-cycle at 10 Hz; short circuit or Hall sensor fault: 75% duty-cycle at 10 Hz</li> <li>• Disabled: zero volts (nominal) output</li> </ul>					
<b>Protection Features</b>	<ul style="list-style-type: none"> <li>• Over and under voltage protection</li> <li>• Over current detection</li> <li>• Short-circuit and reverse polarity protection</li> <li>• Hall commutation sensor loss detection</li> <li>• Locked rotor protection (disabled after three unsuccessful start attempts)</li> <li>• Load dump protection</li> <li>• IP44, (IP56 optional)</li> </ul>					
<b>Ambient Operating Temperature</b>	-20 to 50 °C (-4 to 122 °F)					
<b>Ambient Storage Temperature</b>	-40 to 70 °C (-40 to 158 °F)					
<b>Relative Humidity Range</b>	0% to 95% (non-condensing)					

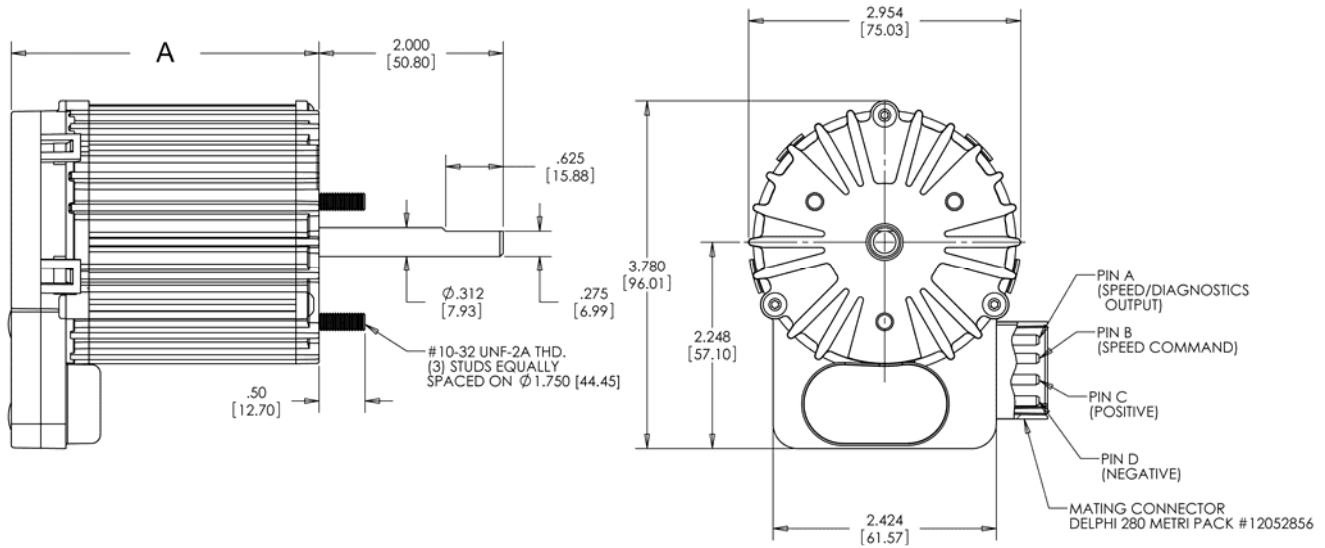
(1) Maximum of 2 sec.

(2) With motor mounted to aluminum plate 200 x 200 x 10 mm (8 x 8 x 0.375 in) at 22 °C

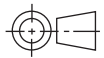
# Brushless DC Motor-Drive

## EnduraMax 75s Series Brushless Integrated Motor-Drives

### DIMENSIONS

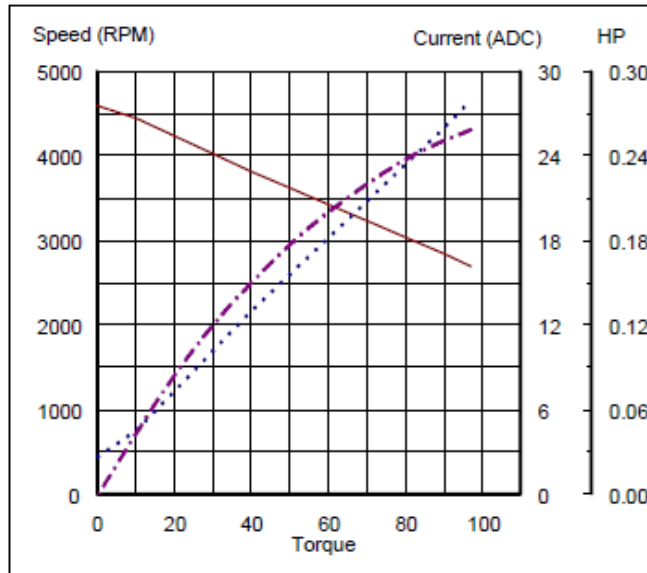


MODEL	MB-EMU-75-2x	MB-EMU-75-5x	MB-EMU-75-8x
Length A in (mm)	2.79 (70.1)	3.34 (84.8)	3.89 (98.8)

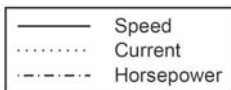
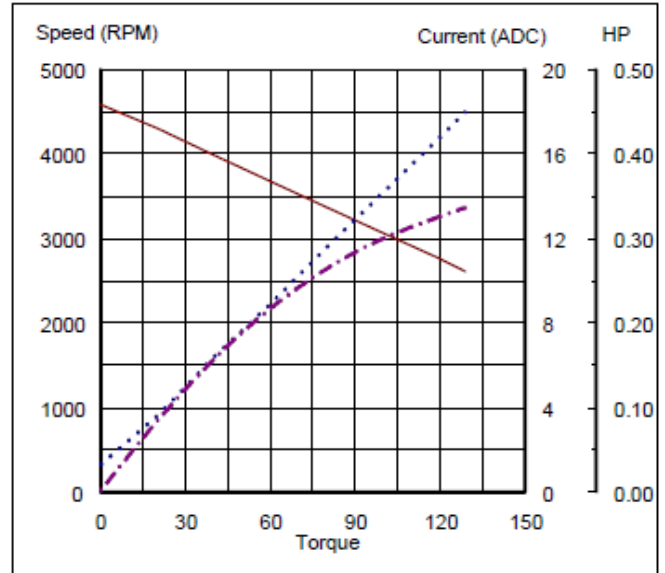


### PERFORMANCE

MB-EMU-75-2Q



MB-EMU-75-2R



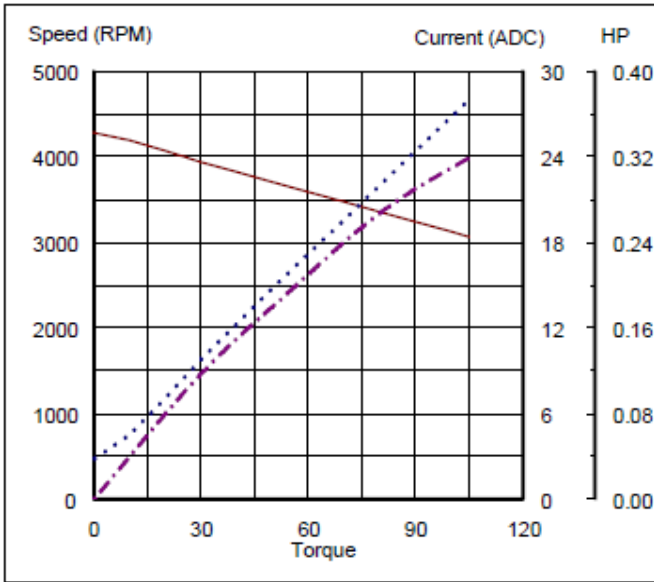
Note: Torque scale is in oz-in.

# Brushless DC Motor-Drive

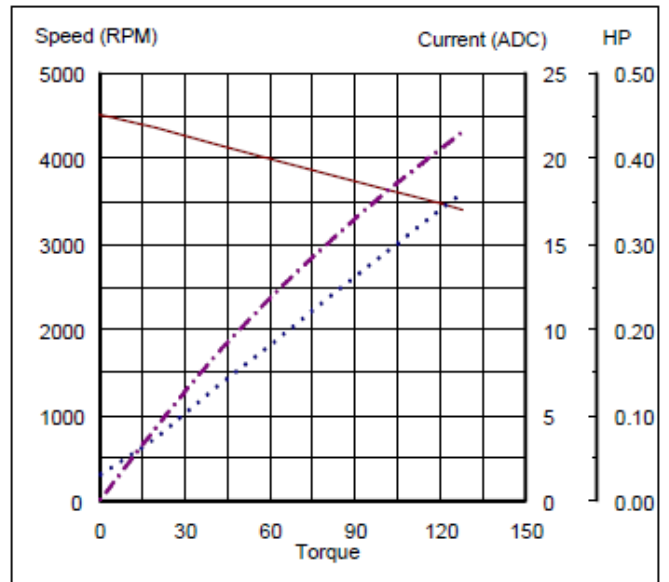
## EnduraMax 75s Series Brushless Integrated Motor-Drives

### PERFORMANCE

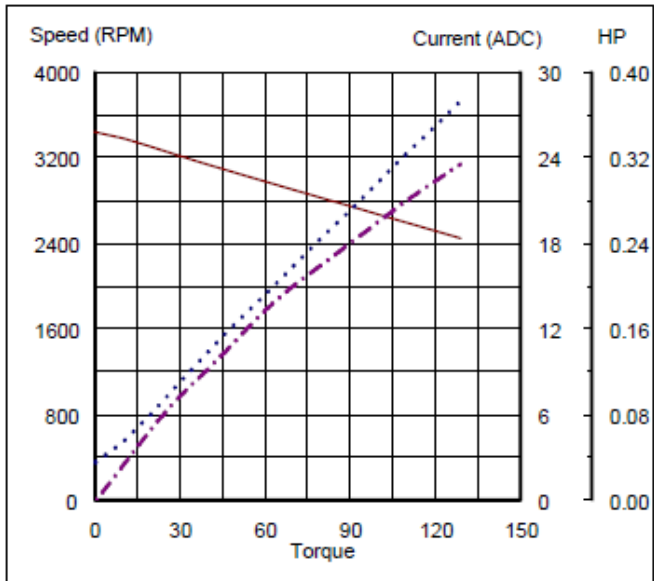
MB-EMU-75-5Q



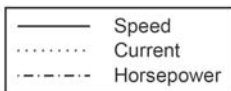
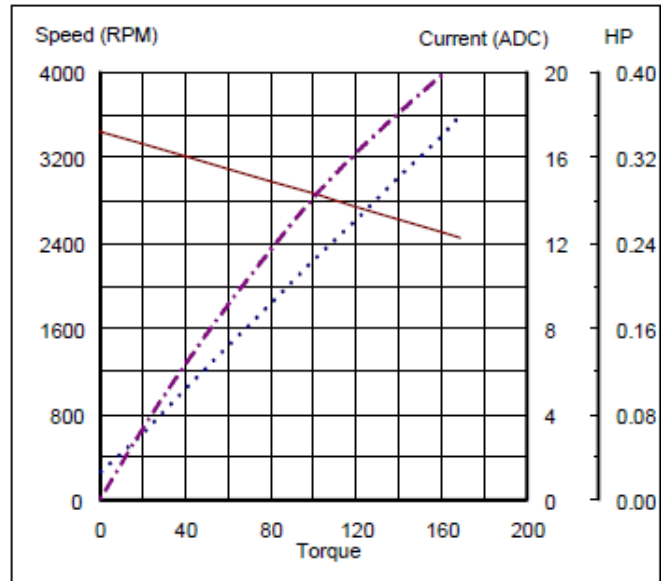
MB-EMU-75-5R



MB-EMU-75-8Q



MB-EMU-75-8R

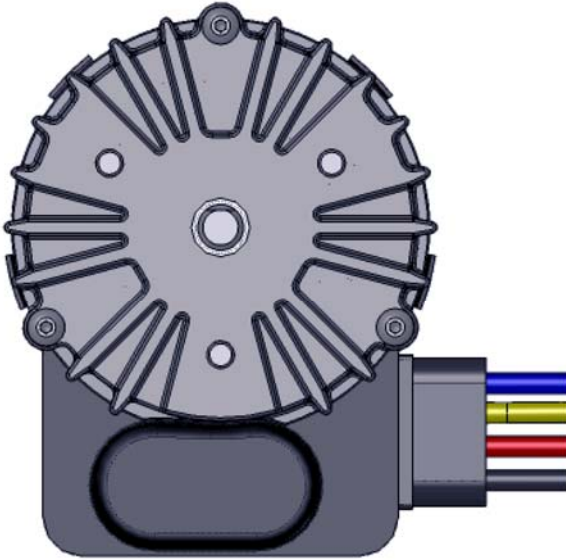


Note: Torque scale is in oz-in.

# Brushless DC Motor-Drive

## EnduraMax 75s Series Brushless Integrated Motor-Drives

### ELECTRICAL CONNECTIONS

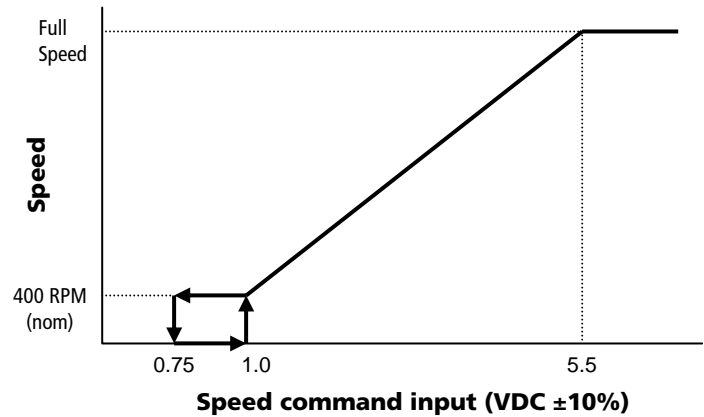
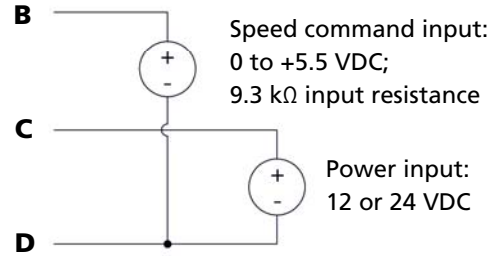


Connections		
Pin	Std. Wire Color	Function
A	Blue	Speed / Status Output
B	Yellow	Speed Command Input
C	Red	Power Input (VDC)
D	Black	Power Common
Mate: Delphi 280 (Metri Pack #12052856)		

### Standard Version

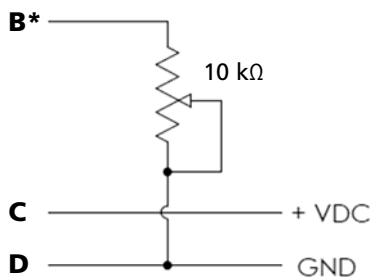
#### Analog Speed Command

A = Speed / status monitor



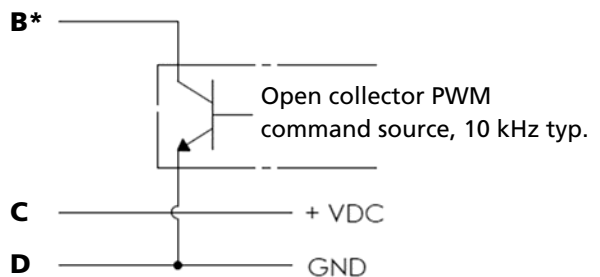
### Option P Version

#### Potentiometer Speed Command



\* Internal 1 kΩ pull-up to +5 V

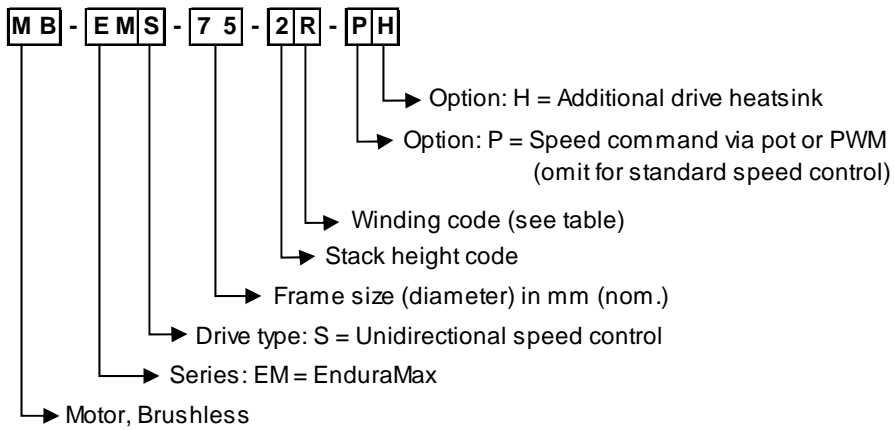
#### PWM Speed Command



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### MODEL NUMBERING



Stack Height
2 = 20.5 mm
5 = 34.5 mm
8 = 48.5 mm

Winding (VDC)
Q = 12
R = 24