

ibLM-A



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ibLM-A

Electronic Commutated Motor (ECM)





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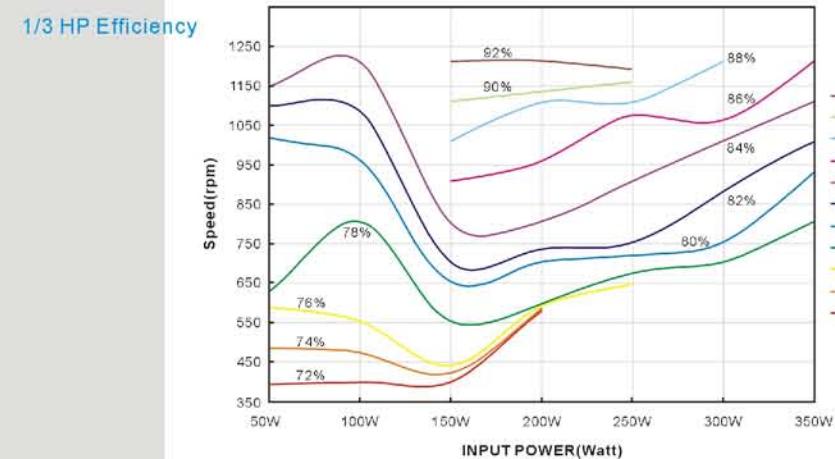
New Trend of Transmission Technology

An ECM is a permanent magnet 3-phase synchronous motor with a brushless structure. Compact sized and light weight, it features an electronic commutated structure which notably reduces mechanical/electrical noise. With low inertia and high speed operation, rotor losses are very low or absent resulting in higher performance than the conventional motors and energy savings when operating under heavy load. Delta's ECM motor provides high output torque at low speeds and offers self-protection functions to prevent overheating, over current, phase loss and leakage current.

► Features

• Higher Efficiency

At full load, an ECM is approximately 20% more efficient than a conventional induction motor. With no rotor losses and a higher power factor in the permanent magnet and DC brushless design, an ECM is able to maintain high efficiency over a wide range of speeds.



• Easy Installation and Maintenance

Delta's ECM is designed for easy installation and maintenance. Without complicated switches and adjustable terminals, system manufacturers can connect the equipment in any convenient manner. Technicians will save valuable service time and cost by replacing the electronic drive without removing the motor.



• Built-in Modbus ASCII

Delta's ECM includes Modbus ASCII to allow monitoring and control over a simple RS-485 communication interface.



• Moisture-Resistant

A common problem for an ECM motor is moisture presence in the air-conditioning system. Delta's ECM solves this problem by filling the electronic components with silicon epoxy potting.

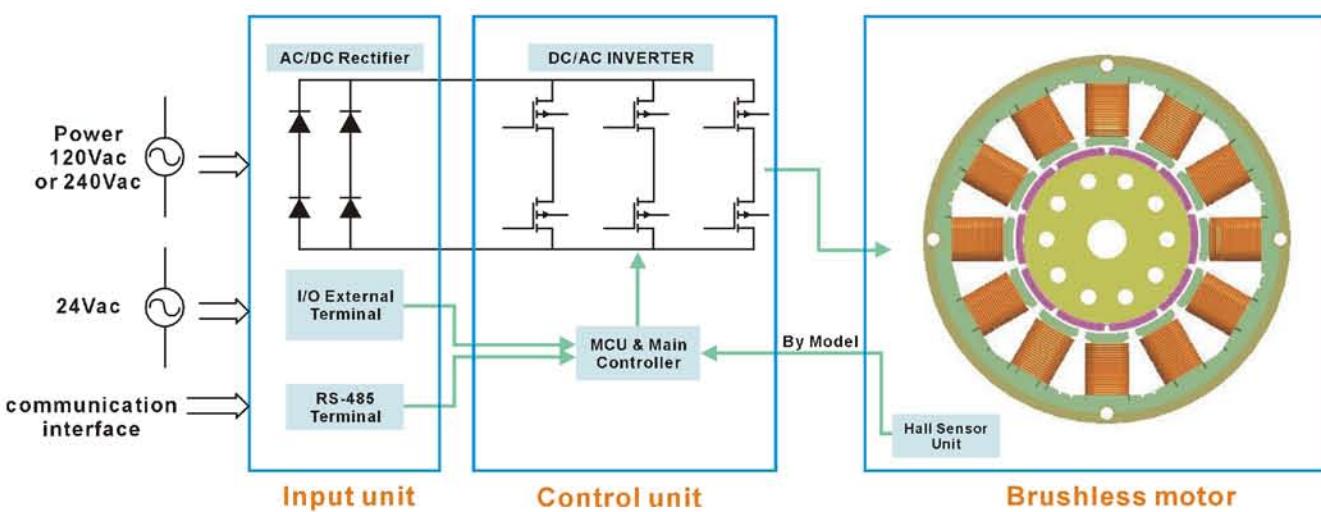
• Various Applications

Delta's ECM may be designed into many applications including HVAC (Heating, Ventilating, & AC), Laundry (washer, dryer), and Medical equipment to name a few.

• Programmable Controls

An ECM motor can optimize your system performance and equipment investment. Its microprocessor provides powerful functions for procedure control, rotation direction and acceleration/deceleration curve at start-up and stop to fulfill demands in all applications.

► Structure of Circuit Diagram



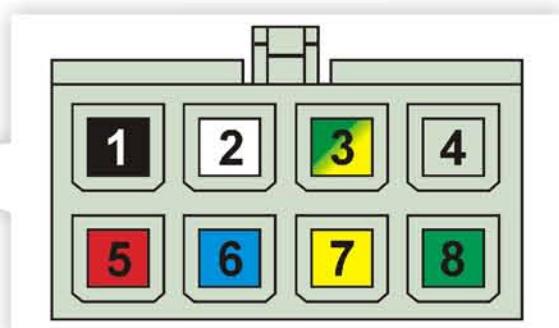


> Applications

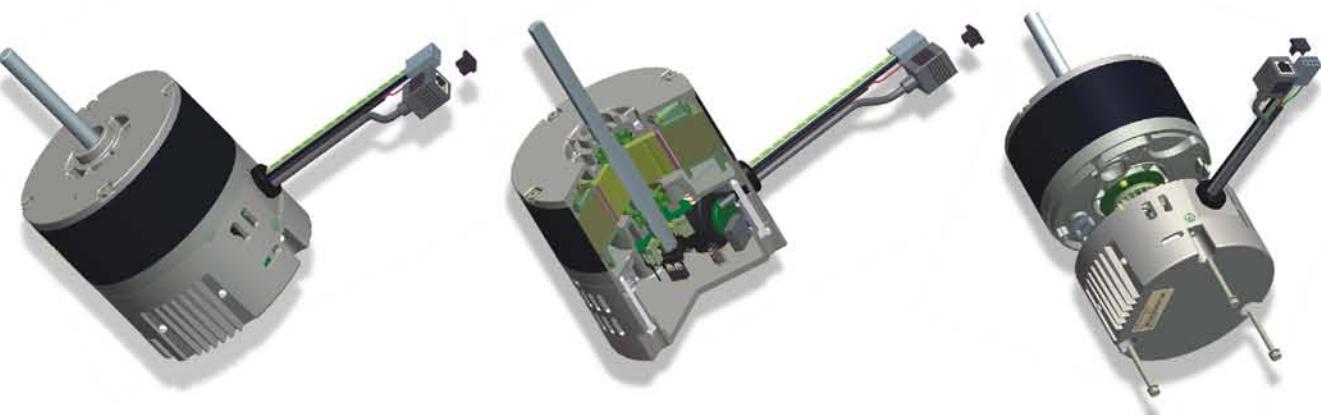
The ECM motor is the most popular in the high reliable and efficient applications, including HVAC air-conditioning & heating, blower, air filter, washer, dryer, medical equipment and other industries.



> Wiring



PIN	Color	IBLM-A1	IBLM-A2	IBLM-A3	IBLM-A5
1	Black			AC 220V 1φ 50/60Hz	
2	White			AC 220V 1φ 50/60Hz	
3	Green/Yellow			Motor grounding	
4					
5	Red	Control input 1:RUN/STOP(24VAC)		Speed/torque control command 1 (24VAC)	
6	Blue	Control input 2:FWD/REV(24VAC)		Speed/torque control command 2 (24VAC)	Speed/torque control command 2 (24VAC)
7	Yellow	Control input 3:EMERGENCY STOP(24VAC)		Speed/torque control command 3 (24VAC)	Speed/torque control command 3 (24VAC)
8	Green			24VAC COMMON	





IBLM-A

IBLM - A1 14 03 S

Product name
 IBLM : Integrated Brush Less Motor

Standard product
Rated input power
 03 : 250W(1/3hp) 06 : 563W(3/4hp)
 04 : 375W(1/2hp) 07 : 750W(1hp)

Frame size 14 : 140mm

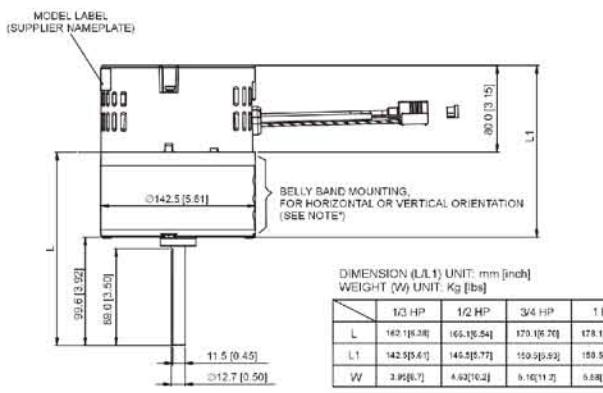
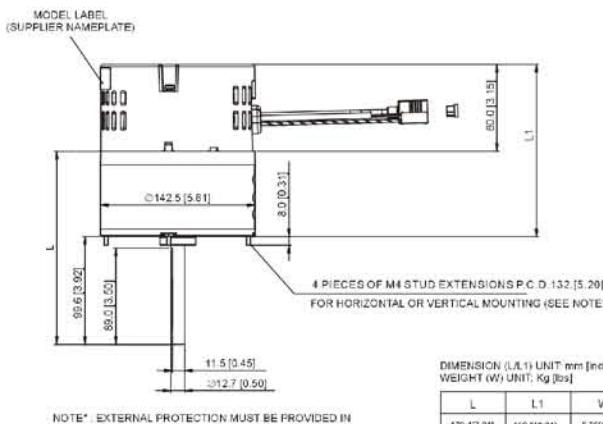
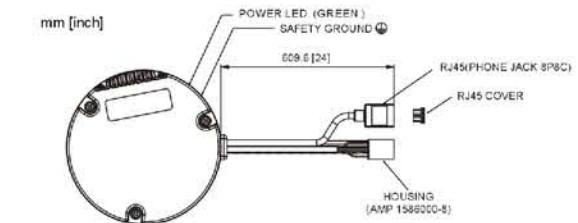
Series
 A1 : Drum of dryer and washer A3 : Indoor HVAC
 A2 : Dryer blower A5 : Outdoor HVAC

► Specifications

Model Number	IBLM-A11403S	IBLM-A21404S	IBLM-A31403S	IBLM-A31404S	IBLM-A31406S	IBLM-A31407S	IBLM-A51403S															
Application	Dryer drum	Dryer blower	Indoor HVAC			Outdoor HVAC																
Control Mode	Constant Speed/Torque/Airflow are available																					
Rated Input Voltage / Frequency	Single-Phase, 200~240±10%, 50/60Hz±5% (NOTE: IBLM-AX14XXD is 110/220VAC model)	Single-Phase, 200~240VAC ±10%, 50/60Hz±5%																				
Max. Applicable Motor (HP)	1/3	1/2	1/3	1/2	3/4	1	1/3															
Max. Applicable Motor (kW)	0.25	0.4	0.25	0.4	0.6	0.75	0.25															
Rated Full-load Input Current (A)	2.4	3.6	2.4	3.6	5.4	7.2	2.4															
Rated Torque (Nm/oz-ft)	1.36/16.1	2.18/25.8	2.28/27	3.55/42	5.10/60	6.76/80	300~950rpm(2.4/28), 950~1200rpm(1.86/22)															
Rated Speed (rpm)	1,750		1050																			
Output Speed Range(rpm)	150~1,750	250~1,750	250~1,050			250~1200																
Efficiency	89% at 1,750rpm/16.1 oz-ft	88.2% at 1,750rpm/25.8 oz-ft	85.9% at 1,050rpm/80 oz-ft			83.5% at 1,050rpm/16.1 oz-ft																
Control Characteristics	Hall Sensor																					
	Sensorless																					
	15kHz																					
Overload Endurance	150% of rated current for 1 minute																					
Input Type of the External Terminals	24VAC±10%				When applying 24VAC±10% to M1/M2/M3, it can control the motor operation and the frequency/torque is set by RS485 communication/ When applying the 24VDC±10% PWM signals to M2, it can control the motor operation and the frequency/torque is set by the width of PWM signal.																	
Operations of the External Terminals	M1:RUN/STOP; M2:FWD/REV; M3:Emergency Stop	When the external terminal is ON, it is multi-step frequencies/torques command and set by the communication.																				
Communication	RS485 (Via external RS232/RS485 interface)																					
Communication Protocol	MODBUS ASCII 4800,8,N,1																					
Enclosure Type	IP20			IP54																		
Protection	Over Voltage, Over Current, Under Voltage, Overload, Over-heat																					
Cooling	Natural air-cooling	Forced cooling (wind of blower/blade must blow over the motor)																				
Environment	-40°C to 60°C																					
	-40°C to 70°C																					
	0-100% RH (condensing)																					
	9.80665m/s ² (1G) less than 20Hz, 5.88m/s ² (0.6G) at 20 to 50Hz																					
Approvals	UL,CSA(optional),CE(class B)																					

► Dimensions

• A1&A2 Series



• A5 Series

