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*We reserve the right to change the information in this catalogue without prior notice



IBLM-A

Electronic Commutated Motor (ECM)



www.delta.com.tw/industrialautomation



IBLM-A

New Trend of Transmission Technology

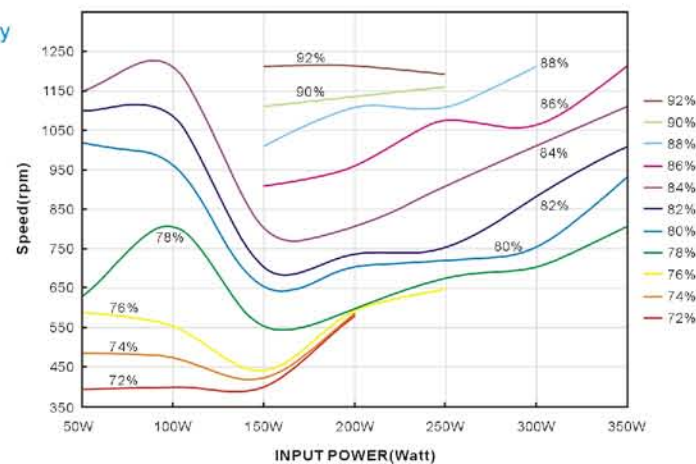
An ECM is a permanent magnet 3-phase synchronous motor with a brushless structure. Compact sized and light weight, it features an electronic commutated structure which notably reduces mechanical/electrical noise. With low inertia and high speed operation, rotor losses are very low or absent resulting 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 overheat, 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.

1/3 HP Efficiency



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.

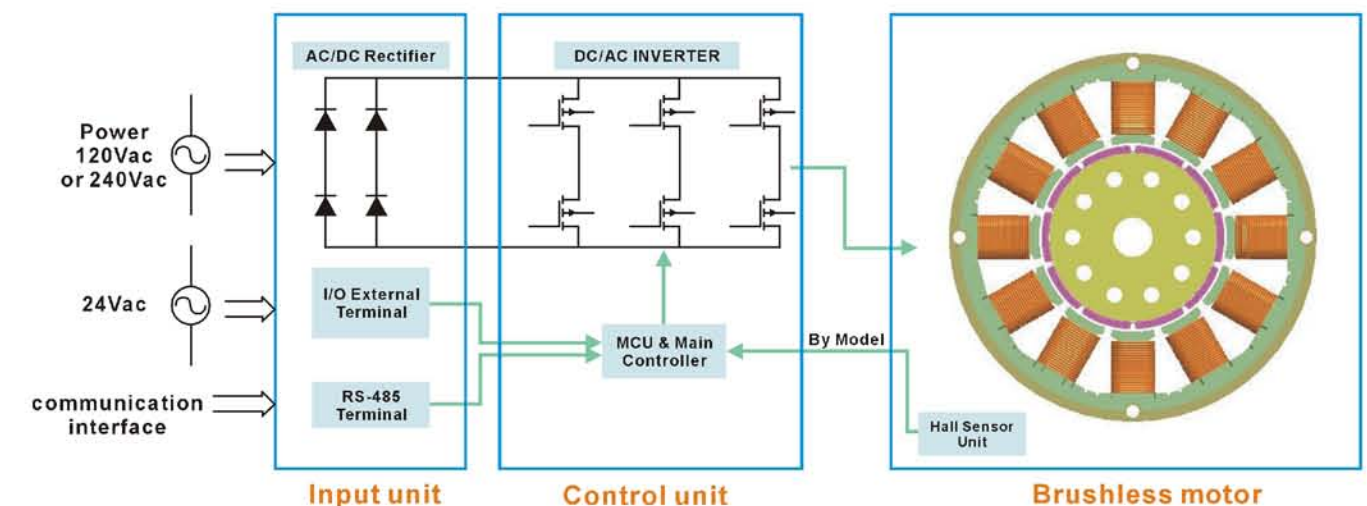
Various Applications

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





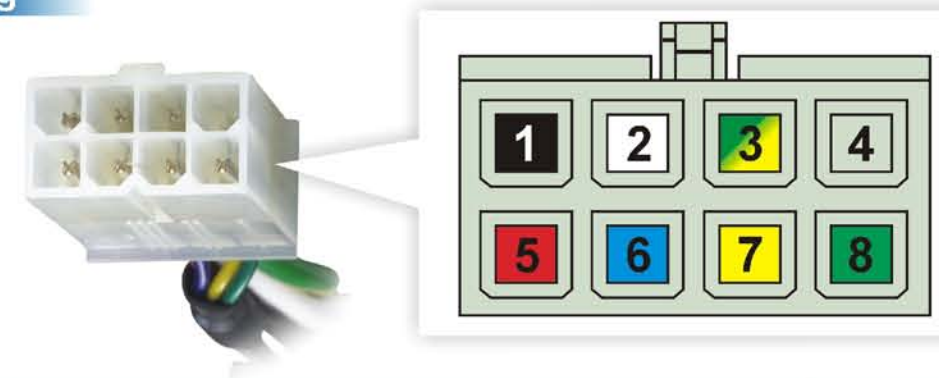
IBLM-A

> Applications

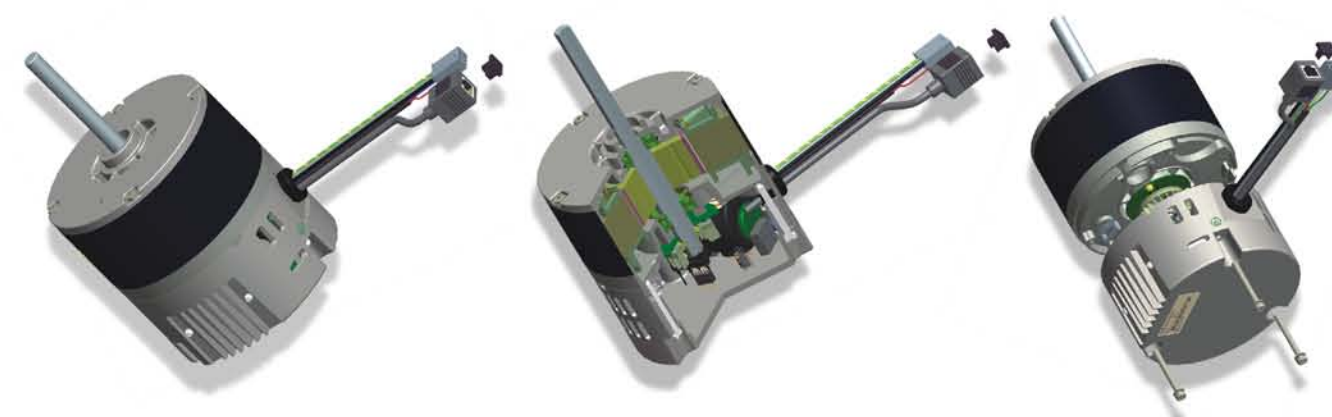
The ECM motor is the most popular in the high reliable and efficient applications, including HVAC air-conditioning & heating, blower, air filter, washer, dryer, medical equipment and other industries.



> 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			





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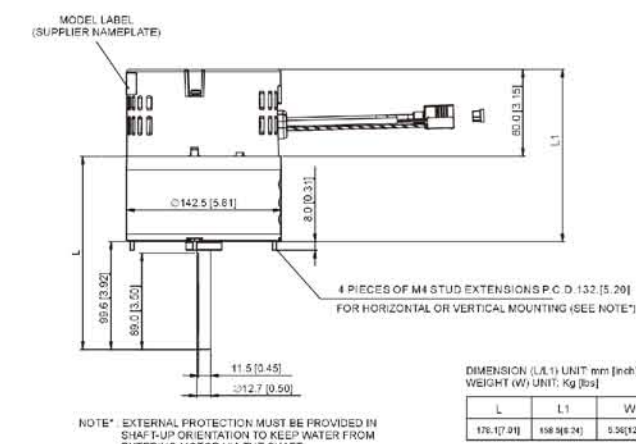
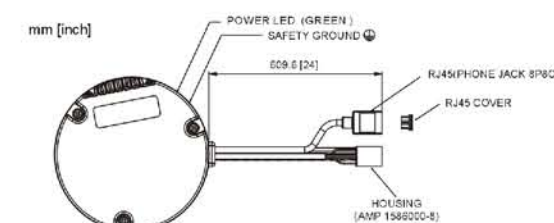
Standard product
Rated input power
 03 : 250W(1/3hp) 06 : 563W(3/4hp)
 04 : 375W(1/2hp) 07 : 750W(1hp)
Frame size 14 : 140mm
Series
 A1 : Drum of dryer and washer A3 : Indoor HVAC
 A2 : Dryer blower A5 : Outdoor HVAC
Product name
 IBLM : Integrated Brush Less Motor

Specifications

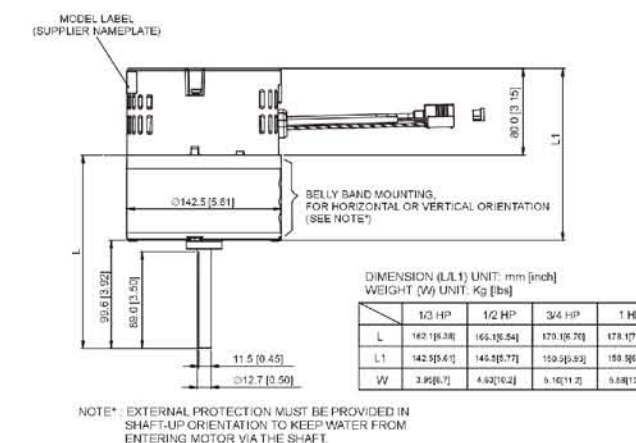
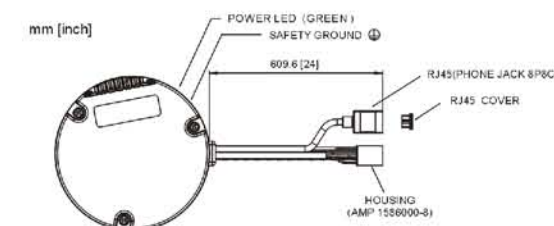
Model Number		IBLM-A11403S	IBLM-A21404S	IBLM-A31403S	IBLM-A31404S	IBLM-A31406S	IBLM-A31407S	IBLM-A51403S
Application		Dryer drum	Dryer blower	Indoor HVAC				Outdoor HVAC
Control Mode		Constant Speed/Torque/Airflow are available						
Rated Input Voltage / Frequency		Single-Phase, 200~240±10%, 50/60Hz±5% (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	Speed Sensor	Hall Sensor			Sensorless			
	Carrier Frequency	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	Ambient Temperature	-40°C to 60°C						
	Storage Temperature	-40°C to 70°C						
	Ambient Humidity	0-100% RH (condensing)						
	Vibration	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



A3 Series



A5 Series

