New Trend of Transmission Technology

An ECM is a permanent magnet 3-phase synchronous motor with a brushless structure. Compact sized and lightweight, 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.

- **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

1. Power 120Vac or 240Vac
2. 24Vac
3. Communication interface
4. AC/DC Rectifier
5. DC/AC Inverter
6. Input unit
7. Control unit
8. Brushless motor
9. Motor
10. Driver
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.

<table>
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<th>IBLM-A2</th>
<th>IBLM-A3</th>
<th>IBLM-A5</th>
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air conditioner
fan
cake showcase
air filter
blower
medical equipment
dryer/washer
outdoor HVAC
**Specifications**

**Model Number**
- IBLM-A11403S
- IBLM-A21404S
- IBLM-A31404S
- IBLM-A31404S
- IBLM-A31404S
- IBLM-A31404S
- IBLM-A31404S
- IBLM-A14103S

**Application**
- Dryer blower
- Dryer closer
- Indoor HVAC
- Outdoor HVAC

**Control Mode**
- Constant Speed/Torque/Airflow available

**Rated Input Voltage / Frequency**
- Single-Phase: 200~240VAC ±10%, 50/60Hz ±5%
- Single-Phase: 200~240VAC ±10%, 50/60Hz ±5%

**Max. Applicable Motor (kW)**
- 1/3
- 1/2
- 1/3
- 1/2
- 2/3
- 2/4
- 1
- 1/3

**Max. Applicable Motor (kW)**
- 0.25
- 0.4
- 0.25
- 0.4
- 0.6
- 0.75
- 0.25
- 0.25

**Rated Full-load Input Current (A)**
- 2.4
- 3.5
- 2.4
- 3.5
- 5.4
- 7.2
- 2.4
- 2.4

**Rated Torque (Nm/Hz-4)**
- 1.96/16.1
- 2.19/25.8
- 2.28/27
- 3.59/42
- 5.18/69
- 8.76/109
- 300~950rpm (2, 4, 28)
- 950~1200rpm (1, 85, 22)

**Rated Speed (rpm)**
- 1,750
- 1060

**Output Speed Range (rpm)**
- 150~1,750
- 150~1,750
- 250~1,050
- 250~1,050
- 250~1,200

**Efficiency**
- 99% at 1,750rpm/16.1 Hz
- 88.3% at 1,750rpm/21.8 Hz
- 85.9% at 1,050rpm/80 Hz
- 83.5% at 1,050rpm/10.1 Hz

**Speed Sensor**
- Hall Sensor
- Sensorless

**Overload Endurance**
- 150% of rated current for 1 minute

**Input Type of the External Terminals**
- 24VAC ±10%

**Operating of the External Terminals**
- M1 RUN/STOP:
- M2 FWD/REV
- M3 Emergency Stop

**Communication Protocol**
- RS-485 (Via external RS323/RS485 interface)
- MODBUS ASCII/RTU, H, T

**Enclosure Type**
- IP34

**Protection**
- Over Voltage, Over Current, Under Voltage, Overload, Over-heat

**Cooling**
- Natural air-cooling
- Forced cooling (wind of blower must blow over the motor)

**Ambient Temperature**
- -40°C to 60°C

**Storage Temperature**
- -40°C to 70°C

**RH**
- 0~100% RH (Condensation)

**Vibration**
- 1.8968m/s² (1G) less than 20Hz, 5.8m/s² (0.6G) at 20 to 50Hz

**Approvals**
- UL/CUL (optional) CE (class B)

**Dimensions**

- **A1 & A2 Series**
- **A3 Series**
- **A5 Series**