

# Evolution

CONTROLS INC.

EVO™/ECM-DCU

## GE ECM Motor™ Digital Control Unit

### Application

The ECM Digital Control Unit provides a means to field adjust the output of General Electric's ECM Motor™. These are fractional horsepower motors featuring an internal microprocessor to provide exceptional efficiency, performance and motor life. The motor may be programmed for constant flow or constant torque. The ECM-DCU allows fast, precise adjustment of the output from 0% to 100% of the programmed control range when the motor is programmed for Vspd control.

The percent output is precisely set with two rotary switches. Using a look-up chart, the airflow may be quickly and accurately set in the field without instruments.

The controller includes a red status lamp. The ECM motor may be programmed so this lamp will indicate motor over/underspeed, an indication of problems with a filter or ductwork.

Control circuits may interrupt power to the Digital control unit to stop the ECM Motor™. Magnetic starters or power relays are not required!

### Specifications

Power NEC Class II Only  
24 Vac  $\pm$  20% 50/60 Hz  
1 W, 2 VA + 1VA/Motor  
(2 motors/controller Max.)

Outputs Go & Signal 24 Vdc @ 25mA

*Signal Supports ECM Autoswitch Function*

Thermal Stability  $>0.01\%/^{\circ}\text{F}$

Operating Environment  $0^{\circ}\text{F}$  to  $130^{\circ}\text{F}$  ( $-18^{\circ}\text{C}$  to  $55^{\circ}\text{C}$ )  
10-80% rh

Power Connections 1/4 Tabs

Cable CMP Plenum Cable  
22 AWG, 4 Conductor



EVO/ECM-DCU

EVO/ECM-DCU-R

### Ordering

ECM Digital Controller EVO/ECM-DCU

Add an "R" suffix when you want the switches mounted to the back of the board.

Cables:

4' ECM-CBL04-A

20' ECM-CBL20-A

8' ECM-CBL08-A

12' ECM-CBL12-A

### Operation

Set the output using the two ten position rotary switches. One switch represents the TENS digit, and the other represents the UNITS digit. A setting of "00" sets the output to 100%.

The ECM motor must be programmed for Vspd control, and the Vspd factors programmed to match the manufactured equipment. A chart or graph may be produced, showing the relationship between the setting (percent) and the output of the manufactured equipment.

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## Wiring

Power the EVO/ECM-DCU controller with a 24 Vac NEC Class II power source. Observe all code requirements regarding Class II circuits to insure a safe, reliable installation. Connect the neutral connection to the grounded side of the 24 Vac Class II power source as required by code.

Connect the 24Vac 50/60Hz connection to the hot side of the 24 Vac Class II power source. If the controller is remote from the class II power source, install a 1/8Amp fuse in the 24Vac power line. Place the fuse inside the transformer cabinet. The control circuit design may interrupt the hot side of the power source as a means to stop the ECM Motor™.

The control cable is fitted with a keyed 16 pin connector. Fit this connector into the mating socket on the ECM Motor™.

The other end is fitted with a 4 pin connector. Fit this connector into the mating socket on the edge of the EVO/ECM-DCU controller. Be sure you are lined up with the socket before pushing in the connector.

## Mounting

The controller should be mounted inside a metal control cabinet or enclosure. The "R" version may be mounted to an inside cabinet wall where adjustment without opening the cabinet is desired.

The ECM Cable is factory fitted with a connector at each end. The end connecting to the controller may be pulled through an empty 3/4" conduit.

Mount the controller with clearance for the 24 Vac power wires and control cable connector. Make sure the adjustment access holes are visible and accessible to the mechanic.

## Testing

The EVO/ECM-DCU controller provides a "GO" signal and an "Vspd" signal to the ECM Motor™. The "GO" signal is simple, while the Vspd signal is complex. Both may be tested with a DC voltmeter. Make sure the AC power is greater than 18 Vdc.

Set the DC voltmeter to measure 35 Vdc.

With the motor and controller powered and connected:

Measure the voltage between GREEN pin 3 (negative) and WHITE pin 15 (GO) of the ECM Motor™ connector. It should be at least 9 Vdc. It may be as high as 30 Vdc, depending on the length of the control wire and the number of connected motors.

Connect the meter between GREEN pin 3 and RED pin 14 (Vspd). Set the switches to "00" (100%). The voltage should be greater than 9 volts. Decreasing the percent setting should reduce the voltage.

