EC Motor

Application

The EVO/ECM-GCU control allows accurate manual adjustment of EC Motors from the occupied space. These are high efficiency electrically commutated permanent magnet motors featuring microprocessor-controlled commutation. The design provides exceptional efficiency, performance and motor life. In air moving applications, these self-regulating motors may be factory configured to provide constant mass airflow.

The GCU is compatible with many PWM or 0-10V controlled fan motors, pump motors, inverters and VFDs. This device may also be used to control other compatible PWM controlled devices or as a 0-10V gradual switch in HVAC and industrial control applications.

Using the EVO/ECM-GCU with the EVO/RLSW, power to the machine containing the motor can be switched off depending on knob position.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>~24V ± 20 % 50/60 Hz NEC Class 2 USA or +24V IEC Class II 2.5 VA, 15 W</td>
</tr>
<tr>
<td>Adjustment</td>
<td>270° rotation from Off to 100% PWM1 or from Off to +10V</td>
</tr>
<tr>
<td>Outputs</td>
<td>Go2 +15V @ 10 mA</td>
</tr>
<tr>
<td></td>
<td>Modulating PWM +15V @ 10 mA or 0-10V @ 10 mA</td>
</tr>
<tr>
<td>Thermal Stability</td>
<td>&gt;0.01%/°F (&gt;0.018%/°C)</td>
</tr>
<tr>
<td>Operating Environment</td>
<td>0°F to 130°F (-18°C to 55°C)</td>
</tr>
<tr>
<td>Connections</td>
<td>0.250 in. / 6.35 mm Tab</td>
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</tbody>
</table>

Ordering

EVO/ECM-GCU-KNOB
EVO/ECM-GCU with adjustment shaft, no knob

ECM-GCUs are shipped without mounting hardware, a switch plate is often necessary and must be supplied by others

Please use our model number as your part number or include in your order description.

Operation

Rotate the knob gradually to increase/decrease the fan/motor speed. The motor control signal is PWM without jumper, insert jumper for 0-10V control signal.

The control signal sets the motor output between the minimum output and maximum output as the GCU is adjusted between 0 and 100%. Refer to the equipment manufacturer’s specifications, data and charts to convert the flow index to torque or mass airflow.

EC Motors may be factory configured so an external signal controls motor output as torque, RPM, or mass flow in fan and pump applications.3

The motor’s configuration data is included in the motor’s profile. The profile includes a minimum output and maximum output defining the adjustment range.

1 Also called Vspd
2 Also called Run. Some motors may not be programmed to use the GO signal.
3 Refer to motor specs to see available control features.
Wiring

Power the EVO/ECM-GCU control with a ~24V NEC Class 2 USA power supply. DC supplies from +20V to +30V may also be used to power the control. Observe all code agency requirements and follow all safety practices regarding low voltage power supplies and circuits to insure a safe, reliable installation. Be sure to use removable push on connectors. Locking push on connectors required for high voltage motor connections are not required for low voltage connections to the GCU. Removing locking push on connectors often destroys the GCU when the push on must be removed to correct wiring or troubleshoot problems.

Ground one leg of the ~24V power source at the transformer. Then connect it to the GCU's neutral connection. Connect the other leg of the ~24V power source to the GCU's ~24V connection.

You may interrupt the GCU's ~24V connection to stop the EC Motor. Most automation controllers will power the control directly from an on/off output.

Connect the GCU to the motor using 18-22-gauge wire with 0.250 in. / 6.35 mm push on connector. Do not route or bundle the control cable with motor power or other high voltage wiring.
Mounting

1. Switch Box

2. Position the EVO/ECM-GCU Board on the box

3. Secure board using two screws

4. Secure switch plate with two #6-32 screws to the board

5. Attach Control Knob (observe correct angle of shaft)

6. Knob turns 270° from 0 -100%. Picture shows around 50% speed
The ECM-GCU is equipped with plaster ears for wall mount applications. They act to keep the control mounted flush with the surface of the wall.

Jumpers

Insert Jumper for 0-10V Output Signal on PWM Terminal
EVO/ECM-GCU with the EVO/RLSW Application:

- Fan Motor Speed Signal
- Equipment Power On/Off
- ~24V 50/60Hz
- ~Line

HVAC Unit

Equipment Power On/Off

Fan Motor Speed Signal