

Getting started with the ECM 142R Motor

Fundamentals:

The ECM 142R is a discrete speed, high efficiency motor designed for outdoor air moving applications. It is ideal for outdoor systems requiring high levels of efficiency and precise speed control.

ECM 142R



Specifications:

The ECM 142R is available in a 1/5, 1/3, 1/2 or 3/4HP rating, 240V or 120V, 60/50 Hz. The operating speed range is 200 to 1250 RPM.

Creating your Sample:

There are a variety of options to consider when ordering your ECM 142R motor. These include overall length restrictions, number of discrete speeds desired, lead length and termination, shaft length, length of shaft flat and mounting method. The motor is usually mounted in the vertical shaft down position by means of four no. 8 studs with a .38" extension, but it can also be configured for horizontal or vertical shaft up positions. It can also be configured with the control module separated from the motor.

Control Options:

The ECM 142R is capable of being controlled via either a digital PWM control signal in a continuously variable speed mode or directly from 24VAC input thermostat type signals in a discrete speed mode. Variable speed mode will help in collecting system performance data, which can be

valuable in developing a motor program that will optimize your application. The *ECM Toolbox* software can be used to switch the motor from one mode to another. The PWM control signal can be provided directly from the *ECM Toolbox* or the ECM Development box (see below) with the use of our 142R cable accessory. The development box also adds the ability to apply 24V discrete signals thru the BK and G toggle switches.



ECM Development Box

In variable speed mode, you may increase or decrease the regulated operating speed by adjusting the PWM signal. Alternatively, the OEM can supply a PWM signal from his own system controller. This PWM signal should be a square wave having an amplitude of at least 12V with a 30V maximum amplitude and a frequency range from 40Hz to 200Hz.

In discrete speed mode, the motor can operate at up to three programmed speeds selected via 24VAC signals. Once the required operating speeds for the application have been determined and all mechanical features defined, you may order a new sample programmed with your selected speed settings.

Connecting the ECM 142:

The wiring configuration of the motor will depend on the number of speeds required. Initially, all ECM 142R motors come standard with a six-wire configuration. This will allow the motor to run in continuously variable mode with a PWM input signal as well as up to 3 discrete speeds. The ECM 142 comes standard with a 36" wire harness and 0.5" bare wire strip leads. An example of a six-wire connection is shown in **Table 1**. As shown in the table, applying a 24VAC signal to a combination of the yellow and white wires with respect to the blue common wire will select one of two discrete speeds. A third speed could also be added. The ECM 142R is designed to be continuously powered at rated line voltage (L1 – L2) while the 24V signals should be used to turn the motor on/off.

POWER CONNECTIONS

WIRE COLOR	CONNECTION	VOLTAGE
BLACK	L1	230 VAC
BROWN	L2	230 VAC
GREEN	G	GROUND

SIGNAL CONNECTIONS

WIRE COLOR	CONTROL VOLTAGE
YELLOW	24 VAC
WHITE	24 VAC
BLUE	24 VAC COMMON

SPEED SELECTION TABLE

YELLOW	WHITE	RPM
OFF	OFF	OFF
24 VAC	24 VAC	750
24 VAC	OFF	680

Table 1

For further information or to request additional materials available on the ECM 142R, visit the ECM Datacenter at <http://elitelink.regalbeloit.com>.