Hoffman|Controls

Product Data

Variable Speed Evaporator Fan Controller

759-ECM
Variable Speed Evaporator Fan Control

Description

The 759-ECM is a True Variable Speed ECM Evaporator Fan Speed Controller for walk in and reach in Coolers and Freezers. The 759 Controller allows maximum efficiency, reduced compressor run time, reduced product shrinkage, and increased product shelf life by operating the evaporator fan(s) at an OPTIMUM speed at all times. When the refrigeration system shuts off active cooling, the microprocessor-based 759 Controller monitors the vault temperature and runs the ECM fan(s) at the minimum required speed. As the vault increases in temperature, the fan(s) proportionately increase speed so that the temperature of the product is used to equalize the temperature across the vault. As the temperature increases to the point where the refrigeration system must activate cooling, the fan(s) has increased to its maximum speed. The 759 Controller constantly monitors each refrigeration cycle and adjust the fan(s) speed settings appropriately.

The installation of the 759 Controller does not require changes to the thermostat or compressor connections. The output of the 759 Controller is a low voltage PWM signal and/or a low voltage 0-10Vdc signal as reuired by the ECM type motor. The only inputs to the 759 Controller are sensors used to monitor the vault temperature and the temperatures at the expansion valve.

For medium temperature applications, ice detector sensors are used to detect freezing coil temperatures, which causes the 759 Controller to increase the ECM fan speed.

Application

The 759-ECM Controller can be used with new or existing equipment, can be used with mechanical or electronic expansion valves, is not refrigerant specific and can be applied to a wide range of walk in and reach in Coolers and Freezers.

Installation is simple and does not require changes to the thermostat or compressor wiring. Simply attach four temperature sensors, connect power to the 759 Controller, and install the variable speed ECM motor. The 759 Controller requires no programing or set-up, will learn the vault conditions, and optimize the fan speed for maximum efficiency.

Features

Can control single or multiple ECM motors (up to 12) with continuously variable speed using PWM and/or 0-10Vdc signal(s).

Inputs are four supplied sensors to monitor vault temperature, expansion valve high & low temperatiures, and evaporator coil temperature.

An optional fifth sensor can be used to monitor a second evaporator coil temperature.

Monitors the refrigeration cycle and continuously adapts without any set-up. The installer has the option to set the ECM motor maximum and/or minimum fan speed.

An Override button is provided to bypass the control functions and keep the fan(s) at maximum speed.
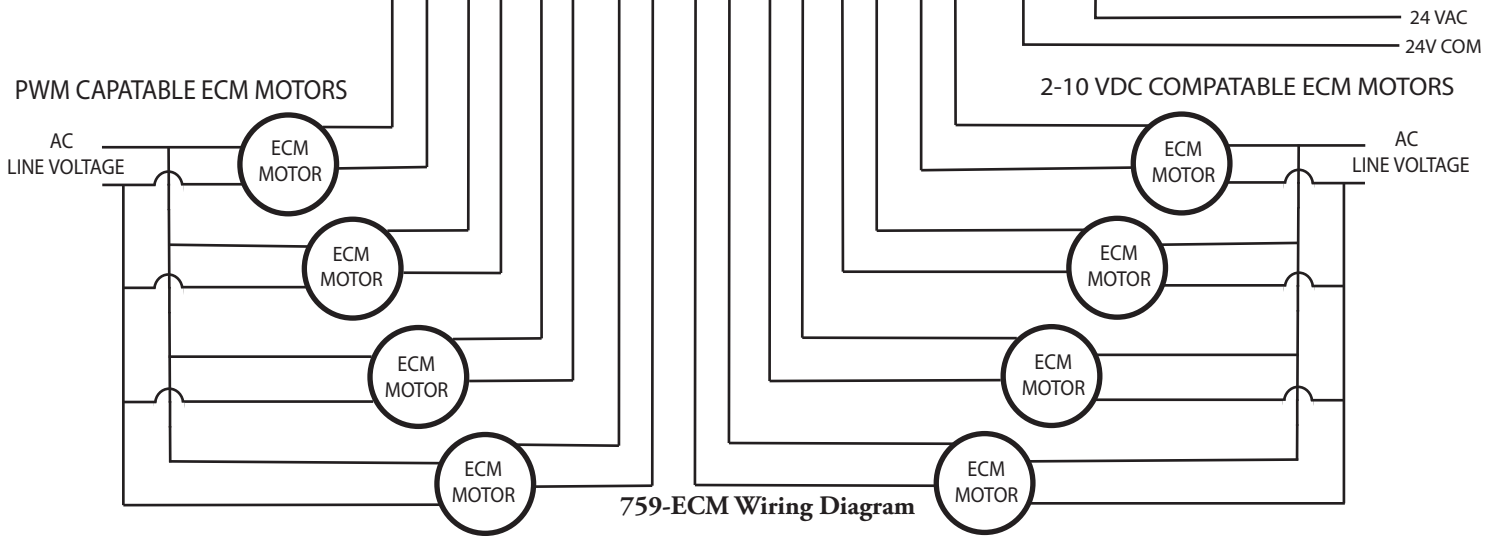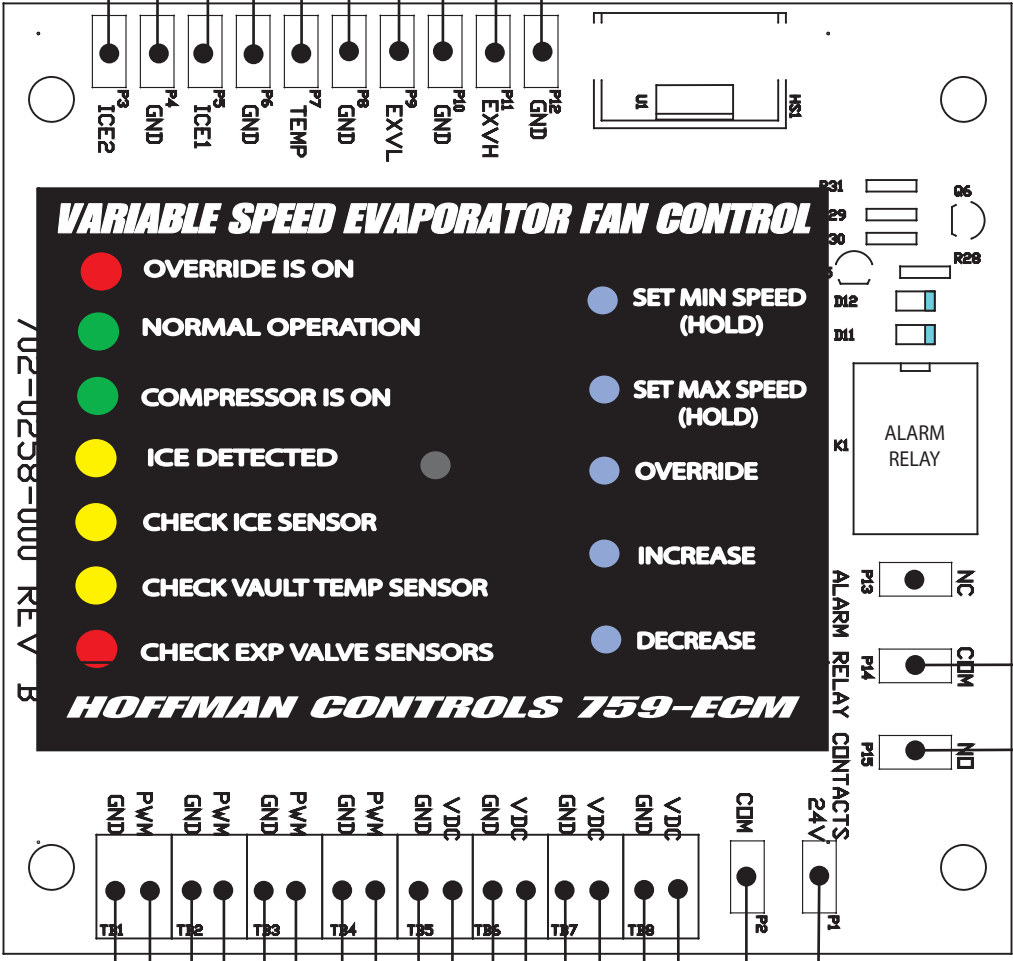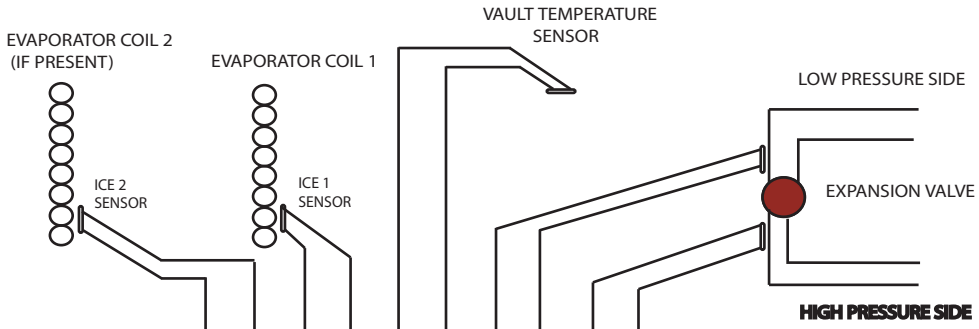
Fault detection LED's are provided for coil icing, bad expansion valve sensors, bad vault temperature sensor, and bad icing sensor.

Display LED's are provided for normal operation, control override, and compressor ON.

24V/10A NO & NC switch contacts are provided to activate an external alarm or warning light when an expansion valve sensor fault or override operation is detected.

Specifications

Motor Types:	PWM or 0-10Vdc compatable ECM type Motors
Motor Speed:	Field Adjustable
Input Voltage:	24VAC (+20%/-10%)
Output:	0% to 100% PWM @ 80Hz
	PWM amplitude 17.5VDC
	and/or 0-10Vdc, 100mA (max.)
Humidity:	95%, Non Condensing
Ambient:	-20°C(-4°F) – +52°C(+125°F)
Dimensions:	(L x W x H) 5" x 4.5" x 1.6"
Alarm Switch Contacts	NO or NC @ 24V/10A

EVAPORATOR COIL 2 (IF PRESENT)

EVAPORATOR COIL 1

VAULT TEMPERATURE SENSOR

LOW PRESSURE SIDE

EXPANSION VALVE

HIGH PRESSURE SIDE

ICE 2 SENSOR

ICE 1 SENSOR

ICE2 | GND | ICE1 | GND | TEMP | GND | EXVL | GND | EXVH | GND
P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12

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VARIABLE SPEED EVAPORATOR FAN CONTROL

- ⬤ OVERRIDE IS ON
- ⬤ NORMAL OPERATION
- ⬤ COMPRESSOR IS ON
- ⬤ ICE DETECTED
- ⬤ CHECK ICE SENSOR
- ⬤ CHECK VAULT TEMP SENSOR
- ⬤ CHECK EXP VALVE SENSORS

- ⬤ SET MIN SPEED (HOLD)
- ⬤ SET MAX SPEED (HOLD)
- ⬤ OVERRIDE
- ⬤ INCREASE
- ⬤ DECREASE

HOFFMAN CONTROLS 759-ECM

R31 | 29 | 30 | R28 | Q6
D12 | D11
ALARM RELAY | K1

NC | P13
COM | P14
NO | P15

ALARM RELAY CONTACTS

TO EXTERNAL ALARM CONTACTOR OR LIGHT

PWM | GND | PWM | GND | PWM | GND | PWM | GND | VDC | GND | VDC | GND | VDC | GND | VDC | GND | COM | 24V
TB1 | TB2 | TB3 | TB4 | TB5 | TB6 | TB7 | TB8 | P2 | P1

24 VAC
24V COM

PWM CAPATABLE ECM MOTORS

2-10 VDC COMPATABLE ECM MOTORS

AC LINE VOLTAGE

ECM MOTOR

ECM MOTOR

ECM MOTOR

ECM MOTOR

AC LINE VOLTAGE

ECM MOTOR

ECM MOTOR

ECM MOTOR

ECM MOTOR

759-ECM Wiring Diagram