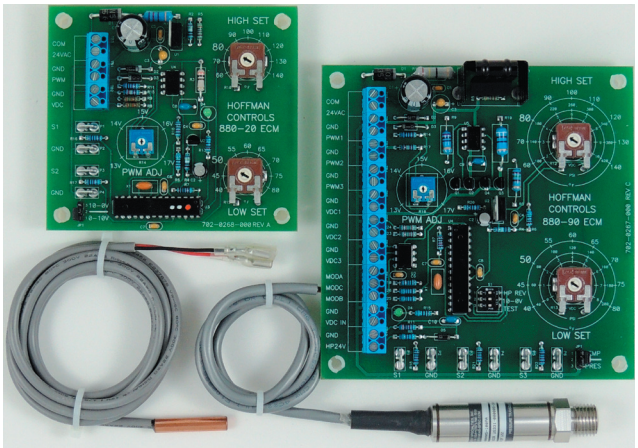
Hoffman|Controls
Product Data



880-20 & 880-90 Series Head Pressure Controller

Description

The **880-20** and **880-90 Series** low ambient head pressure controls are designed to modulate energy efficient Electrically Commutated condenser fan Motors (ECM) in air conditioning and refrigration systems. The 880-Series controllers varies the speed of the condenser fan ECM motor(s) to vary the air volume through the condenser consequently regulating head pressure for proper heat rejection in low ambient temperatures.

The 880-Series head pressure control monitors the head pressure by sensing the sub-cooled liquid line temperature by placing a 10K sensor on the refrigerant liquid line. As the liquid line temperature drops, the motor speed will be reduced to prevent freezing of the coil. As minimum motor speed is reached, the control will cycle the motor off until the liquid line coil temperature has returned to safe operating levels. At this point, the motor will modulate back to full speed to maintain proper heat rejection. The 880-Series control provides an adjustable LOW SET point of 40°F to 80°F and an adjustable HIGH SET point of 60°F to 140°F for the ability to custom tune the control for any application.

The common settings for most applications is a LOW SET point of 50°F and a HIGH SET point of 80°F. In this example condenser fan(s) modulation from full speed occurs at 80°F liquid line (ambients above 60ºF), and reaches minimum speed at 50°F liquid line (ambients below 30°F). The ECM condenser fan motor cycles "OFF" at liquid line temperatures below 50°F, and cycles back "ON" to minimum speed at 53°F liquid line temperature. The ECM condenser fan motor will modulate from minimum speed to full speed between 50°F and 80°F.

The **880-20 Model** includes two liquid line sensor monitoring inputs with the hottest sensor controlling operation, sensor temperature Low & High Set point adjustments with LED indicator, Self-Test mode, Hard Start feature and a 20ma (typically two) ECM motor drive capability. The 880-20 Model provides three ECM motor drive options: a jumper selectable 0-10VDC or 10-0VDC (fail safe) signal and/or an adjustable 13-17VDC, 80Hz PWM signal.

880-20 & 880-90 SERIES
Head Pressure Control for ECM Motors

The **880-90 Model** includes three jumper selected liquid line sensor monitoring inputs with the hottest sensor controlling operation or three jumper selected pressure transducer inputs with the highest pressure controlling operation. The 880-90 Model also includes a 0-10VDC input control signal option, sensor temperature Low & High Set point adjustments with LED indicator, Self-Test mode, Hard Start feature, Modbus communications and a 90ma (typically nine) ECM motor drive capability The 880-90 Model provides three ECM motor drive options: a switch selectable 0-10VDC or 10-0VDC (fail safe) signal and/or an adjustable 13-17VDC, 80Hz PWM signal. The control also has a switch selectable Direct or Reverse acting Heat Pump over-ride function.

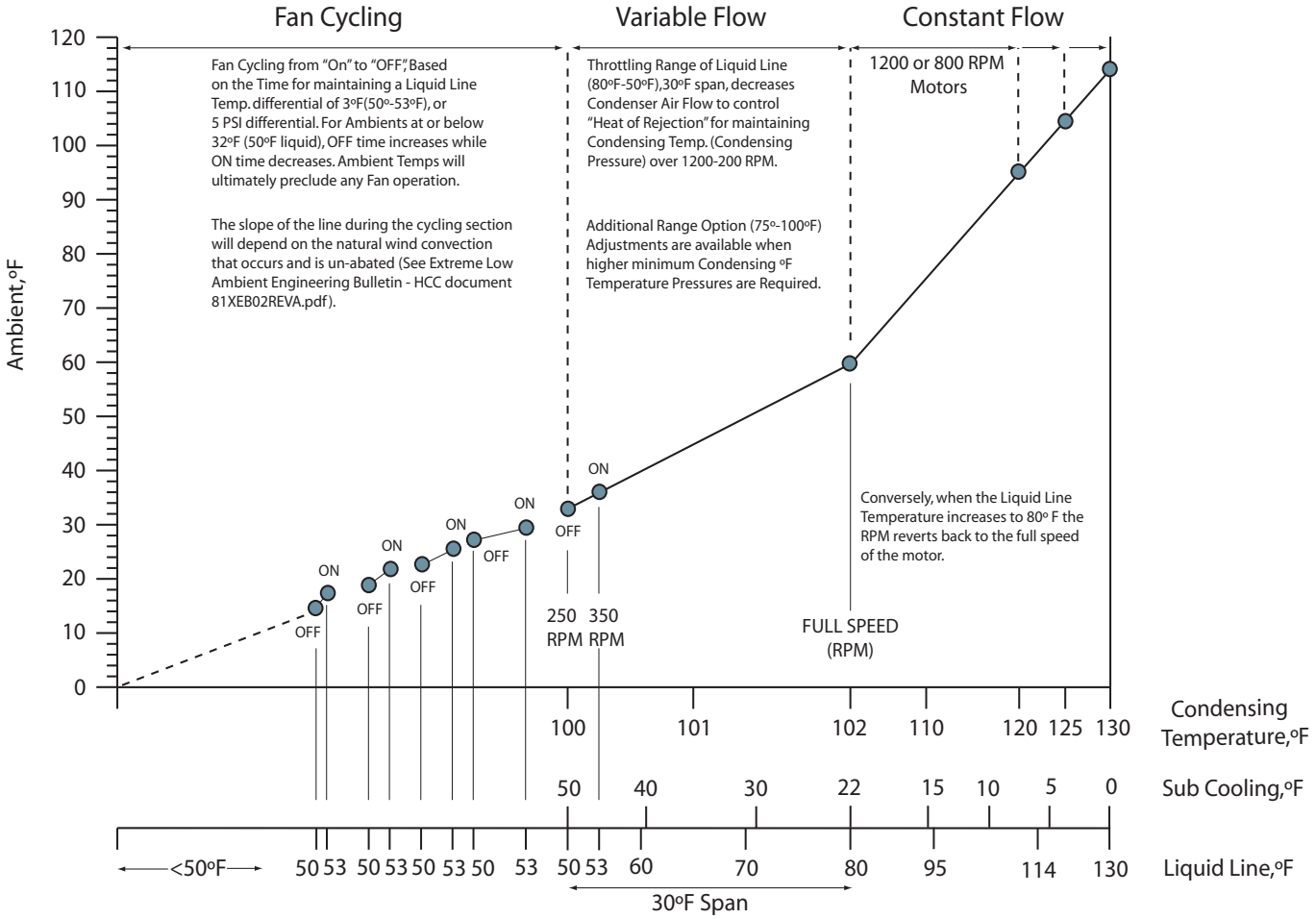
880-20 Features and Specifications

- Not refrigerant specific Class II Controller, conformal coated.
- Two liquid line temperature sensor inputs with Low Set Point: 40°F to 80°F in 1°F increments and High Set Point 60°F to 140°F in 1°F increments with LED Set Point indication.
- Self-Test feature will check ECM motor operation.
- ECM motor drive options include adjustable 13-17VDC, 80Hz PWM and 0-10VDC or 10-0VDC (fail safe) signals.
- 20ma ECM motor drive capability (typically two motors).
- 2.5 second full speed Hard Start.
- Operating Ambient -31°F to +160°F, Humidity 95%, Non-condensing, Dimensions 3.5L x 4.0W x 1.5H, Power supply 22-30VAC, 1VA.

880-90 Features and Specifications

- Not refrigerant specific Class II Controller, conformal coated.
- Three selectable 10K liquid line temperature sensor or three 0.5- 4.5VDC, 500psi pressure transducer inputs including a 0-10VDC input option with LED Set Point indication.
- Temperature input Low Set Point range 40°F to 80°F and High Set Point range 60°F to 140°F in 1°F increments.
- Pressure input Low Set Point range 40psi to 200psi and High Set Point range 100psi to 420psi in 2psi increments.
- 0-10VDC input Low Set Point range 0.5-8.0VDC and High Set Point range 2-10VDC in 0.1VDC increments.
- Hysteresis values: Temp - 3°F, Pressure - 6psi, VDC - 0.8V.
- Self-Test feature will check ECM motor operation.
- ECM motor drive options include adjustable 13-17VDC, 80Hz PWM and 0-10VDC or 10-0VDC (fail safe) signals with 90ma drive capability (typically nine motors).
- 2.5 second full speed Hard Start.
- Direct or Reverse acting Heat Pump Override.
- Controller operates as a Modbus slave over a Modbus RTU Series Interface. 25 registers can be read and 16 registers can be set remotely via Modbus
- Operating Ambient -31°F to +160°F, Humidity 95%, Non-condensing, Dimensions 5.0L x 5.0W x 1.75H, Power supply 22-30VAC, 1VA.

Low Ambient, Condensing, Sub Cooling, and Liquid Line Values for Constant, Variable, and Fan Cycling Operations Utilizing ECM Type AC Motor



Typical Fan Operation with Ambient, Condesing, and Liquid Line Temperatures

IMPROVED HEAD PRESSURE REGULATION WITH ECM MOTORS

Multiple condenser fan equipment typically cycles condenser fan motors to accomplish low ambient control of head pressure. This function results in integral steps of air flow with a dis-proportionate control of air flow resulting in "reverse airflow" through non-operating fans as more and more motors are "cycled off".

The 880-Series controls all motors simultaneously resulting in a smooth, regulated air flow from full speed to minimum speed. This method precludes a sudden reduction of flow (heat rejection), there by eliminating sudden changes in head pressure and / or regulation of TXV super heat.