

Hoffman | Controls

Product Data

816-10DH Microprocessor Based Electronic Head Pressure Control

Description

The NEW 816-10DH Microprocessor Electronic Head Pressure Control modulates (varies) condenser fan motor speed in low ambient temperatures, varying the air volume through the condenser to regulate head pressure. This model's dual sensor input allows for the control of one or two independent refrigerant circuits sharing the same fan motor(s). Open drip proof, direct drive, PSC or Shaded Pole motors that are applicable for motor speed regulation must be used.

The Controller monitors the liquid line temperature (degrees of excessive sub-cooling) which is directly proportional to the head pressure. Speed modulation begins at 80°F liquid line (65°F ambient temperature) and proportionally reduces the fan to minimum speed once the liquid line temperature reaches 50°F (25°F ambient temperature). Power to the motor is removed at 50°F and below liquid temperatures. At 53°F the fan restarts at full speed; then modulates to minimum speed. When ambient temperatures are at or below approximately 25°F (50° liquid temperature), the condenser fan motor will cycle between minimum RPM and "off" to maintain proper head pressure. The above describes a 30°F span (80°F to 50°F) function; a 25°F span is also available. The 25°F span is recommended for High Efficiency systems; 30° span for typical systems. Variable condenser airflow is modulated from full to minimum speed over the selected span.

The controls' purpose is to assure adequate pressure in low ambients:

- for maintaining adequate pressure differential for the expansion device,
- assure an adequate pressure to eliminate freezing of the DX coil for A/C applications,
- eliminate oil foaming (oil migration) and/or liquid slugging.

For Heat Pump installations, the Heat Pump input is used to override condenser fan speed regulation. Heat Pump Mode Direct Acting "DA" and Reverse Acting "RA" jumpers are configured based on the manufacturer's method of energizing or de-energizing the reversing (changeover) valve. Properly configured, the Heat Pump will override speed regulation and allow full speed condenser fan operation when in the heating mode.

The exclusive sensor Range Adjust is provided to optimize the Controller's performance for specifically, TXV (Thermal Expansion Valves) or Capillary Tube/Orifice systems. The Controller's 25°F or 30°F span can be adjusted anywhere from 55°F-80°F to 75°-100°F or 50°F-80°F to 70°F-100°F to ensure optimum performance for the specific expansion method.

A variable Minimum Speed Adjustment is available to compensate for the bearing type employed by the fan motor. A minimum of 400-RPM for sleeve bearing motors, and 200-RPM for ball bearing motors is recommended.

The 816-10DH control **does not** include a transformer within the controller and **will** require an external 24VAC transformer.



816-10DH
Electronic Head Pressure Controller

Features

- Microprocessor Technology
- One control for every application and refrigerant
- A special "Range Adjust" allows differentiation between TXV and Capillary Tube/Orifice applications for optimum low ambient performance (*Exclusive Feature*).
- 25° or 30° (span modulating range) for High or Typical Efficiency units (*Exclusive Feature*).
- Multi voltage model.(115/208-230/460 / 600 VAC)
- Applicable for all refrigerant types.
- Eliminates the need for system penetration.
- Monitors liquid line temperature (liquid subcooling).
- Single or Dual sensor capable (*Exclusive Feature*).
- Full voltage start ensures proper fan rotation.
- Cycles fan "OFF" once minimum flow is achieved.
- Eliminates compressor "slugging" (oil migration).
- Simple field installation.
- Replaces fan cycling controls.
- Additional **Sensor Kit** — Part Number 100-0017-001.
- Optional **Adjustable Sensor Simulator** — Part Number 510-0027-000
- Automatic minimum speed adjustment procedure.
- Optional **Weatherproof Kit** (NEMA 3R) — Part Number 545-0202-007.

Application

The Controller is typically utilized on air-cooled condenser fan motors found in AC&R systems. They are used on the following motor types:

- Single Phase, single speed
- Sleeve or ball bearing, direct drive only
- Open frame — PSC or Shaded Pole
- Some Totally Enclosed Motors (TEC) with 60°C ambient rating may be applicable, however the use of TEC motors is generally not recommended.

Minimum speed should be limited to approximately 400-RPM for sleeve bearing motors and 200 RPM for ball bearing motors.

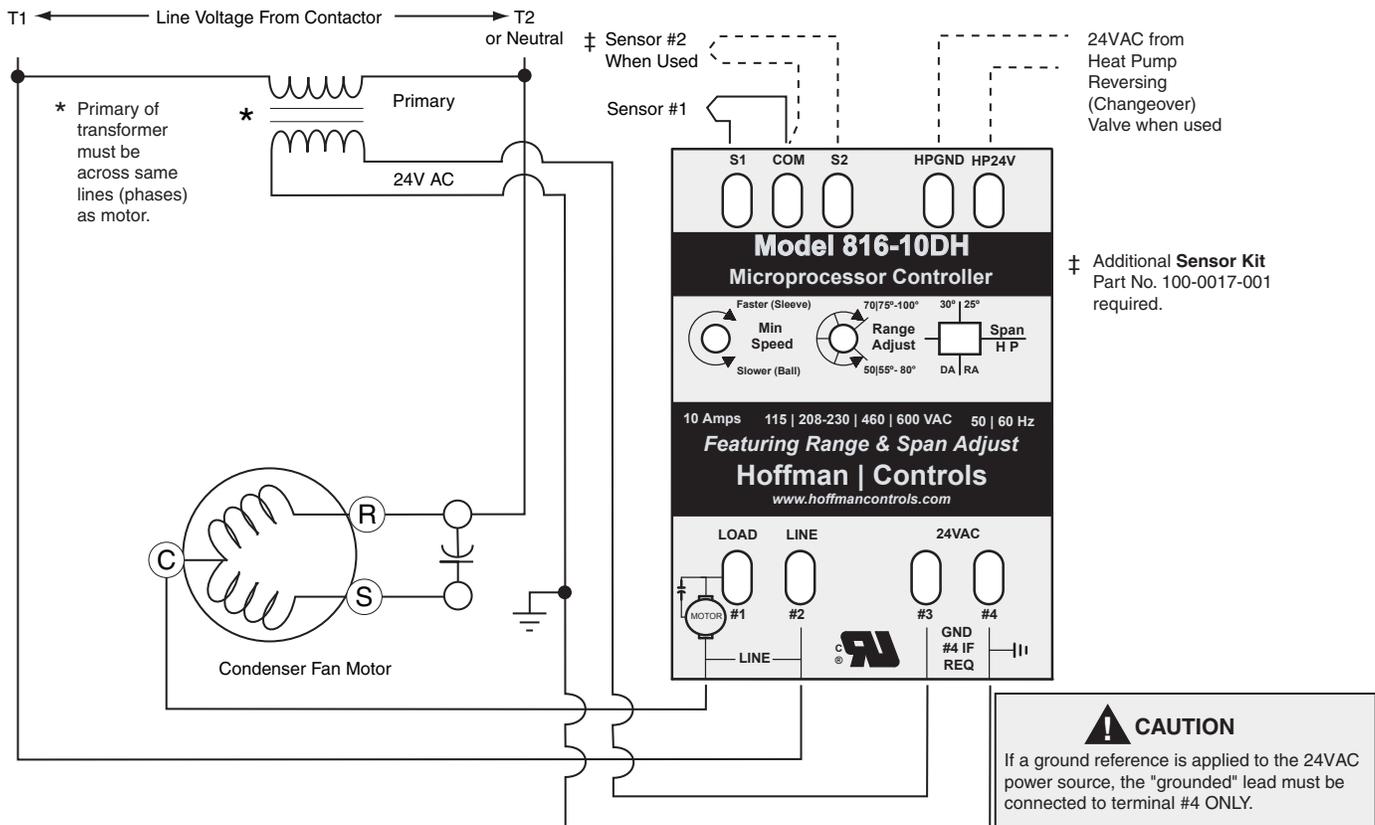
Motors used should be designed for Phase Proportioning and should be evaluated for suitability and acceptability. TEC (totally enclosed types) are not generally suitable or recommended.

Typical Air Conditioning and Refrigeration Applications

- Commercial air conditioning
- Supermarkets
- Computer rooms
- Frozen food storage
- Humidity control
- Glycol coolers
- Hospitals
- Any low ambient application

Specifications

Voltage Range (Nominal)	115/208–230/460 / 600
Current	10 Amps
Frequency	50/60 Hz
Inputs	
Sensor–Dual (strap on)	10K ohm @ 77°F
Heat Pump	24V AC
Outputs	
Fan Motor Control–Single Phase	115V–600V AC
Adjustments	
Min. Speed Adjust	Ball Bearing–200 RPM Sleeve Bearing–400 RPM
Range Adjust (Span)30°F	50°F-80°F thru 70°F-100°F
25°F	55°F-80°F thru 75°F-100°F
Heat Pump Mode Jumper	DA or RA
Environment	
Operating, non-condensing	–30°F–+160°F
Dimensions (L x W x H)	5.56" x 3.32" x 1.25"
UL Recognized	File #SA5917



Wiring Diagram for the 816-10DH
Figure 1

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