

### Description

The NEW 870-10DDC Electronic Head Pressure Control is a pre-programmed "Plug & Play" design that cycles the condenser fan motor. All other control parameters are pre-set. This factory calibrated design is applicable only for TXV thermal expansion type devices for any refrigerant type. The control cycles the condenser fan motor in low ambient temperatures, varying the air flow through the condenser to regulate head pressure. This model's sensor input allows for the control of a single refrigerant circuit, sharing the same condenser fan motor(s). Only open drip proof, direct drive, PSC or Shaded Pole motors must be used.

The Controller's operation is dependent on the equipment's proper refrigerant charge and resulting liquid subcooling of the liquid refrigerant resulting in 4°F to 6°F subcooling at ARI condition at 95°F ambients. This subcooled value must be sensed at the exit of the condenser, and the sensor should be insulated and weather protected. The Controller monitors the liquid line temperature (degrees of excessive sub-cooling) which is directly proportional to the head pressure. Speed control begins at 80°F liquid line (65°F ambient temperature) and cycles the fan to OFF once the liquid line temperature reaches 60°F (40°F ambient temperature). Power to the motor is removed at 60°F and below liquid temperatures. When ambient temperatures are at or below approximately 40°F (60° liquid temperature), the condenser fan motor will cycle "off" to maintain proper head pressure. As ambient continues to fall, the motor remains OFF until the liquid line temperature remains below 60°F. At this condition, air flow is discontinued and ambient control ends. The above describes 20°F span (80°F to 60°F) functions; for expansion valve systems only. Airflow is from full speed to OFF over the selected span.

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

- for maintaining adequate pressure differential for the TXV expansion devices for proper value operation over all ambient conditions.
- assure an adequate suction pressures to preclude freezing of the DX coil for A/C applications.
- eliminate oil foaming (oil migration) and/or liquid slugging.

The 815-10D(DC) control **does not** include a transformer within the controller and **will** require an external 24VAC power source. Important: It is extremely IMPORTANT that when installing any HCC Low Ambient Controllers, the installing technician evaluate the systems. a) Liquid Line temperature for the current Ambient temperature b) Measure and determine the Liquid Subcooling for the Ambient temperature c) Adjust units Refrigerant change to obtain Liquid Line & Subcooling values on Ambient vs. Condensing temperatures, subcooling, and liquid line temperature °F chart.



870-10DDC  
Fan Cycle Switch

### Features

- One control for every application and refrigerant.
- A fixed 20°F span range allows for thermal expansion valve TXV applications for optimum low ambient performance.
- Multi voltage model.(115/208-230 VAC)
- Applicable for all refrigerant types.
- Eliminates the need for system penetration.
- Monitors liquid line temperature (liquid subcooling).
- Single Sensor only applications.
- Full voltage start ensures proper fan rotation.
- Fan cycles "OFF & ON" at various durations at Full speed.
- Eliminates compressor "slugging" and oil migration.
- Simple field installation.
- Replaces fan cycling pressure controls.
- Optional **Adjustable Sensor Simulator** — Part Number 510-0027-000 is available for manual evaluation of motor speed.
- 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:

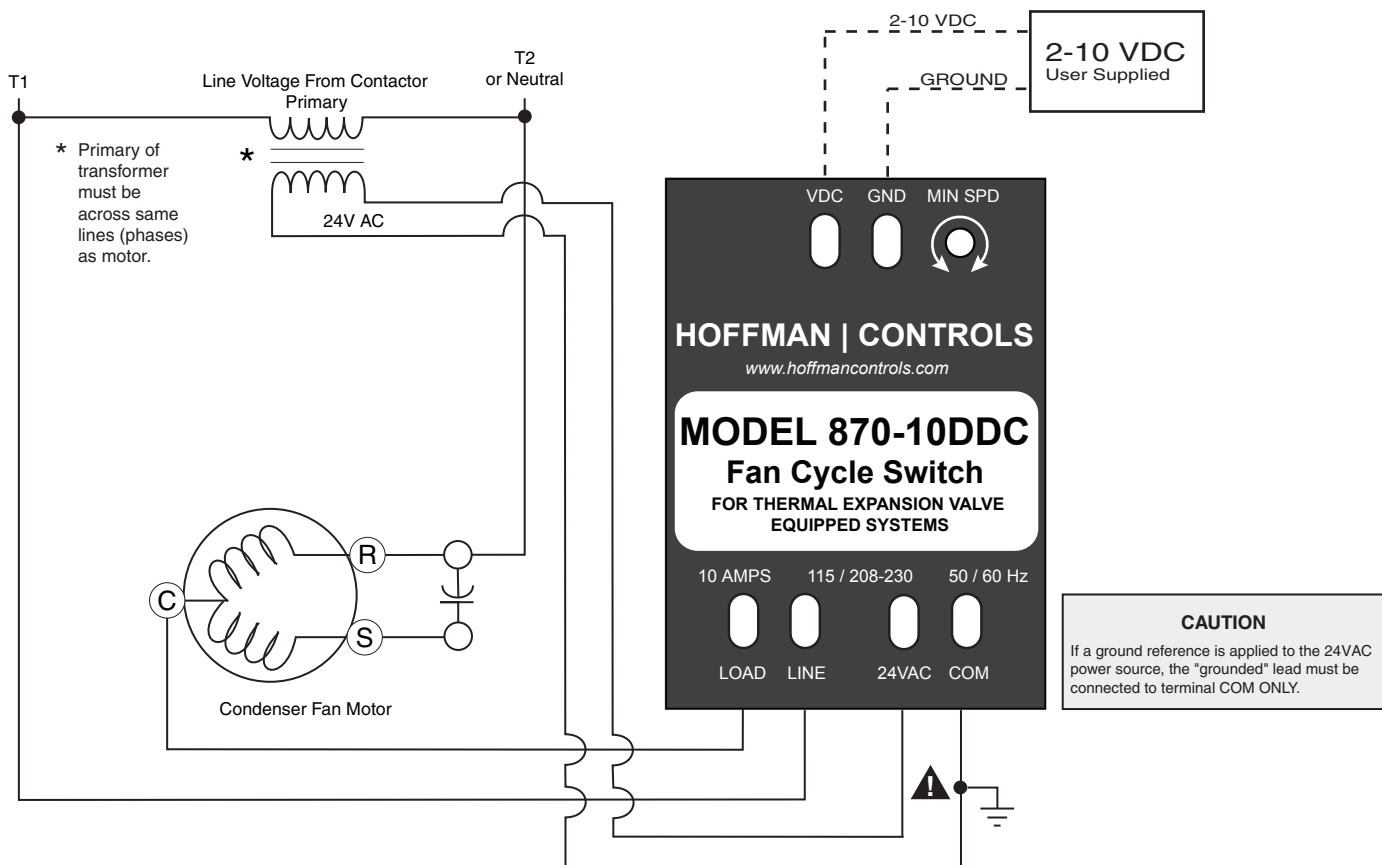
- Single Phase, single speed
- Sleeve or ball bearing, direct drive only
- Open frame — PSC or Shaded Pole

## 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 (strap on)	10K ohm @ 77°F 24V AC
Outputs	
Condenser Fan Motor Control—Single Phase	115V–600V AC
Adjustments	None
Environment	
Operating, non-condensing	–30°F–+160°F
Dimensions (L x W x H)	5.56" x 3.32" x 1.25"



Wiring Diagram for the 870-10D(DC)  
Figure 1

## Hoffman|Controls