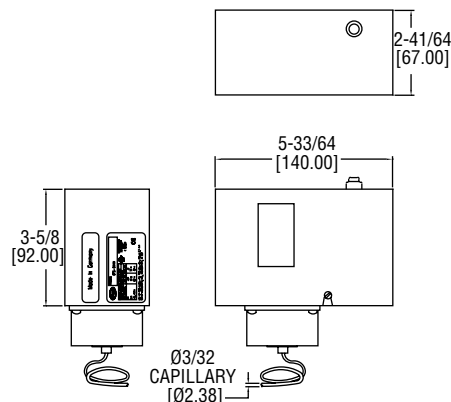




Series DFS Low Limit Freeze Protection Switch

Specifications - Installation and Operating Instructions



The **SERIES DFS** Low Limit Freeze Protection Switch protects cooling coils in air handler systems by preventing frost build up on the coils. By sensing the lowest temperature along any one foot section of capillary, the DPDT manual or automatic reset relays signal the building management system as well as cut off the fan. Set points can be adjusted as low as 34°F (1°C) utilizing the visual set point indicator and set point screw. The Series DFS includes mounting clips for easy installation.

INSTALLATION

WARNING This low limit controller is designed for use only as an operating control. Where a failure of the controller would result in loss of property or personal injury, it is the installer's responsibility to add safety devices and/or systems that protect against or warn of controller failure.

CAUTION Do not kink or apply excessive force to the capillary element as it could cause leaks in the capillary.

NOTICE Avoid locations subject to excessive vibration.

NOTICE All wiring should comply with national and local electrical codes.

The Series DFS Low Limit Temperature Switch can be mounted in any plane; however, the case of the controller should be mounted at the top of the coil with the capillary installed in a downwards serpentine fashion across the face of the coil. On manual reset models, position the switch to allow convenient access to the manual reset button. Locate the controller case and bellows where the ambient temperature is always warmer than the set point.

1. Remove cover from switch by loosening the screw on the front of the housing.
2. Mount the switch housing to the duct or other flat surface using the mounting holes on the rear plate of the switch housing.
3. Install capillary element in a horizontal serpentine pattern across the duct (as shown in Figure A) on the down stream side of the cooling coil so it is exposed to areas where low temperature will occur.
4. Use the mounting clips provided or Dwyer Series CC1 clips to fasten the capillary at sufficient points to prevent damage from air movement or vibration.
5. Adjust set point using the set point adjustment screw as described in the set point adjustment section.
6. Attach electrical wires through the conduit port in the bottom of the switch housing according to wiring section of this manual.
7. Re-attach cover and tighten the screw on the front cover to prevent tampering.

SPECIFICATIONS

Wetted Material: Vapor-filled copper capillary, 10' or 20'.
Housing Material: Plated steel case, painted steel cover, plastic set point window.
Temperature Limit: Operating: -60 to 160°F (-51 to 71°C); Sensing Element: 300°F (149°C) max.
Switch Type: DPDT snap acting.
Electrical Ratings: Inductive: 14 FLA, 84 LRA, 3/4 hp @ 120VAC; 12 FLA, 72 LRA, 2 hp @ 240 VAC; Pilot Duty: 720 VA max @ 120 to 600 VAC; 144 VA max @ 24 VAC.
Reset Action: Manual or automatic.
Adjustable Range: 34 to 70°F (1 to 21°C).
Deadband: 4.5°F (2.5°C), fixed.
Agency Approvals: UL, ULc.

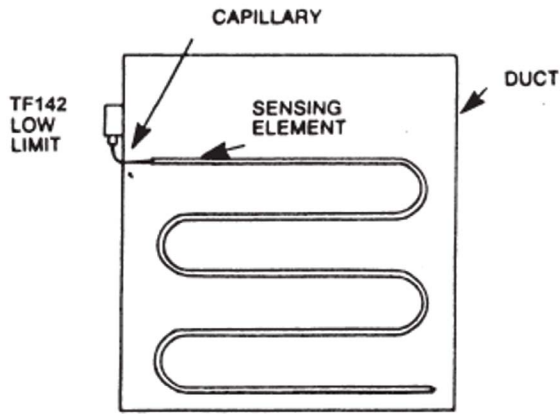


Figure A: Install Capillary in Horizontal Pattern Only

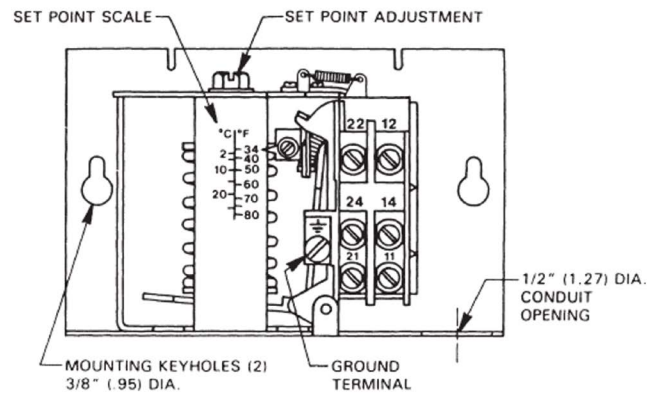


Figure C: Internal View of Series DFS

Set Point Adjustment

The set point shown on the scale of the Series DFS is the temperature at which the switch contacts 11-14 and 21-24 will OPEN on a fall in sensed temperature.

To adjust the set point, use a screwdriver or wrench to turn the range adjustment screw located at the top of the spring housing above the scale. Clockwise rotations decrease the set point. Counter-clockwise rotations increase the set point.

TABLE I. Electrical Ratings	120 VAC	240 VAC
INDUCTIVE		
F.L.A.	14	12
L.R.A.	84	72
Horsepower	3/4	2
PILOT DUTY	720 VA max @ 120 to 600 VAC 144 VA max @ 24 VAC	

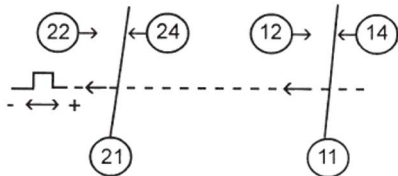


Figure B: Switch Action On Decrease In Temperature

Wiring

The conduit opening located on the bottom of the Series DFS is designed for installing a 1/2" NPT connector. For best results, wiring should be completed with 14 AWG solid copper wire.

1. Use a screwdriver to loosen terminal screws.
2. Strip the insulated wire ends 3/8" and insert under cup washers on the switch block.
3. Securely tighten the terminal screws.
4. Manually test the operation of the DPDT switch by depressing the test lever located below and to the left of the controller spring.

Resetting Manual Reset Models

On a temperature fall below set point, switch contacts 11-14 and 21-24 open and contacts 11-12 and 21-22 close. The switch will remain locked in the switched position until the controller is manually reset by depressing the reset button located on the top of the controller case.

NOTICE

The controller can not be reset until after the sensed temperature rises 5°F (3°C) above the set point.

MAINTENANCE/REPAIR

Upon final installation of the Series DFS, no routine maintenance is required. The Series DFS is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty).

WARRANTY/RETURN

Refer to "Terms and Conditions of Sales" in our catalog and on our website. Contact customer service to receive a Return Goods Authorization number before shipping the product back for repair. Be sure to include a brief description of the problem plus any additional application notes.