

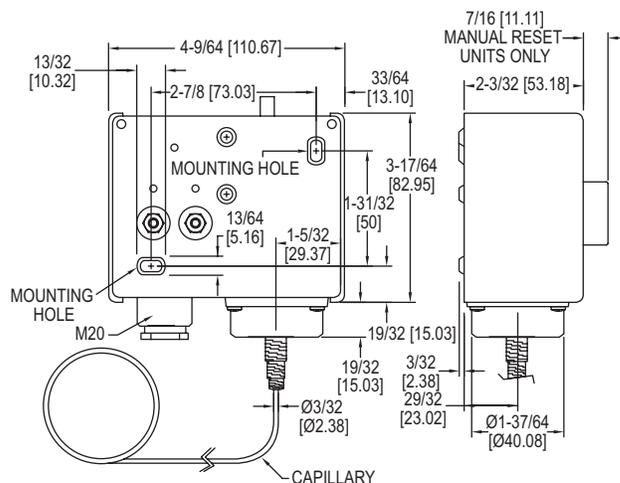


Series DFS2 Low Limit Freeze Protection Switch

Specifications - Installation and Operating Instructions



Manual reset option shown



The **Series DFS2 Low Limit Freeze Protection Switch** protects cooling coils in air handler systems by preventing frost build up. The thermostat and its capillary element provide an antifreeze function 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. The Series DFS2 will detect temperature drops below the fixed safety value (set point) which can be set as low as 34°F (1°C) utilizing the visual set point indicator and set point screw.

INSTALLATION

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

For part numbers with manual reset, allow unrestricted access to the manual reset button.

The Series DFS2 Low Limit Temperature Switch can be mounted in any position; 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. The capillary should be exposed to all areas that encounter a low temperature. See Figure 1.

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 oval mounting holes only on the rear plate of the switch housing. Mounting with round holes in the middle of the thermostat may damage the instrument and cause improper installation. See Figure 2.
3. Install capillary element in a horizontal serpentine pattern across the duct (as shown in Figure 1) on the down stream side of the cooling coil so it is exposed to areas where low temperature will occur.
4. Use the accessory mounting clips to fasten the capillary at sufficient points to prevent damage from air movement or vibration.
5. Adjust set point using the screw on the top of the unit as described in the following 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
Sensing Element: Vapor-filled capillary.
Operating Temperature: 14°F to 54°F (-10°C to 12°C).
Storage Temperature: 14°F to 158°F (-10°C to 70°C).
Capillary Overload Temperature: 392°F (200°C), maximum 60 minutes.
Humidity Limit: 0 to 95% RH, non-condensing.
Enclosure: Galvanized steel base, ABS cover.
Enclosure Rating: NEMA 1 (IP40).
Capillary Material: Copper.
Cable Entry: (1) M20 compression fitting.
Reset Action: Available in automatic or manual reset options.
Low-level Setpoint: Factory set: 39°F (4°C), and safety lock secured; Adjustment via screwdriver slot.
Wire Connection: Terminal with wire-retaining screws.
Wire Size: Max. 14 AWG.
Electrical Rating: 24 to 250 VAC, 15 (8) A.
Electrical Connections: Two each NO/NC/Common.
Deadband: 1.8°F (fixed).
Weight: 1.6 lb (0.7 kg).
Agency Approvals: CE.

Do not kink or apply excessive force to the capillary sensing element. To prevent damage from strong air movement or vibration, secure the capillary element at various points.

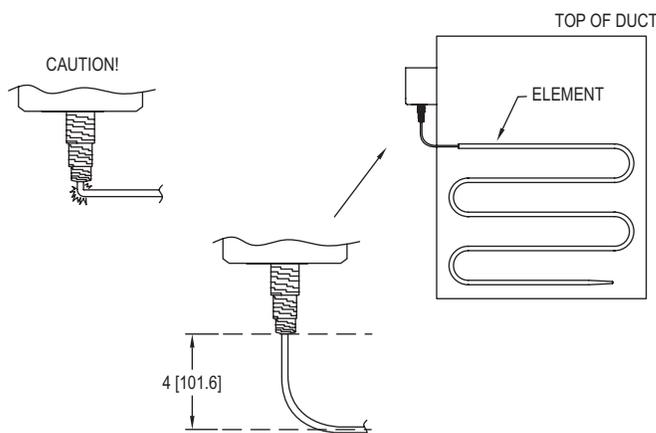


Figure 1: Install capillary in horizontal pattern only

MOUNTING

Mount unit to a flat surface using oval holes only (See Figure 2). Mounting with round holes in the middle of the freeze-stat may damage the instrument and cause improper operation.

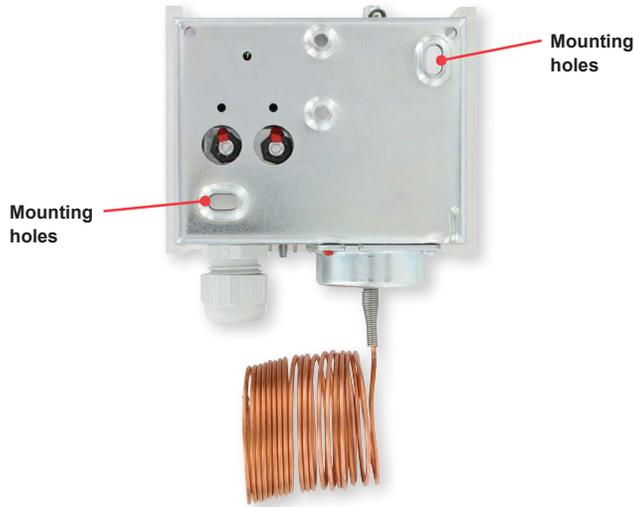


Figure 2: Back view of the DFS2

SET POINT ADJUSTMENT

- 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.
- Auto-reset types will automatically switch back to the normal position if the temperature returns to normal conditions. Manual-reset types will switch back only if both the temperature returns to normal conditions and the reset button (at the enclosure's front) is pressed.

WIRING CONFIGURATION

The conduit opening located on the bottom of the Series DFS2 is designed for installing a 1/2" NPT connector. For best results, wiring should be completed with a 14 AWG solid copper wire.

Falling temperature and attained low cut-out set point, contact connection: red to blue.

The vapor-filled capillary can control the response to the lowest temperature along any 1 foot section of the capillary length.

- All operations performed on the units, whether wiring, testing, or maintenance, must be done with the unit unpowered and without load..
- For protection, enclosure cover must be installed with all screws to be fastened and cable entry secured.
- See Figure 3 below for wiring configuration.

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.

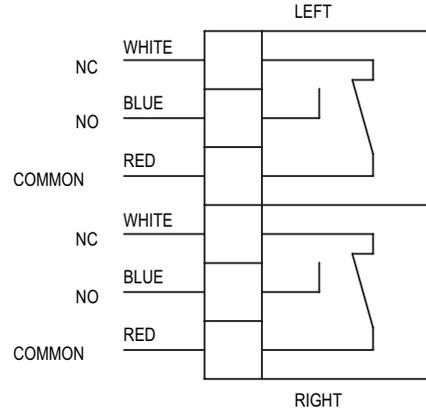


Figure 3: Wiring diagram

MAINTENANCE/REPAIR

Upon final installation of the Series DFS2, no routine maintenance is required. The Series DFS2 is not field serviceable and is not possible to repair the unit. Field repair should not be attempted and may void warranty.

WARRANTY/RETURN

Refer to "Terms and Conditions of Sale" 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.