Freeze Stats

Installation and Operation

#NSA-FLS-06-A, NSA-FLS-06-M, NSA-FLS-10-A, NSA-FLS-10-M, NSA-FLS-20-A, NSA-FLS-20-M, NSA-FLS-50-A
NSA-FLS-50-M, NSA-FLS-MB – 05/18/2020

Overview

The NSA-FLS Series Low Temperature Cutout Thermostat, otherwise known as a "Freeze Stats" are designed with a vapor charged capillary sensing element for use in equipment that requires low-temperature cutout protection. These stats protect heating and cooling coils from freezing or are used in other equipment where temperature stratification may occur. All NSA-FLS series devices are 4 Wire, two circuit devices that can be used to shut down your system upon the air temperature reaching the low temperature limit as well as simultaneously switch on a local indicator or remote alarm when used with your building management system or controller. The Freeze Stats or low limit switches are available in four standard lengths with either Automatic or Manual Resets based upon the system design requirements. A NEMA 1 rated metal enclosure comes standard with a ½" conduit knockout included for all line voltage connections.

Applications: Protect Heating and Cooling Coils, Low Temperature Limit Switch in applications where temperature stratification may occur

Part Numbers

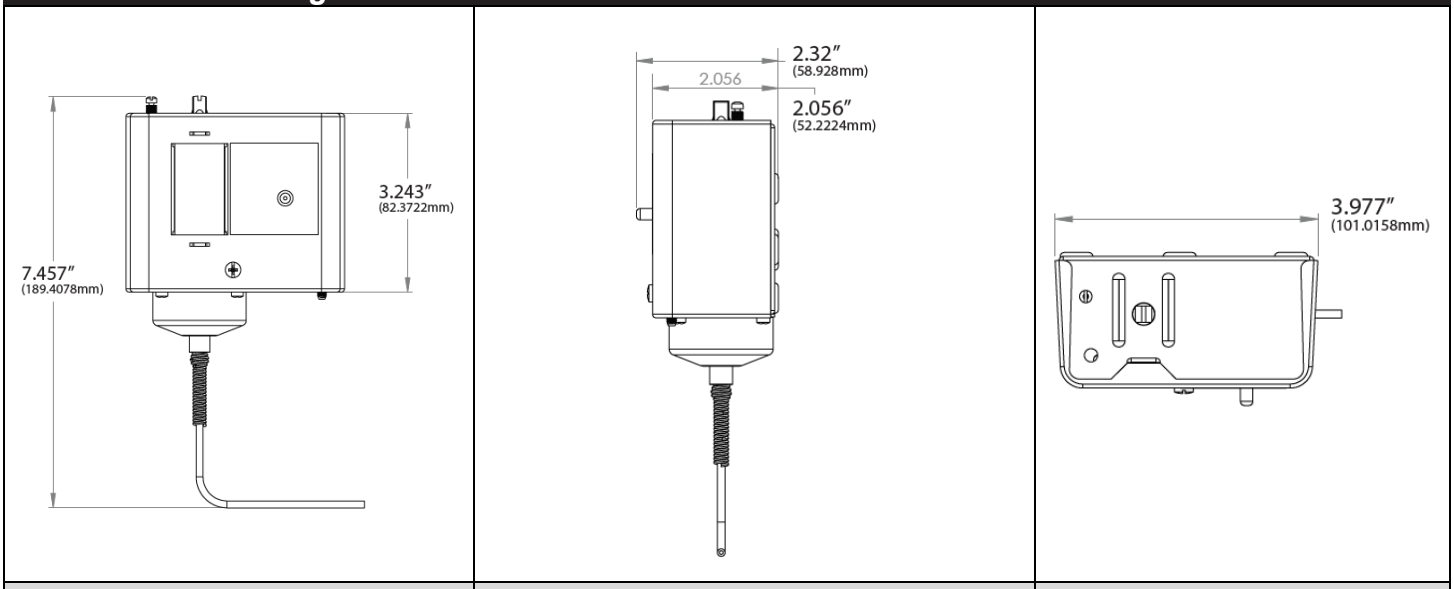
NSA-FLS-06-A	**NSA-FLS-06-M**	**NSA-FLS-10-A**	**NSA-FLS-10-M**
NSA-FLS-20-A	**NSA-FLS-20-M**	**NSA-FLS-50-A**	**NSA-FLS-50-M**
NSA-FLS-MB			

Specifications

Thermostat Type:	Self-contained, electromechanical
Sensing Element:	Vapor Pressure
Sensing Media:	Temperature in air
Adjustable Trip Point Range:	15°F to 55°F (-9°C to 13°C); Factory set with Stop at 35°F(1.7°C)
Trip Point Screw Location:	Slotted adjustment screw top of unit
Reset Options:	Manual and Automatic Resets available (See Ordering Grid back of data sheet)
Switching Differential (Auto Reset Only):	Approximately 5°F (2.8°C), Non-adjustable
Contact Style:	4 Wires, 2 Circuits (Two simultaneously switching contacts (Circuits))
Contact Action:	**Line to M2 (Main)**: Open on Temperature Drop **Line to M1 (Auxiliary/Alarm)**: Close on Temperature Drop
Contact Ratings:	See **Electrical Ratings** on page 2
Wire Connections:	Screw Terminals; Copper wire only rated to 90ºC (194ºF) minimum
Sensing Response:	Lowest temp sensed along any 14 to 16" (35.6 to 40.6 cm) length of sensing element
Sensing Capillary Material:	Copper
Sensing Capillary Length (feet):	**NSA-FLS06-x**: 6 | **NSA-FLS-10-x**: 10 | **NSA-FLS-20-x**: 20 | **NSA-FLS-50-x**: 50
Sensing Capillary Diameter:	0.125" (3.18 mm)
Enclosure NEMA Rating:	NEMA 1 (IP10)
Enclosure Material:	Steel, galvanized
Enclosure Color | Finish:	Black | Baked Enamel
Conduit Entry:	½" conduit knockout
Operating Temperature Range:	0 to 140°F (-18 to 60°C)
Storage Temperature Range:	-40 to 158°F (-40 to 70°C)
Sensing Capillary Overrun Temperature:	400°F (204.4°C) maximum
Operating / Storage Humidity Range:	0 to 95% RH, non-condensing

Product Weight:	**NSA-FLS-20-x**: 2.31 lbs. (1.046 kg)
Product Dimensions (L x W x H):	**NSA-FLS06-x**, **NSA-FLS-10-x**, **NSA-FLS-20-x**: 8.125” (20.64 cm) x 6.375” (16.19 cm) x 2.625” (6.67 cm) **NSA-FLS-50-x**: 10.125” (25.72 cm) x 3.375” (16.19 cm) x 5.500” (13.97 cm)
Agency Approvals:	UL File # SA516 UL 873 | CSA File # LR948 C22.2 No. 24-199 | C-Tick # ACN 002 968 103 | RoHS Compliant

Dimensional Drawing



Front View	Right View	Top View

Figure 1

Electrical Ratings

POLE NUMBER	LINE-M2 (MAIN)				LINE-M1 (AUXILIARY)			
Motor Ratings (VAC)	120V	208V	240V	277V	120V	208V	240V	277V
AC Full Load Amp	16.0	9.2	8.0	----	6.0	3.3	3.0	----
AC Locked Rotor Amp	96.0	55.2	48.0	----	36.0	19.8	18.0	----
AC Non-Inductive Amp	16.0	9.2	8.0	7.2	6.0	6.0	6.0	6.0
Pilot Duty - Both Poles	125 VA, 120 to 600 VAC and 57.5 VA, 120 to 300 VDC				125 VA, 120 to 600 VAC and 57.5 VA, ~~120 to 300 VDC~~			

Installation

Caution

- All A/FLS Series thermostats are designed for use only as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices (safety, limit controls) that protect against, or systems (alarm, supervisory systems) that warn of control failure.
- Locate the thermostat case and bellows where the ambient temperature is always warmer than the set point. The thermostat operates only from the lowest temperature along the entire 6, 10, 20, or 50 foot sensing element. Avoid sharp bends or kinks in the sensing elements.

Mounting

The thermostat may be mounted to a wall surface or panel board using the two mounting holes provided in the back of the case. The desired mounting position is with the element bellows pointing down. For accurate thermostat operation, the sensing element should be horizontally serpentined across the face of the coil to sense temperature in all areas.

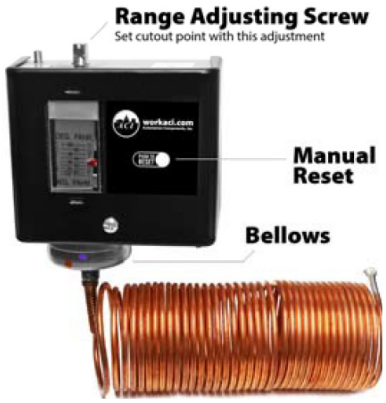


Figure 2

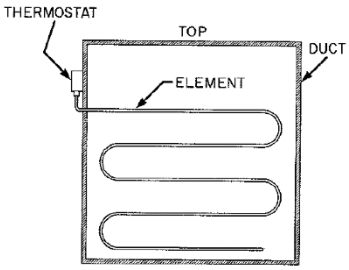
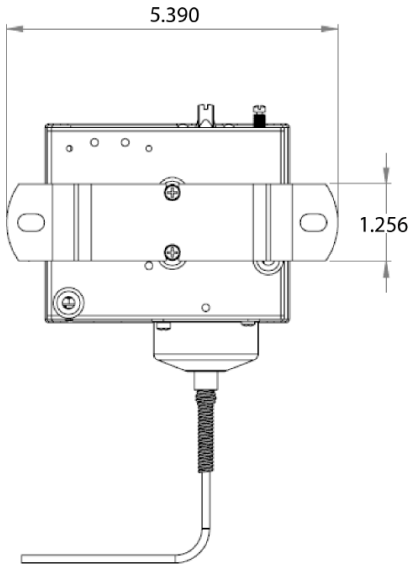
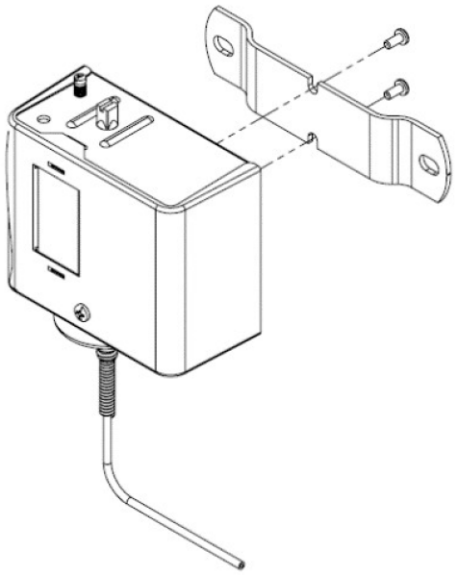


Figure 3

Optional Mounting Bracket

The box for the NSA-FLS series also contains the attachment screws for the optional mounting bracket, **NSA-FLS-MB**. Mounting bracket not included.





Wiring Instructions

Caution

- Disconnect the power supply before wiring connections are made to avoid possible electrical shock or damage to the equipment.
- Make all wiring connections using copper conductors only and in accordance with the National Electrical Code and all local regulations. For maximum electrical rating of the thermostat, see the label on the inside of the thermostat cover. Loads exceeding the rating of the thermostat can be handled with a relay or motor starter.
- Only use terminal screws furnished in the switch (8-32 × 1/4 in.). Longer terminal screws can interfere with the switch mechanism and damage the switch.

Pole Number	LINE-M2 (Main)				LINE-M1 (Auxiliary)			
Motor Rating	**120V**	**208V**	**240V**	**277V**	**120V**	**208V**	**240V**	**277V**
AC Full Load Amp	16.0	9.2	8.0	-	6.0	3.3	3.0	-
AC Locked Rotor Amp	96.0	55.2	48.0	-	36.0	19.8	18.0	-
AC Non-Inductive Amp	16.0	9.2	8.0	7.2	6.0	6.0	6.0	6.0
Pilot Duty – Both Poles	125 VA, 120 to 600 VAC 57.5 VA, 120 to 300 VDC							

Checkout Procedure

The operating point of the thermostat should be confirmed by an accurate thermometer. Before leaving the installation, observe at least three complete operating cycles to be sure that all components are functioning correctly.

Repairs and Replacement

Field repairs must not be made. For a replacement thermostat, contact Carrier.