

**PRESSURE SWITCHES
PRESSURE DIFFERENCE SWITCHES
VACUUM SWITCHES**
From 1.5 mbar to 600 bar

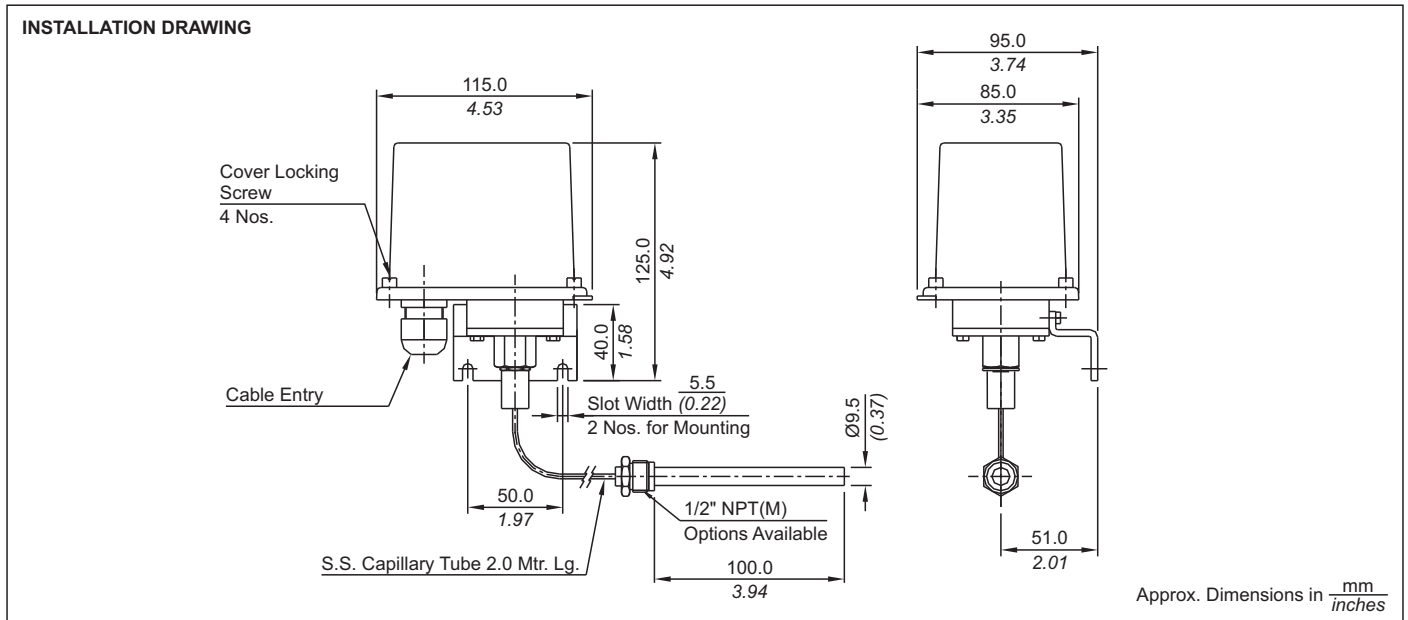


MZ Temperature Switch



INSTALLATION AND OPERATING INSTRUCTIONS

Fig. 1



CONSTRUCTION:

A MZ series temperature switch is a pressure switch actuated by vapour pressure which is directly proportional to the temperature being sensed. It consists of a tough polycarbonate cover, fitted on a stainless steel base, retained by SS screws and a temperature sensing capsule comprising a capillary and a temperature bulb. The temperature being sensed by the bulb, changes the vapour pressure of the liquid filled in the capillary. This is converted to a force which is balanced by a spring. When the pressure exceeds/falls beyond the capsule force, an electrical element is actuated through a bell crank lever mechanism for accurate switching. The electrical wiring terminates at a terminal strip having screwed ends. The cable gland provided is M20 X 1.5 standard.

PRINCIPLE OF OPERATION:

Temperature being sensed by the bulb is in direct proportion to the pressure of the liquid filled in the temperature sensing capsule. As the temperature being sensed changes, so does the vapour pressure inside the bulb. This change in pressure is sensed by a diaphragm and a compression spring. Once the pressure changes beyond the set limit, an electrical element is actuated through a bell crank lever mechanism.

Certificate No.: FM72815



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PROCESS CONNECTIONS

The remote bulb is of brass and the capillary is provided with a 1/2" NPT(M) (Options Available) gland nut. Using this gland nut, a thermowell of appropriate size, rating and material can be used to suit the process whose temperature is to be sensed. Thermowells can be provided as accessories, if the specifications are provided by the end user / customer.

MOUNTING

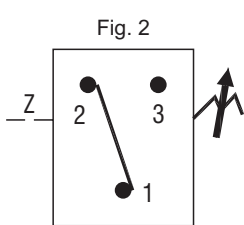
The temperature switch can be mounted in any direction.

- 1) The temperature switch can be mounted directly in case the mounting is rigid.
- 2) For panel mounting, L-shape bracket is provided. Use M5 bolts of appropriate length through the mounting holes as shown in Fig. no. 1. If the equipment is subject to vibration, please use the rubber washer / pads between the panel and the switch.
- 3) Thermowell can be provided as per requirement.

CAUTION : Please ensure that the bulb is preferably vertical and below the capillary. The switch unit though can be mounted in any direction.

FAILURE HAZARD: The copper capillary (Refer fig. 3) is used for filling volatile liquid. It should not be bent such that it develops a crack or is broken. The switch will not function after such an event. The length of copper capillary is purposely kept more in the event the sensing temperature capsule has to be refilled.

ELECTRICAL CONNECTIONS:



(refer Fig. 2)
Temperature switches will generally have only one SPDT microswitch. All models are normally supplied with a straight M20 cable gland on either side of pressure port.

WIRING:

- a) Your attention is drawn to the electrical potential that will be present, if the main cover is removed while the switch is connected to a live supply. The electrical supply must be isolated prior to removal of the cover.
- b) Remove the cover. Refer fig 3.
- c) Pass the cable through the cable gland and connect the wiring to the terminal strip as per your wiring diagram.

The color code is as per the details given below:

- Terminal 1 (Common): Red
- Terminal 2 (Normally closed): Black
- Terminal 3 (Normally open): Yellow

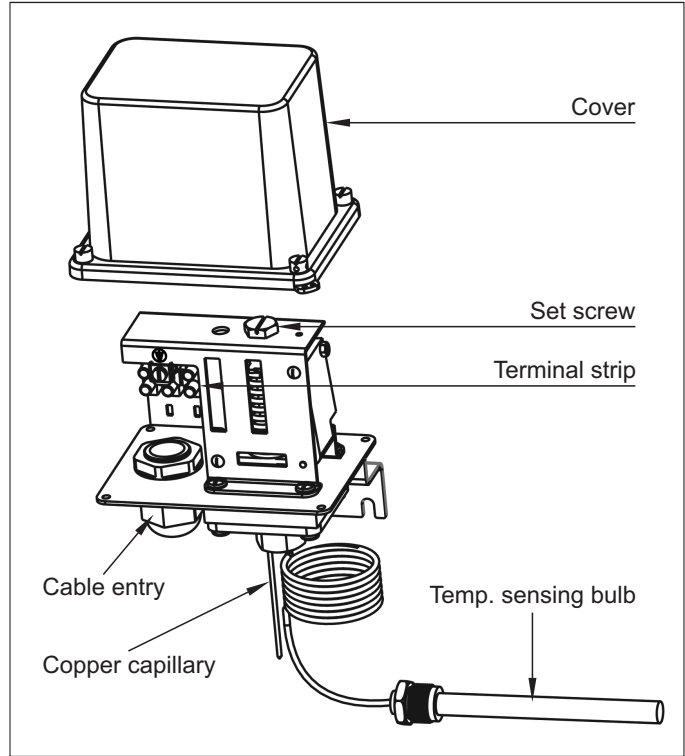
CAUTION : Ensure that wires do not interfere with the operating mechanism. Please use earthing terminals that have been provided, one inside the enclosure and one outside.

SET POINT ADJUSTMENT: (Refer Fig. 3)

1. ISOLATE SUPPLY. Remove the cover.
2. Adjust the desired set point on the scale.
3. Apply the desired temperature to the sensing bulb of the switch.
4. Increase the temperature setting by turning the setscrew till contacts changeover.
5. Some minor adjustment will be required to achieve the exact point, which can be checked with the help of a proper temperature measurement device.
6. Replace the cover.

Tip : The temperature switches are factory set at half the set point range (unless otherwise specified in a Purchase Order).

Fig.3



TROUBLE SHOOTING TIPS

WARNING: Isolate the switch electrically and disconnect from pressure source before carrying out trouble shooting, in a safe area. Generally no problems are observed if the temperature switch selection, wiring and the set point is proper. For a temperature switch selection procedure, please consult our sales office.

For properly selected temperature switches, if following symptoms are observed, the likely causes and remedies are as stated below.

SYMPTOM 1: SWITCH DOES NOT OPERATE

- 1) Wiring may not be correct, Check electrical connections to the temperature switch, if they are as per the wiring diagram.
- 2) The temperature bulb does not sense temperature.

DO NOT TAMPER THE TEMPERATURE BULB IN ANY EVENT.

If the cause is none of the above-mentioned probabilities, proceed as per the following steps.

Check the system temperature & set point of temperature switch. For use of temperature switch for falling set points, system temperature has to be greater than the cut out point.

For use of temperature switch for rising set points, the system temperature may not be reaching the cutout point.

If the switch still does not operate, remove the temperature switch physically from the system. There should be continuity between terminals 1 & 2. If no continuity is observed the temperature switch should be returned to the factory.

SYMPTOM 2: LEAKAGE

In case leakage is observed, the temperature switch has to be returned to the factory without tampering the temperature bulb.

SPARES AND PART REPLACEMENTS:

We strongly recommend for spares and part replacement, kindly contact Kaustubha Udyog, Pune, India. ■