

# Vapor Actuated



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**Marshalltown-Tempco Vapor Actuated Thermometers bring economy and accuracy to remote measuring applications within the (- 40° to 350°F) range.**

Two basic styles allow either remote mounting of the temperature scale (as far as 75 feet from the sensing bulb) or direct mounting of the Thermometer for local temperature indication. Remote reading units offer, as standard, 6 feet of flexible capillary with double-braided copper armor for greater mechanical protection. Capillaries on center back models are reinforced with stainless steel coiled armor at the case. Bulbs are 3.5" standard ½" NPT union connection.



## Available Capillary Options

- Copper braided with copper core
- Heavy Duty Vinyl coated with copper core
- Stainless steel armour with copper core



## Thermowell

- 1/2" NPT Outside
- 5/8" NPT Inside
- Stainless Steel or Brass

## SPECIFICATIONS

**ACCURACY:** +/- 3% from 20-50% of scale and +/- 2% over remaining 50% of scale.

**CASE SIZES:** 2, 2½, 3½, 4½ inches diameter.

**CASE MATERIAL:** Steel with black enamel paint.

## CASE STYLE:

U = Front Flange (U-Clamp), flush mount with center back remote connection.

(2", 2½", 3½") = Marshalltown X-8.

FF = 3 Hole Front Flange, flush mount, with center back remote connection.

(2", 2½", 3½") = Marshalltown X-5.

G = Back Flange, surface mount, with adjustable lower back & bottom remote connection.

(3½", 4½") = Marshalltown X-6, X-7.

P = Plain case (3½" only) with adjustable angle, bottom direct mount (without capillary) = Marshalltown X-3.

**TUBE:** Drawn copper alloy.

**MOVEMENT:** Brass sector with polycarbonate side plates.

**CAPILLARY:** 6 feet of flexible capillary with double-braided copper with sheath standard.

**CONNECTION:**

CB = Center back remote ½" NPT connection, (FF & U cases).

BB = Back & Bottom (Dual) adjustable remote ½" NPT connection, (G case)

BA = Bottom Adjustable Angle direct mount ½" NPT connection. Without capillary. (P case) = (Marshalltown X-3)

**BULB:** 3 ½" sensing bulb standard. Cases 2", 2½", 3½", 4½" have ½" union nut standard.

**RANGES:** Six standard ranges DUAL SCALE in degrees Fahrenheit & Celsius.

- 40°F to 65°F / - 40°C to 15°C

- 40°F to 120°F / - 40°C to 50°C

0°F to 120°F / - 15°C to 50°C

0°F to 180°F / - 15°C to 80°C

30°F to 240°F / 0°C to 115°C

50°F to 350°F / 10°C to 175°

**DIAL STANDARD:** Dual Scale Standard degrees F° and C°.

**DIAL COLOR:** Black markings on white.

**POINTER:** Standard Pointer.

**WINDOW:** 2", 2½", 3½" have twist-in Clearlok window. 4½" case has dimpled ring and acrylic window.

**OPERATING PRINCIPAL:**

A vapor actuated thermometer is essentially a pressure system with a sensing bulb at one end connected by a capillary to a pressure gauge at the other. The bulb is filled with a liquid which vaporizes as the temperature rises. This causes the pressure in the gauge bourdon tube to rise and move the pointer to indicate the measured temperature.

This temperature-to-pressure relationship is non-linear which means that the graduations on the line end of the scale are close together, whereas the graduation on the upper end are spaced farther apart. Changes in ambient temperature along the capillary or at the scale do not affect the thermometer readout. This means that capillary up to 75' long can be used without the need for ambient temperature compensation.

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