



INTRODUCTION

Product temperature is one of the prime parameters in custody transfer and accurate inventory measurement in liquid bulk storage tanks. ESD offers the Multiple Spot Temperature Sensor (MST) for accurate and reliable measurement of temperature.

ESD's MST is designed to measure temperature of bulk stored liquids to provide a tank temperature profile and an average temperature. This sensor is used to measure the average temperature of the liquid in the tank on a continuous basis. This temperature is used to monitor the stock inventory in the tank. When accuracy over a wide temperature range is a crucial factor ESD's MST's are unequalled in performance. Stability over long periods of continued use makes them unmatched in reliability and durability. Precision material and workmanship enables easy replacement without calibration.

The MST contains a number of spot elements positioned at different heights in the tank. Each element gives independent output w.r.t. temperature. User has the choice to select the elements individually or in a group depending upon the application.

CONSTRUCTION

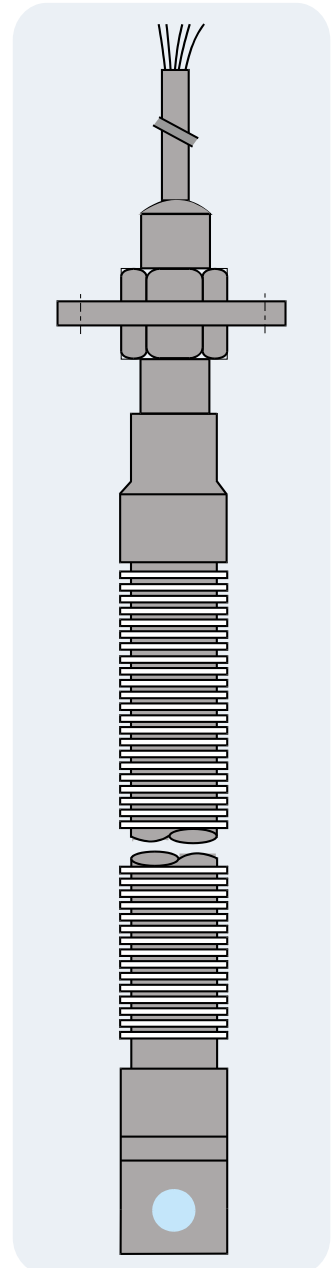
The MST consists of a number of Pt-100 spot elements 5.00 mm or 3.00 mm in diameter having a temperature coefficient of 0.385 ohms / °C. All elements are single point matched. Each element is contained in an insulation covering, bundled together and housed in a flexible air tight protection tube made of convoluted stainless steel. The protection tubes have rigid stainless steel fittings at the top and bottom for proper installation. The MST uses DIN IEC 751 elements. This assures accurate measurement even under extreme conditions. The number of spot elements can vary to suit user application. The spots elements are equidistantly positioned to ensure precise measurement of the average tank temperature. A fairly common distance between the spot elements is 1.5 or 2 meters.

FEATURES

- ✓ DIN IEC 751 elements
- ✓ Highly Reliable & Safe
- ✓ Maximum MTBF
- ✓ Proven field performance
- ✓ Rigid construction
- ✓ Minimum MTTR
- ✓ Highly accurate & stable
- ✓ Easy to install
- ✓ Wide Choice

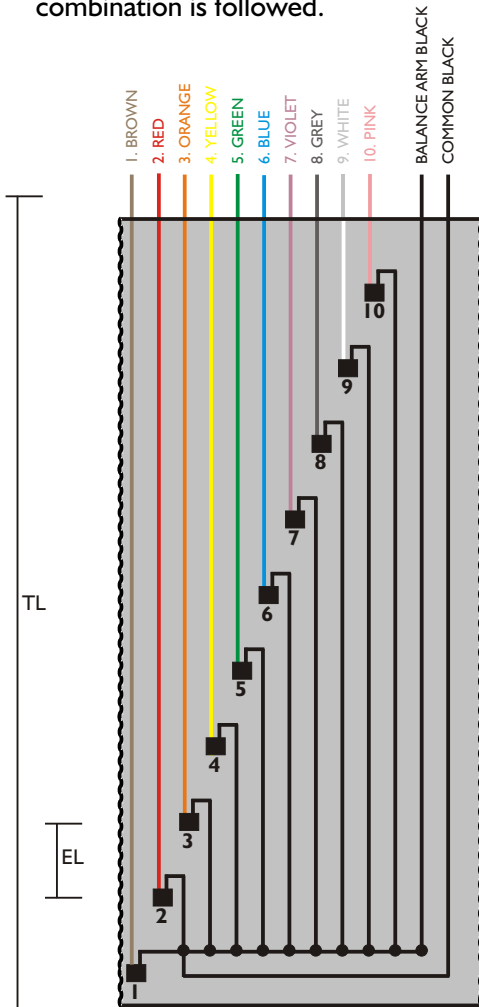
SPECIFICATIONS

Sensor Elements	: Pt-100, 100 ohms at 0 °C as per DIN IEC 751 class B	Connection	: ½ inch BSP
No of elements	: 4 / 6 / 8 / 10 / 12 / 14 / 16 / 20 mm	Flange	: 2 / 3 / 4 inch ANSI [±]
Temp. Coefficient	: 0.385 ohms / °C	Sheath	: Convolute tube in SS 304 or Ss316
Element wattage	: 0.25 W	Pressure	: 4 or 7 Kg / cm ²
Response Time	: 20 Sec. Approximate	Lead Wires	: Collar Coded, PTFE Sheathed 19 / 36 SWG Five meters long
Range	: -50 to +120 °C	Bottom fittings	: To attach anchor weight
Accuracy	: 0.25 °C	Wire colour	: 1 - Brown, 2- Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Gray, 9 - White, 10 - Pink
Element Length	: 30 mm		
Connecting System	: 3 Wire (2 wires common)		
Distance between Elements (EL)	: 1500 to 2000 mm, ± 10		
Total Length (TL)	: 5 / 6 / 7 / 8 / 9 / 10 mtrs ± 25		
Hose Diameter	: 1 inch (25mm), ± 1mm		



COLOUR CODE

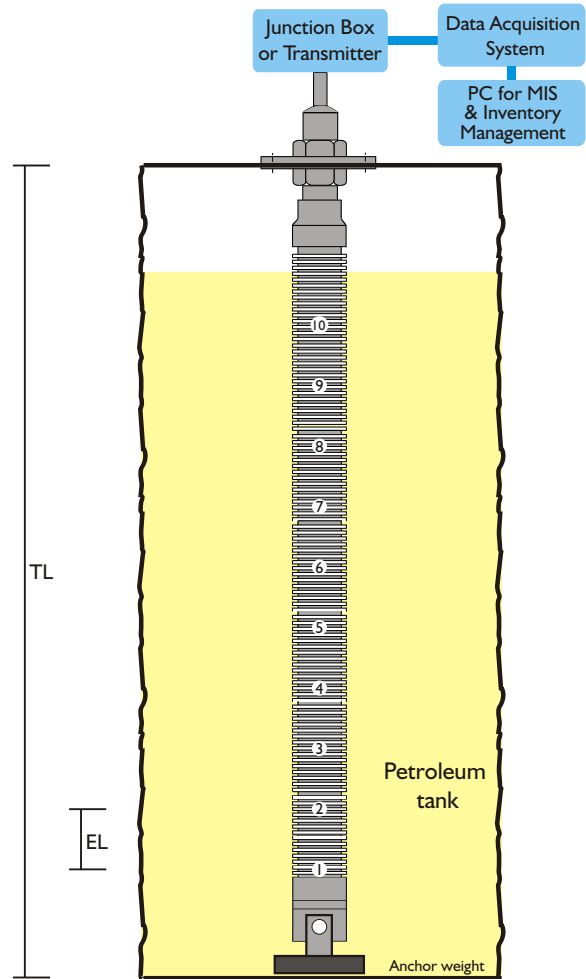
The wire colour code connected to the spot element at different locations is followed as per the internationally accepted resistance band colour schemes. For elements above ten, two colour combination is followed.



Colour Code and Spot Element Locations

INSTALLATION

General arrangement showing installation of multispot temperature sensor in the tank. Output of the sensor is connected to the Data Acquisition System through Transmitters or Junction box. PC for MIS & Inventory Management is connected to the Data Acquisition System.



MODEL CODE

MST

X1 Total length (TL) specify in mm	X2 Sheath material A - 1" AISI 316 B - 3/4" AISI 316	X3 Connection type 1 - Threaded 1/2" BSP 5 - Flange 1 1/2" ANSI 150 psi 6 - Flange 2" ANSI 150 psi 7 - Flange 3" ANSI 150 psi	X4 Wiring 3 - 3 wire individual C - Common return	X5 No. of spot elements 1 to 14 specify	X6 Element type P - Pt-100
X7 Accuracy 1 - 1/6 DIN Class B 2 - 1/10 DIN Class A	X8 Temp. range in deg. C 1 - -50 to 120 2 - -20 to 250	X9 Lead wire 1 - 500 mm 3 - 3mts 4 - specify (max 10 mts)	X10 Anchor weight 0 - None A - 2.5 Kg (H 40 x 200 D mm)		



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