



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

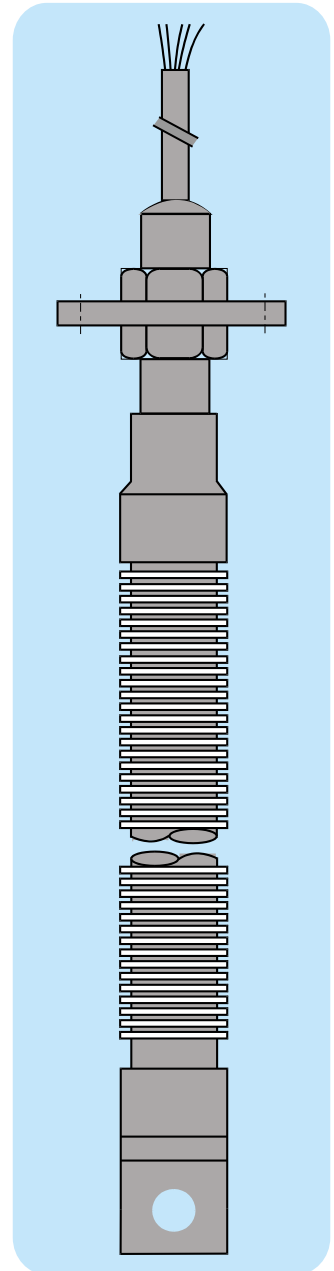
The MST consists of a number of Pt-100 spot elements 5.00 mm or 3.00 mm in diameter having a temperature coefficient of 0.385 ohms / °C. All elements are single point matched. Each element is contained in an insulation covering, bundled together and housed in a flexible air tight protection tube made 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
- Proven field performance
- Highly accurate & stable
- Highly Reliable & Safe
- Rigid construction
- Easy to install
- Maximum MTBF
- Minimum MTTR
- Wide Choice

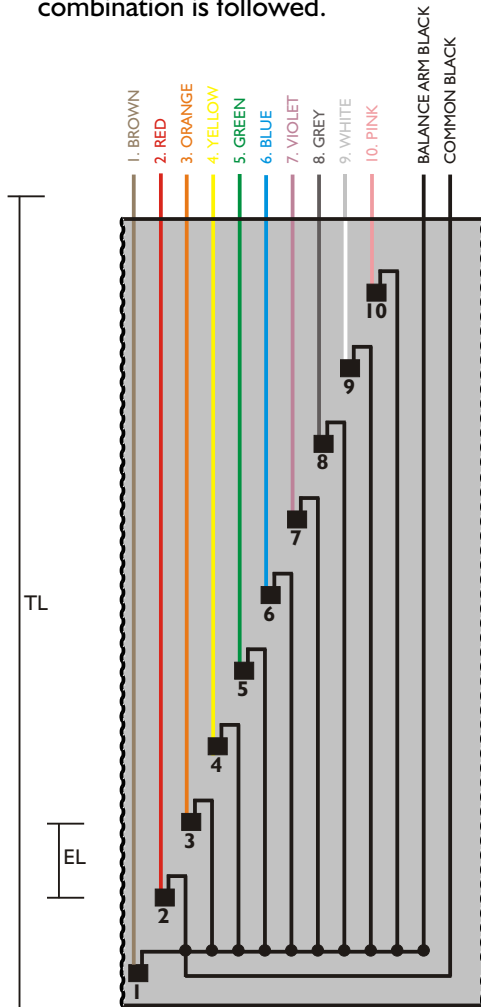
SPECIFICATIONS

Sensor Elements	■ Pt-100, 100 ohms at 0 °C as per DIN IEC 751 class B	Hose Diameter	■ 1 inch (25mm), ± 1mm
No of elements	■ 4 ■ 6 ■ 8 ■ 10 ■ 12 ■ 14 ■ 16 ■ 20	Connection	■ 1/2 inch BSP
Temp. Coefficient	■ 0.385 ohms / °C	Flange	2 / 3 / 4 inch ANSI
Element wattage	■ 0.25 W	Sheath	■ Convolute tube in SS 304 or SS316
Response Time	■ 20 Sec. approximate	Pressure	■ 4 or 7 Kg / cm ²
Range	■ -50 to +120 °C	Lead Wires	■ Colour Coded, PTFE Sheathed
Accuracy	■ ± 0.25 °C		■ 19 / 36 SWG Five meters long
Element Length	■ 30 mm	Bottom fittings	■ To attach anchor weight
Connecting System	■ 3 Wire (2 wires common)	Wire colour code	■ 1 - Brown, 2- Red, 3 - Orange, 4 - Yellow, 5 - Green, 6 - Blue, 7 - Violet, 8 - Gray, 9 - White, 10 - Pink
Distance between Elements (EL)	■ 1500 to 2000 mm, ± 10	Junction box	■ Explosion proof GR IIA IIB
Total Length (TL)	■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10 mts, ± 25 mm	Top mounted	■ Weatherproof to IP 65, CMRI & CCOE approved.
		Cable Entry	■ 1/2" BSP & 3/4" NPT 1 nos. each



COLOUR CODE

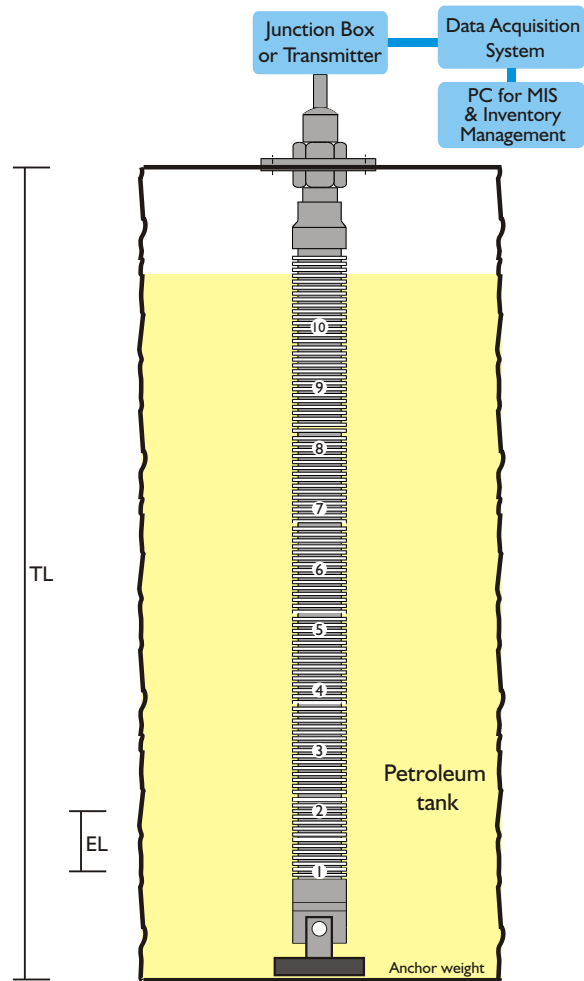
The wire colour code connected to the spot element at different locations is followed as per the internationally accepted resistance band colour schemes. For elements above ten, two colour combination is followed.



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	X2	X3	X4	X5	X6	X7
Total length (TL) specify in mm	Sheath material A - 1" AISI 316 B - 3/4" AISI 316	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	Wiring 3 - 3 wire individual C - Common return	No. of spot elements 1 to 14 specify	Element type P - Pt-100	Accuracy 1 - 1/6 DIN Class B 2 - 1/10 DIN Class A	
Temp. range in deg. C 1 - -50 to 120 2 - -20 to 250	Lead wire 1- 500 mm 3- 3mts 4- specify (max 10 mts)	Anchor weight 0 - None A - 2.5 Kg (H 40 x 200 D mm)	Junction box 0 - None 1 - Integrated with temp. sensor (for upto 6 spots) 3 - JB 42	Hose kit 00 - None 03 - Including glands 3 mts 10 - Including glands 10 mts	Vapor Boot 0 - None 1 - 2" NPS threaded 2 - 3" NPS threaded 3 - Flange 3" ANSI 150 psi 4 - Flange 4" ANSI 150 psi 6 - Flange 6" ANSI 150 psi 8 - Flange 8" ANSI 150 psi	Compliance 1 - As per NACE MR0175	



**ELECTRONICS
SYSTEMS AND DEVICES**
Process Control Instrumentation

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