

Multipoint temperature sensor assemblies

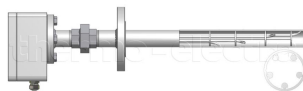
ML7038 Multipoint thermocouple and Pt100 assemblies



Multi-point thermocouples (Stufenthermoelement) are mainly used for profiling measurements and hot-spot detection in chemical reactors, distillation columns and fractionators. Pt100 versions are mainly used in LNG applications. Custom Designed to fit the application and can be of any length. Constructed to withstand extreme temperatures and pressures. A junction box provided with terminal connections or transmitters, an extension tube to place the junction box away from the radiated vessel heat, and a mounting flange which mates the vessel instrumentation nozzle flange and a welded closed-end pipe well to protect the enclosed thermocouples or RTDs from the process conditions. Options: Atex IECEx Explosionproof certification: Ex d Flameproof, Ex e Increased Safety, Ex i Intrinsically Safety and Ex ta/tb dust.

Ordering code
Type

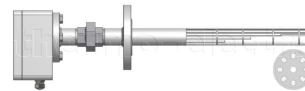
ML7038B Multipoint temperature sensor with guiding tube system



Individual guiding tubes allow easy maintenance and individual sensor replacement. The mineral insulated thermocouples or Pt100's are inserted into guiding tubes guided to the specified measurement point. The Spring loaded construction in the junction box ensure good thermal contact and a fast response time. Spacer discs prevent rotation of the guiding tubes and center the multipoint into the thermowell. These multipoints can also be ordered with sealing compression fittings in the mounting flange so the sensor is sealed from the atmosphere however without springloaded contact.

Ordering code
Type

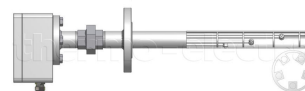
ML7038A Multipoint temperature sensors with basic sensor system



Thermocouples or Pt100's have the measuring point at the desired length, and are bundled together or mounted with spacers. This type of assembly is only suitable for direct medium contact with open or perforated thermowells or where the bundle diameter tightly fills up the inner area of the thermowell to reduce thermal lag. Multi-level sensors are constructed using mineral insulated (MI) cable. This design is generally the most economical of all multi-point designs. If used into a perforated open thermowell the medium makes contact with the sensors, the response time is good. If used in a closed thermowell the response time shall be low compared to other types of multipoint assemblies using a thermowell, since the hot junction or detector make poor contact with the inner wall of the thermowell.

Ordering code
Type

ML7038C Multipoint temperature sensor with positive contact system

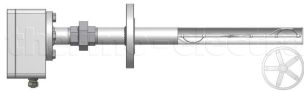


Multipoint with positive contact type guiding tubes This is the most common and reliable multipoint design. Easy maintenance due to individually removable and replaceable thermocouples or Pt100 elements, constructed using mineral insulated (MI) cable with single or duplex sensor. In this design each individual single guiding tube is attached by welding into the thermowell becoming an integral part of this protection thermowell. If a single sensor should need to be replaced, it can be accomplished easily and quickly on site without interrupting the process. All sensors are spring loaded for optimal thermal contact.

Ordering code
Type

Multipoint temperature sensor assemblies

ML7038D Multipoint temperature sensor with spring contact system

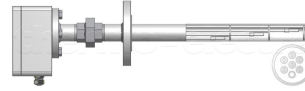


High temperature leaf shaped spring design guarantees a good and stable spring function within a large temperature range up to 250°C. A leaf shaped spring presses and holds the hot junction to the inner wall of the protection tube. Spring loaded multi-points respond quickly to temperature changes. The springs are attached to a flexible stainless steel tube or strip allowing the sensor to follow the contour of the protection tube. Multi level sensors are constructed using mineral insulated (MI) cable with single or duplex thermocouples or Pt100 RTD's. Replacement or repairs requires entire assembly to be returned to the factory. Shipment of these multipoint temperature sensor assemblies can be coiled if ordered without a protection tube.

Ordering code

Type

ML7038E Multipoint temperature sensor, bi-metal contact system

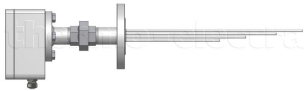


The bi-metal laminated springs are attached onto a strip allowing removal and replacement of the complete thermocouple bundle during operation. The bimetals bend outward and produce at process temperature an internal pressure of 35kPa between the hot junction of the mineral insulated sensor and the internal thermowell wall. This pressure is sufficient for an accurate temperature measurement. The pressure is low enough to remove during operation if necessary. Multipoint assemblies are constructed using mineral insulated (MI) cable with single or duplex thermocouples or Pt100 RTD's. Installation around bends or from the underside of a tank are possible. These multipoint sensors can be supplied coiled to lower transport cost, reduce storage space and allow easy installation.

Ordering code

Type

ML7038F Multipoint catalyst bed reactor temperature sensors

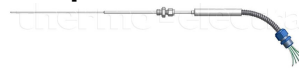


Thermocouple elements have the measuring junction at the desired length and are each free bendable to reach the desired measuring point in the reactor. This type of assembly is suitable for catalyst bed reactors and additional mounting frames are possible. Multi-point sensors are constructed using mineral insulated (MI) cable with single or duplex thermocouples type K, T, J or N. These thermocouple sensors can be inserted through a single entry nozzle. The free bendable design has a sealing flange chamber and each sensor is sealed within the flange to resist high pressures and temperatures.

Ordering code

Type

ML7040 Small diameter multipoint temperature sensor



Miniature multipoint temperature measuring devices are designed to have as many as possible thermocouple measuring points at the desired length to be used for pilot plants and miniature reactors. High pressure on the sheath is allowed due to the design where the mineral insulated thermocouples are tightly filled up with heat resistant MgO to making the sensor homogenous and give excellent reaction time. Made from single or duplex thermocouples type K, T, J or N. These thermocouple sensors can be replaced as a bundle only. Outer diameter / number of thermocouples. 1.5mm/3pcs. 2mm/5pcs. 3mm/6pcs. 3.2mm/7pcs and 6mm/12pcs.

Ordering code

Type

Multipoint temperature sensor assemblies

ML7055 Flexible multipoint temperature sensor



Flexible Multipoint Sensor with Stainless Steel flexible 3.2mm tubing. The high number of measurement points allow the monitoring of temperature profiles or detection of a hot-spot. The measuring points are located at multiple places in the tube. The flexible stainless steel tube is bendable to follow contours. High pressure on the sheath is allowed due to the design. These type of multipoints are normally placed into industrial reactors or pilot-plants. The length of the stainless steel can be specified. Termination with flexible insulated wires, length 1000mm or to specify. Delivery and storage is easy and takes little space since these units are supplied coiled.

Ordering code

Type

ML7055

ML7070 Needle type multipoint thermocouple



This 2mm needle type multi-point thermocouple has a stiff insertion tube with a sharp tip to allow easy insertion into semi-solids without bending. The tube is made from hardened stainless steel, length max.150mm. Designed with 4 thermocouples at measuring points which can be specified. Heat conducting filling makes the sensor homogenous and sturdy. The filling also guarantee a short reaction time. Multilevel thermocouples have insulated hot-junctions with a maximum working temperature of 220°C. The thermocouple types K, T or J are available in this design.

Ordering code

Type

ML7070

ML7060 Spot temperature sensor



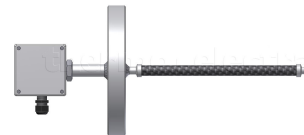
Circular Leaf Type Spring Design
This design provides good thermal contact between the thermocouple or Pt100 and the thermowell, facilitating a fast-time response. Thermocouple or Pt100's are constructed using mineral insulated (MI) cable and available in single or duplex. The leaf shaped baloon spring presses the against the inner wall of the thermowell and give good thermal conduction to the thermocouple and ensures contact also at low temperatures to the thermowell wall. The advantage of this design is the flexibility of the insert as it follows the contour or bendings of the thermowell. Easy to store and is shipped as a coil.

Ordering code

Type

ML7060

ML7080 Flexible multipoint temperature sensor for (bulk)storage



Designed with flexibe insulated wire thermocouples Flexible polyamide armoured jacket as external sheath. Very high traction strength due to the steel wire armour under the jacket. Very low lengthening due to the strength of the steel wires. Proces connection by flange. Junction box waterproof IP65. Flexible multipoint probes are available in all lengths, and number of measuring points up to 48 Jacket characteristics: polyamide. Outer diameter standard 14mm. 2000 kg traction resistance, 4000Kg rupture resistance, maximum temperature 125°C. Option: Sensor-end provided with an anchor hook.

Ordering code

Type

ML7080

Multipoint temperature sensor assemblies

ML7090 Multi spot Pt100 resistance thermometer



Multi spot Pt100 thermometers are mainly used for inventory measurements and high accurate custody transfer measurements in bulk storage tanks to determine the average or multi spot temperature. Pt100 detectors used are class b, 1/6 B or 1/10 B versions for high accuracy. The sensor wires can be 3, 4 wire or 1 common with 2 wires for each sensor. Designed to fit the application and can be of any length. Constructed to withstand aggressive substances. A junction box provided with terminal connections or optional transmitters. For pressurized applications a welded closed-end pipe well is recommended. Options: Atex Explosionproof certification.

Ordering code

Type

ML7090