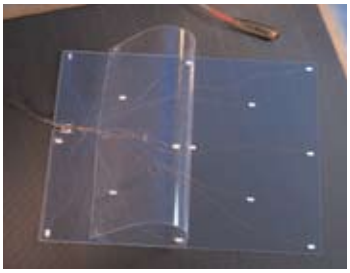
KLA-Tencor
Accelerating Yield

Sensor Bearing Template for Field Instrumentation of Glass for Flat Panel Display Temperature Measurements



IN SITU PROCESS MONITORING

Process Probe 2050

The SensArray® Process Probe® 2050 glass panel sensorinstrumented template is a cost-effective and convenient alternative to our factory-instrumented glass panels for precise in situ characterization of glass temperature profiles for CVD, PVD, and other flat panel display applications. As the size of the glass for LCD and other flat panel manufacturing gets larger, it becomes extremely costly and inconvenient to transport these thin, fragile glass sheets to SensArray to be instrumented with thermocouple (TC) sensors; and return shipments require specially designed, expensive packaging to ensure safe delivery of each finished panel. Using a flexible, thin plastic template with sensor-embedded glass chips attached, the Process Probe 2050 enables the sensors to be mounted to the glass at your site, saving significant time and expense, without sacrificing accuracy and reliability. Simple field repairs are also possible.

EASY-TO-USE KIT

You custom-order your template, letting us know the size of the template, the number of sensors – up to 34 – the sensor locations, and the length of the cables. Your Process Probe 2050 TC temperature sensor template is manufactured at SensArray and shipped to your location for installation. The template arrives as a kit, and includes the following:

- A polyester template with sensor chips mounted at pre-specified locations
- A sensor cable and connector, already attached to the sensors
- A sensor chip bonding adhesive
- Installation instructions
- An easel to support the glass (purchased separately)

SensArray provides training to help you learn how to use the easy installation kit. Or, a SesArray field engineer can be contracted to visit your site for application of the sensors using the template. Process Probe instrumented glass panels may be used in most atmospheric and low pressure process equipment without hardware modification. A flat cable feedthrough allows sensor leads to pass under the process chamber end cap or O-ring seal, maintaining chamber atmosphere purity and vacuum integrity. You can measure glass temperature directly in real time during each critical step in your process cycle, including loading, temperature ramping, steady-state, cool-down, and unloading, allowing you to determine edge-to-center temperature differentials and to optimize cycle time by directly measuring thermal stabilization time of panels within the load. Temperature measurements are acquired using a SensArray hand-held Thermal TRACK™ measurement system or Thermal MAP® metrology system with advanced analysis features. A TC-instrumented glass panel, employing the Process Probe 2050 temperature sensor template, allows you to efficiently and cost-effectively fine-tune your process conditions, improving equipment performance, panel quality, and output.

BENEFITS

COST-EFFECTIVE, CONVENIENT SOLUTION FOR GLASS PANEL SENSOR INSTRUMENTATION.

Offers real-time, in situ process monitoring from 0° to 450°C.

On-site installation of TC sensors reduces handling and shipping time of large glass sheets for flatpanel display applications.

Easy-to-use kit requires minimum effort, allowing installation in 30 minutes.

Patented bonding method ensures strong bond between sensors and glass panel at high temperatures, and provides protection for wires and sensors.

Designed to accommodate panels up to Generation 5.

Offers high measurement reliability in CVD, PVD and other flat panel processing systems.

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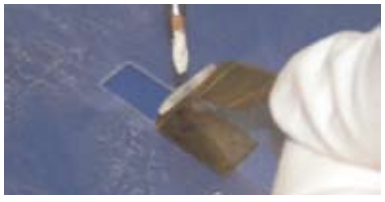
SIMPLE TEMPLATE INSTALLATION

Application of the Process Probe 2050 to your glass panel is simple and can be accomplished in less than 30 minutes by someone familiar with the process.

TEMPLATE APPLICATION

- Peel back the release film at the top.
- Align the template with the glass panel. One side of the film has an adhesive coated surface that clings to the surface of the panel, but can be easily peeled up and moved for proper alignment.
- When properly aligned, smooth out the template as contact is made between the two surfaces.



SENSOR BONDING

- Peel back the small tab over each sensor, lifting the chip.
- Apply the bonding material to each chip and press it back in place against the glass.
- The bonding material will harden in only 30 minutes, and completely cure in about four hours. No heat is required during the curing process.

TEMPLATE REMOVAL

- Once cured, remove the template by gently peeling it away from the glass, leaving the chips in place. No residue is left from the adhesive material.
- Your instrumented glass panel is ready to start measuring.

PRODUCT SPECIFICATIONS

TEMPLATE

Size	Up to 1.9 m x 2.0 m
Thickness	0.12 mm
Material	Polyester
Adhesive film	Silicone
Release film	Polypropolyne

THERMOCOUPLE SENSORS

Accuracy	± 1.1°C or ± 0.4% of reading, whichever is greatest, in isothermal chamber environment
Number of sensors	Specified by customer – up to 34
Sensor type	Type K thermocouple embedded in glass chip (4 mm x 8 mm x 0.7 mm); corner chips (15 mm x 15 mm x 0.7 mm)

INSTRUMENTED GLASS PANEL

Temperature range	0° to 450°C
Sensor-to-sensor precision	± 0.1°C (in isothermal chamber)
Temperature measurement offset in cold wall chamber	± 2.0°C (near 400°C with 200°C vertical gradient)

LEADS AND CONNECTORS

Sensor leads	0.005" diameter (0.127 mm/5 mil)
Sensor lead insulation	Polyimide coated; silicone oversleeving after flat cable feedthrough
Lead length	Specified by customer – up to 120"
Flat cable length	Specified by customer – up to 12"
Wire clamp type	Y-shaped stainless steel
Feedthrough option	Polyimide flat cable. Seal is made under chamber O-ring. Base pressure down to 10-9 Torr is possible in systems with flat cable feedthrough installed.
Connector options	80-pin Hirose HDS, 37-pin D-type, or 2-pin sub-miniature plugs

DATA ACQUISITION AND ANALYSIS OPTIONS

Thermal MAP Metrology System:
Laptop-based acquisition and analysis

Thermal TRACK Measurement System:
PDA-based acquisition and monitoring

KLA-TENCOR SERVICE/SUPPORT
Customer service is an integral part of KLA-Tencor's portfolio that enables our customers to accelerate yield. Our vast customer service organization collaborates with worldwide customers to achieve the required productivity and performance at the lowest overall cost. K-T Services includes comprehensive contracts, time and materials, spares, asset management, customer training, and yield consulting.

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