

## **FIBER OPTIC TEMPERATURE MEASUREMENT FOR CRITICAL ELECTRONICS TESTING APPLICATIONS**

### The Opportunity

*Temperature monitoring of integrated circuit die, printed circuit boards, and discrete components during development, final-test, and failure analysis scenarios can be a challenging task.*

With common thermocouples (TCs) and resistive thermal devices (RTDs), high thermal conduction of metallic leads can lead to an inaccurate measurement. This can cause slow drifts in temperature until the system comes to thermal equilibrium. If the component is under power, there is an additional risk of electrical conduction and a potential short circuit. Obtaining a good thermal connection to the object

under test can also be difficult with TCs and RTDs due to the rigidity of the metal contact junction, especially if the components are of varying shapes. In addition, contact can possibly damage the surface of the component to be measured. Finally, the lifetime of TCs and RTDs can be compromised due to issues with metal fatigue after repeated bending or corrosion over time.

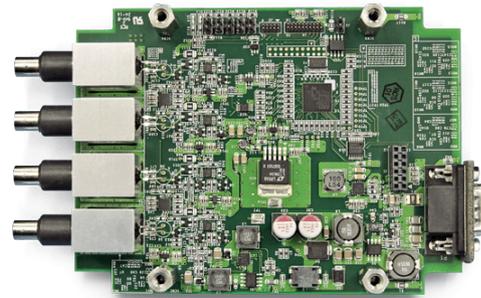
### Our Solution

The LUXTRON m924 OEM Module is designed for Electronic Device and Material testing for Advanced Technologies applications.

The m924 solution uses LumaSense's trusted LUXTRON Fluoroptic® technology, based on a temperature sensitive phosphorescent sensor attached to the end of an optical fiber. The complete LumaSense m924 OEM system consists of the electronics module assembly plus LUXTRON probes and accessories. The system provides precise and repeatable in-situ temperature measurements for control of processes involving RF, EMI, magnetic fields and high voltages.

The m924 Module is designed to replace the LUXTRON m600 OEM Series module and FOT Lab Kit with better performance and a modern architecture. It offers:

- $\pm 0.05$  °C accuracy for higher performance needed for Advanced Lab/R&D and Medical applications.
- Up to 50 Hz/channel sampling rate to capture fast temperature ramp changes.
- RS485 Modbus for expanding up to 64 channels for more sensor data collection.
- Designed for LUXTRON STF and STB probes that are used extensively in Lab/R&D and Medical applications.
- Metal enclosure option for shielding in Lab/R&D and Military applications.



**m924 OEM Module**

# Benefits of Fiber Optic Temperature (FOT)

Based on LUXTRON Fluoroptic® Technology

The m924 OEM solution builds on LumaSense's proven 40+ year history using Fluoroptic® technology. Fluoroptic technology is inherently safe, reliable, stable, and immune to electromagnetic interference. The temperature sensitive phosphorescent sensors are made of an inert dielectric compound attached directly to the end of an optical fiber probe and protected by the highest quality materials available.

Non-metallic and electrically non-conductive, the Fluoroptic® temperature probes are immune to EMI and voltages that adversely affect conventional sensors, such as thermocouples, RTDs and thermistors. By using material of minimal thermal conductance, LumaSense's probes measure temperature on minute samples without perturbing or heat sinking the sample. LumaSense offers its diverse medical, industrial, and process experience to develop custom probes to meet specific Lab and OEM requirements.

## Applications include:

- MRI and RF medical treatment
- Pacemakers and implantable device testing
- Temperature monitoring of critical military equipment and facilities
- Temperature control of microwave processes
- Monitoring of semiconductor wafer temperatures during RF and plasma applications

## Your Benefits

- ✓ **Realize fast, flexible, and accurate temperature measurement of electronics** for device characterization, test fixtures, and failure analysis studies.
- ✓ **Reduce downtime and increase efficiency** with robust sensors that minimize the need for calibration and eliminate or reduce the frequency of sensor replacement.
- ✓ **Eliminate issues with heat conduction and electrical conduction** by using improved contact fiber optic temperature monitors.
- ✓ **Easy to integrate** into existing equipment and backward compatible with LUXTRON probes and modules.



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PRECISION | POWER | PERFORMANCE

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