

# OPTIMIKE™ OM 190HP

## OPTICAL MICROMETER

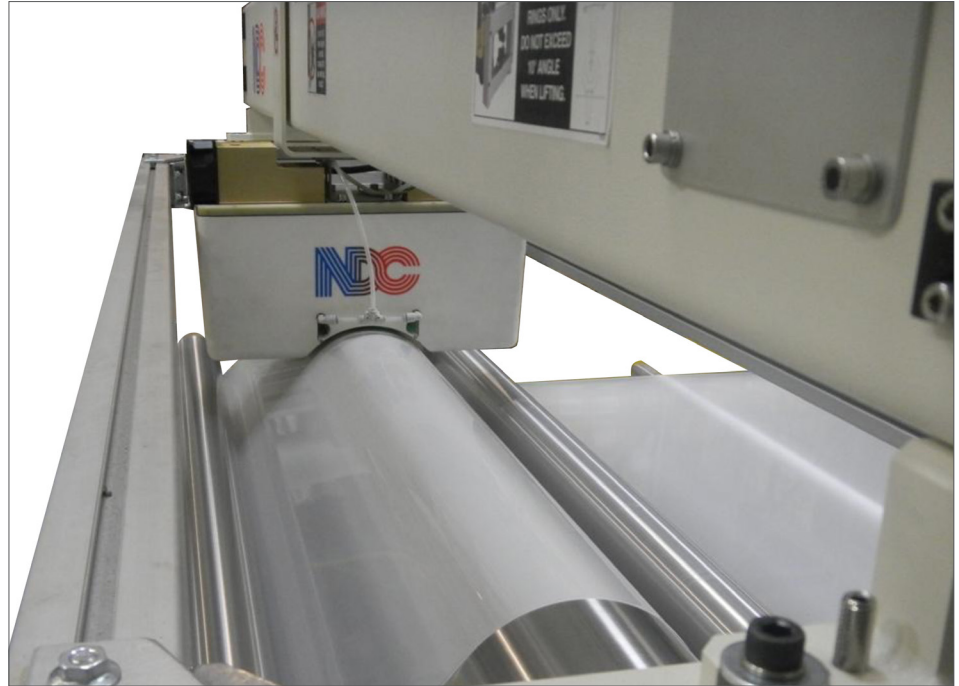
Non-Contacting Optical Gauge for Film and Sheet Thickness Measurement

### Applications:

- ▶ Sheet extrusion
- ▶ Foam Sheet
- ▶ Calendered sheet
- ▶ Nonwovens
- ▶ Hook and loop fastener material
- ▶ Composites

### Features:

- ▶ Non-contacting measurement
- ▶ Non-nuclear measurement
- ▶ Unaffected by product color, density or gloss
- ▶ Temperature stabilized for accurate measurement
- ▶ Intelligent sensor for ease of maintenance



The OptiMike OM190 optical micrometer provides direct, single-sided thickness measurement for non-metallic sheet and thick film products. The optical measurement technique is unaffected by the color, density or gloss of the product.

The sensor incorporates a light emitting diode (LED) array that projects a beam of light across the apex of the product wrapped over a precision reference roll. This roll has low run-out characteristics for accurate, absolute measurement performance. On the opposite side of the roll, a precision charged couple device (CCD) micrometer array measures the exact point of light beam interruption to determine the top surface of the product to sub-micron accuracy. An integrated eddy current sensor

measures the distance of the sensor to the surface of the roll. The data from the CCD array and the eddy current sensor are combined to provide a total thickness measurement.

For sound measurement performance, the sensor frame is made from a structurally stable material with a low coefficient of expansion. A thermo-electric cooling (TEC) system maintains the internal temperature of the sensor components and electronics to within  $\pm 0.1^{\circ}\text{C}$ . The sensor is surrounded by a thermal protection case to further stabilize the sensor and exclude contaminants. The case also provides electromagnetic shielding for the internal components. For reliability and ease of installation, OptiMike does not require either air or water utilities.

# Technical Specifications

The intelligent MiniTrak-S scanner serves as the OptiMike's measurement platform for reliable performance and low maintenance requirements.

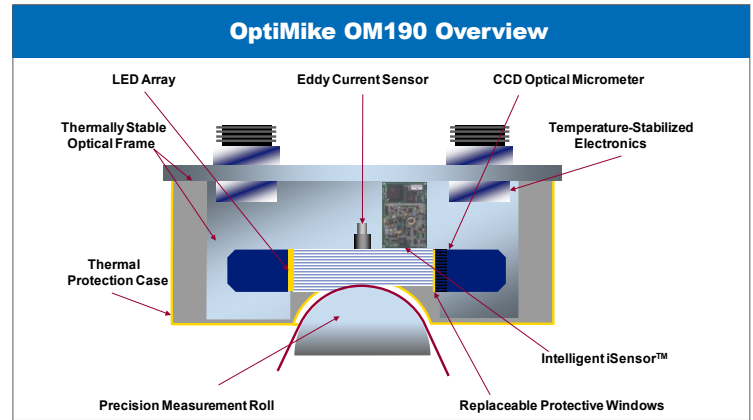
## Thermal Stabilization

The OptiMike's thermally-stabilized design is critical for achieving measurement repeatability and long-term absolute accuracy. For example, every 1°C temperature change to the eddy current sensor can translate into an apparent 5-7 microns change in its output. OptiMike is unique because it has been engineered to have a thermally stable optical bench. This includes an optical frame that is structurally stable with a low coefficient of expansion. Furthermore, the sensor electronics are thermally stabilized with thermo-electric coolers. Also, the sensor's thermal protection case keeps heat and contaminants away from the critical measurement components. Finally, internal air flow passages ensure that the sensor is precisely stabilized to within 0.1°C.

In contrast, conventional sensors often have no temperature stabilization, rendering them susceptible to thermally-related drifts in accuracy. Others use thermistor compensation that introduces lags into the measurement. In addition, these optical benches are subject to thermal expansion with further measurement errors being incurred.

## Measurement Backing Roll

The choice of the OptiMike's measurement backing roll depends upon the customer's accuracy requirements and application considerations. For superior accuracy and long-term durability, the OM190HP offers the best results using a High-Performance Stainless Steel roll. Alternatively, customers may choose either aluminum or their own roll provided it meets NDC's construction and accuracy specifications.



Property	OptiMike OM190HP Specifications*
Range: Requires positive product contact with the backing roll	50 microns to 5000 microns (2 mils to 200 mils)
Measurement Resolution	±0.10 microns (0.004 mils)
Measurement Repeatability: Stainless Steel Backing Roll	±1.0 microns (0.04 mils)
Measurement Repeatability: Aluminum Backing Roll	±1.5 microns (0.06 mils)
Maximum Operating Temperature	50°C
Maximum Sheet Width	2500 mm (98 in)
Roll Wrap: 1mm Product (0.039 in)	64°
5mm Product (0.197 in)	85°
Sensor Cooling	No air or water utilities required
Measurement Optical Spot Size	100 microns (4 mils)

\*The sensor test specifications are performed in accordance with the CEI (Commission Electrique Internationale) international standard IEC 1336

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