

# Thermo Scientific LightDrive Optical Engine

## Performance and peace of mind...for a decade to come

The Thermo Scientific™ LightDrive™ Optical Engine built into the Thermo Scientific™ Nicolet™ Summit FTIR Spectrometer leverages years of optical design expertise, innovation, and creativity from the market leader in FTIR spectroscopy.

The LightDrive Optical Engine is composed of:

- 1 a novel single-point infrared source
- 2 a rugged and ultra-reliable interferometer
- 3 a durable solid-state diode laser
- 4 a thermoelectrically cooled (TEC) detector  
(Only available on the Nicolet Summit PRO Spectrometer - see Table 1.)

These LightDrive Components allow the Nicolet Summit Spectrometer to deliver high-performance and enhanced reliability for years to come. This technical note will review each component of the LightDrive Optical Engine to help you discover why you can achieve reproducible and meaningful results, time after time with the Nicolet Summit FTIR Spectrometer.

Sample



Answers

Figure 1: Nicolet Summit PRO FTIR Spectrometer shown with the Thermo Scientific™ Everest™ Diamond ATR Accessory.

### 1

#### Infrared Source delivers unmatched consistency

First pioneered on the Thermo Scientific™ Nicolet™ iS50 FTIR Spectrometer, the new state-of-the-art infrared source provides more consistent identification and quantification results. Peak shapes and signal-to-noise ratios are improved thanks to a stable hotspot location and energy intensity (Figure 2 and 3). A 10-year warranty ensures that the quality of quantification data sets and libraries are reproducible for years to come.



Figure 2: Source energy stays constant over time, producing more consistent and reliable answers.

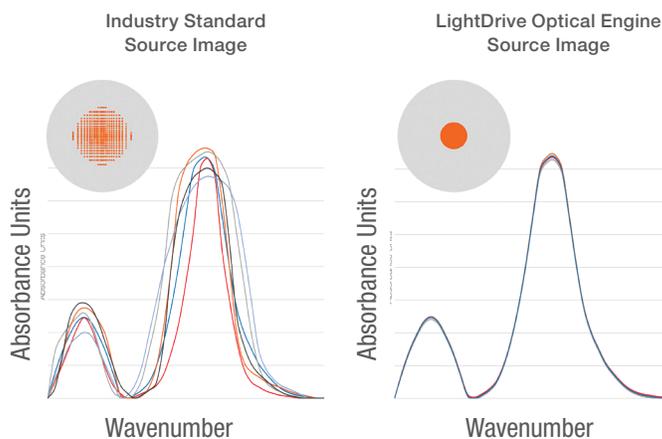


Figure 3: Single-point infrared source image produces more consistent peak shapes.

## 2

### Interferometer produces market-leading precision

Get more from your data and see the details with spectral resolution that can stay ahead of your future needs. The improved Michelson interferometer design delivers better than  $0.45 \text{ cm}^{-1}$  spectral resolution for best-in-class optical quality. Increased reliability, long-term stability, and a simplified design contribute to a relative lifetime 5x greater than previous interferometers (Figure 4), all backed by another 10-year warranty.

## 3

### Laser supplies maximum accuracy

Eliminate future maintenance costs with a modern, solid-state diode laser. The long-lifetime, temperature-stabilized design guarantees accurate and precise data acquisitions scan after scan, day after day.

## 4

### Detector yields definitive answers

Achieve optimized identification and quantification results with the thermoelectrically cooled (TEC) detector available on the Thermo Scientific™ Nicolet™ Summit FTIR Spectrometer. Electronic stabilization ensures ideal detector response profiles, even in extended temperature ranges (Figure 5). Generate results with maximum consistency, regardless of relative peak intensities or laboratory temperature changes.

	Nicolet Summit	Nicolet Summit PRO
LightDrive Optical Engine (laser, source, interferometer, detector)	•	•
10-year warranty on LightDrive laser, source, and interferometer	•	•
Thermoelectrically cooled (TEC) DTGS detector		•
Internal motorized aperture		•

Table 1. Technical comparison of Nicolet Summit and Summit PRO Spectrometers.

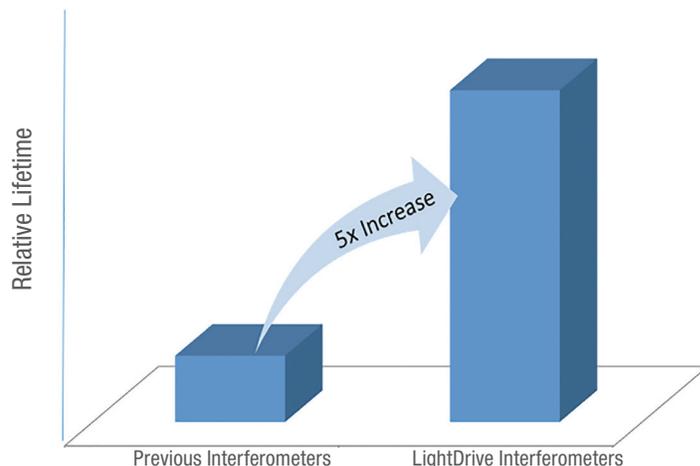


Figure 4: The LightDrive interferometer shows a 5x increase in relative lifetime compared to previous interferometers.

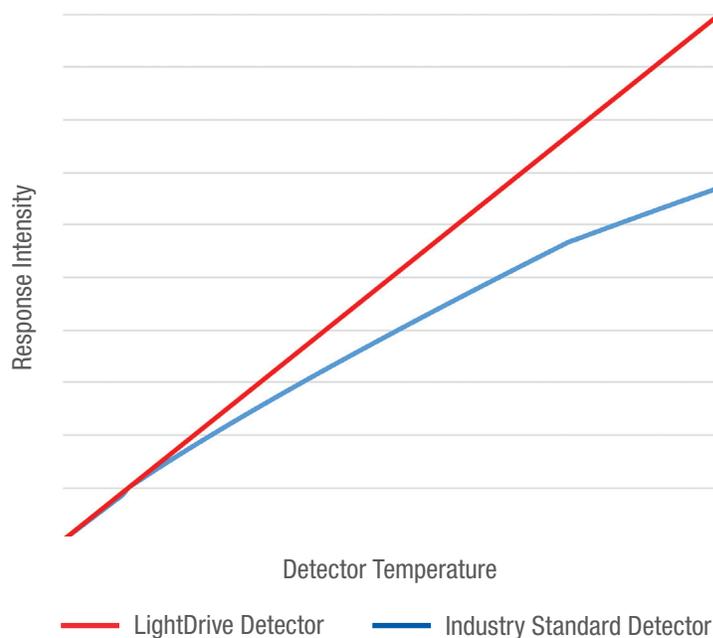


Figure 5: The LightDrive TEC Detector available on the Nicolet Summit PRO Spectrometer provides a linear response not attained by current industry standard detectors to ensure peak intensities remain consistent.

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