Luna’s Micron Optics HYPERION si255 is an industrial grade fanless optical sensing interrogator. Featuring both static and dynamic full spectrum analysis, the si255 provides long-term, reliable and accurate measurements of nearly 1000 sensors on 16 parallel, 160 nm wide channels.

The si255 features an all new, high power, low noise, ultra wide swept wavelength laser with guaranteed absolute accuracy on every scan, which is realized with Micron Optics patented Fiber Fabry-Perot filter and wavelength reference technology.

The HYPERION platform features groundbreaking capabilities including on-board, high-performance DSP and real-time FPGA processing. This enables rapid, full-spectrum data acquisition and flexible peak detect algorithms of Fiber Bragg Gratings (FBG), Long Period Gratings, Fabry-Perot (FP) and Mach-Zehnder (MZ) sensors with low-latency access to data for closed loop feedback applications.

The HYPERION platform is now compatible with ENLIGHT Sensing Analysis Software, which provides an integrated suite of tools for data acquisition, computation and analysis of optical sensor networks.

The HYPERION platform also includes a comprehensive Application Programming Interface (API) and examples written in LabVIEW, Python, Matlab, C++ and C#.

**KEY FEATURES**

- **Deployments**
  - Standard, High Speed and Enhanced Visibility models, each with an available depolarized source and up to 16 parallel channels
  - Dynamic and absolute measurements of FBGs, LPGs, FP and MZ sensors from detailed optical spectrum
  - Deep, continuous dynamic range is available to each sensor on each channel, independent of differential system losses
  - Data verification key guarantees only valid output. Each data set is calibrated and verified against a permanent NIST traceable reference.
  - Proven reliability and longevity of the Micron Optics swept wavelength source, with over 100 million hours logged since 2000

**DEPLOYMENTS**

- Oil & gas
- Medical devices
- Industrial measurements
- Energy
- Structures
- Security
- Aerospace
PERFORMANCE

<table>
<thead>
<tr>
<th>Performance Properties</th>
<th>Enhanced visibility, 10 Hz</th>
<th>Standard, 100 or 1000 Hz</th>
<th>High speed, 5000 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of channels</td>
<td>4, 8 or 16 parallel channels</td>
<td>4, 8 or 16 parallel channels</td>
<td>4, 8 or 16 parallel channels</td>
</tr>
<tr>
<td>Wavelength range</td>
<td>1500-1600 or 1460-1620 nm</td>
<td>1500-1600 or 1460-1620 nm</td>
<td>1500-1580 or 1510-1590 nm</td>
</tr>
<tr>
<td>Wavelength accuracy/stability</td>
<td>1 pm / 1pm</td>
<td>1 pm / 1pm</td>
<td>2 pm / 3 pm</td>
</tr>
<tr>
<td>Wavelength repeatability</td>
<td>1 pm, 0.3 pm at 1 Hz</td>
<td>1 pm, 0.05 pm at 1 Hz</td>
<td>2 pm, 0.05 pm at 1 Hz</td>
</tr>
<tr>
<td>Dynamic range/continuous</td>
<td>35 dB peak / 45 dB FS</td>
<td>25 dB peak / 40 dB FS</td>
<td>17 dB peak / 40 dB FS</td>
</tr>
<tr>
<td>Full spectrum measurement</td>
<td>Included, data rate at 10 Hz</td>
<td>Included, data rate at 10 Hz</td>
<td>Included, data rate at 10 Hz</td>
</tr>
<tr>
<td>Optical connectors</td>
<td>LC/APC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compatible sensors</td>
<td>Fiber Bragg Gratings, Long Period Gratings, Fabry-Perot and Mach-Zehnder Interferometers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical connectors</td>
<td>LC/APC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depolarizer Option</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interfaces and Software

<table>
<thead>
<tr>
<th>Interface</th>
<th>Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>Comprehensive API and example support for LabVIEW™, Python, Matlab, C++ and C#</td>
</tr>
</tbody>
</table>

Physical Properties

<table>
<thead>
<tr>
<th>Dimensions/weight</th>
<th>307 mm x 274 mm x 69 mm / 4.9 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating/storage conditions</td>
<td>-20 to 60 C, &lt; 80%RH non-condensing / -30 to 70 C, &lt; 95%RH non-condensing</td>
</tr>
<tr>
<td>Input voltage</td>
<td>9 - 36 VDC, AC/DC converter included (100<del>240 VAC, 47</del>63 Hz)</td>
</tr>
<tr>
<td>Power consumption at 12 V</td>
<td>30 W typ, 40 max</td>
</tr>
</tbody>
</table>

EXAMPLE CONFIGURATIONS

- **si255-ST-04-1500-1600-0100-NO** - 4 ch si255 ST with 1500-1600 nm scan range, 100 Hz scan rate and no internal accessories
- **si255-EV-08-1460-1620-0010-DP** - 8 ch si255 EV with 1460-1620 nm scan range, 10Hz scan rate and internal depolarizer option
- **si255-ST-16-1460-1620-1000-FR** - 16 ch si255 ST with 1460-1620 nm scan range, 1 kHz scan rate and full redundancy option

ordering

**si255-mm-cc-lwvl-uwvl-ssss-aa**

- **mm** - Measurement option
- **EV** - Enhanced visibility
- **ST** - Standard
- **HS** - High speed
- **cc** - Number of channels
- **04** - 4 channel
- **08** - 8 channels
- **16** - 16 channels
- **lwvl** - Lower wavelength in nanometers
- **uwvl** - Upper wavelength in nanometers
- **ssss** - Scan rate in Hz
- **aa** - Internal Accessory Option
- **NO** - None
- **DP** - Depolarizer
- **FR** - Full Redundancy (16 ch only)

ACCESSORIES

- **x55_rkm** - 19” rack mount kit
- **x55_skm** - Surface mount kit
- **x55_cas** - x55 transport case
- **x55_atx** - 19” ATEX certified
- **x55_ew3** - 3 year extended warranty
- **oa2001** - LC/APC-FC/APC connectivity kit

NOTES

3. For faster scan rates >10 Hz, data bandwidth may limit rate of multichannel spectral streams.
4. FBG bandwidths of 0.25 nm used for performance qualification.
5. Details regarding the Depolarized Laser Option are available in the x55 Depolarized Laser Option Technical Note.