si155

HYPERION Optical Sensing Instrument

Luna's Micron Optics HYPERION si155 is an industrial grade fan-less optical sensing interrogator. Featuring both static and dynamic full spectrum analysis, the si155 provides long-term, reliable and accurate measurements of hundreds of sensors on 4 parallel, 160 nm wide channels.

The si155 features a 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 lowlatency 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#.

Dynamic and absolute measurements of FBG & FP sensors on 4 parallel,160 nm wide channels and ENLIGHT compatible

KEY FEATURES

- **Standard, High Speed** models, each with an available depolarized source and up to 4 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

Performance Properties			
Measurement option	**Enhanced visibility, 10 Hz**	**Standard, 100 or 1000 Hz**	**High speed, 5000 Hz**
Number of channels	1 or 4 parallel channels	1 or 4 parallel channels	1 or 4 parallel channels
Wavelength range	1500-1600 or 1460-1620 nm	1520-1580, 1500-1600 or 1460-1620 nm	1500-1580 or 1510-1590 nm
Wavelength accuracy/stability[1]	1 pm / 1pm	1 pm / 1pm	2 pm / 3 pm
Wavelength repeatability[2]	1 pm, 0.3 pm at 1 Hz	1 pm, 0.05 pm at 1 Hz	2 pm, 0.05 pm at 1 Hz
Dynamic range/continuous	35 dB peak / 45 dB FS	25 dB peak / 40 dB FS	17 dB peak / 40 dB FS
Full spectrum measurement[3]	Included, data rate at 10 Hz	Included, data rate at 10 Hz	Included, data rate at 10 Hz
Optical connectors	LC/APC		
Compatible sensors[4]	Fiber Bragg Gratings, Long Period Gratings, Fabry-Perot and Mach-Zehnder Interferometers		
Depolarizer Option Available[5]	Yes		
Interfaces and Software			
Interface	Ethernet		
Software	Comprehensive API and example support for LabVIEW™, Python, Matlab, C++ and C#		
Physical Properties			
Dimensions/weight	206 mm x 274 mm x 79 mm / 3.0 kg		
Operating/storage conditions	-20 to 60 C, < 80%RH non-condensing / -30 to 70 C, < 95%RH non-condensing		
Input voltage	9 - 36 VDC, AC/DC converter included (100~240 VAC, 47~63 Hz)		
Power consumption at 12 V	30 W typ, 40 max		

EXAMPLE CONFIGURATIONS

si155-ST-01-1500-1600–0100-NO	1 ch si155 ST with 1500-1600 nm scan range, 100 Hz scan rate and no internal accessories
si155-EV-04-1460-1620-0010-DP	4 ch si155 EV with 1460-1620 nm scan range, 10Hz scan rate and internal depolarizer option
si155-HS-04-1510-1590-5000-DP	4 ch si155 HS with 1510-1590 nm scan range, 5 kHz scan rate and internal depolarizer option

ORDERING

si155-mm-cc-lwvl-uwvl-ssss-aa

mm Measurement option
- EV Enhanced visibility
- ST Standard
- HS High speed

cc Number of channels
- 01 1 channel
- 04 4 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_atx**	19" ATEX certified
x55_skm	Surface mount kit	**x55_ew3**	3 year extended warranty
x55_cas	x55 transport case	**oa2001**	LC/APC-FC/APC connectivity kit

NOTES

1. Accuracy per NIST Technical Note 1297, 1994 Edition, Section D.1.1.1, definition of "accuracy of measurement." Stability captures effects of long term use over operating temperature range.
2. Per NIST Technical Note 1297, 1994 Edition, Sect D.1.1.2, definition of "repeatability [of results of measurements]."
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.

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