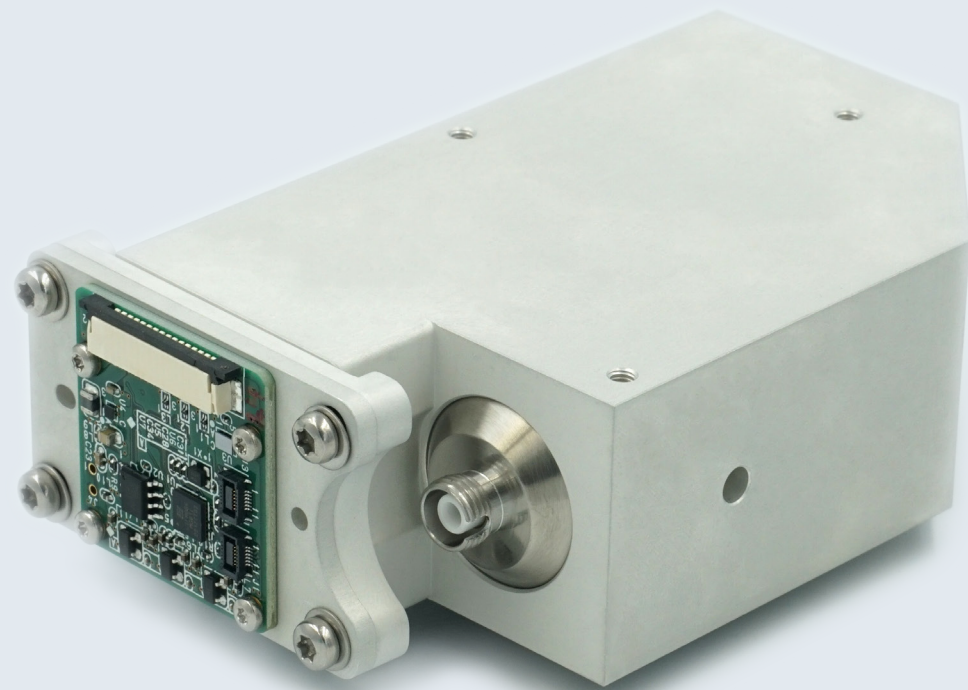


**EAGLE C-OCT-S**

Compact and Cost-efficient SD-OCT Spectrometer from Ibsen Photonics





## EAGLE C-OCT-S for Compact and Highly Efficient Spectrometer for SD-OCT

The compact EAGLE C-OCT-S is a robust, athermal, industrial-grade spectrometer especially well suited for SD-OCT. This spectrometer offers manufacturers of Spectral Domain OCT instruments the possibility to explore new form factors, while still being robust, cost-efficient, and of the highest quality, which can open up new opportunities in current and expanding markets.

### Key specifications of the EAGLE C-OCT-S

- High optical resolution of 0.06 nm
- Center wavelength 840 nm
- 60 nm bandwidth
- 1024 tall pixel detector with 7  $\mu\text{m}$  x 200  $\mu\text{m}$  pixel size
- Frame rate of 34 kHz
- High efficiency, transmission grating design
- High optical throughput
- Compact size of only 61 mm x 110 mm x 33 mm
- Customizable for multiple wavelength ranges
- OEM integration friendly design via MIPI CSI-2 interface
- Robust and athermal design

### Layout and Design

The EAGLE C-OCT-S is based on Ibsen Photonics' LGL platform utilizing a collimating lens, a transmission grating, and a focusing lens. This spectrometer uses a high diffraction efficiency fused silica transmission grating internally produced by Ibsen Photonics. The nature of the athermal design enables a very low temperature induced wavelength shift of 0.002 nm/ $^{\circ}\text{C}$ .

### Compact Size

This spectrometer has a form factor of only 61 mm x 110 mm x 33 mm, which is the compact version of our highly efficient EAGLE OCT-S spectrometer, with best-in-class optical throughput and compact size for Spectral Domain OCT.

The compact EAGLE C-OCT-S maintains the same high performance as the EAGLE OCT-S spectrometer, but in a scaled and form-factor optimized platform. With a wavelength range of 60 nm covering the linear detector array, the EAGLE C-OCT-S is able to measure depths of 3 mm (in air) while preserving the same great roll-off performance of < 14 dB at its maximum measurement depth. This capability is partly attributed to the diffraction-limited optical design, resulting in a spectrometer resolution of 0.06 nm that is constrained solely by the physical pixel size.

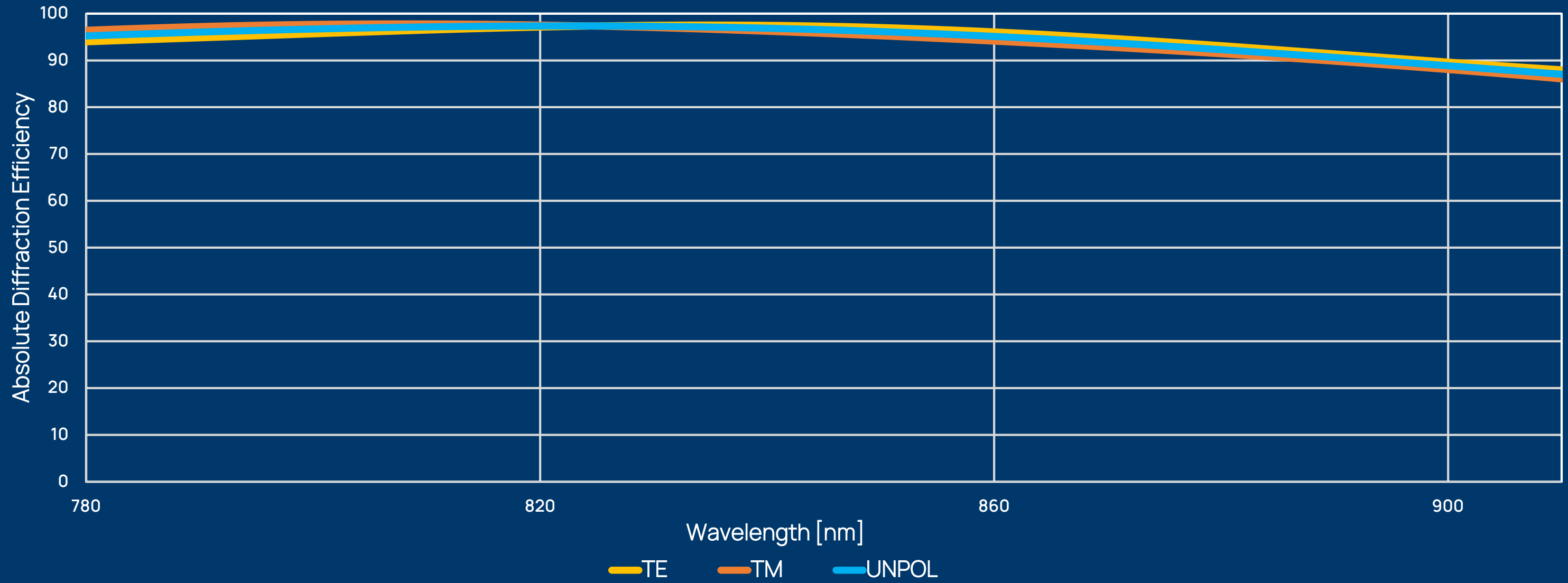
### Camera interface

Built around the Hamamatsu C16821 camera module, the spectrometer offers the standardized MIPI D-PHY/CSI-2 interface, widely used in the mobile industry and also found on many single board computers, such as the Raspberry Pi, Nvidia Jetson and Arduino Spartan among others.

## Technical Specifications

	EAGLE C-OCT-S	Comments
Optical entrance	FC/UPC adapter	780HP single mode optical fiber
Wavelength range	810 - 870 nm	Other ranges available upon request
Resolution	0.06 nm	
Numerical aperture	0.13	
Camera	Hamamatsu C16821	MIPI D-PHY/CSI-2 interface 10-bit Raw Developer kit with USB3 available upon request
Number of pixels	1024 x 1 pixels	
Pixel size	7 $\mu\text{m}$ x 200 $\mu\text{m}$	
Detector	Hamamatsu S15611	
Frame rate	34 kHz	
Operating temperature range	0 to +50 °C	Non-condensing
Storage temperature range	-20 to +70 °C	
Wavelength shift with temperature	0.002 nm/°C	
Dimensions	61 mm x 110mm x 33 mm	
Weight	336 grams	

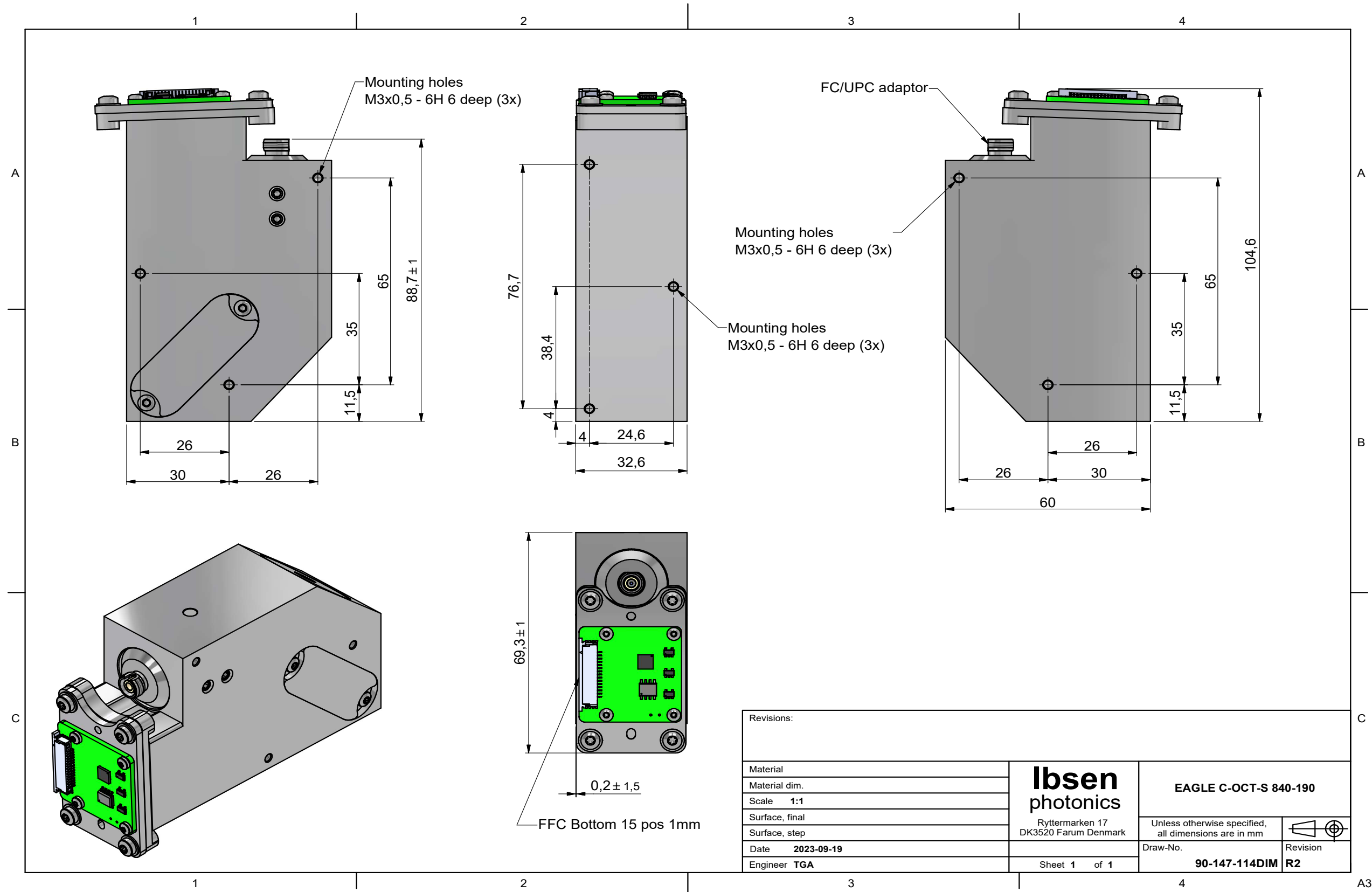
## OCT GRATING, AOI = 49.9°



## Transmission Gratings

The compact EAGLE C-OCT-S spectrometer utilizes the Ibsen Photonics OCT transmission grating. The grating provides a high even diffraction efficiency, as evident by the absolute diffraction efficiency graph displayed above. The design also provides very low polarization dependence as an added benefit. Every grating used in the compact EAGLE C-OCT-S spectrometer platform is a master grating fabricated at Ibsen Photonics' clean room facility in Denmark.

# Mechanical Drawings



Revisions:			
Material	<b>lbsen</b> photonics	<b>EAGLE C-OCT-S 840-190</b>	
Material dim.			
Scale 1:1		Unless otherwise specified, all dimensions are in mm	
Surface, final		Draw-No.	
Surface, step	Ryttermarken 17 DK3520 Farum Denmark	<b>90-147-114DIM</b>	<b>R2</b>
Date <b>2023-09-19</b>			
Engineer <b>TGA</b>	Sheet 1 of 1		

## About Ibsen Photonics

Ibsen was founded in 1991 by Per Ibsen under the name of Ibsen Micro Structures A/S. Today 88% of Ibsen Photonics is majority owned by Foss A/S, a world leader in analytical solutions for the Food and Agricultural industries. Ibsen management and employees own 12 % of the shares in the company.

The Ibsen spirit combines the dynamic, entrepreneurial culture of a medium size company with a disciplined, operational mentality of a large corporation. With an average employee tenure of more than 10 years, Ibsen makes for a very effective organization that builds on more than 30 years of experience as a company.

Ibsen employs more than 90 people at our R&D and manufacturing facility in Denmark and achieved a turnover of more than 180 MDKK in 2022.

## Working with Ibsen Photonics

The core expertise of Ibsen Photonics lies in opto-mechanical design, grating technology and metrology. We master the cycle from optics, grating simulation and design, through optical and semiconductor production technologies, to high volume assembly, packaging and testing. Over the years we have developed many new designs, technologies and processes - many patented.

Our customers are large to medium-sized manufacturers of advanced optical devices and instruments, into which our products are integrated. With a highly organized production process, we are able to help customers obtain smooth instrument production, low unit-to-unit variation, high level of right first time, no field returns, and a low level of rework.

Our grating production facilities are world-class, including class 10 cleanroom facilities that we designed and built in 2000/2001, in which all environmental parameters are under continuous surveillance.

Our spectrometers are produced under strict quality control in our assembly facility in Denmark, certified to ISO 9001, ISO 13485, ISO 14001 and ISO 45001. This confirms Ibsen's capability to consistently produce high quality products that meet market standards and all regulatory requirements.

## Contact us

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