

# aeroGAIN BASE 1.2

High-power ytterbium fiber gain module



# High-performance gain module

Ideal for manufacturing of pulsed fiber lasers

The aeroGAIN-BASE 1.2 is a high-performance ytterbium fiber gain module designed for industrial manufacturers of pulsed fiber lasers.

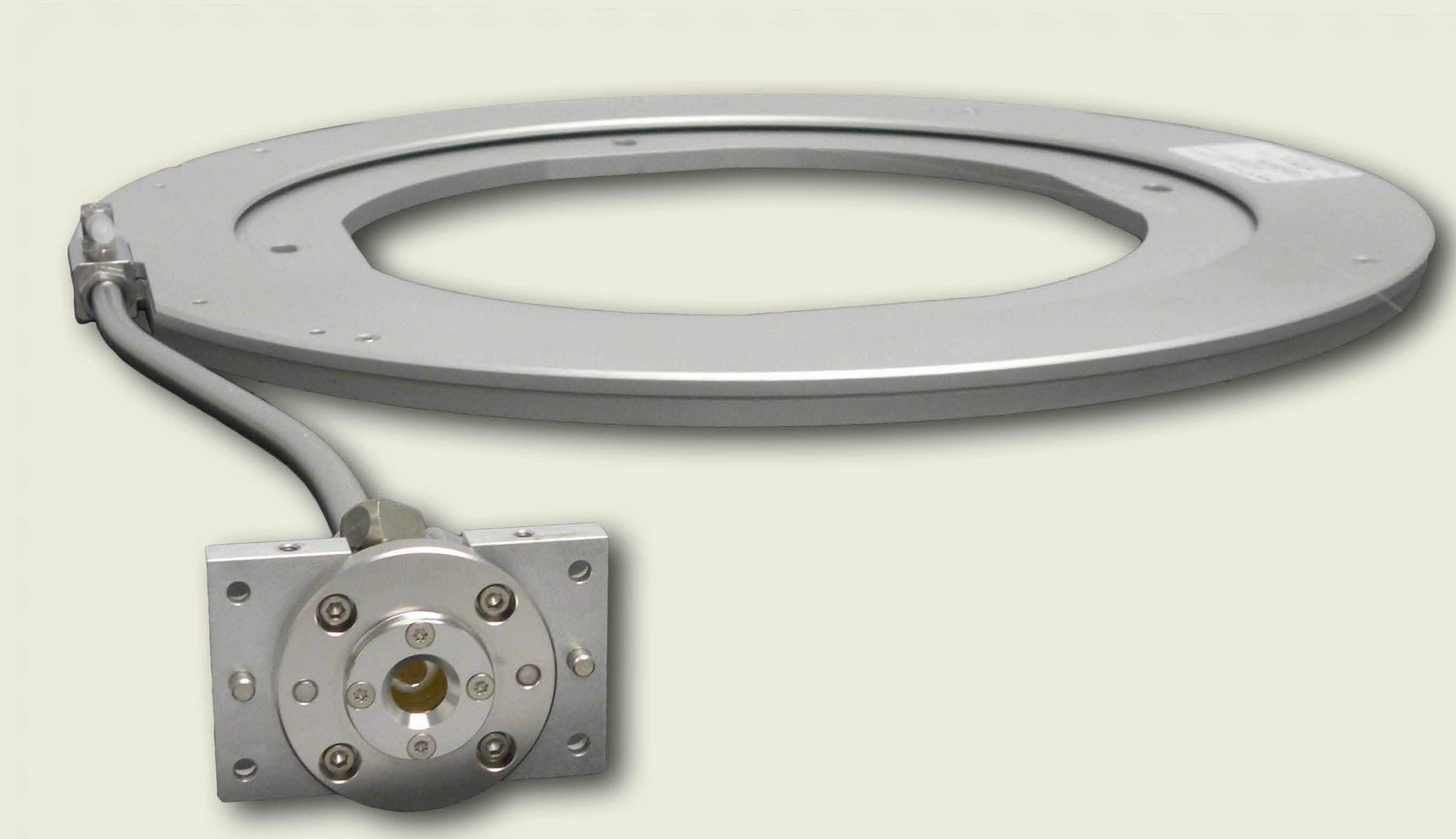
The aeroGAIN-BASE 1.2 provides laser beams with high spectral and spatial brightness. It is also suited as an easy entry into high-power scientific setups.

**aeroGAIN**  
BASE 1.2

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## Applications

**Ultrafast fiber lasers**



# Benefits

## Large single-mode mode field diameter

The gain medium is our world-renowned DC-200/40-PZ-Yb fiber providing the largest single-mode MFD in the industry.

## Thermal management ensures high performance

The gain fiber is heatsinked to the aluminum base-plate that can be clamped to e.g. a water chilled plate or an air-cooled heat sink.

For optimal performance, the aeroGAIN-BASE 1.2 is designed for counter propagating pumping through the output endcap.

The endcap and the last part of the gain fiber is mounted in a water cooled housing to ensure maximum performance and lifetime.

## Standard step-index input fiber

The module is equipped with a 10  $\mu\text{m}$  or 15  $\mu\text{m}$  step-index standard single-mode fiber input that can easily be spliced to a seed source.

## Mode expansion and reduced reflections

The output end of the module is equipped with a large AR coated endcap that provides mode expansion and reduces reflections. Excess pump light is removed by the integrated residual pump dump.

## Proven reliability and long lifetime

The aeroGAIN-BASE design has a proven 24/7 industrial reliability through a significant number of long-term tests including continuous 25,000 hours operation at 55 W output power.

The design has been subjected to extensive HASS testing.

Modules are mounted on a tooling plate for secure transportation. This tooling plate can also be used as a mount in the laboratory

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## Features

**Truly single-mode polarization maintaining system**

**10  $\mu\text{m}$  or 15  $\mu\text{m}$  step-index fiber input**

**Excellent pointing stability**

**Easy thermal management**

**Robust industrial construction**

**Long lifetime**

# Specifications

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BASE 1.2

## Optical

<b>Seed input</b>	
Recommended signal wavelength [nm]	1030 - 1040
Recommended signal input power [mW]	> 500 for high power operation
Recommended pulse duration	fs, ps or ns pulses shorter than 2 ns
Optional signal input fiber	10 $\mu\text{m}$ PM core 125 $\mu\text{m}$ /250 $\mu\text{m}$ or 15 $\mu\text{m}$ PM core 250 $\mu\text{m}$ /350 $\mu\text{m}$
<b>Signal output</b>	
Signal gain [dB]	$\leq 20$ (max 75 W out)
Signal average power [W]	$\leq 75$
Beam quality <sup>1</sup>	$M^2 \leq 1.3$
Mode-field diameter, $1/e^2$ [ $\mu\text{m}$ ]	$31 \pm 2$
PER <sup>1</sup> [dB]	$\geq 15$
Typical optical efficiency <sup>1</sup> [%]	> 70
Typical core to cladding ratio <sup>1</sup> [%]	> 96

<b>Pump input</b>	
Pump center wavelength [nm]	$976 \pm 2$
Maximum pump power [W]	100 @ fiber facet
Pump cladding diameter [ $\mu\text{m}$ ]	$200 \pm 2$
Pump cladding NA (FWHM @ 950 nm)	$\geq 0.55$
Recommended pump coupling beam waist [ $\mu\text{m}$ ]	$\leq 160$

<sup>1</sup> Evaluated with 1.5 W input power at 1030 nm and  $\approx 75$  W output power.

Please also refer to "aeroGAIN BASE 1.2 Handling Instructions" on our website for important information regarding proper use of the product.

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## Mechanical

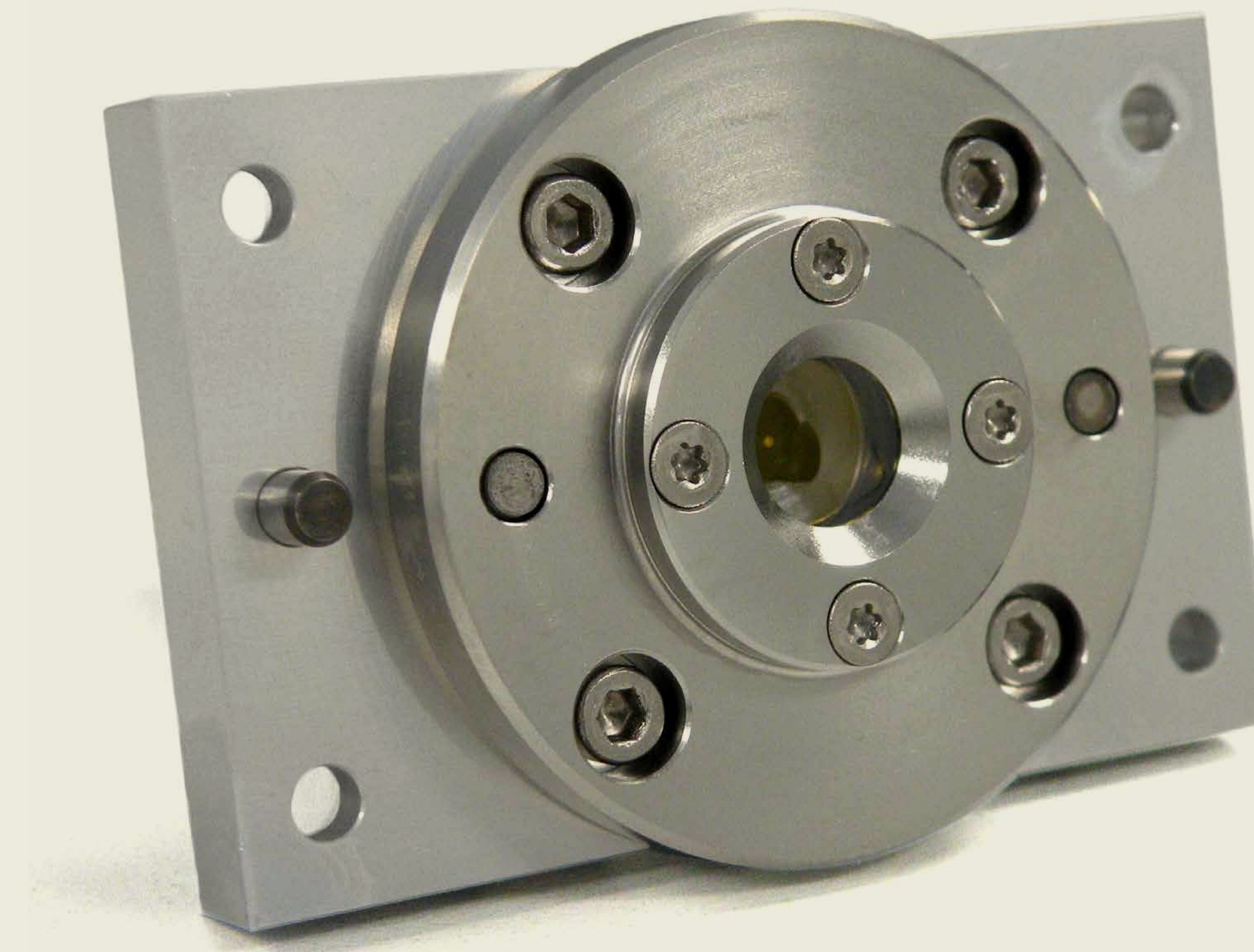
<b>Base plate dimensions <sup>1</sup> [mm]</b>	See drawing
<b>Weight, excl. tooling plate [kg]</b>	1.8
<b>Length of input pigtail [m]</b>	1
<b>Output end facet angle [ °]</b>	0
<b>Endcap length [mm]</b>	6
<b>Endcap diameter <sup>2</sup> [mm]</b>	7

## Water cooling

<b>Cooling flow for base [liter/minute]</b>	4 ± 2
<b>Cooling flow in the tube [liter/minute]</b>	0.2 - 0.5
<b>Cooling water temperature [°C]</b>	25 ± 5
<b>Max temperature of base-plate [°C]</b>	35

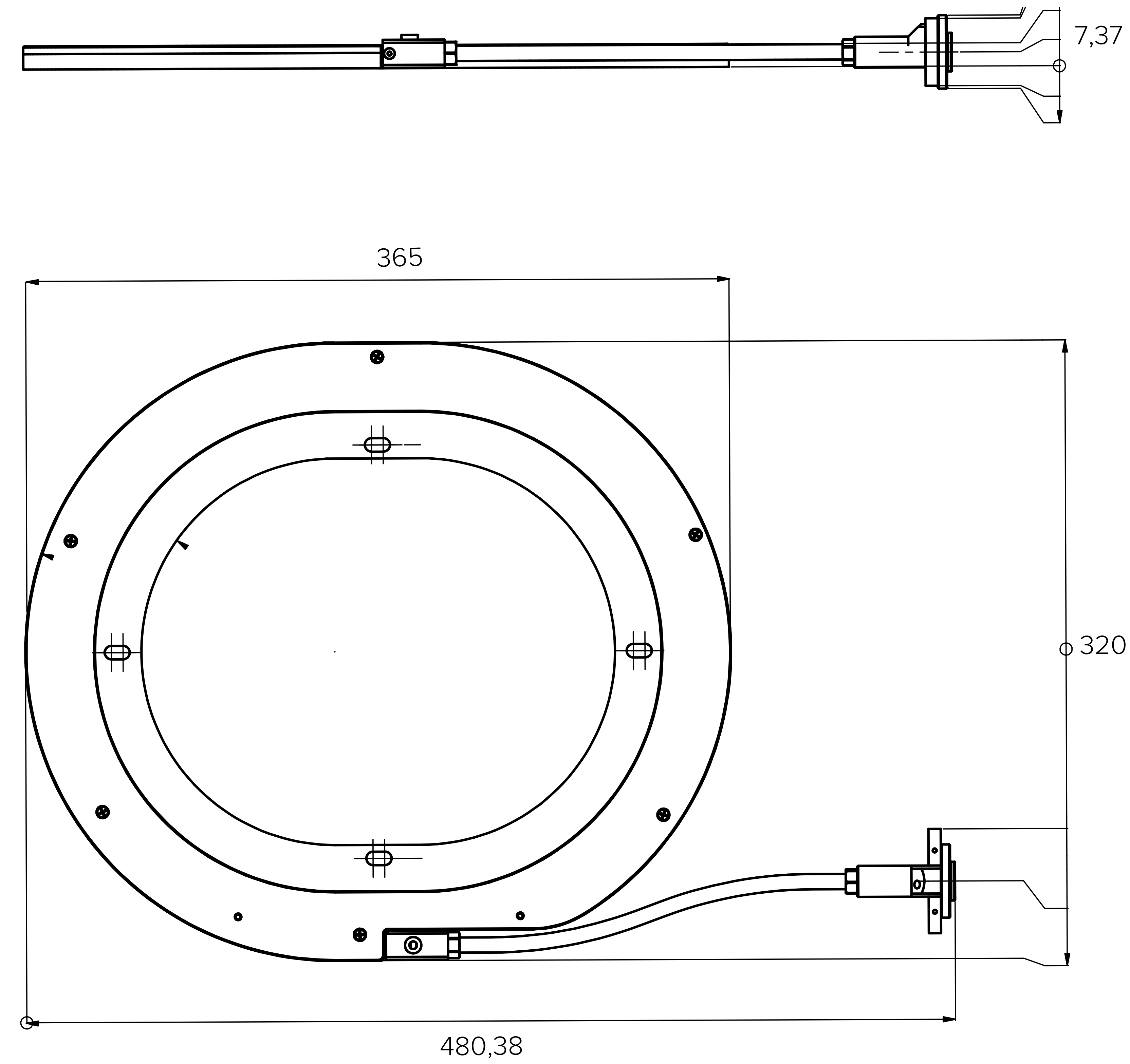
<sup>1</sup> The system is shipped on a larger tooling plate that can be used for mounting the module during test.

<sup>2</sup> Open aperture



Output endcap fixture

# Mechanical Drawings



## aeroGAIN BASE 1.2

All NKT Photonics products are produced under our quality management system certified in accordance with the ISO 9001:2015 standard.



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