

AFX Performance Collimators

Diffraction-limited optics for single mode and ring beam lasers



Features

- Near-diffraction-limited to preserve single-mode beam caustic
- Scanner-optimized configurations for AFX ring beam profiles
- Water cooled for scanning accuracy and minimal focus shift
- Broad range of focal lengths available:
 - 25 mm optics: **F50 to 85 mm**
 - 50 mm optics: **F100 to 160 mm**
- Available accessories: protective window, optical filter, thread adapter, adapter flange for scanner

***n* LIGHT**

nLIGHT AFX Collimators | Product Specifications

Optical		
Parameter	Unit	Typical
Maximum power	kW	2* (within max NA)
Wavelength range	nm	1030 ÷ 1090
Lens diameter	mm	25 or 50
Clear aperture	mm	22 or 47
Lens material	-	High-Quality Fused Silica
Typical power loss	%	< 1
EFL tolerance	%	± 2
Pointing error	mrad	< 3
Focal shift	%Z _R /kW	< 10

Cooling & Environment		
Parameter	Unit	Typical
Operating temperature	°C	5 ÷ 40
Relative humidity	%	< 90 non-condensing
Storage temperature	°C	-20 ÷ 70
Thermo-switch	°C	70 ± 5 (reset < 30)
Minimum water flow	l/min	1
Recommended water flow	l/min	1.5
Maximum pressure	bar	4
Maximum pressure drop [§]	bar	0.4
Water temperature	°C	20 ÷ 35 (above dew point)
Water quality	-	Filtered clean water (< 100 µm) with or without glycol
Water pipe ID/OD	mm	4/6

* Higher power possible upon request

§ Measured @1.0 l/min

Mechanical Specifications with QBH Fiber Interface [‡]				
Focal Length	F50, F60	F70, F75, F85	F100, F120	F160
Length	143.5 mm	167.5 mm	217.7 mm	246 mm
Clamping diameter	∅ 36 mm g8	∅ 36 mm g8	∅ 65 mm g8	∅ 65 mm g8
Weight	0.9 kg	1.1 kg	1.6 kg	1.8 kg
Max diameter ^{*†}	43 mm	43 mm	65 mm	65 mm

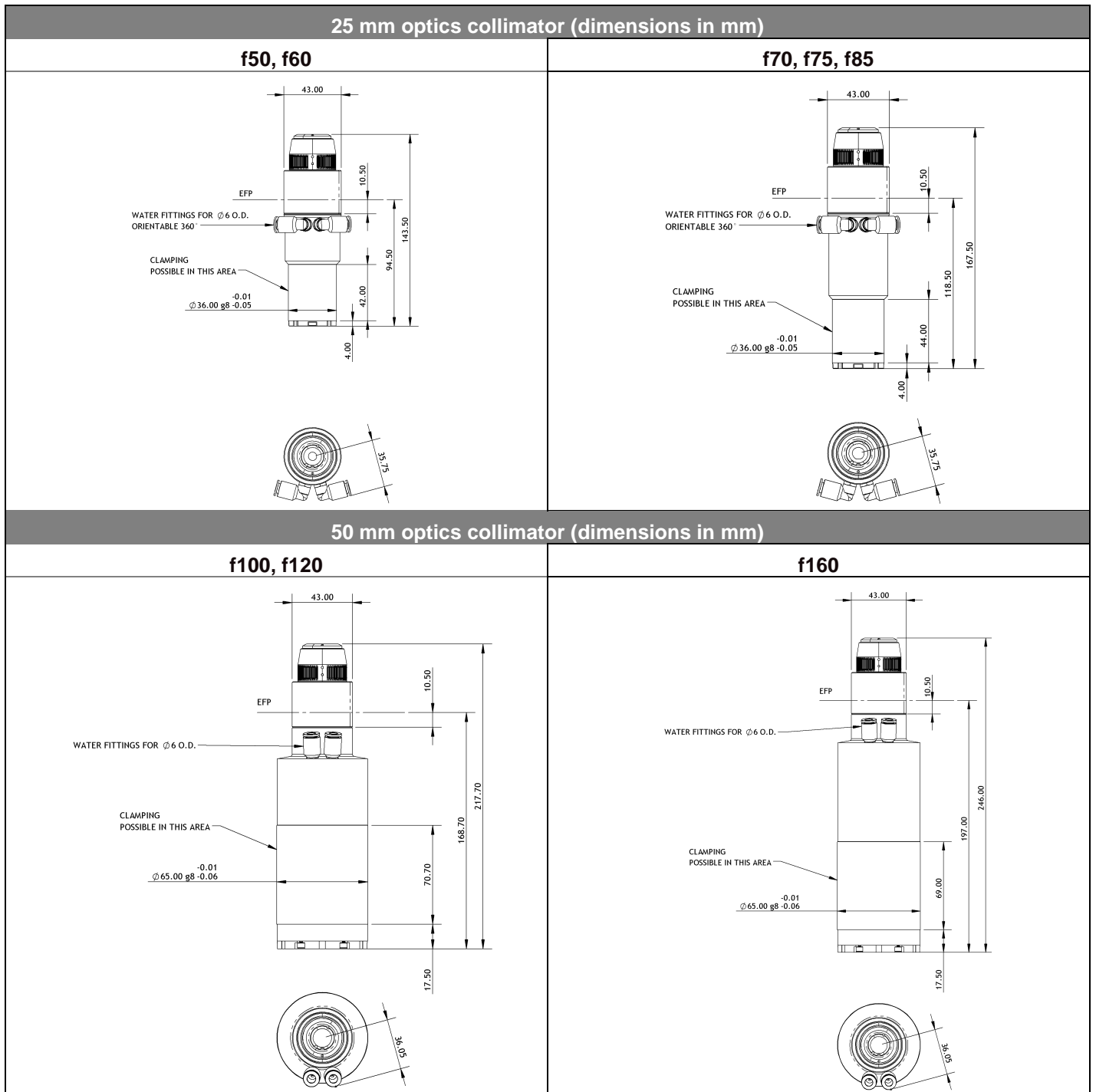
‡ QD fiber connector available upon request

* Excluding water fittings

COLLIMATED BEAM TAILORING

- Matches the aperture of scanner or customer device
- Prevents heating of downstream devices
- Discrete set of collimated beam diameters

nLIGHT AFX Collimators | Technical Drawings



nLIGHT AFX Collimators | Accessories

PROTECTIVE WINDOW

- Protects the *Collimator* from dust, smoke and debris
- Attached to the distal end of the *Collimator*
- Easy to install and replace

Optical		
Parameter	Unit	Typical
Maximum power	kW	2* (within max NA)
Wavelength range	nm	1030 ÷ 1090
Window diameter	mm	25 or 50
Material	-	High-Quality Fused Silica
Typical power loss	%	< 0.5
Focal shift	%Z _R /kW	< 5

*Higher power possible upon request

OPTICAL FILTER

- Filters out > 99.5% in the range 1110 ÷ 1200 nm
- Protects the *Collimator* from dust, smoke and debris
- Attached to the distal end of the *Collimator*
- Easy to install and replace

Optical		
Parameter	Unit	Typical
Maximum power	kW	2 (within max NA)
Transmitted wavelength range	nm	1030 ÷ 1090
Rejection (1110 ÷ 1200 nm range)	%	> 99.5
Filter diameter	mm	25 or 50
Material	-	High-Quality Fused Silica
Typical power loss (@ 1064 nm)	%	< 1
Focal shift	%Z _R /kW	< 15

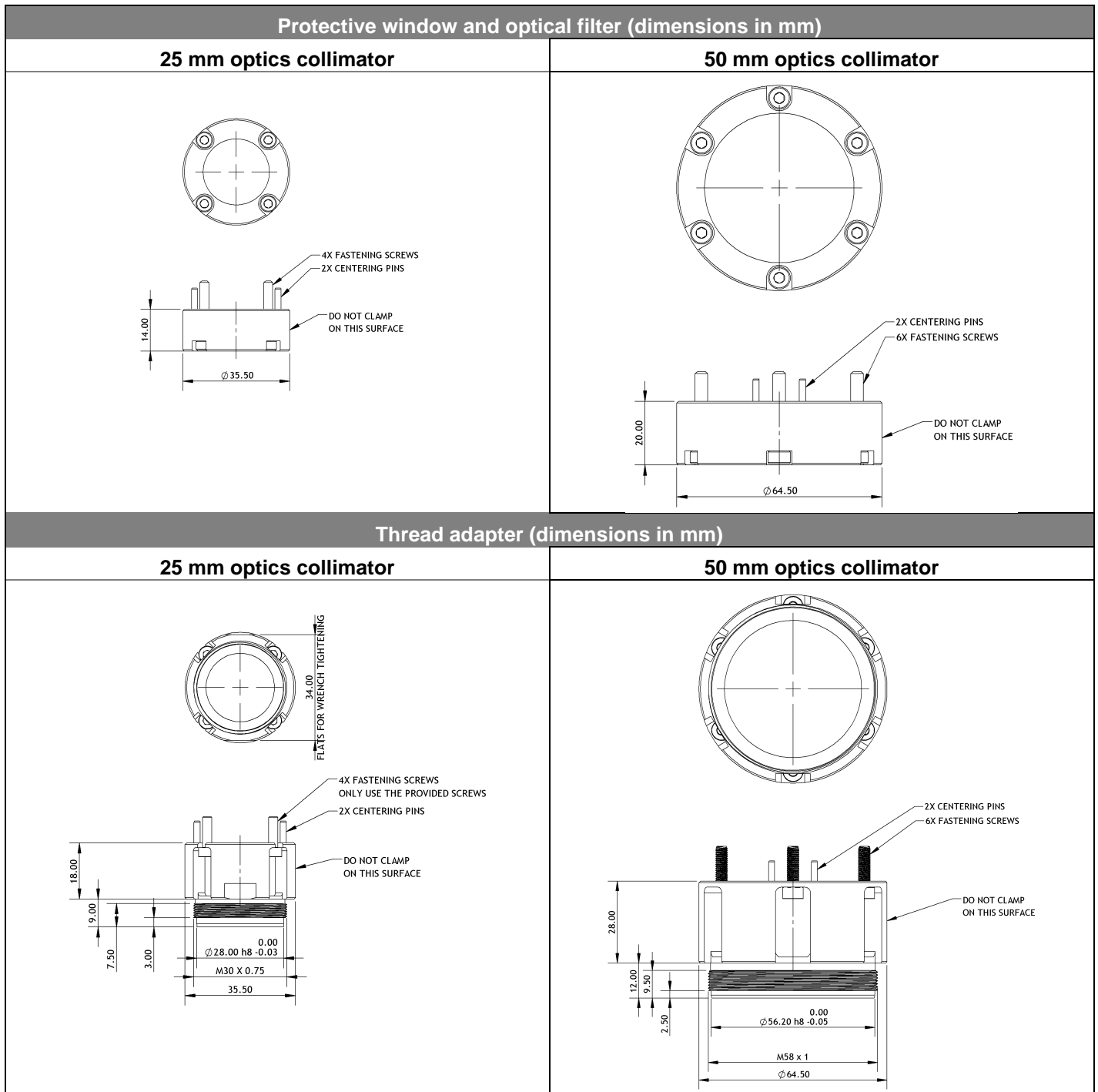
THREAD ADAPTER

- M30 x 0.75 (25 mm version) or M58 x 1.0 (50 mm version) thread
- Attached to the distal end of the *Collimator*
- Easy to install and replace
- Pointing error: < 1.5 mrad

ADAPTER FLANGE FOR SCANNERS

Custom flanges for attaching the *Collimator* to scanner heads or customer devices. More information upon request.

nLIGHT AFX Collimators | Accessories Technical Drawings



VISIBLE AND INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT



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