



JENar™ – F-Theta Lenses and Beam Expanders

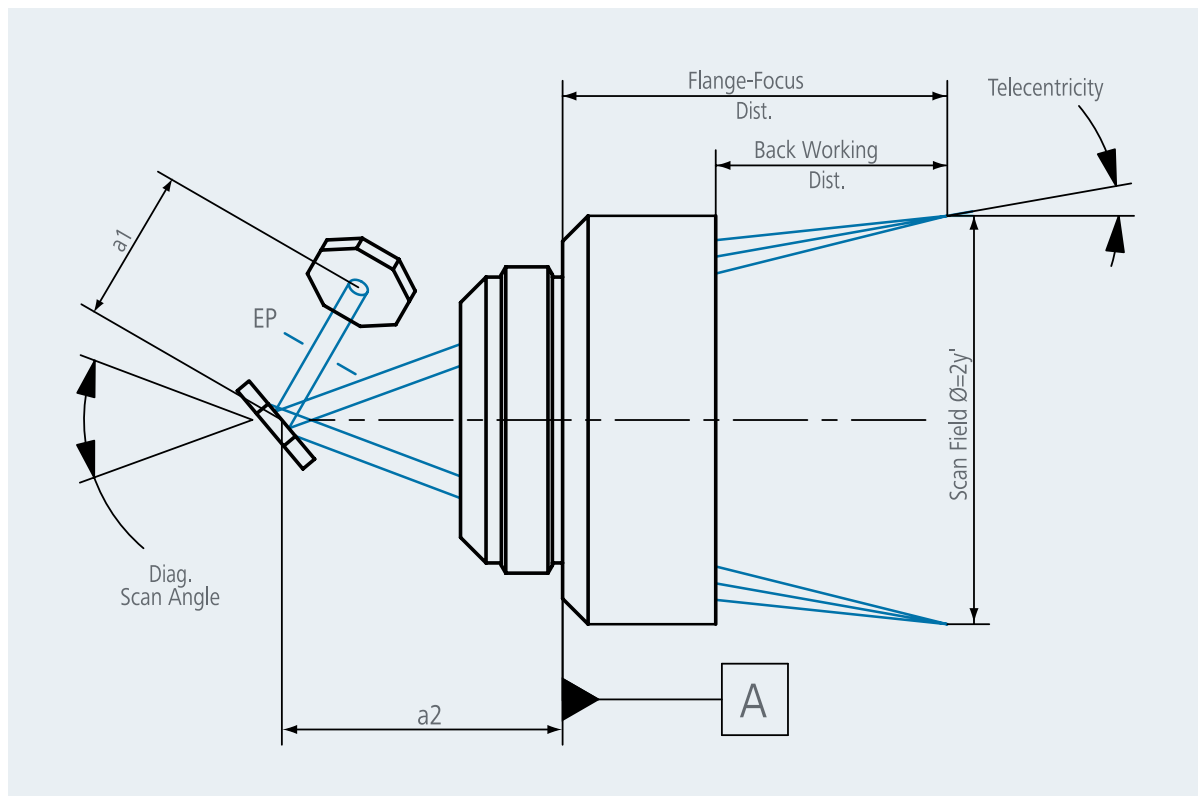


F-Theta Lenses JENar™

Well-designed beam delivery is the only way of maximizing the efficiency in laser material processing – for drilling, dicing, fine cutting, structuring, perforating, marking and texturing. This are typical applications of F-Theta Lenses JENar™ and Beam Expanders.

Jenoptik offers a wide range of standard F-Theta Lenses JENar™ including models for 1064 nm, 532 nm, 355 nm and 266 nm. Among them, there are telecentric designed lenses as well as special wide angle lenses. In conjunction with appropriate scan systems, our lenses allow precise imaging for highly accurate micro and macro machining.

In order to find uncompromising solutions for specific applications, Jenoptik also offers custom development of complete optical systems, lenses or individual components.



Technical parameters and properties of the standard F-Theta Lenses JENar™

Wavelength	Lens Order Number	Focal Length	Scan Field Diagonal	Max. Full Diagonal Scan Angle	Max. Input Beam Diameter Truncated at 1/e ² for 2-axis-scan	Focus Size at 1/e ² Intensity Level	a1 Recommended Mirror Separation	a2 2nd Mirror to Flange	Simulation optimized for T = Telecentric Application M = Max. Scanfield	Back Working Distance from last mechanical surface (incl. window)	Mounting Thread	Window Order Number for Spare Part
[nm]		[mm]	[mm]	[°]	[mm]	[μm]	[mm]	[mm]		[mm]		
1064	017700-024-26	100	93	54	10	19	13	43	M	87	M85x1	017700-049-31
	017700-002-26	100	79	45	5	40	9	20	M	129	M39x1	017700-033-31
		100	70	39.4	8	24	9	20	M	129		
	017700-003-26	125	80	37.2	15	16	18	48	T	155	M85x1	017700-014-31
		125	93	43.2	15	16	18	38	M	155		
	017700-020-26	160	117	41	6	52	10	21	M	181	M39x1	017700-027-31
		160	108	37.7	8	39	10	21	M	181		
	017700-019-26	160	170	60	10	31	13	43	M	178	M85x1	017700-049-31
	017700-005-26	164	162	57	10	32	18	34	M	206	M85x1	017700-049-31
	017700-018-26	170	170	57.4	14	24	17	41	M	194	M85x1	017700-004-31
	017700-004-26	181	100	32	15	23	18	57	T	226		
		181	106	33.8	20	17	25	39	T	226	M85x1	017700-221-32
		181	123	39.4	15	23	18	39	M	226		
	017700-006-26	192	218	64.7	14	26	19	33	M	224	3 7/8"-32	017700-024-31
	017700-017-26	255	239	53.2	20	24	25	39	M	291	M85x1	017700-004-31
017700-008-26	295	376	70	14	41	16	40	M	328	M85x1	017700-014-31	
017700-010-26	338	449	72	15	44	19	29	M	379	3 7/8"-32	017700-024-31	
017700-022-26	347	354	57.6	16	46	17	41	M	404	M85x1	017700-004-31	
017700-009-26	350	452	71	15	45	23	25	M	392	M85x1	017700-024-31	
017700-021-26	420	420	57.1	15	55	17	41	M	501	M85x1	017700-004-31	
532	017700-209-26	100	90	53	10	10	13	43	M	95	M85x1	017700-049-32
	017700-202-26	102	75	43	15	7	18	36	T	133	M85x1	017700-014-32
		102	80	46	15	7	18	36	M	133		
	017700-203-26	108	75	40	15	7	16	39	T	132	M85x1	017700-221-31
		108	86	46	15	7	16	31	M	132		
	017700-206-26	170	160	54	14	12	17	41	M	195	M85x1	017700-004-32
	017700-205-26	255	233	52.1	20	12	25	39	M	294	M85x1	017700-004-32
017700-208-26	330	336	57.6	16	23	17	41	M	384	M85x1	017700-004-32	
017700-207-26	420	420	56.6	15	27	17	41	M	485	M85x1	017700-004-32	
355	017700-401-26 ²⁾	53	24	26.5	10	3	13	40	T	62	2.25"-32	017700-428-31 ¹⁾
	017700-402-26 ¹⁾	103	71	40.2	9	8	14	47	T	136	M85x1	017700-410-31 ¹⁾
	017700-403-26 ²⁾	214	165	44.4	13	11	16	40	M	258	M85x1	017700-410-31 ¹⁾
	017700-405-26 ¹⁾	511	464	51.4	14	24	14	42	M	609	M85x1	017700-442-31 ¹⁾
266	017700-601-26 ¹⁾	103	71	40.2	9	6	14	46	T	133	M85x1	017700-410-32 ¹⁾
	017700-602-26 ¹⁾	511	439	48.8	14	18	14	42	M	607	M85x1	017700-442-32 ¹⁾

¹⁾ fused silica²⁾ partly of fused silica

Beam Expanders

With the 1x to 4x Beam Expanders and the 2x to 10x Beam Expanders Jenoptik offers variable expansion optics to complete the product range of lenses for high precision laser material processing.

Based on an optimized engineering concept, these beam expanders are very robust and compact, so their lens components will experience no rotational shift in the case of a change in setup, which yields improved pointing stability. A further benefit of these Beam Expanders are the engraved expansion and focusing scales.

In order to provide durable systems and to minimize focus shifts, highly resistant materials and fused silica are used to make them particularly suitable for high power laser applications.

Specifications

Beam Expander 1x-4x

Materials:	
Entrance elements:	Fused silica
Exit elements:	Fused silica
Transmission:	≥ 97 %
Mounting Ø:	37.6 (0/-0.1) mm or mounting thread M30x1
Weight:	0.19 kg

Recommended maximum diameter of entrance pupil			
Zoom factor	Ø entrance pupil		
	1064 nm	532 nm	355 nm
1x	4.0 mm	4.0 mm	4.0 mm
2x	4.0 mm	4.0 mm	4.0 mm
3x	4.0 mm	4.0 mm	4.0 mm
4x	4.0 mm	4.0 mm	4.0 mm

Order Number:	017052-002-26 017052-202-26 017052-402-26
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Specifications

Beam Expander 2x-10x

Materials:	
Entrance elements:	Fused silica
Exit elements:	Highly laser resistant materials (532 nm and 1064 nm) or fused silica (355 nm)
Transmission:	≥ 96 %
Mounting Ø:	37.6 (0/-0.1) mm
Weight:	0.23 kg

Recommended maximum diameter of entrance pupil			
Zoom factor	Ø entrance pupil		
	1064 nm	532 nm	355 nm
2x	8.0 mm	8.0 mm	6.0 mm
3x	8.0 mm	7.0 mm	6.0 mm
4x	7.0 mm	6.0 mm	5.0 mm
5x	6.0 mm	5.0 mm	4.5 mm
6x	5.0 mm	4.0 mm	4.0 mm
7x	4.0 mm	4.0 mm	3.5 mm
8x	3.5 mm	3.5 mm	3.0 mm
9x	3.2 mm	3.2 mm	2.7 mm
10x	3.0 mm	3.0 mm	2.2 mm

Order Number:	017052-001-26 017052-201-26 017052-401-26
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