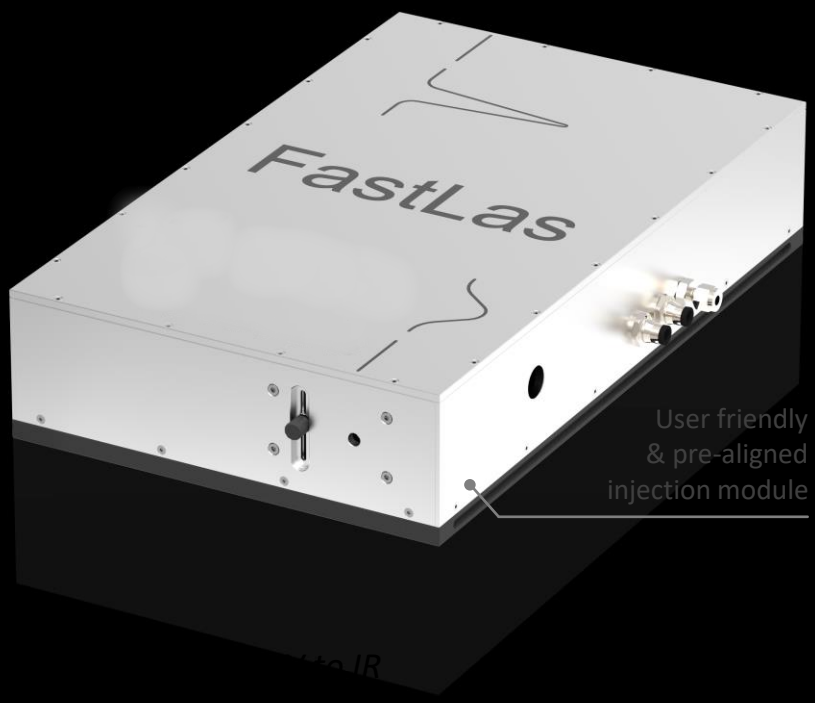
Pulse Compression Unit

FastLas

SCALABLE, VERSATILE AND STRONG PULSE COMPRESSION FOR MOST COMMON ULTRA-SHORT LASERS



Scalable energy from few µJ to mJ

Scalable input pulse duration

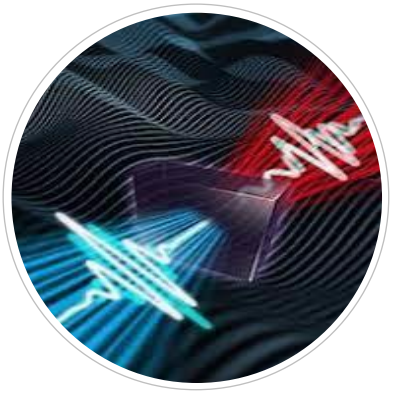
High average power handling

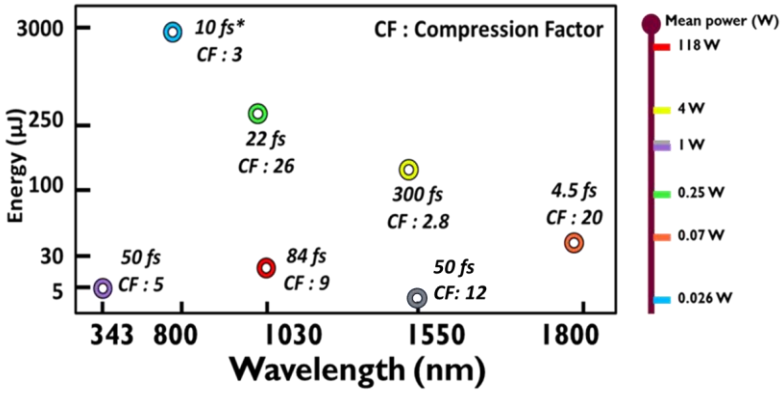
Outstanding pulse compression factor

Micromachining

Surgery & Biomedical

Extreme light and Atto-science





Input Laser					Compressed output				Performance		
λ_0 (nm)	Δλ (µm)	Input pulse energy (µJ)	Δτ (fs)	Average power (W)	λ_0 (nm)	Δλ [1] (µm)	E (µJ)	Δτ (fs)	Compression ratio	Spectral broadening ratio	Ref / Client region installation
343	1.2	4.5	250	1	343	23.5	2.5	50	5	20	[1]
800	60	2600	30	0.07	775	160	1300	10 [2]	3	2.6	[2]
1030	3	100-1000	600	0.1-1	1050-1080	1030-1100	80-650	50	12	23	[3]
	1.6	16.8	740	118	1030	30	15.8	84	9	19	[4]
	3	158	600	0.158	1030-1040	30	126	22	27	10	[5]
	1.7	46	350	46	1030	>40	38.8	29	12	>24	East Asia
	1.7	46	360	9.2	1030	>55	38	27	13	>32	East Asia
	2.4	46.5	436	93	1030	>60	43	45	9	>25	Europe
1550	15	105	850	4.2	1550	50	78	300	2.8	3.3	[6] /Europe
	1.6	2.5	600	1.65	1550	80	1.6	50	12	40	[7]
1800	80	35	80	0.07	2000 [3]	1000-2000	28	4.5	20	15	[8]

(1) $1/e^2$ width, (2) estimation based on the transform limit, (3) Soliton wavelength

[1] M. Chafer *et al.*, "Pulse-compression down to 50 fs of femtosecond UV laser using Inhibited-Coupling hollow core PCF" in conference on laser and Electro-Optics, 2018, p.JTh5A.6.
[2] B. Debord *et al.*, "2.6 mJ energy and 81 GW peak power femtosecond laser-pulse delivery and spectral broadening in inhibited coupling Kagome fiber", in CLEO:2015, p.STh4L.7.
[3] B. Debord *et al.*, "Multi-meter fiber-delivery and pulse self-compression of milli-Joule femtosecond laser and fiber-aided laser-micromachining", Optics express 22 (9), 10735-10746.
[4] F. Emaury *et al.*, "Efficient spectral broadening in the 100-W average power regime using gas-filled kagome HC-PCF and pulse compression", Optics Letters 39 (24), 6843-6846.
[5] M. Maurel *et al.*, "Giant compression of high energy optical pulses using a commercially available Kagome fiber", The European Conference on Lasers and Electro-Optics, CJ_4_6 (2017).
[6] Dj. Boukhaou *et al.*, "High energy 50 fs fiber-based laser system for high harmonics generation in solids ", EOSAM 2023.
[7] Y.Y. Wang *et al.*, "Design and fabrication of hollow-core photonic crystal fibers for high-power ultrashort pulse transportation and pulse compression", Optics letters 37 (15), 3111-3113.
[8] T. Balciunas *et al.*, "A strong-field driver in the single-cycle regime based on self-compression in a kagome fibre", Nature communications 6 (1), 6117.

Mechanical & Physical Specifications

Physical module	Table-top rectangular module (Dimensions: 470*288*98 mm, Weight: 9Kg)
Gas and thermal handling	Equipped with connections for gas pressure control, and water cooling for high average power lasers
Operations	Pre-aligned system for quick and easy fiber coupling