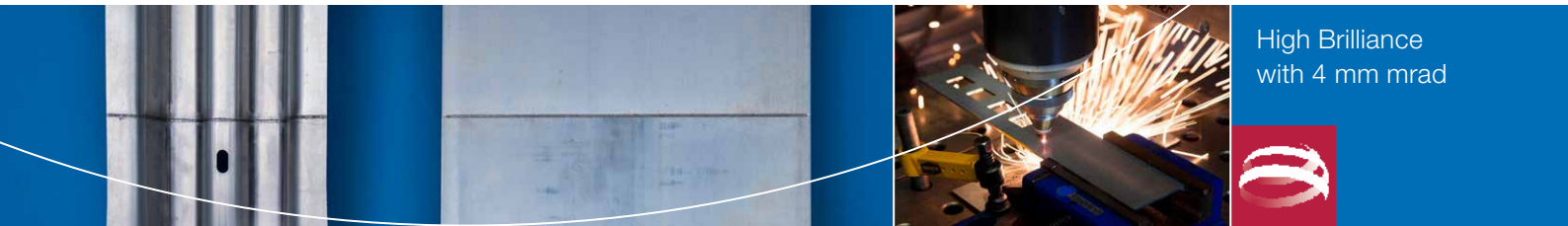


LDF Diode Laser with Beam Converter



High Brilliance
with 4 mm mrad



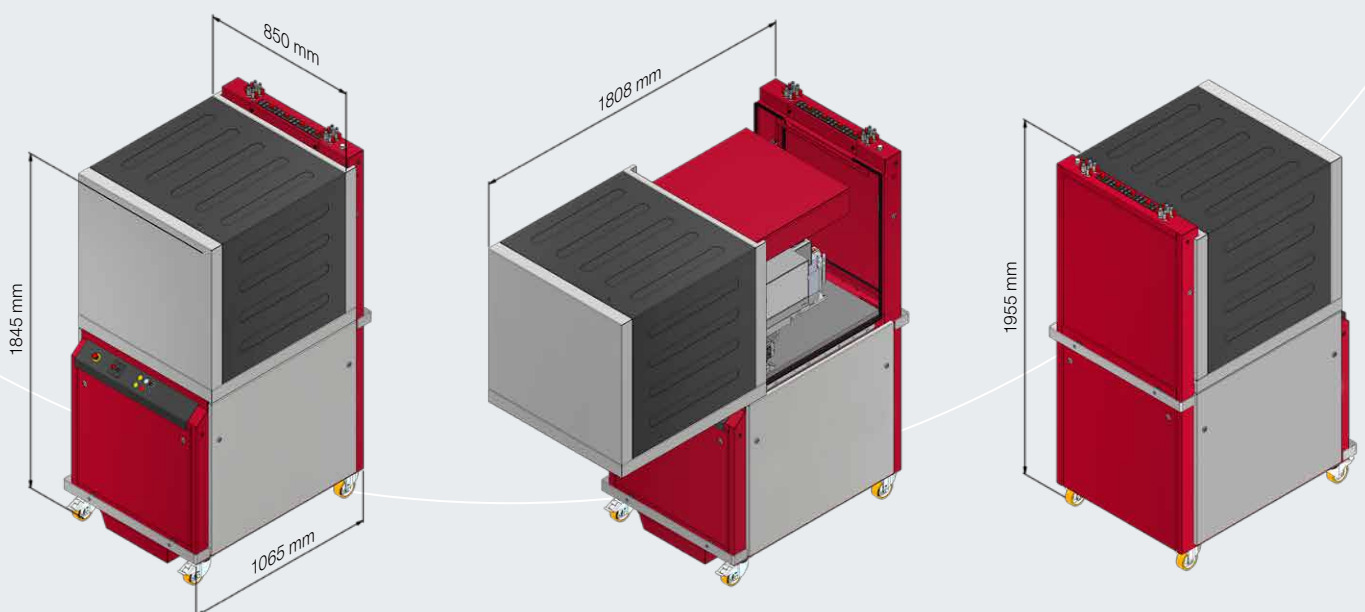
High speed, Small focus, Narrow weld.

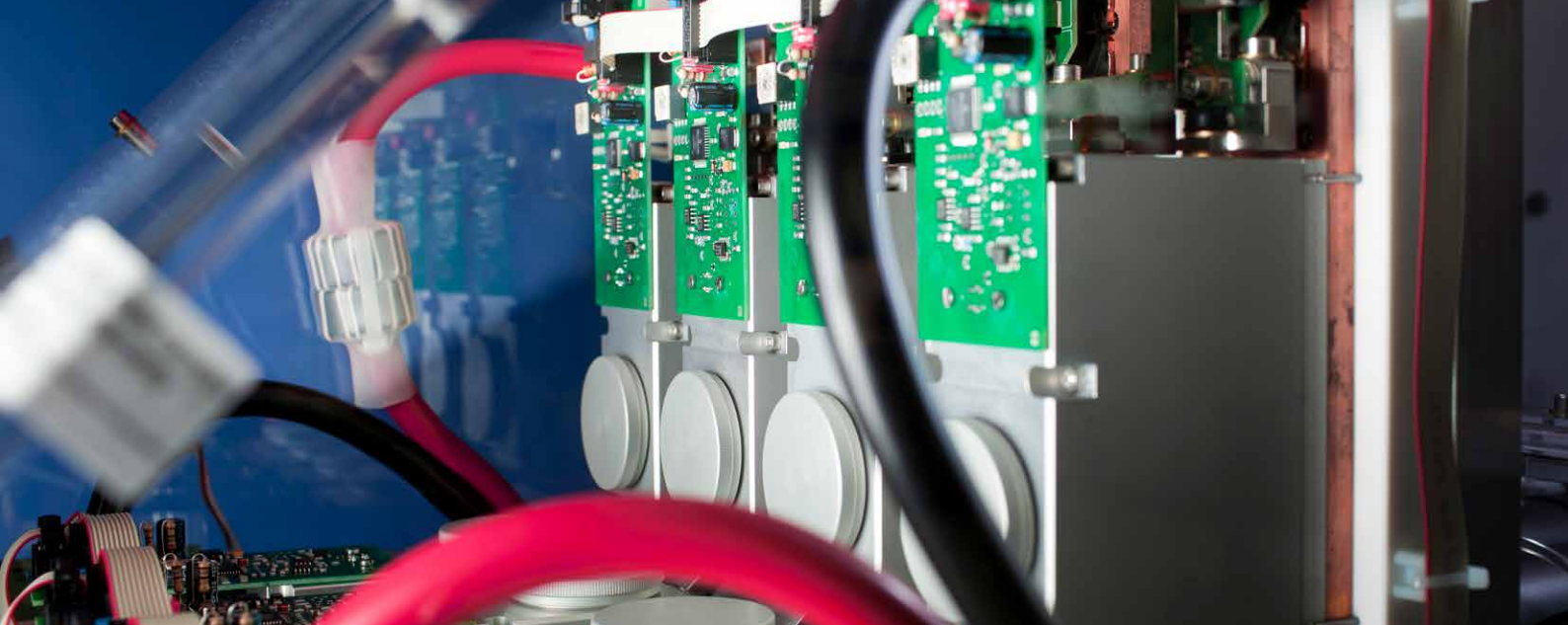
Customers worldwide appreciate the modular design, high efficiency and maximum reliability of our lasers at low maintenance and operating costs. The Laserline beam converter technology opens up new application fields for diode lasers.

Precision applications

Many developments for precision machining, such as remote welding applications, require industrial-grade beam sources with high power and high brilliance.

Here the Laserline beam converter concept sets benchmarks and perfectly combines the modularity, practicality and cost effectiveness of LDF diode lasers with high beam qualities.





Brilliance by transformation

The beam converter is a technical enhancement of the proven LDF core technology with directly cooled laser diodes. Starting from a standard diode laser, a laser beam at medium beam quality is first focused into an active fiber – the converter. The converter module transforms the brilliance of the laser beam. In contrast to LDF systems without beam converter, the wavelength changes only slightly and is about 1,080 nm. Different configurations thus enable an output power of up to 8 kW with brilliant beam quality of 4, 6 or 8 mm mrad.

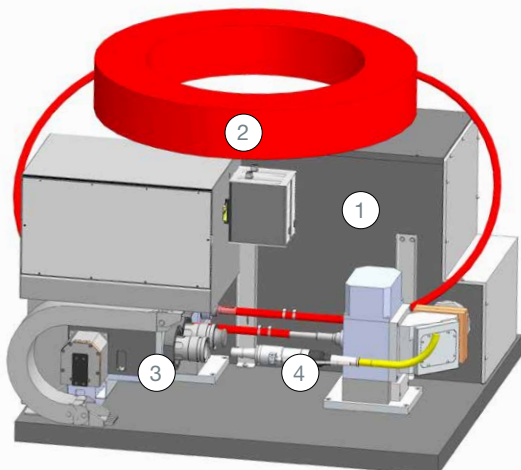
- > Fiber-coupled laser with 8000 W laser power
- > High beam quality of up to 4 mm mrad
- > Compact and economical design
- > Based on proven LDF core technology
- > 5 years warranty on laser diodes

System modularity

With the latest Laserline LDF system design modularity, reliability and ease of maintenance are pursued consistently. Laser power, beam quality, the number of beam switches, cooling and auxiliary components can be configured individually and adapted to changing requirements. All system data are monitored and collected by the central control unit. The operation and evaluation can be done with the mobile control panel directly on the laser, via network connection in a control center, as well as over secured remote access.

Equipped with a dust and humidity protection unit, the LDF system with beam converter can be used in multi-shift mode without failure, even under hostile ambient conditions such as high humidity or excessive metal dust content. The practical and robust system concept of the LDF product family ensures minimum downtime and reliability of over 99%.

The laser energy is transmitted via pluggable and robot-suitable optical fiber. Depending on the beam quality, core diameters of 100 μm to 200 μm are available.



Process principle beam converter:

1. Pump diodes
2. Active fiber
3. Beam switch
4. Passive fiber

Optical specifications

Max. output power	4,000 W	6,000 W	8,000 W
Minimum beam quality	4 mm mrad	6 mm mrad	8 mm mrad
	Other laser output powers on request		
Optical fiber	100 µm [NA 0.1]	150 µm [NA 0.1]	200 µm [NA 0.1]
Typical focus at 1:1 Imaging	100 µm	150 µm	200 µm
Fiber-coupling unit	LLK-D/Auto		
Fiber length	10 m, 20 m, 30 m, different lengths on request		
Power stability	< +/- 2% over 2 hours		
Wavelength range	1,080 nm +/- 20 nm		

Mechanical specifications

VG66	Weight approx. 800 kg, dimensions: 1,065 x 850 x 1,845 mm ³ (L x W x H)
VG68*	Weight approx. 900 kg, dimensions: 1,409 x 1,227 x 1,865 mm ³ (L x W x H)

Connection data

Voltage	400 - 480 V, 3 Phases, PE, 50 or 60 Hz		
Power connection	Harting connector 32 A - 63 A (according to power consumption)		
Power consumption, typical	15 kW	23 kW	30.5 kW
Cooling requirements, typical	11.5 kW	17 kW	22.5 kW
External inputs	Digital 24 V, analog power control 0 -10 V, safety interlocks		

Cooling systems

Water / water heat exchanger	CHW40, 40 kW cooling power, water temperature: 10 °C to 16 °C; internal or external
Water / water compressor chiller	CCW12, 12 kW cooling power, water temperature: 15 °C to 35 °C; external
Water / air chiller	CCA12, 12 kW/ 20 kW cooling power, ambient temperature: 38 °C
	CCA20, 20 kW/ 20 kW cooling power, ambient temperature: 38 °C
	CCA35, 35 kW/ 35 kW cooling power, ambient temperature: 38 °C

Operating conditions

Temperature	10 - 45 °C operational, 5 - 65 °C storage
Humidity	Max. 70% @ 25 °C, with humidity protection max. 80% @ 35 °C; non condensing
Protection rating	IP54
Safety class	Laser safety class 1 according to EN 60825-01

Options

Interface	PROFINET, Interbus-S, Profibus DP, DeviceNet, EtherNet/IP, EtherCat
Beam switch*	Time sharing, 4 fibers
Optics	Laserline optics or commercial optics for every application
Others	Teleservice, pilot laser, pyrometer, CMOS camera, software for PC, separate control panel, dust and humidity protection, water chiller with compressor, water/air chiller, optics chiller

Warranty and Lifetime

Warranty	5 years on diode laser elements, 2 years on laser system and converter fiber
Diode cooling	Active for highest power density and reliability
Uptime	Typically > 99.5%

Concerning functional safety, the laser conforms to DIN EN ISO 13849-1 and achieves performance level d.

* VG68 required for 3 or 4 beam outlets.

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