

The art of laser marking
Diode-Pumped Fiber Laser
FL10 and FL20

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FL10 / FL20



Technology

cab has expanded its product range in the area of diode pumped solid state laser systems with focus on the development of the Ytterbium fiber laser systems FL10 and FL20. Highest beam quality and pulse peak power offer the possibility to handle most diverse materials like steel, aluminum, precious metals and plastics.

Concept

The laser marking systems consist of a laser source as desktop unit or 19" rack and a fiber-coupled galvo head for beam deflection. The marking head provides to integrate different plano-spherical lenses. The laser sources have integrated air-cooling and are designed modularly. The development of the FL series especially focuses on industrial use.

Performance

The high focused laser beam and first pulse suppression provide marking results up to a resolution of 1000 dpi - perfect conditions for marking two-dimensional codes on sensitive materials. Even at high ambient temperatures the laser systems are working most precise and fast. Small fonts, graphics or logos - everything is marked in correct position and true to the original.


Advantage

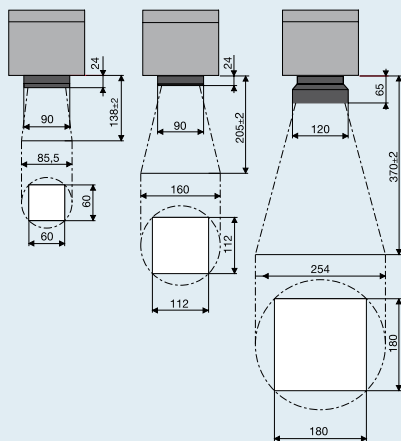
The power output of the laser is reached by parallel connection of multiple diodes whose MTBF (mean time between failure) is more than 50.000 hours. Consequently, „trouble-free“ control of single diodes as well as long operating life is attained, even at high environmental temperatures. Fiber laser systems are adjustment-insensible and maintenance-free. An average power consumption of 400 Watts requires energy costs amounting to less than 3 cents/hour. The integrated diagnostic system shows the device's status. Either modules or the whole device can be exchanged fast and easily.

Marking Software

cablase provides both a multilingual user interface and a freely programmable COM interface. The software can be installed on a standard PC without any additional PC interface cards under the operating systems Windows 2000 or Windows XP. Additionally, an extensive library which contains control commands for the laser system and scanning head helps to respond to even complex demands as for example „marking on the fly“. cablase offers in addition the possibility to control and to supervise external NC axes and digital in- and outputs. The processing of variable data as well as access to external data bases is given. The integrated „live“ preview supports the user to manage his jobs.

Technical Data

Laser source	FL10	FL20	
cw power up to	10 Watt	20 Watt	
Pulse energy	0,5 mJ	1 mJ	
Laser type	Ytterbium fiber laser, pulsed		
Cooling	air cooled		
Wave length	1.064 nm		
Beam mode	TEM ₀₀		
Pulse width	>120 nsec		
Pulse frequency	20-80 KHz		
Pilot laser	650 nm / 1 mW		
Laser protection class	4		
Length coupling fiber	5 m	3 m	
Scan head			
Assembly	set up possible in horizontal or vertical direction		
Scanning speed	up to 5.000 mm/s		
F-Theta lens	100	160	254
Focal length	138±2	204±2	370±2
Marking area 	60 x 60 mm	112 x 112 mm	180 x 180 mm
Spot ϕ	25 μ m	35 μ m	50 μ m
Δ Resolution	1.000 dpi	725 dpi	500 dpi



Interfaces	
PC interfaces	PCI, USB, TCP/IP
Laser Control Interface for	Laser operation ready, Start/Mark in progress Laser-Emission, Shutter/Chamber-Interlock

Operation	
Operating voltage	100 - 240 VAC / 50-60 Hz
Power consumption	350 Watt 450 Watt
Fuse	2 A T bei 230 VAC 2,5 A T bei 230 VAC 4 A T bei 110 VAC 5 A T bei 110 VAC
Operating temperature	5 - 40°C
Humidity not condensing	15 - 90%

Dimensions and Weight	Laser source	Scan head
Dimensions (H x W x D)	178 x 420 x 420 mm	110 x 170 x 330 mm
Weight	17 kg	8 kg

Marking software	
Hardware requirements	Pentium IV PC, 500 MHz pulse frequency, min. 128 MB RAM, 150 MB free hard drive capacity, USB interface, CD-ROM drive, high resolution graphic card
Operating systems	Windows 2000®, Windows XP®

Characters	
Characters formats	All TrueType Fonts installed under Windows, filled or as Outline, laser specific Single-, Double and Tripple Line Fonts; all Fonts can be freely scaled and „wobbled“.
Font direction	Any alignment and font direction, circular arc marking.
Font width	Stretching and compressing possible

Graphics	
Graphic elements	Line, circle, rectangle, polygon, all surface elements filled or unfilled
Graphic formats	PLT, DXF, BMP, JPG, PCX, WMF, EPS, TIF All graphic elements can be scaled, moved, grouped or mirrored. Special tools are available to align the objects.

Codes	
Linear barcodes	2 of 5 Codabar Code 39, Code 93 EAN Code 128 UPC
2D barcodes	Data Matrix, ECC200, QRCode Barcodes are variable in height, module width and ratio. Optionally, a generated or inverted check digit can be marked.

Additional features of the marking software	
Serial number, date, time	
Variable fields	
Direct insertion of graphic data out of other Windows programs	
Programmable laser parameter	
Process and parameter filesaving	
Control of external and digital in- and outputs is implemented in the Software	
Additional axes (for e.g.lifting, rotating, moving axis) can be controlled	
cablase provides a Com Automation Server enabling the user to control the laser from any other user interface (Visual Basic, Borland Builder), provided the programming language has access to communicate to Com objects.	

Delivery program

Part No.	Fiber laser	Plano-spherical lens
5524902	FL20 USB	160
5524904	FL10 USB	160
5524906	FL20 PCI	160
5524908	FL10 PCI	160
5523224	F-Theta lense100	
5525033	F-Theta lense 254	



Contents of delivery: Fiber laser with scan head and plano-spherical lens, power supply cable, interface cable, marking software cablase, operating and programming manual. The PCI version includes a 19" PC and a 17" TFT display.

Complete Solutions



Laser Safety Housing LSG 100

The laser safety housing LSG 100 is the industrial solution to laser mark parts in series. The robust metal design offers, besides a big working area, space for the integration of the laser source and the control PC. Keyboard and monitor are installed in an ergonomic way on a manipulator. The operation door is driven by pneumatic.

Drehachse ZD 30

Is used for marking the outline of rotationally symmetric work pieces.



Slide Table

The pneumatic slide table is used to feed work pieces which are larger than the marking area in marking position.



Hubachse Z 460

is used for the precise adjustment of the defined focus distance at different work piece heights.



Rotary Table RT

The rotary table RT is designed for the integration in the laser safety housing LSG 100. Two devices for one or more work pieces can be assembled to the table. The operation door and also middle wall of the turn table can be opened by pneumatic. The 180° rotation is released by two-hand operating.



Type Plate Module THS

The type plate module THS is designed for the integration in the laser safety housing LSG 100. Plates with different dimensions and thicknesses made of steel, aluminium or plastics can be marked. The magazines can be adjusted easily to different dimensions of the plates.



Laser Safety Housing LSG 30

The laser safety housing LSG 30 is the introduction to laser marking and an economic alternative for an efficient marking of single work pieces. The desktop version has a manually operated door. Laser source and PC are installed separately.



Laser Safety Housing LSG 65

The laser safety housing LSG 65 offers companies a professional solution for an easy and fast marking of single work pieces and small series. The desktop version also offers enough working space for bigger work pieces. The manual operation door is balanced. For the integration of the laser source and control PC, a separate rack is available.



Laser Label Marker LM

With the laser label marker labels with different sizes can be precisely marked and cut from continuous material without any additional costs for tooling. The labels can be separated by means of a cutter or rewinded after marking.

Applications



Made in Germany

Development and production



For more than 30 years now cab has been developing and manufacturing product marking systems for industry, commerce and services. The constant requirements of changing markets demand innovative ideas and form tomorrow's products.

Our experience and our aim to make our identification systems more simple in operation have made cab a leading manufacturer worldwide.

cab is manufacturing in Germany according to the DIN ISO 9001 standards, with a large vertical range of manufacturing processes.

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