Status: 03/2020

cab product overview

Laser marking

Made in Germany

Key points first

Laser is economic when it comes to marking small components or even large workpieces precisely and permanent. There are several benefits:

- **Focus on smallest spaces,** as laser beams allow strong bundling
- **Flexibility,** as both metals and plastics can be marked – even on spots that are difficult to access
- **High speeds of operation,** as strongly bundled light must not overcome mechanical resistance
- **No mechanical force** exerted on components, as heat energy is brought in without direct contact
- **Highly resistant,** as laser marking is insensitive to acids or bases, UV radiation, heat and wear

cab marking lasers have been designed to solve a wide range of applications. It is possible to mark stagnant products of metal or plastics in a wide range of industries:

- **Medtech –** machine-readable encoding of medical or surgical instruments, compliant with the guidelines on Unique Device Identification
- **Aerospace –** DataMatrix encoding of strategic components such as turbines
- **Electronics –** permanent encoding and alphanumeric data assure quality assurance of PCB, clamps or switch gears
- **Automotive –** laser encoding to track and trace automotive components and units; markings include, for example, manufacturing data, dates, part, series and batch numbers

For current data see also the Internet:
www.cab.de/en/laser

Sample applications

cab marking lasers mainly work with metals and plastics.
Depending from the requirement and material, different methods are known:

Traceable QR encoding

Markings on cast parts

Engraving

Evaporation with high energy density removes the material. An indentation with a sharp outline occurs.

Medical instruments

Traceable sterilization

Annealing

finds application mainly on highly alloyed stainless steel or titanium.

Aluminum rating plates

Automotive components

Ablating

uncovers material underneath the top layer.
Examples include anodized or painted layers.

Consumption metering

Medical size allocation

Coloring

finds application on plastics. The degree of color change depends from the chemical composition of the material as well as from ingredients and fillers.

Marking lasers XENO 4

20, 30, 50 Watt

The performance and quality of markings mainly depend from the output power and the laser beam focus.

cab XENO 4 marking lasers are diode-pumped and air-cooled. They have high beam quality and high pulse peak powers. Beam sources are provided with 20, 30 and 50 Watt.

Different plano-spherical lenses enable marking in fields from 69 x 69 mm to 290 x 290 mm.

Marking is possible on plastics, metals and painted surfaces.

XENO 4 marking lasers consist of two units:
A control unit with an integral beam source and a scan head that is connected with the beam source via a fiber. It can be assembled in any orientation.

The integrated focus finder simplifies workpiece positioning.

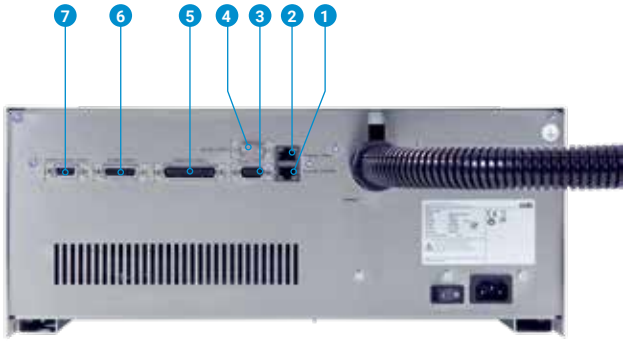
XENO 4 represents

- a compact scan head,
- high operation speeds,
- integrated focus finding,
- shifting the marking plane quickly,
- shifting the focus throughout height differences up to 140 mm,
- Industry 4.0,
- TCP/IP control and monitoring

The control unit and the beam source are incorporated in a 19" rack.

Interfaces providing process control and monitoring

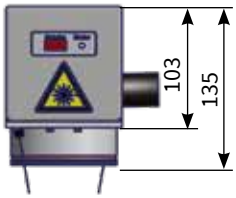
1. **Ethernet 10/100 Mbit/s** to connect a PC. As delivered, the device has been configured with an IP address or in DHCP mode.
2. **Ethernet 10/100 Mbit/s** to connect peripheral devices. Bidirectional data transfer from and to end devices
3. + 4. **2 x RS232 C** to connect peripheral devices. Bidirectional data transfer from and to end devices
5. **Digital I/O interface** control and monitoring
   Provided are 8 inputs and outputs, freely programmable.
   Circuit protected according to IEC 61131-2
6. **Remote** laser switch-on and control
7. **Interlock / E-stop** to integrate to external safety circuits and connect an external E-stop



Technical data

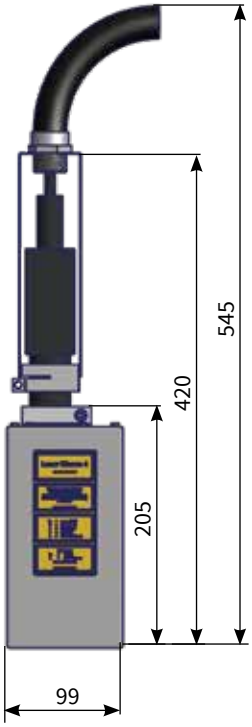
			1.1 - 1.12			
Marking laser			**XENO 4 / 20**	**XENO 4 / 30**		**XENO 4 / 50**
Beam source				Ytterbium fiber laser, pulsed, air-cooled		
cw output power		up to W	20	30		50
Pulse energy		mJ		1		
Wave length		nm		1,064		
Beam quality M^2				<1.8		
Pulse width		ns		<120		
Pulse repetition frequency		kHz	20 - 60	30 - 60		50 - 100
Connection cable		m		2.5		
Plano-spherical lens		**on**		**XENO 4**		
Lens		Type	100.2	160.2	254.2	420.2
Operation distance		mm	149 ± 4	210 ± 8	310 ± 8	549 ± 20
Marking field		mm	69 x 69	112 x 112	180 x 180	290 x 290
Spot diameter		µm	~25	~35	~50	~85
= Resolution		dpi	1,000	725	500	300
Scan head						
Assembly				horizontal / vertical		
Marking speed		mm/s		~5,000		
Pilot laser						
Wave length		nm		650		
cw output power		mW		<1		
Electronics						
Processor 32 bit clock rate		MHz		600		
Main memory (RAM)		MB		256		
Data memory (Flash)		MB		512		
Extension (Flash)				USB memory stick		
Dimensions and weights				**Rack 4 height units 19“**		
Control unit	W x H x D	mm		420 x 178 x 420		
	Weight	kg		16		
Scan head	W x H x D	mm		99 x 135 x 205		
	Weight	kg		3		
Operation panel						
Key switch				Beam source ON/OFF		
Buttons	Pilot laser / focus finder			ON/OFF		
	Shutter open			open / close		
Display	Emission			Beam source in operation		
	Laser error			Beam source error		
	Ready			Beam source ready		
	Power			Power supply ON		
	Pilot laser / focus finder			ON		
	Shutter open			Safety lock open		
Connections	Service			USB mini		
	Data memory			USB		
Operating data						
Power supply				100-240 VAC, 50/60 Hz		
Power switch				ON/OFF		
Power consumption		Standby W		65		
		up to W	200	200		350
Temperature / humidity		Operation		+5-35 °C / 10-85 %, not condensing		
		Stock		0-60 °C / 20-80 %, not condensing		
		Transport		–25-60 °C / 20-80 %, not condensing		
Approvals				CE, FCC Class A		
Laser protection class	EN60825-1					
	Beam source			Class 4		
	Pilot laser			Class 2		

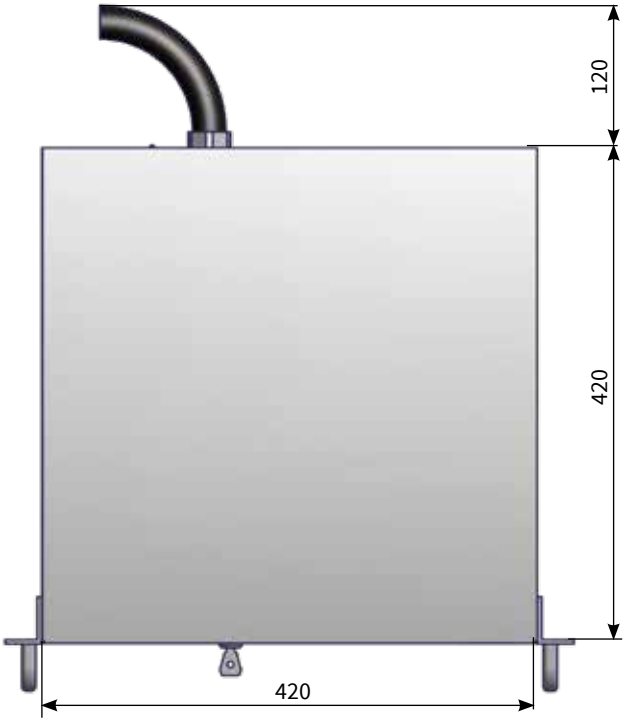
Dimensional drawing



XENO 4 scan head

XENO 4 control unit





Laser marking system XENO 1

2.1 - 2.4

XENO 1 is a compact desktop system, demanding little footprint and offering a large work area.

XENO 1 fits with marking on metals or plastics.

XENO 1 completes the range of cab laser marking systems in the lower price segment. Processing the system complies with high industrial standards.

The marking plane is adjustable in heights up to 200 mm with the motor-driven moveable Z-axis and easily and quickly with the focus finder. In case of different height levels at the workpiece, the scan head can be automatically adjusted to the right focus distance by the integrated numeric Z-axis.

Depending from the lens, the size of the marking field is 112 x 112 or 180 x 180 mm. It can be moved from the center to the right margin.

The marking can be simulated with the pilot laser.

Interior LED lighting allows observation of the workpiece when the operation door is closed.

The workpiece holder is mounted on the groove plate.

A rotary axis is available for cylindrical objects.

The automatic operation door opens or closes within seconds. Material can be inserted manually or by a handling system from three sides.

With the comprehensive cabLase marking software layouts are graphically designed, markings controlled and processes monitored.

Legal environmental regulations RoHS and REACH are observed.

			2.1	2.2	2.3	2.4
Laser marking system			**XENO 1**			
Beam source			Ytterbium fiber laser, pulsed			
cw output power	up to	W	20		30	
Pulse energy		mJ	1			
Wave length		nm	1,064			
Beam quality M^2			<1.8			
Pulse width		ns	<120			
Pulse repetition frequency		kHz	20 - 60		30 - 60	
Pilot laser / focus finder						
Wave length		nm	650			
cw output power		mW	<0,4			
Lens		Type	160.2	254.2	160.2	254.2
Operation distance		mm	210 ± 8	310 ± 8	210 ± 8	310 ± 8
Marking field		mm	112 x 112	180 x 180	112 x 112	180 x 180
Work area height		mm	200	100	200	100
Groove plate W x H x D x pitch		mm	500 x 20 x 375 x 25			
Z-axis stroke, motor-driven		mm	210			
Position accuracy		mm	± 0,1			
Repetitive accuracy		mm	± 0,1			
Traversing speed		mm/s	20			
Interior lighting			LED			
Operation door			motor-driven opening / closing			
Workpiece weight	up to	kg	30			
Dimensions and weight						
Device	W x H x D	mm	580 x 660 x 700			
	Weight approx.	kg	65			
Laser protection window	W x H	mm	100 x 200			
Extraction						
Nozzle flexible hose		DN mm	38			
Suction pipe		DN mm	50			
Operating data						
Power supply			100-240 VAC, 50/60 Hz			
Power consumption			Standby < 35 W / typical 150 W / up to 200 W			
Temperature / humidity	Operation		+5-35 °C / 10-85 %, not condensing			
	Stock		0-60 °C / 20-85 %, not condensing			
	Transport		–25-60 °C / 20-85 %, not condensing			
Approvals			CE, FCC Class A			
Laser protection class EN60825-1			Class 1			
Operation panel						
LED displays			Power, Ready, Emission, Error, Marking			
Buttons, illuminated			Control ON/OFF		Start	
			Focus finder ON/OFF		Z-axis up / down	
			Extraction ON/OFF		Rotary axis left / right	
			LED ON/OFF		Operation door open / closed	
Switch			E-stop			
Key switch			automatic / manual			
Monitoring						
Safety circuits			closed			
Collective error			Marking laser		Extraction system	
Interfaces						
Operation room			Rotary axis		Digital I/O interface	
Back of the device			2 x Ethernet TCP/IP		Extraction and filter system AF5	
			24 V for digital I/O interface		External start, external E-stop	

Accessory

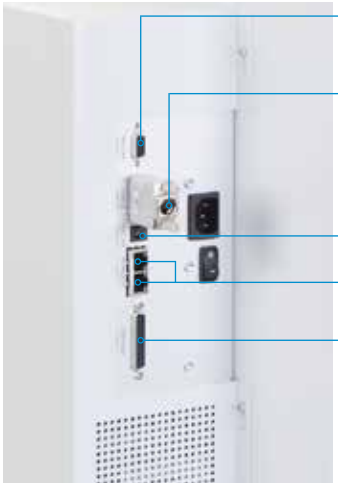
6.7 **Extraction and filter system AF5**

Details

XENO 1 is a fully equipped laser marking system offering high operating comfort for marking single components and series.

1. **Fiber laser** 20 or 30 W
2. Motor-driven **operation door**
3. **Scan head,** providing motor-driven height setting and a pilot laser to preview the marking
4. **Focus finder** to set the marking plane
5. **Interior LED lighting**
6. **Rotary axis** with a 3-jaw chuck for markings on cylindrical items
7. **Digital I/O interface** control and monitoring, provided are 8 inputs and outputs, freely programmable
8. **Plug** to connect the rotary axis
9. **Operation panel** providing buttons and status display
10. **Groove plate** to clamp workpiece carriers
11. **Z-axis**, moveable along the groove plate
12. **Suction hose**

Interfaces



13. **External start signal**
14. **E-stop** to integrate into external safety circuits
15. **External 24 V** for additional operations
16. **2 x Ethernet 10/100 Mbit/s**
    As delivered, the device has been configured with an IP address or in DHCP mode.
17. **Port to connect an extraction and filter system**

Laser marking system XENO 3

3.1 - 3.2

XENO 3 provides an integrated laser system to mark metal and plastic plates permanently.

Fiber laser beam source, control unit and operation room are incorporated in a joint laser safety housing according to protection class 1. Due to its compact design and small footprint, XENO 3 fits with desktop operations.

Markings applied by a XENO 3 remain clearly legible even in the long term in rough surroundings.

Hydraulic cylinders, engines, pumps, gears, vehicle chassis oder system components are typical items to be marked with a XENO 3.

Replace magazines enable to process different plate sizes. Plates to be processed are 40 x 20 to 120 x 100 mm in size, resp. 0,5 to 1 mm in thickness.

Plate stacking is possible to heights of 50 mm.

The marking can be observed through the protection window and with the help of the lit interior.

Fold-out carry handles simplify the installation of the system.

With the comprehensive cabLase marking software layouts are graphically designed, markings controlled and processes monitored.

The system might be remote controlled or monitored in networks in which machines interact with other machines or human beings.

In the case of metal engravings and ablation of top layers we advise you on the selection of filters.

			3.1	3.2
Laser marking system			**XENO 3**	
Beam source			Ytterbium fiber laser, pulsed	
cw output power		up to W	20	30
Pulse energy		mJ	1	
Wave length		nm	1,064	
Beam quality M^2			<1.8	
Pulse width		ns	<120	
Pulse repetition frequency		kHz	20 - 60	30 - 60
Pilot laser				
Wave length		nm	650	
cw output power		mW	<0.4	
Lens		Type	160.2	
Operation distance		mm	210 ± 8	
Marking field		mm	112 x 112	
Interior lighting			LED	
Material				
Plates				
Width x Height		from mm	40 x 20	
		up to mm	120 x 100	
Plate tolerance according			ISO 2768-mk	
Position accuracy		mm	±0.2	
Plates 0.5 mm		quantity	100	
Plate thickness		mm	0.5 - 1.0	
Dimensions and weight				
Device	W x H x D	mm	420 x 480 x 480	
	Weight approx.	kg	< 35	
Laser protection window W x H		mm	100 x 200	
Extraction				
Nozzle flexible hose		NW mm	38	
Suction pipe		NW mm	50	
Interfaces				
Back of the device			2 x Ethernet TCP/IP, Extraction and filter system AF5, external start, external E-stop	
Operating data				
Power supply			100-240 VAC, 50/60 Hz	
Power consumption			Standby < 35 W / typical 150 W / up to 200 W	
Temperature / humidity	Operation		+5-35 °C / 10-85 %, not condensing	
	Stock		0-60 °C / 20-85 %, not condensing	
	Transport		–25-60 °C / 20-85 %, not condensing	
Approvals			CE, FCC Class A	
Laser protection class EN60825-1			Class 1	
Performance level			d	
Operation panel				
LED displays			Power, Ready, Emission, Error, Marking	
Switch			E-stop	
Monitoring				
Operation door			open / closed	
Collective error			Marking laser Extraction system	
Software				
Marking software			cabLase Editor 5 cabLase automation	
Software operation			Start Pilot laser ON/OFF Extraction ON/OFF LED ON/OFF	

Accessories

3.3 **Magazine, customer-specific**

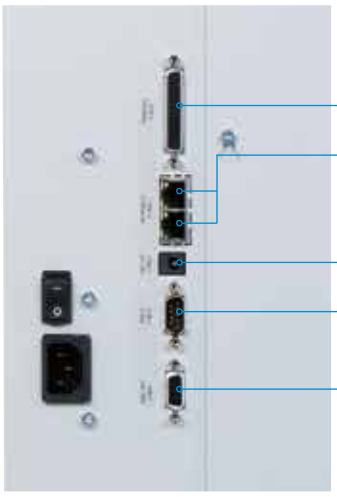
6.7 **Extraction and filter system AF5**

Details

XENO 3 is a fully equipped laser marking system offering high operating comfort for marking single plates and series.

1. **Fiber laser** 20 or 30 W
2. **Setup door**
3. **Operation panel**
   providing buttons and status display
4. **Scan head,** providing manual height setting and a pilot laser to preview the marking
5. **Interior LED lighting**
6. **Extraction,** integrated
7. **Typeplate handling module**
8. **Replace magazine**
9. **Output magazine**
10. **Carry handles**

Interfaces



11. **Port to connect an extraction and filter system**
12. **2 x Ethernet 10/100 Mbit/s**
    As delivered, the device has been configured with an IP address or in DHCP mode.
13. **External 24 V** for additional operations
14. **E-stop** to integrate into external safety circuits
15. **External start signal**

Laser safety housing LSG+100E

4.1 - 4.2

The laser safety housing LSG+100E offers an industrial solution for marking component series with a marking laser XENO 4. The rugged metal design besides a large work area provides enough space to integrate both the beam source and an industrial PC in a 19“ assembly frame.

A keyboard and a monitor are assembled ergonomically to a pivot arm. The operation door opens and closes electrically.

		4.1		4.2	
Laser safety housing		**LSG+100E 230 V**		**LSG+100E 120 V**	
Operation room W x H x D	mm	980 x 460 x 980			
Grooved plate, T-slot, W x D	mm	550 x 375			
Pitch	mm	25			
Z-axis stroke	mm	440			
Position accuracy	mm	0.02			
Repetitive accuracy	mm	± 0.02			
Traversing speed up to	m/s	60			
Interior lighting		Low energy light bulb			
Operation door		electrical opening / closing			
Time to open / close	s	<2			
Lens	Type	100.1	160.1	254.1	420.1
Marking field	mm	69 x 69	112 x 112	180 x 180	290 x 290
Operation distance	mm	141 ± 4	202 ± 8	302 ± 8	541 ± 20
Workpiece height up to	mm	60 - 490	430	330	90
Workpiece height up to	kg	50			
Dimensions and weight					
W x H x D	mm	1,000 x 2,280 x 1,120			
Laser prot. window W x H	mm	200 x 100			
Machine stands	Ø mm	80			
Suction pipe	Ø mm	50			
Frame to assemble XENO 4 and a PC		4 height units 19“			
Weight	kg	395			

Operating data			
Power supply		220-240 VAC, 50 Hz	100-140 VAC, 60 Hz
Power switch		ON/OFF	
Temperature / humidity	Operation	5-40 °C / 10-85 %, not condensing	
	Stock	0-60 °C / 20-80 %, not condensing	
	Transport	–25-60 °C / 20-80 %, not condensing	
Laser protection class EN60825-1		Class 1	
Approval		CE	
Operation panel			
LED display		Power Emission Marking Ready Error	
Buttons, illuminated		Control ON/OFF Focus finder ON/OFF Extraction ON/OFF Lighting ON/OFF Start Z-axis up / down X-axis left / right Rotary axis left / right Operation door open / close Reserve	
Switch		E-stop	
Key switch		automatic / manual	
Monitoring			
Safety circuits		closed	
Collective error		Marking laser Extraction system	
Interfaces			
Interlock / E-stop	XENO 4		
Remote	XENO 4		
Digital I/O interface	XENO 4		
Stepper motor Z-axis, X-axis, rotary axis			
Extraction and filter system AF1.1			

Details

Setup door

A large setup door allows to access LSG+100E easily. Jigs may be assembled comfortably to the grooved plate in the well-lit operation room.

Linear axis Z400

It provides precise and fast focus setting. For setup, the axis is traversed with the help of buttons integrated to the operation panel.

Accessories

4.3	**PC in a 4 height units 19'' rack**
4.4	**Monitor 19''**
4.5	**Standard keyboard, optical mouse**
4.6	**Keyboard with trackball**
6.1	**Extraction and filter system AF1.1**
8.1	on request: **Rotary table module RTM650**
8.6	**Linear axis X400**
8.7	**Rotary axis D30**
8.8	**3-jaw chuck D30**
8.12	**Axis controller 2S**

Laser label marker LM+

5.1 - 5.2

		5.1	5.2
Laser label marker		**LM+160.1**	**LM+254.1**
Operation room W x H x D	mm	160 x 5 x 190	
Position accuracy	mm	0.2	
Transport speed	mm/s	200	
Interior lighting		LED	
Material		Label or continuous materials	
Thickness	mm	0.055 - 0.3	
Weight	up to g/m²	500	
Width	mm	25 - 120	
Label height	up to mm	180	
Roll			
Outside diameter	up to mm	300	
Core diameter	mm	76	
Winding		outside or inside	
Lens	Type	160.1	254.1
Marking field	mm	112 x 112	120 x 180
Operation distance	mm	202 ± 8	302 ± 8
Dimensions and weight			
W x H x D	mm	440 x 520 x 802	
Laser prot. window W x H	mm	100 x 50	
Machine stands	Ø mm	50	
Suction pipe	Ø mm	50	
Weight	kg	22	
Operating data			
Power supply		100-240 VAC, 50/60 Hz	
Power switch		ON/OFF	
Temperature / humidity	Operation	5-40 °C / 10-85 %, not condensing	
	Stock	0-60 °C / 20-80 %, not condensing	
	Transport	–25-60 °C / 20-80 %, not condensing	
Laser protection class EN60825-1		Class 1	
Approval		CE	

The laser label marker allows marking labels of different sizes straight from the roll precisely and cutting them out without the need of additional tools.

After the marking, labels made of laser markable foil can be cut or externally rewound.

Accessories

- 4.3 **PC in a 4 height units 19'' rack**
- 4.4 **Monitor 19''**
- 4.5 **Standard keyboard, optical mouse**
- 4.6 **Keyboard with trackball**
- 5.3 **External rewinder**
- 5.4 **Hose set**
- 5.5 **Mobile cart**
- 5.6 **Console**
- 5.7 **Monitor column**
- 6.1 **Extraction and filter system AF1.1**

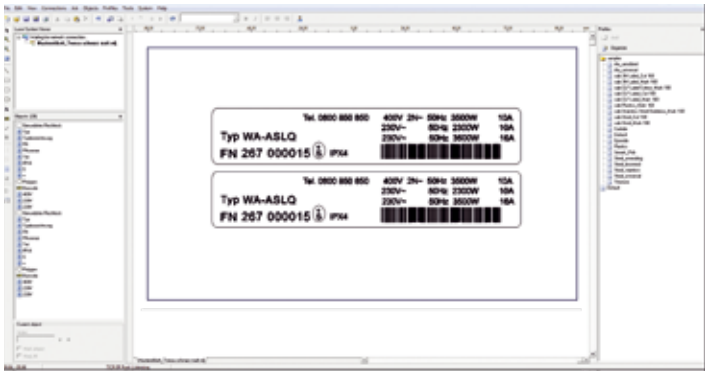
Operation panel	
LED display	Continuous material Labels
Buttons	Material feed Material backfeed Cut
Switches	automatic / manual E-stop
Monitoring	
Safety circuits	closed
Wipe-down roller	locked
Material	in marking position / no material
Interfaces	
Interlock / E-Stop XENO 4	
Serial RS232C XENO 4 CON5	
External E-stop	
Cutter	

Laser label marker LM+
on a mobile cart, providing an external rewinder on the console, a monitor column and an extraction and filter system AF1.1

cabLase marking software

cabLase Editor 5 features

- graphic layout design,
- marking control,
- process monitoring



cabLase at a glance

Software		
Software	cabLase Editor 5	
Fonts		
Font types	All TrueType fonts included in Windows, filled or outline; laser typical single, double, triple line fonts. All font types can be freely scaled and “wobbled”.	
Alignment	Any alignment and direction of rotation, circular ark marking	
Character spacing	compress and stretch	
Graphics		
Graphic elements	Lines, circles, rectangles, polygons; hatching of all closed surface elements	
Graphic formats	PLT, DXF, BMP, JPG, PCX, WMF, EPS, TIF; All graphic elements can be scaled, moved, rotated, grouped or mirrored. Special tools are available to align the objects.	
Barcodes		
Linear	Interleaved 2/5 Code 39, Code 93 Code 128	Codabar EAN UPC
2D	DataMatrix, ECC200, QR code	
	All codes are variable in height, modular width, ratio; check digit or inverted code output are options	
Further features		
Serial numbers, time, date		
Variable fields		
Add graphic data of Windows programs		
Program laser parameters		
Memory process data and parameters		
Control digital inputs and outputs		
Control and monitor additional axes, e.g. stroke, rotary and linear		
Recommended system requirements PC		
Operation system	Windows 7 Pro SP1 or Windows 10 (32/64 bit)	
Processor	Min. Intel Core i5-6400, recommended i7-6700 or higher	
Main storage	Minimum 8 GB, recommended 16 GB or higher	
Hard disc	Memory requirements software 1 GB	
Interfaces	Network card 10/100 Mbit for laser connection USB 2.0 connection for dongle	

Stand-alone operation

cabLase supports marking without the need of a PC. Marking layouts and related fonts are downloaded by the software to the laser control unit and managed. Digital signals provide process control and monitoring.

Remote host operation

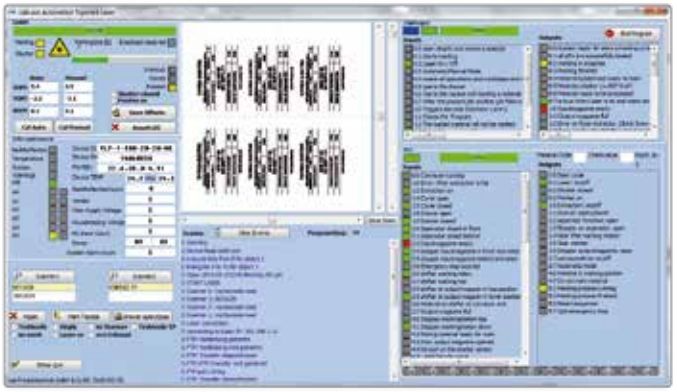
cabLase allows remote control by a master control unit such as a PC or PLC serially, via Ethernet or ProfiBus. Programming commands are provided to select a layout, change marking data, control and monitor processes.

Remote API interface

if lasers are integrated in complex production processes. Objects and parameters, layouts and variable data can be set, administrated and processed externally via a PC or PLC.

COM automation server

for customer-specific marking applications. A library of commands provides all the functions of the cabLase marking software.



Integration in ERP and MES systems

cabLase provides program modules to integrate a marking system in MES and ERP platforms. As cab is a member of the SAP Printer Vendor Program, marking applications may be for example connected to the SAP data stream.

Industry 4.0

Industry 4.0 and the IoT represent smart production. Usable software and connectivity are implementation keys. Future-proof cab marking lasers provide all the interfaces necessary for programming and data transfer.
We gladly advise you in your application!

9.1 - 9.2

At delivery, all marking laser systems include a cabLase Editor 5 USB software dongle.

Extraction and filter system AF1.1 for LSG+100E and LM+

Processing materials with a laser produces poisonous dusts and gas pollutants. Extraction protects the operator's health and prevents the laser room and lens from contamination. It also ensures that laser power maintains. Air is extracted from the working room with the help of a highly performant turbine throught a flexible hose.

Pollutants and dusts are emitted in the pre-filter and a filter particularly provided for suspended particles. Gas pollutants are absorbed by the active carbon filter. Clean air is returned to the environment.

The system has a modular design. Filters are easy to replace.

6.1

Consumables

6.4 **Pre-filter mat**

6.5 **Filter for suspended particles**

6.6 **Active carbon / BAC filter**

Accessories

6.2 **Suction hose** 2.5 m

6.3 **Crevice nozzle**
to clean the operation room

			6.1
Extraction and filter system			**AF1.1**
Suction power		up to m³/h	320
Vacuum		bis Pa	12,500
Filter equipment	**Filter class**		
Pre-filter mat	M5		■
Filter for susp. part.	H13		■
Active carbon filter			■
Dimensions and weights			
Device	Width	mm	355
	Height	mm	682
	Depth	mm	355
	Weight approx. kg		35
Suction pipe	NW	mm	50
Operating data			
Power supply			240 VAC, 50/60 Hz
Power consumption	Standby	W	<40
	typical	W	400
	up to	W	1,200
Temperature / humidity	Operation		5-40 °C / 10-85 %, not condensing
	Stock		0-60 °C / 20-85 %, not condensing
	Transport		–25-60 °C / 20-85 %, not condensing
Approval			CE

Operation panel	
Display	LED
	Filter saturation Extraction ON/OFF Reset
Button 1 Button 2	Run / Standby Reset
Control knob	Suction power
Interface	
	Digital I/O interface
Monitoring	Run / Standby Trouble-free system operation Collective errors: - Temperature error - Turbine error - Filter saturated - Pre-filter error
Control	Run / Standby

Extraction and filter system AF5 for XENO systems

Processing materials with a laser produces poisonous dusts and gas pollutants. Extraction protects the operator's health and prevents the laser room and lens from contamination. It also ensures that laser power maintains. Air is extracted from the working room with the help of a highly performant turbine throught a flexible hose.

Pollutants and dusts are emitted in the pre-filter and a filter particularly provided for suspended particles. Gas pollutants are absorbed by the active carbon filter. Clean air is returned to the environment.

The system has a modular design. Filters are easy to replace.

6.7

Consumables

6.10 **Pre-filter mat**

6.11 **Pre-filter**
to absorb about 10 times more pollutants and dusts compared to the mat

6.12 **Filter for suspended particles**

6.13 **Active carbon / BAC filter**

Accessories

6.8 **Pre-filter module**
for retrofitting

6.9 **Suction hose** 2.5 m
included in the scope of delivery

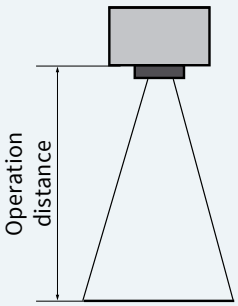
6.3 **Crevice nozzle**
included in the scope of delivery
to clean the operation room

		6.7	6.8
Extraction and filter system		**AF5**	**AF5 with a pre-filter module**
Suction power	up to m³/h	230	
Vacuum	up to Pa	11,000	
Filter equipment	**Filter class**		
Pre-filter mat	F5	■	-
Pre-filter	F7	-	■
Filter for susp. part.	H13	■	■
Active carbon / BAC filter		■	■
Dimensions and weights			
Device	Width mm	350	350
	Height mm	647	880
	Depth mm	350	350
	Weight approx. kg	40	55
Suction pipe	NW mm	50	50
Operating data			
Power supply		100-240 VAC, 50/60 Hz	
Power consumption	Standby W	<40	
	typical W	400	
	up to W	1,100	

Temperature / humidity	Operation	+5-40 °C / 10-85 %, not condensing	
	Stock	–25-55 °C / 20-85 %, not condensing	
	Transport	–25-55 °C / 20-85 %, not condensing	
Approvals		CE, FCC, cETLus, W3, CAN ICES-3	
Operation panel			
Display	Colored LCD display		
	Filter saturation	Error message	
	Filter state	Turbine / temperature	
	Suction power	System error	
Button 1	Run / standby		
Button 2	Suction power		
Interface			
	Serial RS232C		
Monitoring	Run / standby	Filter 1/2 vacuum	
	Suction power	Rotational speed	
	Temperature error	Temperature	
	Turbine error	Operating hours Run	
	Filter saturated	Operating hours Standby	
	Filter pre-warning (75 %)		
Control	Run / standby		
	Suction power ±		
	Reset		

Accessories

7.1 - 7.4



Plano-spherical lenses F-Theta XENO 4

Lenses are provided to cover different marking fields.
The smaller the marking field, the higher the resolution.

Plano-spherical lens		100.2	160.2	254.2	420.2
To be used with		**XENO 4**	**XENO 1 XENO 3 XENO 4**	**XENO 1 XENO 4**	**XENO 4**
Operation distance	mm	149 ± 4	210 ± 8	310 ± 8	549 ± 20
Marking field	mm	69 x 69	112 x 112	180 x 180	290 x 290
Spot diameter	µm	~25	~35	~50	~85
≙ Resolution	dpi	1.000	725	500	300

7.5

Protective glass for F-Theta

The glass is assembled to the plano-spherical lens F-Theta.
It can be replaced in the case of damage.

Protective glass		100	160	254	420
Outside diameter	mm	80	75	75	114

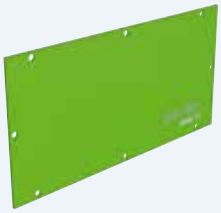
8.1

Rotary table module RTM650 for LSG+100E

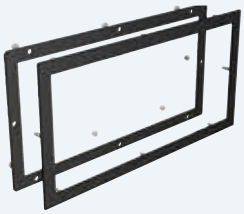
to assemble two jigs for a single or more workpieces.
180° rotation is released by two-hand operation.

Rotary table module		RTM650		
Rotary table diameter	mm	650		
Plano-spherical lens	Type	100.1	160.1	254.1
Workpiece height	up to mm	360	300	150
Workpiece weight	up to kg	20 (incl. workpiece carrier)		
Switch accuracy		± 0.1 mm at = 600 mm		
Cycle time, rotating		2,5 s / 180°		

8.2



8.3



Laser protection window and assembly frame for LSG+100E

to be assembled in housings or doors to observe the marking process. The window may be assembled directly or with the help of the black anodized front panel and the back side frame behind the wall of the housing.

Laser protection window Assembly frame		100 x 200	100 x 200
Diemsnions	Width mm	228	228
	Height mm	128	128
	Thickness mm	3	2

Accessories

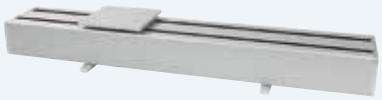
8.4, 8.5

Linear axes Z400, Z200 for XENO 4

to position the scan head precisely.

Linear axis		Z400	Z200
Traversing distance	mm	440	200
Position accuracy	mm	0.05	0.05
Repetitive accuracy	mm	± 0.05	± 0.05
Traversing speed	up to mm/s	60	20
Dimensions W x H x D	mm	110 x 840 x 220	110 x 510 x 220
Load capacity	kg	10	7
Weight	kg	16	9

8.6



Linear axis X400 for LSG+100E

to position customer-specific workpiece or pallet carriers (maximum weight 50 kg) precisely.

Linear axis		X400
Traversing distance	mm	440
Position accuracy	mm	0,05
Repetitive accuracy	mm	± 0.05
Traversing speed	up to mm/s	60
Dimensions W x H x D	mm	835 x 110 x 200
Load capacity	kg	50
Weight	kg	16

8.7 - 8.9

Rotary axis D30 for LSG+100E
Rotary axis D30.1 for XENO 1

for markings on the circumference of cylindrical workpieces.
Workpiece clamping in the 3-jaw chuck

Rotary axis		D30 / D30.1
Rotational speed	U/min	0 - 40
Operating torque	Nm	12
Increment	at least [arcmin]	2,5
Holding torque	Nm	2,0
Through bore	Ø mm	15
Workpiece	Ø up to mm	160
Distance to the grooved plate	mm	84
Dimensions W x H x D	mm	125 x 105 x 128
Weight	kg	3
3-jaw chuck		**D30**
Clamping range	Ø inside mm	23 - 76
	Ø outside mm	3 - 76
Cable to connect a rotary axis		**D30**
Length	mm	1,000

8.12 - 8.13

Axis controller 2S for LSG+100E and XENO 4

to position the linear and rotary axes
with the help of a RS232 or the digital I/O interface.

Axis controller		2S
Dimensions W x H x D	mm	150 x 110 x 25
Interfaces for	Z-axis, rotary axis	
	digital I/O	for manual operation
	RS232	for automatic operation
Voltage		24 VDC
Cable to connect the axis controller		**2S**
Length	mm	3.000

Delivery program

Pos.		Part no.	Devices
1.1		**5528560**	Marking laser XENO 4 20 W / 100.2 v.E.
1.2		**5528430**	Marking laser XENO 4 20 W / 160.2 v.E.
1.3		**5528435**	Marking laser XENO 4 20 W / 254.2 v.E.
1.4		**5528570**	Marking laser XENO 4 20 W / 420.2 v.E
1.5		**5528565**	Marking laser XENO 4 30 W / 100.2 v.E.
1.6		**5528440**	Marking laser XENO 4 30 W / 160.2 v.E.
1.7		**5528445**	Marking laser XENO 4 30 W / 254.2 v.E.
1.8		**5528575**	Marking laser XENO 4 30 W / 420.2 v.E.
1.9		**5528580**	Marking laser XENO 4 50 W / 100.2 v.E.
1.10		**5528585**	Marking laser XENO 4 50 W / 160.2 v.E.
1.11		**5528590**	Marking laser XENO 4 50 W / 254.2 v.E.
1.12		**5528595**	Marking laser XENO 4 50 W / 420.2 v.E.
	Scope of delivery	Marking laser XENO 4 incl. lens USB software dongle Software cabLase Editor 5 Power cable Type E+F, 1.8 m Patch cable CAT 5e, 3 m E-stop dongle Assembly instructions DE / EN	

Pos.		Part no.	Accessories
1.19		**5528441**	Adapter plate XENO 4/FL+

Pos.		Part no.	Devices
2.1		**5528130**	Laser marking system XENO 1 20 W / 160.2 incl. lens
2.2		**5528140**	Laser marking system XENO 1 20 W / 254.2 incl. lens
2.3		**5528150**	Laser marking system XENO 1 30 W / 160.2 incl. lens
2.4		**5528160**	Laser marking system XENO 1 30 W / 254.2 incl. lens
	Scope of delivery	Laser marking system XENO 1 incl. lens USB software dongle cabLase Editor 5 Power cable Type E+F, 1.8 m Patch cable CAT 5e, 3 m E-stop dongle Operator's manual DE / EN	

Pos.		Part no.	Devices
3.1		**5528610**	Laser marking system XENO 3 20 W / 160.2 incl. lens
3.2		**5528615**	Laser marking system XENO 3 30 W / 160.2 incl. lens
	Scope of delivery	Laser marking system XENO 3 incl. lens USB software dongle cabLase Editor 5 Power cable Type E+F, 1.8 m Patch cable CAT 5e, 3 m E-stop dongle Instructions DE / EN	

Pos.		Part no.	Accessory
3.3		**5528xxx**	Magazine, customer-specific

Delivery program

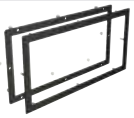
Pos.		Part no.	Devices
4.1		**5528650**	Laser safety housing LSG⁺100E for XENO 4 - 230 V
4.2		**5528655**	Laser safety housing LSG⁺100E for XENO 4 - 120 V
	Scope of delivery	Laser safety housing LSG⁺100E Power cable Type E+F, 1.8 m Conn. cable, 9/9 pins, 3 m, for Interlock / E-Stop Conn. cable, 9/9 pins, 3 m, for Remote Conn. cable, 25/25 pins, 3 m, for I/O interface Conn. cable, 15/15 pins, 3 m, for extraction Pivot arm to assemble a monitor/keyboard tray Assembly instructions DE / EN	
Pos.		**Part no.**	**Accessories**
4.3		**5570125**	PC in 19" housing 4 height units, DE
		5570135	PC in 19" housing 4 height units, EN
4.4		**5570130**	Monitor 19“
4.5		**5901626**	Standard keyboard USB, DE
		5901677	Standard keyboard USB, EN
		5901658	Optical mouse
4.6		**5901621**	USB keyboard with trackball, DE
		5901651	USB keyboard with trackball, EN
Pos.		**Part no.**	**Devices**
5.1		**5528670**	Laser label marker LM⁺160.2 for XENO 4
5.2		**5528675**	Laser label marker LM⁺254.2 for XENO 4
	Scope of delivery	Laser label marker LM+ Power cable Type E+F, 1.8 m Conn. cable, 9/9 pins, 3 m, for Interlock / E-Stop Conn. cable, 9/9 pins, 3 m, for Remote Conn. cable, 25/15 pins, 3 m, for extraction Funnel to include scan head Guide 1 mm for foil intake Führung 2 mm for foil intake Cutter Extraction closure Throttle-valved hinge for extraction Assembly instructions DE / EN	
Pos.		**Part no.**	**Accessories**
5.3		**5525355**	External rewinder ER 4/300 LM
5.4		**5527655**	Hose set LM+
5.5		**5527585**	Mobile cart
5.6		**5527675**	Console R/L
5.7		**5527705**	Monitor column

Pos.		Part no.	Extraction and filter system AF1.1
6.1		**5907275**	Extraction and filter system AF1.1 incl. filter set and a power cable Type E+F, 2.5 m integrated
	Scope of delivery	Extraction and filter system AF1.1 incl. filter set Instructions DE	
Pos.		**Part no.**	**Accessories**
6.2		**5905818**	Suction hose, 2.5 m
6.3		**5907174.001**	Crevice nozzle
Pos.		**Part no.**	**Consumables** **Pack unit**
6.4		**5906617.001**	Pre-filter mat 10
6.5		**5906618.001**	Filter for suspended particles 1
6.6		**5906619.001**	Active carbon filter 1

Pos.		Part no.	Extraction and filter system AF5
6.7		**5907550**	Extraction and filter system AF5 incl. filter set
	Scope of delivery	Extraction and filter system AF5 incl. filter set Suction hosee Crevice nozzle Power cable Type E+F, 2 m Cable SUB-D25 male/male, 3 m Instructions DE / EN	
Pos.		**Part no.**	**Accessories**
6.3		**5907174.001**	Crevice nozzle
6.8		**5907570**	Pre-filter module incl. pre-filter
6.9		**5907537.001**	Suction hose, 2.5 m
Pos.		**Part no.**	**Consumables** **Pack unit**
6.10		**5906555.001**	Pre-filter mat 10
6.11		**5907575.001**	Pre-filter 1
6.12		**5906569.001**	Filter for suspended particles 1
6.13		**5906570.001**	Active carbon / BAC filter 1

Delivery program

Pos.		Part no.	Spare parts
7.1		**5527846.001**	Plano-spherical lens F-Theta 100.2 69 x 69 mm
7.2		**5527847.001**	Plano-spherical lens F-Theta 160.2 112 x 112 mm
7.3		**5527848.001**	Plano-spherical lens F-Theta 254.2 180 x 180 mm
7.4		**5527849.001**	Plano-spherical lens F-Theta 420.2 290 x 290 mm
7.5		**5528305.001**	Protective glass for F-Theta 100
		5528310.001	Protective glass for F-Theta 160 and 254
		5528315.001	Protective glass for F-Theta 420

Pos.		Part no.	Accessories
8.1		**on request**	Rotary table module RTM650
8.2		**5907189**	Laser protection window 100 x 200 mm
8.3		**5527416**	Assembly frame 100 x 200 mm
8.4		**5527695**	Linear axis Z400
8.5		**on request**	Linear axis Z200
8.6		**5527690**	Linear axis X400
8.7		**5905933**	Rotary axis D30
		5906350	Rotary axis D30.1 incl. connecting cable and axis controller
8.8		**5905978**	3-jaw chuck D30
8.9		**5526156**	Connecting cable D30
8.10		**5528250.001**	E-stop dongle
8.11		**5528368**	Foot switch
8.12		**5527685**	Axis controller 2S
8.13		**5527665**	Connecting cable 2S
8.14		**5527478**	Adapter cable set FL-PCI
8.15		**5527479**	Adapter cable set FL-TCP

Pos.		Part no.	Software
9.1		**5526096.001**	USB software dongle cabLase Editor 5
9.2		**5526094**	USB software dongle cabLase Editor 5, Save Only

cab product overview

Label printers
MACH1, MACH2

Label printers
EOS 2

Label printers
EOS 5

Label printers
MACH 4S

Label printers
SQUIX 2

Label printers
SQUIX 4

Label printers
SQUIX 6.3

Label printer
A8+

Label printer
XD4T

Label printers
XC

Print and apply systems
HERMES Q

Print and apply systems
Hermes C

Tube labeling systems
AXON

Print modules
PX Q

Labels and ribbons

Label software
cablabel S3

Label dispensers
HS, VS

Labeling heads
IXOR

Marking lasers
XENO 4

Laser marking systems

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Germany
cab Produkttechnik GmbH & Co KG
Karlsruhe
Phone +49 721 6626 0
www.cab.de

France
cab Technologies S.à.r.l.
Niedermodern
Phone +33 388 722501
www.cab.de/fr

USA
cab Technology, Inc.
Chelmsford, MA
Phone +1 978 250 8321
www.cab.de/us

Mexico
cab Technology, Inc.
Juárez
Phone +52 656 682 4301
www.cab.de/es

Taiwan
cab Technology Co., Ltd.
Taipei
Phone +886 (02) 8227 3966
www.cab.de/tw

China
cab (Shanghai) Trading Co., Ltd.
Shanghai
Phone +86 (021) 6236 3161
www.cab.de/cn

China
cab (Shanghai) Trading Co., Ltd.
Guangzhou
Phone +86 (020) 2831 7358
www.cab.de/cn

South Africa
cab Technology (Pty) Ltd.
Randburg
Phone +27 11 886 3580
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