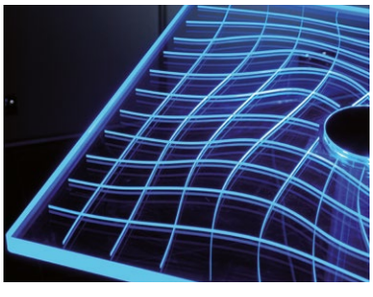
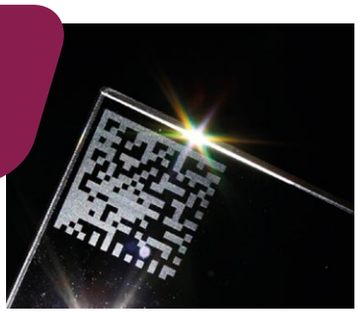
cericom
laser

LASER PROCESSING OF GLASS

with innovative machines from cericom





www.cericom.de

cericom - the specialist for machines and software for laser structuring of glass

cericom GmbH is a medium-sized company in Minden, North Rhine-Westphalia (Germany), which was founded in 2002 and has been part of the LiSEC Group since 2020.

We offer our customers a full range of services in laser marking, matting, decoating, drilling and cutting, including customized machine prototypes.

Our philosophy: We are committed to

- making glass processing more environmentally friendly by using laser technologies, tailor-made mechanical engineering and outstanding service
- enabling individual and affordable glass design
- offering innovative solutions that are very difficult or impossible to achieve using conventional, machining processes.

When developing new groundbreaking solutions in glass processing and finishing with laser technology, we act according to a simple principle:

From our own laser research department to software development, system integration and special construction, as well as in-house production for worldwide service and sales, we consistently follow the principle of "everything from a single source".

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PRODUCT OVERVIEW

Unique glass decorations of outstanding quality

Marking / Matting / Surface Engraving

cericom machines mainly use CO_2 lasers for this application. This type of laser can process the surfaces of all flat glass products available on the market without restrictions, as well as structure many coatings.

The glass surface is matted by the CO_2 laser beam through a small amount of material removal and additional melting of the glass surface. Advantage: Laser-frosted glass surfaces are less sensitive to fingerprints and dirt than glass surfaces that are roughened by means of sandblasting or etching.

In addition, our glass marking technology can be used to create non-slip glass surfaces. An extremely wear-resistant non-slip surface is achieved by creating micropores in the glass surface with the laser beam.

Subsurface engraving

Solid-state lasers that work with visible laser radiation in the green wavelength range are used for engraving the inside of glass. Subsurface engraving always requires a clear, smooth and transparent glass surface so that the laser beam can penetrate unhindered - in order to modify the glass structure there in a targeted manner and thus create a laser engraving on the inside of the glass.

In addition, a laser can also often engrave the inside of frosted glass: Since usually only one side of the glass is frosted or coated, subsurface engraving can be achieved from the clear glass side in this case.

Laser decoating is so decorative

Decoating

Clear decoating is carried out with pulsed infrared lasers; matt decoating with CO_2-lasers. In addition, we offer specialized lasers to achieve the best quality and productivity for a variety of coating types. Coatings such as paint, mirror layers, enamel, LowE layers or conductive layers can be removed and structured in a targeted manner and with the highest resolution. The method developed by cericom for targeted laser ablation enables flexible and economical decoating and structuring of a wide variety of glass products.

Laser ablation can achieve significantly higher resolutions and sharper contours than screen or digital printing. Sampling can also be carried out quickly and efficiently using laser decoating, since no intermediate steps are required. The glass exposed under the coating normally remains undamaged and unfrosted.

Milling & drilling

A particularly innovative highlight at cericom are laser machines for drilling, cutting and 3-dimensional structuring of glass surfaces.

Laser cutting offers significant economical and qualitative advantages, particularly in the processing of technical glass, already showing great growth potential for industrial applications: Outstanding advantages of laser cutting are the free shaping, the completely force-free process without coolant, and a final cut edge of outstanding quality – this usually requires no further post-processing. If desired, the edge of a cut or a hole can be chamfered or rounded directly in the process.

c-vertica: full flexibility

Experience trend-setting laser technology with cericom, with endless design options for the finishing of all types of flat glass. The inclined bed system processes precise designs of unique quality, in which even the finest structures can be reproduced effortlessly.

The c-vertica is a modular series with a high level of efficiency, which can create flat glass with a frosted surface as well as a 3-dimensional structure on the inside.
With the optional magazine trolley, an automated multi-shift operation can take place and thus maximum efficiency and productivity can be achieved. Our machines are available from door format to XXXL size.

c-vertica 230 – 600 with fully automatic pane feed

Areas of application

- Ideal for all types of flat glass
- Removal of commercially available coatings, as well as mirrors and paints
- Thin film structuring and clear chrome glass decoating

Advantages

- Simple one-person operation
- Easy, scratch-free handling of the glass plates
- Space-saving vertical glass processing
- Particularly time-efficient execution
- Diverse decorative patterns with highest precision and quality
- Effortless reproduction of even the finest structures
- Glass engraving: surfaces remain intact and are easy to clean
- Clean process: no ink, no granules, no chemicals
- Low running costs

Decoating

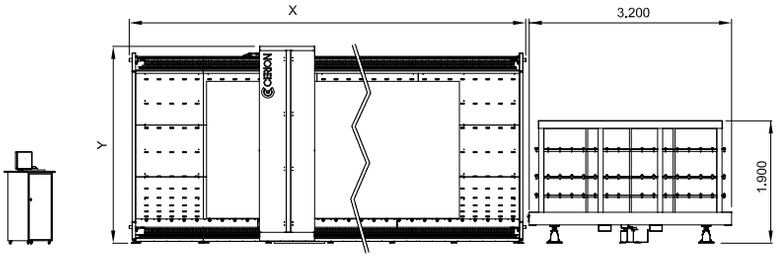
Subsurface engraving

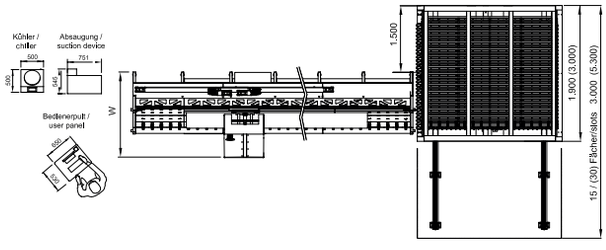
Surface engraving / matting / marking

Dimensions

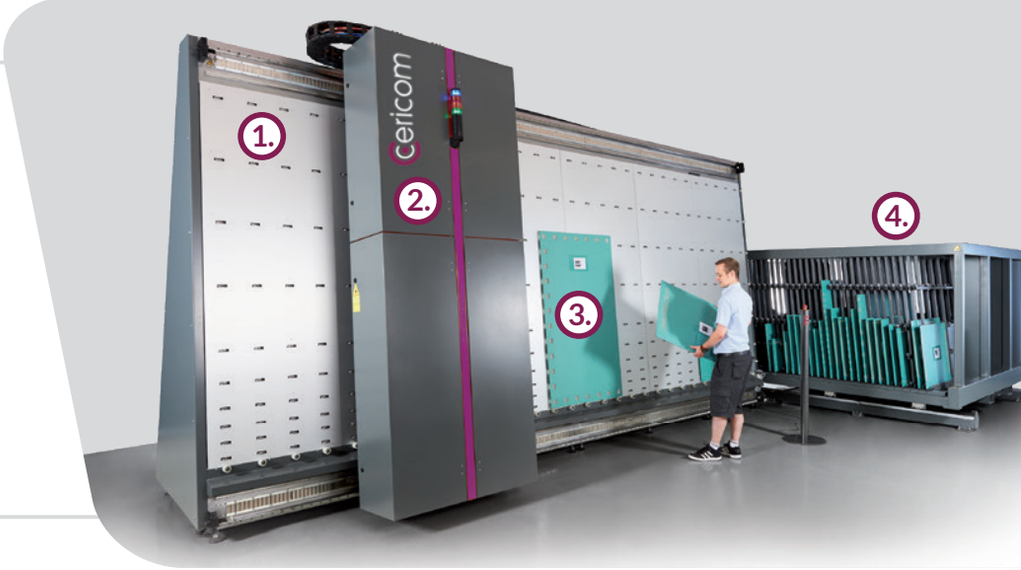
Dimensions											
Type c-vertica	**180 - 300**			**230 -**	**230 - 600**	**230 - 900**	**230 -**	**330**	**330 - 600**	**330 - 900**	**330 -**
Glass size max.:	H	W	T	H	W	W	T	H	W	W	T
	1,800	3,000	50	2,300	6,000	9,000	50	3,300	6,000	9,000	50
Process area:											
Laser A surface	1,720	2,700	50	2,200	4,500	7,500	50	3,300	4,500	7,500	50
Laser B inside engraving	1,720	2,700	50	2,200	4,500	7,500	50	3,300	4,500	7,500	50
Laser A + B	-	-	-	2,200	4,100	7,100	50	3,300	4,100	7,100	50
Dimensions machine:	Y	X	W	Y	X	X	W	Y	X	X	W
	2,400	3,510	1,360	3,200	6,100	9,100	2,000	4,100	9,100	15,100	2,200

all figures in mm – subject to change





1. Processing area
2. Laser sled
3. Glass pane
4. Pane feed (fully automatic)

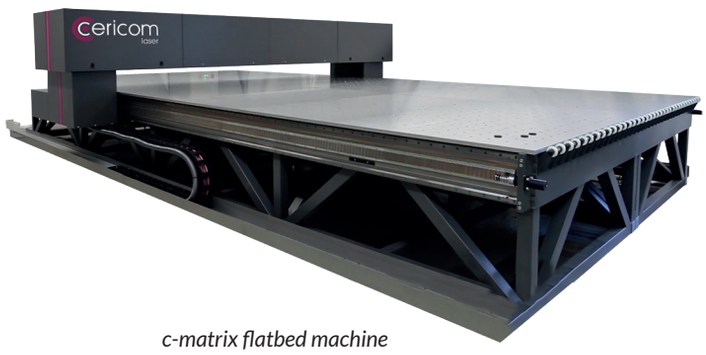


c-matrix: Flatbed machine for interior and/or surface engraving

With our c-matrix series we have developed an extremely robust machine concept. The subframes are manufactured as heavy steel constructions with milled guideways.

We offer the machine table in a closed or open design, depending on the main application. Wherever glass is to be processed in a horizontal orientation, this machine is the optimal solution.

We have been manufacturing c-matrix systems as single and multi-laser systems for years. You can either subsurface engrave using a solid-state laser or process the surface using a CO_2 laser or fiber laser. Furthermore, with a hybrid system containing two laser beam sources, two applications can be carried out on just one machine.



c-matrix flatbed machine

Decoating

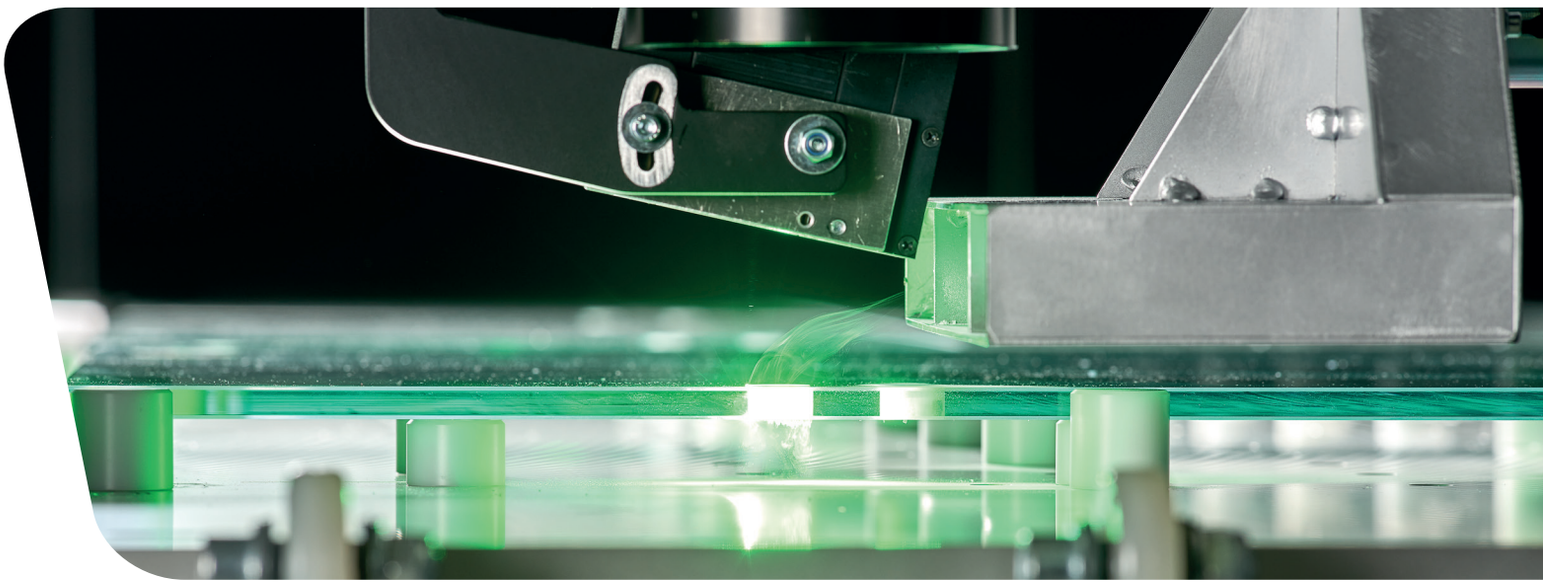
Inside engraving

Surface engraving / matting / marking

Milling and drilling

Advantages

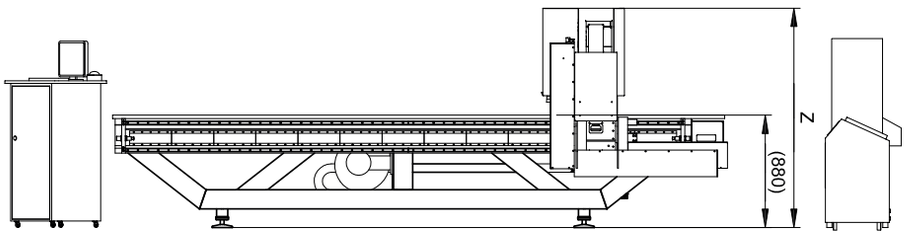
- Surface engraving and subsurface engraving
- Air cushion table for easy and safe handling of the glass plates
- 2 and 3 dimensional motifs
- Control via integrated PC with control panel and screen
- High precision
- High flexibility through multi-laser system

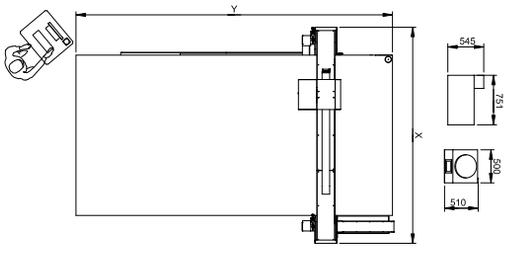


Dimensions

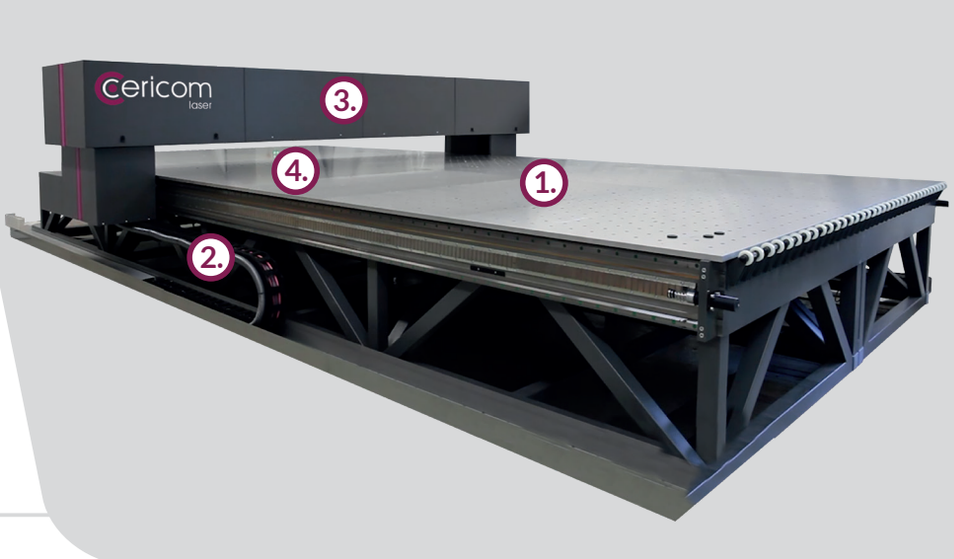
Dimensions									
Type c-matrix	**175 - 300**			**234 - 400**			**330 - 600**		
Glass size max.:	L	W	T	L	W	T	L	W	T
	1,300	1,400	100	4,000	2,340	100	6,100	3,400	100
Process area:									
Laser A surface	2,400	1,200	100	3,210	2,250	100	6,000	3,300	100
Laser B inside engraving	2,400	1,200	100	3,210	2,250	100	6,000	3,300	100
Laser A + B	-	-	-	3,210	2,250	100	6,000	3,300	100
Dimensions machine:	Y	X	Z	Y	X	Z	Y	X	Z
	3,430	2,250	1,650	4,600	3,300	1,700	7,600	4,700	1,700

all figures in mm – subject to change





1. Processing area
2. Laser sled
3. Guide rail
4. Glass pane



c-cut: machine for dry laser drilling, cutting and milling of glass

c-cut is our machine for (contour) drilling, cutting and milling of optically transparent materials using laser radiation. This machine enables efficient laser processing of all types of glass, especially float, borosilicate and quartz glass. In a working area of approx. 100 x 100 mm, holes can be made, sections can be cut along any curve and complex geometries can be milled according to CAD drawings.

A very narrow cutting width - in combination with high accuracy and resolution - enables the production of cuts that cannot be achieved with any conventional glass processing technology.

The machining process is completely "dry", i.e. it does not require any water. Drill holes and cutting contours can be created with a high aspect ratio of up to 1:25.

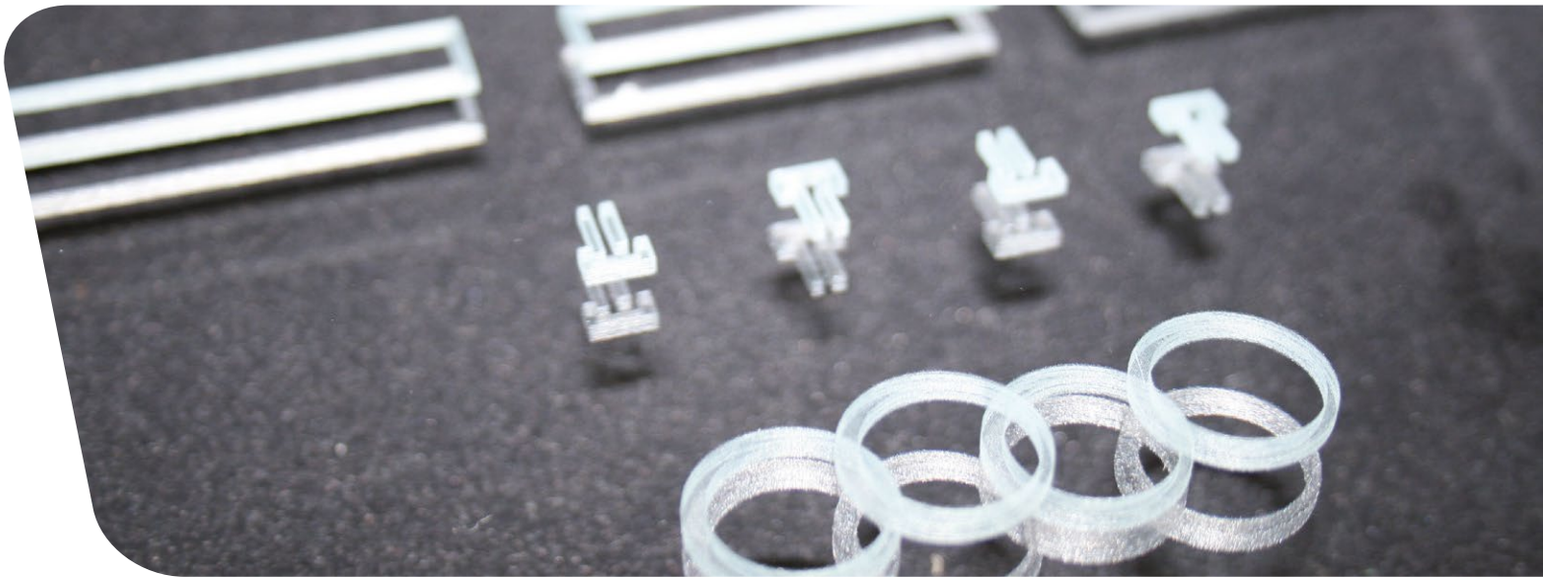
Special features

- Dry process
- High aspect ratio
- Small cutting geometries > 0.2 mm
- High precision and standard design
- Can be integrated into production lines

Milling and drilling

Areas of application

- Microelectronics
- Sensors
- Microfluidics



Parameter c-cut

	High precision *c-cut 300/300-60*	**Standard** *c-cut 300/300-100*
Laser beam source		
Laser type	Fiber laser	
Laser wavelength	515 nm	
Maximum laser power	50 W	
Optical System		
Steel guide system	Optical fiber, 3 m	
Process		
Shape	Any Shape (cut according to drawing)	
Material	Glass, brittle materials, transparent to the visible spectrum	
Material thickness	0.7 - 20 mm	
Maximum workpiece size	300 x 300 mm	
Minimum hole size, Ø (1)	Ø 0.5 mm	Ø 0.7 mm
Maximum cutting area	60 x 60 mm	100 x 100 mm
Drilling/cutting spreed (1) (2) (3)	15 mm/s*mmt	12 mm/s*mmt
Aspect ratio (hole diameter: drilling depth)	1:25	1:18
Accuracy (4)	±25 µm	±30 µm
Deviation from vertical cutting angle	< 2°	< 2°
Minimum kerf width (1)	200 µm	250 µm
General		
Control system	full numerical control, built-in industrial computer with OS Windows	
Cooling	water cooling, built-in laser cooler (5)	
Power supply	single phase, 220-240 VAC, 50 Hz	
power consumption *(laser, built-in chiller, without exhaust system)*	Max 2000 W	
Dimensions (W x T x H) (6)	1.300 x 810 x 2.000 mm	
Weight	380 kg	
Operating conditions	Ambient temperature: 20..30°C Humidity: < 80% (without condensation)	

(1) – depending on material, thickness, dimensions, shape, speed
(2) – the speed is given in mm/s per 1 mm material thickness
(3) – Calculation of the machining time of a Ø 20 mm drilled hole in 4 mm thick soda-lime glass
(4) – can be improved upon special request
(5) – if necessary, the radiator can be installed separately, maximum length of coolant hoses 3 m
(6) – without monitor

c-mark – the universal marking solution

c-mark consists of a module with a laser and 2D scanner as well as a lens, optionally available with variable focal lengths. A special adapter plate enables easy and flexible integration of the laser marking module into the existing system technology and facilitates maintenance and replacement.

The rotatable laser scan head enables the laser beam to be emitted variably, so that processing can also be carried out “overhead”, for example.

It can be used wherever high-quality markings are required or copyrights are an issue - for example for marking safety glass, in the automotive industry, in medical technology, or for jewelry and perfumes. c-mark enables easy integration into existing systems and machines and is also available as a "stand-alone solution".

Advantages

- High marking quality and durability
- Direct glass lettering; no additional material required
- No weakening of the glass in the marked area
- Easy service
- Electronic readability
- Individual product code for referencing
- Highest marking speed
- High flexibility of the lettering motifs
- Professional software with a simple user interface
- Low energy consumption
- Labeling of other materials possible

Surface engraving / matting / marking

Parameters c-mark-economy

Laser				
Laser	CO_2 (M^2<1.2)			
Max. laser power	30 W			
Performance stability	± 6% at cold start, guaranteed			
Cooling	air (fan)			
Optical system				
Lens - Focal Length (ZnSe)	F-75	F-100 (Standard)	F-150	F-200
Marking area [mm x mm]	50 x 50	70 x 70	105 x 105	140 x 140
Focus diameter [µm]	~ 170	~ 210	~ 290	~ 360
Resolution [dpi]	~ 145	~ 115	~ 90	~ 70
Max. marking speed	> 1000 Markierungspunkte / Sekunde			
Control / Interfaces				
Computer	Integrated Shuttle PC, Windows ® 10			
Interfaces	2x USB, 2x Ethernet, 1x HDMI			
Laser control interfaces	Laser interlock, marking start (24 VDC), marking stop (24 VDC), E-Stop, error reset, laser busy, optional digital I/Os (24 VDC)			
Software	C-Control V3 (C-Mark Edition)			
Options / Accessories				
Scanner mounting angle (min. working distance)	0° (77.8 mm); 90° (49.1 mm); 180° (56.1 mm); 270° (49.1 mm)			
Additional optional accessory	- foot switch for efficient and user-friendly control - suction systems			
Dimensions / Installation / Laser Safety				
Dimensions marking module (L x H x W in mm)	774 x 178,5 x 143			
Weight of the labeling module (incl. laser and laser scanner)	18 kg			
Cable length	3 m (standard), up to 20 m; suitable for drag chains			
Ambient conditions	Operating temperature range +5 bis +35° C Relative humidity max. 90 %; not condensing			
Electrical Requirements	115 - 230 VAC, 16 A, 50/60 Hz, 1/N/PE			
Power consumption	< 1000 W (incl. laser cooling)			
System protection	Marking head: sealed against splash water *(IP 54)* Laser rack unit: dustproof *(IP 20)*			
Laser-class	Laser class 1-4 (depending on the integration situation), CE certified			

all figures in mm – subject to change

c-jet: Motifs that float in the glass - promotional items for eternity

Three-dimensional images in the glass! With this machine you can produce individually processed glass cubes, for example for use at events.

The c-jet sets new standards: Great performance in the smallest space! This laser system enables larger glass objects to be engraved and multi-mode operation to be used for high-volume production. At the same time, it is easy to transport, making it perfect for use at events and trade fairs. Thanks to its compact design and large viewing window, this system will cause a stir wherever it goes.

Cericom has been the specialist in laser processing of glass for 20 years and offers everything you need. Use our c-cam 3D camera and our crystalab pro software to create textured 2D and 3D designs in connection with our subsurface laser engraving systems and thus produce high-quality souvenirs, individual gift ideas or original promotional items inside glass.

Advantages

- Compact and portable
- Easy to install
- Rollable transport case included – can also be used as a table
- High engraving speed
- Latest short-pulse laser for best image quality
- Programmable multimode operation
- Efficient air cooling; no water circuit required
- Large, motorized viewing window with laser protection

Subsurface engraving

We also manufacture to your order

An economically attractive alternative: We not only manufacture machines for laser glass processing, but also produce for you on a subcontract basis on our own laser machines.

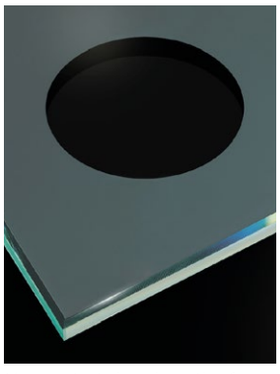
Contours cut into glass.

Our portfolio:

- Drilling
- Cutting
- Milling
- Decoating
- Engraving
- Labeling
- Manufacturing of heatable glass

Micromachining - contour drilling and milling

Laser beam processing makes it possible to drill, cut or mill a wide variety of shapes and patterns in glass - without contact and without environmental pollution from consumables, coolants and their processing.



Non-contact glass decoating for attaching point holders.

Macro processing – decoating, structuring and subsurface glass engraving

Our service: decoating or structuring of glass surfaces e.g., for decorative purposes, attachment points for point holders or increased transmittance for mobile phone radiation.

Internal engraving: Normal or low-iron float glass - also as part of laminated glass - can be internally engraved with the laser.

Subsurface engraved and illuminated table, designed and manufactured by cericom.

cericom
laser

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