# nanoVIS ʺ / Laser Marking System
Safety Class 4

System Overview

Laser for integration with innovative frequency self-adjustable system. The **nanoVIS**_II_ uses a new revolutionary laser technology with auto-monitoring of the frequency. The **OEM nanoVIS**_II_ system is an extremely innovative laser unit, very compact and light, stable and reliable, which is well suited for integration of line and bench top applications. As part of the new family of **a-Wave™** products, Automator's exclusive laser technology allows nanoVIS_II_ laser to be very cost effective with results comparable to much higher cost systems for annealing hardened surfaces or marking on plastics. The nanoVIS_II_ achieves excellent results infact on many different materials; plastics, metals, anodized, ceramic, polycarbonate, painted and much more.

In addition to being the world's least expensive galvanometer steered laser, **nanoVIS**_II_ is also the smallest laser in the world. All its components are integrated in the practical and compact **nanoVIS**_II_ in just 327mm (12,9")length and 7,7Kg (16,9lb) weight: from the source Pto the electronic boards, to the scanning head with a flat field lens. Designed and built in compliance with the "Eco Philosophy" **nanoVIS**_II_ respects EU legislation relating to the environment and energy savings. A policy that Automator adopted both in the choice of components and in the internal production phases. In one word: **nanoVIS**_II_ "respects" the environment.

System Configuration

nanoVIS_II_ project main concept is _modular engineering_ to combine the best components in the smallest laser system with interchangeable of parts and options, projected and manufactured by Automator.

Laser marker

PC (not included)

Power supply

Automator
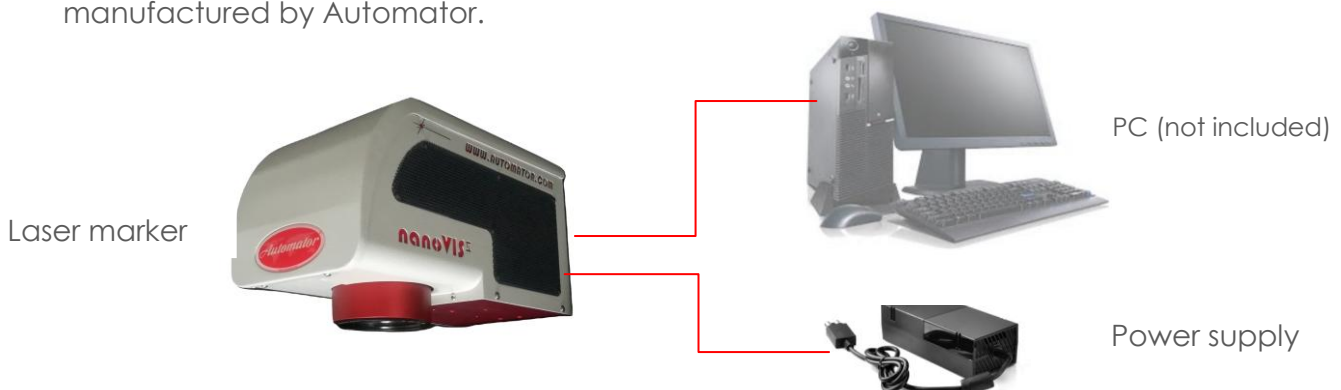
nanoVis[II] - Technical data

Overall Dimensions: LxWxH (mm - inches):	327,7x165x202,6 – 12,9x6,49x7,97
Weight (kg - lb):	7,7 – 16,9
Laser type:	YAG – aWave
Power range (W):	Variable
Wavelenght (nm):	1060
Polarization:	Linear (100:1)
Standard lens (mm - marking area):	F160 - marking area 110x110
Optical Isolator:	No
External power supply (VDC):	24
Beam quality (M²):	TEM00
Pulse duration (ns) @20kHz:	<130
Output power tunability (%):	10-100
Power consumption (20°C) (W):	160
Operating temperature (°C - °F):	+15 - +35 - 59 – 95
Store temperature (°C - °F):	0 - +60 - 32 - 140
Humidity (%):	10 – 85 without condensation
Cooling system:	Forced air cooled
Directive 2011/65/EC - Restriction of Hazardous Substances (RoHS):	Respectful
Safety Class:	4
MTBF (h):	Estimated above 120.000

Earthing, by linking to the point named "PE" – on the back of the laser source – is a customer's responsability

Connectivity and layout of the system
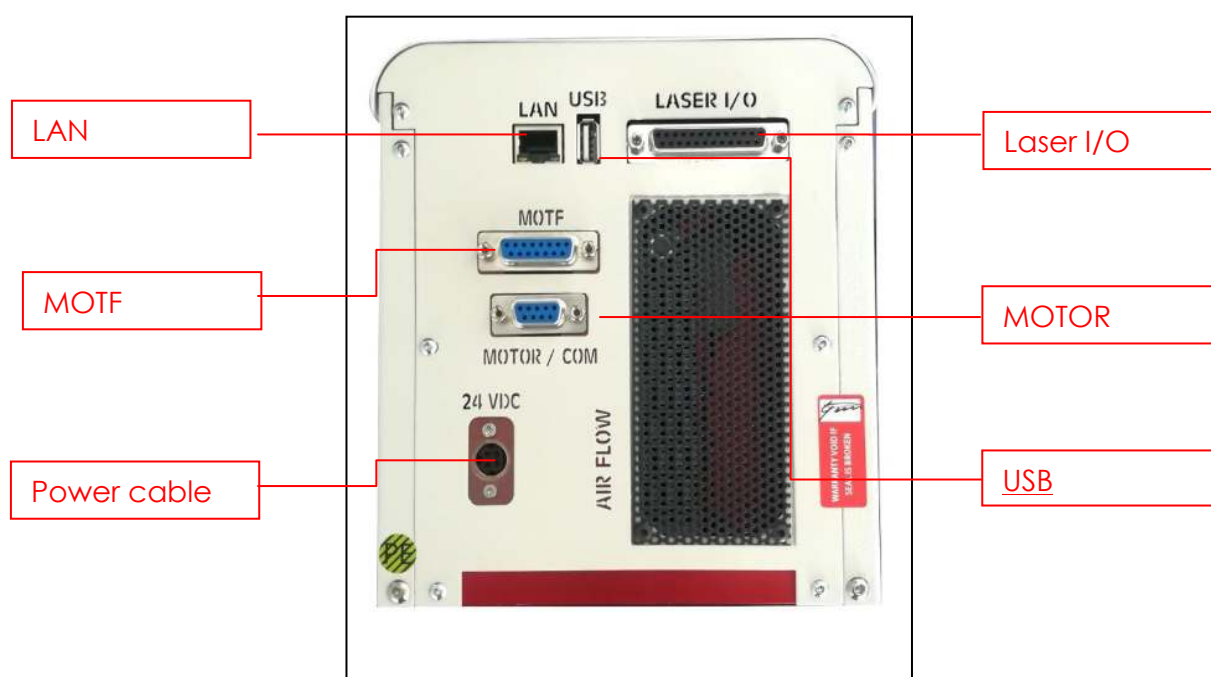
Marking Head - Red pointer

With its aWave™ technology and high performing scan head with a flat field lens 110x110mm standard marking area, nanoVIS*ᴵᴵ* is an OEM laser unit (acronym for Original Equipment Manufacturer) using a source with auto frequency control. The cooling of the source is air. nanoVIS*ᴵᴵ*, for integration, is in Safety Class 4. In this case, the integrator has to ensure the safety of the system as required by the text of the Machinery Directive in force.

Marking Head - Red pointer

The nanoVIS *ᴵᴵ* laser system has an auxiliary visible red light at 632 nm (class III), with a power of about 2 mW, used as a pointer to preview the working area directly on the workpiece surface without making any marking.

Marking Head - Optical Hazard
nanoVIS *ᴵᴵ* is a laser device in **Safety Class 4**.

Marking Head - Technical drawings

DATA	VALUE[mm]	VALUE[in]
A	100	3.94
B	200	7.87
C	200	7.87
D	0	0
E	0	0
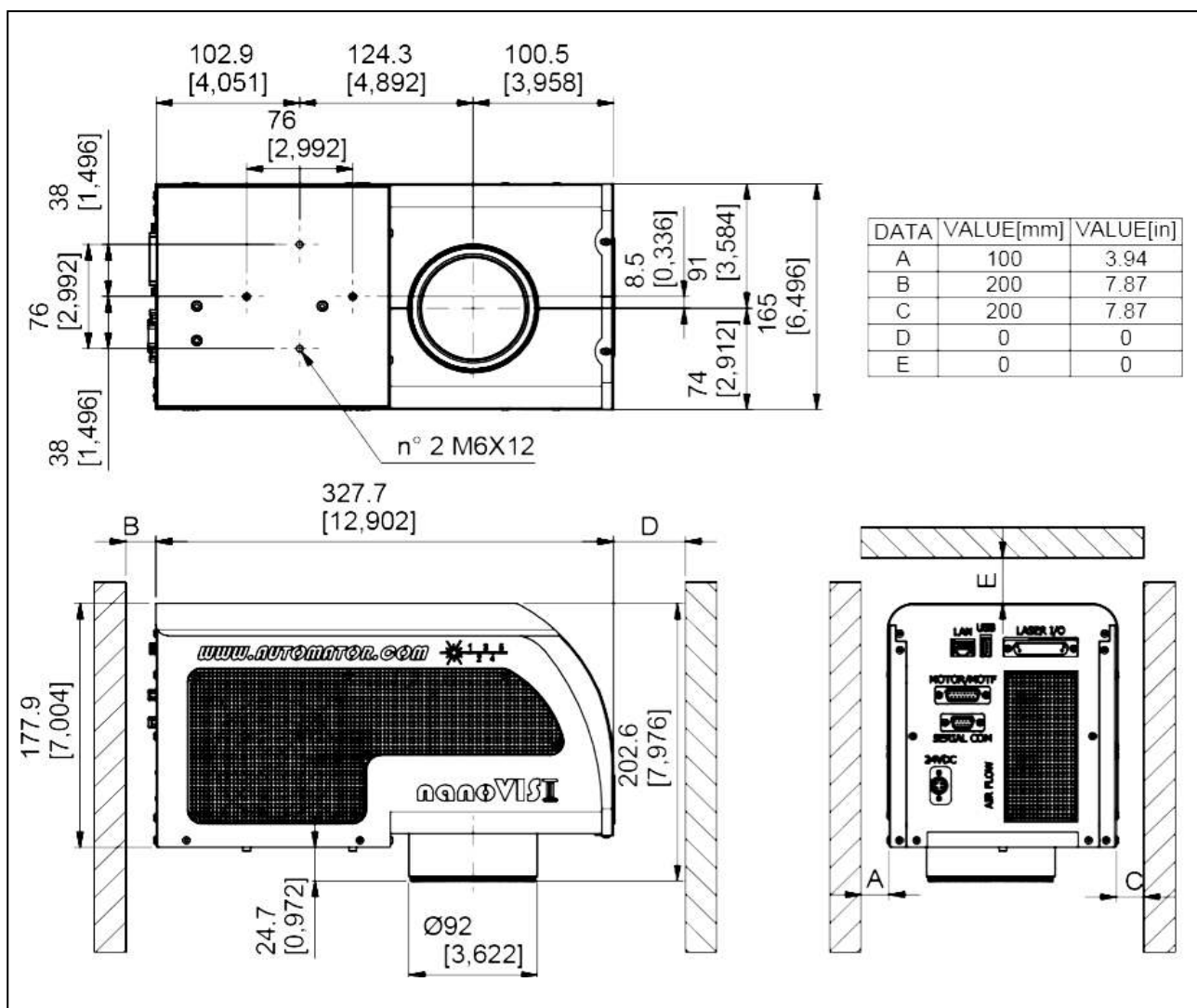
Lenses	Flat field focus – Marking area		Focus length
Standard Lens F160	110x110 mm	• 4,33"x4,33"	198 mm • 7,8"
Lens F100	60x60 mm	• 2,36"x2.36"	120 mm • 4,7"
Lens F254	155x155 mm	• 7"x7"	302 mm • 11,9"
Lens F330	220x220 mm	• 8,66x8,66"	390 mm • 15,3"
Lens F420	300x300 mm	• 12,59"x12,59"	520 mm • 20,5"

Marking Head - Shutter

The nanoVIS^{II} marking head integrates a shutter housing: this electro-mechanical actuator provides a millisecond shutter operation. During marking, the shutter stays in an open position and then closes when the operation is completed providing a safe condition of lockout. The shutter movement can be controlled by the laser hardware/software or by the I/O signals. An integrated certified safety sensor detects the shutter blade position in the housing, providing a critical information that confirms the state of the shutter position.

nanoVIS^{II} – Software EuGenius

EuGenius Software has been projected and developed by Automator highly specialized team, consolidating the marked requests in the long term marking knowhow of more than 70 years in marking.

Versatile in the applications and friendly to use, even by operators without highly technical specific training, such as CAD knowledge.

- Multilanguage menu
- Management barcode "Datamatrix", 2D code, QR code, PDF Queues
- Easy import of vector drawings, DXF
- Easy import of raster graphics, BMP, JPEG, .JPG, GIF
- Complete set of laser parameters such as speed or power laser
- Texts, Text arcs, text on curved lines,
- Lines, rectangles, polygons, circles and arcs
- TTF Font ® (windows property)
- Graphic preview
- Texts with date, serial numbers, shift codes and year/month/day
- Multi fillings or single profile markings
- Templates (object to be marked as background)
- Proportion scale, move, rotate, group creation of each object on the screen
- Quick Test for an easy identification of the best laser parameters
- Automation & object tiling
- External axis commanded by software
- Shutter control
- Easy diagnosis of troubleshootings

Laser Marking Software

nanoVIS^{II} – Pin out – I/O scheme

| Pin:	YAG-GREEN-ON/OFF	FYBRA	CO2
1	Com. IN	Com. IN	Com. IN
2	Enable Laser	nc	nc
3	Start Marking	Start Marking	Start Marking
4	JOB loading	JOB loading	JOB loading
5	USER 1	USER 1	USER 1
6	USER 2	USER 2	USER 2
7	USER 3	USER 3	USER 3
8	USER 4 (SHUTTER)	USER 4 (SHUTTER)	USER 4 (SHUTTER)
9	nc	nc	nc
10	nc	nc	nc
11	nc	nc	nc
12	nc	nc	nc
13	X1 , X2 (Com. Securty)	X1 , X2 (Com. Securty)	X1 , X2 (Com. Securty)
14	Com. OUT	Com. OUT	Com. OUT
15	System ON	System ON	System ON
16	System READY	System READY	System READY
17	Laser ON (armed)	Laser ON (armed)	nc
18	Laser OK (System OK)	nc	nc
19	Ongoing marking	Ongoing marking	Ongoing marking
20	USER OUT 1	USER OUT 1	USER OUT 1
21	USER OUT 2	USER OUT 2	USER OUT 2
22	nc	nc	nc
23	nc	nc	nc
24	Y1 (Security Channel 1)	Y1 (Security Channel 1)	Y1 (Security Channel 1)
25	Y2 (Security Channel 2)	Y2 (Security Channel 2)	Y2 (Security Channel 2)

Pin:	I/O 9 Female Poles (communications/motors)
1	(reserved)
2	RX2
3	TX2
4	(reserved)
5	0 Vdc
6	(reserved)
7	A
8	B
9	+24 Vdc

| Pin:	I/O 15 Female Poles (encoder)		
1	+24 Vdc	8	nc
2	0 Vdc	9	+5Vdc
3	A	10	/A
4	B	11	/B
5	Z	12	/Z
6	nc	13	nc
7	nc	14/15	nc

nanoVIS*ᴵᴵ* - Diagnosis

Human eye visibile the diagnostic on the laser supply, with easy indicators

1. +15 laser head power supply
2. 15 laser head power supply
3. 24V CPU board power supply
4. 12V auxiliary power supply
5. 24V input power supply
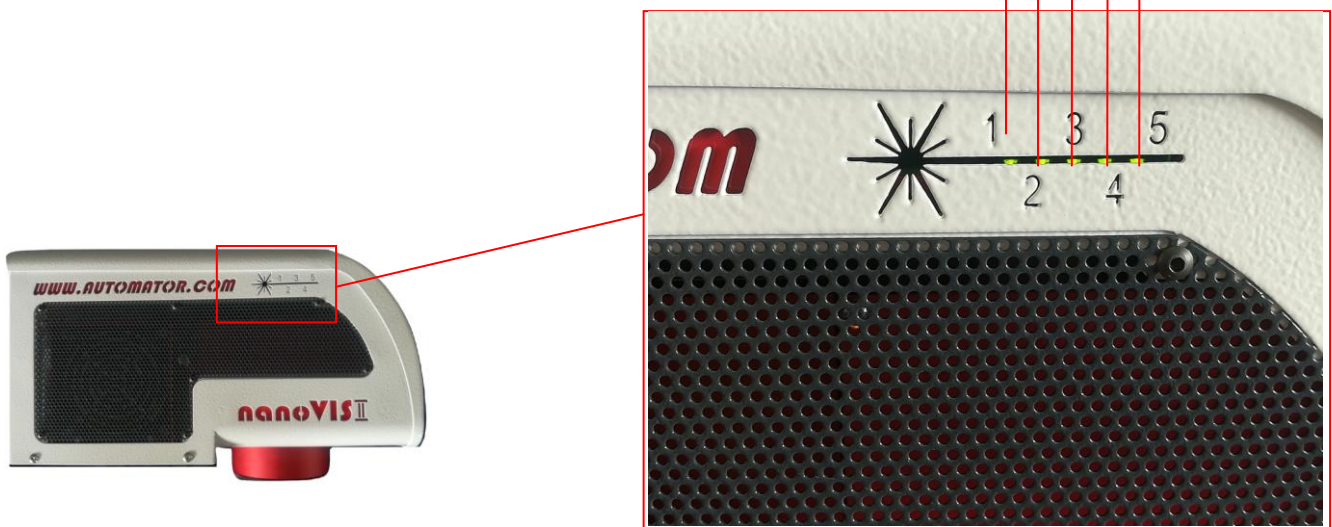

nanoVIS*ᴵᴵ* – Other possible Class 4 configuration

Automator nanoVIS is available in Benchtop configuration, together with the Automator standard or special Toolstand with manual and electric driven Z axis up to 1200 mm height.
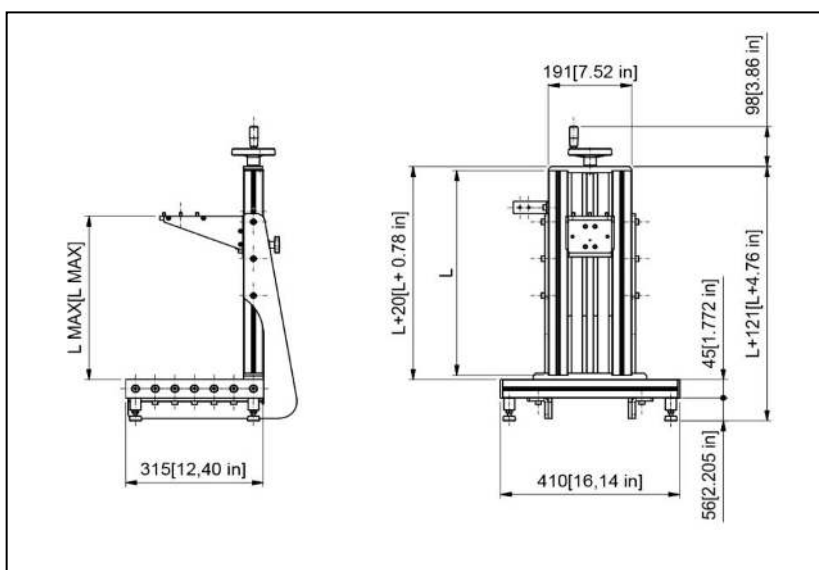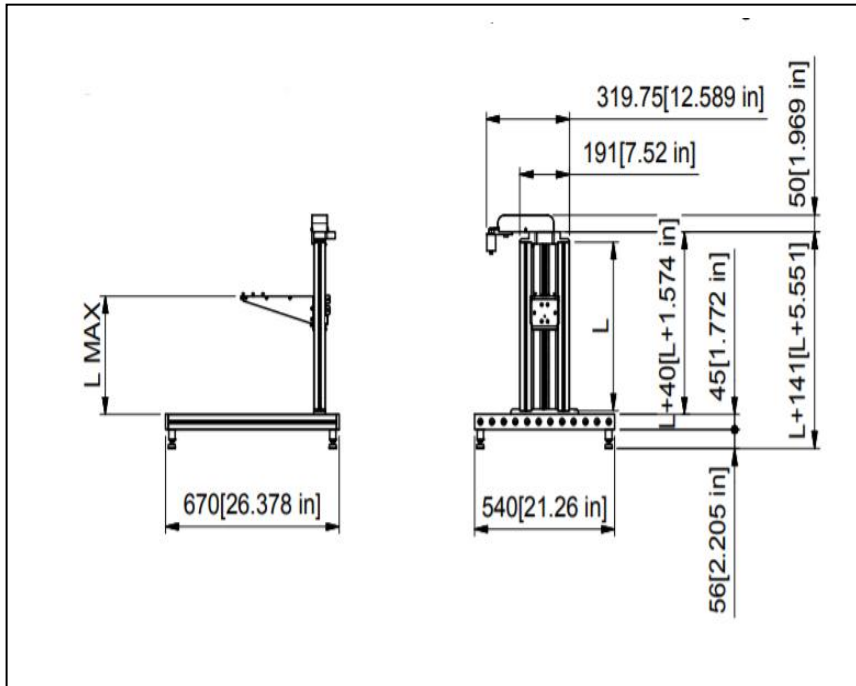
nanoVIS[II] - Possible Safety Class 1 configurations

nanoVIS[II] is available also in different Safety Class 1 Configurations, set in an Automator laser enclosure with a wide range of loading and marking areas.

OMEGA   ARENA   REGINA   SUPERIOR
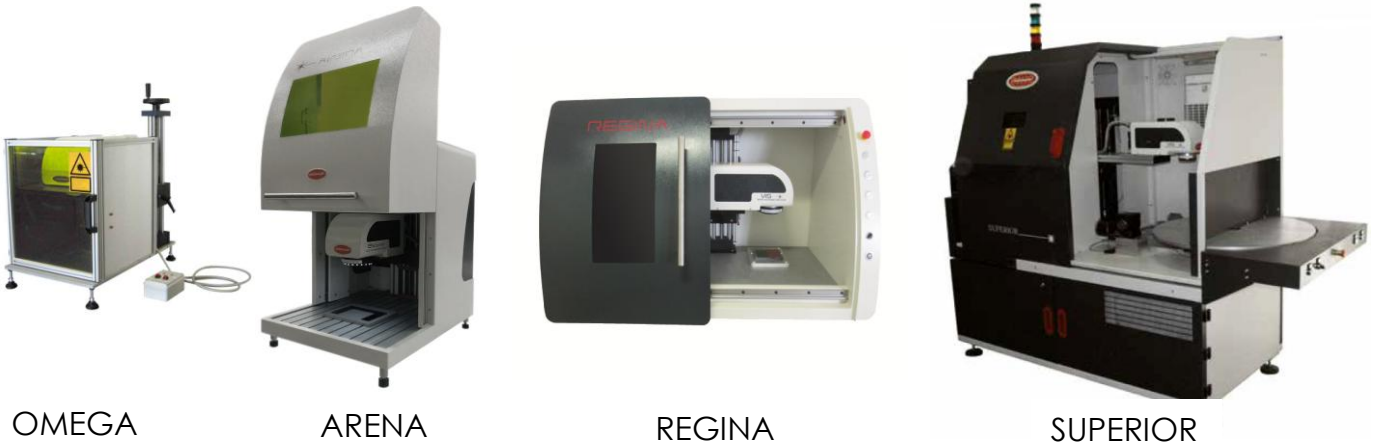
www.IdentificationSystemsGroup.com
info@identificationsystemsgroup.com
Toll Free: 888-964-6482

Automator