Automator
Marking Systems

nanoVIS3

Laser Marking System

Software EuGENIUS™
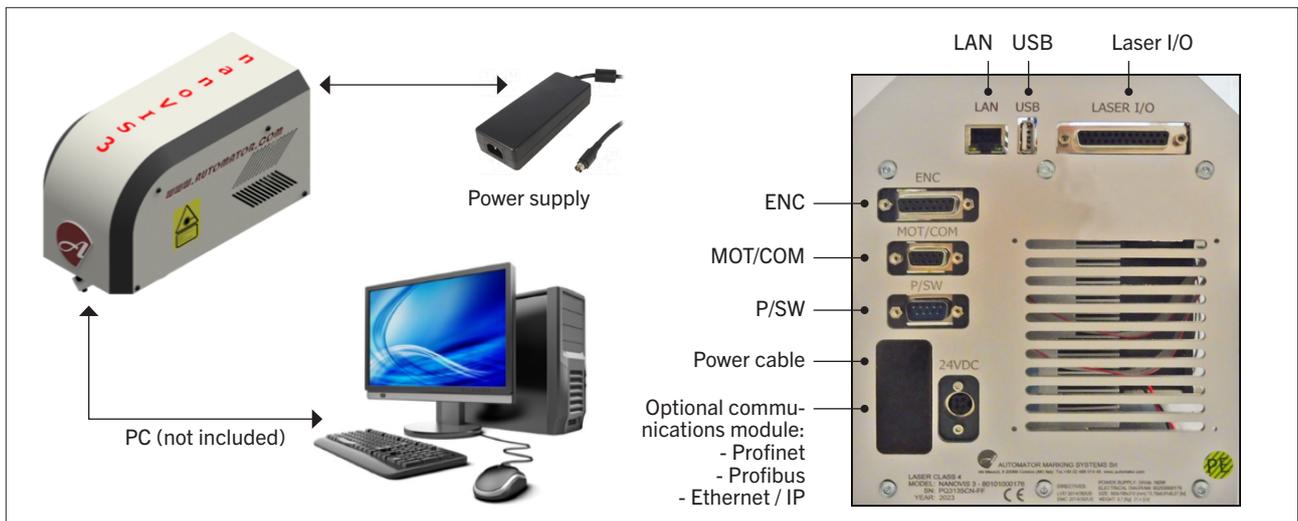
Safety Class **SIL4**
SHUTTER

CE

Laser for integration with innovative frequency self-adjustable system. The nanoVIS3 uses a new revolutionary laser technology with auto-monitoring of the frequency. The OEM nanoVIS3 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 nanoVIS3 laser to be very cost effective with results comparable to much higher cost systems for annealing hardened surfaces or marking on plastics. The nanoVIS3 achieves excellent results infact on many different materials; plastics, metals, anodized, ce-

ramic, polycarbonate, painted and much more. In addition to being the world's least expensive galvanometer steered laser, nanoVIS3 is also the smallest laser in the world. All its components are integrated in the practical and compact nanoVIS3 in just 350mm (13,78") length and 9,7Kg (21.4lb) 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" nanoVIS3 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: nanoVIS3 "respects" the environment.

SYSTEM CONFIGURATION, CONNECTIVITY AND LAYOUT OF THE SYSTEM

nanoVIS3 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. Earthing, by linking to the point named "PE" — on the back of the laser source — is a customer's responsability

Power supply

PC (not included)

LAN USB Laser I/O

ENC

MOT/COM

P/SW

Power cable

Optional communications module:
- Profinet
- Profibus
- Ethernet / IP

TECHNICAL DATA

Overall Dimensions: LxWxH (mm - inches)	350x168x210 – 13.78x6.61x8.27
Weight (kg - lb)	9.7 – 21.4
Laser type	YAG – aWave
Power range (W)	Variable
Wavelenght (nm)	1060
Polarization	Lineare (100:1)
Standard lens (mm - marking area)	F160 - Marking area 110x110
Optical Isolator	No
External power supply (VDC)	24
Beam quality (M^2)	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

SAFETY SYSTEMS

Safety sensor SCHMERSAL type RSS260	(Ple) Category 4 EN 13849-1
Action	RFID
PFH	6.8 x 10^{-10}/ h
PFD	1.2 x 10^{-4}
SIL	For SIL 3 applications
Estimated life	20 years
Safety system EN ISO 14119	Type 4

PIN OUT – I/O SCHEME

PIN		I/O 25 PINS FEMALE
1		Com. Inputs
2	Input	Laser enable
3	Input	Start Marking
4	Input	Job Select (Standalone)
5	Input	USER 1
6	Input	USER 2
7	Input	USER 3
8	Input	USER 4 (SHUTTER)
9	Input	USER 5 (SHUTTER)
10		nc
11		nc
12		nc
13	Safety	X1 , X2 (Com.)
14		Com Outputs
15	Output	System ON
16	Output	System Ready (Standalone)
17	Output	Laser Enabled (Laser ON)
18	Output	Laser OK (System OK)
19	Output	Mark in progress
20	Output	USER OUT 1
21	Output	USER OUT 2
22	Output	USER OUT 3
23		nc
24	Safety	Y1 (Security Channel 1)
25	Safety	Y2 (Security Channel 2)

The I/O handles opto-isolated signals that can be wired PNP or NPN. **OUTPUT**: maximum current 35Vrms/50Vpk/100mApk impedance 2.5 Ω. **INPUT**: current 35Vrms/50Vpk/10mApk impedance 5 kΩ

PIN	MOT/COM 9 PIN FEMALE	PIN	MOT/COM 9 PIN FEMALE
1	(reserved)	6	(reserved)
2	RX2	7	A
3	TX2	8	B
4	(reserved)	9	+24 Vdc
5	0 Vdc		

PIN	ENC 15 PIN FEMALE (ENCODER)	PIN	ENC 15 PIN FEMALE (ENCODER)
1	+24 Vdc	9	+5 Vdc
2	0 Vdc	10	/A
3	A	11	/B
4	B	12	/Z
5	Z	13	nc
6	nc	14	nc
7	nc	15	nc
8	nc		

PIN	P/SW ENABLING POWER SUPPLY LASER SOURCE	PIN	P/SW ENABLING POWER SUPPLY LASER SOURCE
1	+24 Vdc	6	+24 Vdc
2	+24 Vdc	7	nc
3	nc	8	nc
4	R	9	R
5	R		

Close with clean contact pins 1-2-6 to pins 4-5-9 to give power to laser source.

PIN	MAIN POWER SUPPLY
1	+24 Vdc
2	0 Vdc
3	0 Vdc
4	+24 Vdc

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
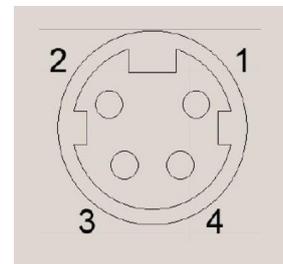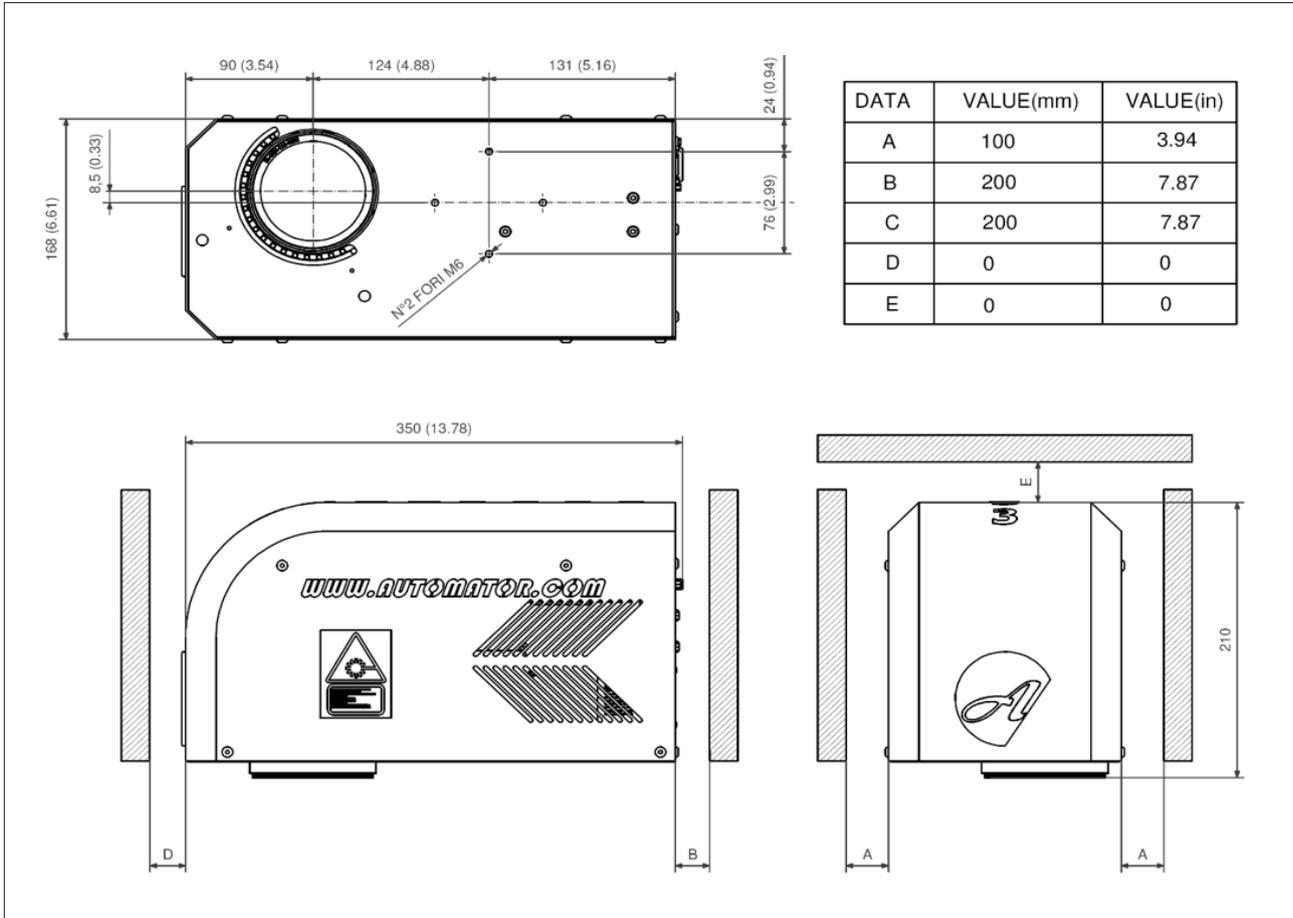
MARKING HEAD (Red pointer)

The nanoVIS3 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.

AVAILABLE LENSES AND FOCUS LENGTH*

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"

*these data are can vary lens by lens with a tolerance of 5%.

SHUTTER

The nanoVIS3 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.

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

COMMUNICATION MODULES

The following communication modules can be integrated into the laser head:
- Profinet
- Profibus
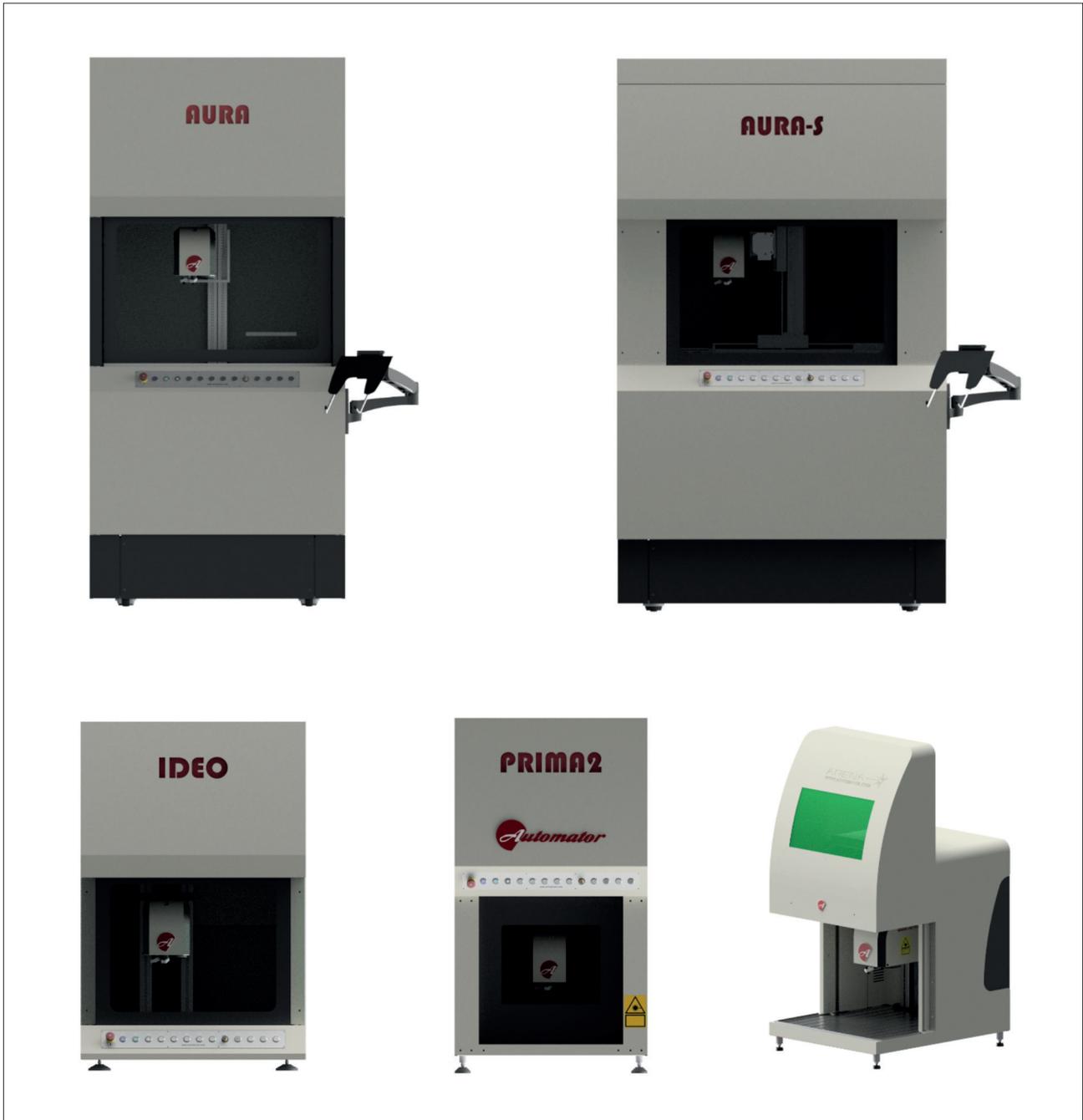- Ethernet / IP

OTHER POSSIBLE CLASS 4 CONFIGURATION

Automator nanoVIS3 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.
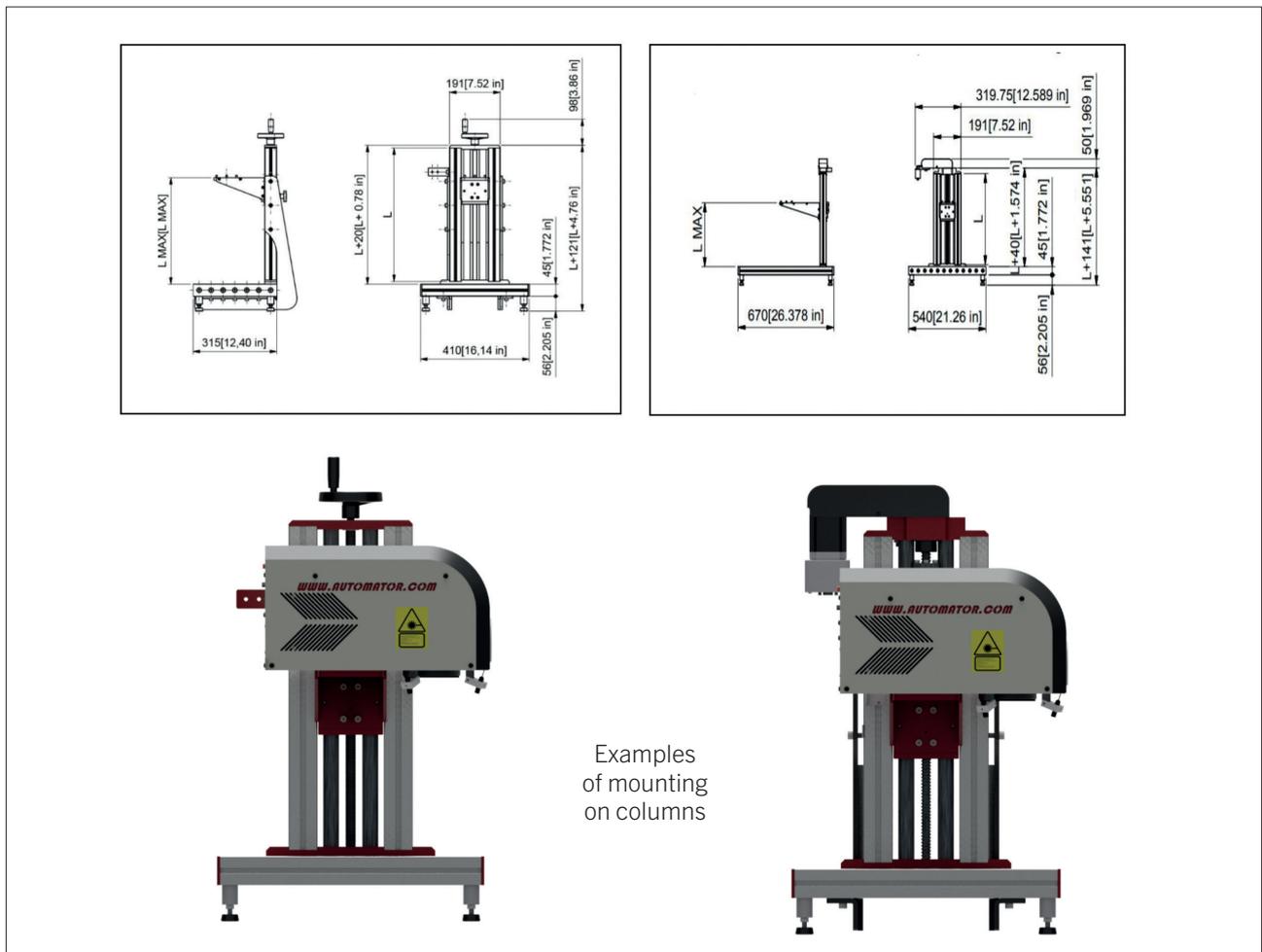
Examples of mounting on columns

POSSIBLE SAFETY CLASS 1 CONFIGURATIONS

nanoVIS3 is available also in different Safety Class 1 Configurations, set in an Automator laser enclosure with a wide range of loading and marking areas.

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