USER'S MANUAL

> EOX™ 10W

⊕DATALOGIC

DATALOGIC

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EOX™ 10W User's Manual

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SYMBOLS

Symbols used in this manual along with their meaning are shown below. Symbols and signs are repeated within the chapters and/or sections and have the following meaning:

Generic Warning:
This symbol indicates the need to read the manual carefully or the necessity of an important maneuver or maintenance operation.

Electricity Warning:
This symbol indicates dangerous voltage associated with the laser product, or powerful enough to constitute an electrical risk. This symbol may also appear on the marking system at the risk area.

Laser Warning:
This symbol indicates the danger of exposure to visible or invisible laser radiation. This symbol may also appear on the marking system at the risk area.

Fire Warning:
This symbol indicates the danger of a fire when processing flammable materials. Because there is a danger of fire, it is indispensable to follow the instructions provided by the manufacturer when commissioning the marking system.

Notice:
Notes, usage tips, or additional information.

Note:
Carefully read the user's manual before using the marking system.

REVISION INDEX

Revision	Date	Number of added or edited pages
0.0	20-10-2011	Release
821002150	10-02-2012	Appendix A
821002151	05-09-2012	30
821002152 rev. A	07-11-2012	19, 38, 41, 43
821002153 rev. B	10-04-2014	13, 39
821002154 rev. C	10-02-2015	General Review
821002155 rev. D	15-11-2015	13, 14, 34, Chapter 5, Appendix F
821002156 rev. E	25-05-2016	Chapter 1
821002157 rev. F	22-05-2017	ii, Chapter 7.3 added, Appendix E

NOTE:

We sometimes update the documentation after original publication. Therefore, you should also review the documentation on www.datalogic.com for any updates.

FOREWORD

Information included in this manual is intended for a _qualified installer_ able to integrate the marking system in a system, complying with all the protection features required by international rules and local legislations. Refers to the Appendices for further information.

Following manual refers to an EOX^{TM} 610X-TLSV marking system in Class 4 configuration.

In addition to being professionally trained in their role, personnel assigned to work on the marking system must be informed and made acquainted with the risks inherent to invisible and visible laser radiation. The operator is required to carefully read the section of the manual concerning safety instructions as well as the sections related to matters falling under her/his responsibility.

The workers assigned to the marking system can be identified as:

- **OPERATOR**
  responsible for loading elements to be processed, visually checking the work cycle, removing the finished product and cleaning the marking system.

- **MAINTENANCE WORKER**
  responsible for the electrical, mechanical and optical maintenance and adjustment of the marking system.

⚠️ **WARNING!**
Datalogic shall not be held responsible for any non-conforming use of marking system of its manufacture.

📖 **NOTE:**
BEFORE INSTALLING AND USING THE LASER, **READ CAREFULLY** THE **APPENDICES**.

OVERVIEW

The CO_2 laser marking system developed and manufactured by Datalogic employs the most advanced technologies with regards to the mechanical-optical part, the electronic control of laser beam power, communication and the overall safety of the entire system.

OPERATION OF A LASER SYSTEM WITH GALVANOMETRIC SCANNING

In pulsed or continuous operation mode, the CO_2 generates an invisible, high-energy infrared beam.
In order to obtain a more accurate focus, the laser beam is first enlarged by using an optical expansion system and then deflected by a scanning system consisting of two mirrors mounted on galvanometric motors.
These mirrors deflect the beam in a controlled fashion along the X and Y axes; processing of the product surface occurs by coordinating the movement of the two motors with the turning on/off of the laser beam.

The deflected laser beam is focused by an F-Theta scan lens before it hits the surface of the product.
Generally speaking, the marking is carried out within the focus of the beam.

LASER SOURCE

A sealed gas laser tube is used in the marking system.
The tube contains a gas mixture (usually CO_2, N_2 and He) which is excited by a radiofrequency generator to bring it to a plasma state.
The produced radiations are reflected back and forth between the mirrors, which represent the "resonant laser cavity"; the laser beam is amplified with each reflection.
While one of the two mirrors (rear) is 100% reflecting, the output mirror (front) reflects only 95%; this slight loss of 5% represents the laser radiation used for etching purposes.

GALVANOMETRIC SCANNING HEAD

The scanning head features two deflection mirrors that deflect the beam in an X and Y direction, depending on the graphics/pattern to be reproduced.

MARKING SOFTWARE

The marking software Lighter is preinstalled on the system.

NOTE:
Consult Lighter software user's manual for a proper use of the same.

NOTE:
Consult the proper Appendix to upgrade the preinstalled software if necessary.

WARNING!
Marking system installation in secure environment is responsibility of the system integrator!

The marking system is composed by a single device (All-In-One) with laser head and compact dimensions for an easy integration inside a complex system able to manage marking signals and customer's complementary modules.

All marking system connections are found on the back of device: supply input, controls and signals and interfaces for internal embedded controller. Moreover is available an inlet air to use to maintain clean the marking area thanks to holes around the focal lens.

Two side cooling belts are provided for cooling down the marking system; their flow must never be obstructed.

Figure 1: EOX^{TM} 10W.

INTENDED USE

The marking system is intended for the identification marking of organic and plastic materials and for the removal of coatings, paints and surface treatments from metals.

WARNING!

CO_2 marking systems mainly interact with materials through a thermal carbonization process with the emission of fumes and vapours.

Suitable methods for the treatment and abatement of marking fumes must be provided for, especially when working on plastic materials.

IMPORTANT WARNINGS

Access to the internal parts of the electrical equipment is allowed only to authorized personnel, duly qualified and trained with regards to risks of optical and electrical nature.

Datalogic declines any and all responsibility for work carried out on live parts by untrained or unauthorized personnel.

WARNING!

It's not allowed modify destination use of the marking system in different way of its functions.

Datalogic declines any responsibility and liability for irregular and improper use of the marking system which it manufactures.

WARNING!

These marking system actuation is demanded to the system integrator.

TABLE OF CONTENTS

1.CONTENTS OF THE PACKAGING

1.1 UNPACKING

When unpacking the marking system from the shipping carton you should:
- Remove the documentation from the top of the marking system
- Remove the box containing the accessories
- Carefully remove the marking system from the packaging using both hands
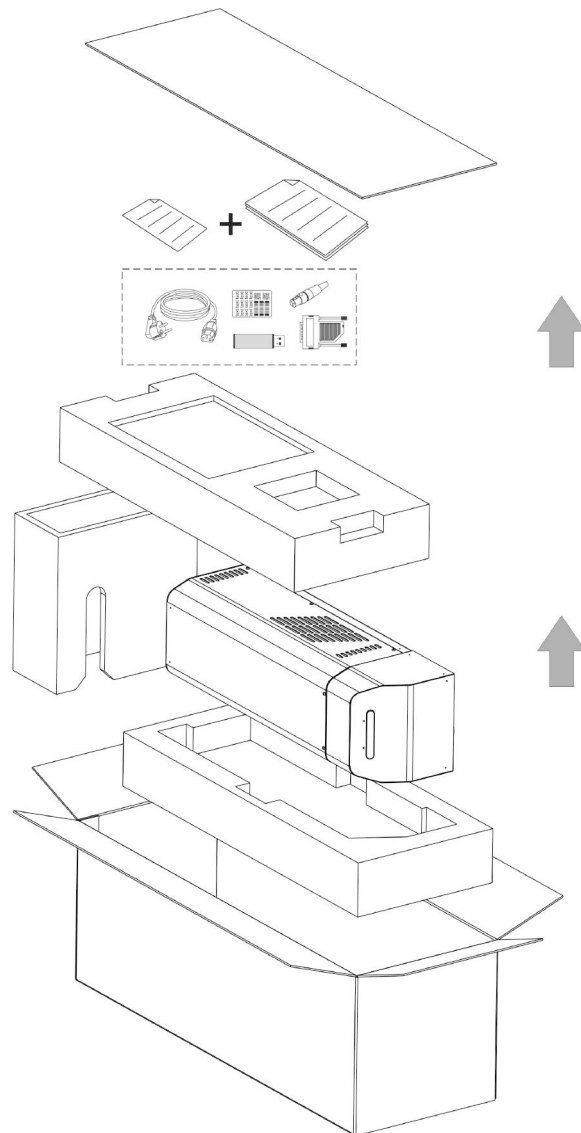
Figure 2: Unpacking.

Before installing or operating the marking system, you should:
- Inspect the shipping container for damage
- Inspect the marking system for signs of damage
- Confirm that the shipping carton contains all items on the shipping inventory list including any accessories
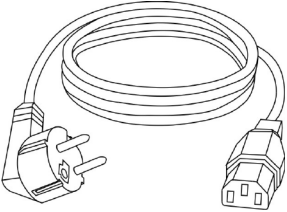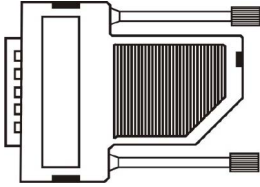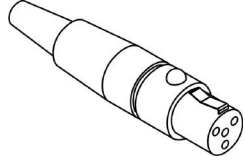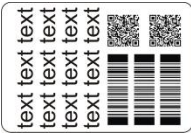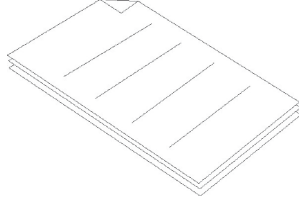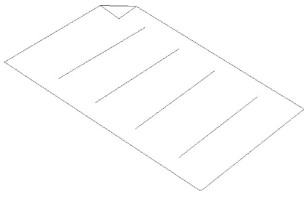
Retain all packaging materials until the marking system has been inspected for completeness and damage, and you have checked the operating performance. If anything is missing or defective, see chapter 7 for contact details.

1.2 MAIN HARDWARE
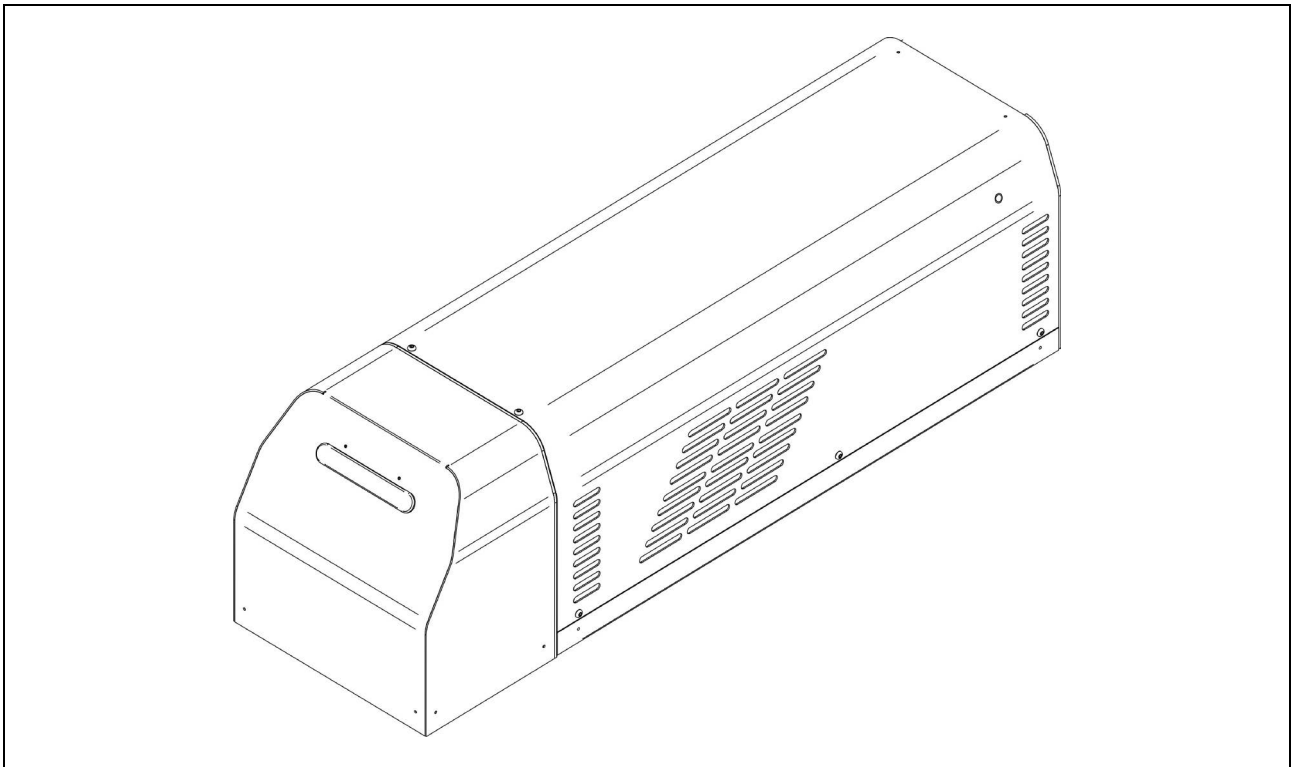
1.3 CABLES AND OTHER COMPONENTS

Power supply cable	**Command Box gold connector (*)**	**Interlock gold connector (*)**

USB pen drive	**Sample Test**	**User Manual**	**Test Report**

* If this connector is used, the marking system works in **DANGEROUS** condition (MUTING DEVICE).

1.4 TRANSPORT

The marking system needs to be moved in order to proceed to its positioning and wiring. The marking system can be easily lifted up and moved by a single person thanks to its compact size and reduced weight.
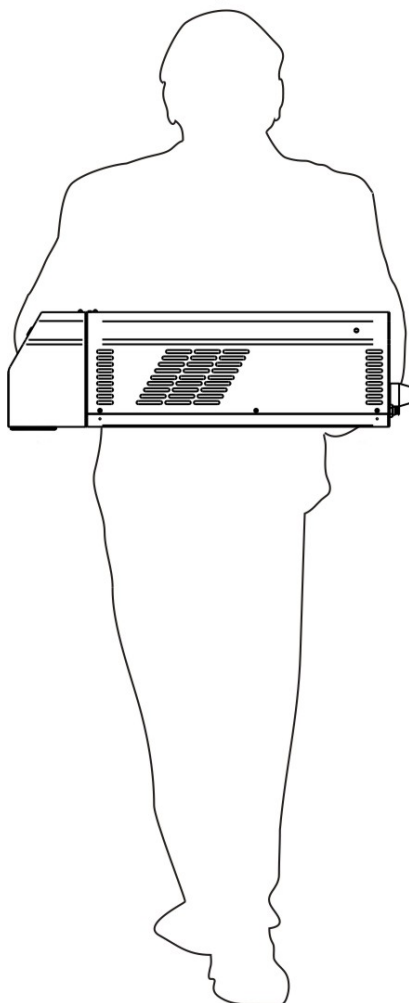
Figure 3: EOX^{TM} 10W transport.

⚠️ **WARNING!**
EOX^{TM} is a delicate optical marking system, avoid damaging it with shock and vibrations.

1.5 ON MOISTURE CONDENSATION

If the marking system is brought directly from a cold to a warm location, moisture may condense inside or outside the marking system. This moisture condensation may cause a malfunction of the marking system.

If moisture condensation occurs
Turn off the marking system and wait about 1 hour for the moisture to evaporate.

Note on moisture condensation
Moisture may condense when you bring the marking system from a cold place into a warm place (or vice versa) or when you use the marking system in a humid place as shown below.

How to avoid moisture condensation
When you bring the marking system from a cold place into a warm place, put it in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the ambient temperature (after about 1 hour).

1.6 FIXING AND POSITIONING

The marking system must be safely positioned and instructions below must be followed.

The marking system must be secured to a suitable base (not supplied by Datalogic) using the four M6 threaded holes:
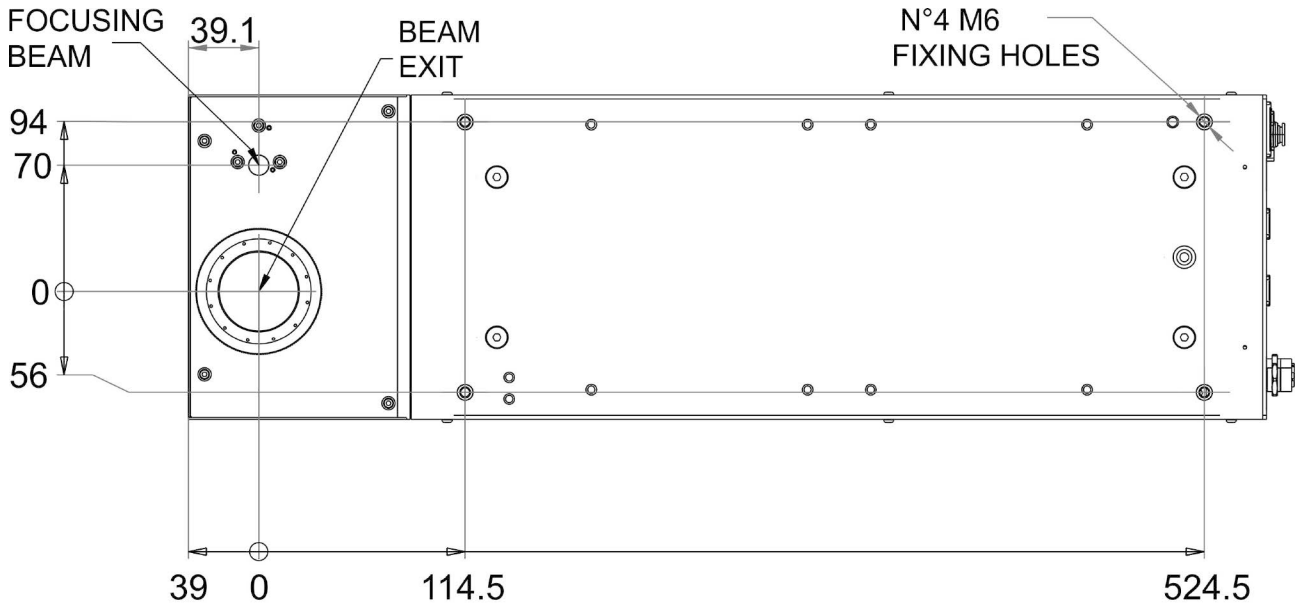
Figure 4: Fixing points on marking system (standard mount).

The marking system must be safely positioned and secured to a specific surface, parallel to the marking area and totally vibration-free. The marking system can be fixed either vertically or horizontally.

WARNING!
It is very important to secure the marking system before you start marking the piece since improper securing or positioning may cause serious damage. Do not secure the marking system in a way other than the one described in the figure.

NOTE:
In order to prevent marking distortions, check for the absence of vibrations between marking system and piece to be marked.

NOTE:
It is recommended to install the marking system on a micrometer positioning Z-axis system!

1.7 INSTALLATION ENVIRONMENT

The marking system must be installed in a suitable environment in order to allow proper air flow passage and correct housing of the cables:

EOX^{TM} is an air cooled marking system, an adequate air flow is necessary to guarantee its correct cooling.

Installation must not slow or stop the flow of air cooling. Moreover, do not install a heat source near.

300 mm

300 mm

300 mm
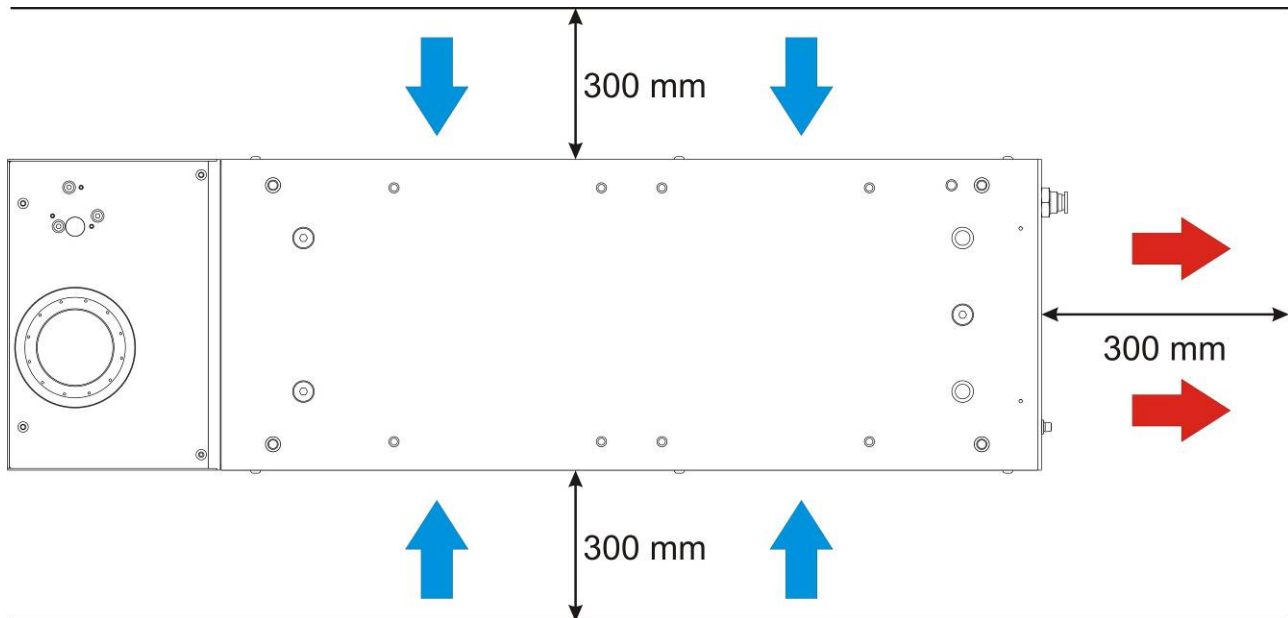
Figure 5: Marking system installation environment.

To obtain a good marking quality, and not to decrease life time, we recommended a ventilation or vacuum system in a protection box to limit dust due to marking phase.

1.8 FUME / DUST EXTRACTOR

During marking process, dust and/or gas may be produced. It is important to use adequate fume extractor and/or air filtration.

⚠️ **WARNING!**
Marking PVC (or other plastic material) can cause the release of chlorine gas which can be harmful to the laser operator and to the laser units itself. Always use adequate fume extractor during PVC and plastic marking.

2. TECHNICAL SPECIFICATIONS

NOTE:
BEFORE INSTALLING AND USING THE LASER, **READ CAREFULLY** THE APPENDICES.

WARNING!
EOX^{TM} is a **CLASS 4 LASER PRODUCT** and it is the responsibility of the OEM/system integrator to provide the safety completeness to be ready-to-use.

2.1 TECHNICAL CHARACTERISTICS

MECHANICAL CHARACTERISTICS

Weight	17 Kg
Height	180 mm *
Width	180 mm
Depth	598 mm
IP Rating	IP21 **

* without F-Theta scan lens

** In horizontal position only

NOTE:
Refer to Datalogic's website for detailed drawings.

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SPECIFICATIONS $^{(@25°C)}$

Laser Source	CLASS 4, CO_2 sealed laser tube
Configuration	All-In-One
Average Power[1]	10W
Stability	± 10% (cold start)
Wavelength	10.57-10.63 µm; Peak @10.6 µm
Range Frequency	10 – 25000 Hz; CW
Rise Time	< 150 µs
M2	≤ 1.2
Beam Ø[1]	~ 3.5 mm @ $1/e^2$
Standard Bexp	2x
Ellipticity	< 1.2
Divergence[1]	< 4 mrad
Aiming Beam	Class 2 Red Diode Laser; λ=635nm ± 5nm; 1mW
Focusing Beam	Class 2 Red Diode Laser; λ=635nm ± 5nm; 1mW
Marking Area	70x70 mm = [ƒ = 100mm] 140x140 mm = [ƒ = 200mm]
Marking Speed[2]	2000 mm/s, 500 chr/s
Spot Size[3]	270 µm [ƒ = 100mm] 370 µm [ƒ = 200mm]
Cooling	Integrated Fan-Cooled
Power Supply	100/240 VAC – 50/60Hz
Absorption	Typical 400W, Maximum 600W
Marking on the Fly (MOF)	YES [constant speed or variable speed with encoder]
Line speed productivity[4]	Up to 75 m/min – 4 pieces/s
Temperature range	Operating: Min. +15 °C (59°F) / Max +35 °C (95°F) Storage: Min. -10°C (-14°F) / Max. +60°C (140°F)
Humidity	0 – 95%, non-condensing
Control	EMC embedded control
Control Software	Lighter Suite
Communication Interface	4x USB 2.0, Ethernet LAN (TCP/IP) and RS232 port
Input/Output	I/O signals; 4-axes interface; Encoder and photocell

[1] Measured @ resonator exit
[2] May vary: measured with ƒ= 200mm
[3] With Bexp 2x on 10W
[4] Single line string, Roman-s font

2.2 DESCRIPTION OF THE LASER MODULES

A description of the main parts of the EOX^{TM} is provided here below:
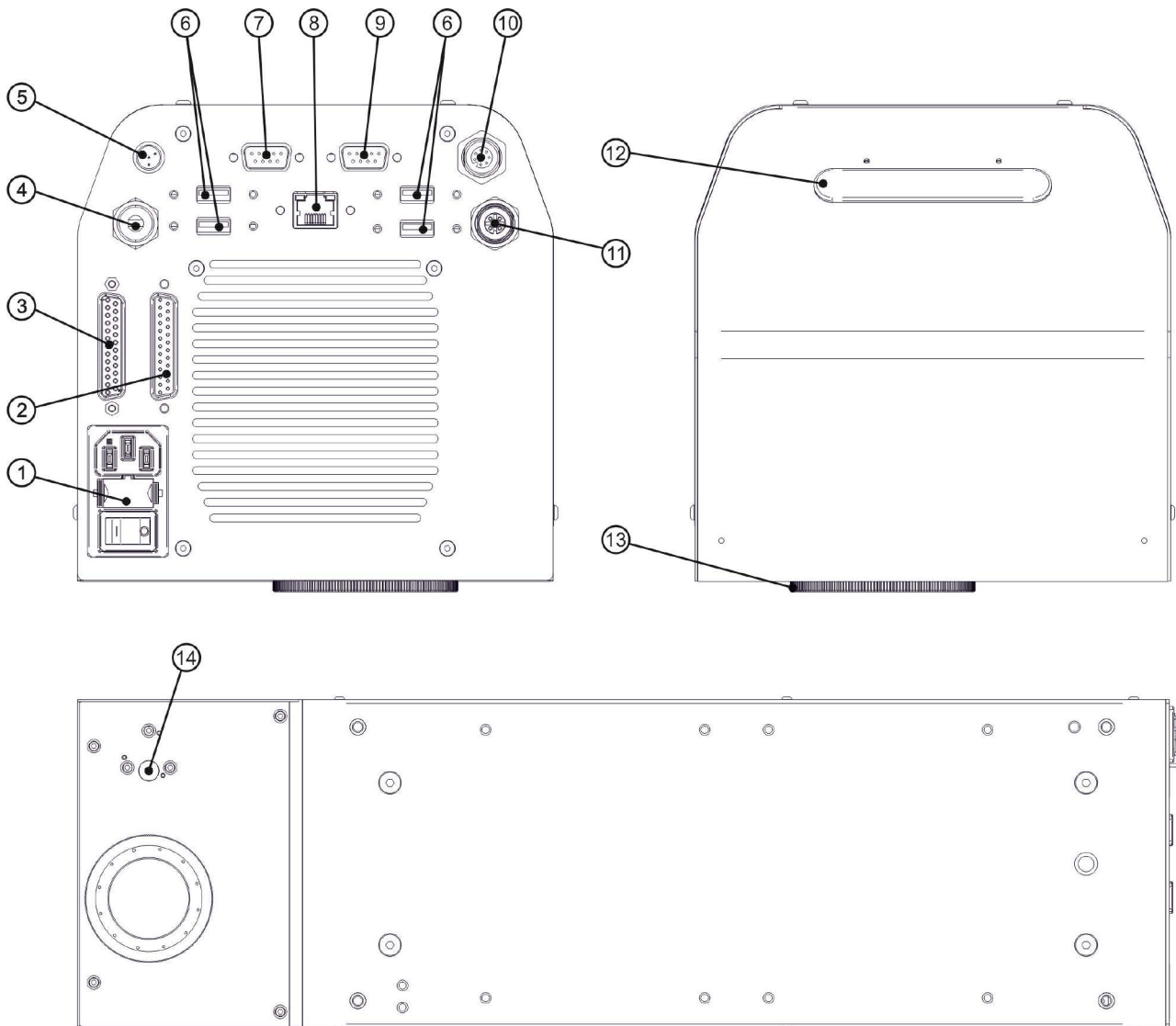
Figure 6: EOX^{TM} 10W overview.

1) Main power supply	8) LAN port
2) Command Box Connector (Laser Control)	9) VGA connector
3) I/O Connector (Axes Control)	10) Photocell connector
4) Inlet air	11) Encoder connector
5) Interlock connector	12) Status LED bar
6) 4x USB 2.0 ports	13) F-Theta with air compressed issue holes
7) RS232 port	14) Focusing Beam

2.3 MARKING AREA SPECIFICATION

Datalogic provides a wide range of F-Theta scan lenses to be attached to the scanning head to focus the laser beam in flat Marking Field, in order to achieve high-resolution marking results.

These F-Theta scan lenses are available to best-match the object (i.e.: logo; string; 2D matrix; etc.) to be marked with customer need, over the material processing, and fit the standard Datalogic Scanning Head; further solutions about different models of lenses and scanning heads will be considered upon request.

The table below lists the standard F-Theta scan lenses currently available:

F-Theta Scan Lens 10600nm		f = 100	f = 200
Lens diameter (mm)		**M48 x 1**	**M48 x 1**
Working Distance	mm	100 ± 2	200 ± 2
Fixing Distance	mm	104.5 ± 2	204.5 ± 2
Marking Area	mm^2	70 x 70	140 x 140

WARNING!

This product was designed to use only certain configurations of F-Theta lens and marking field. If your needs are not satisfied by current available F-Theta lens configurations please contact Datalogic for a solution. The use of other F-Theta lenses or operation outside the specified marking field for a certain F-Theta lens configuration can lead to damage of F-Theta lens, scanning head or laser source. Such damage is not covered by warranty!

WARNING!

For each F-Theta lens configuration Datalogic recommends the use of certain adapter. This adapter ensures that residual back reflections caused by F-Theta lens do not damage optics of the scanning head. The removal of such adapter or its incorrect use (for example incomplete threading, use of another F-Theta lens adapter, etc.) can lead to damage of the F-Theta lens, scanning head or laser source. Such damage is not covered by warranty!

NOTE:

Working Distance is defined as the distance between the center of the marking area (defined in the focal plane) and the last mechanical edge of the F-Theta Scan Lens. Refer to the following figure.

WD: Working Distance

FD: Fixing Distance

MA: Marking Area

AB: Aiming beam

FB: Focusing beam
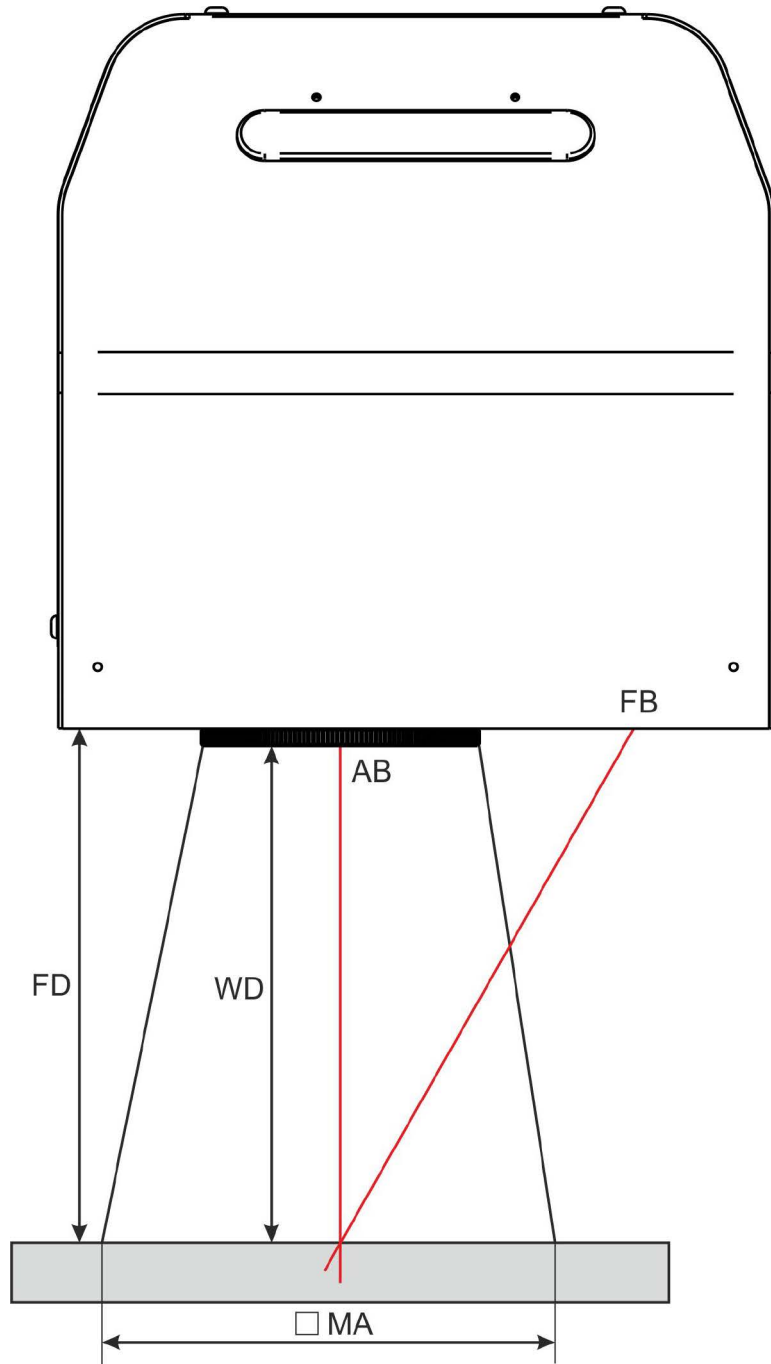
Figure 7: Marking area.

NOTE:

For systems equipped with standard F-Theta Scan Lens the focus condition is obtained by matching the Aiming Beam with the Focusing beam.

2.4 *CONNECTORS SPECIFICATIONS*

2.4.1 INTERLOCK CONNECTOR

The interlock **disables** laser emission.

PANEL CONNECTOR

Type SWITCHCRAFT TB Series male Tini Q-G (Mini XLR) panel mount connector, 4 positions.
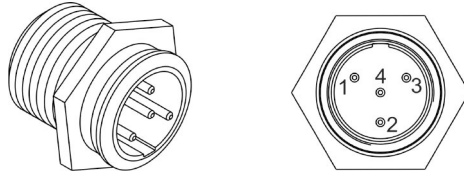
Figure 8: Male panel plug cod. TB4M (front view).

PIN	SIGNAL	TYPE	DESCRIPTION	FUNCTIONAL DIAGRAM
1	VCC_INT_A	OUTPUT	5V DC reference for *INTERLOCK* signal A	
2	INTERLOCK_A	INPUT	*INTERLOCK* signal A	
3	GND_INT_B	GND	Ground reference for *INTERLOCK* signal B	
4	INTERLOCK_B	INPUT	*INTERLOCK* signal B	

PIN 1- PIN 2	PIN 3- PIN 4	MARKING FUNCTIONALITY	CONDITION
CONTACT OPEN	CONTACT OPEN	NOT POSSIBLE	SAFE
CONTACT CLOSED	CONTACT OPEN	NOT POSSIBLE	DANGEROUS
CONTACT OPEN	CONTACT CLOSED	NOT POSSIBLE	DANGEROUS
CONTACT CLOSED	CONTACT CLOSED	POSSIBLE	DANGEROUS

PLUG CONNECTOR

Connector type SWITCHCRAFT TA Series Tini Q-G (Mini XLR) female cable mount connectors, 4 positions.
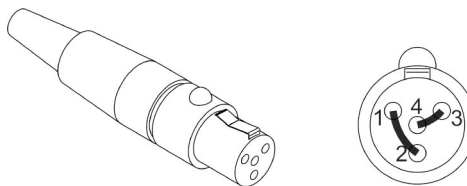
Figure 9: Female "Gold" connector cod. TY4F (solder view).

WARNING!

If the interlock Gold connector is used, the marking system is in **DANGEROUS** condition (MUTING DEVICE).

NOTE:

To restore the marking system is necessary to repeat the "*Turning on sequence*" without shutting down the system. See chapter 4.1 for more details.

2.4.2 COMMAND BOX CONNECTOR (LASER CONTROL)

Panel socket Sub-D, 25 positions, female.

Figure 10: Female panel socket Sub-D 25 (front view).

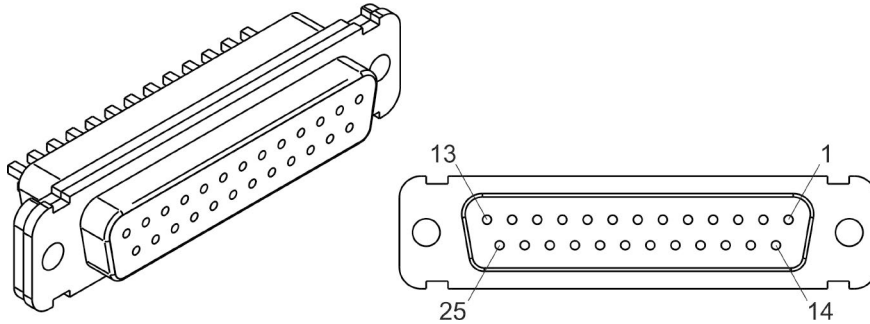| PIN	SIGNAL	TYPE (***)	DESCRIPTION
1	12V_ENABLE_B	Output power supply	12V DC power supply available for *EXT_ENABLE_B* (max 250mA)
2	EXT_ENABLE_B	Digital Input	Secondary external *ENABLE* signal (see paragraph 2.4.2.1). This signal is used to open the mechanical Shutter and enable laser emission: - HIGH level: contact closed - LOW level or disconnected: contact opened
3	RESERVED	Digital Output	DO NOT CONNECT
4	EXT_12V	Output power supply	Auxiliary 12V DC power supply available to drive input logical HIGH (max 250mA)
5	EXT_12V	Output power supply	Auxiliary 12V DC power supply available to drive input logical HIGH (max 250mA)
6	EXT_12V	Output power supply	Auxiliary 12V DC power supply available to drive input logical HIGH (max 250mA)
7	12V_ENABLE_A	Output power supply	12V DC power supply available for *EXT_ENABLE_A* (max 250mA)
8	EXT_ENABLE_A	Digital Input	Primary external *ENABLE* signal (see paragraph 2.4.2.1). This signal is used to open the mechanical Shutter and enable laser emission: - HIGH level: contact closed; - LOW level or disconnected: contact opened
9	BUSY (*)	Digital Output	This signal is used to know if the current spooler is executing (marking in progress). (see paragraph 2.4.2.3) - ON: during limits or marking process
10	CONNECTOR PRESENCE	Digital Input	This signal is used to check the Command Box connector presence (see paragraph 2.4.2.2**)** - HIGH level: normal operation; - LOW level or disconnected: laser error
11	START_MARKING (*)	Digital Input	This signal is used to start to the marking process when a document or a sequence is running in AUTO MODE (**) or WORK MODE (**) (see paragraph 2.4.2.3): - HIGH level pulsed signal start the marking process
12	EXT_KEY	Digital Input	This signal is used to activate the laser source (see paragraph 2.4.2.2) - HIGH level: contact closed; - LOW level or disconnected: contact opened
13	STOP_MARKING (*)	Digital Input	This signal is used to stop the marking process (see paragraph 2.4.2.3) - HIGH level pulsed signal stop the marking process

14	CODE3	Digital Input	Generic Input (INPUT 13)
15	CODE2	Digital Input	Generic Input (INPUT 12)
16	CODE1	Digital Input	Generic Input (INPUT 11)
17	END (*)	Digital Output	This signal is used to know if the marking process is finished: (see paragraph 2.4.2.3) - ON at the end of marking process
18	LASER_ACTIVE	Digital Output	This signal is used to know if the laser source is activated: (see paragraph 2.4.2.2) - ON when the laser is in *STAND_BY* or *READY* state
19	GND	Ground	Ground reference
20	SYSTEM_ALARM	Digital Output	This signal is used to know if the system is in error state: (see paragraph 2.4.2.2) - ON in case of system error
21	GND	Ground	Ground reference
22	SHUTTER_OPEN	Digital Output	This signal is used to know if the system is ready to emit laser radiation: (see paragraph 2.4.2.2) - ON when the system is in *READY* state and Shutter is opened
23	SW_READY (*)	Digital Output	This signal is used to know if a document, sequence or script is loaded and ready to be executed: - ON when a document or a sequence is running in AUTO MODE (**) or WORK MODE (**) (SW_READY COMPATIBILITY (**) = true) - ON when a document or a sequence is running in AUTO MODE (**) and laser in *READY* state (SW_READY COMPATIBILITY (**) = false) - ON when a script is running n AUTO MODE (**) and "IoPort.setReady (true)" function is used
24	GND	Ground	Ground reference
25	GND	Ground	Ground reference

(*) refers to Lighter user's manual "Setting I/O parameters" paragraph to set the signals properties
(**) refers to Lighter user's manual
(***) refers to paragraph 2.5

NOTE:
Connection example in see paragraph 2.6.

2.4.2.1   ENABLE SIGNAL'S SCHEME (COMMAND BOX CONNECTOR)

PIN 1- PIN 2	PIN 7- PIN 8	MARKING FUNCTIONALITY	STATUS
CONTACT OPEN	CONTACT OPEN	NOT POSSIBLE	SAFE
CONTACT CLOSED	CONTACT OPEN	NOT POSSIBLE	DANGEROUS
CONTACT OPEN	CONTACT CLOSED	NOT POSSIBLE	DANGEROUS
CONTACT CLOSED	CONTACT CLOSED	POSSIBLE	DANGEROUS

NOTE:
The response time is 250ms from the input's switching.

2.4.2.2 LASER CONTROL SIGNALS TIMING (COMMAND BOX CONNECTOR)
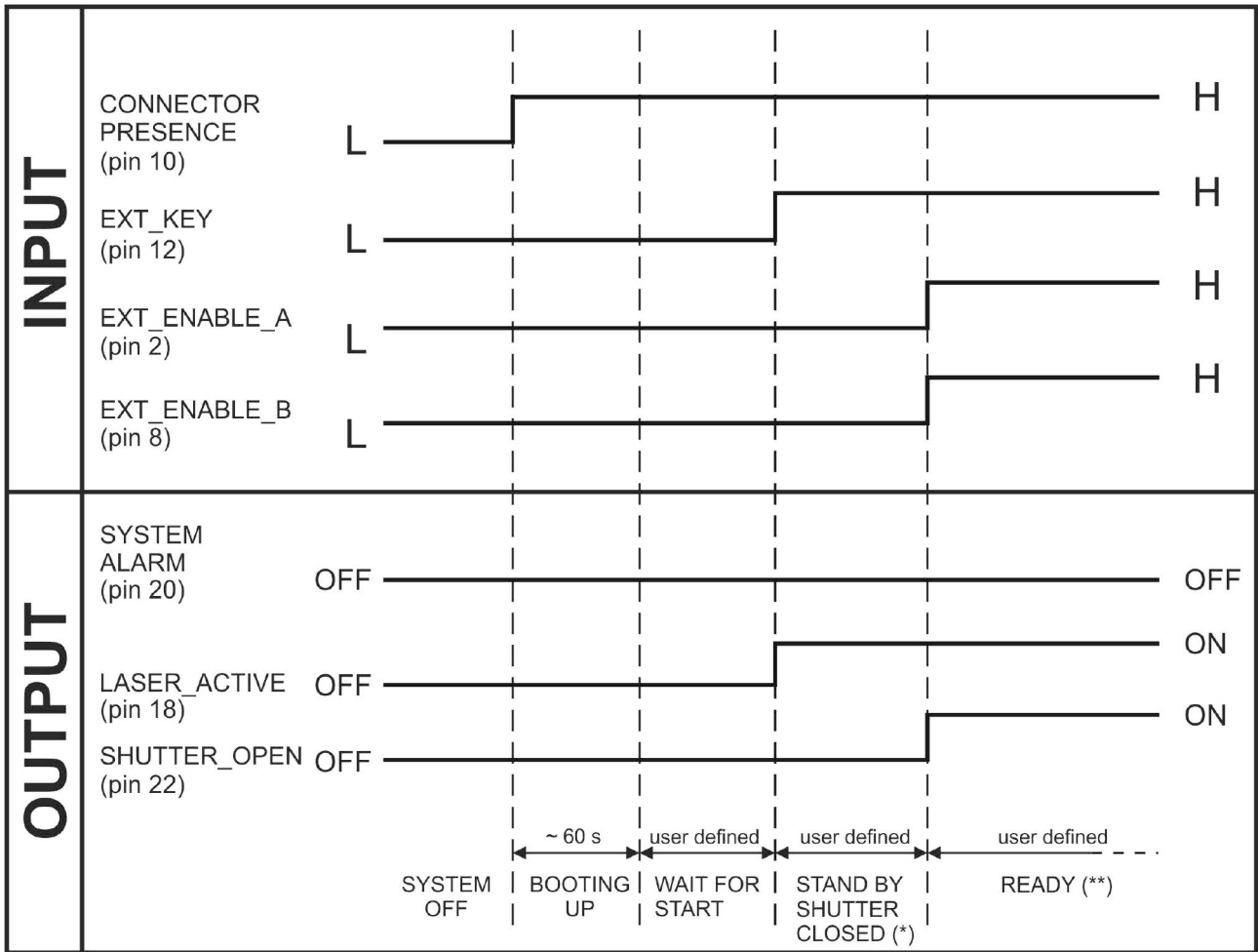
* a 5 seconds delay is present between *KEY* activation and laser source RF driver activation

** a maximum delay of 3 seconds may be present between *ENABLE* activation and laser emission

Figure 11: Timing control signals

2.4.2.3   MARKING PROCESS SIGNALS TIMING

Figure 12: Timing signals (normal operation)

The time intervals in the diagram can all be programmed with a resolution of 1 ms (*).

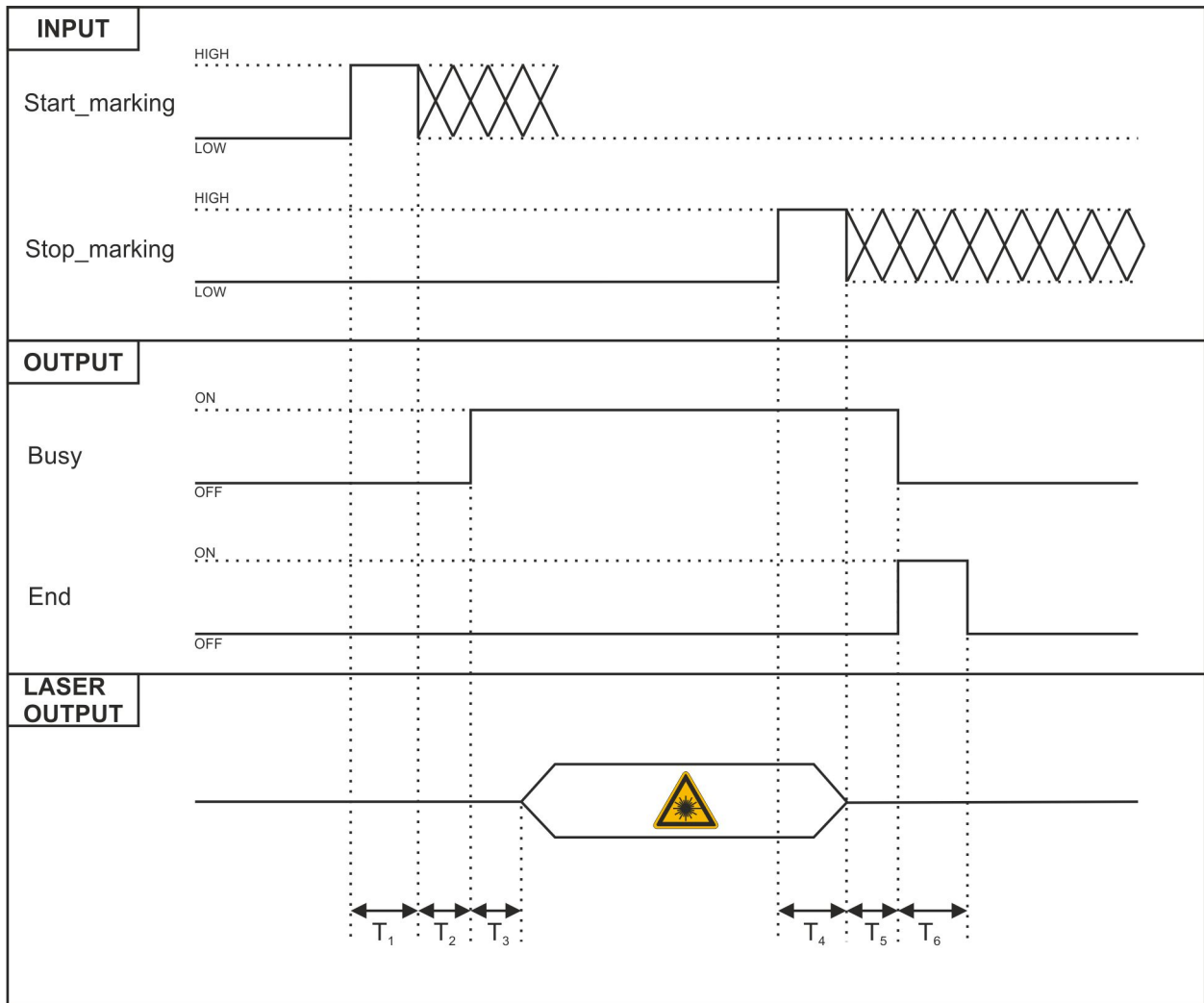| T_1	Start Time	For setting the minimum acceptable time for the *START_MARKING* signal
T_2	Start Delay	For delaying the start of marking process
T_3	Busy Advance	*BUSY* signal corresponding to marking progress
T_4	Stop Time	The minimum time for *STOP* signal to stop the marking process
T_5	Busy Delay	For delaying the Laser *END* signal with respect to laser emission
T_6	End Time	For setting the Laser End activation time

(*) Refer to Lighter user's manual "Setting I/O parameters" to set the signal's properties.

2.4.3 AXES CONNECTOR (I/O CONTROL)
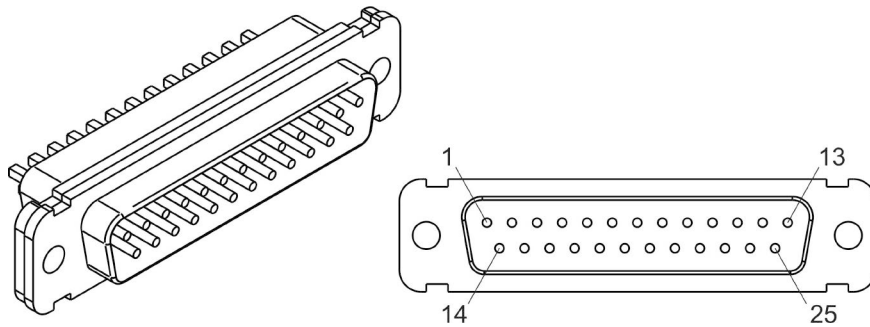
Panel socket Sub-D, 25 positions, male.

Figure 13: Male panel socket Sub-D 25 (front view).

PIN	SIGNAL	TYPE (**)	DESCRIPTION
1	EXT_12V	Output Power supply	Auxiliary 12V DC power supply available for drive input logical HIGH (max 250mA)
2	OUTPUT_0 (*) or STEP_Y	Digital Output	Generic output or Y-Axis drive step signal (Clock) for axis control
3	OUTPUT_2 (*) or STEP_Z	Digital Output	Generic output or Z-Axis drive step signal (Clock) for axis control
4	OUTPUT_4 (*) or BRAKE X	Digital Output	Generic output or X-Axis electromechanical brake release signal. ON during drive motion
5	OUTPUT_6 (*) or BRAKE Y	Digital Output	Generic output or Y-Axis electromechanical brake release signal. ON during drive motion
6	OUTPUT_8 (*) or BRAKE Z	Digital Output	Generic output or Z-Axis electromechanical brake release signal. ON during drive motion
7	INPUT_0 (*) or ZERO X	Digital Input	Generic input or X-Axis home sensor input. The home search is stopped when this signal goes HIGH
8	INPUT_1 (*) or ZERO Y	Digital Input	Generic input or Y-Axis home sensor input. The home search is stopped when this signal goes HIGH
9	INPUT_2 (*) or ZERO Z	Digital Input	Generic input or Z-Axis home sensor input. The home search is stopped when this signal goes HIGH
10	INPUT_3 (*) or DISABLE X	Digital Input	Generic input or X-Axis disable signal. When HIGH, the corresponding step signal remains in the status prior to activation
11	INPUT_4 (*) or DISABLE Y	Digital Input	Generic input or Y-Axis disable signal. When HIGH, the corresponding step signal remains in the status prior to activation
12	INPUT_5 (*) or DISABLE Z	Digital Input	Generic input or Z-Axis disable signal. When HIGH, the corresponding step signal remains in the status prior to activation
13	GND	Ground	Ground reference
14	OUTPUT_12 (*) or STEP R	Digital Output	Generic output or R-Axis drive step signal (Clock) for axis control
15	OUTPUT_1 (*) or STEP X	Digital Output	Generic output or X-Axis drive step signal (Clock) for axis control
16	OUTPUT_3 (*) or DIR Z	Digital Output	Generic output or Z-Axis drive direction signal
17	OUTPUT_5 (*) or DIR Y	Digital Output	Generic output or Y-Axis drive direction signal

18	OUTPUT_7 (*) or DIR X	Digital Output	Generic output or X-Axis drive direction signal
19	INPUT 9	Digital Input	Generic Input
20	INPUT 8	Digital Input	Generic Input
21	INPUT_7 (*) or ZERO R	Digital Input	Generic input or R-Axis home sensor input. The home search is stopped when this signal goes HIGH
22	INPUT_6 (*) or DISABLE R	Digital Input	Generic input or R-Axis disable signal. When HIGH, the corresponding step signal remains in the status prior to activation
23	OUTPUT_9 (*) or BRAKE R	Digital Output	Generic output or R-Axis electromechanical brake release signal. ON during drive motion
24	OUTPUT_11 (*) or DIR R	Digital Output	Generic output or R-Axis drive direction signal
25	GND	Ground	Ground reference

(*) enable an axis cause that the corresponding signals will no longer be available as generic inputs/output. Refer to Lighter user's manual, "Setting the X, Y, Z, and Rotor Axes parameters" to enable/disable Axes and set the Axes properties.

(**) refers to see paragraph 2.5

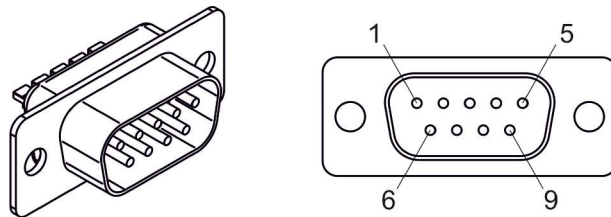## 2.4.4 RS232 CONNECTOR (COM2)

Panel socket Sub-D, 9 positions, male.

Figure 14: Male panel socket Sub-D 9 (front view).

PIN	SIGNAL	TYPE	DESCRIPTION
1	DCD	Input	Data Carrier Detect
2	RXD	Input	Receive Data
3	TXD	Output	Transmit Data
4	DTR	Output	Data Terminal Ready
5	GND	Ground	Ground reference
6	DSR	Input	Data Set Ready
7	RTS	Output	Request to Send
8	CTS	Input	Clear to Send
9	RI	Input	Ringing Indicator

2.4.5 ENCODER CONNECTOR

Panel socket BINDER, M12, 8 positions female, 763 series. Recommended encoder: Datalogic ENC58-S10-XXXX-M1 (ENC58-S10-5000-M12).
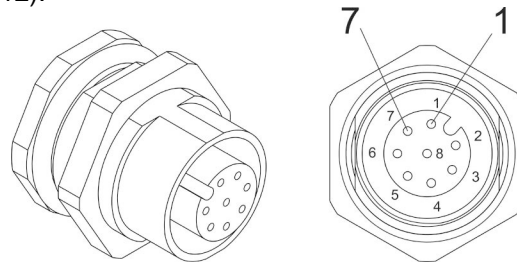

Figure 15: Female panel socket cod. 09-3482-87-08 (front view).

PIN	SIGNAL	TYPE	DESCRIPTION
1	GND	GND	Ground signal
2	VCC	POWER OUTPUT	12V DC power supply
3	ENC_A	DIGITAL INPUT	Encoder HTL A channel signal
4	GND	GND	Return signal for ENC_A
5	ENC_B	DIGITAL INPUT	Encoder HTL B channel signal
6	GND	GND	Return signal for ENC_B
7	NC	NC	NC
8	NC	NC	NC
BODY	SHIELD	SHIELD	SHIELD

2.4.6 PHOTOCELL CONNECTOR

Panel socket BINDER, M12, 4 positions female, 763 series. Recommended photocell: Datalogic S51-PA-5-B01-PK; Datalogic S15-PA-5-B01-PK or equivalent.
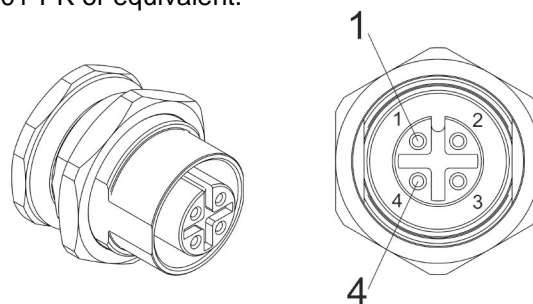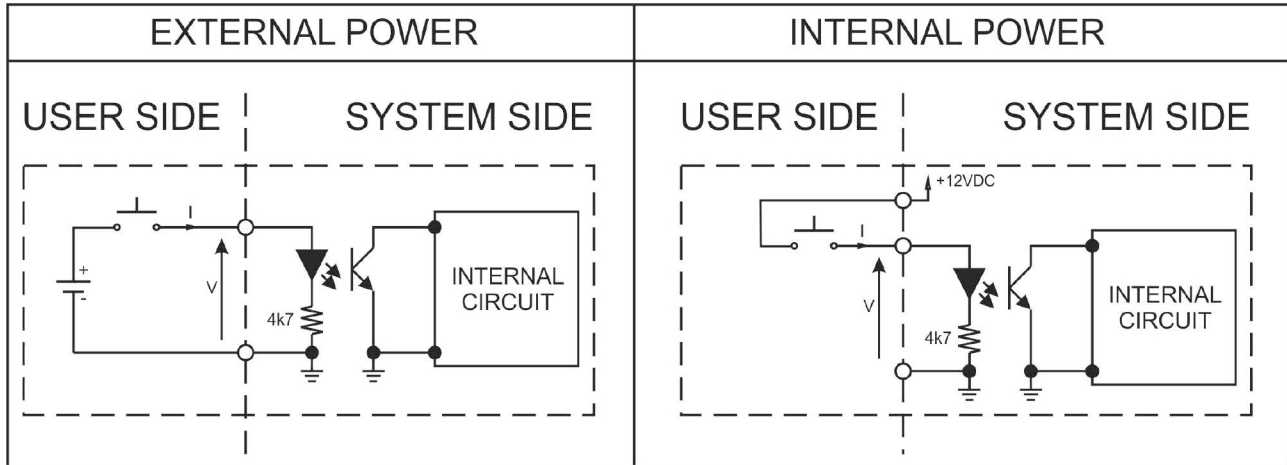

Figure 16: Female panel socket cod. 09-3482-87-04 (front view).

PIN	SIGNAL	TYPE	DESCRIPTION
1	VCC	POWER OUTPUT	12V DC power supply
2	NC	NC	NC
3	GND	GND	Ground signal
4	PHOTOCELL	DIGITAL INPUT	PNP photocell signal

2.5 INPUT/OUTPUT SIGNALS SPECIFICATIONS

DIGITAL INPUT:

Type	Optocoupler		
V_{max}	24V DC		
I_{max}	5mA @ 24V DC		
Pulse Width	≥ 1ms (debounce)		
	MIN	**TYP**	**MAX**
INPUT Logic LOW	0.0 V DC	0.0 V DC	2.0 V DC
INPUT Logic HIGH	5.0 V DC	12.0 V DC	24.0 V DC

DIGITAL OUTPUT:
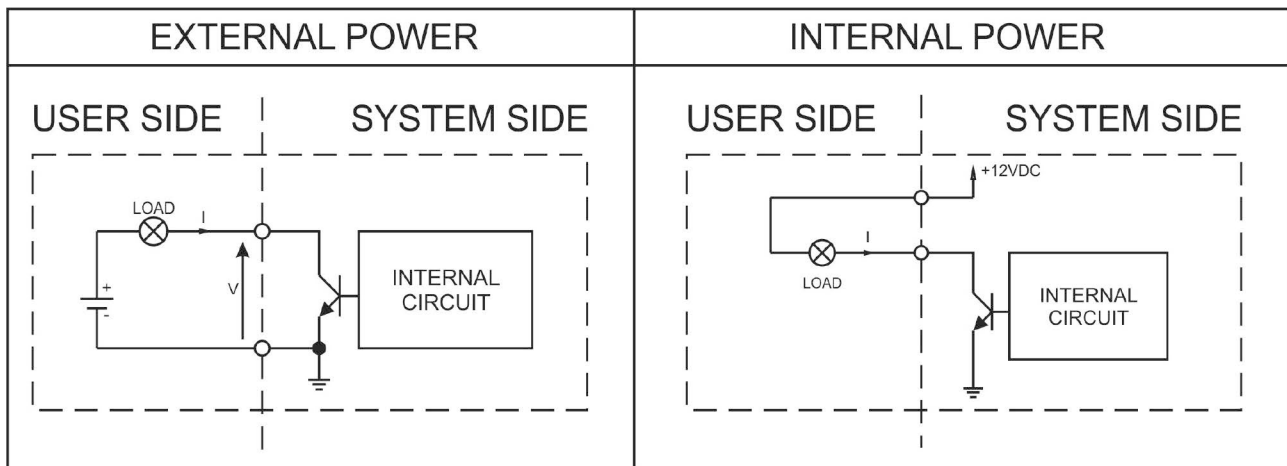
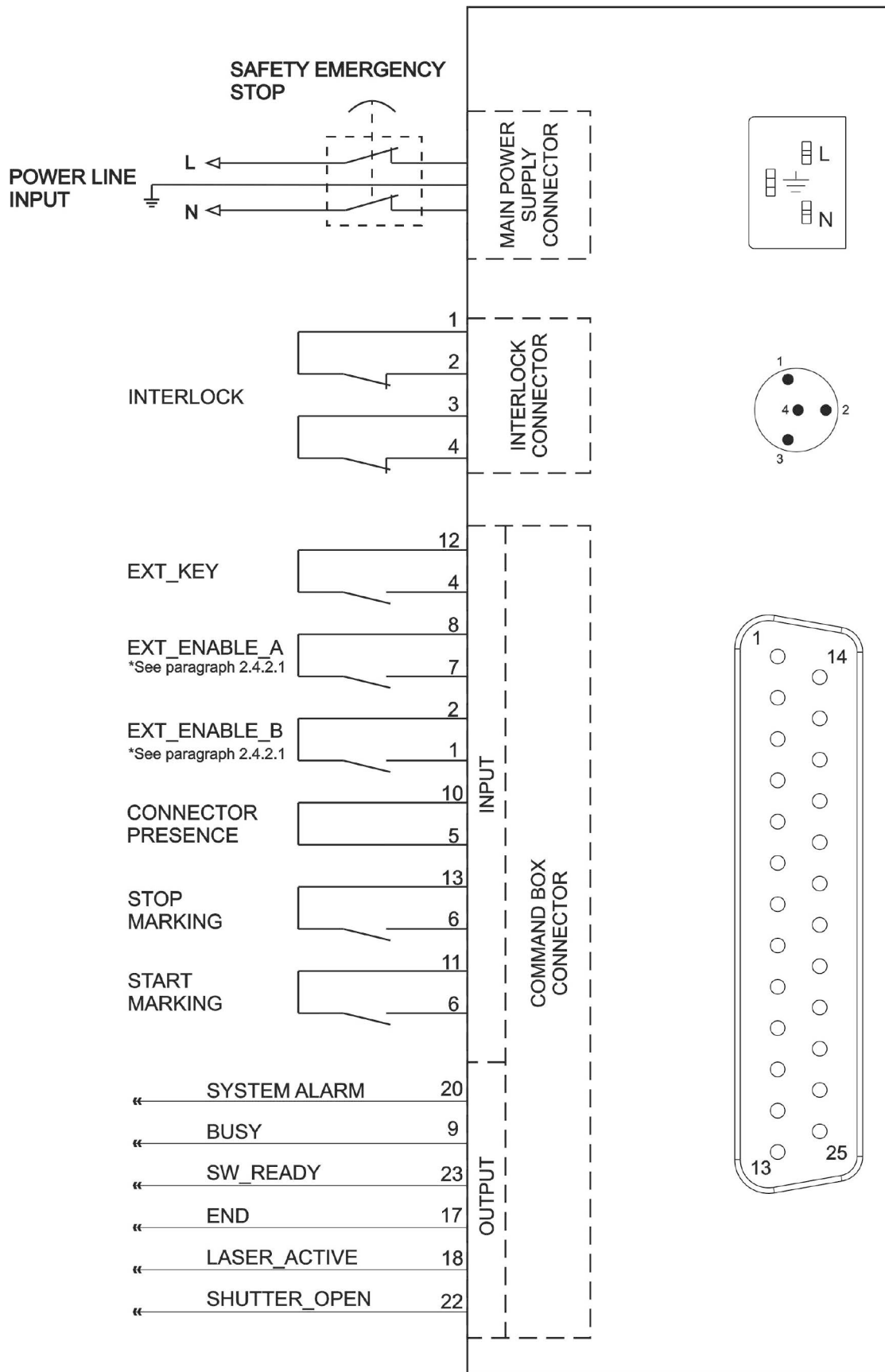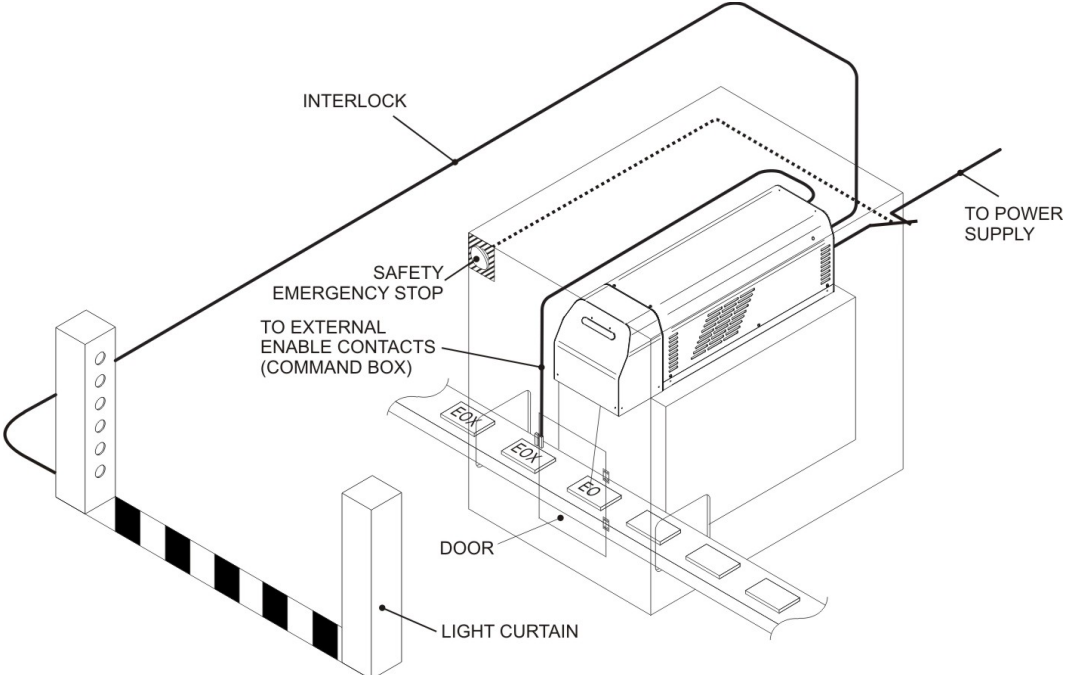| Type	Low side driver
V_{max}	24V DC
I_{max}	250mA
Vsaturation	<0.5V DC
Leakage current	< 5µA
OUTPUT State ON	V ≤ 0.5 V DC; I ≤ 250mA
OUTPUT State OFF	V ≤ 24 V DC; I ≤ 5µA

2.6 CONNECTION EXAMPLES

Figure 17: Connection example.

EXAMPLE OF APPLICATIONS AND EXTERNAL CONNECTIONS

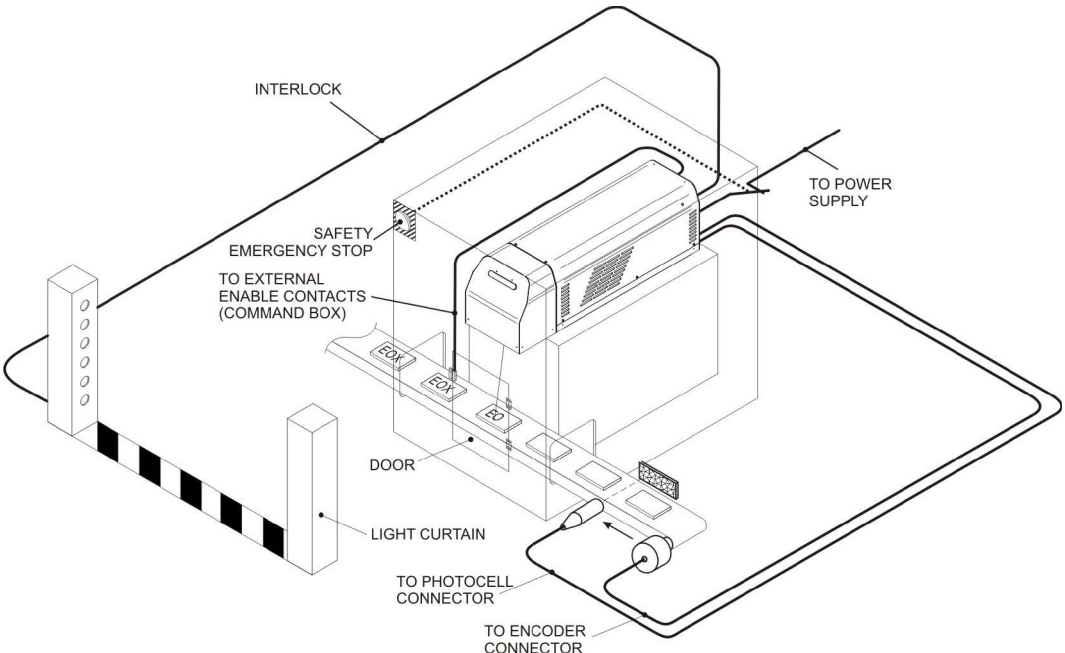Handy and simple installation of the marking system makes it easy to use also in line production applications.

Figure 18: Example of static marking application.

⚠️ **WARNING!**

It is important to install an **emergency circuit** able to cut input power supply (V AC) **switching off** marking system entirely. This safety circuit needs to be installed from qualified personnel only.

Figure 19: Example of Marking on Fly (MOF) application.

3. INSTALLATION AND SET UP

3.1 CONNECTIONS

This section of the manual describes the marking system connections. Carry out the connecting operations as described below.

⚠️ **WARNING!**
Connect the marking system to other parts **WITHOUT** voltage in order to avoid risks to the operator and to the laser source.

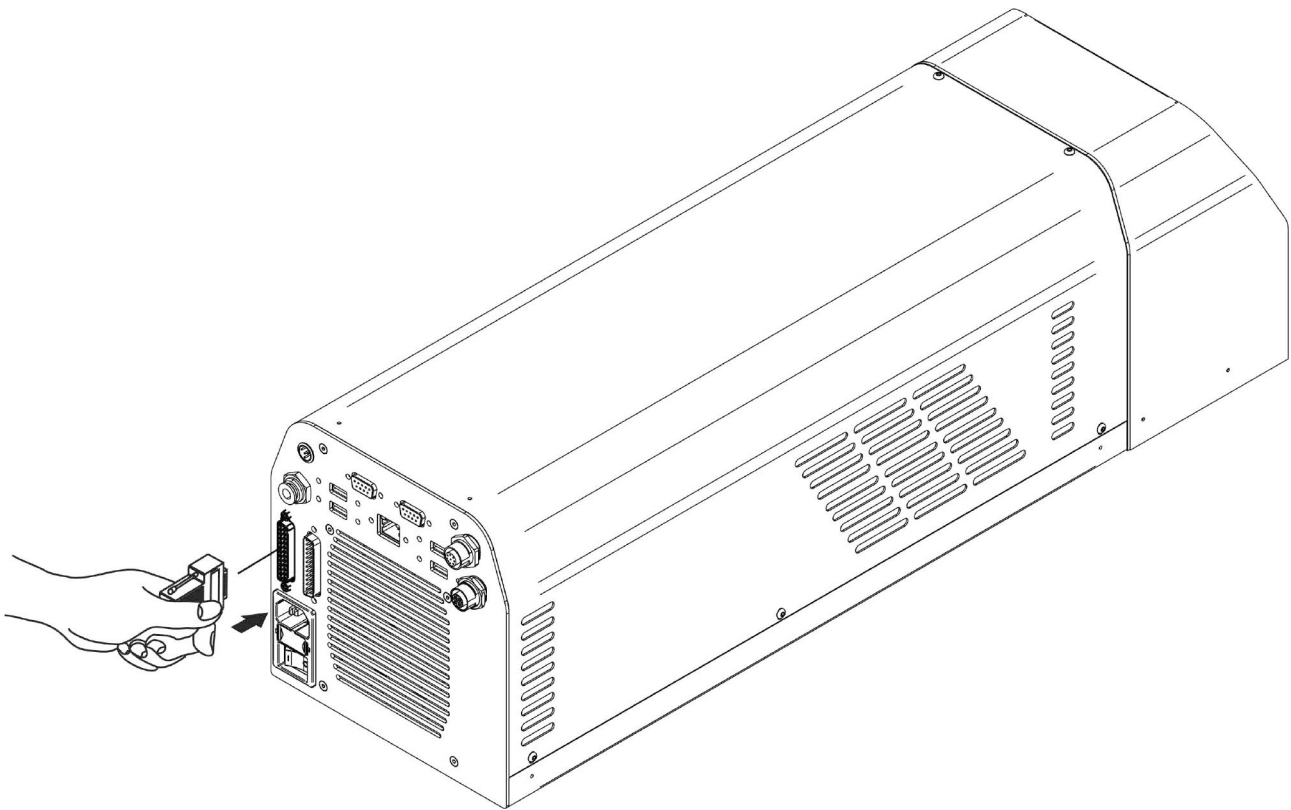### 3.1.1 COMMAND BOX CONNECTOR CONNECTION

Connecting Command Box cable.

Figure 20: Command Box connector connection.

👉 **NOTE:**
The Command Box connector must always be inserted and wired properly in order to use the marking system. If this connection is not present the marking system goes in error status.

👉 **NOTE:**
Refer to paragraph 2.6 for a connection example of the Command Box Connector.

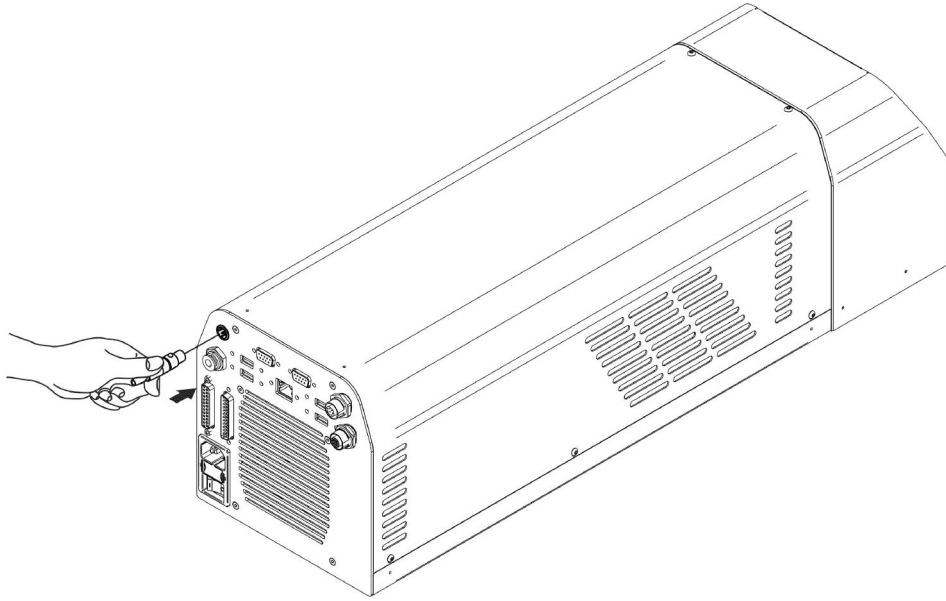## 3.1.2 INTERLOCK CONNECTOR CONNECTION

Connecting interlock connector.

Figure 21: Interlock connector connection.

☞ **NOTE:**
The interlock connector must always be inserted in order to use the marking system. The absence of such connector locks the marking system.

⚠ **WARNING!**
If the interlock gold connector is used, the marking system is in **DANGEROUS** condition (MUTING DEVICE).

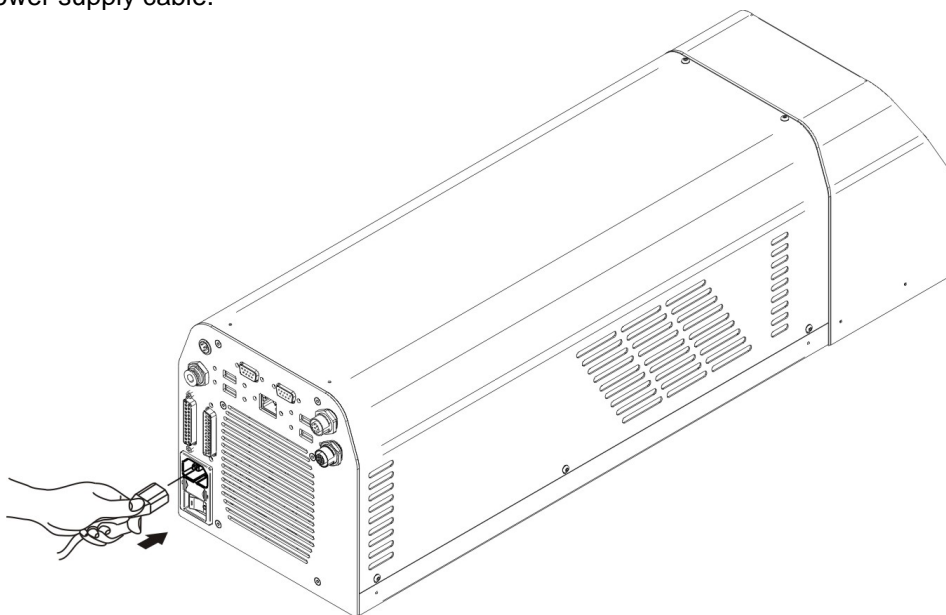## 3.1.3 POWER SUPPLY CABLE CONNECTION

Connecting power supply cable.

Figure 22: Connecting power supply cable.

3.1.4 LOCAL MODE CONNECTION

To use the marking system in "Local Mode" it is necessary to install a mouse, keyboard and monitor. Connect the monitor and input devices to marking system as shown below:
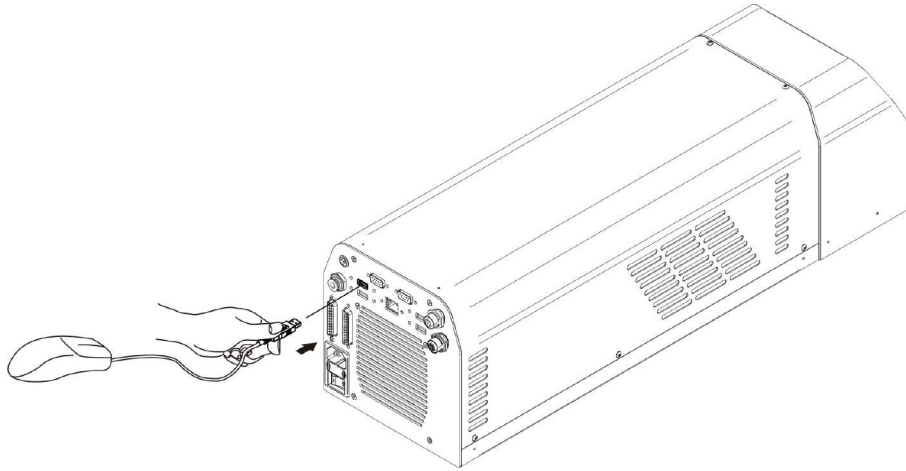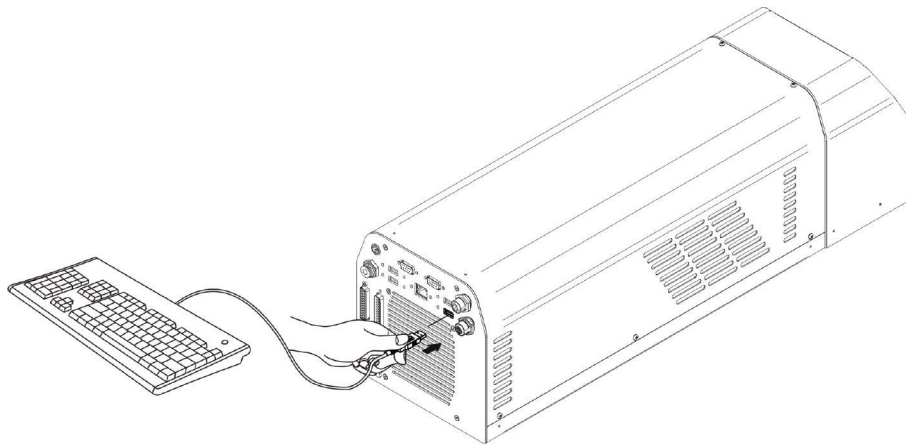

Figure 23: USB mouse connection.
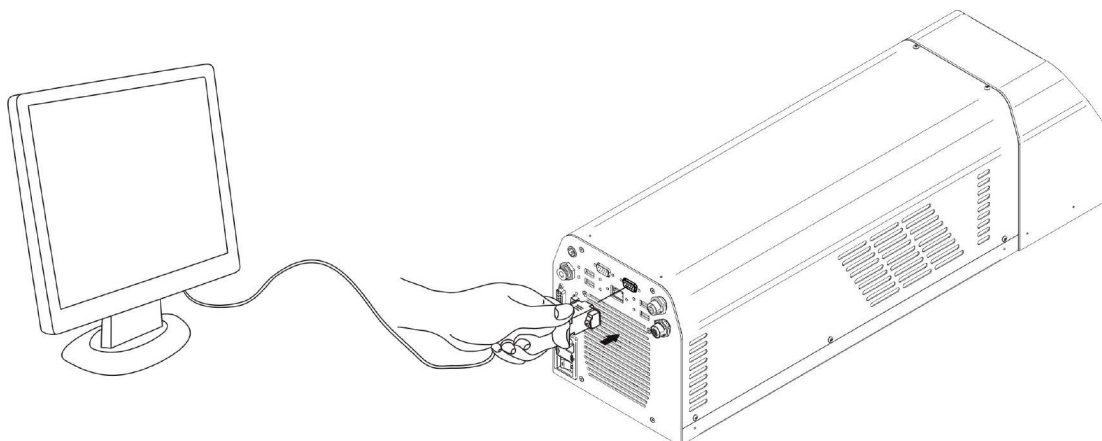

Figure 24: USB keyboard connection.

Figure 25: VGA monitor connection.

NOTE:
Minimum resolution 800 x 600.

3.1.5 REMOTE MODE CONNECTION

To use "Remote Control Mode" it is necessary a network cable.
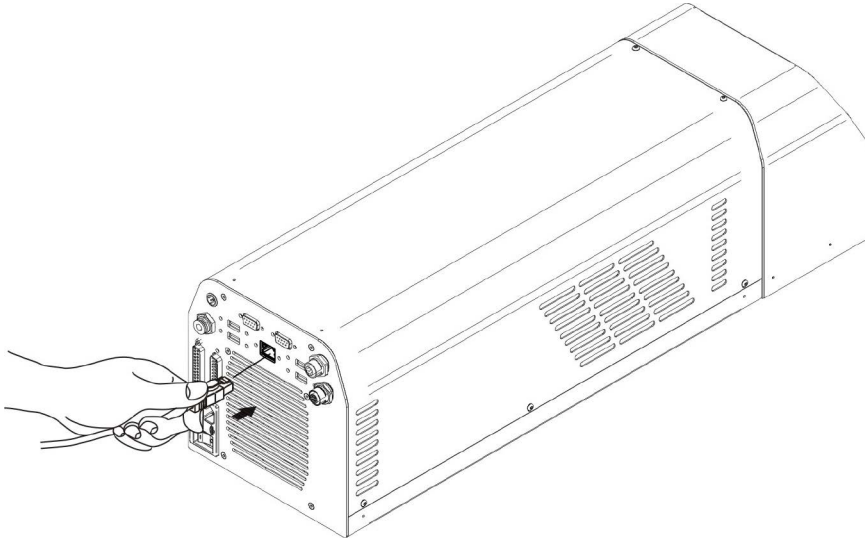
Figure 26: Ethernet connection.

NOTE:

The system LAN is configured by default with a fixed IP Address and Subnet Mask:
- Default IP address: 192.168.0.10
- Default Subnet Mask: 255.255.255.0
See paragraph 5.2 in order to change LAN configuration.

NOTE:
Ethernet TCP/IP 10, 100 Mbit.

3.1.6 F-THETA LENS PROTECTIONS CAP REMOVAL

Remove the F-Theta Lens protection cap before marking operation.

Figure 27: F-Theta Lens protection cap removal.

WARNING!
Marking with the lens protection cap could result in damage to the lens.

4. USE AND OPERATION
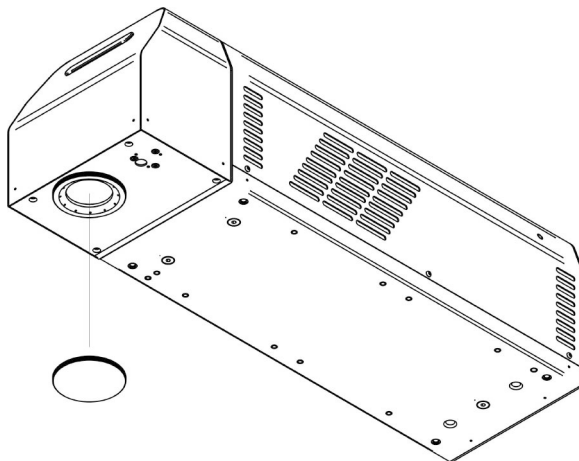
4.1 TURNING ON SEQUENCE

Before turning on the marking system, be sure that the system is connected as previously described. Check presence of voltage power supply connection, interlock connector and Command Box connection as described in the previous chapter.

SIGNAL	STATUS
EXT_KEY	OFF
EXT_ENABLE_A	OFF
EXT_ENABLE_B	OFF

1) Turn on the main switch in the back of the marking system:
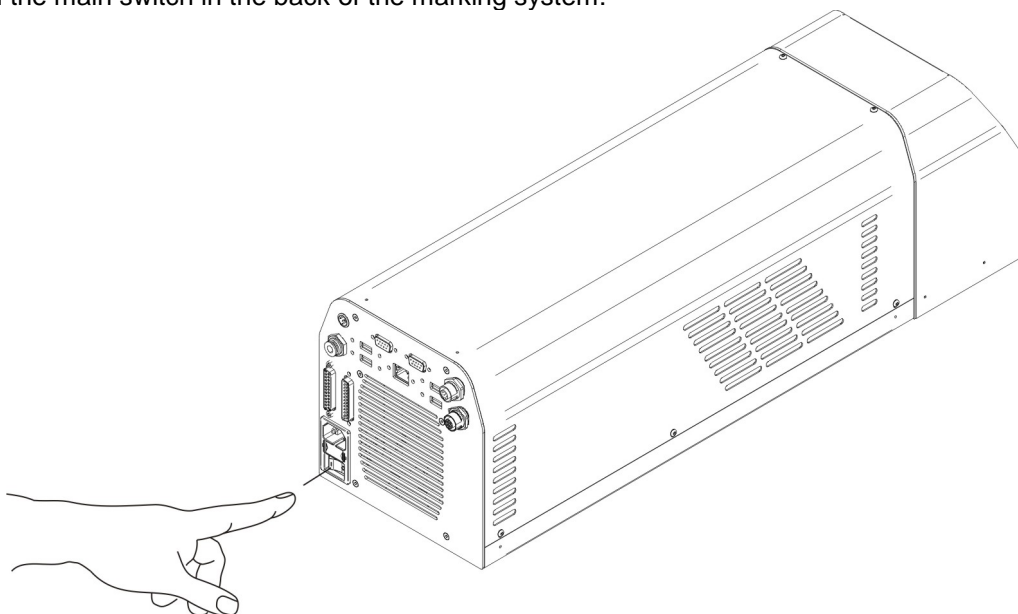

Figure 28: Power on.

If the marking system is turned on cooling fans are running. It's possible to know if the marking system is switched on checking the EXT_12V auxiliary power supply available on the Command Box Connector.
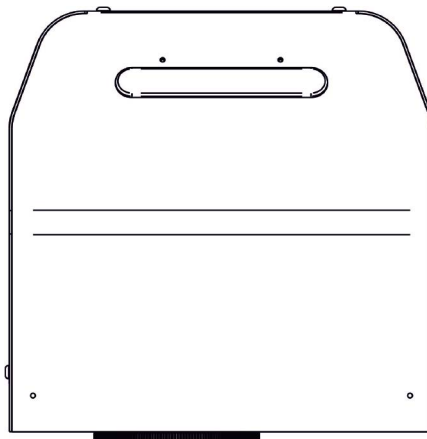

Figure 29: Status LED bar turned off.

4

2) After booting up (~60 s) activate *EXT_KEY* signal on Command Box connector:

With *EXT_KEY* signal activated the LED bar becomes green and "*LASER_ACTIVE*" signal is activated on Command Box connector.

SIGNAL	STATUS
EXT_KEY	ON
EXT_ENABLE_A	OFF
EXT_ENABLE_B	OFF
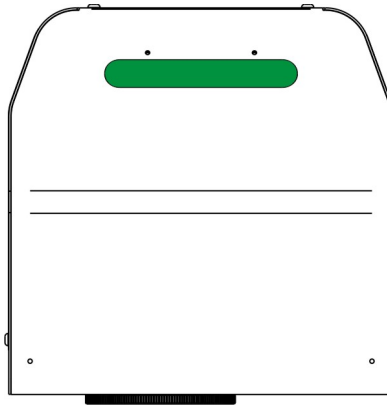
Figure 30: Status LED display.

3) Activate *EXT_ENABLE_A* and *EXT_ENABLE_B* signals on the Command Box connector:

SIGNAL	STATUS
EXT_KEY	ON
EXT_ENABLE_A	ON
EXT_ENABLE_B	ON

WARNING!
During this status, the Shutter is opened and **it is possible to have LASER beam output!**

The marking system is ready to mark. The status LED display will turn orange. "*SHUTTER_OPEN*" signal is activated on Command Box connector in the back panel.

Figure 31: LED bar status.

4) During laser emission LED bar becomes red. The *BUSY* output signal is active on the Command Box connector.

Figure 32: LED bar status.

NOTE:
Refer to paragraph 2.6 for any further information on the connections.
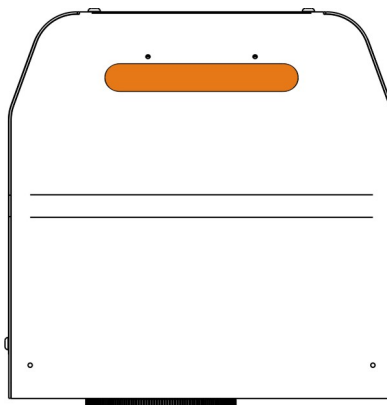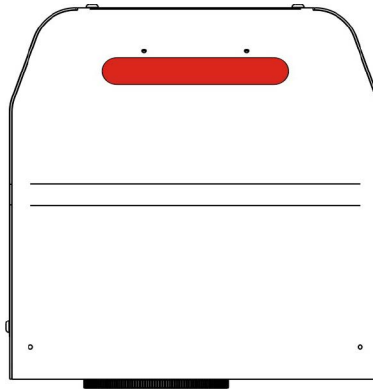
RESUME TABLE

STATUS	STATUS LED BAR	INPUT STATUS (*)		OUTPUT STATUS (*)	
SYSTEM BOOTING UP	TURNED OFF	EXT_KEY EXT_ENABLE_A EXT_ENABLE_B	LOW LOW LOW	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	OFF OFF OFF
WAIT FOR START	TURNED OFF	EXT_KEY EXT_ENABLE_A EXT_ENABLE_B	LOW LOW LOW	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	OFF OFF OFF
STANDBY SHUTTER CLOSED	STEADY GREEN	EXT_KEY EXT_ENABLE_A EXT_ENABLE_B	HIGH LOW LOW	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	OFF ON OFF
READY	STEADY ORANGE	EXT_KEY EXT_ENABLE_A EXT_ENABLE_B	HIGH HIGH HIGH	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	OFF ON ON

STATUS	STATUS LED BAR	OUTPUT STATUS (*)	
WARNING INVALID START SEQUENCE	BLINKING ORANGE (2Hz)	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	OFF OFF OFF
SYSTEM ERROR	BLINKING RED (2Hz)	SYSTEM_ALARM LASER_ACTIVE SHUTTER_OPEN	ON OFF OFF

(*) See paragraph 2.4.2.2 for more information.

4.2 LOCAL MODE OPERATIONS

The local mode (with monitor, keyboard and mouse connected) is optimal to fully benefit of the ALL-IN-ONE architecture characteristics.

**SW Editor
SW Engine
Correction Matrix
Laser Control
Galvo Control**
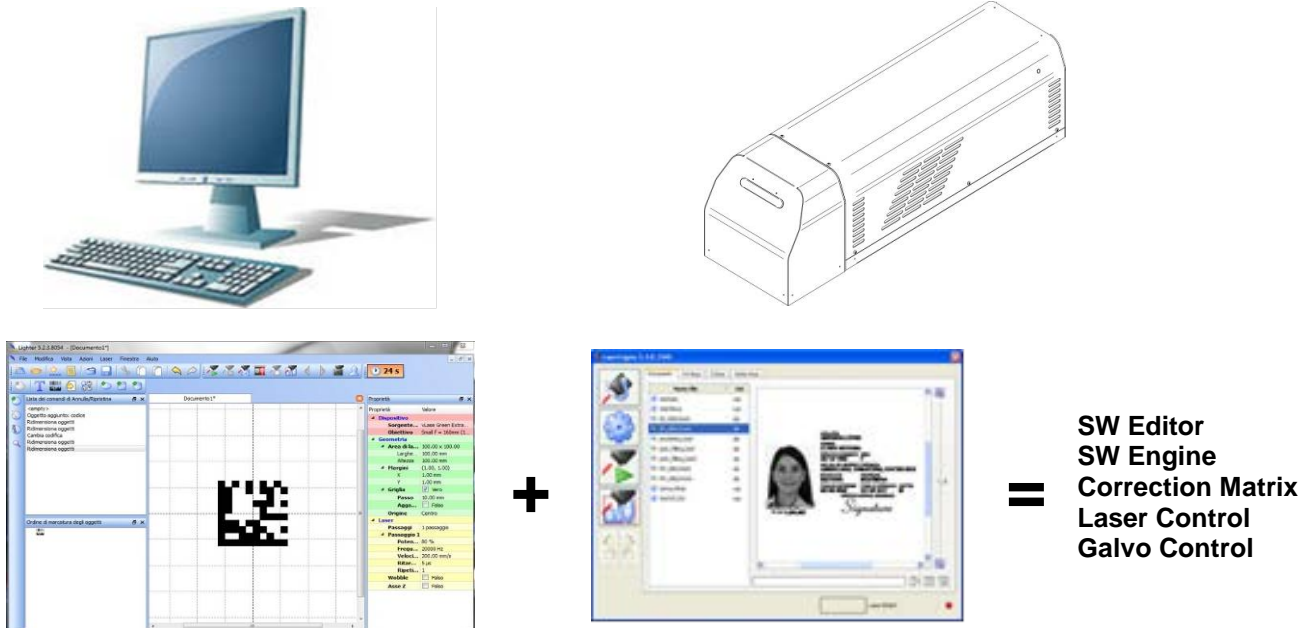
4.3 REMOTE MODE OPERATIONS

Keyboard, mouse and monitor are not necessary in this configuration.

LAN

**SW Editor
Remote SW Engine
Remote Active-X**

**SW Engine
Correction Matrix
Laser Control
Galvo Control**
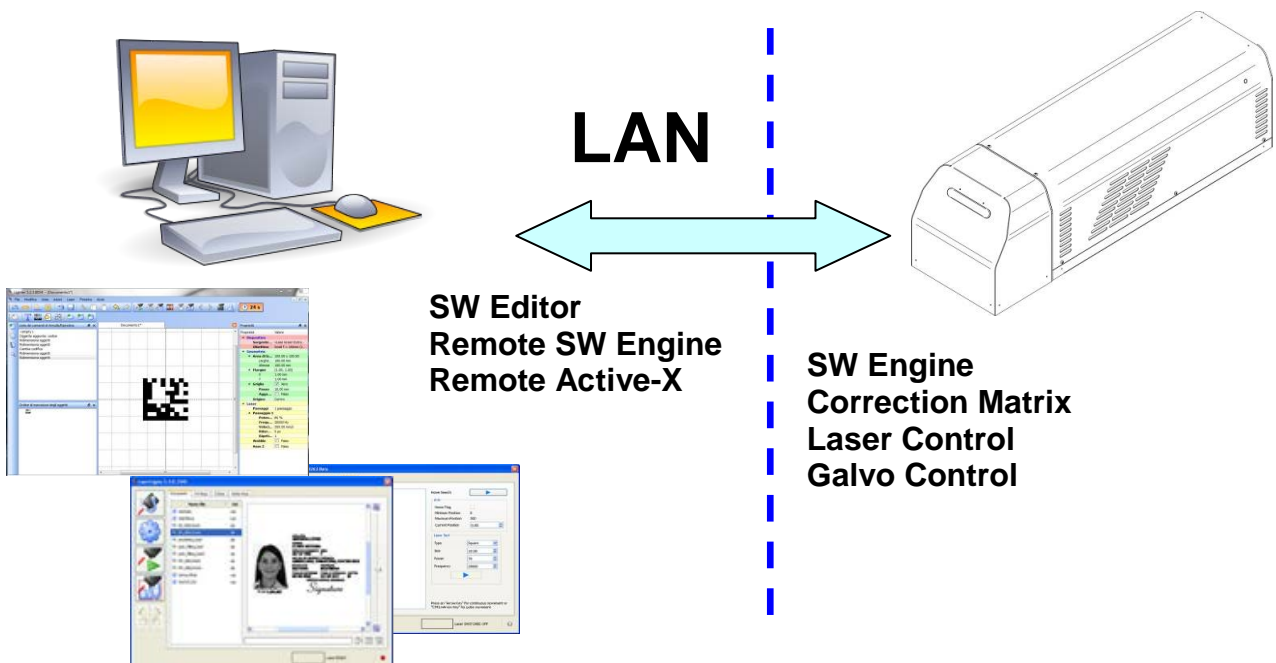
New IP ActiveX allows OEM integrators and end-users to create customized Applications and User Interfaces via Ethernet.
Local or remote ActiveX control interface is available with the same commands to allow the use of the same application developed for both local and remote configurations.

LAN

Remote ActiveX

SW Engine
Correction Matrix
Laser Control
Galvo Control
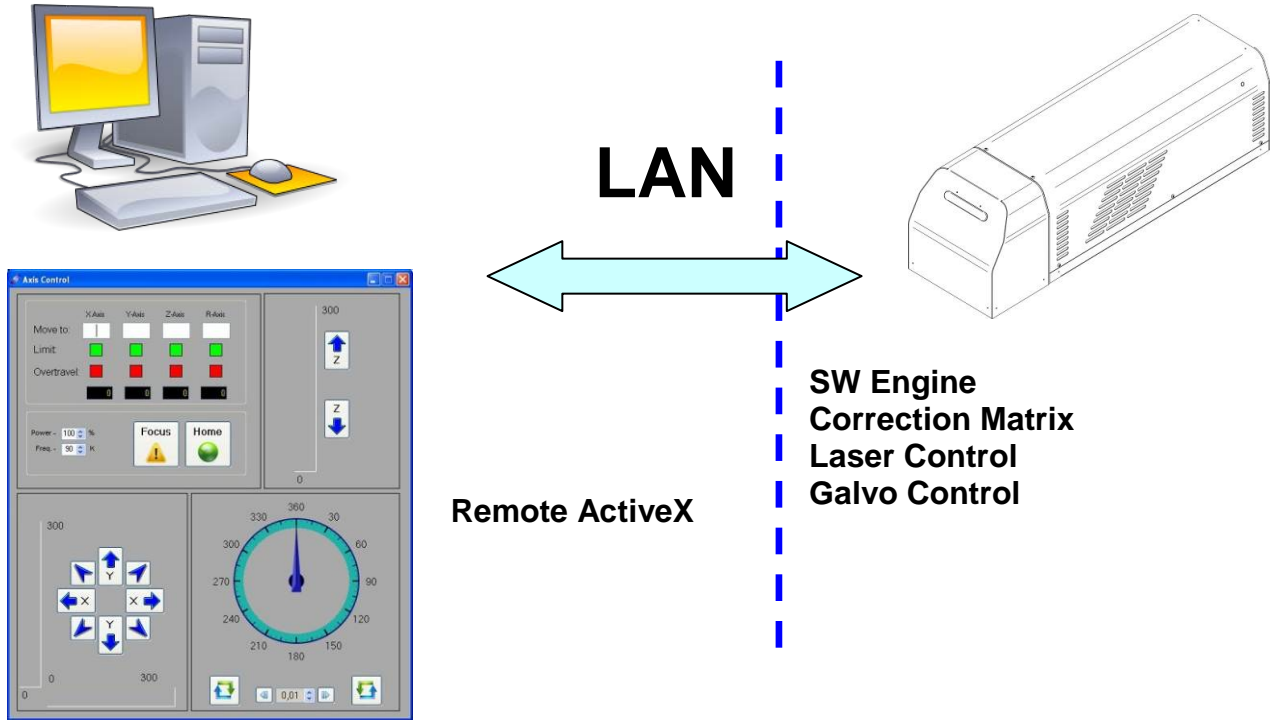
4.4 OPERATING IN LOCAL MODE

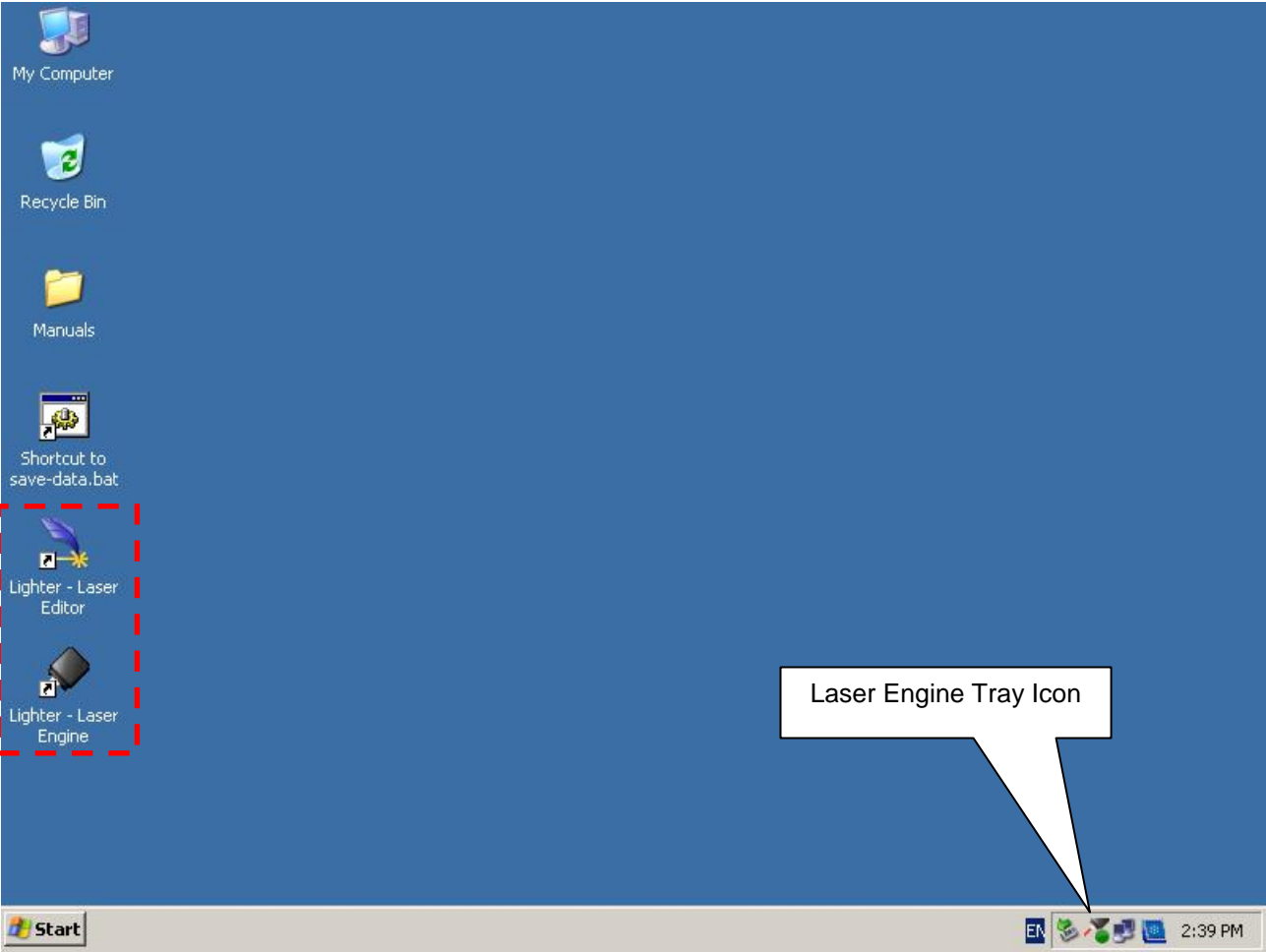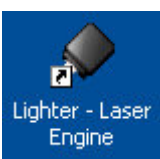Connecting monitor, mouse and keyboard to the marking system (paragraph 3.1.4) allows the operator to access the console which contains the instruments to operate with laser.

![Lighter - Laser Editor]	Laser Editor is a software that allows to easily mark or mark product identification information such as 2D matrix codes, barcodes, text, alpha-numeric serial numbers, date codes, part numbers, graphics and logos in any production environment.
	With Laser Editor you can:
	   ○ edit graphic layouts
	   ○ set laser parameters
	   ○ set marking system configuration
	   ○ control the integrated I/O module for axis management
	   ○ create automated procedures
	   ○ create programs using Lighter programming language

![Lighter - Laser Engine]	Laser Engine is an application automatically loaded at start-up that allows to operate on the marking system. Laser Engine is present in the tray icon.
	With Laser Engine you can:
	   ○ monitor the marking system status
	   ○ select a saved document, display limits using a red laser pointer, watch the marking preview and do marking tests
	   ○ switch between Manual/Auto mode (marking operations controlled by operator or external signals)

4.4.1 HOW TO CREATE AND EDIT YOUR FIRST GRAPHIC DOCUMENT
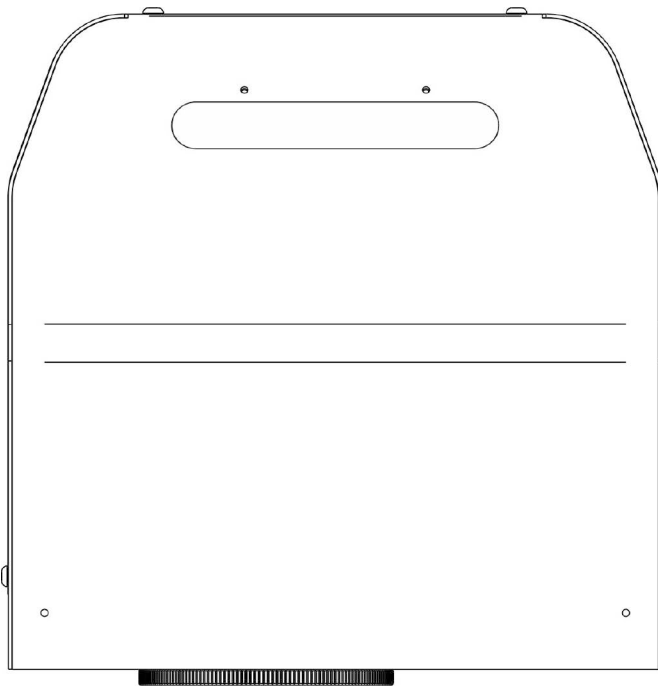
SIGNAL	STATUS
EXT_KEY	OFF
EXT_ENABLE_A	OFF
EXT_ENABLE_B	OFF

In "*WAIT FOR START*" status, double click on **Laser Editor** icon to start the layout editor application

Click on the document type selector and choose **Layer**:
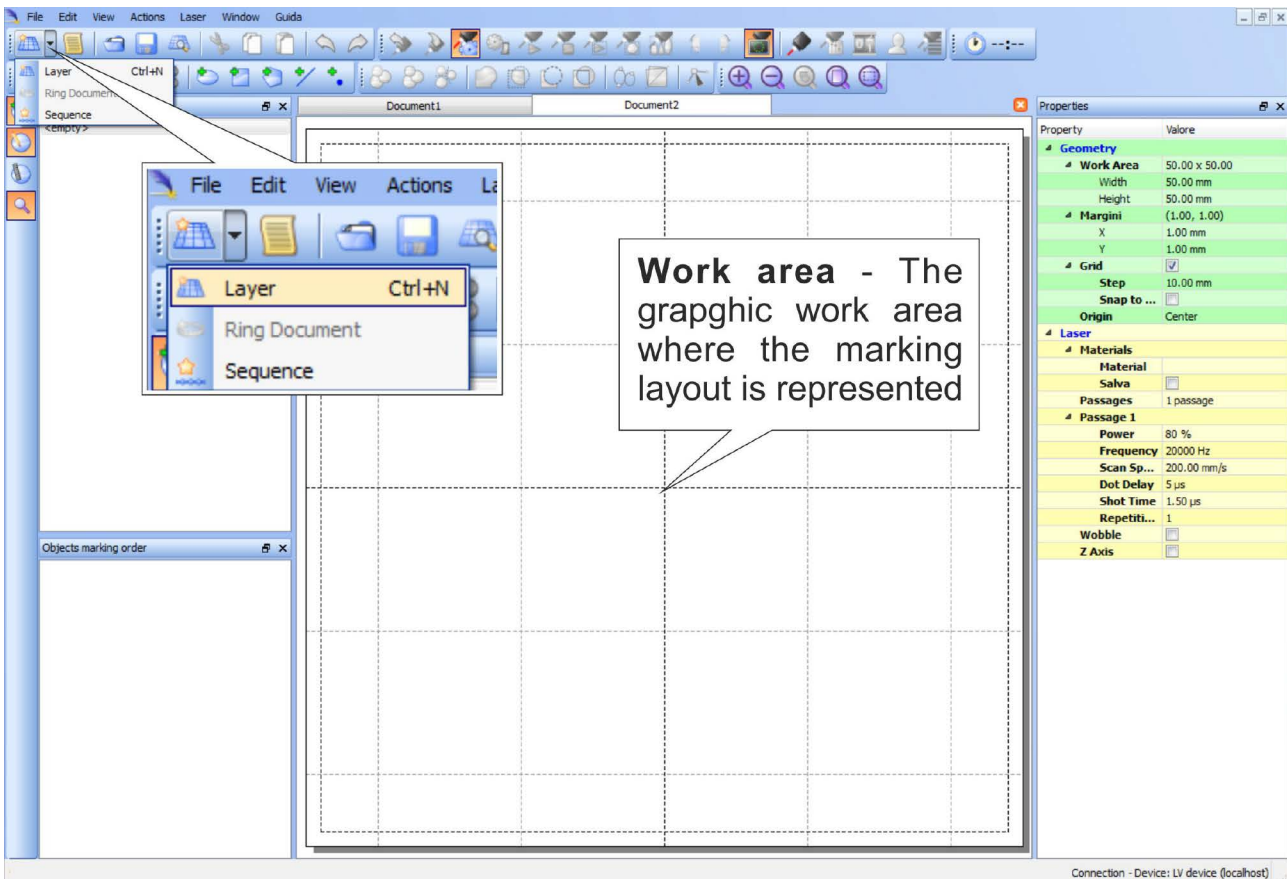
Click on the **Text String** icon in the **Object toolbar** to add a string object to the layer:
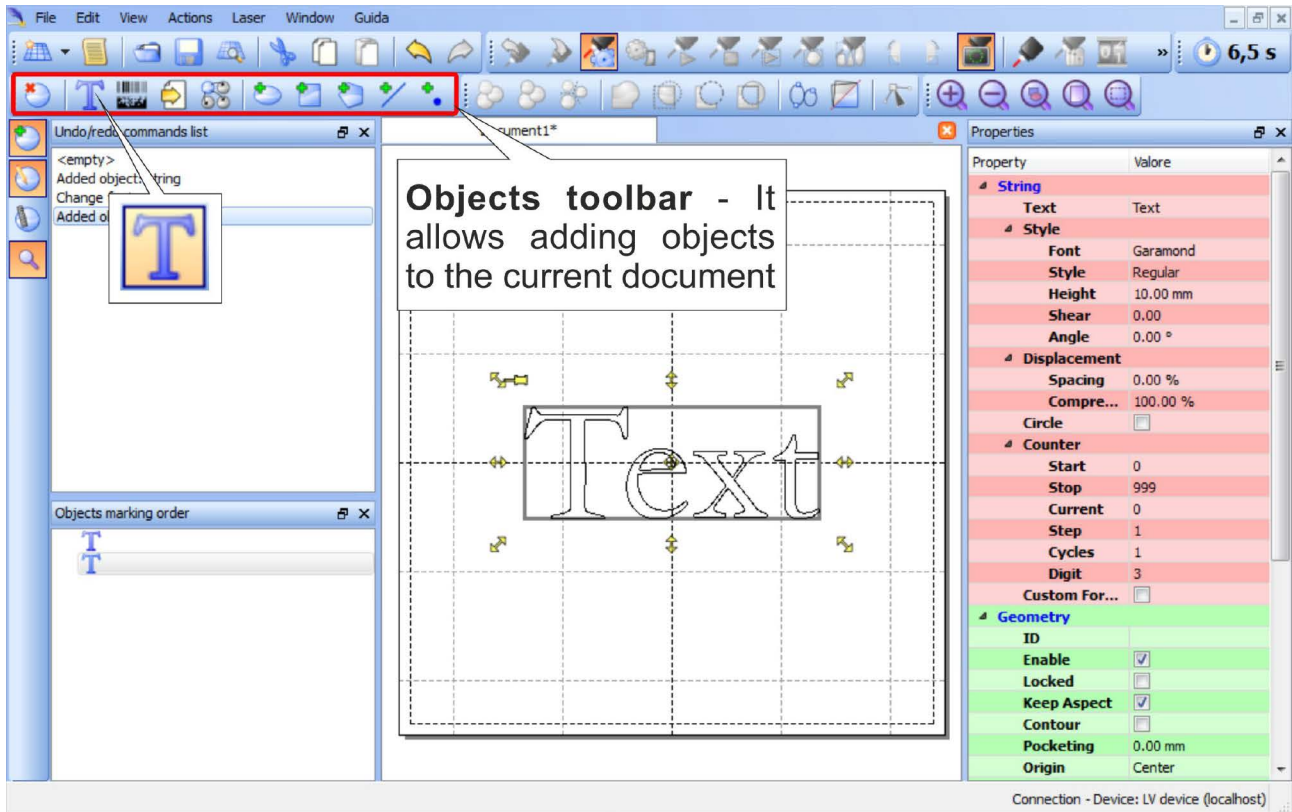
Edit String properties such as value, font, style, etc. using the **Properties browser**:
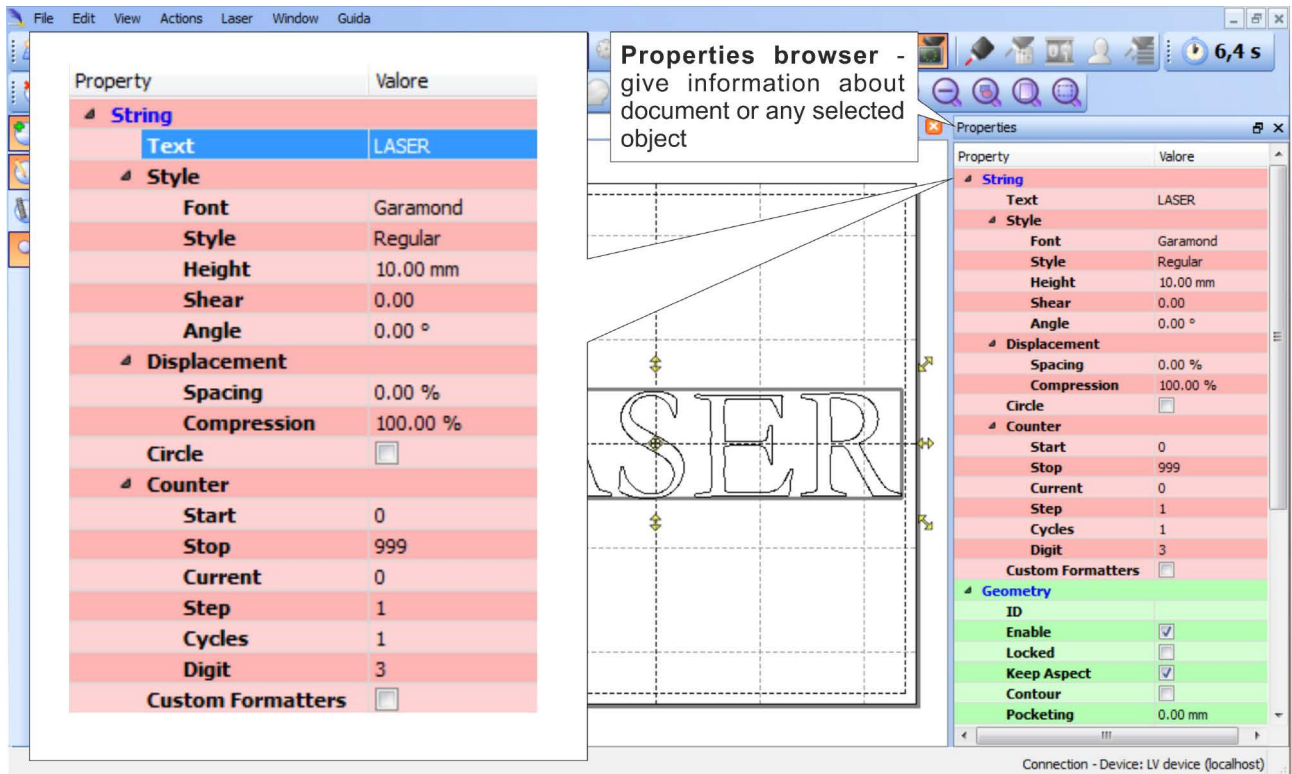
Edit Filling properties such filling type, interline, etc. using the **Properties browser**:

4
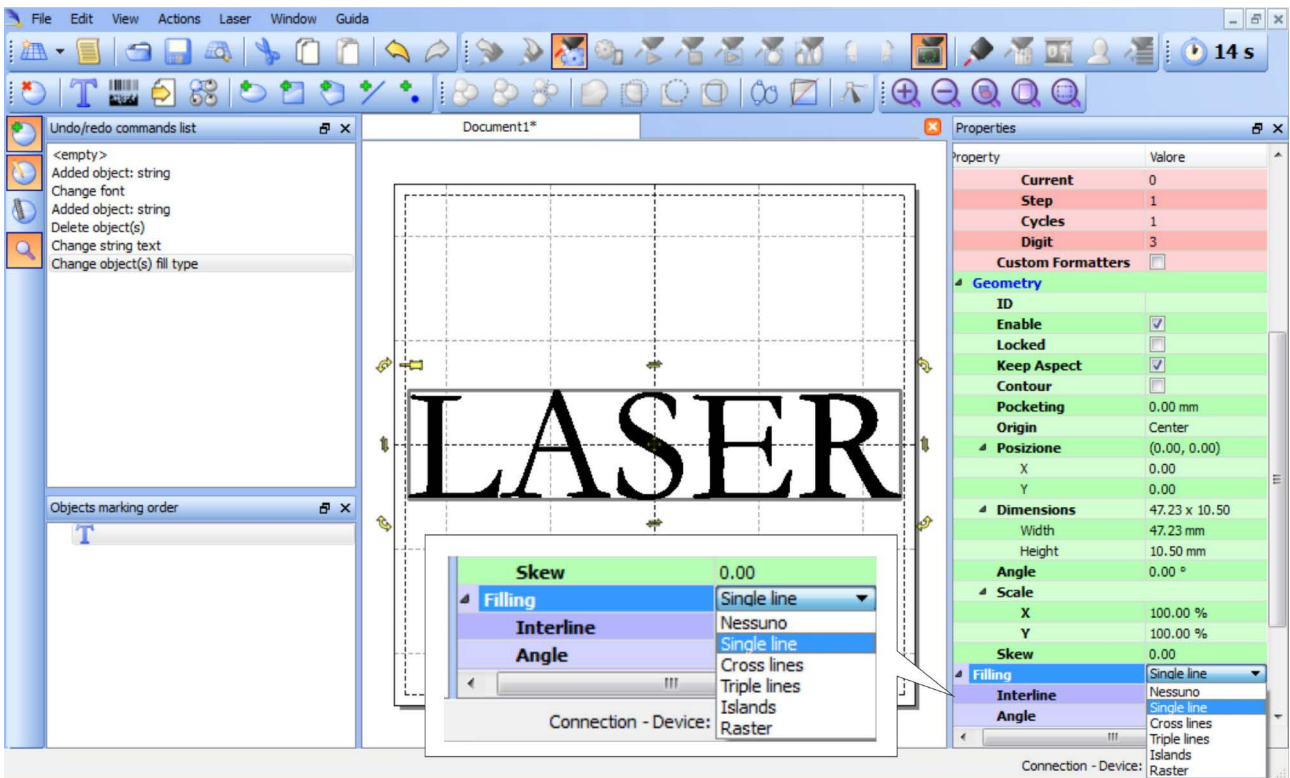
4.4.2 HOW TO TEST AND MARK YOUR DOCUMENT
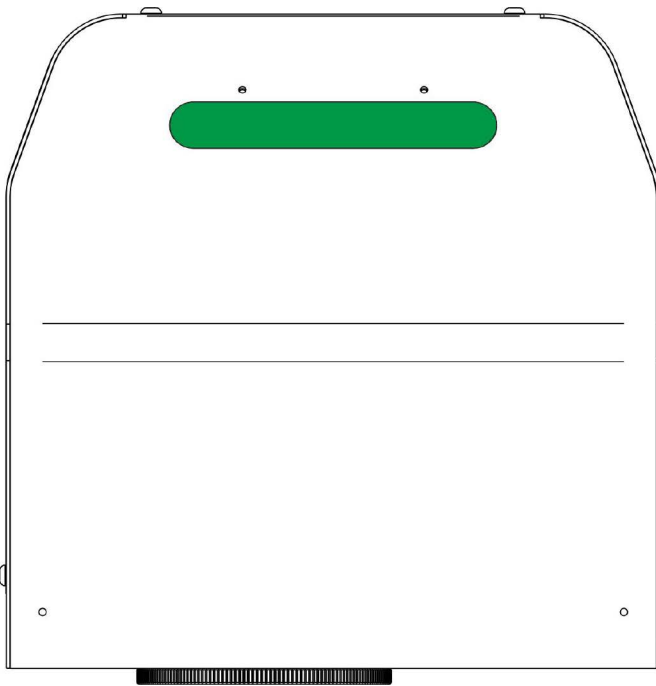
SIGNAL	STATUS
EXT_KEY	ON
EXT_ENABLE_A	OFF
EXT_ENABLE_B	OFF

In "*STANDBY SHUTTER CLOSED*" status, press **Limits All** button in the **Laser Toolbar** to adjust the object position in the marking field:

In "*READY*" status, adjust the Laser parameters using the **Properties browser**:
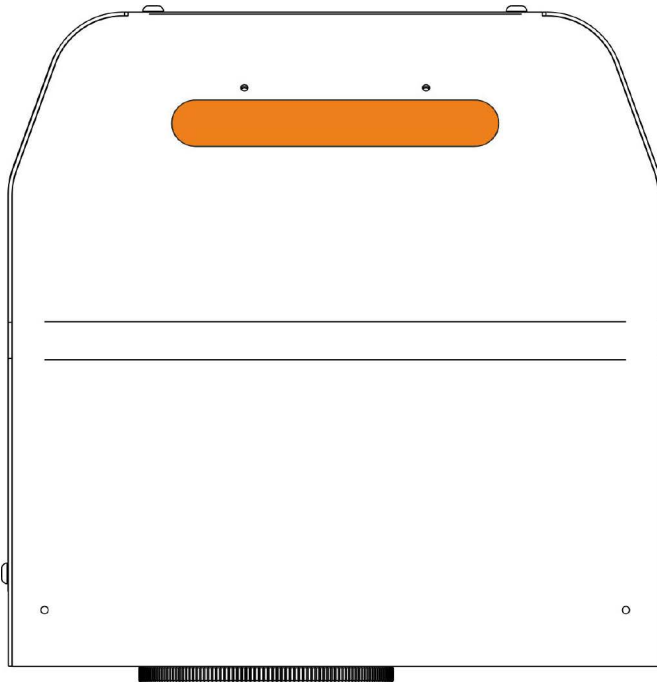
SIGNAL	STATUS
EXT_KEY	ON
EXT_ENABLE_A	ON
EXT_ENABLE_B	ON
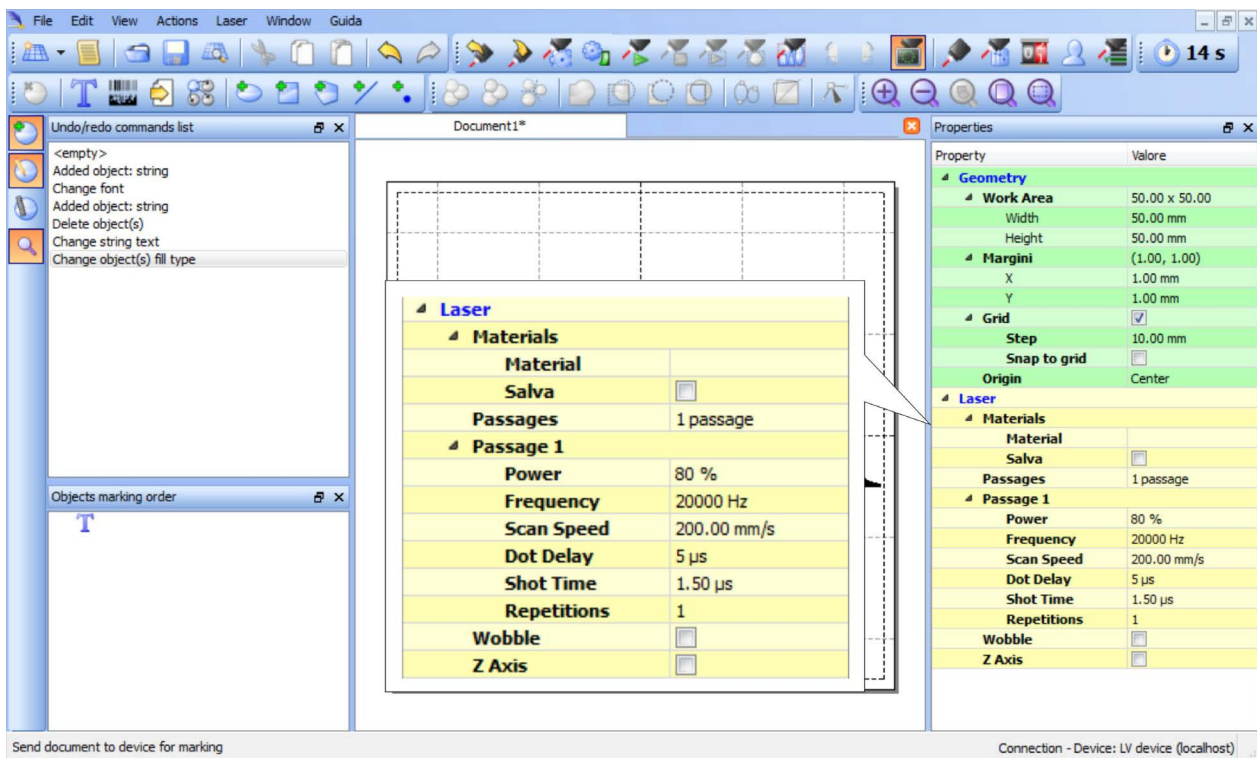
Press **Send Marking** button in the **Laser Toolbar** to start the marking process:

WARNING!
During the marking operations, the status LED bar will be **RED**.

4.4.3 HOW TO USE EXTERNAL SIGNALS TO MARK YOUR DOCUMENT

Automate the marking process allowing documents to be marked using external *START_MARKING* and *STOP_MARKING* signals, that can be generated by PLC or other external devices.

Click on *Save to Device* button to save the layout in the marking system memory:
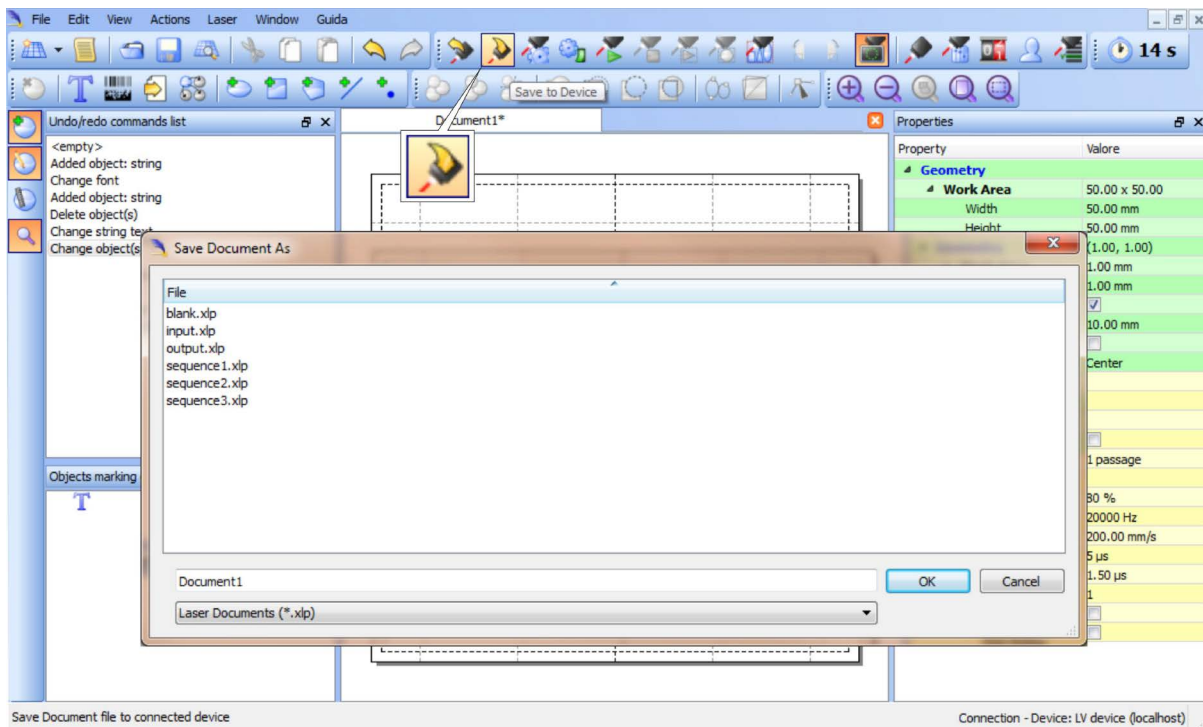
Click on **Show Laser Engine** button to display Laser Engine window:

Document preview - this area shows how the graphic objects will be actually marked

Documents tab - lists all the project or documents that have been saved to the system

System Status
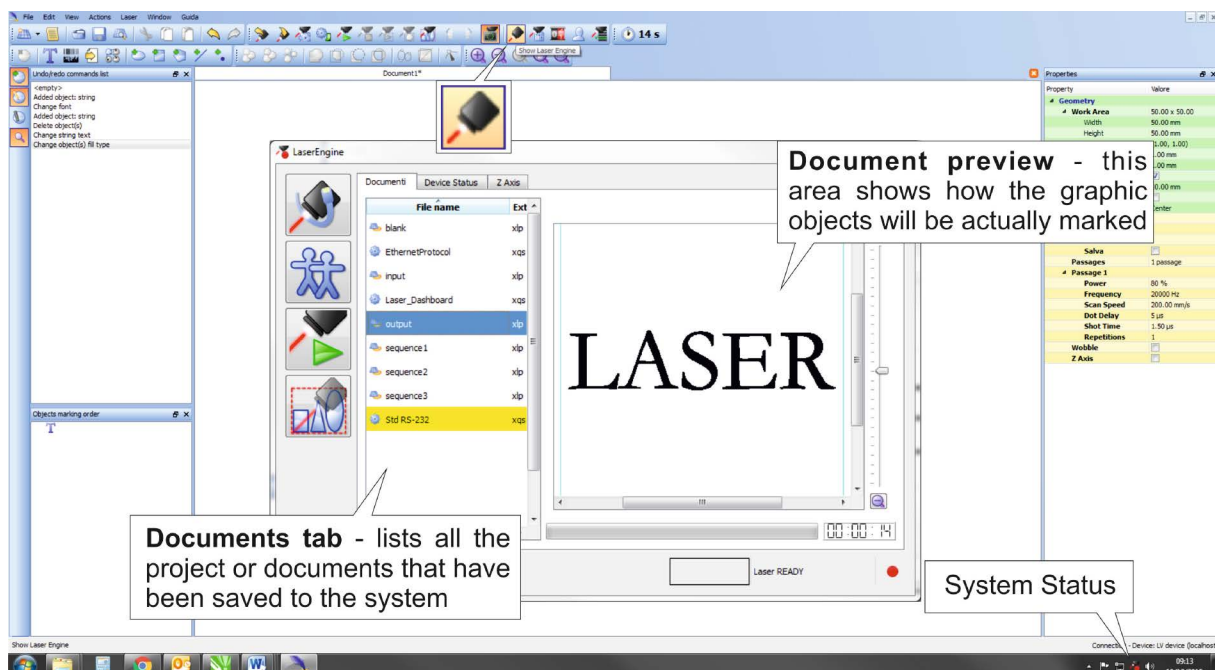
AUTO/MANUAL Mode button allows switching between the two available working modes:

o Auto mode: the marking operations are executed automatically using external signals.

o Manual mode: used for displaying the margins of the graphic objects to be marked and testing layouts.

Select the document from the list and click on **To Auto Mode** button:
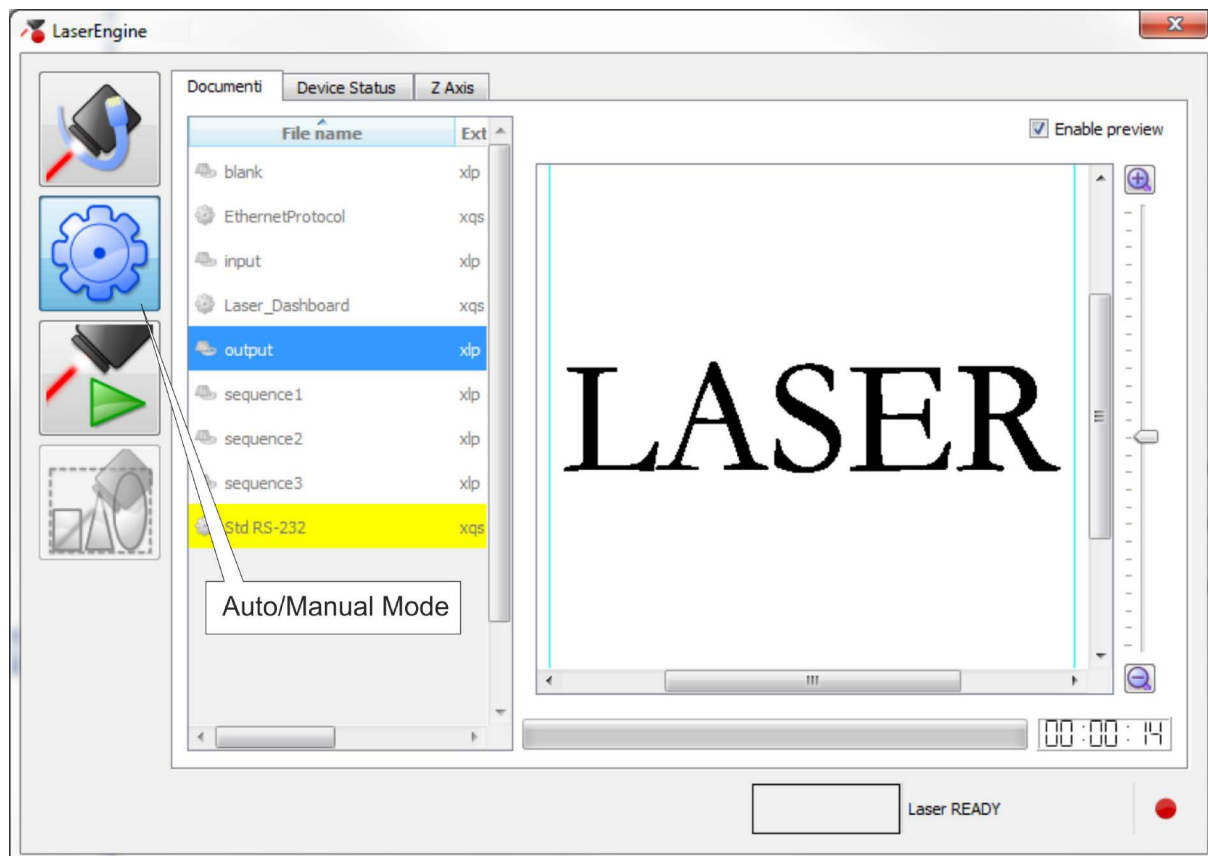
Marking system is ready to mark document using external *START_MARKING* and *STOP_MARKING* signals:

5. CUSTOMIZE THE SYSTEM'S SOFTWARE

5.1 CHANGE O.S. LANGUAGE AND KEYBOARD LAYOUT

The marking system allows you to personalize the operating system changing the language used in menus and dialogs, languages you can use to enter text and keyboard layout.

☞ NOTE:

In order to perform this setting it is necessary to connect mouse, keyboard and monitor to the marking system (paragraph 3.1.4).

o   Turn OFF and ON the marking system and wait the end of the booting-up

o   From the main screen click on **Start > Control Panel**
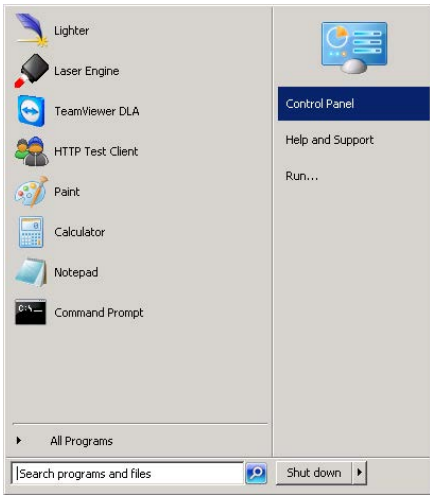
o   Select **Change display language**:
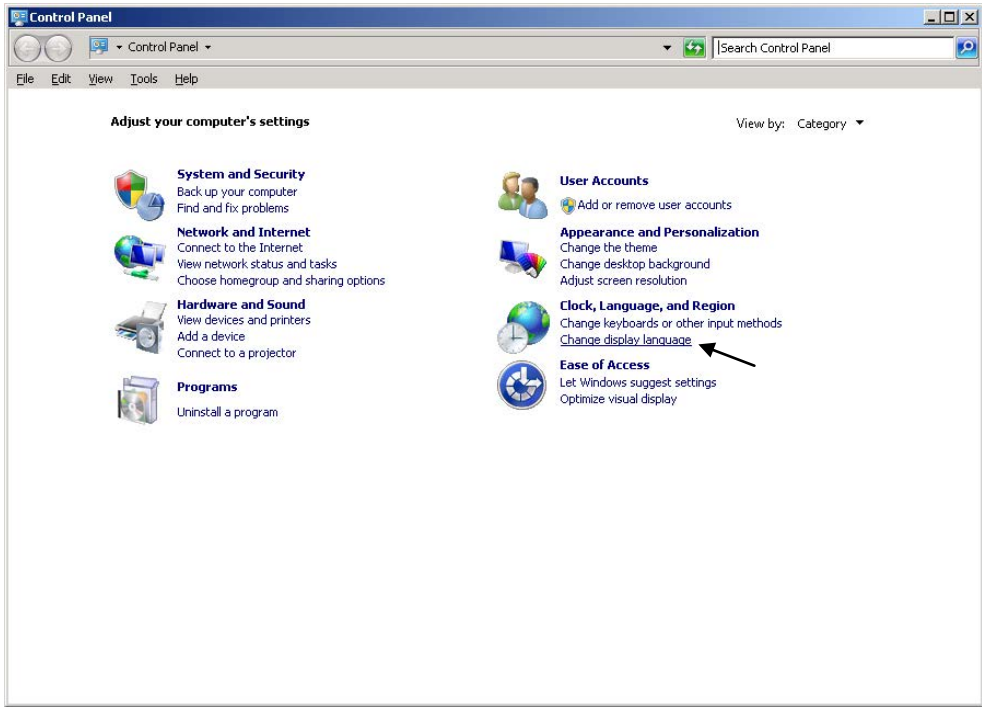
o   In **Keyboards and Languages** select and choose the desired language.
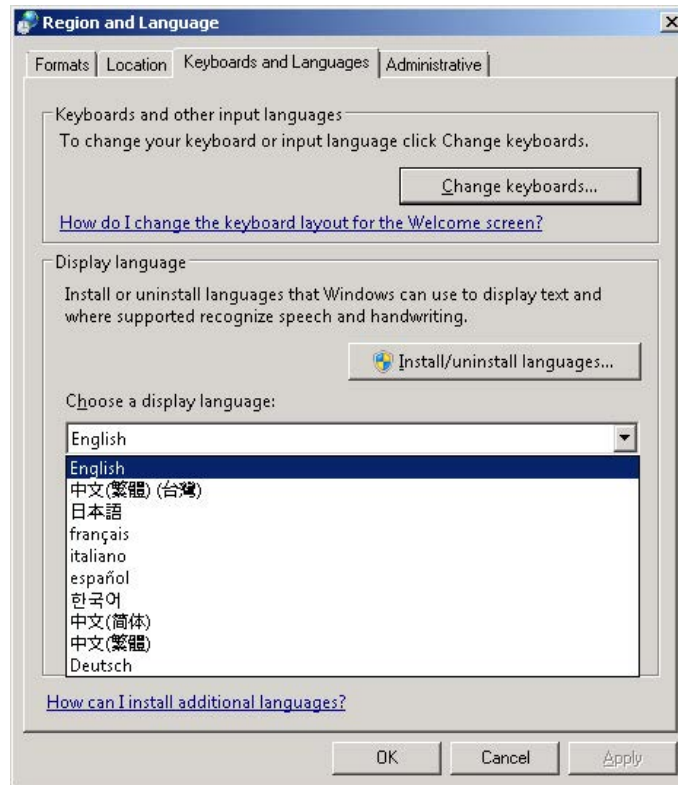
o   Select **Change keyboards** to change your keyboard or input language:
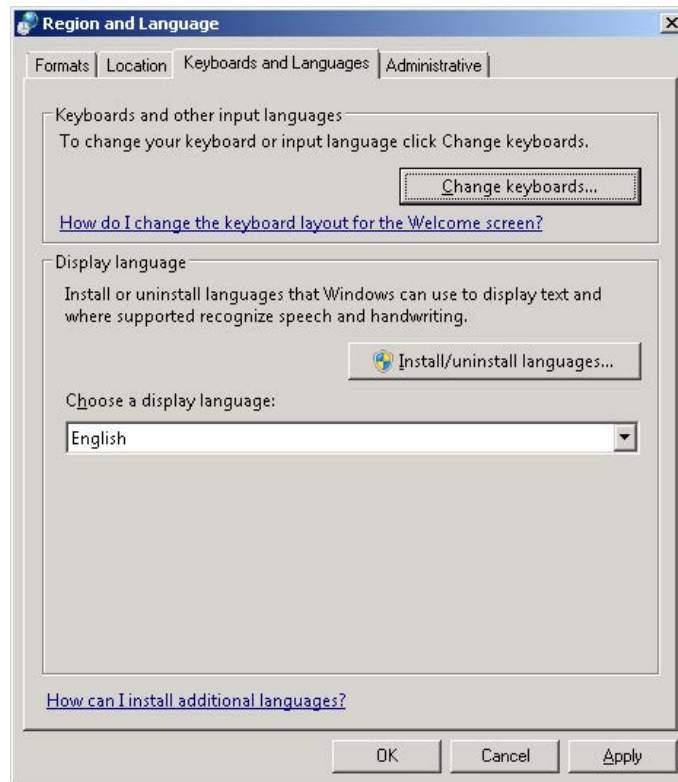
o Select now input languages and press **OK**:
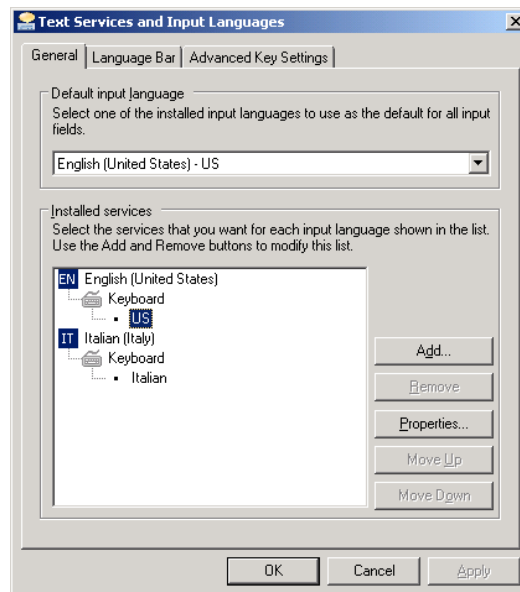
o Close all the open screens and double click on shortcut to `save-data.bat` icon in the Desktop screen.

o A message advise you to restart or shutdown the system in order to permanently save data. Press **OK**:
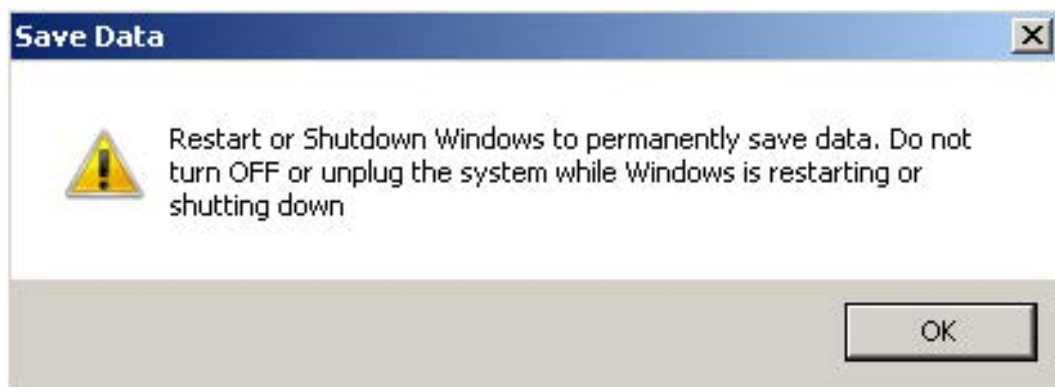
o **Shut down** the system in order to save the new settings:

WARNING!
DO NOT turn **OFF** or **UNPLUG** the system while Windows® is shutting down.

o <u>**WAIT**</u> until system shuts down automatically (black screen)

o Power off the system to complete installation

5.2 CHANGE LAN CONFIGURATION AND IP ADDRESS

The system allows you to change the LAN configuration and IP address.

NOTE:

In order to perform this setting it is necessary to connect mouse, keyboard and monitor to the marking system (paragraph 3.1.4).

o   Turn OFF and ON the marking system and wait the end of the booting-up

o   From the main screen click on **Start > Control Panel**
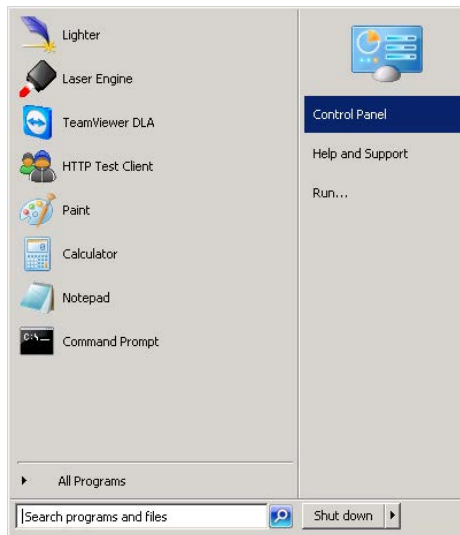
o   Select **View network status and task**:
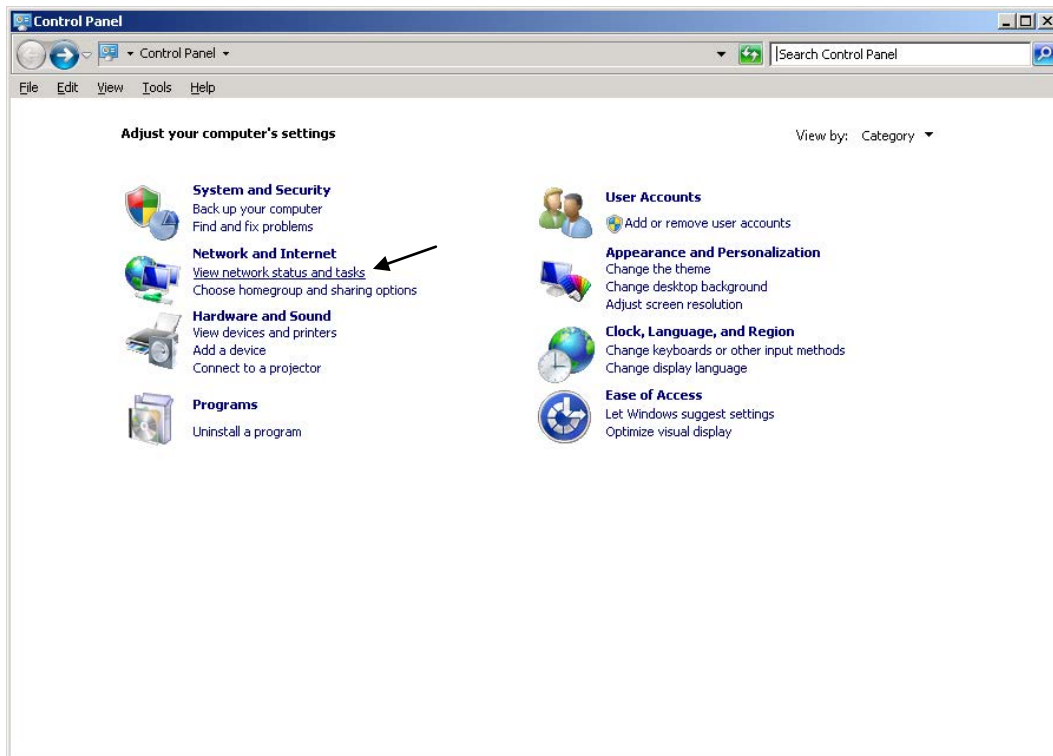
o   In the **Network and Sharing Center** screen select **Change adapter settings**:
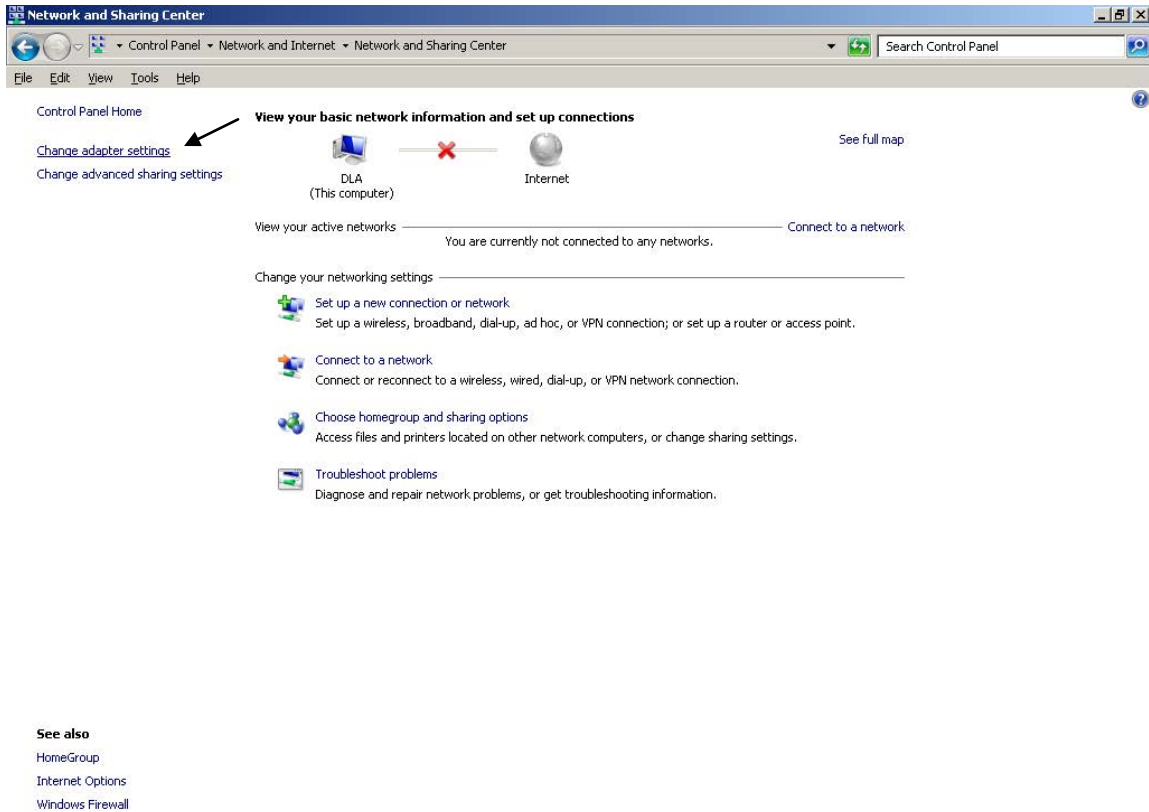
o   In the **Network Connections** screen double click on **Local Area Connection**:
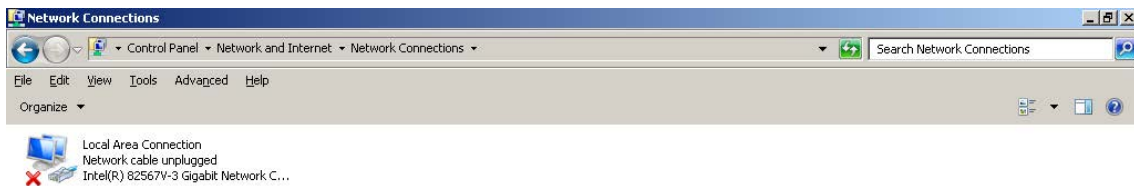
o   In the **Local Area Connection Properties** screen double click on **Internet Protocol Version 4 (TCP/IPv4)**

o   In the **Internet Protocol Version 4 (TCP/IPv4) Properties** you can change the IP address and configuration:
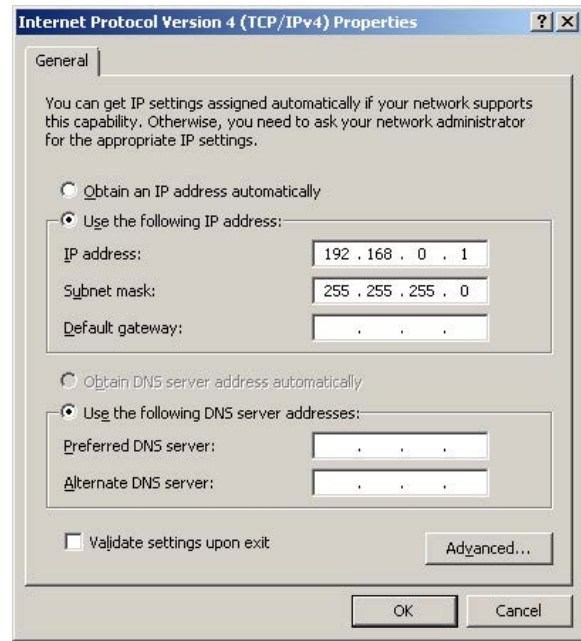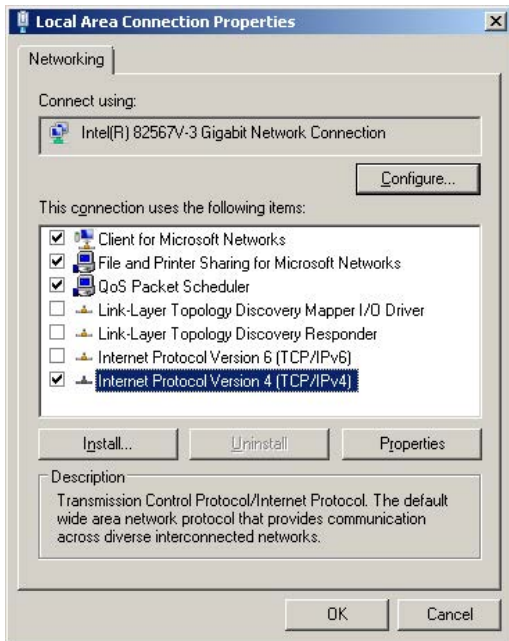
o   Close all the open screens and double click on shortcut to `save-data.bat` icon in the Desktop screen.

o   A message advise you to restart or shutdown the system in order to permanently save data. Press **OK**:
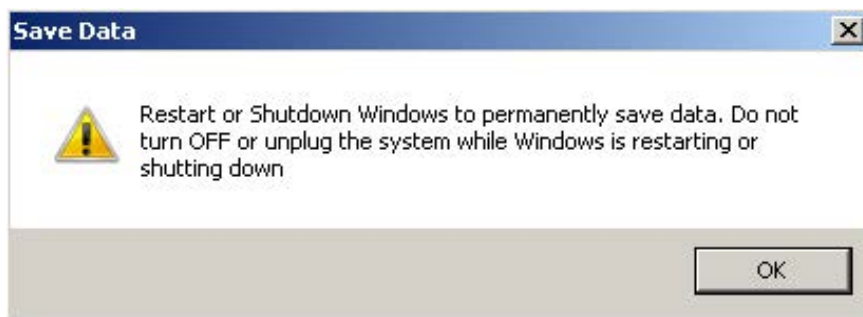
o   **Shut down** the system in order to save the new settings:

⚠ **WARNING!**
DO NOT turn **OFF** or **UNPLUG** the system while Windows® is shutting down.

o   **WAIT** until system shuts down automatically (black screen)

o   Power off the system to complete installation

5.3 CHANGE VIDEO SETTING

The system allows you to change the Video setting.

NOTE:

In order to perform this setting it is necessary to connect mouse, keyboard and monitor to the marking system (paragraph 3.1.4).

o Turn OFF and ON the marking system and wait the end of the booting-up (the status LED on the front cover must be steady green)

o From the main screen click on **Start > Control Panel**
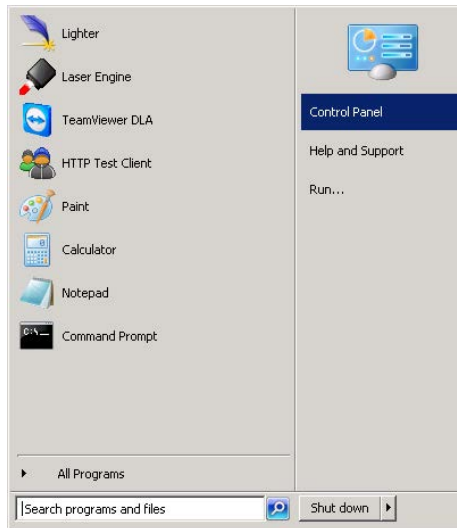
o Select **Adjust screen resolution**:
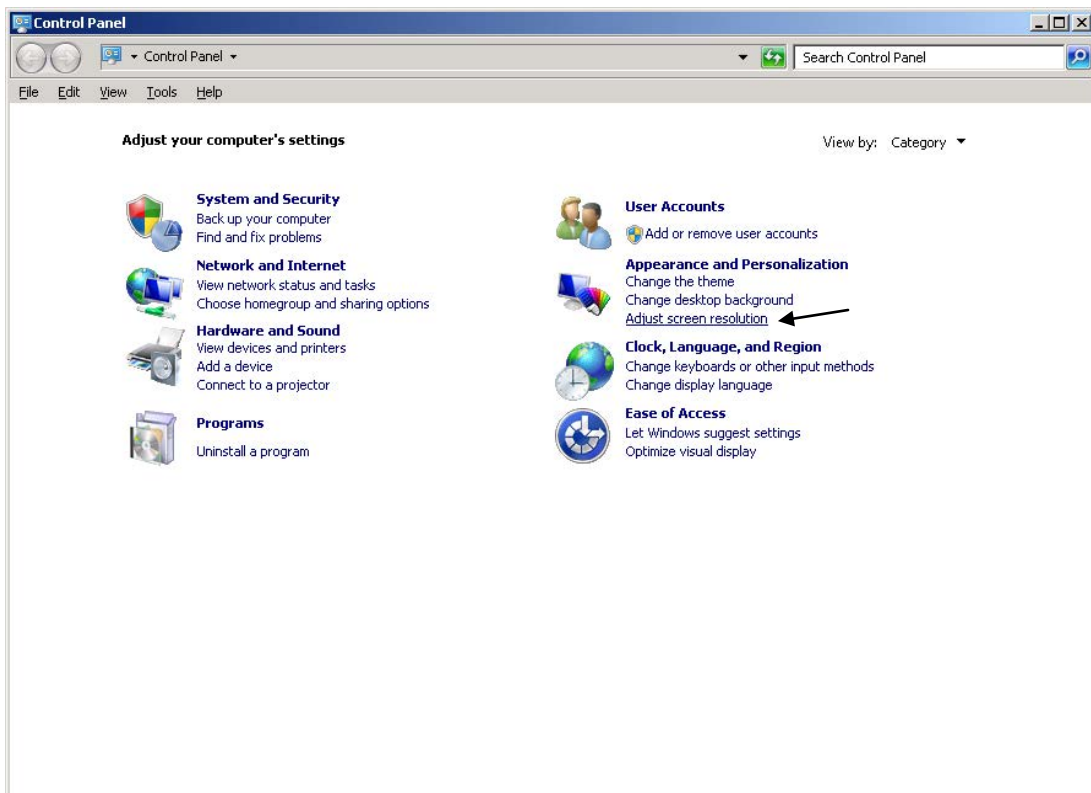
     o   In the **Screen Resolution** window select the desired Screen resolution and Colour quality:
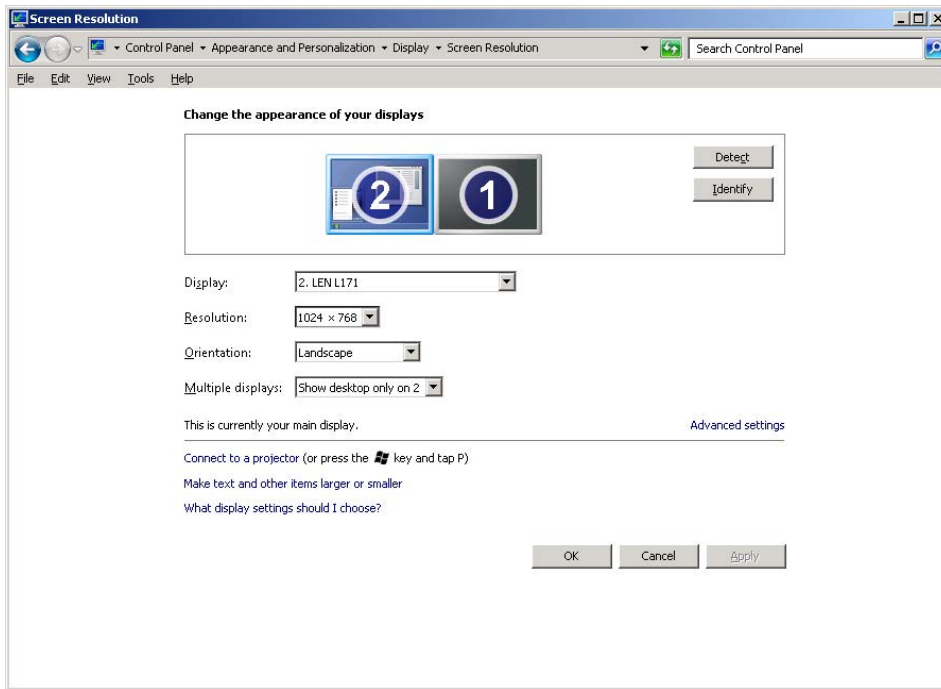
     o   Close all the open screens and double click on shortcut to `save-data.bat` icon in the Desktop screen.

     o   A message advise you to restart or shutdown the system in order to permanently save data. Press **OK**:

     o   **Shut down** the system in order to save the new settings:

WARNING!
DO NOT turn **OFF** or **UNPLUG** the system while Windows® is shutting down.

     o   <u>**WAIT**</u> until system shuts down automatically (black screen)

   o   Power off the system to complete installation

5.4 REMOTE DESKTOP CONNECTION

To connect the marking system to a remote Windows® based computer, follow these steps:

o   Turn on marking system

o   Make sure that both marking system and remote computer are connected to the LAN

o   Click **Start > All Programs > Accessories**, and then click **Remote Desktop Connection**

o   Click **Options**

o   In the Computer list, type the host name or the IP address of the computer to which you want to connect

o   Type the user name, password, and domain (if applicable) of an account to which you have allowed remote access into the corresponding boxes, and then click **Connect**
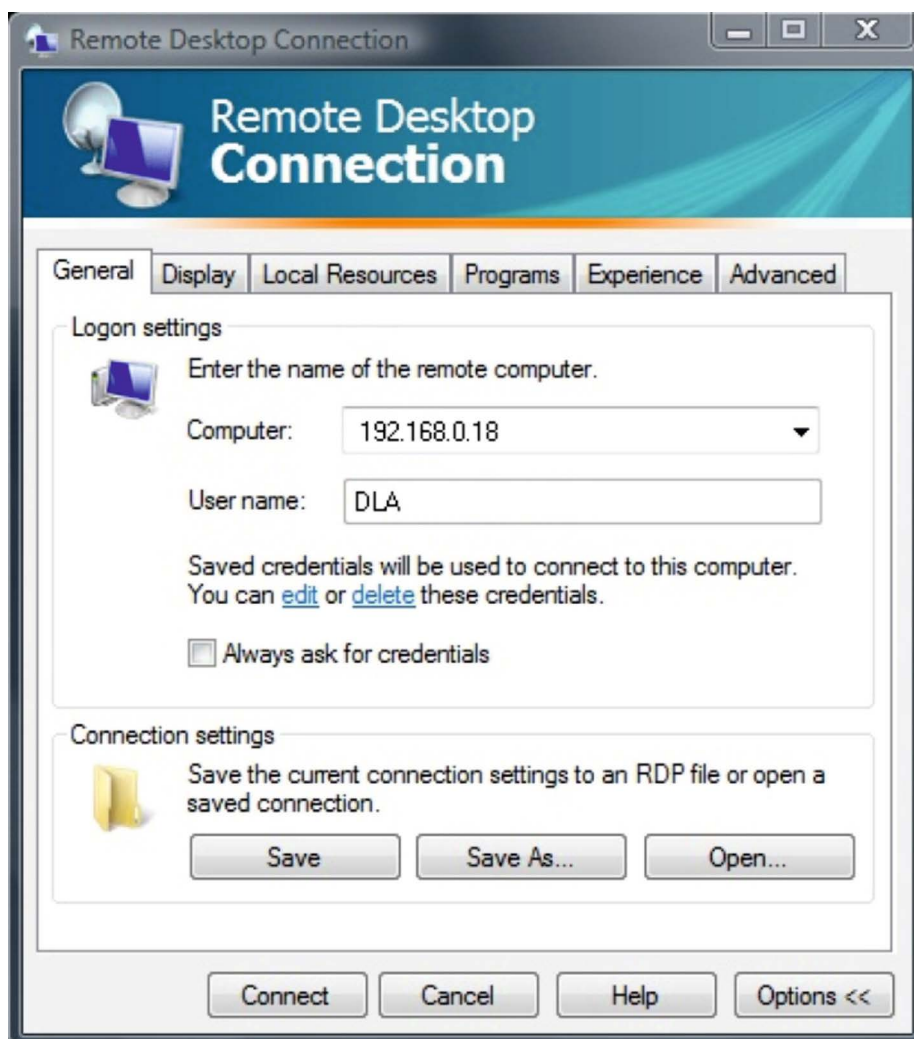
o   In the **Log On to Windows**® dialog box that appears, type the password of the account with remote access privileges into the **Password** box:

<div align="center">

User name: **DLA**
Password: **dla**

</div>
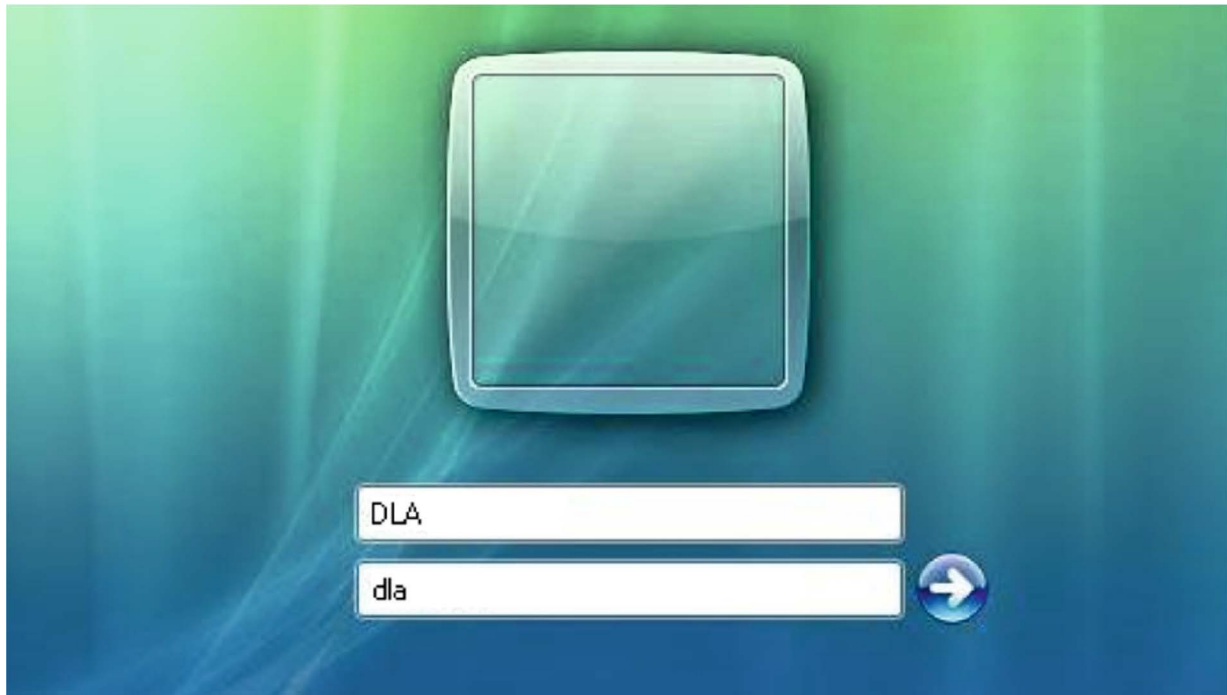
o   In the **Log on to** list, if applicable, select the domain or remote computer that you want, and then click **OK**

The remote desktop is displayed in a window on the desktop. The remote computer is locked during this session

o   To disconnect the session, click the **Close** button in the session window, and then click **OK** when you are prompted to disconnect the Windows® session.

6. ACCESSORIES

The accessories listed here below are described for information purposes only, and are not necessarily included in the packaging. The minimum contents of the packaging include the main hardware, cables and keys. For additional information, please refer to paragraph 1.2.

6.1 CONTROL BOX

Control and command device able to manage:

- Warmup the system
- Open the Shutter and enable laser emission
- Start and Stop the marking process
- Show the marking process status
- Show the system error status
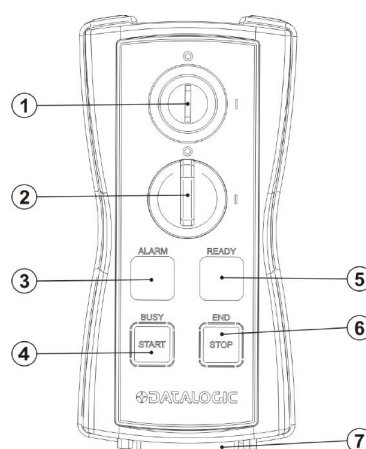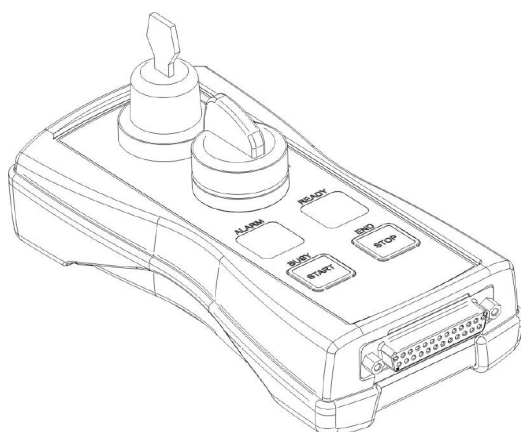
Figure 33: Control Box (Ordering no: 985330031).

1	**Key selector**
	Selector switch for *EXT_KEY* control signal
2	**Enable selector/ *ENABLE* indicator**
	Selector switch for both *EXT_ENABLE_A* and *EXT_ENABLE_B* control signals with LED indicator for *SHUTTER_OPEN* control signal
3	**Alarm indicator**
	LED indicator for *SYSTEM_ALARM* control signal
4	**Start button / *BUSY* indicator**
	Pushbutton for *START_MARKING* control signal with LED indicator for *BUSY* control signal
5	**Stop button / *END* indicator**
	Pushbutton for *STOP_MARKING* control signal with LED indicator for *END* control signal
6	***READY* indicator**
	LED indicator for *SW_READY* control signal
7	**External connector**
	Connection to Command Box connector

* Refer to Command Box connector (paragraph 2.4.2) for detailed control signal's description.

⚠ **WARNING!**
If the control box is used, the marking system works in **DANGEROUS** condition.

6.2 *MARKING ON FLY KIT*

The marking on fly kit is available on request. Kit includes: encoder, photocell, cables and plastic reflectors.
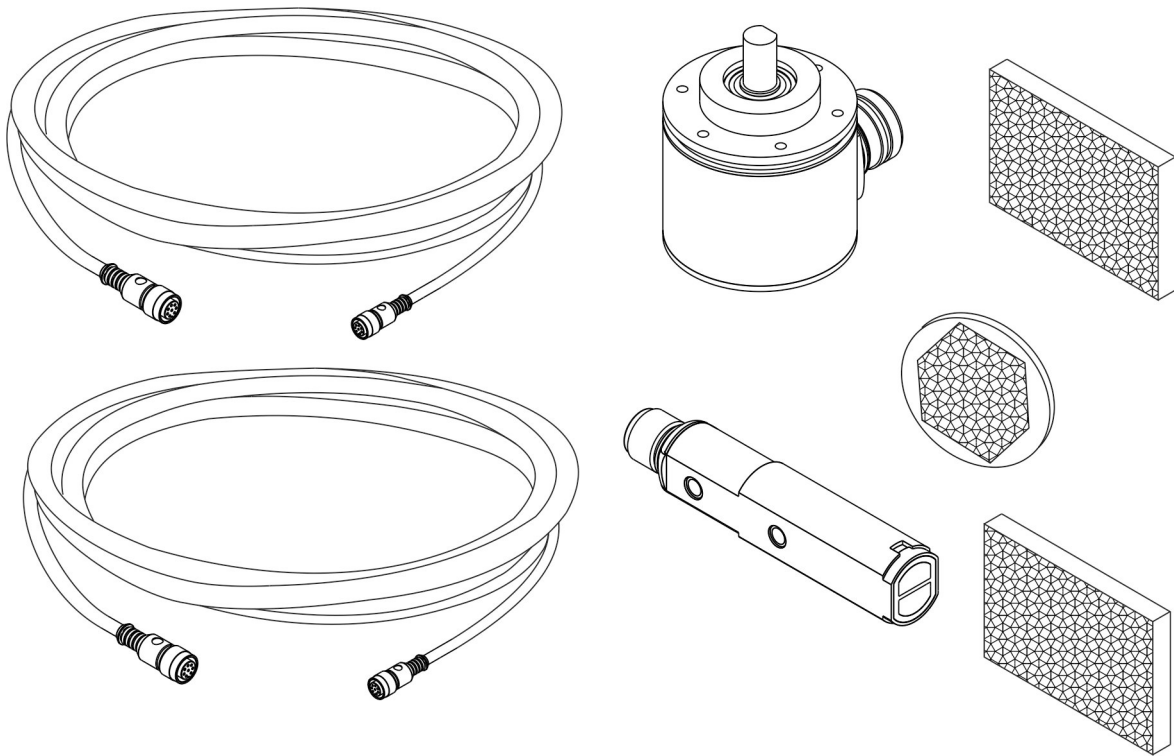
Figure 34: Kit MOF (Ordering no: 985330027).

7. TECHNICAL SUPPORT

7.1 *SEALS*

The marking system has seals in some areas. The seals must not be broken or removed for any reason. The sealed parts may be opened only and exclusively by Datalogic. Breakage of these seals by a customer shall result in immediate cancellation of the warranty on the entire marking system.

WARNING!
If a customer **breaks or removes the seals placed** by the manufacturer on the marking system **the warranty** on the entire marking system will immediately become **null and void**.

WARNING!
The manufacturer shall not be held liable for any **non-conforming use** of marking system of its manufacture.
It is **forbidden** to operate the marking system before the machine it is intended for has been **declared in conformance** with statutory Directives.

WARNING!
Access to the internal parts of the electrical marking system is only permitted for **authorized personnel**, who have been trained and instructed on the electrical risks.
Datalogic shall not be held liable for work on electrically charged parts by inadequately trained personnel!

WARNING!
Access to the internal parts of the marking system is only permitted for **authorized personnel**, who have been trained and instructed on the optical risks!
Datalogic shall not be held liable for work on parts by inadequately trained personnel!

7.2 *MAINTENANCE*

The ordinary maintenance program foresees only simple operations. Some operations consist in a mere "check" of the operating condition.

The maintenance activities must be done in compliance with the law prescriptions regarding the safety rules during the operations.

The following parts/functions have to be controlled:

MAINTENANCE PROGRAM

COMPONENT OR FUNCTION	TYPE OF OPERATION	INTERVALS
F-Theta scan lens	Check / Clean	Weekly: wipe gently with a dry cloth (or soaked in high purity isopropyl alcohol) or clean it with air blowing
Fan and heat exchanger unit	Check	Every 6 months (according to the place and frequency of use)
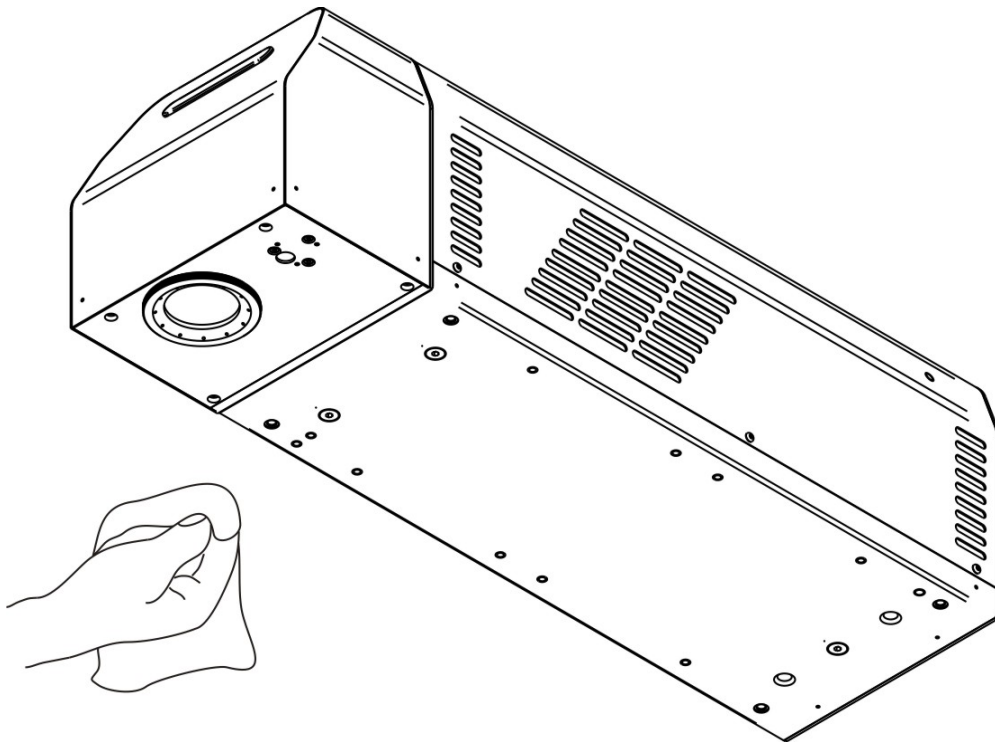
Figure 35: Cleaning F-Theta lens.

WARNING!
Before cleaning the F-Theta scan lens, the marking system MUST be in set SAFE mode:
1- Disable *EXT_ENABLE_A* and *EXT_ENABLE_B*.
2- Disable *INTERLOCK_A* and *INTERLOCK_B*.

7.3 TROUBLESHOOTING

If a problem occurs during operation, first check the following troubleshooting. If you cannot fix the problem, contact Datalogic customer service.

7.3.1 LIST OF POSSIBLE WARNING AND ERROR STATUS

STATUS LED BAR	DESCRIPTION	POSSIBLE CAUSE	ACTION	OUTPUT STATUS COMMAND BOX CONNECTOR	
Blinking ORANGE (2Hz)	Warning invalid start sequence	Wrong turning ON sequence	Repeat the turning ON sequence (see paragraph 4.1)	SYSTEM_ALARM POWER_ON ENABLE_OUT	OFF OFF OFF
Blinking RED (2Hz) at POWER ON	System error	INTERLOCK ERROR	Check *INTERLOCK* signals (see paragraph 2.4.1)	SYSTEM_ALARM POWER_ON ENABLE_OUT	ON OFF OFF
			Check Interlock connector presence (see paragraph 2.4.1)		
		CONNECTOR PRESENCE ERROR	Check *CONNECTOR_PRESENCE* input signal of the Command Box connector (see paragraph 2.4.2): - HIGH level: normal operation; - LOW level or disconnected: system error		
			Check Command Box connector presence		
Blinking RED (2Hz) after Key activation	System error	RESONATOR ERROR	- Check that the system is working in the correct temperature range - Contact Datalogic technical support	SYSTEM_ALARM POWER_ON ENABLE_OUT	ON OFF OFF
		SHUTTER ERROR	Contact Datalogic technical support		

7.3.2 LIST OF POSSIBLE PROBLEMS RELATED TO SYSTEM STATUS

PROBLEM DESCRIPTION	STATUS LED BAR	POSSIBLE CAUSE	ACTION	OUTPUT STATUS COMMAND BOX CONNECTOR
System doesn't turn ON	Turned OFF	POWER SUPPLY CABLE disconnected	Check POWER SUPPLY CABLE connection	SYSTEM_ALARM OFF POWER_ON OFF ENABLE_OUT OFF
		POWER SUPPLY main switch	Check that POWER SUPPLY main switch is turned ON	
		POWER SUPPLY fuses	Check fuses on the main power supply connection	
System never exit BOOTING UP status	Turned OFF	Lighter Suite marking SW corrupted	Restore the system using USB recovery disk (See APPENDIX E)	SYSTEM_ALARM OFF POWER_ON OFF ENABLE_OUT OFF
		CF Disk or SSD Disk corrupted		
System never go to *STANDBY SHUTTER CLOSED* status	Turned OFF	*EXT_KEY* contact opened	Check *EXT_KEY* input signal on the Command Box connector (paragraph 2.4.2) - HIGH level: contact closed; - LOW level or disconnected: contact opened	SYSTEM_ALARM OFF POWER_ON OFF ENABLE_OUT OFF
System never go to READY status	Steady GREEN	*EXT_ENABLE_A* and/or *EXT_ENABLE_B* contact opened	Check *EXT_ENABLE_A* e *EXT_ENABLE_B* input signals on the Command Box connector (paragraph 2.4.2): - HIGH level: contact closed; - LOW level or disconnected: contact opened	SYSTEM_ALARM OFF POWER_ON OFF ENABLE_OUT OFF

7.3.3 LIST OF POSSIBLE GENERIC PROBLEMS

PROBLEM DESCRIPTION	POSSIBLE CAUSE	ACTION
System doesn't mark	System is not in *READY* state	- Check *EXT_KEY* contact on the Command Box connector is CLOSED - Check *EXT_ENABLE_A* and *EXT_ENABLE_B* contacts are CLOSED
	F-Theta Lens protection not removed	Check that F-Theta lens protection has been removed
	Wrong F-Theta Lens focus distance	Check the working distance (refers to paragraph 2.3)
	Wrong laser parameters	Check that laser parameters are appropriate for the selected material
System doesn't mark using external *START_MARKING* signal	*STOP_MARKING* signal is active	Check the *STOP_MARKING* signal on the Command Box connector (paragraph 2.4.2) - HIGH level signal stop the marking process
	START_MARKING signal wrong timing	- Check the *START_MARKING* signal on the Command Box connector (paragraph 2.4.2) - HIGH level pulsed signal start the marking process (refers to Lighter user's manual "Setting I/O parameters" paragraph to set the signal properties) - Use Lighter System Test function to test external *START_MARKING* and *STOP_MARKING* signals
	Wrong PHOTOCELL type or connection	Check that the photocell is compatible with the system (paragraph 2.4.6) - HIGH level pulsed signal start the marking process (refers to Lighter user's manual "Setting I/O parameters" paragraph to set the signal properties)
	Lighter is not set in AUTO MODE or WORK MODE	Check that Laser Engine is set in AUTO MODE or that Laser Editor is set in WORK MODE
System doesn't work in Marking On Fly mode	Laser Engine is not set in MOF MODE	- Use the Laser Engine MOF wizard to setup the system (refers to Lighter User's Manual) - Check that Laser Engine is set in MOF MODE (refers to Lighter User's Manual)
	Laser Engine is not set in AUTO MODE	Check that Laser Engine is set in AUTO MODE (refers to Lighter User's Manual)
	Wrong ENCODER type or connection	- Check that the encoder is compatible with the system (paragraph 2.4.5) - Check that the encoder is working using Laser Engine MOF wizard (refers to Lighter User's Manual)
	Wrong PHOTOCELL type or connection	- Check that the photocell is compatible with the system (paragraph 2.4.6) - Check that the photocell is working using Laser Engine MOF wizard (refers to Lighter User's Manual)
	Inappropriate layout	Check that the layout to mark is compatible, in terms of marking time, with the MOF application
Impossible to use Command Box control signal to monitor and automate the marking process	Wrong integration	Check that the control signals are compatible with the external devices used for integration (refers to paragraph 2.5)

SW_READY output signal doesn't rise in AUTO MODE or WORK MODE	Wrong Laser Engine setting	- Check SW_READY COMPATIBILITY property in Laser Engine Configuration "Setting I/O parameters":
		   - SW_READY COMPATIBILITY = true: SW_READY signal goes ON when a document or a sequence is running in AUTO MODE or WORK MODE not depending on system state
		   - SW_READY COMPATIBILITY = false: SW_READY signal goes ON when a document or a sequence is running in AUTO MODE or WORK MODE and system is in *READY* state

Red Aiming beam not visible	System is not in the correct status	- Check that the system status is coherent with the AIMING BEAM TYPE property in Laser Engine Configuration "LASER" (refers to Lighter User's Manual)
	Wrong Laser Engine setting	- Check STANBY POSITION property in Laser Engine Configuration "SCANNER". Depending on the setting, the aiming beam could be not visible because pointed outside the marking field (refers to Lighter User's Manual)

		- Check AIMING BEAM TYPE property in Laser Engine Configuration "LASER" (refers to Lighter User's Manual)
		  - ON: active both during *STANDBY SHUTTER CLOSED* state and *READY* state
		  - OFF: always OFF
		  - AUTOMATIC: active only during *STANDBY SHUTTER CLOSED* state

Red Focus beam not visible	System is not in the correct status	- Check that the system status is coherent with the FOCUSING BEAM TYPE property in Laser Engine Configuration "LASER" (refers to Lighter User's Manual)

	Wrong Laser Engine setting	- Check FOCUSING BEAM TYPE property in Laser Engine Configuration "LASER" (refers to Lighter User's Manual)
		  - ON: active both during *STANDBY SHUTTER CLOSED* state and *READY* state
		  - OFF: always OFF
		  - AUTOMATIC: active only during *STANDBY SHUTTER CLOSED* state

X, Y, Z, R Axis doesn't work	Wrong integration	- Check that the control signals are compatible with the external devices used for integration (refers to paragraph 2.5)
	Axis not enabled	- Check that the selected Axis is enabled in Laser Engine Configuration (refers to Lighter User's Manual)
I/O signals doesn't work	Wrong integration	- Check that the control signals are compatible with the external devices used for integration (refers to paragraph 2.5)
	I/O already used by Axis	- Check that the selected I/O signals are not used by an Axis that is enabled (refers to paragraph 2.4.3) - Check that the Axis that use the selected I/O is disabled in Laser Engine Configuration (refers to Lighter User's Manual)
Optical distortion on marking object	Wrong F-Theta Lens	- Check that F-Theta Lens installed in the system is the same set in Laser Engine Configuration (refers to Lighter User's Manual)
	Wrong F-Theta Lens focus distance	- Check the working distance (refers to paragraph 2.3)
Windows® settings are not saved at system restart	C:\ drive is write protected	- Follow the procedure present in chapter 5

7.4 PRODUCT SUPPORT AND CUSTOMER SERVICE

Warranty Information

Datalogic reserves the right to change the information and specification container in this manual without prior notice.

Product Support

In the unlikely event that the marking system does not function normally and that it requires attention, contact Datalogic for advice on further on-site fault diagnosis and/or module return.

If the marking system is to be returned to Datalogic, ensure that all relevant return documentation is in place before shipment. Details of documentation requirements and copies can be obtained where required from Datalogic.

Pack the marking system in the original packing and include all original accessories and documentation as detailed in the original inventory. It is advised that the correct and original packaging is used to prevent transit damage to the marking system. If part or all of the original packaging is unavailable, please contact Datalogic for replacement items. Please take time to complete all return documentation. This can be obtained from Datalogic and accurate details, diagnosis and comments in the documentation can help reduce turnaround time for module repair at Datalogic.

Customer Service Contacts

Product Support
support-dla-lasermarking@datalogic.com
Tel: +39 051-3147011

Customer Services
service-dla-lasermarking@datalogic.com
Tel: +39 0331-918001
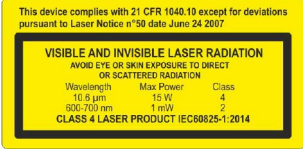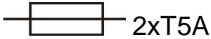
Company Web Site
www.datalogic.com

For further contact information see the Contact Us link at www.datalogic.com or contact your local distributor.

APPENDIX A: LABEL IDENTIFICATION

LABEL	DESCRIPTION
ⒹDATALOGIC DATALOGIC S.r.l. via S.Vitalino, 13 - 40012 Calderara di Reno (BO) - Italy www.datalogic.com Model: EOX 6102-1240 S/N: E11L00009 Manufactured: December 2011 - MADE IN ITALY Supply: 100÷240 VAC – 50/60Hz - 600W CE	**Identification label**
⚠	**Warning logotype**
⚠	**Warning logotype (Dangerous voltage)**
This device complies with 21 CFR 1040.10 except for deviations pursuant to Laser Notice n°50 date June 24 2007 **VISIBLE AND INVISIBLE LASER RADIATION** AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION Wavelength Max Power Class 10.6 µm 15 W 4 600-700 nm 1 mW 2 **CLASS 4 LASER PRODUCT IEC60825-1:2014**	**Laser label[5]**
AVOID EXPOSURE VISIBLE AND INVISIBLE LASER RADIATION IS EMITTED FROM THIS APERTURE	**Aperture label**
CAUTION VISIBLE AND INVISIBLE CLASS 4 LASER RADIATION WHEN OPEN AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION	**Label for non-interlock protective housing**
MAC Address 00:07:BE:00:7C:44	**MAC Address**
2xT5A	**Fuses**
INTERLOCK	**Interlock connector**
COMMAND BOX	**Command Box connector**
AXES	**Control Axes connector**
INLET AIR	**Inlet air**
USB	**USB plug**

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[5] Maximum output of laser radiation as per definition 3.55 of IEC60825-1 considering single fault conditions.

LAN	LAN connector
RS232	RS232 connector
VGA	VGA connector
PHOT	Photocell connector
ENC	Encoder connector

POSITIONING OF EXTERNAL LABELS

Figure 36: External labels.

APPENDIX B: STANDARDS

LASER STANDARDS

EOX^{TM} 10W is designed to comply with the <u>applicable</u> sections of these laser standards:

EU : EN60825-1
USA : 21 CFR 1040.10

The marking system is classified as Class 4 Laser Product.

Datalogic, as manufacturer of "EOX**TM** 10W" laser sources, provides a marking system which is NOT intended for immediate use, but it must be connected, by others, to other devices which have the final aim of creating a laser processing system.

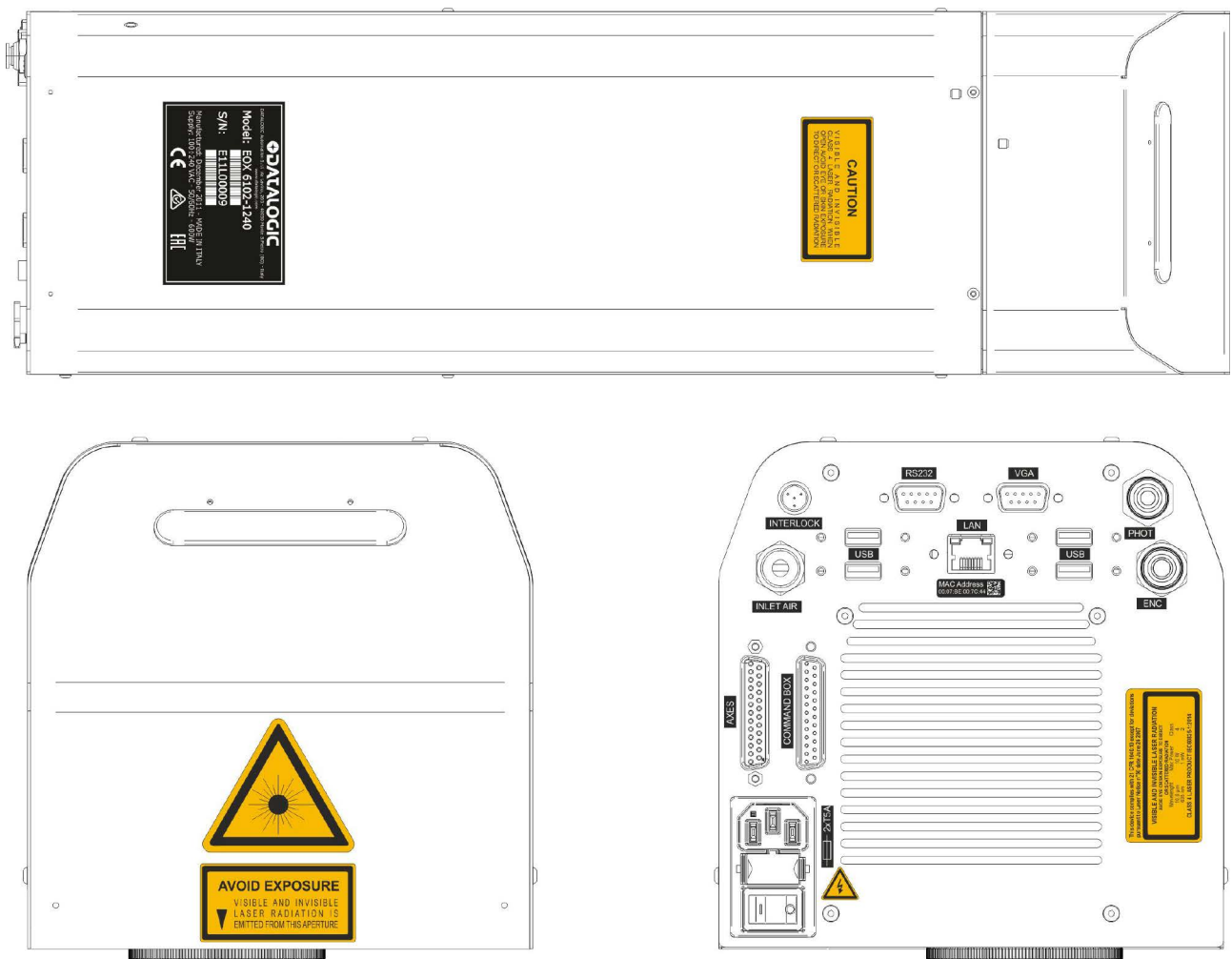The final system manufacturer MUST ensure the safety of the laser processing machine according to its standards including the risk-analysis, implementation of safety measures, certification and testing of safety measures and the production of adequate information for use of the marking system.

Datalogic is available for providing to the system integrator/OEM all the information in its possession to help in complying with applicable standards.

CE COMPLIANCE

CE marking states the compliance of the product with essential requirements listed in the applicable European directive.

Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document.
The EU declaration of conformity is available for competent authorities and customers by Datalogic commercial reference contacts.

Since 20th April 2016 the main European directives applicable to Datalogic products require to include an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity.
Datalogic products are mainly designed for integration purposes, into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

> ⚠ **WARNING!**
> This is a Class A product. In a Class B environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC COMPLIANCE

Modifications or changes to this marking system without the expressed written approval of Datalogic could void the authority to use the marking system.

This marking system complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This marking system may not cause harmful interference, and (2) this marking system must accept any interference received, including interference which may cause undesired operation.

This marking system has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the marking system is operated in a commercial environment. This marking system generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this marking system in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

APPENDIX C: NOTE ABOUT LASER

LASER SAFETY

The following information is provided in compliance with regulations set by International Authorities, and it refers to proper use of marking system.

⚠ **WARNING!**

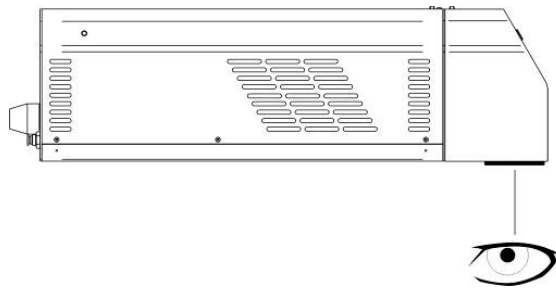It is crucial that you protect yourself against beams of reflected or direct light as they cause permanent damage to your skin.

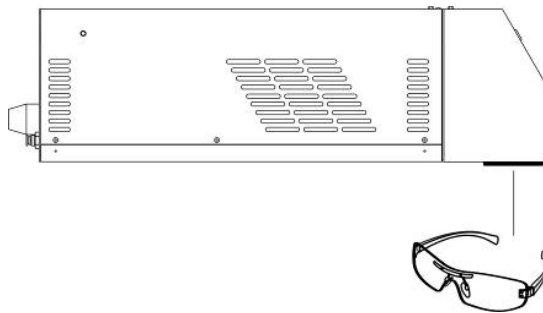⚠ **WARNING!**

Staring directly at a laser beam may cause irreversible damage to your eyes.

⚠ **WARNING!**

Wear safety goggles while using the marking system!

📖 **NOTE:**

BEFORE INSTALLING AND USING THE LASER, **READ CAREFULLY** THE APPENDIX CONCERNING **LASER SAFETY**.

WARNING!

The marking system is designed for the processing of non-flammable materials.

Infrared laser radiation carries very high energy: **FIRE HAZARD!**

Do not direct the laser beam at flammable materials (paper, wood, containers filled with flammable liquids, etc.) without taking suitable precautions (inert gas, etc.).

Do not direct the laser beam at sloping surfaces as there is a risk of reflection.

Keep solvents and flammable materials away from the marking system. Avoid the accumulation of combustible vapours.

WARNING!

When marking materials using CO_2 laser radiations, decomposition products may form which are harmful to man's health.

The vaporization of certain materials may generate ultra-fine dust and vapours containing carbonization products which are harmful to man's health.

We **strongly** recommend installing an adequately sized extraction system equipped with filters suited to the dust and fumes to be extracted.

Certain processes may generate fumes and vapours of such density that they cause the extraction system to become totally ineffective in a very short time.

Periodically check for proper operation of the extraction system.

WARNING: Zinc selenide!

The marking system uses a special focusing lens (mounted on the scanning head) in Zinc Selenide (ZnSe).

When broken down to dust and fragments, this material is toxic for man's health if inhaled, swallowed or in case of eye contact.

There are no health hazards under normal operating and maintenance conditions.

Do not scratch the lens while cleaning it.

In case the lens breaks, wear protective gloves and clean up all lens pieces, putting them in a sealed bag to be sent back to Datalogic.

LASER RADIATION

Laser radiation is an electromagnetic emission with a micrometric wavelength which ranges from the long infrared (CO_2 Laser), close infrared (Nd Laser: Yag, Nd: YVO4), visible (He Laser: Ne or Argon) and ultraviolet (excimer laser).

It should be considered non-Ionizing Radiation. In the marking system EOX^{TM} 10W the emission is generated by CO_2 tube. The continuous reflection of Photons, between a front mirror and rear mirror, creates a positive reaction so that their number continues to increase, until reaching the concentration necessary to produce a beam which projects from the semi-reflecting front mirror. The radiation (which we can imagine as a "Beam of invisible light") is then Collimated and Focalized with Lenses at a point where the intensity becomes high enough to be able to react with various materials producing an alteration in them due to thermal effect.

The radiations of marking system are invisible and visible and the Eye receives it almost in its entirety without using the natural defense provided by pupil reflex! Added to this is the fact that it is generally very intense, with the result that it can be very harmful to the eye and present vision problems.

⚠	**WARNING!** Directly viewing a Laser beam **can cause irreversible damage** to vision.

To prevent permanent damage to vision, a few precautions must be taken.
All individuals who may be exposed to dangerous levels of laser radiation, must know that the laser is active and wear protective goggles if necessary.

Due to its high power, the laser integrated in the Datalogic system provokes reflected laser light from flat surfaces. Reflected light is potentially dangerous for the eyes and skin. Electromagnetic emission with a micrometric wave length is placed in long infrared, and is therefore invisible, thus it is not clear where reflected beams are aimed.

⚠	**WARNING!** **It is indispensable to protect yourself from reflected light beams**, because they can be sufficiently intense to create permanent injury to the eyes or skin.

In addition to possible injury to the eyes or skin, direct laser emission can cause flammable materials to burn like organic solvents (alcohol, acetone) or gasoline and cause fabric and clothing to burn.

|	
⚠	**WARNING!** This marking system is classified as **Class 4**. Class 4 includes lasers which can produce risks, not only from **direct** or **reflected** radiation, but also from **scattered** radiation! The marking systems may be a significant risk for the skin and risk of burning flammable materials.

ABSORPTION OF LASER RADIATION

Human skin absorbs electromagnetic radiation in different ways depending on the wave length of the radiation. Both the eye and skin have a "predisposition" for accepting certain wave lengths, and are more unresponsive to absorbing others. In the specific case of the Eye, the Cornea and Crystalline lens let all the wave lengths from 400 to 1400 nm pass and reach the Retina, even with various attenuations. They include the range from visible light to IRA infrared. Therefore, one must immediately note that the radiation of marking system, respectively with wavelength 10,6 µm, **involves the direct exposure of the Retina!**

In terms of the Skin, the "biological window" has different absorption percentages but is not dissimilar in terms of wave length. The maximum exposure values for Skin are much different compared to those tolerated by the Eye.
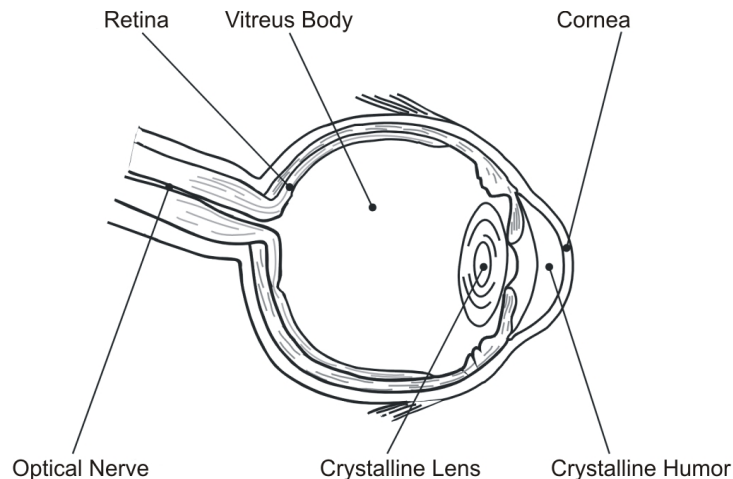
Figure 37: Eyeball section.

In terms of the damage mechanism that absorbed radiation can cause, it also depends on the wave length. Short lengths (ultraviolet: UV-C 180-280nm; UV-B 280-315 nm, UV-A 315-400 nm) generally cause photo-chemical effects:

- cataract, or opacification of the crystalline lens
- melanic coloring, or reddening of the skin

Greater wavelengths (infrared: IR-A 780-1400 nm; IR-B 1400 3000 nm; IR-C 3000-10^{E6} nm) generally cause thermal effects:

- detachment or photocoagulation of the retina
- burning of the skin

The degree of injury obviously depends on the **amount of absorbed radiation** and the **instantaneous power** of the radiation source.

CLASSIFICATION AND DANGER LEVEL

Regulations have established different classes of Laser danger based on the ability to injure people, from Laser Class 1 (basically safe in all conditions) to Laser Class 4 dangerous in various conditions.

Lasers which can produce risks, not only for direct or reflected radiation, but also for scattered radiation belong to Class 4. These marking systems can also have a significant risk for the Skin and fire risk for flammable material. For these reasons, the User must put into effect all measures aimed at containing the radiation to make sure that it is terminated at the end of its useful path. The operator must also be informed of the risks from exposure to Laser radiation and must wear specific I.P.D. (individual protection devices) including goggles that protect against radiation and are certified as suitable for this use.

⚠ **WARNING!**
This laser marking system contains a **Class 4 invisible** source.

RADIATION VIEWING CONDITIONS

The Laser output by the resonator is to be considered as a highly collimated and intense monochromatic light source. Due to these characteristics it can be seen as a "point source" of high luminosity. This means that its image is then focalized on the Retina in a very small spot with a dangerously high power density! If the beam becomes divergent and scatters to a non-reflecting screen, then there is an "extended vision" of the image, with a decisively less dangerous power density. So there are different types of radiation viewing based on the access to the radiation and consequently different degrees of dangerousness.

DIRECT VIEWING OF THE LASER BEAM

This type of viewing is the most dangerous and can occur at the outlet of the laser aperture after having removed the lens. It is to be avoided at all costs! No protective goggles represent a valid means against direct viewing of the beam.

DIRECT VIEWING OF THE BEAM AFTER MIRROR REFLECTION

This may occur by directing the beam on a reflecting surface.
Viewing of a mirror reflected beam from a flat surface is very dangerous and equal to direct viewing.

DIRECT VIEWING OF THE BEAM AFTER FOCUSING

This occurs if the Laser beam is not extinguished with an opportune absorber at the end of its useful path. Looking at the beam is dangerous up to a considerable distance. Filters and goggles can ensure safety for brief exposure, as long as they are the right size and certified.

SCATTERED VIEWING OF THE BEAM AFTER FOCUSING

This is the most frequent viewing, but opportune Filters and Goggles can ensure safety, even for prolonged exposure.
The Nominal Ocular Hazard Distance (N.O.H.D.) for EOX^{TM} 10W are showed in the next paragraph.

WARNING!
Always use goggles with conformity certificate.
Remember that **no goggles can provide prolonged protection from direct or mirror-reflected radiation!**

EYES AND SKIN RISKS

If exposed to intense Laser radiation, even of a short duration, or a less intense but longer lasting duration, both the Cornea and the Retina can burn and be damaged irreparably forever. This consequence is completely realistic in the event of direct viewing of a Class 4 Laser beam.

If subject to direct focalized radiation, even the skin can burn.

In addition, it is necessary to bear in mind that a collateral ultraviolet radiation may exist with the main radiation: long exposure may cause skin cancer.

GENERAL SAFETY REGULATIONS

The User must comply with the regulations and work in the best possible safety conditions to prevent decreasing the degree of marking system safety. Therefore it is necessary to develop a Standard Operating Procedure (S.O.P.) related to maneuvers to effect for turning on and off the marking system. This procedure, which shall be prepared around the time of installation, shall serve as a reference for the Operator and shall be written in his/her language.

Training is essential and must include:

- Familiarization with system operating procedures.

- Knowledge of the biological effects of radiation on the Eyes and Skin.

- Understanding of the necessity for Individual Protection Devices (I.P.D.)

COLLATERAL RISKS

If the intended use of the marking system is changed, for example for material processing applications, collateral risks may arise represented by the production of fumes and vapors which may be irritating or toxic, if not removed and adequately filtered before being released into the air again.

WARNING!
It is advisable **not to change the intended use** without previously contacting the Manufacturer.

An additional risk may be represented by fire caused by processing materials other than those the marking system is designed for.

WARNING!
When processing **flammable material**, since there is a **fire danger**, it is indispensable to follow the instructions provided by the manufacturer when the marking system is commissioned.

WARNING!
Do not subject **materials other** than those the marking system was designed for to radiation.

The most serious collateral risk associated with laser marking system, which may be fatal, is electricity.
This may occur when the manufacturer's warning and procedures are not followed. Unauthorized and untrained personnel must never do any work on the electrical part. The safety devices must never be removed and their operation must be periodically checked.

WARNING!
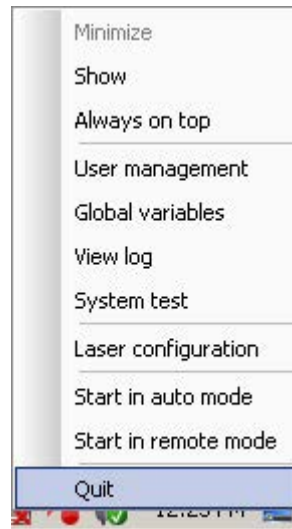Do not work on the electrical part if you are not trained to do so. **Do not remove protection devices**.
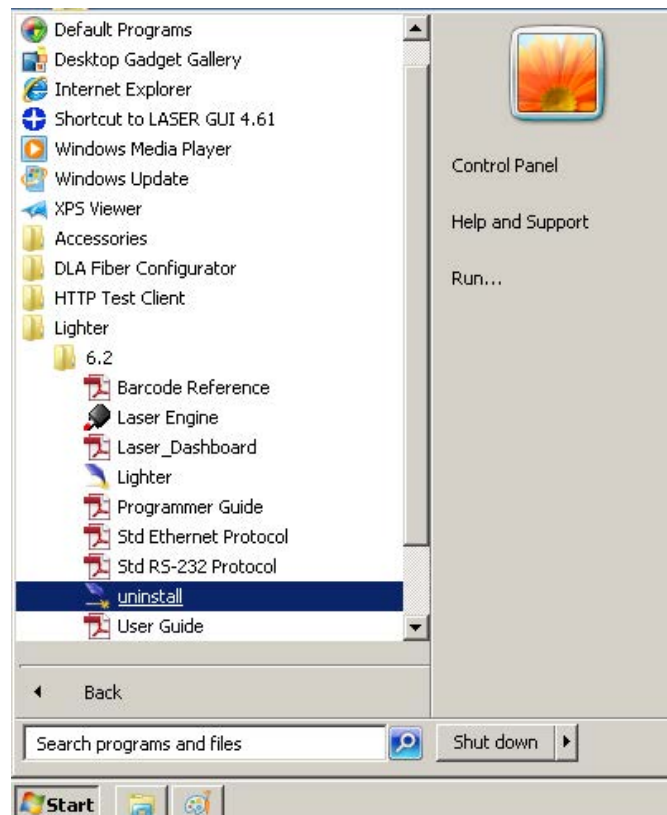
APPENDIX D: SOFTWARE UPGRADE

This document describes how to update software version on marking systems:

1. Close the Lighter and Laser Engine (Click on **QUIT**)

2. Do Lighter "**UNISTALL**": you cannot run the new installer before having removed the old software version

3. Wait the end of uninstall procedure.

4. Run new Lighter installer from an external device (USB pen drive).

5. Wait until installation procedure is completed.

6. Depending on whether the Lighter update includes any control board updates, the following screen may appear:
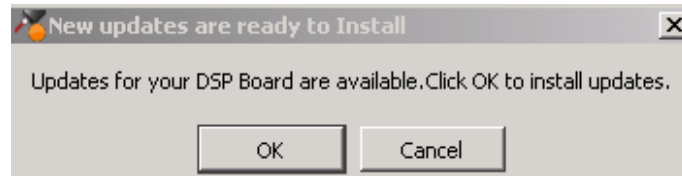
- Procedure with control board update:

  o press **OK** to execute control board update

  o upon completion, a window informs user that data is automatically saved in the system
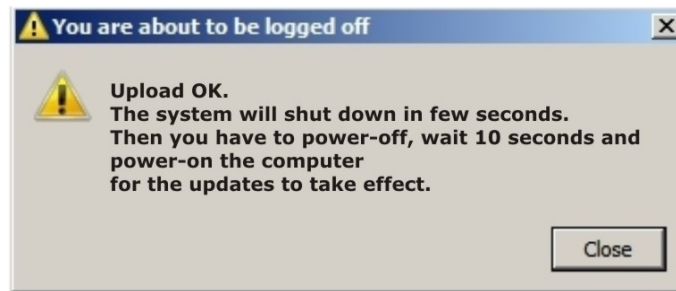
  o system will be shut down automatically within the next 10 seconds

WARNING!
DO NOT turn off the system while Windows® is shutting down!

  o wait until system shuts down automatically (black screen)

  o power off the system to complete installation

- • Procedure without control board update:

  - o a window informs user that data is automatically saved in the system

⚠ You are about to be logged off	✕
⚠ **System restart required aftr Lighter upgrade**	
	Close

  - o system will be restarted automatically within the next 10 seconds

WARNING!
DO NOT turn off the system while Windows® is restarting!

  - o wait until system is restarted automatically

APPENDIX E: RECOVER THE SYSTEM USING USB RECOVERY DISK

The marking system is provided with a **USB recovery disk** able to restore the system to the factory settings. The **USB recovery disk** should be used if the *Operating System is corrupted* or disks are *corrupted.*

⚠️ **WARNING!**
All the existing data in the system will be overwritten. All existing data will be lost!

The recovery procedure requires the **USB recovery disk** which is included in the standard equipment.

Procedure:

o   Turn OFF the system

o   Insert the USB recovery disk provided with the system in the USB port

o   Turn ON the system and press **ESC** key to enter BIOS menu

o   Go to BOOT menu, select **Hard Drive BBS Priorities** and press **ENTER** key

o   Select **Boot Option #1** and press **ENTER** key

o   Select the USB disk from the list and press **ENTER** key

o   Press **F4** key

o   Select **YES** and press **ENTER**

o   The system will restart and Clonezilla live will boot from the USB disk

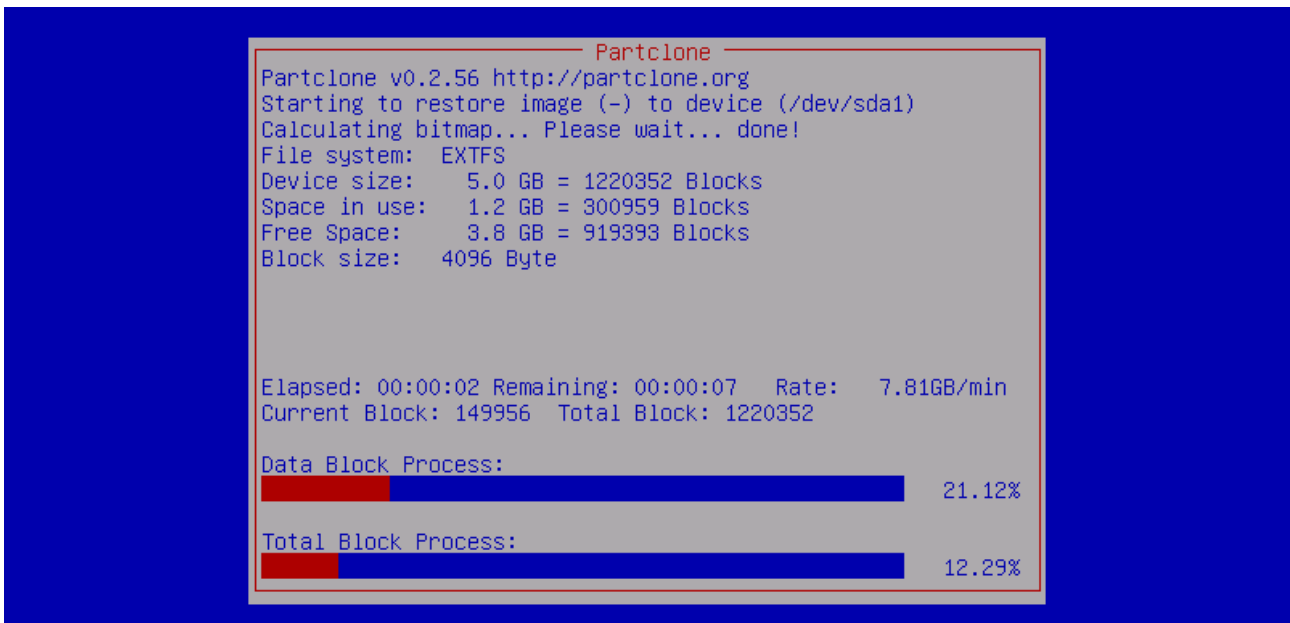o   Datalogic Recovery Disk procedure screen will appear:
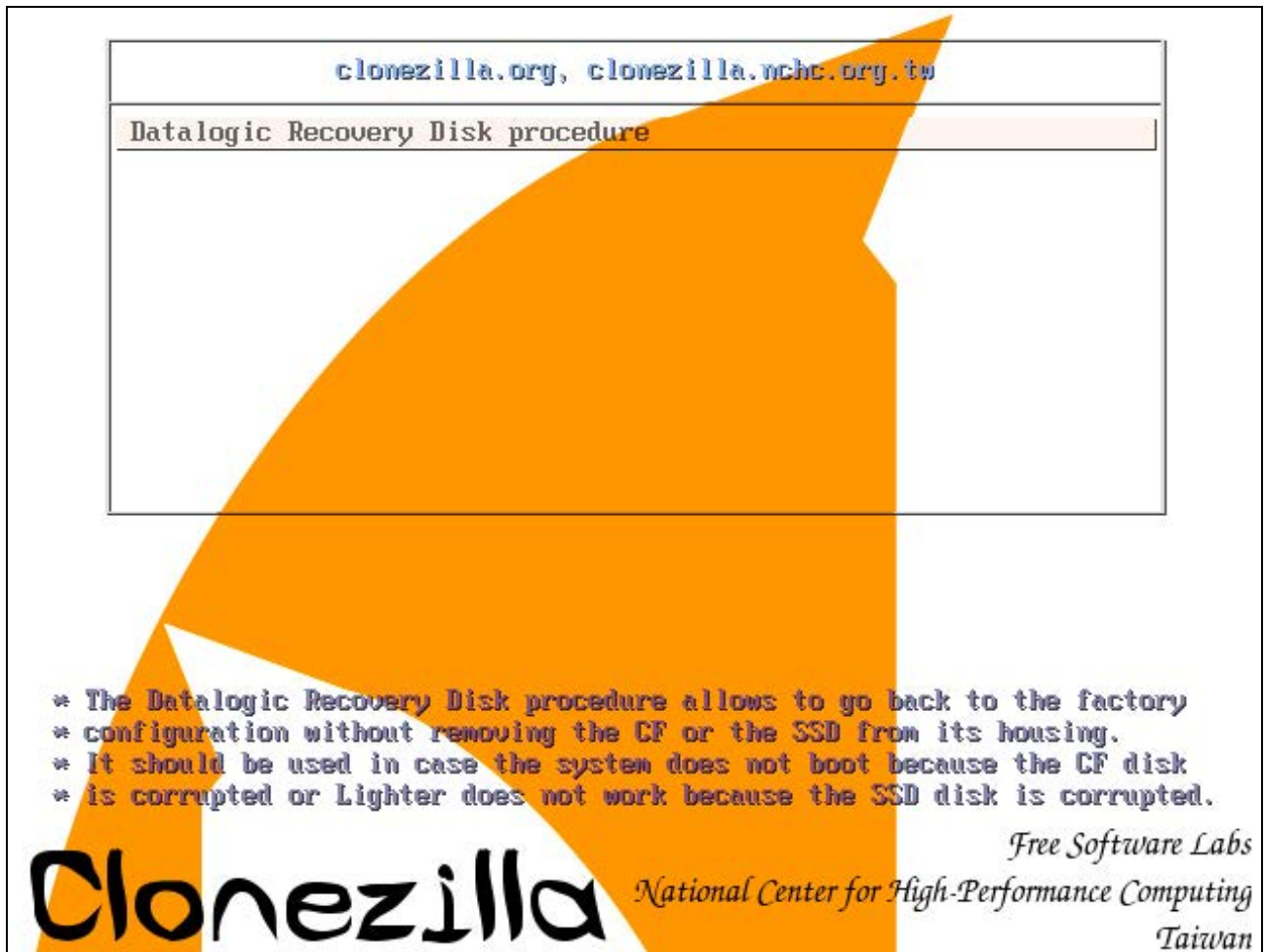
o   Press **ENTER** key to continue

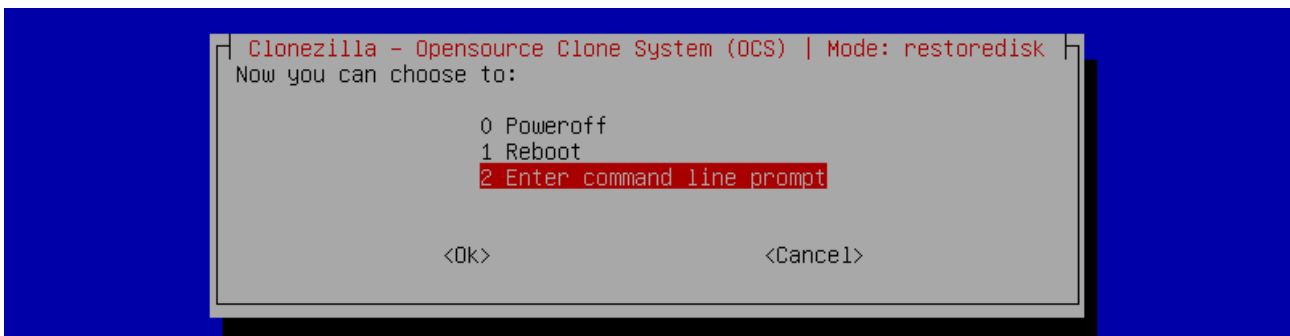o   Choose **RESTORE_DISK_C_PCM3365** to restore *disk C:* and press **ENTER** key
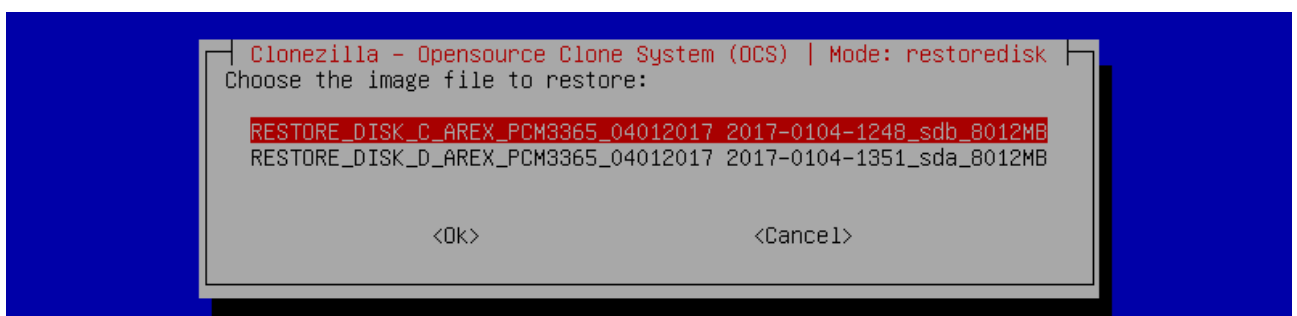
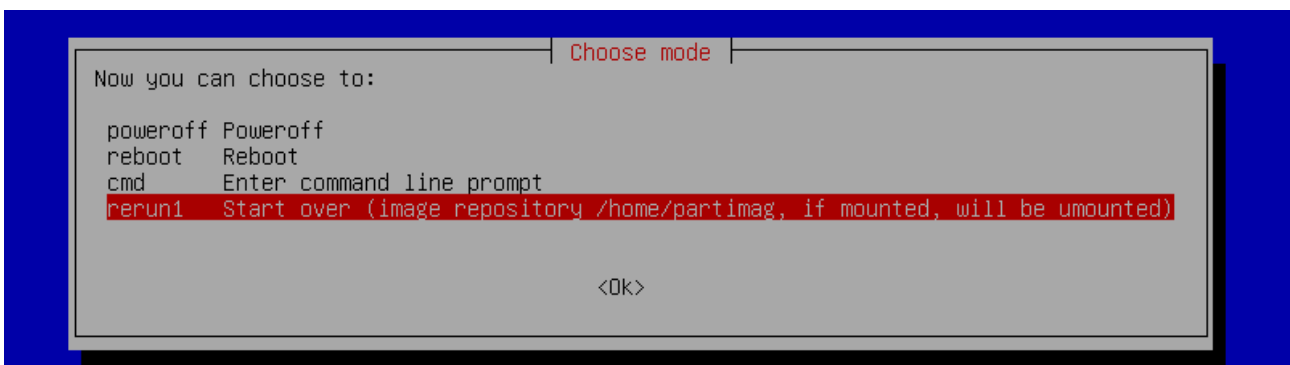o   In the next screen, choose **sdb** as target disk and press **ENTER** key
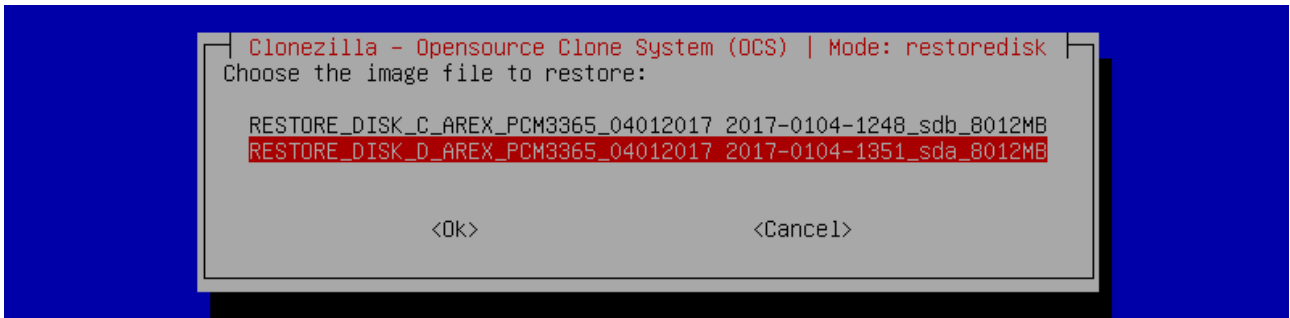
o   Wait for the end of the procedure (<u>about 10 minutes</u>):

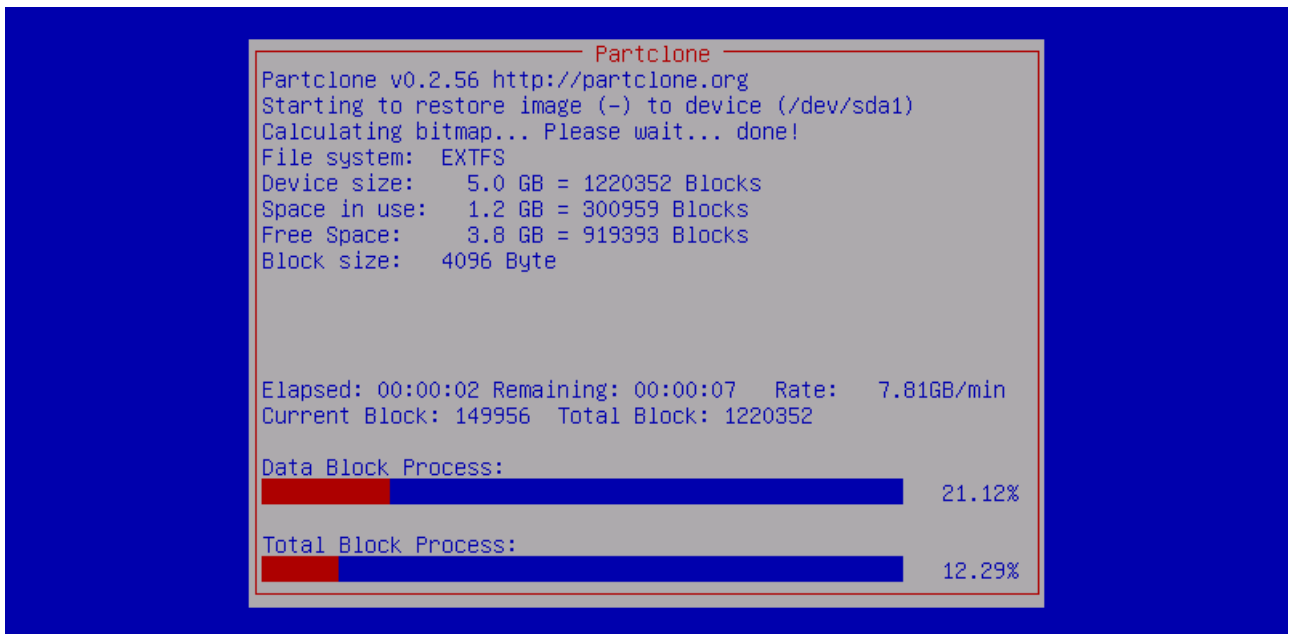o   Select **Enter command line prompt** and press **ENTER** key

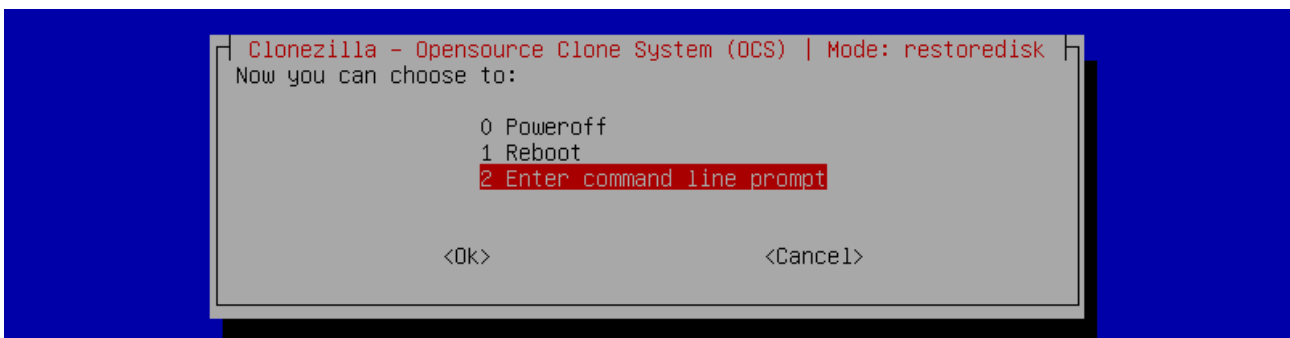o   Select **Start over** and press **ENTER** key

o   Choose **RESTORE_DISK_D_PCM3365** to restore *disk D:* and press **ENTER** key

```
┤ Clonezilla - Opensource Clone System (OCS) | Mode: restoredisk ├
  Choose the image file to restore:

   RESTORE_DISK_C_AREX_PCM3365_04012017 2017-0104-1248_sdb_8012MB
   RESTORE_DISK_D_AREX_PCM3365_04012017 2017-0104-1351_sda_8012MB


              <Ok>                        <Cancel>
```

o   In the next screen, choose **sda** as target disk and press **ENTER** key

o   Wait for the end of the procedure (about 2 minutes):

```
                        ─── Partclone ───
  Partclone v0.2.56 http://partclone.org
  Starting to restore image (-) to device (/dev/sda1)
  Calculating bitmap... Please wait... done!
  File system:   EXTFS
  Device size:    5.0 GB = 1220352 Blocks
  Space in use:   1.2 GB = 300959 Blocks
  Free Space:     3.8 GB = 919393 Blocks
  Block size:    4096 Byte



  Elapsed: 00:00:02 Remaining: 00:00:07   Rate:   7.81GB/min
  Current Block: 149956  Total Block: 1220352

  Data Block Process:
                                                      21.12%

  Total Block Process:
                                                      12.29%
```

o   Select **Poweroff** and press **ENTER** key

```
┤ Clonezilla - Opensource Clone System (OCS) | Mode: restoredisk ├
  Now you can choose to:

              0 Poweroff
              1 Reboot
              2 Enter command line prompt


              <Ok>                        <Cancel>
```

o   Wait some seconds until the shutdown process is done

o   Turn OFF the system using the main switch

o   Remove the USB recovery disk from the USB port

Customize the system

NOTE:

In order to work, the system must be customized with the correct configuration file.

o   Turn ON the system

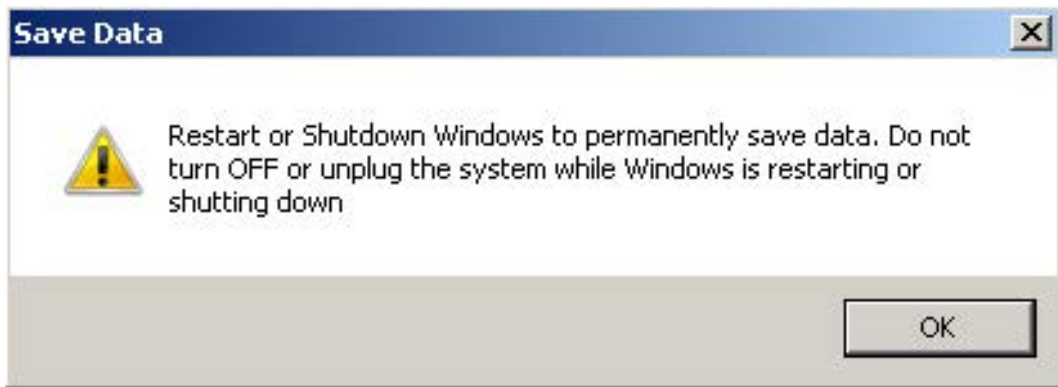o   An error message will advise you that Lighter configuration file is not present:

- Press **OK** to continue

- After all drivers are installed click "Restart Later" button in restart window

- Insert the USB recovery disk provided with the system in the USB port

- Navigate to *Fileinz and report* folder on the USB recovery disk

- Copy customized `Laser.inz` file in D:\DATA\CONFIG folder on the system
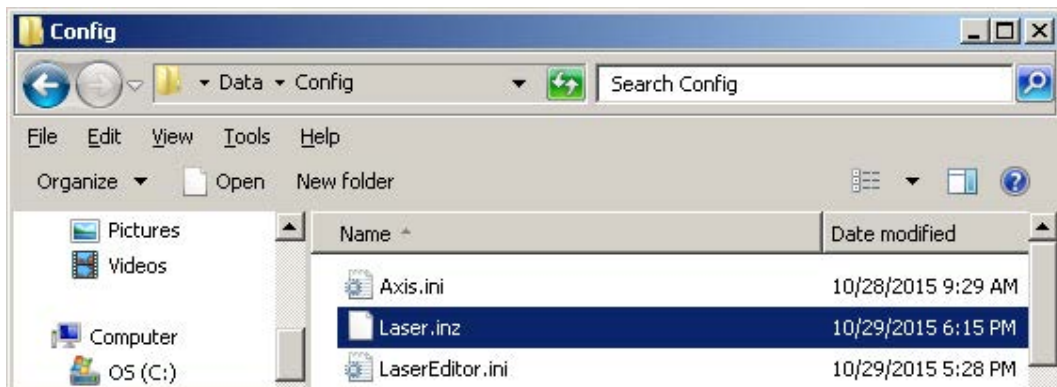
- Select **Test Layouts** folder on the USB recovery disk

- Select the right **test layouts files** based on the laser system model

- Copy the selected **test layouts files** file in D:\DOCS\LAYOUTS folder on the system
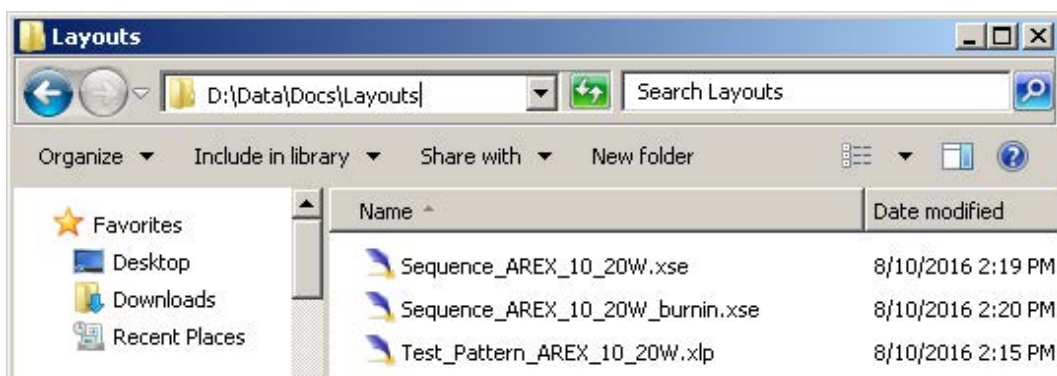
o   Double click on shortcut to `save-data.bat` icon in the Desktop

o   A message advise you to restart or shutdown the system in order to permanently save data. Press **OK**:

o   **Shut down** the system in order to save the new settings:

⚠	**WARNING!** **DO NOT** turn **OFF** or **UNPLUG** the system while Windows® is shutting down.

o   **WAIT** until system shuts down automatically (black screen)
o   Remove the USB recovery disk from the USB port
o   Power off the system to complete installation

A (1 : 4)

180

180

N°4 M6 FIXING HOLES

559
524.5

BEAM EXIT

114.5

39.1

0
39

109
94
70
0
56
71

Ø70

4,5

A

COMPRESSED AIR CONNECTION FOR LENS CLEANING SYSTEM

*: REFER TO MODEL EOX 6102-1240

A (1 : 4)

180

180

N°4 M6
FIXING HOLES

BEAM
EXIT

559
524.5

114.5

39.1

Ø70

4.5

A

39

0

109
94
70
0
56
71

COMPRESSED AIR
CONNECTION
FOR LENS CLEANING SYSTEM

*: REFER TO MODEL **EOX 6102-1540**
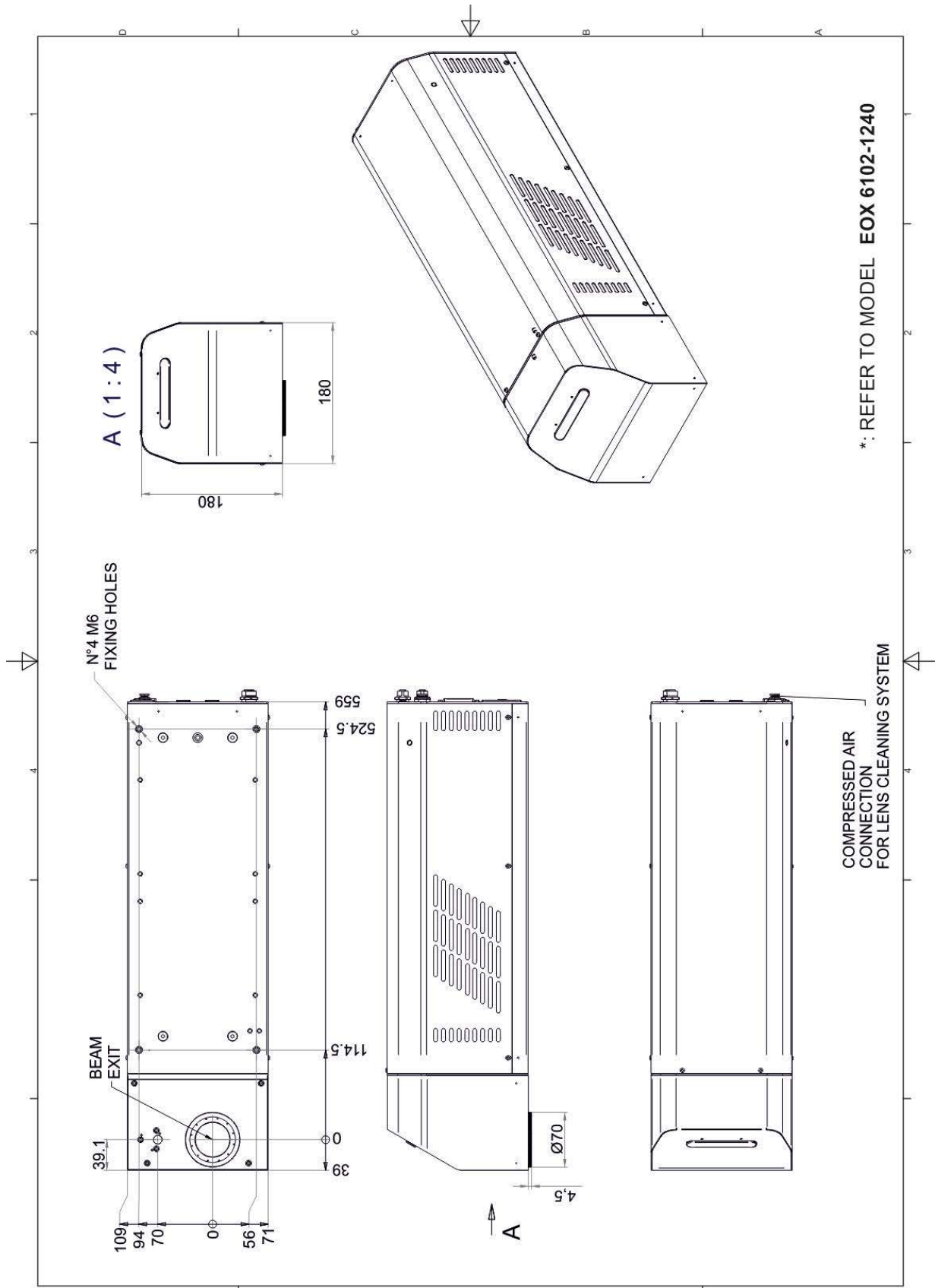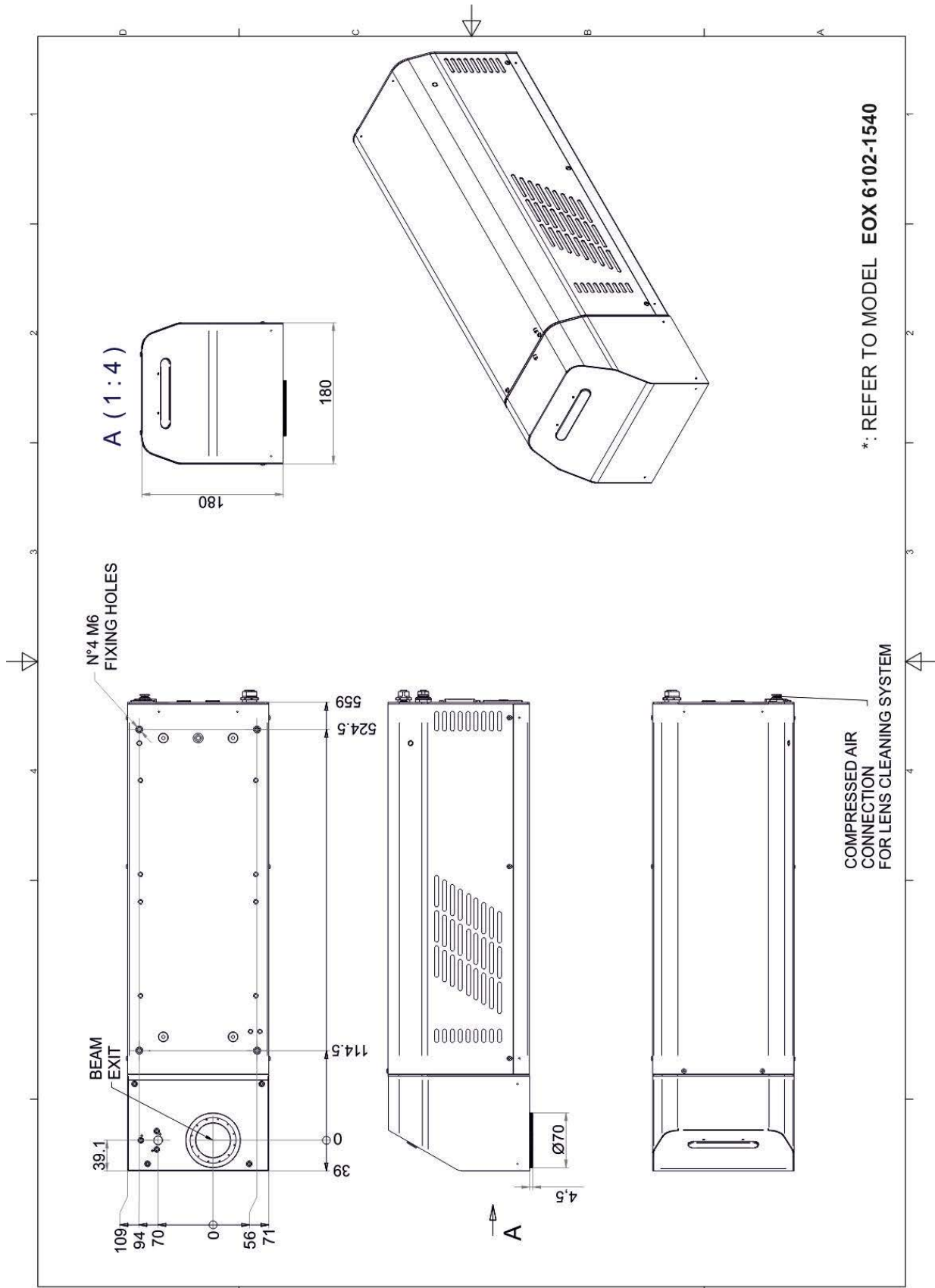
NOTE:
Please refer to Datalogic website for detailed drawings.

FIGURES

DATALOGIC

www.datalogic.com