

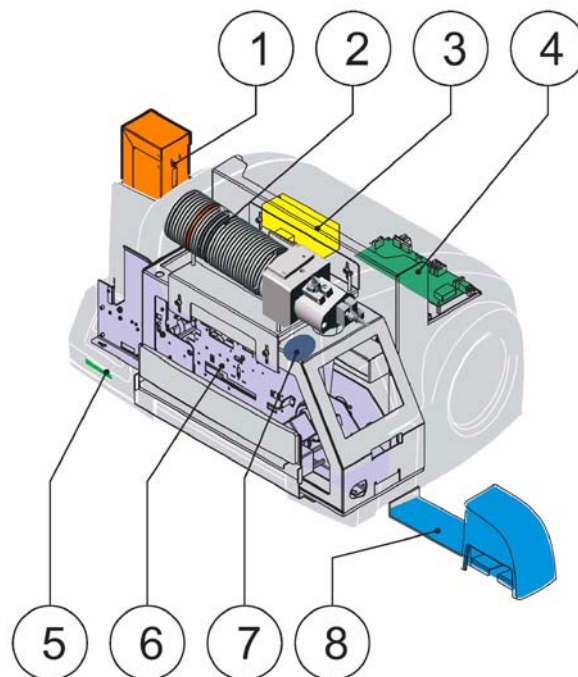
## Technical Specification: IXLA 100 Plus



The IXLA 100 Plus is a new generation of Desktop Laser Engraving System. The system is a highly sophisticated smart card laser printer for chip encoding and laser engraving of high-resolution picture, text, barcodes and signatures. Different process modules can be integrated in the compact and easy use system to produce high quality security cards.

The cards are supplied one by one to the system by the input feeder and can be personalized in different processes. The transport unit handles every card to the process module of the machine.

### Functional Groups



- 1) Sealed Card Loader
- 2) Laser Resonator with Scan Head
- 3) Laser Diode
- 4) Main Control Board
- 5) TTL Hybrid partial insert smartcard reader for user validation
- 6) Card feeder and encoder
- 7) XY auto-positioning
- 8) Output bin and Reject

### **Sealed Card Loader**

<b>Card Capacity:</b>	450 Cards ISO 7810
<b>Card Size</b>	ISO CR-80 ISO 7810, 53,92/54,03 mm 85,47/85,72 mm
<b>Card Thickness</b>	ISO 7810, 0,68/0,84mm

### **Laser Resonator with Scan Head**

#### **Resonator**

The laser resonator consists basically of a couple of lens, able to collect the pump radiation at 808nm coming out from optic fiber and to focus inside the crystal (Nd:YAG), and of a couples of aligned mirrors functioning as oscillators for 1064nm laser radiation, of a crystal functioning as an active Q-Switch which allows the generation of laser pulse of high-power suitable for marking . Last phase functions as beam-expander increasing the laser beam diameter and improving the collimation in order to focalize the beam in a spot of small dimensions obtaining a high irradiance on marking plan.

#### **DAC3 Digital analog converter**

Mounted close to scanner head, it converts the digital signals sent to DSP3 to analog signals for galvo-motor

#### **Scan marking head**

Two inclinable mirrors are mounted inside the scan marking head. They are moved by galvo-motors and controlled by DSP3 board which interfaces a D/A digital analog converter, mounted close to the head.

### **Laser Diode**

The Laser diode is installed in the Coupler Unit. It is supplied with 3.5 Vdc low voltage and current up to 30 Ampere, it works at a monitored and regulated temperature between 20° and 30°C and supplies electro magnetic energy, the so-called "optical pumping", needed to supply the resonator. The Peltier Cell is in direct contact with the base of the Coupler Unit, and is located exactly under the Laser diode. It is supplied with 24 Vdc low voltage and discharges all of the thermal energy generated by the Laser diode LD on the Dissipater

**Diode Power Supply:** 3.5V  
**Max Absorption:** 30A  
**Wave length** 808nm

### Main Control Board

The electronics, that controls laser system and the relative signals, consists of a board with DSP processor which has to be connected to a standard PC through an USB2.0 cable. It manages all the operations concerning the marking process; the remote commands from DSP board to scan head are used for scanning of lines, segments (vectors and polygons) and raster images. Each element to be marked by scan head has to be divided in small lines and segments. Commands spooler is sent from PC to DSP board where a circular double buffer stores the data. After a signal of Start, the data are sent in digital form to scan head in real time.. Digital signals together with mirrors coordinates are converted in analog forms by the converter fixed at the entrance of signals of scan head.

### TTL Hybrid partial insert smartcard reader for user validation

#### Electrical

Card Seated: Signal is created after the ICC connector has made contact with the IC card's contacts.  
 ICC Signals (per ISO 7816) on connector.

**Power:** +5 VDC. (50mV ripple maximum)  
**Ground:** 0 VDC (GND)  
**Chassis Ground:** Connected to GND and magnetic head case

#### Environmental

**Operating Temperature:** -22° F to 158° F (-30° C to 70° C)  
**Storage Temperature:** -40° F to 185° F (-40° C to 85°C)  
**Humidity:** Maximum 95% non-condensing

#### Reliability

**ICC Card Connector:** 500,000 cycles minimum  
**Chassis and Bezel:** 1,000,000 card cycles minimum.

### Card Feeder and Encoder Encoder Module

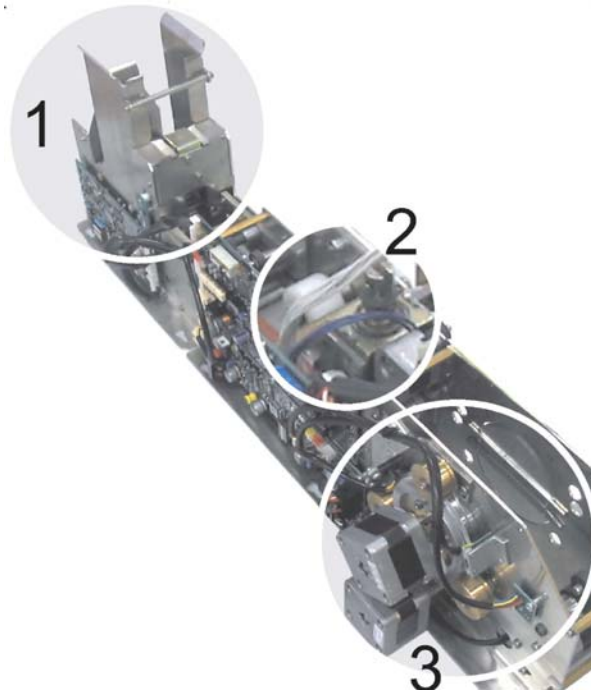
Encoder Module is a device which takes the card from feeder and leads it during the various personalization phases which consist of:

magnetic stripes reading/writing  
 smart-card reading writing

flip-over station for laser marking

<b>Magnetic Stripe</b>	ISO 7811
<b>Smartcard</b>	ISO 7816

### Card Feeder and Encoder



#### 1 -Plastic Card feeding and transport

The card feeding is positioned under the loader and, by means of a serial command, feeds the card into the encoder module.

#### 2 -Read/write magnetic head and Contacts for smart-card

This module is an option, it reads and encode the magnetic tracks ISO 3554 (ISO 1 and ISO 3 at 210 Bpl, ISO 2 at 75 Bpl), for all tracks the encoding can be made with low coercivity (LoCo) or high coercivity (HiCo) It is a solenoid equipped with a PCB that fits standard contacts for ISO 7816 smart cards. The contacts are connected to the control board by a flexible cable. In stand-by position the contacts are up, the contacts are moved down by a software command only when the card is stopped in the right position. The firmware controls that the contacts are up before moving the card to the next station.

#### 3 -Flip-over station for laser engraving

The flip-over mechanism allows the transport and positioning of the card under the laser source. Once the card has been read or encoded, it is fed to this station. The position of the card under the laser is granted by the output photo-sensor. Moreover, further

movements are allowed, in order to place the card for the CLI (Changeable Laser Image) engraving, tilt up to 30° in one direction and 180° in the other. At the end of this operation the card must be re-positioned in its horizontal position, then ejected. In case of rear engraving the card should be placed in the central position, rotated of 180°, engraved, rotated again of 180° then ejected. In case of rejection, the card must be tilted of 45° or 90° then let fall in the reject pocket.

### **XY Auto-positioning System**

XY Auto-positioning is available using an industrial vision system integrated in the IXLA 100 plus. Laser Capture is a software tool integrated in the Cardist Suite. It is used to recognize pre-System defined pattern and measure the offset thanks to its pattern match algorithm. Laser capture use the IXLA 100 vision system with its relative twain driver. Laser capture, together with Cardist, grants high accuracy in the laser engraving positioning.

### **Camera Sensor**

High-speed USB2 camera provides 65 fps at 640x480 pixels. Based on a high-quality 1/2" CMOS sensor with fast global shutter - ideal for capturing objects in motion. Unique sensor provides sub-sampling and region of interest sub-window for faster frame rates. I/O control for synchronization with strobe and peripheral devices.

<b>Image Sensor:</b>	1/2" format, color or mono sensor
<b>Effective Pixels:</b>	640 x 480, 9.90um square pixels
<b>Frame Rate:</b>	65 fps at 640x480, faster with ROI
<b>Sensitivity:</b>	2 V / lux-sec
<b>Dynamic Range:</b>	60dB
<b>Exposure:</b>	Auto / Manual
<b>White Balance</b>	Auto / Manual
<b>Dimensions:</b>	(W x H x D) 2.00 x 2.50 x 1.63 inches
<b>Mass:</b>	~150g
<b>Power Requirement:</b>	USB bus power, or external 6VDC, 800mA
<b>Power Consumption:</b>	~2.5 Watts
<b>Operating Temperature:</b>	0° C to + 50° C
<b>Operating Humidity:</b>	0%-95%, Non-condensing
<b>Interface Connector:</b>	Standard USB
<b>Lens:</b>	C-Mount Pentax
<b>Focal Length:</b>	8.5mm
<b>Format: 2/3 Iris Range:</b>	1.5 C
<b>Horizontal angle of View:</b>	56°48'

### **Output Bin and Reject**

The engraved cards of IXLA 100, are ejected and collected into an

output and collected. In case of jams or reading/writing errors (both magnetic and contacts), IXLA 100 discards the processed card into the reject pocket inside the unit.

**Output Bin Capacity:** 20 Cards  
**Reject Bin Capacity:** 10 Cards

## Software

### Xlaser

The xLaser software is a brand new cross-platform C++ class set running under Microsoft Windows, Unix compatible systems like Linux and Macintosh platforms. This innovative software solution, will provide a complete new and open approach to industrial applications at the lowest cost on the market

### Developers Toolkit

Is made of:

- xLaser
- Sample application program with relative source code and Documentation
- On line support for 1 year

## Main Technical Features

### General characteristics

Plastic card stacker capacity: 400 cards (0.76 mm)  
 Output bin capacity: 20 cards (0.76 mm)  
 Display: Graphic with 5 multifunction buttons  
 Driver: Windows XP

**Communication:** USB

**Marking:** Monochrome laser marking  
 Resolution up to 1600 dpi

Dimension: 672 x 465 x 403 mm

### Environmental conditions

Working temperature: min 15°C max 35°C  
 Working Humidity: min 10% max 80% without condensation  
 Storage temperature: min -5°C max 70°C  
 Storage Humidity: min 20% max 70% without condensation  
 Cooling: Air to air (integrated)

### Laser:

Laser medium: Nd:YAG  
 Wavelength: 1064 nm  
 Nominal Power: 10 W  
 Polarization: Random

Modulation:	up to 100kHz
Laser Pumping:	Diode Laser
Average Diode Lifetime	> 8000 hours
Heat Load:	80 W

**Power Supply**

Power Supply:	90Va.cto 240Va.c.
Frequency:	50-60 Hz
Power:	600 W

<b>Throughput:</b>	97 cards/hour
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