Datamark
INDUSTRIAL MARKING SYSTEMS

Laser marking systems

Fiber laser ML-100
The basics

Using marking lasers is economic, when it comes to precisely and durably mark smallest components up to larger parts. The benefits of laser marking are manifold. The most significant are:

- **Focusing in smallest spaces**, as laser beams allow enormous energies to be bundled.
- **Flexibility**, as both metal and plastic parts can be marked. Even in places that are difficult to access.
- **High marking speed**, as strongly focused light does not have to overcome mechanical resistance.
- **No mechanical force on components**, as heat energy is used without direct contact to the part.
- **High durability**, as laser marking is insensitive to acids, UV radiation, heat and abrasion.

Datamark ML-100 fiber laser is designed for a wide range of marking applications. The process allows stationary as well as on-the-fly marking on metal or plastic parts in many industries:

- **Aerospace**: permanent marking for identification and traceability of all critical components and parts.
- **Automotive**: identification codes and numbers marking on vehicle parts and components.
- **Metal-machining**: identification data marking on machined parts, references, part numbers, logos, etc.
- **Medtech**: marking machine-readable codes on medical or surgical instruments.
- **Electronics**: marking permanent codes and alpha-numeric characters on PCBs, terminals, switches and others.

For further or updated information please visit our website.
Product technical specifications may be modified at any time.

DATAMARK LASER MARKING SYSTEMS
http://datamark-systems.com/laser-marking-systems/
Sample applications

**Engraving - Burning**
Evaporation with a very high energetical density removes material surface and creates a sharp-outlined depression. Depending on the alloy or chemical composition, an additional change of color may improve the contrast.

**Steel brakes marking**

**Steel gears marking**

**Annealing**
Application is mainly with high-alloy, stainless steel and titanium. Partial heating evokes an oxidation and a change of color of the surface, without causing any damage.

**Titanium surgical tools marking**

**Stainless steel marking**

**Surface removal**
The top coating is removed by the laser to uncover the underneath material. Exemplary applications are with anodised or paint coatings, laser marking foils and the day-and-night design of control buttons.

**Marking on painted parts**

**Marking anodized nameplates**

**Change of colors**
Mainly applied on plastics, the change of color depends on the chemical composition of the material as well as on ingredients and fillers. By destroying color pigments and adding gas bubbles light marks are created. Dark marks are created by carbonization.

**Polypropylene marking**

**ABS plastic parts marking**

**Foaming**
Material surface is melted by the laser, volume increases. When cooling down, small gas bubbles are included, on which the incoming light diffusely reflects. An increased marking can be percepted.

**Plastic parts marking**

**Foam plastics marking**
Fiber marking laser **ML-100 20W**

The ML-100 Fiber laser offers the latest and most advanced features in the laser marking industry.

Its fiber laser engine offers high power peaks, fast processing times and maximum application flexibility to mark with total quality and precision in all types of industrial parts and materials; metals, alloys and most plastics.

The ML-100 system consists of the laser source generating unit and the compact marking scan head with motorized galvanometric mirrors, both connected by a flexible fiber conductive cable.

The marking system is very easy to install as a desktop workstation or directly integrated into a fully automated production line.

The control and programming of marking messages is easily done using the fully featured and intuitive Datasoft PC software, connected to the marking machine via USB, LAN/Ethernet or wireless WiFi connection.

The marking head incorporates a red light pilot to facilitate the quick adjustment of the marking distance on the different parts.
Technical data

<table>
<thead>
<tr>
<th>Laser source</th>
<th>ML-100</th>
</tr>
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<tbody>
<tr>
<td>Laser technology</td>
<td>Diodes pumped fiber</td>
</tr>
<tr>
<td>CW output power max. W</td>
<td>20</td>
</tr>
<tr>
<td>Wavelength nm</td>
<td>1064 +/- 4</td>
</tr>
<tr>
<td>Pulse energy mJ</td>
<td>0.5</td>
</tr>
<tr>
<td>Pulse duration ns</td>
<td>80-140</td>
</tr>
<tr>
<td>Pulse frequency kHz</td>
<td>20-70</td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Air cooling</td>
</tr>
<tr>
<td>Fiber coupling m</td>
<td>1.9</td>
</tr>
<tr>
<td>Dimensions Width x Height x Depth mm</td>
<td>264 x 120 x 408</td>
</tr>
<tr>
<td>Weight kg</td>
<td>14.4</td>
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</table>

<table>
<thead>
<tr>
<th>Scan head</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Mounting</td>
<td>Horizontal/vertical</td>
</tr>
<tr>
<td>Marking speed max. mm/s</td>
<td>6000</td>
</tr>
<tr>
<td>Interchangeable marking lenses</td>
<td>F-Theta</td>
</tr>
<tr>
<td>Dimensions Width x Height x Depth mm</td>
<td>97 x 134 x 445</td>
</tr>
<tr>
<td>Weigh kg</td>
<td>5.6</td>
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<table>
<thead>
<tr>
<th>Operating data</th>
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</thead>
<tbody>
<tr>
<td>Operating voltage/frequency</td>
<td>110-220 VAC ~ 50/60 Hz</td>
</tr>
<tr>
<td>Power operating consumption max. W</td>
<td>150</td>
</tr>
<tr>
<td>Temperature operation °C/%</td>
<td>0-35/10-85% nc</td>
</tr>
<tr>
<td>Laser safety class</td>
<td>Class 4</td>
</tr>
<tr>
<td>Approvals</td>
<td>CE</td>
</tr>
</tbody>
</table>

Intefaces

1. Socket for external power supply.
2. Scan head digital connector.
3. USB interface for WiFi wireless connection to a PC.
4. Digitale I/O for control and monitoring. Including eight freely. programmable inputs and outputs.
5. USB 2.0 slave interface to connect a PC.
6. Ethernet 10/100 Base for PC. The device is supplied with a fixed IP address and may be changed by the user.

Marking lenses

<table>
<thead>
<tr>
<th>F-Theta marking lenses</th>
<th>F160</th>
<th>F254</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking distance mm</td>
<td>190</td>
<td>285</td>
</tr>
<tr>
<td>Marking field mm</td>
<td>110 x 110</td>
<td>180 x 180</td>
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</table>
Features included

**High speed marking**
The marking head uses motorized galvano-metric mirrors, capable of moving the laser beam at an adjustable speed of up to 6000 mm with total precision.

**Fast focus finder**
The marking head incorporates a red light pilot to facilitate the quick adjustment of the marking distance of the laser for the different sizes of pieces.

**Marking preview**
The laser preview function allows the user to see the area where the marking is going to be done on the part and to quickly adjust its position using the cursor keys.
Datasoft 4.0 is the powerful, intuitive and easy to use fully featured PC software to control and program the ML-100 fiber laser marking machine.

Datasoft 4.0 software enables easy editing from simple marking designs with texts, images, symbols, barcodes, Datamatrix codes, etc... to the most advanced marking applications using automatic data; dates, serial numbers, database connection, digital input data, etc.

Datasoft 4.0 software is extremely flexible and incorporates all the connection possibilities for the laser control; LAN/Ethernet networking, direct USB connection and wireless Wi-Fi connectivity.

Datasoft 4.0 Software is compatible with Windows 7, 8 and 10 operating systems.
Technical drawing

Dimensions mm: Laser source & Scan head
Accessories

**Rotary axis**
Allows precise marking up to 360° around cylindrical parts. Its tilting system allows marking on the inner face of the parts.

**Protection goggles**
To work safely with the laser in open mode (without enclosure) it is strictly mandatory for the user to wear specific protection glasses for 1064nm lasers.

**Desktop support**
With adjustable height, facilitates the quick manual adjustment of the marking distance for the different sizes of parts.

FIBER LASER ML-100 is a Class 4 laser equipment in compliance with CFR 1040 standards. It is mandatory that users work with safety glasses to protect against laser beams with a wavelength of 1064 nm. Datamark provides these elements of protection and in no case will be responsible for the damages caused by the non-use or by an improper use thereof.
Custom made laser safety enclosure

The laser safety enclosure allows using Datamark ML-100 Fiber Laser marking machine into a Class1 safety desktop workstation configuration.

The laser safety enclosure is fully customizable according to the present and future customer's needs.

Thanks to its modular construction, the cost effective custom made laser safety enclosure may be easily adapted to unexpected production requirements, for example if new larger size or special shape parts must be loaded into the marking machine.

From the size itself all the equipment, electronical features and accessories shall be personalized according to the customers and applications needings.

Main custom options

- Door open safety interlock mechanism.
- Side opening door or vertical sliding door.
- Front door with security inspection window.
- Automatic door opening & closing system.
- Additional side doors.
- Automatic z-axis for fast part height adjustment.
- Rotary axis for marking round parts.
- Barcode & Datamatrix codes marking verifier.
- Automatic fume extractor system.
Services

Installation & Training
Specialized service for the installation and training to the users in the handling of our machines of marking.
- Installation and programming of laser marking machines.
- Installation and training of software applications.
- Integration with IT and electronic systems.

Preventive Maintenance
The technical department of Datamark offers to customers different levels of maintenance services according to their specific needs. Contact us so we can propose the best preventive maintenance service contract personalized for your company.

Technical Assistance
Our skilled technical assistance staff is arranged to solve effectively any need that may arise.

Spares & Repairs
- Review and diagnosis of machines.
- Machines repair.
- Warranty management.

Back-Up Marking Machine
With the Back-up Machine Service (substitution machine) you will not be in the hard situation of running out of your marker when performing repair or maintenance at Datamark Technical Service, because we will always offer a marking solution for your total security.