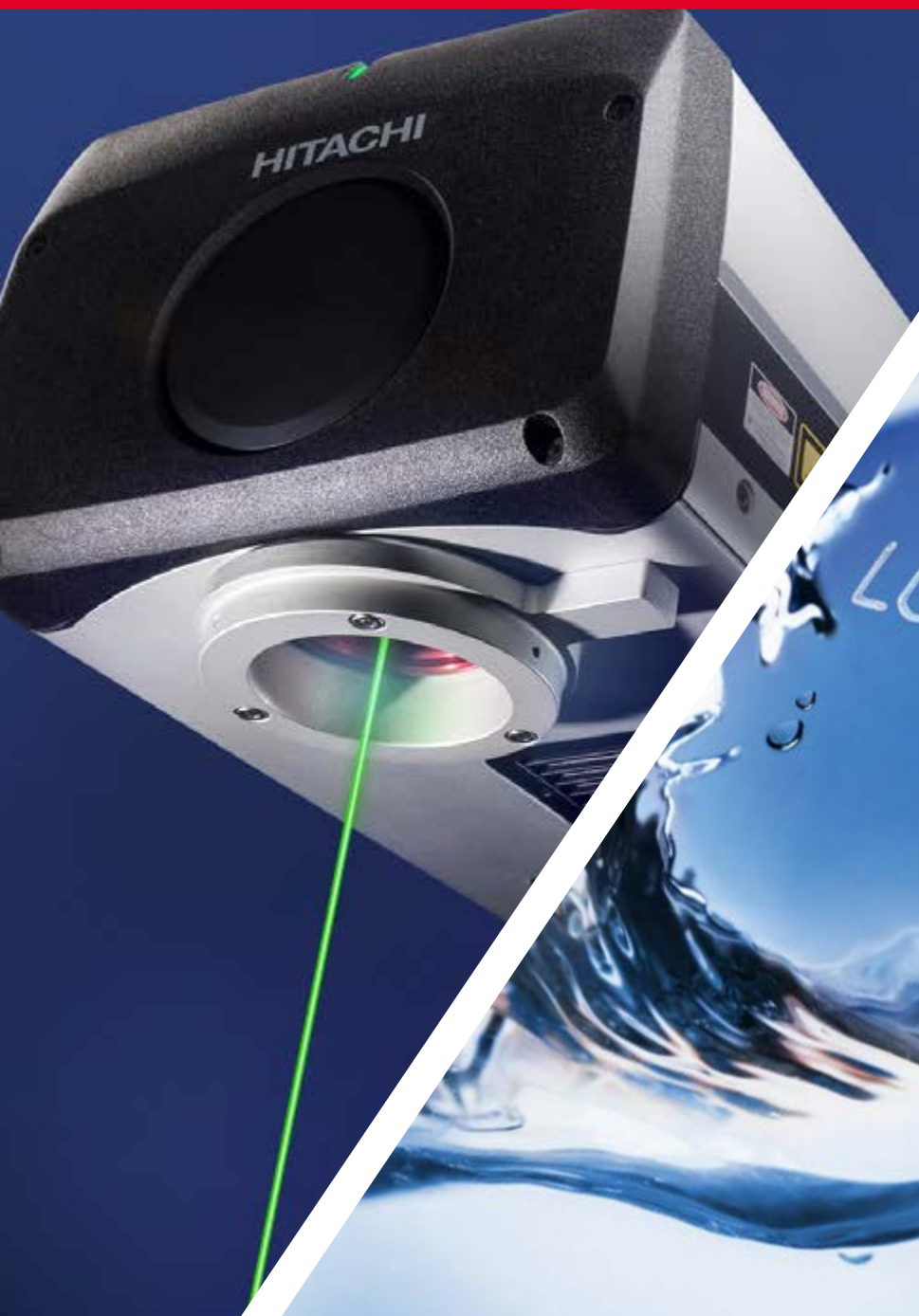
HITACHI
Inspire the Next

Coding & Marking Solutions

CO2 Laser Coder

LM Series



CO2 Laser Coder LM Series

A robust, versatile, high-performance laser for industrial coding requirements

The new LM Series from Hitachi is a Carbon Dioxide CO2 based Vector laser. Our wide ranging of wave-lengths as well as the flexible power and focal lens configuration ensures performance ideally suited to coding on various packaging substrates including paper, cardboard, glass or plastics. An innovative cascading cover design supported by an efficient cooling air stream provides a high level of reliability.

The result is a very low electrical energy consumption and precise, clear coding even at small font sizes. Small outer dimensions and powerful on-board control system enable easy hardware and software integration of the LM series into factory networks.

Our highlights

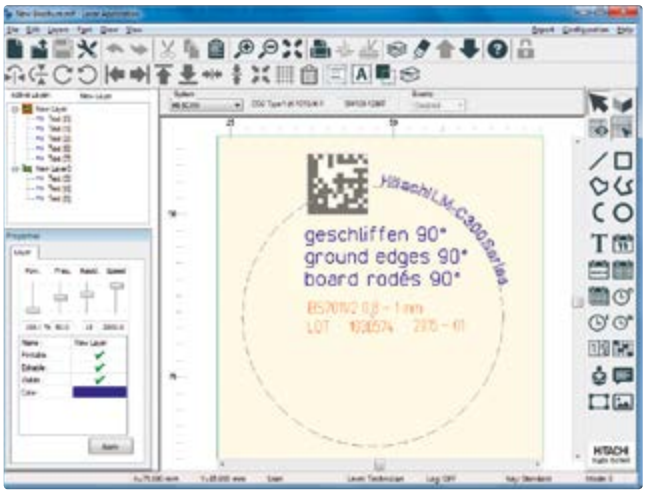
- Compact single body space saving design for ease of mechanical integration
- An electrical power consumption of <300 VA reduces the overall operating costs to a minimum
- Low laser power and duty cycle translates to increased reliability and increased safety due to low operating temperatures
- Dual casing structure provides additional protection for the laser tube and optics which ensures durability against harsh environments
- Most efficient air cooling by a cascading cover design extends laser tube lifetime
- Optional lens air flow available to keep the focal lens in a clean condition
- User-friendly interface: PC based or with an optional colour 10.4" Touchscreen
- Highest print quality at a variety of production speeds using vector as well as Dot Matrix fonts with a user friendly font editing tool
- The beam expander technology creates a very small spot size transferring a high level of energy onto the substrate resultant in a high resolution print
- Powerful Windows software available for net-working, status control and for designing the text layout with True Type fonts, barcodes & 2D codes and logo files
- Wavelengths of 9.3 µm, 10.2 µm and 10.6 µm combined with various lens options allows for coding onto a wide range of substrates
- Flexible Input / Output connections for ease of integration, 12 programmable inputs and four programmable outputs

Easy Operation

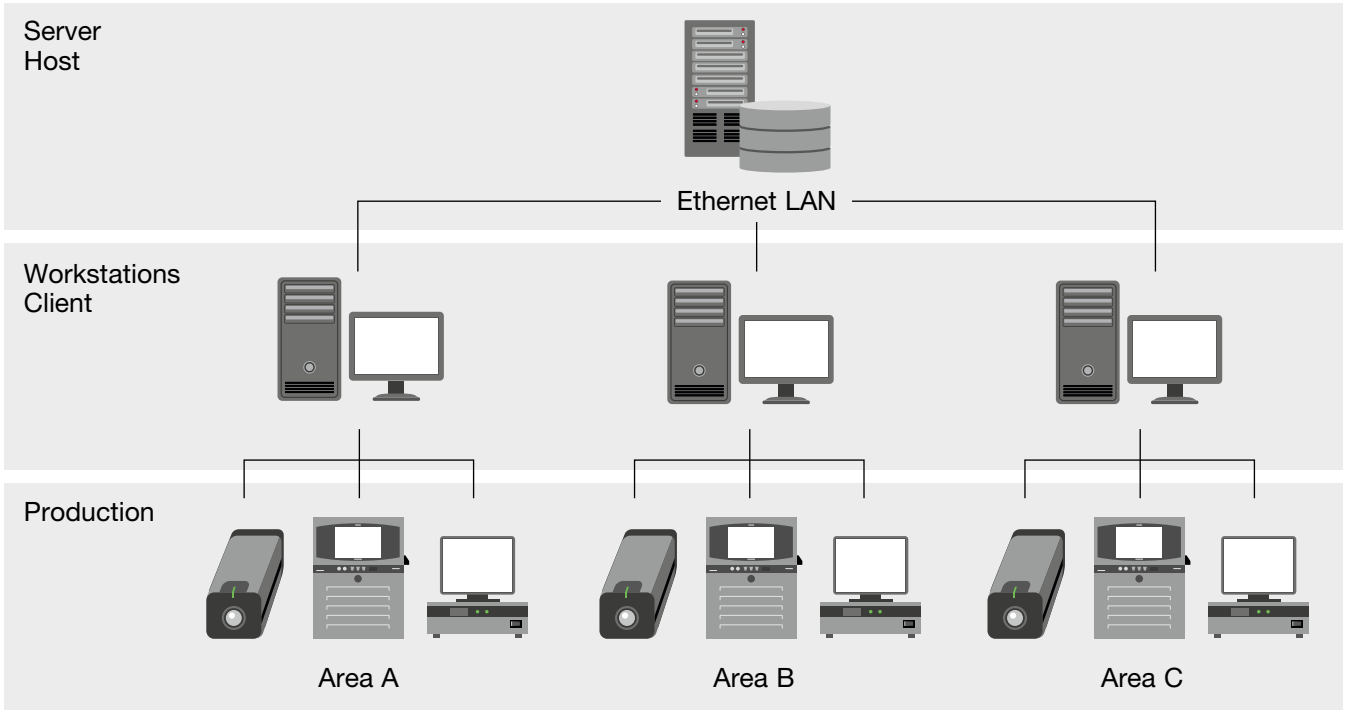
The user friendly colour 10.4" touchpanel is ready for immediate use

Intuitive operation
Our new, icon-based 10.4" full colour touchpanel provides easy and straight-forward navigation. The WYSIWYG design provides stress-free operation by displaying marking data and settings immediately. The touchpanel is easy to use in both handheld and equipment-mounted configurations.

Control with standard PC equipment
The LM Series can also be operated with standard (industrial) PC equipment. The windows based laser application supports multiple text layers, secure image storage operations, preview image before downloading, manage and download the laser setup for individual products and provides WYSIWIG image design. Additional features include database connectivity, an easy to use font editor, powerful time and date calculations, management of log files and creation of reports. By utilizing the Laser Application Software, no touchpanel is needed to fully operate the laser.

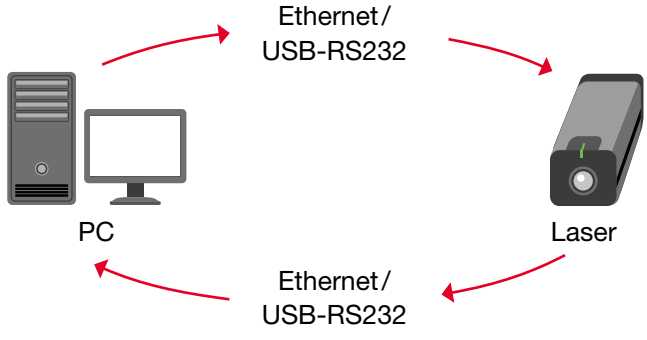


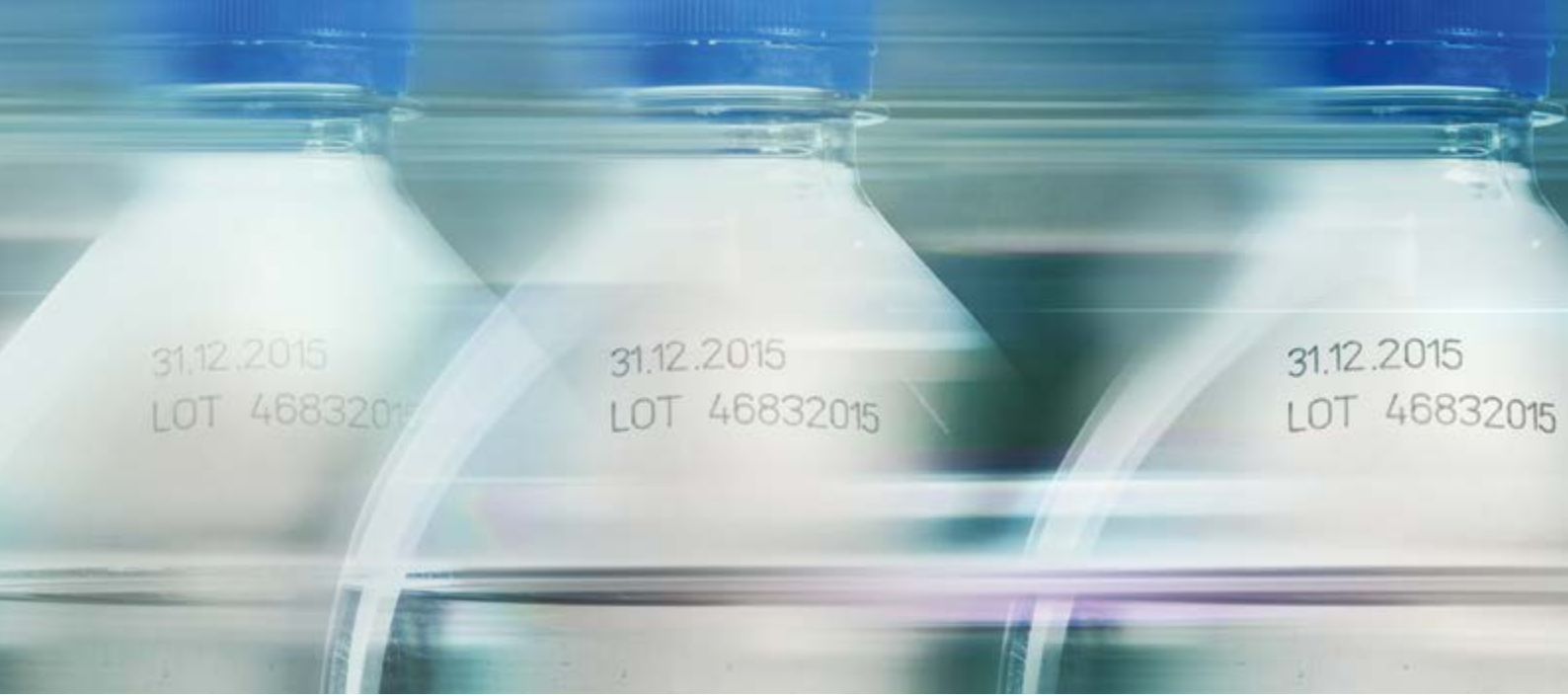
Integration of different coding equipment



Offline configuration

Data can be created and saved via a remote PC and then transferred into the laser coder located at a remote site. The Ethernet and serial USB port of the laser coder offers a convenient way to share image files or machine settings between the laser coder and the host PC. A quick backup of the most important data is ensured and further ease operation with the LM-C300 Series.

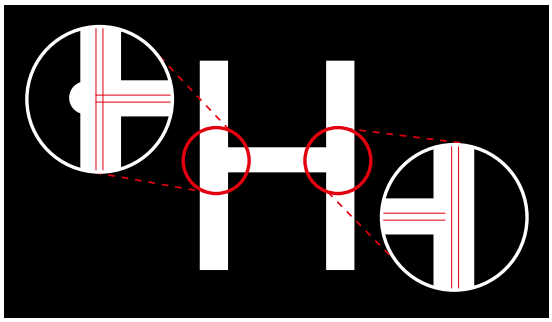




Speed & Quality

Accurate coding at high speed

Even at high speed the LM-C300 Series maintains an accurate and aligned coding process. The new laser generates energy instantaneously and transmits it onto the product in a very short time. The beam expander technology further reduces the focal point and generates extremely sharp and clear characters and vector lines onto the packaging material. Even though the LM-C300 series is a vector font based laser, dot matrix fonts can be printed on demand as well.

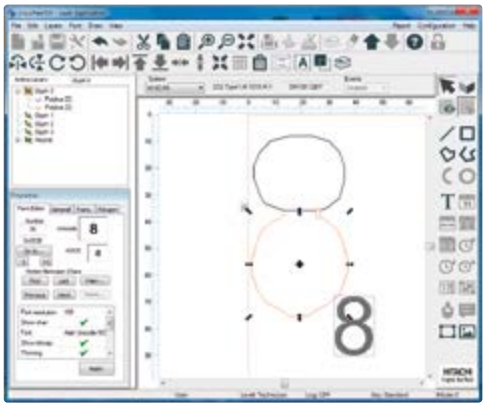


Intersection correction

Our LM-C300 Series offers a support function for crossless lines, which prevents deep marking where lines intersect, eliminating the tendency of overlapping lines not to distort the shape of output characters. These crossless fonts have been engineered and designed by the powerful font editing tool which is available as part of the laser application software.

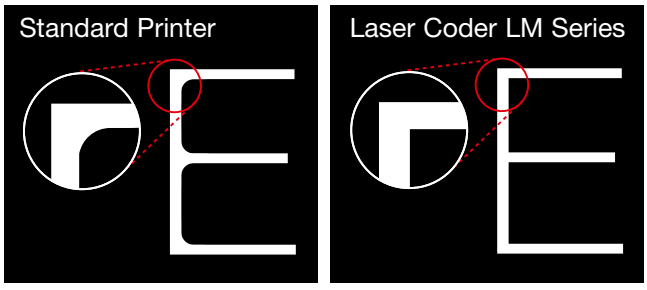
The font editor

Each character of a font can be manually modified and aligned to the application requirements. True type fonts and laser fonts can be opened and changed plus some areas of an image might require a deeper and more powerful marking than others. In order to avoid pin holes, the individual character line can be interrupted at any point. The package keeps its consistency and the product is safely protected.



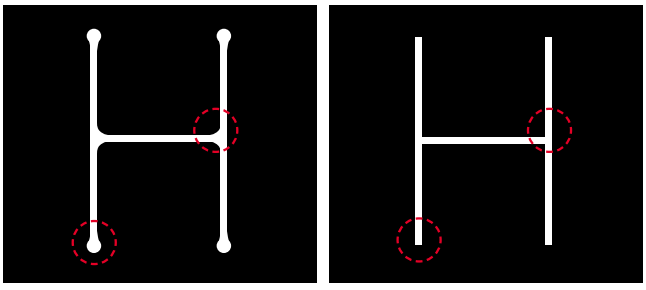
High speed coding at 600 cps

Hitachi's new laser is capable of printing up to 600 cycles per second (cps). This high performance scribing process can be achieved through the use of a new dynamic and precise optic assembly. The overall weight of all moving parts has been reduced to a minimum which results in a faster marking time. The edges of each character remains correctly marked with no degradation of the character form despite the high speed.



Depth control

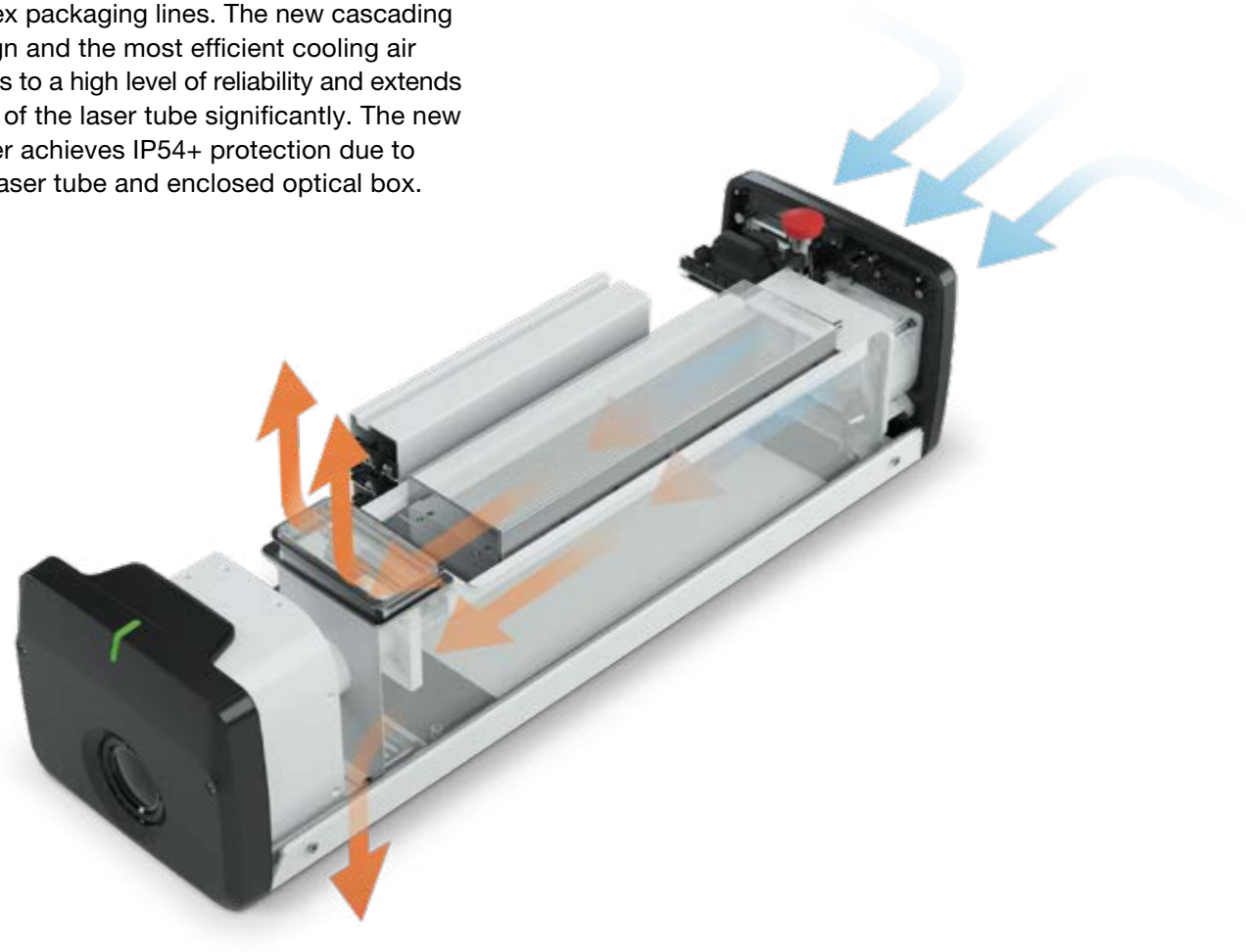
The LM-C300 Series offers many system settings which control the power of the marking at areas susceptible to deep marking such as beginning and end of lines where straight and curved lines intersect. Unwanted dots or even missing lines are being prevented. The dynamic depth control also removes less material from the product package and therefore extends the filter life time of the fume extraction system.



Proven Reliability

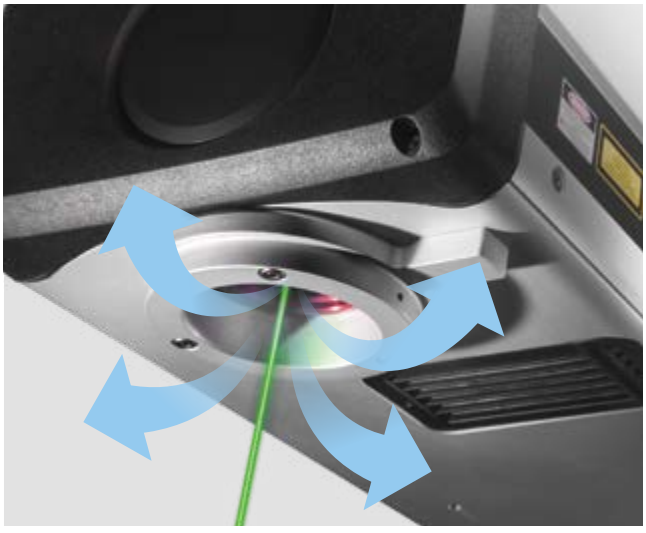
Advanced cooling System

Low power air cooled laser systems are the only compact laser technologies demanding less floor space and providing ease of mechanical integration into complex packaging lines. The new cascading cover design and the most efficient cooling air stream leads to a high level of reliability and extends the lifetime of the laser tube significantly. The new Hitachi laser achieves IP54+ protection due to cascaded laser tube and enclosed optical box.



Optional lens air flow

An optional air flow helps to keep the focal lens in a clean condition. The overpressure keeps any kind of particulate off the lens assembly, avoids contamination and a reduction of the laser output power. This option helps to reduces operating costs, minimizes maintenance and increases print quality.



Energy efficiency

Efficient usage of the laser energy creates a low-cost laser coder with a total power consumption of <300 W! Our low operating cost LM-C300 series is comparable of 1/3 power consumption of other lasers to execute the image process. The new Hitachi technology produces the print quality and speed of lasers that typically require far more power.

As a standard feature the LM-C300 series directly controls Hitachi's fume extraction solution. The remote Start/Stop functionality activates the fume extraction only if the laser is switched into print mode. No energy is consumed if the laser is switched to offline mode. The total power consumption of Hitachi's laser and fume extraction solution is reduced to a minimum.

Energy consumption

Harsh environment

With the robust structure which provides a high level of protection for the laser tube and optics, the new LM Series can be used in extremely harsh production environments and meets IP54 accreditation. The laser tube and the optical assembly are additionally protected and even achieve a higher IP+ capability. Regular cleaning of the mirrors and the lens assembly is no longer required and less operator intervention further reduces running costs.

Global sales & service network

Are you looking for a proven global company that can work with you at a local level? Hitachi offers a global sales and service network when marking, coding and traceability challenges demand a coordinated answer. For each of your locations, and across your entire organization we will champion your goals by providing international consistency, global perspective, broad expertise and coordinated service with dedicated contacts. Our global team applies its worldwide technical expertise to your unique challenges in a consistent way. Tangible deliverables and proven solutions are results of our business analysis and project implementation. Mechanical integration is supported by 3D CAD design, electrical schematics, customized circuits, application specifications and customized documents. Plus cross border project management and coordination between suppliers, OEM's and end users are part of our deliveries. You gain more visibility and save time and money.

Packaging materials

The world of packaging consists of a huge variation of different technologies and materials including paper, corrugated cardboard, glass, rigid plastics, flexible foils and films to name a few. To handle this diversity of materials Hitachi's LM-C300 Series comes with two different output power levels – 10 W and 30 W – and with three different wavelengths: 9.3 µm, 10.2 µm and 10.6 µm. Remember each material and composition does adopt, absorb and reflect light in a different way.

PET – 9.3 µm Wavelength
Perfectly matched for the head absorption of plastics like PET (Polyethylene Terephthalate), the 9.3 µm wavelength laser allows marking on plastic surfaces by smoothly melting the surface layer without creating pinholes or cracking the inner structure. This is the ideal solution for plastics being produced by polycondensated thermoplastic materials from the family of polyesters. PET is widespread in the beverage industry and is mostly used for producing bottles.

Film and Foil – 10.2 µm Wavelength
The 10.2 µm wavelength is ideally suited to marking on thin films and any type of packaging foil. Best results can be expected on painted films and foils with a thin ink layer on top. The laser energy removes the ink and generates a contrast to the next bottom layer e. g. to the metalized composite or aluminium. Packaging materials which absorb this wavelength very well and therefore generates best CO2 Laser print quality are PE, HDPE, LDPE, PP, OPP, OPA, PA, PMMA, POM, PUR, ABS and PVC.

Paper, cardboard and glass – 10.6 µm Wavelength
The CO2 laser radiation of 10.6 µm wavelength gets well absorbed in applications that process materials ranging from thin paper to cardboard type packaging. Extremely good print results are also achieved on any kind of glass products. This wavelength is the most common one available with CO2 lasers and perfectly suits the majority of packaging applications.

Specifications

	LM-C310	LM-C330
Laser Technology	CO2, Vector	
Laser Power	10W	30W
Laser wave length	10,6 µm (e.g. paper, cardboard, glass)	9,3 µm (e.g. PET), 10,2 µm (e.g. OPP, PP, PE), 10,6 µm (e.g. Paper, cardboard, glass)
Coding Area (inch) / Spot size (µm)	1.57 × 1.57 – 9.84 × 9.84 (13.82-87.13, without beam expander, 10,6 µm)	1.57 × 1.57 – 9.84 × 9.84 (13.82-87.13, without beam expander, 10,2 µm & 10,6 µm)
		2.36 × 2.36 – 3.94 × 3.94 (15.16-31.89, without beam expander, 9,3 µm)
	1.57 × 1.57 – 9.84 × 9.84 (6.14-38.74, with beam expander, 10,6 µm)	1.57 × 1.57 – 9.84 × 9.84 (6.14-38.74, with beam expander, 10,2 µm & 10,6 µm)
		2.36 × 2.36 – 3.94 × 3.94 (7.56-15.94, with beam expander, 9,3 µm)
Aim Beam Pointer	Standard (Red semiconductor, Wave length 655 nm, Class 2 Laser)	
User Interface	Coloured Touch Screen / PC, 10,4"	
Shutter	Automatic Electromechanical Shutter	
Cabinet Protection	IP54	
Communication Interface	Ethernet, serial USB	
Weight	38 Lbs	55 Lbs
Dimensions	7.72 × 5.83 × 27.48 (inch)	8.50 × 7.05 × 31.42 (inch)
Laser Status Indicator	Ready (Green) / Marking (Blue) / Alarm (Red)	
Power supply	AC100 ~ 120V +10 %, AC200 ~ 240V +10 % (50 / 60 Hz)	
Power Consumption	300VA	600VA
Temperature range	41 ~ 104 °F	
Humidity range	35 ~ 95 %	

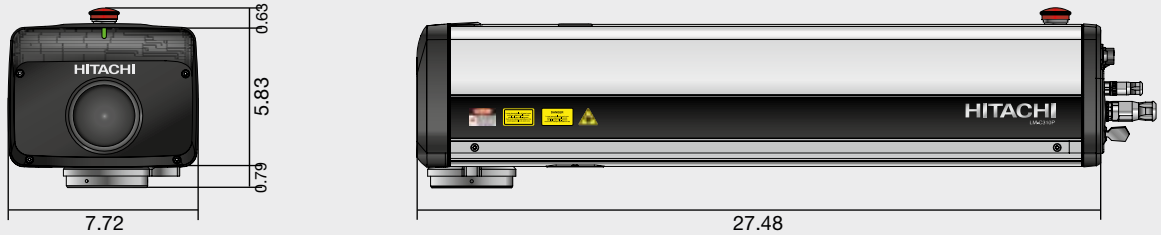
1. Hitachi Industrial Equipment Systems Co., Ltd. (Hitachi) shall not be liable for any manufacturing loss, or any product damage due to trouble or malfunction of the product.
2. Hitachi continually improves products. The right, therefore, is reserved to alter the design and / or specifications without giving prior notice.

Global standards

- **Conformity to global standards**
  CE, UL, c-UL, c-Tick approvals.

Dimensions of Laser (inch)

LM-C310



LM-C330