

Light Logics Dot-matrix Hologram Mastering Machine: HoloMast Digi series- **specification sheet**

Light Logics manufactures a series of hologram mastering machines with various resolutions and stage movement capacity. These machines have become benchmark in holography industry due to their versatility, reliability and user friendliness.

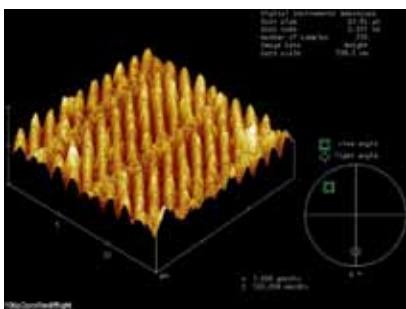
Comparison with conventional dot-matrix machines

Light Logics Dot Array Security Mastering Machines	Effect	Conventional Dot Matrix Machines	Effect
Less moving parts	High reliability	Many moving parts	Reduced reliability.
Stationary optics	High speed and excellent image quality	Moving optics	Reduced speed and poor image quality.
Fringes are computer generated and projected	Excellent flexibility in master design	Fringes are formed by interference of beams controlled by mechanically adjusted optics	Results in reduced speed, low resolution and noise.
Very high resolution	High security master holograms	Limited resolution	Limited security features.
Modular and flexible.	Versatile and easy settings	Rigid main structure.	Less adaptability.
User friendly software	Easy operations	Less user friendliness	Difficulty in operations.
Upgradeable	Cost effective to have higher versions	Not upgradeable	Increased cost.
Direct laser switching and modulation	High reliability	Shutter based switching	Rigid and slow.
Solid state laser	High reliability and longer life	Gas Laser	Low reliability and less life.

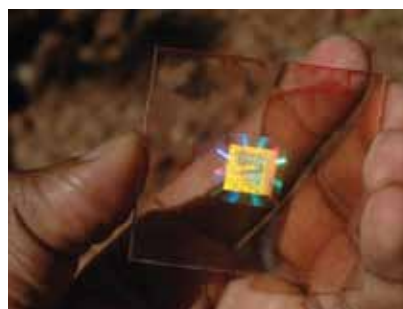
Image features include True-3D, "true color", micro-texts, nano-text, covert images, animated covert images, stereogram, CLR images, HOE, DOE, "blaze effect" elements, "diffraction white", "diffraction gray", 256 angles dynamic color holograms of over 256 colors, modulated depth 2D/3D background, wide and narrow angle photographic holograms, multi-channel and full 3D holograms, embossed metal and pearl effect, watermark, Hidden Laser Image (Fourier covert laser readable images), hidden image animations, variable hidden images, 15 micron and less diffractive micro text, full 3D images, true color images etc. Recordable Hologram types are Digital 3D ,Stereogram, 2D/3D, 2D, HOE , DOE etc.

The company has recently introduced the dot-matrix machine HOLOMAST DIGI-ULTRA with a mind-boggling ultra high a resolution of 25000 dpi. This is one of the highest resolution dot-array type security hologram mastering machines now available in the world. Also for packaging industry we provide custom stage sizes for recording large format holograms

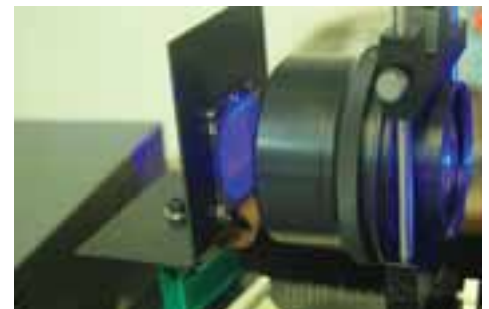
Atomic force microscope (AFM) involves the technology that lead to the Nobel Prize for Physics in 1986. AFM is an extremely high-resolution microscope and can image even fractions of a nanometer. This is more than 1000 times the optical diffraction limit. The AFM is one of the foremost tools in imaging the nano and sub-nano world with amazing clarity and details.



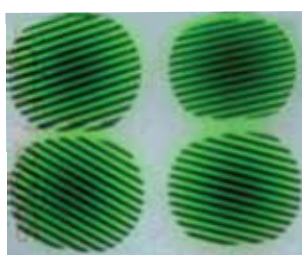
AFM image of HoloMast Digi master



Originated Glass Master



Modulation Head



Micrograph of the dots



Embossed Holograms produced from the Master



System Components

Laser:

Ultra stable Violet (405 nm) solid-state laser of 50 mW, having a life of over 10,000 hours. This wavelength is optimum for high photoresist sensitivity and thus reduces the master recording time and increases client profits. This laser along with the advanced software and the high quality photonics results in high contrast fringe modulation and direct switching, avoiding the need for mechanical shutter.

Optical table:

The HoloMast Digi system comes with a honeycomb vibration isolation table having pneumatic legs. This ensures rock steady performance even under hostile conditions. The high quality optical honeycomb table has holes plugged from bottom ensuring reliability, high damping and excellent compliance.

Optics and Opto-mechanics

The system applies high quality coated optics with stable response, reducing laser reflection losses and maximum laser energy coupling. Ultra precision motion control and stages of .0001 mm resolution is the best in the world now available. Optional custom designed stage sizes are available for the packaging industry applications. The honeycomb vibration isolation table with pneumatic legs, ensures very stable operation, facilitating sharp focusing to record grating images of

Opto-electronics

Perfect synchronization in grating recording, based on your design, is achieved through the advanced motion control cards and the control software. State of the art and separate motion controllers are used for each arm of the stage and this makes the electronics modular and adaptable. Ultra high resolution light modulator with high contrast ensures laser sharp holographic fringes and high refractive index modulation in the photoresist, yielding excellent image quality, envied by our

Software

Highly user friendly software with a set of third party control software ensures easy design and creation of complex and difficult to repeat security holograms and OVDs, utilizing the creative capabilities of designers to the fullest extent. Continuous R&D and innovation ensures state of the art products and reliable technical support. Graphical resolution of 25000 dpi helps our customers to create very complex masters with ultra high resolution features. Selectable resolution and speed of exposure and typical exposure times of 1 cm recording in 20 seconds.

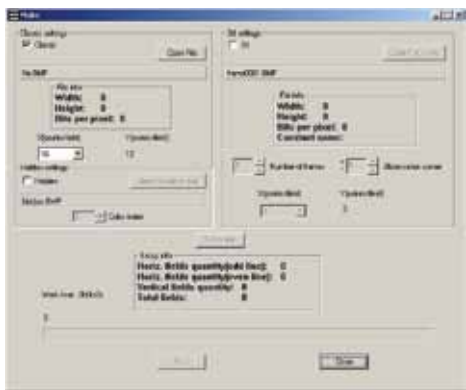
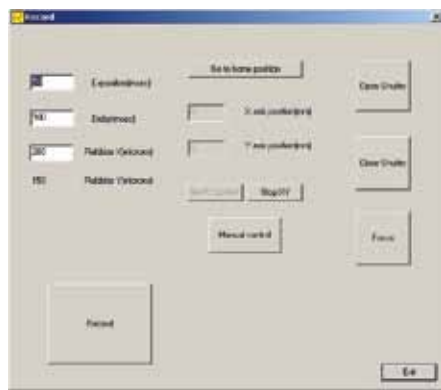
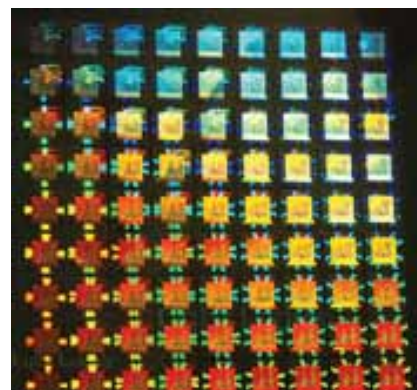


Image input window



Stage program and Record window



Recombine master

Computer Hardware

Intel Core i7 Processor 800 Series, Intel Original LGA 1156 Board, 4 GB DDR3 1333 MHz RAM, 320 GB SATA HDD
Genuine Microsoft Windows 7, 16 x DVD R/W Drive, Optical keyboard and mouse, NVIDIA Ge Force 9400 GT 512 MB DDR2 RAM. *Due to the fast progress in computer technology the computer specification changes frequently always being optimal available at the time of ordering.*

Versatile Design

Design of HoloMax Digi mastering machines have a modular approach both in micro scale and macro scale. It is important to note that experience and expertise of several years in photonics, opto-electronics, mechanical engineering and electronics are fused together in the design to yield the world's best dot-array hologram mastering machine. The design team included holography scientists with over 25 years industrial experience. Thus the machine is fine crafted and tuned to meet the challenges of security hologram mastering and OVD creation in its most reliable and user friendly manner. All the system components can be easily accessed and addressed independently. The novel optical scheme is made flexible to ensure versatility in design and recording, resulting in immense security possibilities. Instead of honeycomb breadboard, our system uses honeycomb table with pneumatic isolation and this ensures stable and uniformly bright images under high resolution recording. The optical and optoelectronics components are protected for dust and humidity control, ensuring stable performance and very long life.

Dimensions (LxWxH): 1700 mm x 900mm x 950mm

Unit net weight: 225 kg

Shipping package, LxWxH: 180cm x 100cm x 75cm

Total carton weight 320 kg