



Holographic High Resolution DOT- MATRIX-SYSTEM

**HOLOPRESS
DTM 2000**

System Description

The DOT-MATRIX-SYSTEM DTM 2000 creates Computer Generated Holograms and an infinite number of holographic patterns.

Although the system especially capable to produce high security and anti-counterfeiting Holograms and microstructures.

The DTM 2000 System creates as well perfectly designed decorative, multicolour and fullcolour Holograms and continuous patterns, so-called "wallpaper images".

Current Specifications:

Spot Size

The Dot Matrix System offers a range of discrete spot sizes that provide `butted up` resolutions from 500 d.p.i. to in excess of 2000 d.p.i. Changing a single lens changes the spot size. This is done quickly and simply. At the system's default resolution of 1016 d.p.i., the diffractive pixels are invisible to the naked eye.

Speed of exposure

The Dot Matrix System intelligently calculates the optimum speed for a given image in a real time, as the hologram is being produced. The rate of exposure changes depending upon the complexity of the image and so it is difficult to quote an average figure. For adjacent pixels, which have a similar or the same angle of diffraction, the exposure rate can be as high as 20 pixels per second. More usually the rate varies from between 8 to 12 exposures per second.

Exposure and wait times

Exposure and wait times vary according to the spot size and the type of photoresist and development regimes used. With standard photoresist and developer an exposure time of between 1 and 5 ms is usually sufficient, with an inter-exposure wait time of 45 to 50 ms.

Number of diffractive angles and total viewing angle

The number of grey scales displayed by the computer image determines the number of angles used for a given hologram. The maximum number of grey scales used in a computer image, and therefore the maximum number of angles available, is 256. These 256 diffractive angles can be spread through a total viewing angle of between 0 and 180 degrees. This total viewing angle can be user defined in software. This gives the operator the ability to restrict the total viewing angle of certain applications.



For example it is often considered desirable to have a smaller, say 100 degree, total viewing angle produces a hologram with a 'fuller' image i.e. more of the image 'lights up' at any one angle.

Pixel colour and number of interfering beams

The Dot Matrix System uses a physical mask to create the two or more laser beams required to the diffractive pixels. This makes the Dot Matrix System incredibly versatile when compared with dot matrix systems that utilised conventional beam splitting devices. Any number of interfering laser beams can be utilised by simply manually changing the mask. The beams can be adjusted to give any inter-beam angle, or fringe spatial frequency, within a certain range. This enables the production of dot matrix holograms which can display any of the infinite number of colours found in the spectrum and by manually changing the Dot Matrix System mask between exposures, multicolour dot matrix holograms can be produced quickly and easily. Other unique colour effects can be achieved by utilising multiple laser beams at differing orientations with respect to each other. Even acromatic dot matrix holograms can be produced using a single exposure for each pixel.

Features of the computer (minimum specifications) PC 500 MHz Pentium processor or better.

Features of the custom software

Dot Matrix Control - simple to use yet powerful software to control all aspects of the Dot Matrix System. A recent upgrade allows the automatic recording of registration marks in any position and utilising any diffractive angle.

Dot Matrix Visualiser - software to pre- visualise a hologram. An animated image is viewed in a real time to simulate viewing a hologram. Four types of simulated lighting can be chosen: spot light, semi- diffuse light or fluorescent strip light. The software can also compile a standard animation file so that a hologram visualisation can be easily e-mailed to clients for their approval.

Dot Matrix Security - a program that creates an infinite number of complex image patterns such as might be used within security images

Dot Matrix Mosaic - software to tile or mosaic small image elements to make ever- repeating 'wallpaper' patterns. An image element can be tiled whilst mirroring in the vertical or horizontal directions, neither direction or both directions at the same time.

Dot Matrix Image Splicer - A specialised utility for splicing two or more images together in such a way as to produce a 2D/3D stereogram or 3D stereogram using the Dot Matrix System.

Dot Matrix Cropper - for use in stereo / 3D imagery design



Other advantages of the Dot Matrix System

The system utilises an open frame XY table and the resist plate is positioned emulsion side down on the plate holder. The advantages are:

- 1.) The emulsion is protected at all times from dust and spurious light.
- 2.) Resist plates with variable substrate thickness can be used
- 3.) Laser beam focussing and alignment takes only a few seconds, even for a multiple colour / multiple laser beam set up. After initial alignment no further alignment is necessary. This ensures that the system is extremely reliable and consistent.

One of the world's most sophisticated control systems is utilised. This incorporates such control capabilities as linear, circular and helical interpolation. The system can control up to four motors, which can be either stepper, servo or brushless servo motors.

Combinations of different types of motors can be used at the same time for the ultimate in versatility and upgradeability. Only three motors are used with the Dot Matrix System at the current time leaving a fourth for potential upgrades.

A device to automatically switch off the laser after exposure is incorporated into the system. This prevents wasting tube time if, for example, the hologram exposure finishes during the night.

2001 Holographic High resolution holographic dot matrix system

Includes 50 mw laser x-y system, computer, laser table, optical head(500-2032 DPI resolution) and software programs. Manual full colour ability via masks.

50 mw Kimmon Laser

Melles Griot Laser Table & Mount

Various Lens & Mount

Accusto Optic Modulator Shutter

Low Profile X-Y & Control Unit & Plate Holder

Dot Matrix TM Optical Head

Dell PC & Monitor + Software

Additional Dot Matrix TM Compilation Software and Operating Program on Hard Drive

Adobe Photoshop Software 5.5

Start Up package.

Comprising,

10 high quality photo resist plates 5x5 ins,

Chemical developer, 5 litre,

Developing tray.

Focussing microscope.



Price: Upon Inquiry

Delivery : Ex Works Holopress Hamburg, Germany

Packing: in two wooden crates for export, seaworthy

Installation: On site of the customer company, training for 5 working days

Warranty: **50 mW Kimmon Laser – 1 Year or 3000 hours, warranty**
Whole System 12 month warranty

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