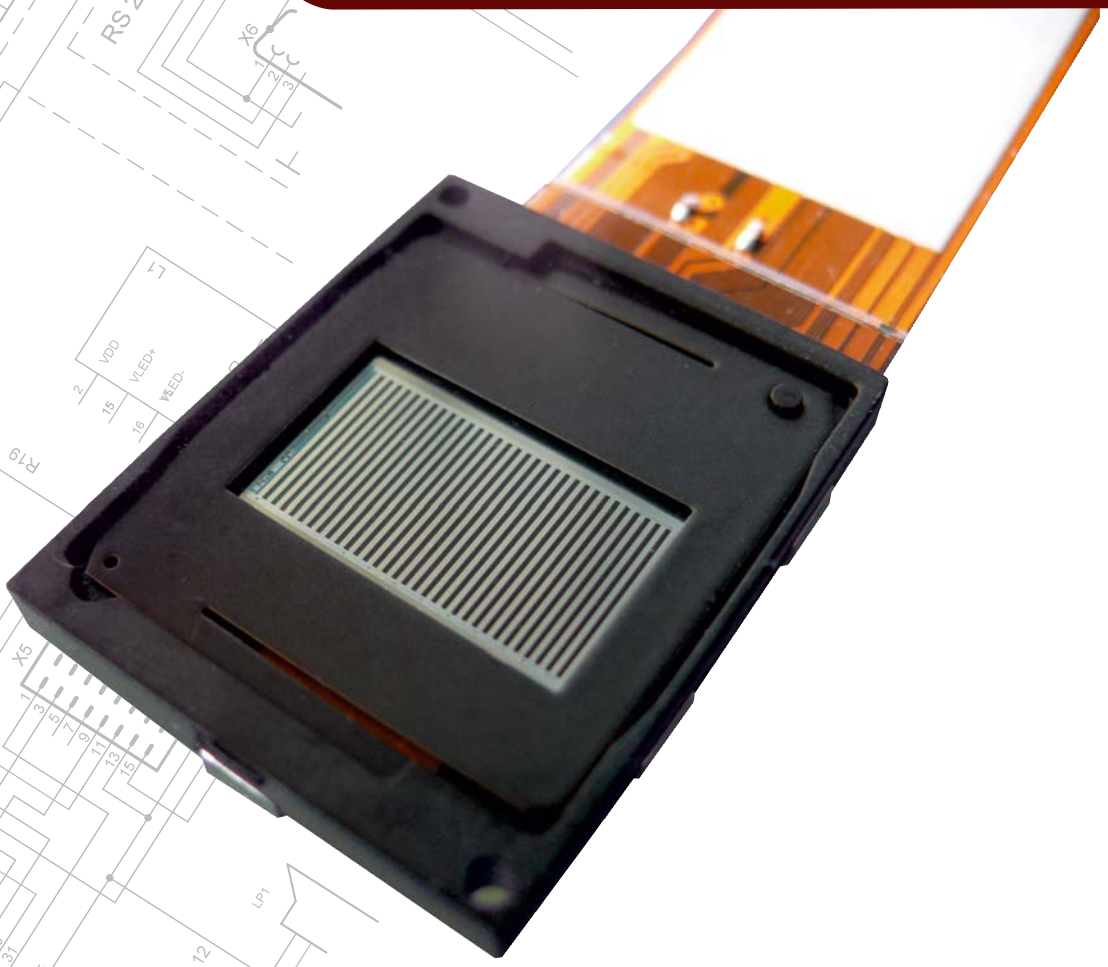
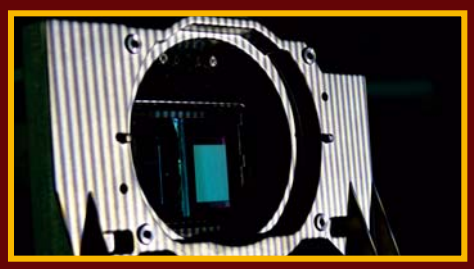
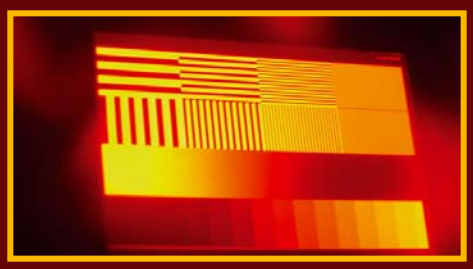
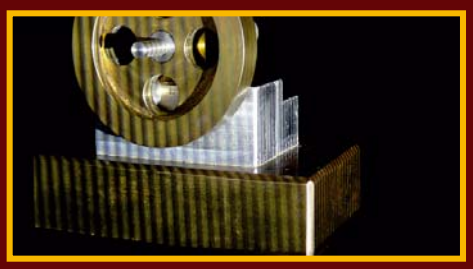
Fringe Projection

LCOS for Fringe Projection Systems







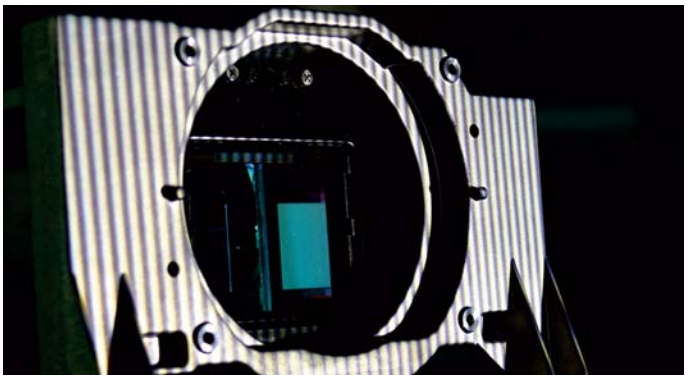


HOLOEYE **Systems, Inc.**

Fringe Projection Systems

Amongst the manifold applications of optical technologies a key position is occupied by cutting edge optical metrology methods. Optical metrology offers non-invasive and quick measurements combined with an extremely high accuracy and applicability in difficult environments.

One of the most widely-spread techniques in this field is the fringe projection method for 3D-digitizing, 3D-surface inspection, 3D metrology and even etch depth measurement.



The surface of an object is illuminated with a sequence of fringe patterns. A camera observes the illuminated object and its surface shape is calculated according to the resulting displacement of the fringes. The required fringe patern can be realized with ultimate precision by HOLOEYE Liquid Crystal on Silicon (LCOS) microdisplays.

High resolution, homogeneity and grey scale accuracy of the microdisplay are the keys for high precision and resolution in a 3D digitizing system. The digital drive of HOLOEYE´s LCOS technology shows an extraordinary repeatability, no cross talk and homogeneity in the addressed images. Furthermore, the digital drive is addressing all pixel at once instead of a progressive scan refresh. So, one can use the maximum frame rate and trigger the camera to the device driver at frame rate.

The digital drive architecture shows high programmability. Modifications of bit depth, frame rate as well as gamma corrections can be done. HOLOEYEs standard signal source is DVI, but we can also provide custom drive board solutions with alternative signal sources (USB, VGA, RS232 and other).

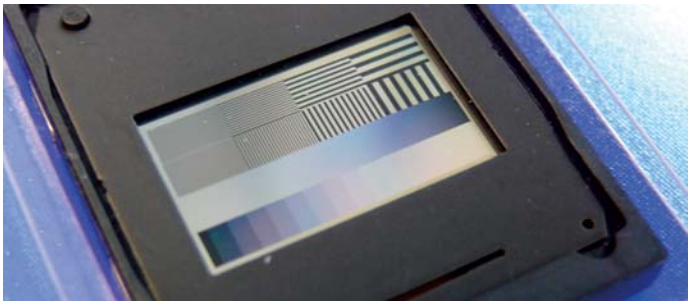
During the past years, HOLOEYE has proven to be a reliable source for LCOS microdisplays due to strong cooperations with several microdisplay manufacturers. Besides a secure distribution of the LCOS microdisplay panels and drive boards, HOLOEYE also offers support for ASICs and the development of complete optical engines for your integrated fringe projection system.

HOLOEYE LCOS Advantages:

+ High reflectivity of panels
+ High frame rates
+ High dimensional precision of panels
+ Small size of microdisplay panels and drive boards
+ Analogue and digital addressed displays for progressive scan and fast bit-plane addressing (all pixels addressed at once)
+ Customized drive boards for different input sources such as DVI, VGA, USB, RS 232 and other
+ Trigger to external camera
+ Small form factor for microscopic applications
+ Capabilities of custom optical design towards complete projection engines
+ Cost and volume production ability
+ Reliable supply chain

The application of high resolution cameras require high resolution fringe projection systems. HOLOEYE offers a wide range of microdisplays with resolutions up to 1920 x 1080 (HDTV) pixel. Panel sizes range from 0.7“ down to 0.177”. Even microdisplays with high frame rates up to 180 Hz are available. Besides exact pixel addressing HOLOEYE´s microdisplay panel solutions can provide very high contrast and high brightness due to the reflective surface of LCOS microdisplays and a precise grayscale resolution and gama correction for sinusoidal projections with exact defined slope are possible.

HOLOEYE offers single microdisplays, driveboard solutions, development of complete optical engines and ASICs for own board developments. HOLOEYEs LCOS displays feature a smart packaging and solid metal substrates. This enables customized mounting and if need thermal control for an optimum in stability to guarantee a geometrical exact and stable projection.



Microdisplay Resources:

Display Types:
Reflective (LCOS)
(transmissive on request)

Resolutions:
640 x 480 (VGA),
1024 x 768 (XGA),
1280 x 768 (WXGA)
1920 x 1080 (HDTV)

Contrast Ratio:
Typ. 2500:1 (up to 10000:1 for coherent applications)

Dynamic Range:
8 Bit (higher on request)

Frame Rates:
up to 180 Hz

Display size:
0.7” down to 0.177”

Pixel size:
down to 5.6 µm

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