Indian Institute of Technology, Kanpur

Tender Enquiry No.: AS/CHE/2014-15/DEC/01   Date: December 05, 2014
Last Date for submission: December 23, 2014

Microlens Optical Test System Specifications:

Sealed Quotations are invited for Infrared (IR) microlens test system (spectral range 8-12 micron) to characterize separate microlenses in an array of microlens under test. The test set up should handle microlens having diameter from 200micron to 5 millimetres.

The measurement parameters consistof the following:
a.   Output wave front
b.   50 Zernike terms
c.   Focal length of separate microlenses in an array
d.   Microlens aberration
e.   Point spread function (PSF) of each Microlens.

The microlens test system should consist of two components of one hardware and software

The complete microlens test system would consist of following specifications:

Hardware:
a.   Breadboard system with aligned optical components:
     •   Dimensions 600x 900 x 12.7 mm M6/25
     •   Aluminum, black
     •   Mounts and other mechanics from Thor labs and Standa

b.   Hartmann mask :
     •   Custom made (Al or Cu) on Fr4 substrate
     •   Geometry: hexagonal, 37, 64 or 127 holes , the size of hole to be defined from the size of the camera sensor
     •   Provide all the details related to Hartmann mask.
     •   Calibration mask to be provided to calibrate the system at periodic intervals
     •   Calibration of Micro lens array supplied by customer.
     •   Provide Hartman mask with holder as spare (two numbers)

c.   IR source of 8 to 12 microns range + BAND PASS FILTER :
d.   IR camera/ Sensor 8 to 14 microns range:
     •   Array Type Un-cooled micro-bolometer (a-Si)
     •   # Pixels 384 x 288itch
     •   Pixel Pitch 25 μm
     •   Array Cooling Uncooled
     •   Pixel operability > 99%
     •   Spectral Range: 8 to 14 microns
     •   Focal length 18 mm f/1, HFOV 25.5°, standard manual focus

- Optical interface Adaptation rings for various lenses
- Frame rate 50 Hz in 8 bit mode
- 25 Hz in 16 bit mode(depending on network load)
- Window of interest Minimum size 32 x 32
- Non Uniformity Correction (NUC) DSP-controlled
- Temperature stabilization DSP-controlled, no thermoelectric cooling required (TEC-less)
- Integration type Rolling Shutter
- A to D conversion resolution 16 bit
- Camera control
- Ethernet (TCP/IP): Xeneth API/SDK
- CameraLink: XSP (Xenics Serial Protocol)
- Digital output Ethernet (TCP/IP): 16 bit or 8 bit
- CameraLink: 16 bit base
- Analog out PAL or NTSC
- Trigger Trigger in and out; LVCMOS
- Operating mode Stand-alone or PC-controlled
- Power consumption 3.6 W at room temperature
- Power supply 12 V
- Shock 70 G, 2 mshalfsine profile (without shutter)
- Vibration 4.5 G, (5Hz to 500 Hz)
- Ambient operating temperature 0°C to 50°C
- Dimensions 70 W x 74 H x 65 L mm³ (without lens)
- Weight camera head < 500 g (Lens not included)

e. Beam forming optics to image the aperture of the microlens to the Shack Hartmann mask.

f. Laptop with software loaded.

Software

Hartmanogram processing software for optical characterization of microlens.

The system should be very universal, and after modifications it can be used for:

- Optical shop testing of transmissive and reflective optics: lenses, mirrors, lens assemblies, collimators, etc. The measurement precision can reach λ/100 rms.
- Real-time display of low-order aberrations (tip/tilt, defocus, coma, astigmatism) in the "Alignment mode".
- Reconstructs optical wavefronts from Hartmanogram and sensor data.
- Produces wavefront plot, synthetic interferogram, far field intensity and reports on Zernike terms. All measurement data and results can be saved with one mouse click.
- Processes spot patterns obtained with hexagonal, orthogonal or random Hartmann masks and microlens arrays with arbitrary number of apertures.
- Operates with and without reference pattern: in the last case the parameters of the Hartmann mask or microlens array are used as a reference.

- "Alignment mode" of operation allows for real time display of position of the beam centre and low-order wavefront aberrations in polar coordinates and bar graph format.
- Windows version
- Saving options of the Hartmann shift data and the reconstructed phase data for offline analysis).

General Terms and conditions:

- Quote should be made in two parts: Technical bid and financial bid separately in sealed envelopes.
- Technical Bid should contain compliance statement of specifications.
- Quotes should have a minimum validity of 60 days.
- Financial bids for the product whose technical bid is not acceptable will not be opened. Any quote with the financial bid included in the technical bid will be summarily rejected.
- The sealed envelopes with the quotes should be super scribed with the Inquiry number and whether it is a technical or financial bid.
- **Payment:** Payment will be made only after successful installation and system performance check by wire transfer.
- The delivery period should be specifically stated.
- **Warranty:** Comprehensive warranty should be minimum 3 years.
- Quotes should be made CIF New Delhi.
- Maximum educational discounts should be provided.
- Brochure of the particular model of the components having technical details along with Pictures of all the items should include with the technical quotation.
- System should include all kinds of spares for maintaining the system.
- On site one week installation and user training should be provided either by principle or Indian agent.
- Installation and performance test of the system can be done either by principle or Indian agent.
- Principle or Indian agent should quote separately for the Annual Maintenance Contract for a period of 3 years after completion of warranty.
- Include list of users in India or abroad with contact details.
- Software upgrade should be for at least for 5 years free of costs.

Sealed Quotation must reach to us on or before the last date at following address:

Prof. Ashutosh Sharma
Department of Chemical Engineering
Indian Institute of Technology Kanpur
Kanpur 208016 INDIA