

Datasheet

H8 Height Standard

Specifications:

nominal stepheight 8 nm

Features:

small stepheight
 available with certificate

Order Code:

H8

Applications:

z calibration of the scanning mechanism
 of scanning probe microscopes

Description:

The standard H8 is used for a very precise z-calibration of the scanning mechanism of a scanning probe microscope . The standard consists of multiple areas of hole and stripe arrays etched into silicon.

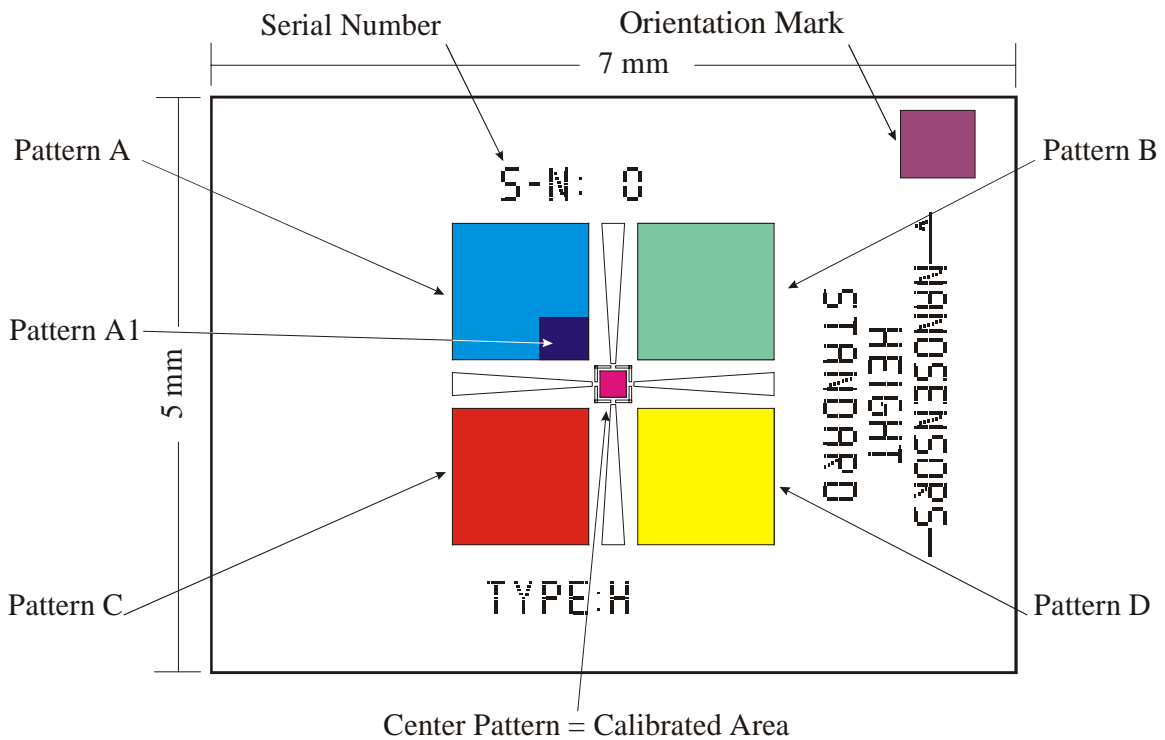


Fig.1: Sketch of the height standards overall layout.

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Detailed Specifications:

Chip

- Chip size: 5 x 7 mm²
- Active area (5 different structures): 2200 x 2200 μm²

Layout of the different structures:

- center pattern: 4 x 4 μm holes with 8 μm period, size of the field: 227 x 227 μm²
- pattern A: 4 x 4 μm holes with 16 μm period, size of the field: 1187 x 1187 μm²
- pattern A1: 2 x 2 μm holes with 4 μm period, size of the field:
- pattern B: horizontal 10 μm wide grooves and 6 μm wide bars, size of the field: 1187 x 1187 μm²
- pattern C: 4 x 4 μm holes with 8 μm period, size of the field: 1187 x 1187 μm²
- pattern D: vertical 10 μm wide grooves and 6 μm wide bars, size of the field: 1187 x 1187 μm²

(for further details see Fig. 2.)

Calibration

The standards is available either with a NANOSENSORS™ calibration certificat (traceable to PTB) or a calibration certificat of the PTB itself. Standards including the latter option are accompanied by a so called “*Kalibrierschein*” of the german “Physikalisch-Technische Bundesanstalt (PTB)” which is the highest technical authority of the Federal Republic of Germany. This PTB certificat ensures the traceability of this standard to the international “Meter Convention”.

For recalibration and for standards without a PTB certificate the PTB offers an optional calibration service. This service is available via negotiation of a direct contract between the purchaser of a standard and the PTB. NANOSENSORS™ Customer Service can provide further details or a direct contact upon request.

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Layout explanation:

The whole standard is micromachined from silicon on a silicon substrate. The different patterns are etched into the silicon up to a certain depth. Patterns which should be visible with an optical microscope (e.g. serial-number and other marks) are etched approx. 200 nm deep. The etch depth of all other patterns defines the stepheight of the standard. For the following description, please refer to Fig. 1:

In the chips upper right corner there is an orientation mark. Below this, the NANOSENSORS™ logo and type of standard are mentioned. Above the central area the serial number of the standard is printed. The serial number is visible with a slight magnification. Below the central area the type-code (H8 for a nominal height of 8 nm) is mentioned.

Four arrows are pointing to the central area of the chip. The layout details of the central region are detailed in Fig. 2. The drawing elements correspond to etched depressions in the standard. The depth of all depressions correspond to the standard's stepheight.

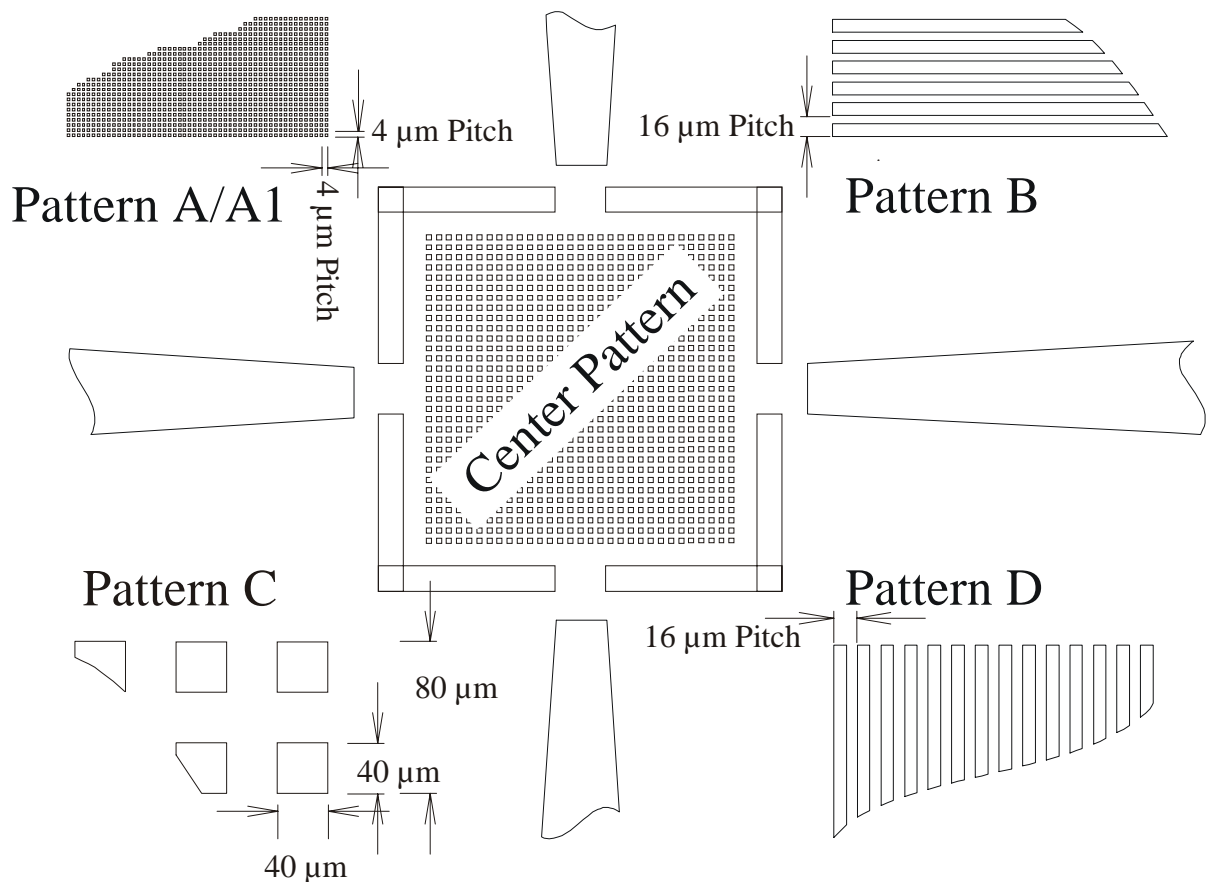


Fig. 2: Sketch of the central region of the standard

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Shipping and handling information

The standard is glued onto a steel sample holder with 12 mm diameter. The Standard comes in a special GelPack® container which is a suitable packing method for shipping and storage. The soft elastomeric gel retains the standard solely by adhesion. The adhesion force has been selected to keep the standard secured.

For easy removal grab the standard with the attached tweezers and gently try to rotate it. This will imply a torsional force to the gel which will help to free the standard.

Cleaning

Please try to avoid the necessity for cleaning the standard by proper handling and storage. If cleaning is necessary use the following methods:

- 1) Blow with dry, clean air to remove larger particles or dust
- 2) Rinse the standard with filtered and deionized water.
- 3) For organic contamination you may use isopropanol (analytic-grade). The use of other organic solvents is not recommended, because the standard is glued with cyan-acrylate on the metal disc.
- 4) If none of the above methods is successful, please contact NANOSENSORS™ Customer Service to arrange a cleaning service.

- This datasheet is preliminary and may be changed without notice -