Our 3D-sensors are based on the patented Miniature Projection-Technique (MPT), combining GrayCode- and Phaseshift-method.

The Idea
Of all imaging optical 3D measuring techniques, the topometric method of structured illumination stands out as it is both flexible and reliable. Thereby - via a high-powered light source - fringe patterns are projected onto the object to be measured. The depth information is obtained by triangulation.

The Function Principle
The gratings to be projected are all written on a common wafer. Thereby, the phase error of the gratings is below 0.5 µm.

The various gratings are addressed in video-realtime by a shift of the wafer within the projection setup. The shift is performed in the direction perpendicular to the grating periodic with high precision. The first part of the sequence serves the GrayCode evaluation, the second part the phase-shift analysis. Thus, a combined GrayCode-/Phaseshift-sequence can be realized without a separate phase shift device and, as a consequence, without any additional effort concerning apparatus and calibration.

Our MPT-projection units are available in different versions, distinguished by the size and structure of the wafer as well as by the grating sequence. The standard configuration uses 9 graycode patterns and 4 phase shifted gratings with 64 or 128 line pairs.

Requirements on the MPT-projection units
- high fringe density
- projection of fringe patterns with rectangular (GrayCode) or sinusoidal modulation (phase shift)
- precise defined phase relation of all gratings
- maximum contrast of fringe patterns and high transmission
- highly stabilized light intensity

The MPT-projection units guarantee
- high resolution and measuring accuracy
- fast data acquisition
- reliable data analysis
- high information density and more flexibility