

triTOS SPECIFICATIONS AND MEASURING RANGES

light source	100 W halogen lamp
number of projected fringes	128
min. measuring time (Fast Mode)	980 ms
sensor weight	3 kg (mono) 4 kg (stereo)
digitization (x,y)	1.384 x 1.036 pixel (mono) 2 x 1.384 x 1.036 Pixel (stereo)
triangulation angle	30, 20, 10 degree (stereo) 20 or 10 degree (mono)
size of measuring range	about 0.8 x 0.6 of image diagonal
depth of measuring volume	typically 1 / 2 of image diagonal
X,Y resolution	typically 1 / 1.500 of image diagonal
feature accuracy	typically 1 / 10.000 of image diagonal (stereo) typically 1 / 5.000 of image diagonal (mono-20)
noise (Z)	typically 1 / 15.000 of image diagonal (stereo)

The triTOS system offers a new unique feature :

It may be configured as both, mono or stereo version.

For both configurations, we offer the following measuring ranges :

- standard FOV's : 150 mm, 300 mm, 600 mm

- extended FOV's : 90 mm, 225 mm, 450 mm

All fields of view (FOV) can be realized with the same sensor components, camera(s) and projector, just by changing the objectives of camera(s) / projector.

The operating distance for all FOV is about 720 mm.

The measuring ranges are identified by the size of the image diagonal, e.g.

FOV 300 image diagonal 300 mm, standard objectives

FOV 600 image diagonal 600 mm, wide angle objectives

To simplify the setup and calibration of the standard measuring ranges, they will be offered only with a special set of lenses for each FOV. The lenses will be delivered with a factory setting for the aperture and focal depth, which is optimized for the corresponding FOV and which must not be changed by the user.

To use the whole flexibility of our triTOS system, including the extended FOV's, we recommend special training and certification.

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specifications of fields of view : stereo setup							
image diagonal	[mm]	90	150	225	300	450	600
X,Y resolution	[μm]	55	90	120	180	270	360
resolution limit (Z)	[μm]	1	2	4	6	8	12
noise (Z)	[μm]	± 8	± 10	± 15	± 25	± 30	± 50
feature accuracy	[μm]	± 12	± 20	± 30	± 40	± 60	± 80

specifications of fields of view : mono, 20 degree							
image diagonal	[mm]	90	150	225	300	450	600
X,Y resolution	[μm]	55	90	120	180	270	360
resolution limit (Z)	[μm]	2	4	8	12	16	24
noise (Z)	[μm]	± 12	± 20	± 30	± 40	± 60	± 80
feature accuracy	[μm]	± 20	± 30	± 45	± 60	± 90	± 120

The measurement specifications given above are average values for the central field of view, which are achieved under defined measurement conditions and after precise calibration of the sensor. All details concerning accuracy and resolution are possibly dependent on the surface of the object and the environment.

The resolution limit is defined as the theoretical limit using a phase evaluation of 10 bit.

The feature accuracy is defined as the difference of the measured positions of index marks towards the target-values (2σ value).

The noise is measured as deviation of the measured points towards a best-fit curve.

The data given above are valid for a single view only.

The accuracy of a complete measurement cycle depends strongly on the measuring strategy. In combination with photogrammetry or CMM, the overall accuracy is given by those systems. The gap between two adjacent images is minimized approx. to the noise level of the sensor by using advanced 3D-alignment and merging techniques.