

Certificate

Accuracy testing according to DIN EN ISO 12836:2013-01

We herewith declare that the devices described in the following have been tested by an accredited test laboratory according to the requirements in the standard DIN EN ISO 12836:2013-01 and the correctness of the measurement accuracy we determined was confirmed.

Device description: Optical 3D scanner

Device types: Vinyl High Resolution

Applicable standards: DIN EN ISO 12836:2013-01

Test laboratory: Dimetec GmbH, Gevelsberg

Date of test: 06.08.2018

Accuracy according to the standard: See individual results in the table

Measurement accuracy in the series: $\leq 4 \mu m$ in the series

Results of the individual measurements:

| Results: | | | | | | | | |
|----------------------------------|----------|---------------|----------------------|-----------------|----------------------|--|--|--|
| Property | Accuracy | Repeatability | Repeatability | Reproducibility | Reproducibility | | | |
| | | (mean value) | (standard deviation) | (mean value) | (standard deviation) | | | |
| Inspection dimension "d" | 0.004 mm | 30.045 mm | 0.0033 mm | 30.043 mm | 0.0016 mm | | | |
| Inspection dimension "e" (in -X) | 0.003 mm | 9.997 mm | 0.0018 mm | 9.997 mm | 0.0011 mm | | | |
| Inspection dimension "e" (in +X) | 0.005 mm | 10.002 mm | 0.0016 mm | 9.987 mm | 0.0092 mm | | | |
| Angle "a" (in -X) | 0.06° | 16.01° | 0.017° | 16.08° | 0.023° | | | |
| Angle "a" (in +X) | 0.11° | 16.04° | 0.017° | 16.12° | 0.025° | | | |

| Results: | | | | | | | | |
|--------------------------|----------|-------------------------------|---------------------------------------|---------------------------------|--------------------------------------|--|--|--|
| Property | Accuracy | Repeatability (mean value) | Repeatability (standard deviation) | Reproducibility (mean value) | Reproducibility (standard deviation) | | | |
| Inspection dimension "b" | 0.011 mm | 4.977 mm | 0.0004 mm | 4.984 mm | 0.0091 mm | | | |
| Angle a (ZX plane) | 0.41° | 15.24° | 0.020° | 15.25° | 0.056° | | | |
| Angle a (YZ plane) | 0.24° | 15.59° | 0.031° | 15.36° | 0.309° | | | |

This certificate was used for the first time in 2018.

Created: Birte Lehmkämper / Quality Management

Bochum, 07.08.2018

Jörg Friemel / CEO

smart optics

Sensortechnik GmbH Lise-Meitner-Allee 10

D-44801 Bochum / Germany

Fon: +49 234 29 82 8-0 Fax: -20