



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

AUTOMATED PRECISION INC.
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Rockville, MD 20850
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CALIBRATION

Valid To: December 31, 2020

Certificate Number: 2229.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,3}:

I. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Active Target – Centering ADM Offset	Up to 1 mm Up to 100 mm	0.23 µm 2.1 µm	Straightness sensor, laser tracking system
Angle Encoder	Up to 360°	0.11 arc seconds	Polygon mirror, autocollimator
Autocollimator –	X, Y Angle Up to 20 arc seconds Up to 1000 arc seconds	0.02 arc seconds 0.07 arc seconds	Trans. ref. laser
I-360, IntelliProbe 360, IntelliProbe 360 Wireless – I-Scan	Pitch: 80° Yaw: 360° Roll: 360°	0.94 µm/m 0.94 µm/m 1.1 µm/m 1.7 µm	Laser tracking system, angle encoder

Parameter/Equipment	Range	CMC ² (±)	Comments
Laser Interferometer Measuring System With Weather Station (1D, 3D, 5D and 6D) – Displacement Angle Straightness	Up to 80 m Up to 1000 arc seconds Up to 3 mm	0.1 µm/m 0.07 arc seconds 0.04 µm	1 st ref. laser, frequency counter, 1 st ref. thermometer, 1 st ref. pressure sensor, trans. ref. laser, weather station
IFM Based Laser Tracking System (Radian,T3/T3+, T2/T2+)	Up to 80 m	0.87 µm/m	1 st ref. laser, frequency counter, trans. ref. laser, weather station, polygon mirror, autocollimator, angle encoder bundle
ADM Based Laser Tracking System (OT2,OT)	Up to 100 m	0.97 µm/m	Trans. ref. laser, weather station, polygon mirror, autocollimator, angle encoder bundle
Pentaprism	90° ± 600 arc seconds	0.22 arc seconds	Manual autocollimator
Parallelism Kit	Yaw: 90° ± 600 arc seconds	0.22 arc seconds	Autocollimator
Polygon Mirror	Up to 360°	0.10 arc seconds	Autocollimator
Scale Bar	800 mm	0.15 µm/m	Trans. ref laser, weather station

Parameter/Equipment	Range	CMC ² (±)	Comments
Spherically Mounted Retro-Reflector (SMR) Centering Accuracy	Up to 1 mm 3D centering Up to 1 mm X-Y centering Up to 1 mm Z-depth centering	0.25 µm 0.15 µm 0.20 µm	Straightness sensor
Spindle Analyzer	Up to 0.8 mm	0.06 µm	Trans. ref. laser
Straightness Sensor	Up to 3 mm	0.04 µm	Trans. ref. laser
Angle Sensor	Up to 800 arc seconds	0.07 arc seconds	Trans. ref. laser
XD Level Reference	Up to 1°	0.07 arc seconds	Trans. ref. laser
Swivel Check, Roto Check	Angle Encoder: 360° Level Sensor: 1.5°	0.11 arc seconds 0.17 arc seconds	Polygon mirror, autocollimator, angle encoder
Telescoping Ballbar	Up to 6 mm	0.06 µm	Trans. ref. laser
vProbe	Pitch: 80° Yaw: 80° Roll: 360°	0.94 µm/m 0.94 µm/m 1.1 µm/m	Laser tracking system, angle encoder
SmartTrack Sensor	Pitch: ± 55° Yaw: ± 360° Roll: ± 60°	1.5 arc seconds	Polygon mirror, autocollimator, angle encoder
Trans. Ref. Laser – Wavelength: Distance:	633 nm Up to 80 m	0.004 ppm 0.1 µm/m	1 st ref. laser, frequency counter, 1 st ref. thermometer, 1 st ref. pressure sensor

Parameter/Equipment	Range	CMC ² (±)	Comments
Weather Station – Temperature:	(-10 to 60) °C	0.025 °C	1 st ref. thermometer
Air Pressure:	(375 to 825) mmHg	0.1 mmHg	1 st ref. pressure sensor

¹ Commercial calibration service is not normally available for this laboratory.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ This scope meets A2LA's *P112 Flexible Scope Policy*.



Accredited Laboratory

A2LA has accredited

AUTOMATED PRECISION INC.

Rockville, MD

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 13th day of May 2019.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2229.01
Valid to December 31, 2020

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.