

Leica Geosystems Calibration Certificate Silver

Calibration Certificate Silver with measurement values issued by Manufacturer

Product:	ScanStation P30	Certificate No:	1851502-■■012018
Article No:	808687	Inspection Date:	January ■■, 2018
Serial No:	■■■■■■■■■■	Order No:	
Equipment No:	■■■■■■■■■■	PO No:	
Issued by:	Manufacturer Leica Geosystems AG 9435 Heerbrugg Switzerland	Ordered by:	
Status:	After inspection	Customer:	

Compliance

The Calibration Certificate Silver with measurement values issued by Manufacturer corresponds to the Producer Inspection Certificate M in accordance with DIN 55 350 Part 18-4.2.2.

The test equipment used is traceable to national standards or to recognized procedures. This is established by our Quality Management System, audited and certified to ISO 9001.

Certificate

We hereby certify that the product described has been tested with the following result:

- Compliance** The test results are within the specification of the product
 Non-Compliance The test results are not within the specification of the product.



Leica Geosystems AG

February ■■, 2018



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Hans Tüxen
Product Management

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Holger Strack
Quality Management

Leica Geosystems Calibration Certificate Silver - Appendix

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Test Procedures

Distance Measurement

The scale factor of the EDM device (ppm) is tested by checking the EDM time base with a frequency measurement generated by a calibrated frequency counter.

The EDM is tested for systematic deviations by a baseline method. The instrument is set up on three different collinear positions (position 1, 3 and 5). From each position it measures two planar targets (positions 2 and 4), set up collinearly between the instrument's positions. The distance between both target positions 2-4 can be calculated for each instrument position. By subtracting the distance 2-4 of the outer instrument positions 1 and 5 from the distance 2-4 of the inner position (3) a possible systematic deviation can be detected. In addition the noise on each planar target is evaluated.

Angle Measurement

The instrument scans over two pairs of auto-collimators, simulating a measurement in infinity. Each pair of auto-collimators is arranged antipodally. The angle between the optical axis of the pairs are known.

The measurements on the auto-collimators are performed in three runs, where the instrument is tilted and rotated between each individual run.

The angle measurement uncertainty is evaluated by comparing the angle measurements registered in the instrument to the angles of the detected laser spot positions on each collimator.

Test Equipment

Distance Measurement

Universal Frequency Counter/Timer (Agilent 53220A)

Serial No.: [REDACTED]

Five pillars, placed collinearly, where planar targets are mounted on pillar 2 and 4, while the instrument scans from pillar 1, 3 and 5.

Angle Measurement

Test stand with 2 pairs of antipodal auto-collimators (design by Leica Geosystems)

Specifications

a) Distance Measurement

Standard Uncertainty (1σ):

1.2 mm + 10.0 ppm

b) Angle Measurement

Standard Uncertainty (1σ):

8.0 " horizontal
8.0 " vertical

Test Results

a) Distance Measurement

Standard Uncertainty (1σ):

0,5 mm + 1,0 ppm

b) Angle Measurement

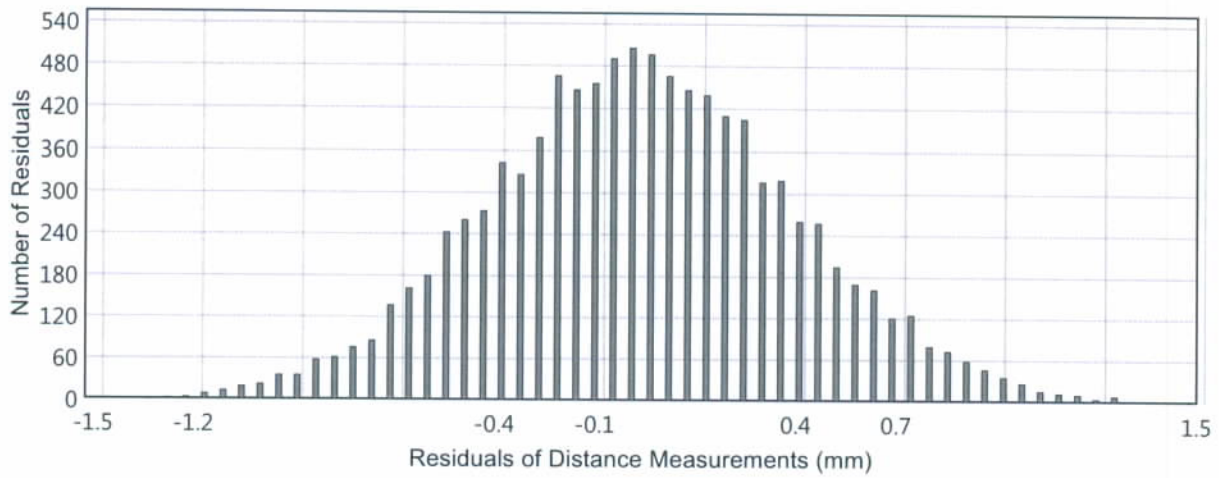
Standard Uncertainty (1σ):

3,2 " horizontal
4,3 " vertical



Measurement Report

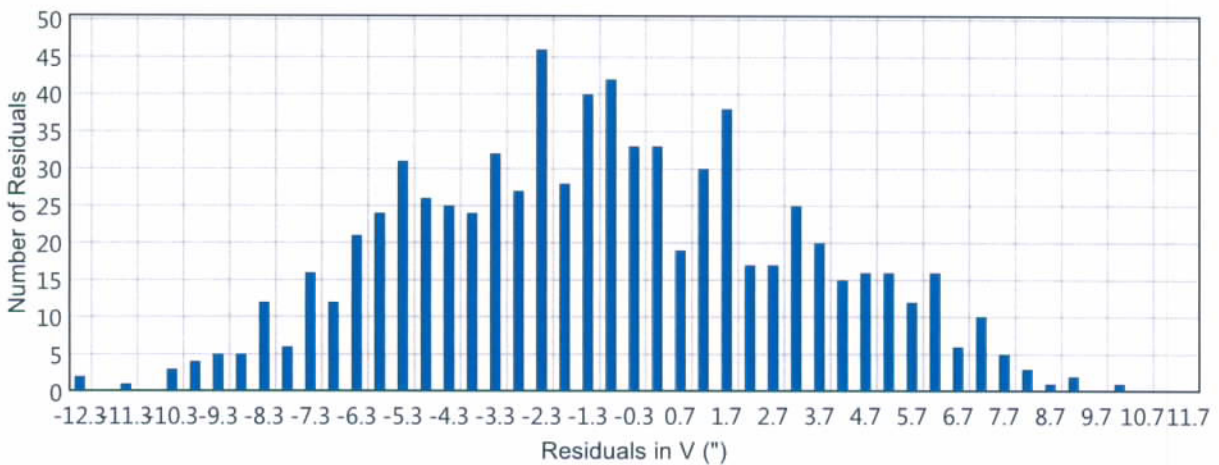
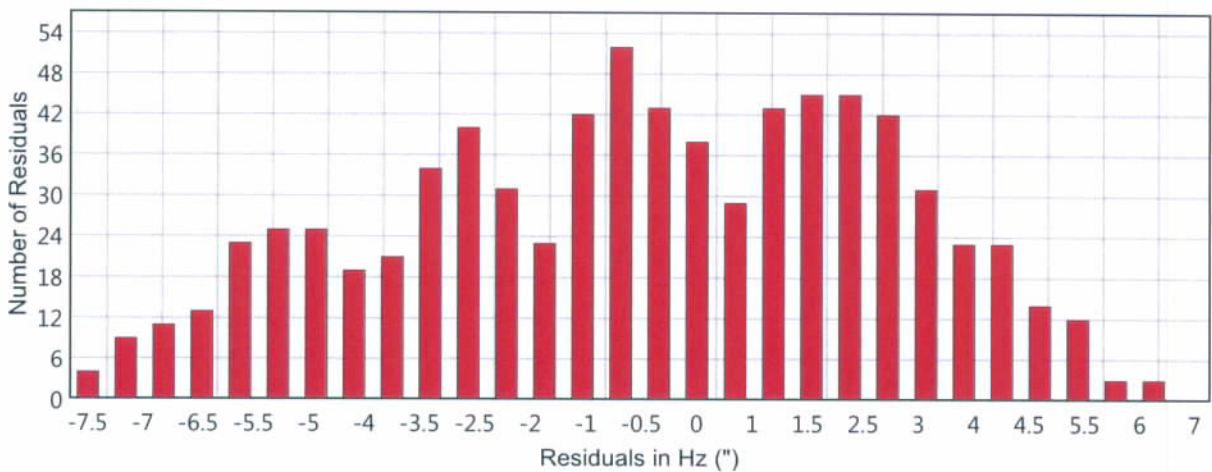
a) Distance Measurement



Standard Uncertainty (Confidence Level of 68%):

0.5 mm + 1.0 ppm

b) Angle Measurement



Standard Uncertainty (Confidence Level of 68%):

3.2 " horizontal
4.3 " vertical