

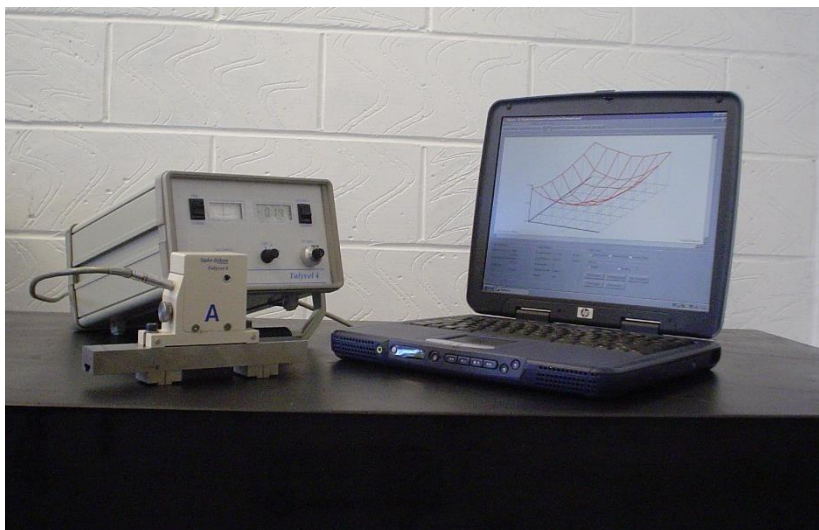


# C. D. Measurements Ltd

SPECIALISTS IN ENGINEERING METROLOGY

## Surfsure

### Professional Flatness Calibration Software



#### Features of Surfsure

The latest version of the SURFSURE software is compatible with current versions of Windows, offering the user a powerful professional data acquisition and analysis package, for assessing the flatness of engineering surfaces such as Surface Tables; Machine bed-plates; Guideways etc. Incorporating many advanced features, the software can be optimised to satisfy the specific needs of individual users.


Minimum zone, least squares and gravity reference planes; customised certification and a range of generator configurations such as Union Jack, Linear and Rectangular Grids are provided. The ability to specify the flatness results in terms of any known standard and grade is also a valuable feature when servicing the requirements of international customers.

Compatibility with the earlier Windows versions of SURFSURE is maintained, whereby data files generated with the older systems can be read and analysed. Extensive data management features are also included. A data base of customer details can be established and information recalled for certification purposes. Previously calibrated table details can also be recalled, thereby eliminating time in inputting information when repeat calibrations are being undertaken.

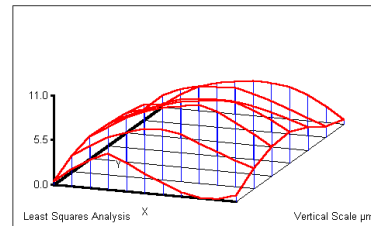
The software will operate on any PC compatible computer having a Windows operating system. Laptops and notebook being particularly convenient for on-site applications. An RS232 / USB port or equivalent is also required when data is to be input directly from an angular instrument such as a Talyvel 4, Talyvel 6. The CDM Serialiser for interfacing analogue instrument from older versions is also compatible.

#### Test Certificates

An important feature of the software is that it incorporates its own unique certificate designer providing comprehensive facilities for users wishing to customise output results in terms of UKAS or in-house style certificates. The example overleaf shows a two page UKAS style certificate which can be printed from the program directly onto plain paper if required, saving cost and alignment problems associated with pre-printed stationery. UKAS and Company Logos, Approved Signatures, positioning of headings and comments, size

 <b>CERTIFICATE OF CALIBRATION</b> <small>A B C CALIBRATION SERVICES            STEVENSON INDUSTRIAL ESTATE            NEWTON, ANYSHIRE AD1 1YZ            TEL: 01234 567890            FAX: 01234 567891</small>														
Customer	A B C Engineering Unit 1 Main Street Anytown Anyshire	Date of Issue 22 May 2022												
Description		Page 1 of 2												
Size	Surface Table 1000.0 mm x 630.0 mm Depth 400.0 mm	Approved Signatory A N Other												
Serial Number	ABC 123													
Material	Granite													
<p>Results: This Surface Table/Plate was calibrated on 15 May 2022 at 20 °C. Results are reported on page 2</p> <table border="0"> <tr> <td>Our Reference</td> <td>As Found</td> </tr> <tr> <td>Condition on receipt</td> <td>As Supplied</td> </tr> <tr> <td>Adjustments Made</td> <td>Our Works</td> </tr> <tr> <td>Location</td> <td>A Level AZ3-1</td> </tr> <tr> <td>Equipment Used</td> <td>XYZ P1</td> </tr> <tr> <td>Procedure Number</td> <td></td> </tr> </table> <p>The measured results satisfied the specified tolerances for Grade 1 Surface Tables \ Plates</p>			Our Reference	As Found	Condition on receipt	As Supplied	Adjustments Made	Our Works	Location	A Level AZ3-1	Equipment Used	XYZ P1	Procedure Number	
Our Reference	As Found													
Condition on receipt	As Supplied													
Adjustments Made	Our Works													
Location	A Level AZ3-1													
Equipment Used	XYZ P1													
Procedure Number														
<p>The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with UKAS requirements.</p> <p>This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with prior written approval of the issuing laboratory.</p>														

 <b>CERTIFICATE OF CALIBRATION</b> <small>A B C CALIBRATION SERVICES            STEVENSON INDUSTRIAL ESTATE            NEWTON, ANYSHIRE AD1 1YZ            TEL: 01234 567890            FAX: 01234 567891</small>		
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--



0.2	1.8	3.8	3.7	4.0	4.3	4.3	4.0	3.3	2.0	0.5	
1.3	3.3	4.2	4.7	5.0	5.0	4.5	3.8	3.1	2.2	1.3	
2.4	3.7	4.0	4.9	5.1	5.2	5.2	4.8	4.3	3.6	2.9	
2.6	3.8	4.8	5.7	6.3	5.6	6.9	6.8	6.1	5.0	3.8	
2.7	4.1	5.5	6.4	7.1	7.6	8.0	7.3	6.1	4.9	3.8	
1.9	3.3	4.8	5.4	6.1	6.2	5.8	5.0	4.1	3.3	2.5	
0.4	2.1	2.4	4.4	3.4	2.3	1.4	0.5	0.0	0.0	0.5	
Least Squares Analysis										BS 817	Heights $\mu\text{m}$

Overall Flatness	8.0 $\mu\text{m}$	Tolerance to BS 817 1988	11.0 $\mu\text{m}$
	Grade 1	Uncertainty of Measurement (+/-)	2.5 $\mu\text{m}$
Local Flatness	3.0 $\mu\text{m}$		
	Grade 0		
Table Grade	1		
Grade Required	Grade 0	Fail	

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full except with prior written approval of the issuing laboratory.

### Sample Certificate Front Page

and fonts used for text can all be controlled and set-up by the user. On the second page, the orientation and colour of the graphical output can also be controlled by the user consequently the resulting certificate style appears unique to an individual calibration laboratory. For customers wishing to receive electronic calibration results, an option to save certificate as a PDF file can be provided. .

### Measurement Method

The Incremental Angular Technique is used as a basis for flatness calibration. Angular data is obtained along prescribed generators using angular instruments such as Electronic Levels, Autocollimators or Laser Interferometers. Various patterns of generators can be selected depending upon requirements. The well known "Union Jack" or Diagonal Configuration in addition to the Linear and Rectangular Grid are available.

Angular data input to the program is via the computer keyboard or alternatively if the angular instrument has a suitable interface may be input on-line.

### Flatness Analysis and Specification to any Known Standard

Flatness data can be analysed with respect to a Gravity, Least Squares or Minimum Zone reference plane. A gravity datum is particularly appropriate for applications relating to the accuracy of Machine Tools and Guideways, whereas the Minimum Zone criterion is required by most of the current test Standards.

The results of a flatness calibration can be specified and graded with reference to National or International test standards such as BS 817 2008; DIN 876; ISO 8512-2. Other standards can be set-up by the user as and when required.

## C. D. Measurements Ltd

Chomlea House, Hadfield Road, Hadfield, Glossop, Derbyshire, SK13 2ER, United Kingdom

Email :  
sales@cdmeasurements.com

Tel :  
01457 852929

Web :  
www.cdmeasurements.com

*All trade marks acknowledged*