

## CALIBRATION CERTIFICATE

1809-11280

### Customer information

Client : ASCO instrument  
Contact : Dhr M. Paolo DE MACEDO  
Address : 2 place des dix toises  
Chateaufort 78117  
France  
Reference client :  
Reference Trescal : 201818929/36

### Instrument information

Make / type : POSITEK / X138.100AL200NPRTZ000  
Description : Displacement transducer  
Range : 0 .. 100 mm  
Serial number : 67056/2018  
Identification number : D21  
Accuracy :

Date of calibration : 25 September 2018

### Method of calibration

P1-02-G.005 Calibration of linear gauges

The calibration of displacement transducers such as dial gauges, levers, etc. consists of a visual examination of the instrument and series of measurements. Firstly, we examine the state of the transducer, e.g. its running qualities and the readability of its indicator, the functionality of the zero and tolerance boundaries, the solidity of the hands/indices. Secondly, we measure the repeatability, the reversibility and the total deviation.

### Environmental conditions (limits during measurements)

Ambient temperature :  $20\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$   
Relative humidity :  $45\%\text{rh} \pm 20\%\text{rh}$

### Used reference

The equipment used is traceable to National and/or International standards.  
R2868/19 Length measuring machine Cert.180903723

### Note

Tested with Unitronics Unistream read-out/software.

Issue date: 26 September 2018

Technician  
Koen Groffen



Head of the laboratory  
Luc Van Pelt



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Unless otherwise stated, the calibration was performed at the address mentioned in the footnote.

Trescal nv | Vosstraat 200 | 2600 Berchem (Antwerpen) | Belgium | T + 32 3 542 62 90 | E info.benelux@trescal.com



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Visual inspection	OK / NO	Remark
Readability	OK	Digital
Tentacle (shape)	OK	
LED-segments	-	
Spindle movement	OK	
Wear & Tear / corrosion	OK	

	Reference value	Instrument value	Difference	Uncertainty $\pm$	Units
1	0,00	0,00	0,00	0,07	mm
2	9,50	9,60	0,10	0,07	mm
3	18,80	19,00	0,20	0,07	mm
4	37,00	37,40	0,40	0,07	mm
5	45,60	46,10	0,50	0,07	mm
6	50,00	50,60	0,60	0,07	mm
7	54,30	55,00	0,70	0,07	mm
8	63,50	64,20	0,70	0,07	mm
9	81,10	82,10	1,00	0,07	mm
10	90,80	91,70	0,90	0,07	mm
11	100,00	100,90	0,90	0,07	mm
12	90,80	91,70	0,90	0,07	mm
13	81,10	82,00	0,90	0,07	mm
14	63,50	64,20	0,70	0,07	mm
15	54,30	54,90	0,60	0,07	mm
16	50,00	50,60	0,60	0,07	mm
17	45,60	46,20	0,60	0,07	mm
18	37,00	37,40	0,40	0,07	mm
19	18,80	19,00	0,20	0,07	mm
20	9,50	9,60	0,10	0,07	mm
21	0,00	0,00	0,00	0,07	mm

Description	Tolerance	Calculated value	Units	
Repeatability (fw)	-	0,00	mm	-
Reverseability (fu)	-	0,10	mm	-
Error (fe)	-	1,00	mm	-
Total error (fges)	-	1,00	mm	-

The stated uncertainty is that of the entire set-up including the object under test.

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95%.

The uncertainty is calculated following EA-4/02 in accordance with the requirements of the ISO/IEC 17025.