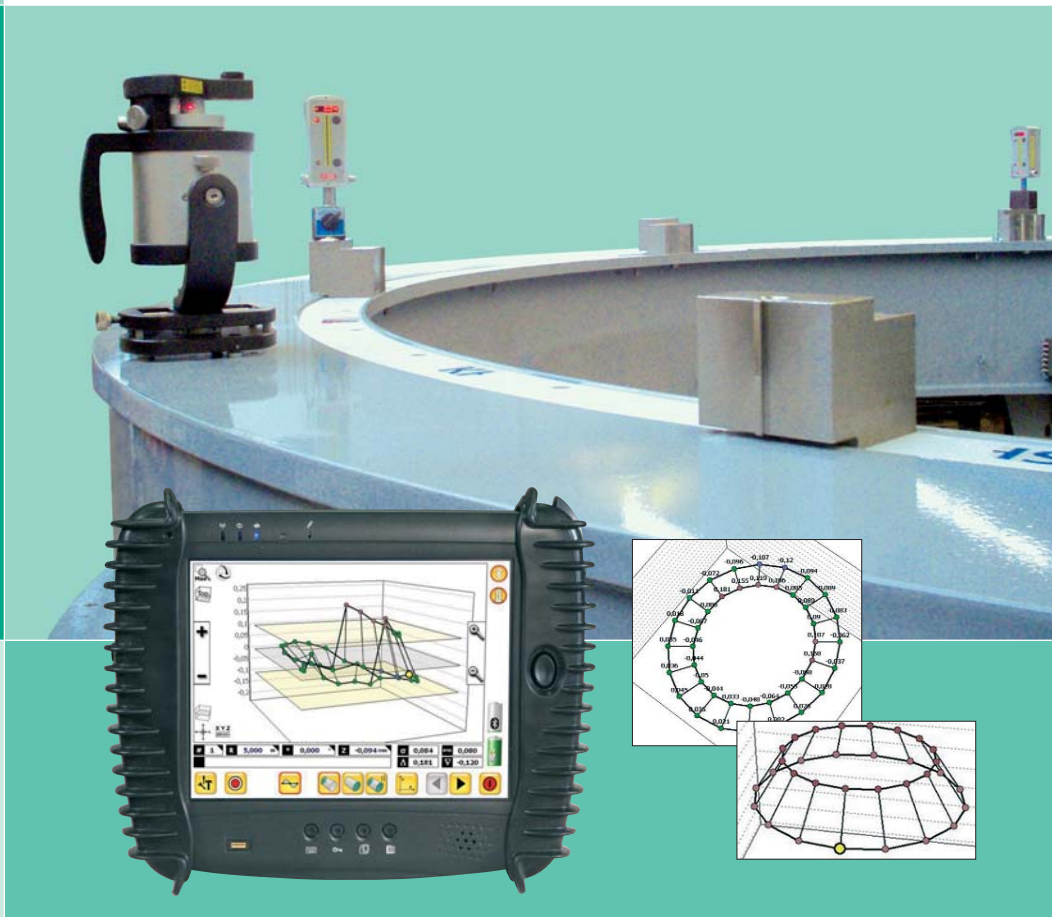
ProFlange v2

Software for Optimum Flange Measurement



Status Pro
maschinenmesstechnik

ProFlange v2

You have made a good choice ...

ProFlange v2 ,in combination with the display unit, provides optimum documentation of flange measurements.

The following functions and characteristics will convince you:

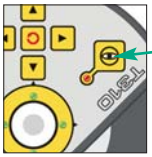
- Excellent user interface: logical and user-friendly and nevertheless fully suitable for professional use.
- Automatic connection management, wireless via Bluetooth.
- Automatic sensor detection.
- Complete 3D Depiction.
- Easy-to-use touchscreen, no keyboard needed.
- Reports and measured data can be stored on USB stick.
- Automatic calculation of the best reference.
- High-performance display unit is robust and yet lightweight.

Contents

Preparatory laser alignment for optimum flange measurement

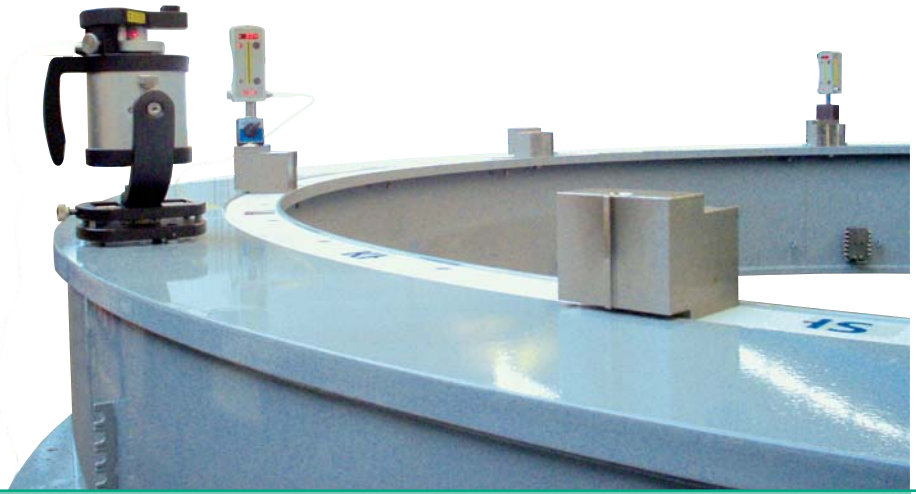
1. Set up the T310 rotation laser in the direction of measurement.

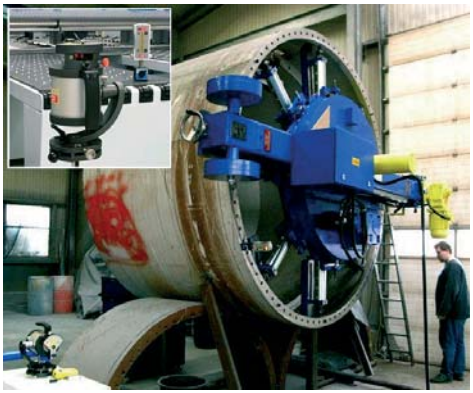
   Use the integrated spirit level to align the housing so that it is perpendicular.



2. Now switch on the leveling function of the T310.

3. Now adjust the height of the tripod so that the laser beam strikes the middle measuring range of the receiver positioned on the measuring point.





Flange Measurement

The key issue with flange measurement is …

1. Do you have to place your laser parallel to the flange plane or not?

2. What range does your receiver have?

With the Status Pro Flange package, you do not have to adjust your reference parallel to the flange plane and you have 80mm (3.5 inch) Range on a R310.
This makes your measurement very secure and practical in real life building site work.

Flange Parallelism

Measure the flatness and the relative parallelism of two connected flanges.

The Method is called
"The Combined Laser Point and Bearing Method for Flange Parallelism".
It is a pending patent belonging to Status Pro.

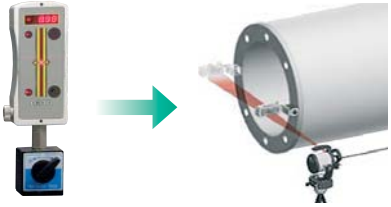
The method uses the standing beam of the T310 detected by a 2D Receiver (R525) to reproduce a second rotating reference plane.

It is a great combination of traditional measurement craftsmanship and modern laser technology. The advantage is the improved security of the measurement and the ease of use.

Step 1
Setup Tripod 1 at position 1 so that the rotating beam cuts a plane roughy parallel to flange 1. You can use the IR laser control in the R310 to buckin the laser.

Step 2
Setup Tripod 2 with the mounted R525 at position 2. Adust the R525 to read (0,0). Lock the adjustment.

Step 3
Measure Flange 1 using an R310 and a magnetic point contact adapter as usual.



Step 4
Change T310 and R525 assemblies leaving the tripods in its position. Adjust the Standing beam using the Remote control Rc310 so that it measures (0,0) on the R525 again.

Step 5
Measure Flange 2 the same way as Flange 1.

The Software

ProFlange is an easy to use software to measure the flatness of flanges themselves or in relation to each other.

You can use it for measuring one or two flanges with inner and/or outer circle. You can set a unlimited amount of measuring points.

With its rotating laser and the corresponding receivers, you are able to work in inaccessible places without the need for cables.

First steps

Switch the sensor on and open the target window.
For instructions for preparatory laser alignment, see page 3.

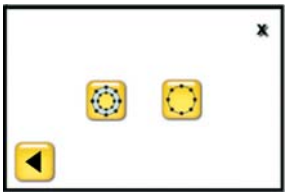
Start the ProFlange v2 software via the desktop icon .
The software automatically establishes a connection to the sensor.

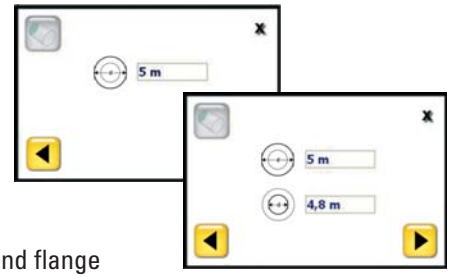
1. Define the number of connected flanges

one flange

two flanges

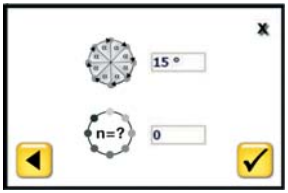
2. Define the number of measurement rings

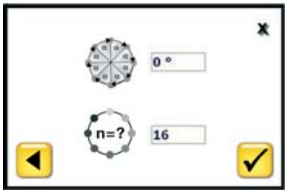




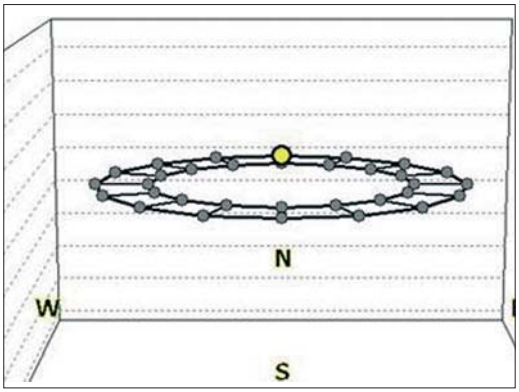
– diameters of one circle or two circles
– of the first flange and - if chosen - second flange

3. Define the number of points for each ring



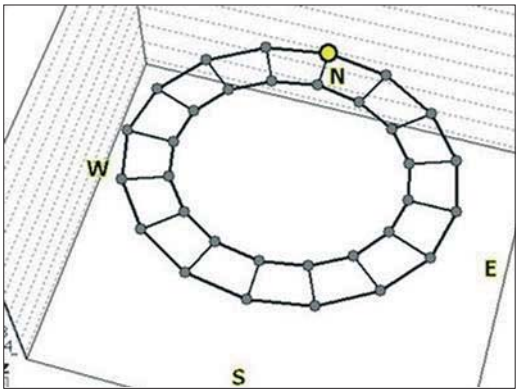


– setting the count of the measurement points by the angle between the points or by the count of points.

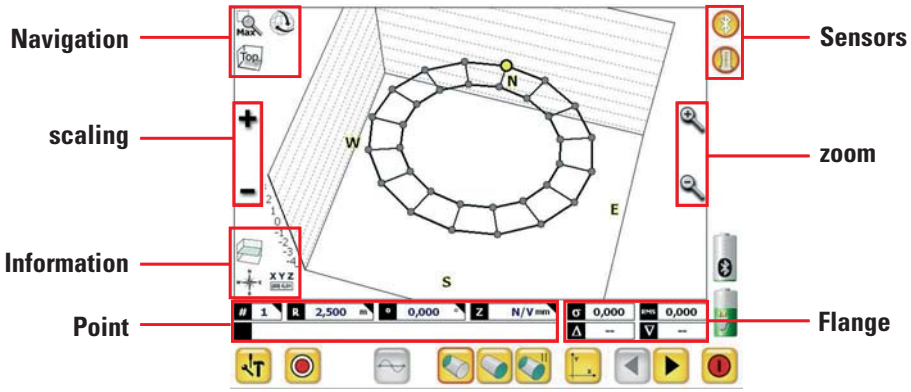


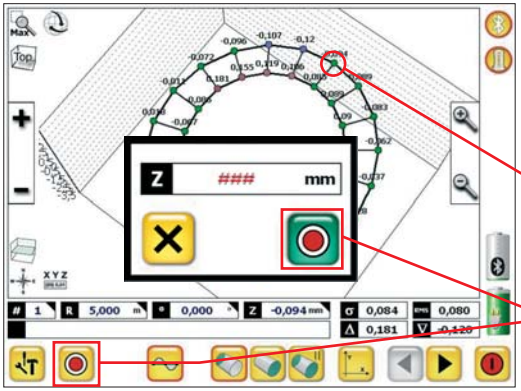
4. Now you have a template

This is your flange. Here we see the two measurement rings. Select a point and measure.



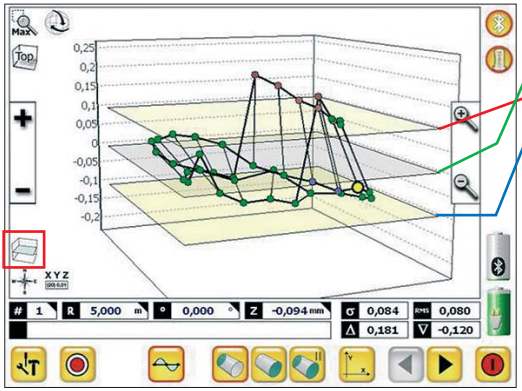
You can move and rotate this image in 3D.





To measure a point,
it has to be activated

measure



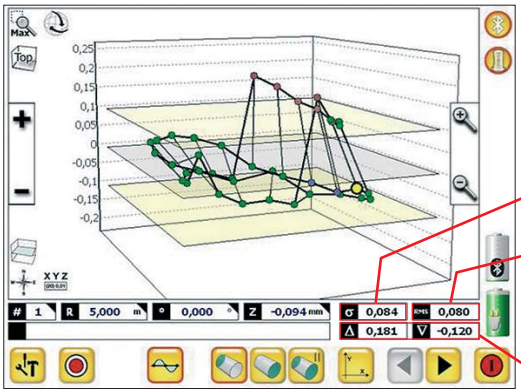
Turning on the 0-level

Turning on the tolerance levels

Points higher than tolerance
indicated in red

Points in tolerance
indicated in green

Points lower than tolerance
indicated in blue

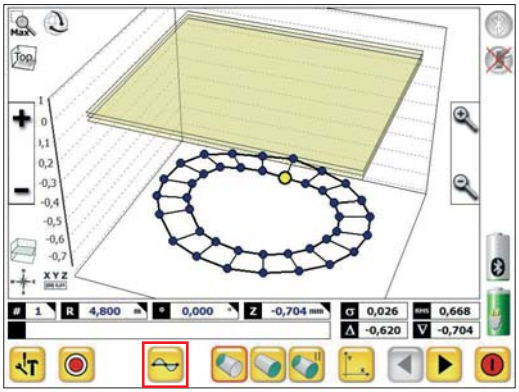


Standard deviation

RMS (root mean squared)

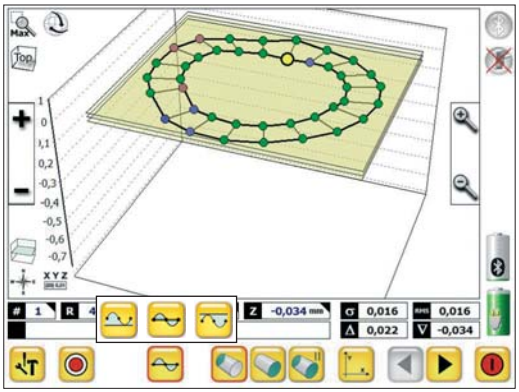
$$\sqrt{\frac{1}{n}\sum_{i=1}^{n} x_i^2} = \sqrt{\frac{x_1^2 + x_2^2 + \cdots + x_n^2}{n}}$$

Highest deviation in + and -



Reference Planes

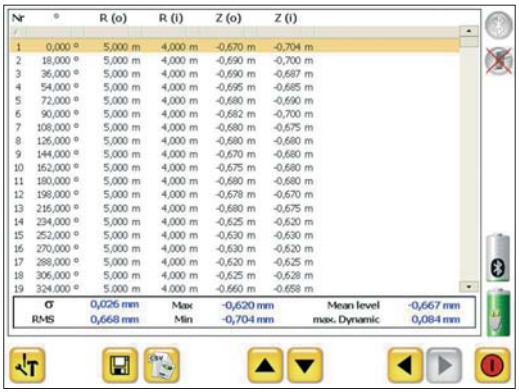
Here we see our original measured values. We can "Zero" the measurement by choosing a new reference plane. The best Fit function lets you chose a best fit reference.



You can choose best fit where the remaining errors are in + and - or just in + or just in -. This is important when aligning a milling machine for correction.

Middle view or shifted by lowest or highest value.

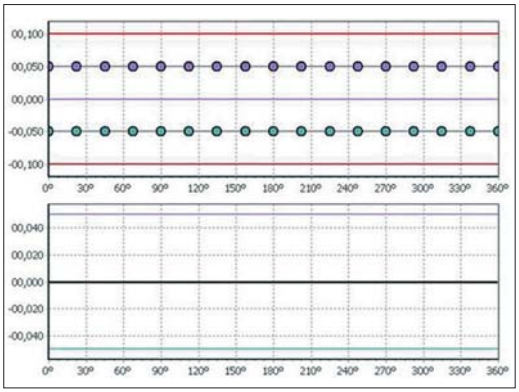
Only the residuals are shown.



Changing to the data view with the right arrow button.

Save the data.

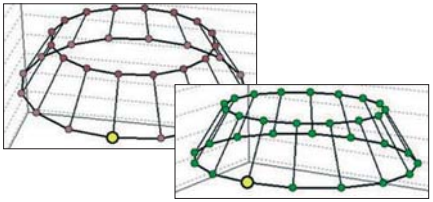
Export a csv file, a comment textfile and a picture of the flange.

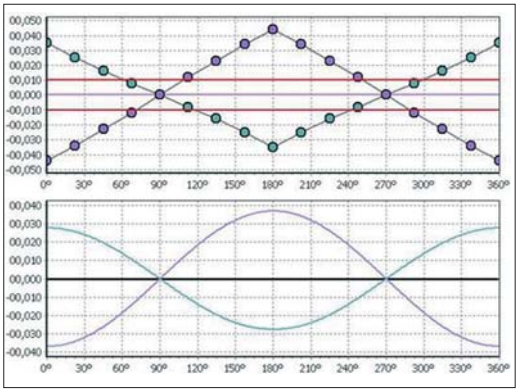


View the flange Taper

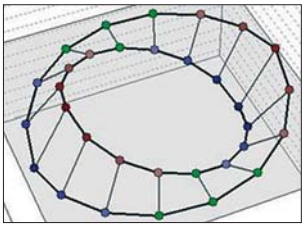
Changing to 2D view

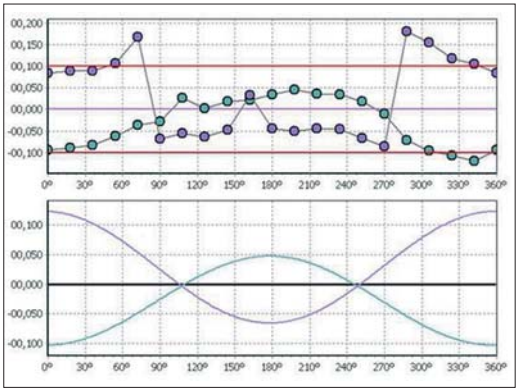
Here we have a parallel taper error.



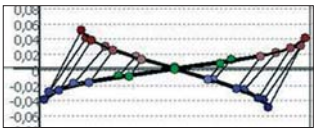


Here we have an angled taper error.





Most taper errors are a mix of parallel and angular errors.



Register new sensors – license key

When you order a measuring package with a display unit from Status Pro, all components are ready to use when you receive them. If you wish to use your own computer or add additional sensors later, they have to be registered in the software in order to enable communication.

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Für Firma ABCD
Herr Muster
Musterstr 1234
44866 Bochum

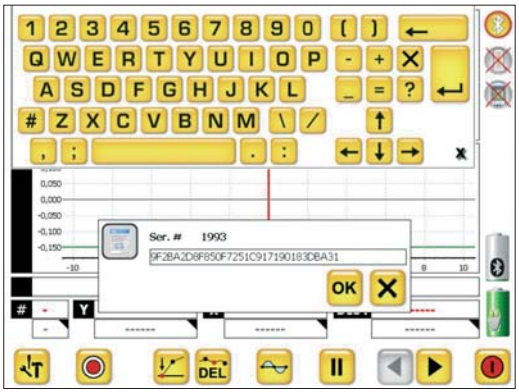
Pro Line V2 License 18.01.2008

Anbei erhalten Sie den Lizenzschlüssel für Ihr RS20 Gerät. Bitte bewaren Sie dieses Schreiben sorgfältig auf.

Serial 1993
License Key 9F2BA2D8F850F7251C917190183DBA31

With your sensors, you receive a delivery note that includes a license key.

When you start ProLevel v2, the new sensor is found and the software prompts you to enter the license key.



Enter and confirm the license key that you received for the sensor. The unit is now ready for operation.

Description of program symbols

 Record measuring point

 Best fit Options

 Previous / next page

 Open / close settings

 Set pause for current measured value display

 Save a comment to the measuring

 Create new measuring data file

 Open measuring data file

 Save results of measurement

 Export results for reports

 Choose the number of measurement rings desired

 Measure flange 1 or 2

 Show alignment of both connected flanges

 Show 2D or 3D illustration

 scaling  zoom

 Autorange / Iso view / 3D Rotate

 Show reference plane / NS / Show values

 Define diameter of circle

 Number of measuring points due to angle definition

 Number of measuring points on circumference

 Retrieve event log

 Search for sensors

 Definition of the displayed resolution

 Define averaging time of the display

 Define averaging time of the measuring pick-up

 Define mean value for two measuring points

 Define tolerance range

 Bluetooth active / inactive

 Sensors active / inactive / no connection

 Charge condition of receiver / DU310

 Enter sensor connection code (required only once for new sensors)

 End program

DU310 UMPC

Part No. IT 200310

Operating system	Windows XP prof. (UMPC Edition), XP embedded or CE 5.0
Processor	AMD Geode LX800
Memory	512 MB - 1 GB RAM
Mass storage	512 MB - 8 GB Flash or 30 GB hard disk
Display	10.4“ TFT, 1024x768, HiBrite
Touch Screen	Control with pen or finger
Interfaces	USB 2.0, CardBus PCMCIA Type II, CF-Card Slot, Bluetooth integrated, WLAN integrated, VGA
Security	Fingerprint reader, Intel WLAN Security
Rechargeable battery	Li-Ion 14 Wh internal, external extra battery 28 Wh replaceable or 74 Wh battery pack in carry bag
Housing	Magnesium/aluminum with rubber guard
Operating environment	Temperature 0–104 °F, relative humidity 0–90 % n.c.
Dimensions & weight	appr. 8.3x10.3x0.7 in, 2 lbs incl standard rechargeable battery
Special features	Front is splash & water proof, shock proof from as high as 4 feet (with rubber guard), 5 configurable keys, up to 4 hours of operation; Optional: multi-language, daylight display

Part No. BG 830200/1

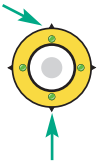
Rotation laser T310

The T310 leveling laser makes even difficult measuring tasks easy! A laser transmitter transmits the signal and a detector measures the beam position. Done!

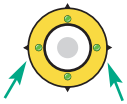
Control of the T310

The control keys control various functions. In addition, LEDs function as displays.

1. IR-receiver with folding mirror



2. Leveling status -LED for Y-axis (or Z-axis in case of laying arrangement)
Green 1x: Leveling < 0.0016 in/ft;
2x: Leveling < 0.001 in/ft;
Red LED: Actuator motor working

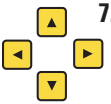


3. Leveling status LED for X-axis
Green 1x: Leveling < 0.0016 in/ft;
2x: Leveling < 0.001 in/ft;
Red LED: Actuator motor working

4. Power status LED on / off

5. Power key on/off

6. Laser rotation on/off



7. Key cross for setting the laser level 5(+) / 6(-)
As well as 3(+) /4(-)

8. Self-leveling on/off

9. Leveling status LED on/off

10. Level for rough leveling of the appliance

R310

The R310 measures the position of the rotating laser beam as a dial gauge from the work-piece for reference. The beam forms an entire reference plane and not just a line like a wire. The R310 is wireless and has a range of up to 262.5 feet.

Measuring range	80mm (3.15 in)
Resolution	0.01mm
Accuracy	+/- 0.02 + 0.3% linearity
IR control	Range: 50m (164 ft)
Interface	Rs232 / Bluetooth (optional)
Power supply	(rechargeable) battery 6x AA
Temperature range	0-50°C (0-122°F)

Part No. BG 830100

R525

20x20mm PSD,
without lens

Part No. SP-R525-P

Measuring range	20x20mm
Resolution	1µm in X & Y
Accuracy	+/- 2µm
Inclinometer	Resolution 0,1°
Laser sensitivity	650nm / modulated
Wireless	Bluetooth class 1a (range: 30m (98 ft))
Interface	Rs232 / Bluetooth
Power supply	12V rechargeable battery
Operation with battery	8 hours
Charging time	2 hours – 90%
Protection class	IP 65

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