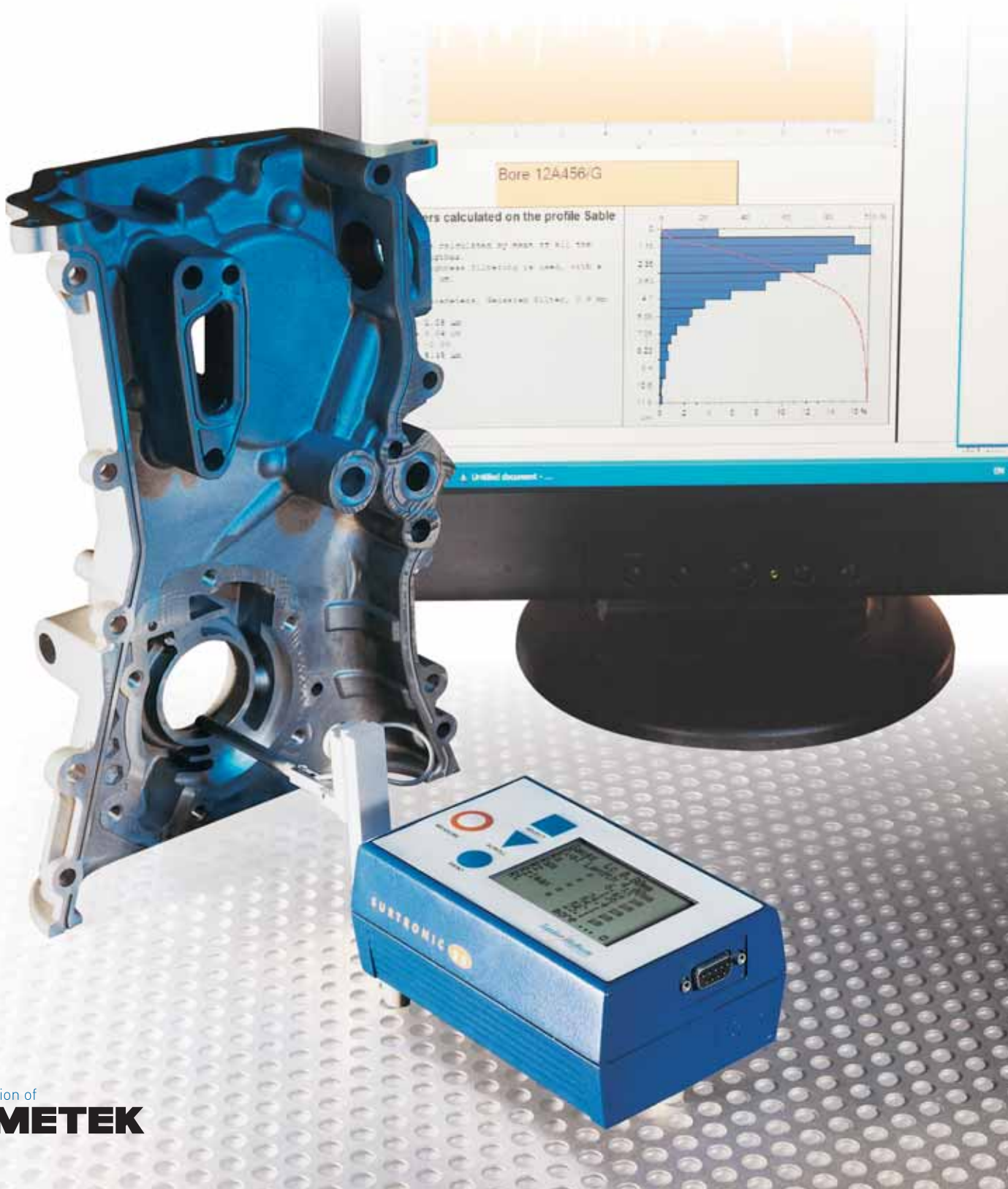
Taylor Hobson
PRECISION

Surtronic 25
Roughness checker



a division of
AMETEK

Surtronic 25

This new edition of the long-standing Surtronic range brings a large display with the simplest of menu structures and the most up-to-date parameters. Its mechanical rigidity and styli have a firm reputation for giving reliable and repeatable surface finish measurements across a wide range of applications.

The Surtronic 25 is battery powered and offers total portability with a built-in memory capacity (holds up to 100 readings). The instrument can be used either freestanding (on horizontal, vertical or even inverted surfaces) or bench mounted with fixturing for batch measurement and laboratory applications.

This accurate and reliable instrument offers complete flexibility and simplicity:

- **Parameter Options to suit your application**
- **Fast Measurement Cycle**
- **Intuitive Menu Structure**
- **Unique Stylus Lift Mechanism for total flexibility**
- **Long Traverse Length and extended Pick-up reach**
- **Comprehensive Range of Accessory & Pick-up options**
- **Storage of up to 100 readings**
- **Powerful software option**
- **Worldwide technical support**

All measured parameters are displayed simultaneously on the large LCD screen

Parameter Options to suit your application

The Surtronic 25 can calculate up to 10 parameters according to your measurement application:

Amplitude Parameters (measures the vertical characteristics of the surface deviations):

Ra (Arithmetic Mean Deviation)
Rsk (Skewness)
Rz (Average peak to valley height)
Rt (Total height of profile)
Rp (Max profile peak height)
Rz1max (Max peak to valley height)

Spacing Parameters (measures the horizontal characteristics of the surface deviations):

RPc (Peak count)
RSm (Mean width of profile elements)

Hybrid Parameters (combinations of spacing and amplitude parameters):

Rmr (Material Ratio)
Rda - R Delta a
(Arithmetic Mean Slope)

The above parameters cover the most common requirements to check lubrication, feed rates, stresses, friction and wear properties. Additional parameters can be analysed with the addition of Talyprofile software (see page 4).

Fast Measurement Cycle

The Surtronic 25 incorporates the latest electronics for very fast analysis - results are calculated and displayed even before the traverse unit returns. This fast processing, combined with intuitive menu buttons, greatly reduces measurement cycles.

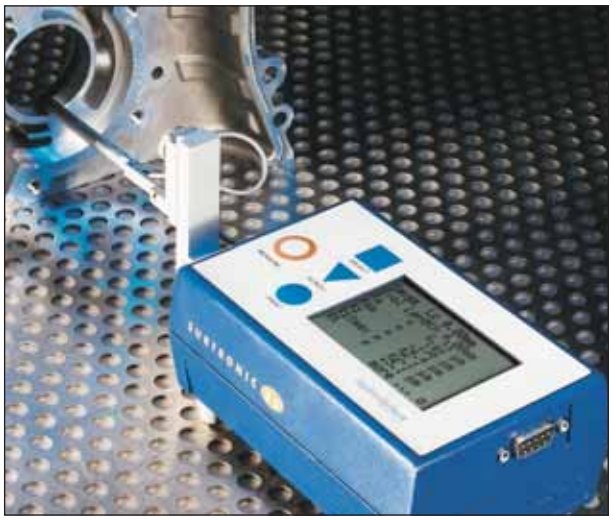
Intuitive Menu Structure

The Surtronic 25 incorporates a large LCD screen which allows full menu and measurement results to be displayed. Using only two buttons the user can scroll through the menus and make selections intuitively before pressing the MEASURE key.

All selections become the default for future measurements and are saved even if the instrument is powered down or "sleeping" to conserve power. The selection criteria and the measurement results are displayed clearly on the large LCD screen, ready to print or export to a PC.

Unique Stylus Lift Mechanism

The Surtronic 25 has a uniquely engineered stylus lift mechanism which **allows a vertical adjustment of 50mm and rotation of the pick-up to different measuring positions, including right angle or inverted measurements**. These adjustments to the height and position of the gauge allow areas and features of a part to be easily measured without additional complex fixturing. This feature saves the operator a huge amount of set up time and allows total flexibility. Typical applications where the stylus lift is invaluable include the measurement of steps, bores, grooves and lands.



Built-in Memory/Storage

No PC or printer cables in your way while you measure - the Surtronic 25 is now truly portable: Take your Surtronic wherever you need to take measurements, save as many batch readings as you need (max 100 measurements) then download to your PC or printer at your convenience.

Optional software is available for PC downloads - code 112/3810-01 including cable.

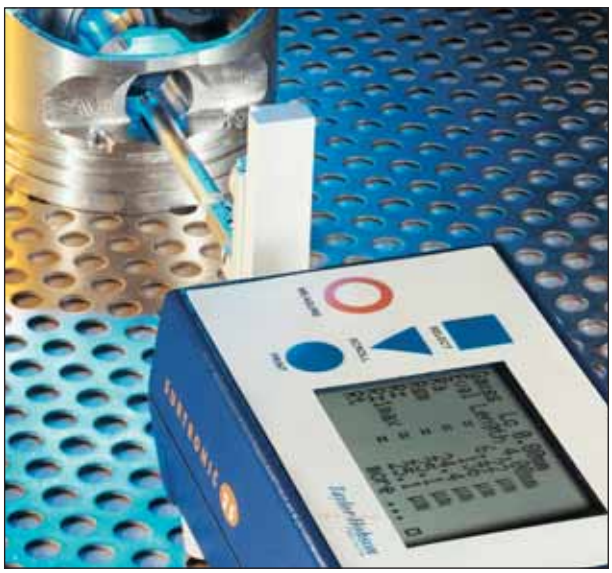
Long traverse length and extended Pick-up reach

The Surtronic 25 can traverse up to 25mm (or as little as 0.25mm) depending on your component. In addition, the stylus length and pick-up configuration give a long reach, making it **an ideal instrument for features such as large and narrow bores**. Optional extension rods extend the pick-up further (see accessories page).

Comprehensive Range of Accessories & Pick-ups

Taylor Hobson has developed an extensive range of pick-ups and accessories to suit the varied measurement needs of our customers. In addition to the pick-ups shown on page 6 our applications department regularly designs and manufactures pick-ups and fixturing for specific requirements.

The dimensions of the Surtronic 25 and the pick-ups available are all **fully compatible with existing Surtronic 3, 3P and 3+ instruments.**



Powerful Software Options

The Surtronic 25 includes an RS232 multi-function port which allows connection of a printer or export of measurement results to a PC for further analysis using the optional Talyprofile software (see next page). By setting the Surtronic 25 to 'Data Dump' mode, measurements and setup can be instigated directly from the Talyprofile software.

Surtronic 25

Talyprofile

Advanced surface finish analysis
Talyprofile is a dedicated software package designed for use with workshop or laboratory instruments.

Two versions are available. Talyprofile "Silver" has all functions typically used for a shopfloor inspection. Talyprofile "Gold" has complete laboratory analysis functions:

Talyprofile features	Gold	Silver
Leveling	✓	✓
Symmetries	✓	✓
Zoom	✓	✓
Thresholding	✓	
Form removal	✓	
Erase defects	✓	
Filtering by FFT	✓	
Profile curves	✓	✓
Material Ratio curve	✓	✓
Interactive Mr curve	✓	✓
Fractal analysis	✓	
R & W Motifs (ISO 12085)	✓	
Rk Parameters	✓	
Rk Parameter curves	✓	
Distance measurement	✓	✓
Step height measurement	✓	
Area of a hole / peak	✓	✓
Frequency spectrum	✓	
Power spectrum density	✓	

✓ indicates availability in Gold or Silver version

Outstanding graphics
The software is visually advanced and provides clear on screen profile images. Talyprofile allows the user to take a basic measurement and create a full measurement report using the software's detailed analysis options and desktop publishing function (see screen displays opposite for examples).

In depth analysis
Profiles can be leveled and zoomed to remove unwanted features or defects from the analysis. Distance measurement between features and areas of a profile are easily implemented and the information can be displayed graphically and numerically. Step height and the area of a hole or peak can also be displayed.

Time-saving Analysis Templates
A 'template' can be created whereby a sequence of analysis functions can be saved and applied to future measurements, turning detailed reporting tasks into routine documents.

Desktop publishing facility
Talyprofile offers a comprehensive desk top publishing function which allows clear presentation of results measurements and profiles. Graphs, profiles and results can be arranged and printed from within the Talyprofile software or copied into other wordprocessing documents giving complete flexibility in reporting.

Full compatability
Surface finish results from other TaylorHobson surface roughness instruments can be imported to Talyprofile software, allowing a uniform report style to be used throughout your workshop or laboratory.

Talyprofile Parameters

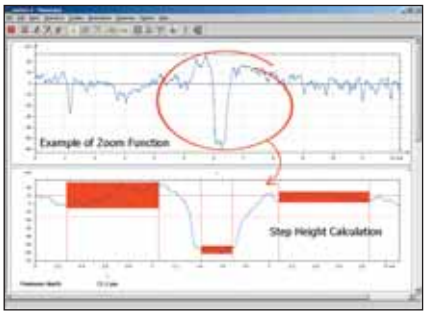
Roughness parameters obtained by filtering: Ra, Rq, Rt, Rp, Ry, Rku, Rsk, RSm, Rz, RΔq, RTp, RHTp, Rlo, Rλq, RPC, RzJIS, R3z.

Waviness parameters obtained by filtering: Wa, Wq, Wt,Wp, Wv, Wku, Wsk, WSm, Wz, WzJIS, Wλq, WΔq, WTp, WHTp, WLo, WPC, W3z.
(only with Gold version &instruments with straightness datum)

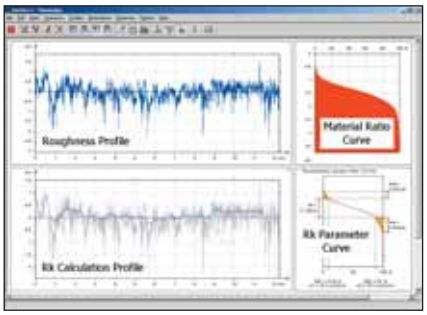
Parameters on the raw profile (unfiltered): Pa, Pq, Pt, Pp, Pv, Pku, Psk, PSm, Pz, PΔq, Pλq, PTp, PHTp, PLo, PPc.

Parameters obtained by double filtering (DIN 4776): Rk, Rpk, Rvk, MR1, MR2, A1, A2, Rpk, Rvk
(only with Gold version)

Parameters obtained by the motifs method ("R&W"): R, AR, Pt, Rx, SR, SAR, Nr, Kr, W, AW, Wte, Wx, SW, SAW, Nw, Kw, Rke, Rpke, Rvke, Trc, HTrc.
(only with Gold version)

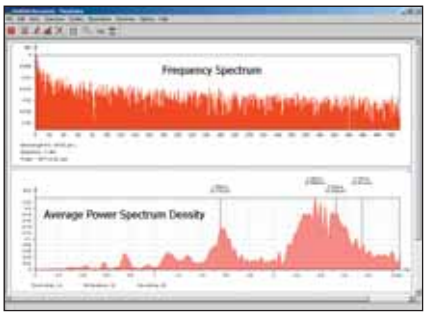


step height calculation and zoom function



example of Rk and material ratio curves

parameter calculations and distance measurements



analysis by means of frequency and power spectrums

Surtronic Accessories

1 Precision Vice
code 112/2694-01
High quality precision vice ideal for holding finished components.
Jaw width 70mm, jaw opening 80mm

2 Thermal Printer
code B112/3469-01
Outputs measuring conditions such as cut-off, traverse length, filter and parameter results, plus optional graph.

3 Support Stand
code 112/1517
With swivel platform for rotation and tilting to keep the pick-up traverse parallel to the surface.

4 Roll and Bore Fixture
code 112/1509
This fixture allows the Surtronic 25 to be mounted on cylindrical components.

5 Datum Support Stand
code 112/865
Provides an independent straight datum when used with pick-ups fitted with the detachable skid.

6 Detachable Skid
code 112/1191
Clamped to the pick-up body, this accessory is required for use with the Datum Support Stand.

7 Ball Joint Vice
code 112/2695-01
Comprising a surface mounted swivel base and a wide jaw vice. Suitable for holding irregular shaped components.

Overall length	280mm
Jaw Width	54mm
Jaw Opening	160mm

8 Pick-up Lift
code 112/1525
For lifting the stylus clear of the workpiece to prevent the arm falling and damaging the surface or stylus.

9 Portable Base
code 137/1734
Provides a support when used on machine tool applications.

Column and Stand (see page 3)
code 112/2693
Granite base (400x250mm) and manually operated column with adjustment height of 260mm.

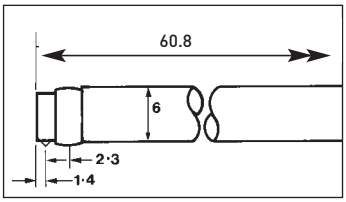
Mains Adaptor
code US -110V - B112/1594
UK -240V -112/1551
Euro-230V -112/1595 (2 pin)
Enables instrument to be powered from the mains supply.

Extension Rod
code 112/1533 100mm length
112/1510 200mm length
Provides extension to pick-up for measurements in deep holes. Longer extension rods can be made to order.

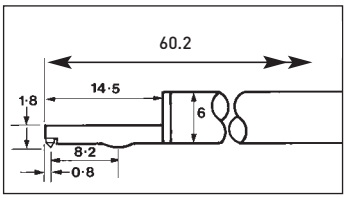
Surtronic 25

Pick-Ups

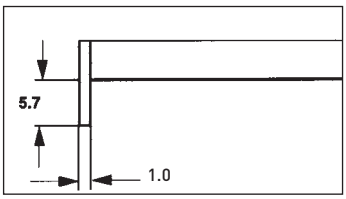
Taylor Hobson has developed an extensive range of pick-ups to suit the varied measurement needs of our customers. In addition to the pick-ups shown below our applications department regularly designs and manufactures pick-ups for specific requirements.



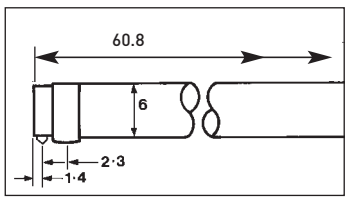
Standard Pick-up
code 112/1502
For general surface roughness measurement. Also available with 10µm (400µin) tip radius. (**code** 112/1503)



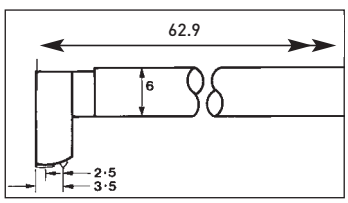
Small Bore Pick-up
code 112/1504
For general use in small bores, grooves and on narrow surfaces. 2µm tip radius version is also available (**code** 112/2673).



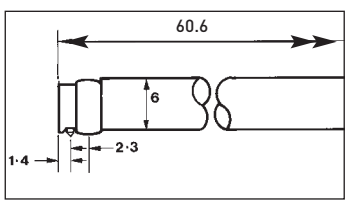
Narrow Gauge Stylus
code 155/P11610
For measuring in 'O' rings and narrow grooves up to a depth of 5.5mm (0.22in).



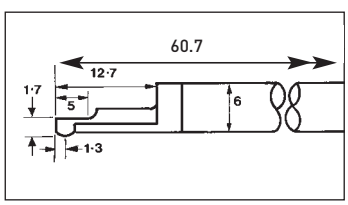
Right Angle Pick-up
code 112/1505
For measurement at right angles to the direction of traverse.



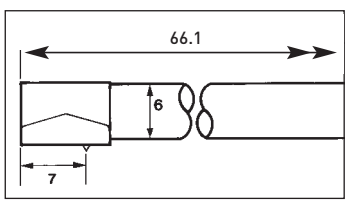
Recess Pick-up
code 112/1506
For recesses to a depth of 5.7mm (0.23in). A 2µm tip radius version is available (**code** 112/2672). (Also available for 25mm depth.)



Chisel Edge Pick-up
code 112/1524
For measuring along sharp edges or wire. Not for use on flat surfaces.



Side Skid Pick-up
code 112/1531
For use on curved surfaces such as gear teeth.



Shoe Pick-up
code 112/1599
For measuring rougher surfaces, particularly with the 2.5mm (0.1in) cut-off.

Specifications

Pick-up	
Gauge range	300µm (0.012in)
Resolution	0.01µm (0.04µin)
Accuracy	2% of reading + LSD µm
Pick up type	Inductive
Gauge force	150-300mg
Diamond stylus	Tip radius 5µm (200µin) unless otherwise specified
Instrument	
Cut off value	0.25, 0.8, 2.5, 8mm (0.01, 0.03, 0.1, 0.3in)
Filter	2CR or gaussian (selectable)
Traverse length	0.25-25mm (0.01-0.98in)
Traverse speed	1mm/sec (0.04in/sec)
Display units	µm / µin
Data output	RS232
Power	9V battery or mains (optional)
Parameters	
Ra, Rz, Rt, Rp, Rmr, Rpc, Rsm, Rz1max, Rsk, Rda	
Storage Capacity	
100 measurement results	
Dimensions	
Overall dimensions	127x85x60mm (5x3.35x2.4in)
Weight	450gm (1Lb)
Nominal operating conditions	
Temperature	5-40°C (41-104°F)
Humidity	0 to 80% non condensing
Storage conditions	
Temperature	0 to 50°C (32°F to 122°F)
Humidity	0 to 80% non condensing

Taylor Hobson pursues a policy of continual improvements due to technical development in all their instruments. We therefore reserve the right to depart from catalogue specifications.

The Surtronic 25 System Includes:

- Display and Traverse Unit
- Pick-up and Diamond Stylus
- Calibration Standard
- Carrying Case
- Battery
- Handbook

Other Taylor Hobson Products

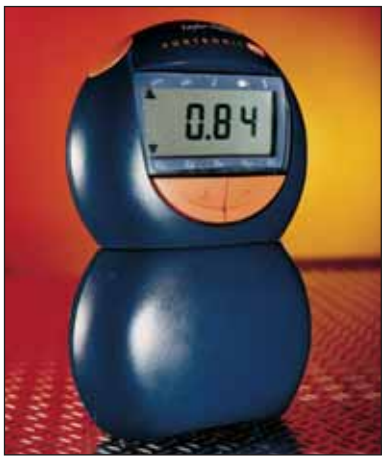
Surtronic Duo

Roughness only

Surtronic Duo measures Ra or Rz at the touch of a button and shows the result on a large LCD window.

Optional additional parameters Rp, Rv and Rt can be displayed and units of measure switched between inch and metric without re-measuring the part.

- Skidded pick-up with 5µm (200µin) stylus tip
- 0.8mm (0.03in) cut-off
- Self-contained, battery operation for shop floor use



Surtronic Duo

Form Talysurf PGI Series

Roughness, waviness and contour

Phase grating interferometer gauge head delivers wide range and exceptional resolution for surface finish and contour

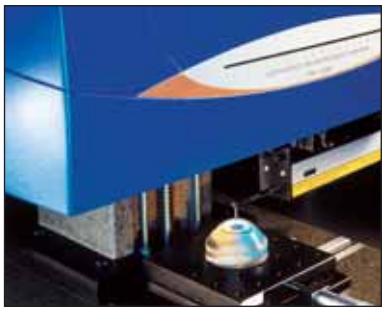
- Available with 4mm, 8mm or 12.5mm vertical measuring range which can be increased to 8mm, 16mm or 25mm with double length stylus arm
- 15,625,000:1 range to resolution ratio for 0.8nm maximum gauge resolution
- 120mm (4.72") or 200mm (7.9in) traverse with straightness datum
- 0.125µm (5µin) horizontal data spacing for exceptional profile resolution on both large and small components

Form Talysurf Intra

Roughness, waviness and form

Low cost, portable system for high level surface finish analysis in the manufacturing shop

- Skidless pick-up with 2µm (80µin) stylus tip
- 50mm (1.97in) traverse with straightness datum
- Colour VGA touch screen control panel for simple operation and high visibility display
- Automatic calibration over a sphere ensures that radius and form measurements are correct


Form Talysurf PGI with 12.5mm range

Form Talysurf Inductive Series

Roughness, waviness and form

Modular product line for high level surface finish analysis to suit a wide range of applications and budgets

- 120mm (4.72in) 200mm (7.9in) traverse with straightness datum
- Inductive gauge with 1mm (0.040in) range and interchangeable stylus arms for small bores, grooves and other difficult features
- Ultra software takes charge of all hardware/software/analysis functions for seamless operation
- Programmable for automatic inspection and analysis routines

Form Talysurf Intra

Talyrond 365
for Roughness, Roundness and Cylindricity

With the dual capability Talymin 5 gauge and seamlessly integrated Ultra roughness and roundness analysis software, this is the first instrument ever to efficiently measure surface finish and circular geometry on a single platform with a single gauge head.

Automatic center and leveling assures correct alignment of the workpiece and full automatic operation virtually eliminates operator errors and other measurement inconsistencies. Talyrond 365 is the way to increased productivity and reduced costs.

Talyrond 365