Starrett®

# SR300
# SR400

## Surface Roughness Testers

## Durable roughness testers for shop floor, industrial & inspection room applications

Working closely with manufacturers across a wide range of industries including precision bearings, automotive and aerospace engineering, Starrett focuses on the key attributes that are most important for quality control in today's precision industries.

The new SR300 and SR400 instruments offer a versatile solution for all your roughness requirements with a variety of systems and application specific accessories along with fixtures that can be tailored to your specific need.

## USB Connectivity

Through its industry standard Type A USB port and mini USB port the SR series instruments provide extensive connectivity options to many standard devices.

### USB type A

The Type A USB port can be used to attach a portable printer (ESC/POS compatible), see 'Accessories' page or a standard USB storage device for recording results, raw data or screen images.

### USB mini

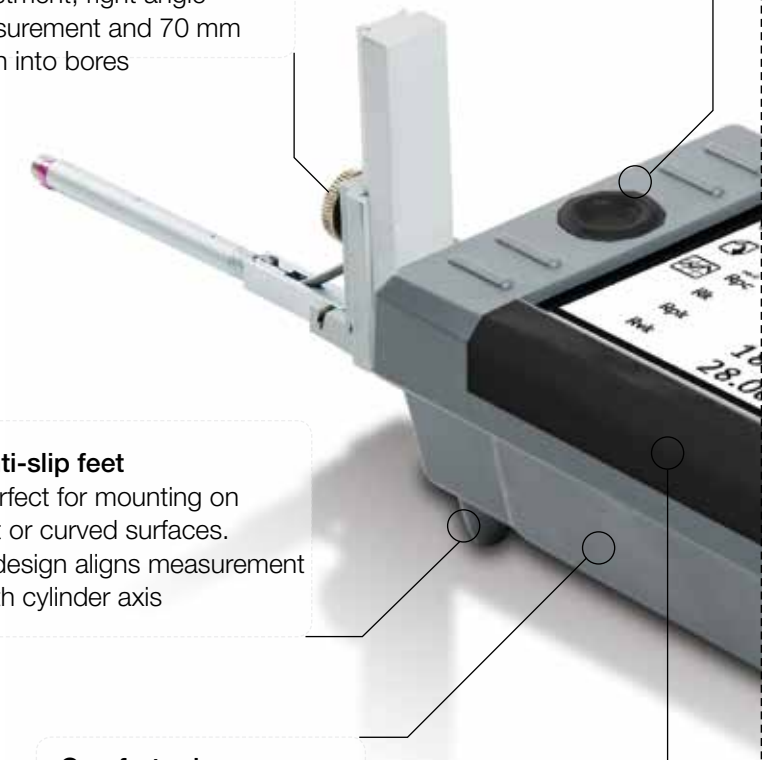
The mini USB port can be used for charging (with any standard USB charger) and / or connection to a PC to provide further analysis and reporting functionality.


# *SR series*

## A range of roughness testers robust enough for the shop floor and flexible enough for any inspection room.

**Measure**
Tactile measurement button, great when device is being used overhead or inside pipes

**Lift/lower**
Supplied as standard providing 50 mm height adjustment, right angle measurement and 70 mm reach into bores



**Anti-slip feet**
Perfect for mounting on flat or curved surfaces. V design aligns measurement with cylinder axis

**Comfort grip**
Sits comfortably in the hand when reviewing results or changing settings

**Rubberized moulding**
Added protection and better grip in the hand invaluable in shop floor environments

- Improve throughput
- Reduce part scrappage
- Monitor tool wear
- Ensure traceability

**Profile graph**
Detailed graph shows measured area to help identify problem areas

**Simple set up**
Shortcuts provided for all the key settings to give instant access with just a single touch


**USB mini**
for charging (with any standard USB charger) and / or connection to a PC for data transfer

**USB type A**
attach a portable printer or USB storage device

**Orientation**
Fix the display in 1 of 4 orientations perfect for awkward measurements

# Features

## Any surface, any height

The inclusion of a 50mm stylus lift with right-angle attachment and more than 70mm stylus reach means that even the most challenging surfaces can be measured without the need for expensive riser blocks, stands or fixtures. The anti-slip V-feet also mean the system can be used on flat or curved surfaces. The stylus can even measure upside down!

## Standards and traceability

The reference standard supplied can be used both to calibrate the instrument and check for stylus wear to ensure the most accurate results are always being achieved.

| Measurement | Best capability |
|---|---|
| Roughness standards (Ra) | ±(2% + 0.004µm) |
| Workpiece or component surface texture (Ra) | ±3% of measured value per track |

| Talyprofile | Lite | Silver | Gold |
|---|---|---|---|
| Surtronic S-series acquisition | x | x | x |
| Desktop publishing templates | x | x | x |
| Multi-language support | x | x | x |
| EN, FR, DE, ES, IT, PL, CN, KR | x | x | x |
| Levelling | x | x | x |
| Symmetries | x | x | x |
| Zoom | x | x | x |
| ISO 4287 | x | x | x |
| Material Ratio Curve | x | x | x |
| Area of a hole/peak | x | x | x |
| Profile parameters & curves | x | x | x |
| Roughness & waviness curves | x | x | x |
| Distance measurement | x | x | x |
| Multiple file format reports | | x | x |
| Report printing | | x | x |
| Form Talysurf data import | | x | x |
| Tolerance limits (pass/fail) | | x | x |
| Data file explorer | | x | x |
| ISO 13565 Automotive | | x | x |
| Interactive Mr curve | | x | x |
| Step height measurement | | x | x |
| Form removal | | | x |
| Filtering by FFT | | | x |
| Thresholding | | | x |
| Frequency spectrum | | | x |
| Power spectrum density | | | x |
| Retouch profile point | | | x |
| Rk parameters | | | x |
| Rk Parameters curves | | | x |
| ISO 12085 R&W motifs | | | x |

| PC specification | Minimum | Recommended |
|---|---|---|
| Operating system | Windows XP | Windows 8 |
| Memory (RAM) | 1 GB | 3 GB |
| CPU speed | 1 GHz | 2 GHz |
| Screen resolution | 1024 x 768 | 1920 x 1080 |
| USB port | 1.1 | 2.0 |

### Talyprofile parameters

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

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

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

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.

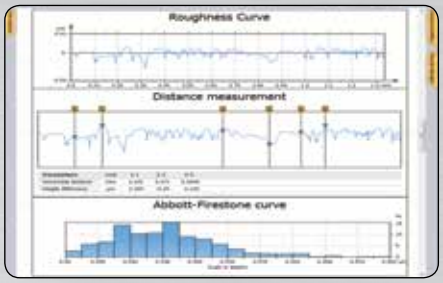
*Only with gold or silver versions

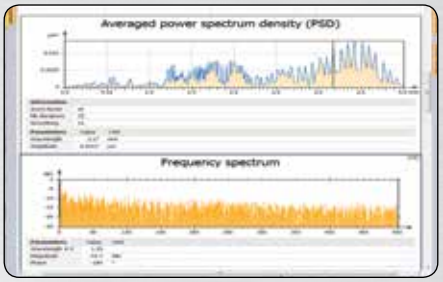
# Talyprofile

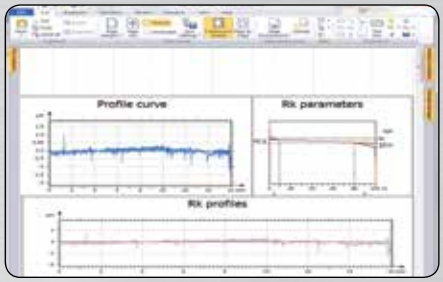
### Advanced surface finish analysis

Talyprofile is a dedicated PC based software package designed for use with the SR300 and SR400 series instruments. Three versions are available. Talyprofile “Lite” has all functions typically used for a shopfloor inspection, Talyprofile “Silver“ has enhanced features for R&W parameters, a statistics module and full report printing and Talyprofile “Gold“ has complete laboratory analysis functions:

- **Outstanding graphics**
- **Advanced time-saving analysis templates**
- **Desktop publishing facility**
- **In depth analysis**
- **Full compatibility**



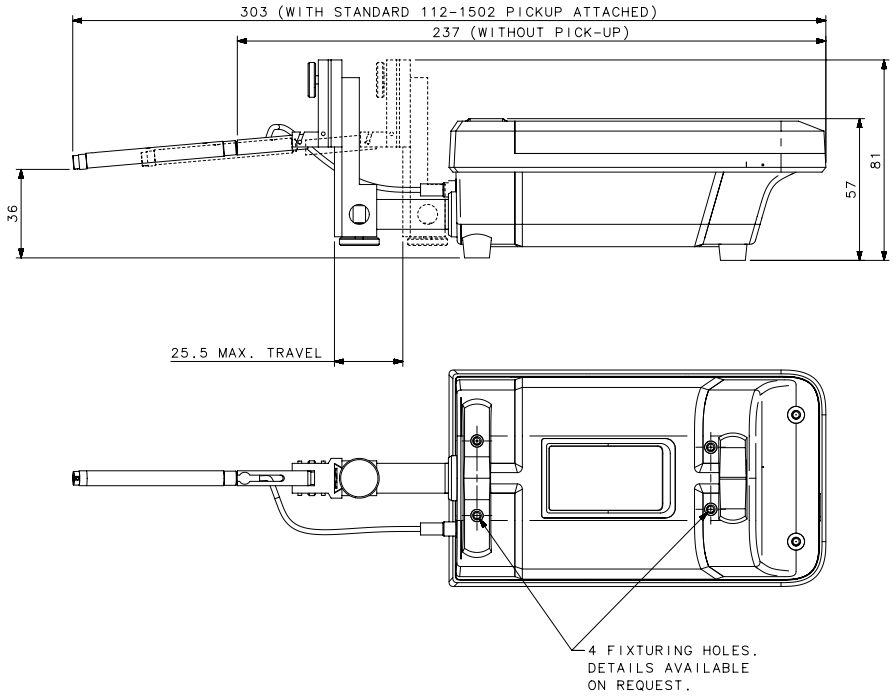



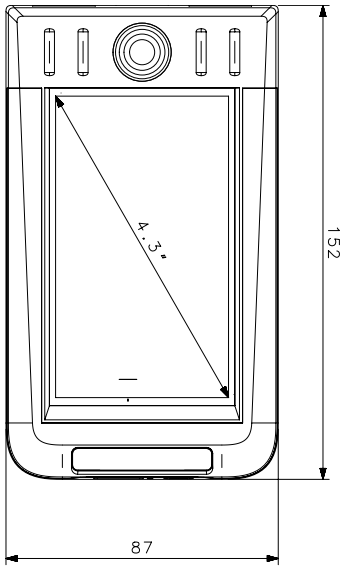



# Technical Specifications

| Technical | | SR300 | SR400 |
|---|---|---|---|
| Languages | Basic | English, French, German, Italian, Spanish | |
| | Extended | | |
| | Asian | | |
| Data output | On-screen | up to 7 results per page, selectable on-screen graph with XZ axis | |
| | Printer | Output settings, results and high resolution profile graph | |
| | PC Connection | Full data analysis with Talyprofile | |
| Data storage | Internal | 100 measurement results, 1 raw profile | |
| | USB (4GB supplied) | >39,000 raw profiles, up to 100,000 results per batch (>70 batches) | |
| | PC connection | Unlimited data storage | |
| SPC / stats | Internal | Optional | Min, Max, Mean, StdDev of stored results |
| | USB (4GB supplied) | Optional | ASCII export of all results for SPC |
| | PC connection | full SPC and tolerancing of all parameters using Talyprofile software | |
| Battery | Charger | USB 5v 1A 110-240VAC 50/60Hz | |
| | Charging time | 4 hours | |
| | Battery life | 2000 measurements | |
| | Standby time | 5000 hours | |
| | InstantOn | max 1 sec from standby to ready to measure | |
| | Auto sleep function | 30 sec - 6 hours | |


| Component capacity | | SR300 | SR400 |
|---|---|---|---|
| Physical specifications | Weight including pickup | 0.5 Kg (1.1 lbs) | |
| | IP rating | none | IP43 |
| | Power source | Li Poly rechargeable battery | |
| Operating conditions | Temperature | 5 - 40 °C (41 - 104 °F) | |
| | Humidity | 0 - 80 % non-condensing | |
| Storage conditions | Temperature | 0 - 50 °C (32 - 122 °F) | |
| | Humidity | 0 - 90 % non-condensing | |



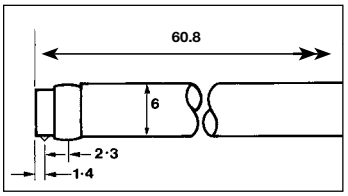
# Accessories

## Surface Roughness Tester and Accessories

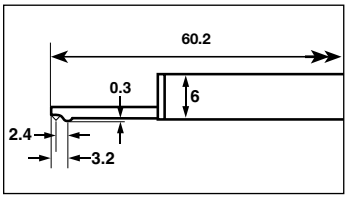
| Cat. No. | EDP | Description |
|---|---|---|
| SR300 | 21000 | SR300 display and 17.5mm traverse unit, TalyProfile Lite software pick-up and diamond stylus, calibration standard, manual and carrying case |
| SR400 | 21001 | SR400 display and 25mm traverse unit, TalyProfile Lite software and pick-up diamond stylus, calibration standard, manual and carrying case |
| SR-112-1510 | 20961 | 7.875"/200mm Extension Rod with Lead |
| SR-112-1534 | 20962 | Reference Standard |
| SR-112-1517 | 20963 | Support Stand |
| SR-112-2693 | 20964 | Column and Stand |
| SR-112-1502 | 20956 | Standard Pickup with 200µ" / 5µm Stylus |
| SR-112-1503 | 20957 | Standard Pickup with 400µ" / 10µm Stylus |
| SR-155-P28495 | 20129 | Small Bore Pickup |
| SR-112-1505 | 20959 | Right Angle Pickup |
| SR-112-1506 | 20960 | Recess Pickup |
| SR-112-3680 | 20952 | TalyProfile Gold - 2D Analysis Software w/cable |
| SR-112-3681 | 20953 | TalyProfile Silver - 2D Analysis Software w/cable |
| SR-K509-1578 | 20954 | TalyProfile 8'/2.5m Cable |
| SR-K509-1820 | 20955 | TalyProfile 5'/1.5m Cable |
| SR-112-4545 | 20220 | Plug Adaptors |
| SR-112-4570 | 21002 | USB Thermal Printer |
| SR-112-4571 | 21003 | Thermal Paper |

# Dimensions

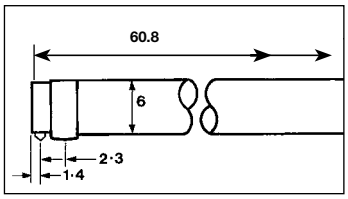
| Measurement capability | | SR300 | SR400 |
|---|---|---|---|
| Gauge | Range | 200 µm 100 µm 10 µm | 400 µm 100 µm 10 µm |
| | Resolution | 100 nm 20 nm 10 nm | 50 nm 10 nm 5 nm |
| | Noise floor (Ra) | 250 nm 150 nm 100 nm | 150 nm 100 nm 50 nm |
| | Repeatability (Ra) | 1 % of value + noise | 0.5 % of value + noise |
| | Pickup type | Inductive | |
| | Gauge force | 150-300 mg | |
| | Stylus tip radius | 5 µm (200 µin) default / 2 µm (80 µin) or 10 µm (400 µin) optional | |
| | Measurement type | Skidded | |
| Calibration | Process | Automated software calibration routine | |
| | Standards | Able to calibrate to ISO 4287 roughness standards | |
| Analysis | Filter cut-off | 0.25 mm / 0.8 mm / 2.5 mm | |
| | Filter type | 2CR / Gaussian | |
| | Evaluation length | 0.25 mm - 12.5 mm (0.01 in - 0.49 in) | 0.25 mm - 25.0 mm (0.01 in - 0.98 in) |
| | Max X axis range | 17.5 mm | 25.5 mm |
| Speed | Measuring speed | 1 mm / sec (0.04 in / sec) | |
| | Returning speed | 1.5 mm / sec (0.06 in / sec) | |



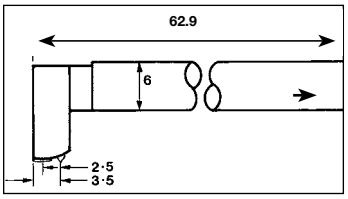

**Standard Pick-up**
For general surface roughness measurement
**code SR-112-1502**
(5 µm tip radius)
**code SR-112-1503**
(10 µm tip radius)




**Small Bore Pick-up**
For general use in small bores, grooves and on narrow surfaces
**code SR-155-P28495**




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




**Recess Pick-up**
For measuring into deep recesses
**code SR-112-1506** recess 5.7 mm (0.23 in)

| Analysis capability | | SR300 | SR400 |
|---|---|---|---|
| Parameters | Standards | ISO 4287, ISO 13565-1, ISO 13565-2, ASME 46.1, JIS 0601, N31007 | |
| | ISO basic | Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rmr, Rdq, Rpc, RSm, Rz1max | |
| | ISO advanced | Optional | Rk, A1, A2, Mr1, Mr2, Rpk, Rvk |
| | ASME | Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rdq, RSm, Rpm, Rda | |
| | JIS | Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rmr, Rdq, RSm, RzJIS, Rc, Rku, Rdc | |
| | Other | R3z (Daimler Benz) | |
| | ISO Primary | Optional | Pa, Pv, Pp, Pz, Pt, Pq, Psk, Pmr, Pdq, Ppc, PSm, Pz1max |
| | Units | µm / µin | |

**Bulletin 398**
09/13 2.5M/Q
Specifications subject to change.
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