

# Starrett®

Precision, Quality, Innovation

## SURFACE ROUGHNESS TESTING EQUIPMENT SR SERIES

SR160

SR300

SR400

TalyProfile

Accessories



## SURFACE ROUGHNESS TESTING

Starrett surface roughness testing equipment is simple, accurate and high quality. It performs the complex analysis required to meet or exceed your customers specifications. The SR160, SR300, and SR400 units are tough, shock tested, and capable of withstanding the demands of a shop environment. Our surface roughness testers meet the increasing requirements across industries like safety, aerospace, automotive, precision bearings, and general manufacturing.

When our customers speak, we listen. And that is why the new Starrett SR160 is one of our most well developed tools yet. Regardless of your application, an investment in a Starrett surface roughness tester will give you the peace of mind that your shop deserves.

## ROUGHNESS STANDARDS MEETS ROUGHNESS

ASME 46.1, ISO4287, ISO13565-1/2, JIS 0601, N331007

## APPLICATIONS

- Incoming inspections
- Final inspection before shipment
- Process control on the production line
- Checking large components or structures

## USB MINI CHARGING AND DATA OUTPUT

Includes international adapters.



\*USB Type A

## SR160

### MEASURE

Tactile measurement button great for challenging orientations



### DIAMOND STYLUS AND PIEZOELECTRIC PICK-UP

The hard wearing, protected piezo-electric pick-up stylus with diamond tip assures very reliable measurement.

### LI-POLY BATTERY

Most advanced rechargeable battery technology for unrivalled reliability and battery life. Will perform over 10,000 measurements from a single charge.

### LONG-LASTING AND INDUSTRIAL

A rubberized molding and mylar screen enhance durability and grip for unbeatable protection in harsh shop floor environments.

## SR300 AND SR400

### LIFT/LOWER

Standard 50mm height adjustment, 70mm reach into bore, and right angle measurement.



### ANTI-SLIP

Perfect for mounting on flat or curved surfaces. Contact design aligns measurement with cylinder axis.

### PROTECTION

A 4-digit security key prevents an operator from changing important settings.



### BLUETOOTH® TECHNOLOGY

Quick, reliable communication between traverse and display/control unit.

### PROFILE GRAPH

Detailed graph of measurement area.

### SIMPLE NAVIGATION

Instant access to menu options and settings. Ready to measure in less than 5 seconds!

### USB MINI CHARGING PORT

Charge through PC connection, main charger and standard USB charger included.

### TACTILE MEASUREMENT

Tactile measurement button great for challenging orientations

### ORIENTATION

Display in 1 of 4 orientations for ease of view.

### TOUCH SCREEN

Responsive touch screen.

### USB CONNECTIVITY

- Attach a portable printer or storage device.
- USB mini port for charging and data transfer through PC connection.



## TWO PIECE OPERATION

The SR160 splits into a display/control unit and traverse unit via a slide and lock mechanism. The SR160 has the smallest form factor in its class.

## BENEFITS

- Improved throughput
- Reduce part scraggage
- Monitor tool wear
- Ensure traceability
- Measure without the need for expensive riser blocks, stands or fixtures
- Use on flat or curved surfaces
- Measure upside down



## STANDARDS AND TRACEABILITY

The supplied reference standard can be used to consistently achieve a proper calibration.

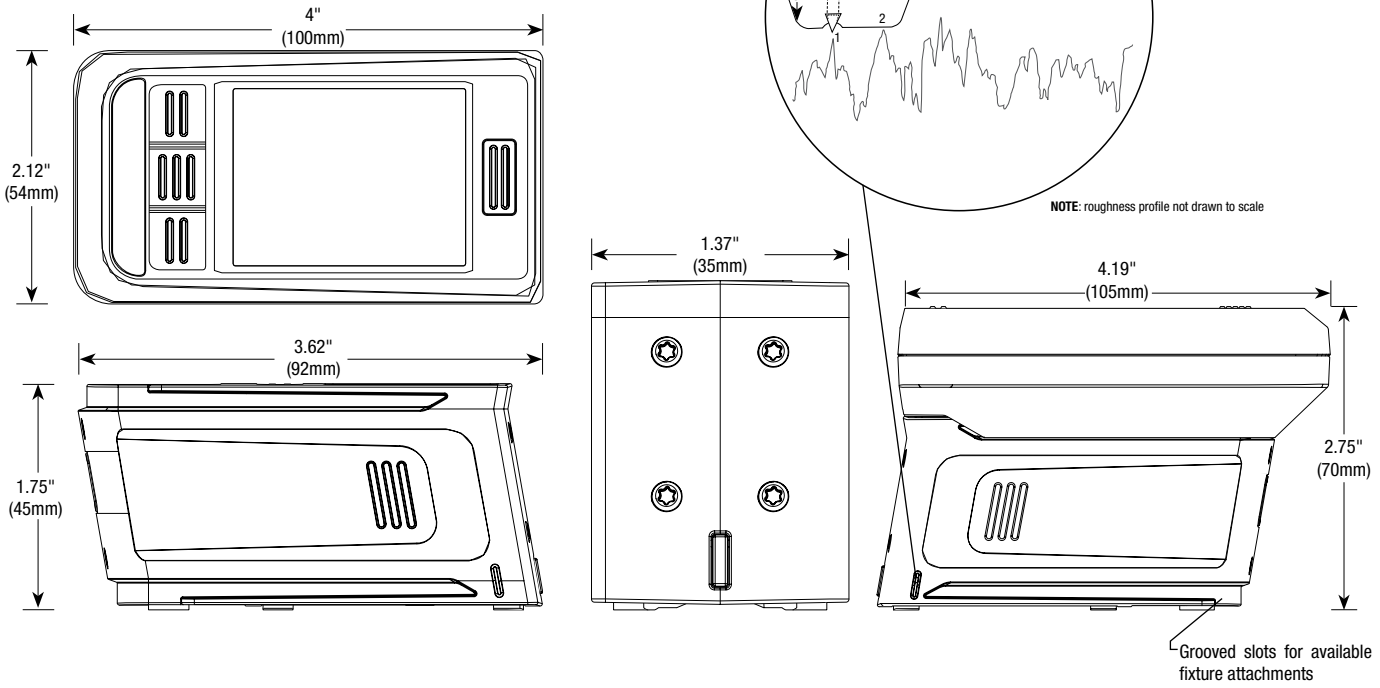
Measurement	Best capability
Roughness standards (Ra)	±(2% + 0.004 μm)
Workpiece or component surface texture (Ra)	±3% of measured value per trace

# TECHNICAL SPECIFICATIONS

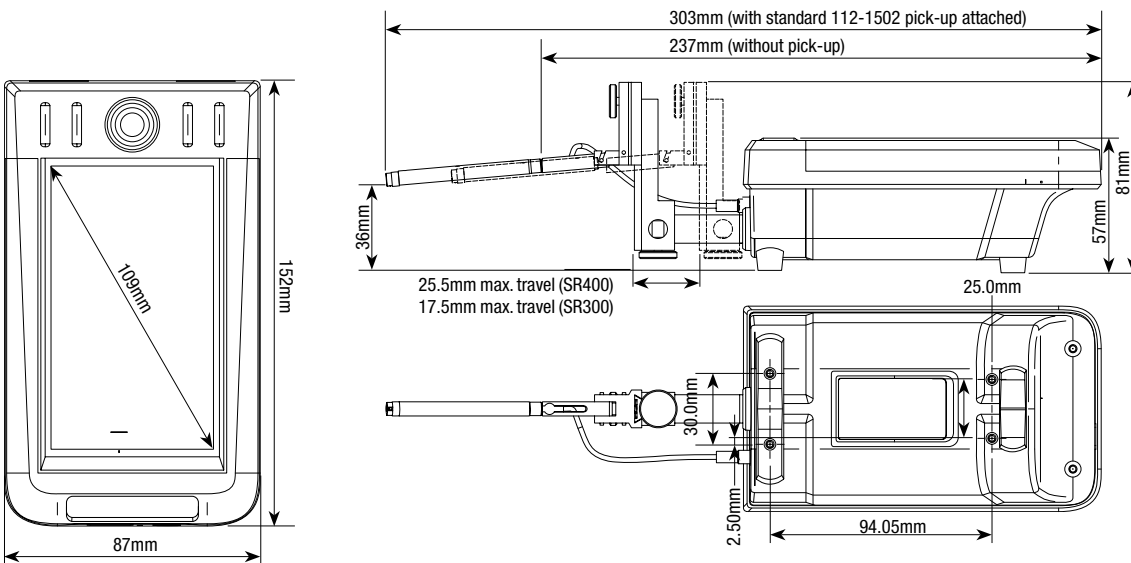
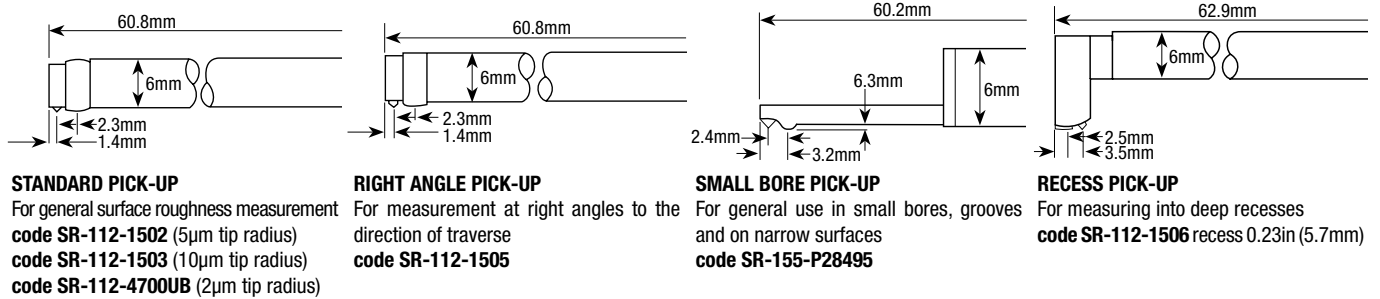
		SR160	SR300	SR400
<b>Instrument Performance</b>				
Gage	Resolution	0.4µin (10nm)	100nm, 20nm, 10nm	50nm, 10nm, 5nm
	Range	200µm	200µm, 100µm, 10µm	400µm, 100µm, 10µm
	Repeatability (Ra)	2% of value + noise	1% of value + noise	0.5% of value + noise
	Accuracy	5% of reading + 4µin (0.1µm)	±2% of reading + noise	±2% of reading + noise
Measurement	Noise	0.8µin (20nm)	250nm, 150nm, 100nm	150nm, 100nm, 50nm
	Process	Automated software calibration routine	Automated software calibration routine	Automated software calibration routine
Calibration	Standard	Able to calibrate to ISO 4287 roughness standards	Able to calibrate to ISO 4287 roughness standards	Able to calibrate ISO 4287 standards
	Internal	None	100 measurement results, 1 raw profile	100 measurement results, 1 raw profile
Data Storage	USB Type A (4GB supplied)	None	>39,000 raw profiles, up to 100,000 results per batch (>70 batches)	>39,000 raw profiles, up to 100,000 results per batch (>70 batches)
	PC connection	None	Unlimited data storage	Unlimited data storage
Data Output	On-screen Output	Up to 5 results per page, selectable on-screen graph	Up to 7 results per page, selectable on-screen graph	Up to 7 results per page, selectable on-screen graph
	PC connection	None	Full SPC and tolerancing of all parameters using TalyProfile software	Full SPC and tolerancing of all parameters using TalyProfile software
	Printer (USB Type A) Output	None	Output settings, results and high resolution profile graph	Output settings, results and high resolution profile graph
<b>Technical</b>				
Languages	Basic	English	English, French, German, Italian, Spanish	English, French, German, Italian, Spanish
Battery	Charger	Mini USB 5V 1A 110-240 VAC 50/60 Hz	USB 5V 1A 110-240VAC 50/60Hz	USB 5V 1A 110-240VAC 50/60Hz
	Charging time	4 hours	4 hours	4 hours
Power	Battery life	>10,000 measurements	>2,000 measurements	>2,000 measurements
	Standby time	5000 hours	5000 hours	5000 hours
	InstantOn	Max 5 sec from off to ready to measure	Max 1 sec from standby to ready to measure	Max 1 sec from standby to ready to measure
	Auto-sleep function	5 min.	30 sec. - 6 hours (user-selectable)	30 sec. - 6 hours (user-selectable)
	Internal SPC/STATS	None	Optional	Min, Max, Mean, StdDev of stored results
	External SPC/STATS (4GB USB Supplied)	None	Optional	ASCII export of all results for SPC
<b>Instrument Capability</b>				
Pick-up Assembly	Pick-up type	Piezoelectric	Inductive	Inductive
	Stylus type Radius	Diamond, 200µin (5µm)	200µin (5µm) default/80µin (2µm) or 400µin (10µm) optional	200µin (5µm) default/80µin (2µm) or 400µin (10µm) optional
Gage	Gage force	200 mg	150-300mg	150-300mg
	Measurement type	Skidded	Skidded	Skidded
Filter	Filter type	Gaussian	2CR/Gaussian	2CR/Gaussian
	Filter cut-off	0.8mm	0.25mm/0.8mm/2.5mm	0.25mm/0.8mm/2.5mm
Measuring	Traverse length	0.2in (5mm)	17.5mm	25.6mm
	Measuring speed	0.08in/sec (2mm/sec)	0.04in/sec (1mm/sec)	0.04in/sec (1mm/sec)
	Evaluation Length		0.01in-0.49in (0.25mm-17.5mm)	0.01in-0.89in (0.25mm-25.6mm)
Display	Units	µin/µm	µin/µm	µin/µm
	Returning speed	.08in/sec (2mm/sec)	0.06in/sec (1.5mm/sec)	0.06in/sec (1.5mm/sec)
<b>Environmental/Physical</b>				
Physical Specifications	Weight including pickup	14 oz (0.4Kg)	1.1lbs (0.5Kg)	1.1lbs (0.5Kg)
	Power source	Li-Poly rechargeable battery	Li-Poly rechargeable battery	Li-Poly rechargeable battery
Operating Conditions	Temperature	41-104°F (5-40°C)	41-104°F (5-40°C)	41-104°F (5-40°C)
	Humidity	0-80% non-condensing	0-80% non-condensing	0-80% non-condensing
Storage Conditions	Temperature	32-122°F (0-50°C)	32-122°F (0-50°C)	32-122°F (0-50°C)
	Humidity	0-80% non-condensing	0-80% non-condensing	0-80% non-condensing
<b>Parameters - ISO 4287, ISO 13565-1, ISO 13565-2, ASME 46.1, JIS 0601, N31007 (N31007 for SR300 and SR400 only)</b>				
Total		14	19	39
	ISO basic	Ra, Rv, Rp, Rz, Rt, Rsk, Rz1max, Rq, Rku	Ra, Rv, Rp, Rz, Rt, Rsk, Rmr, Rdq, Rpc, RSm, Rz1max, Rdc	Ra, Rv, Rp, Rz, Rt, Rsk, Rmr, Rdq, Rpc, RSm, Rz1max, Rdc
	ISO advanced		Optional	Rk, A1, A2, Mr1, Mr2, Rpk, Rvk
	ASME		Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rdq, RSm, Rpm, Rda	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	Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rmr, Rdq, RSm, RzJIS, Rc, Rku, Rdc
	Other		R3z (Daimler Benz)	R3z (Daimler Benz)
	ISO Primary	Pa, Pv, Pp, Pz, Pt	Optional	Pa, Pv, Pp, Pz, Pt, Pq, Psk, Pmr, Pdq, Ppc, PSm, Pz1max, Pdc

# DIMENSIONS

## SR160



## SR300 and SR400





# 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

### TalyProfile parameters

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

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

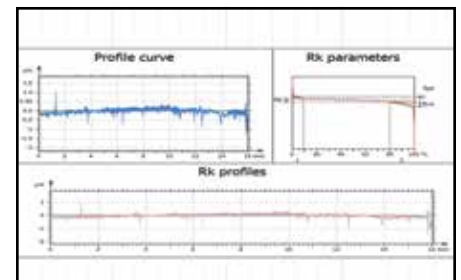
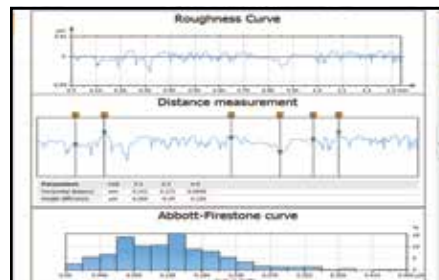
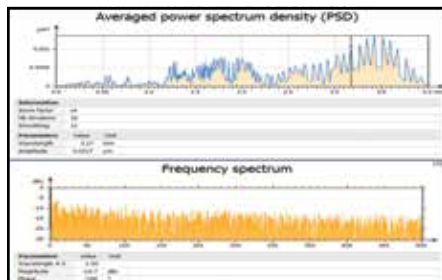
Parameters obtained by double filtering (DIN 4776)\*: Rk, Rpk, Rvk, MR1, MR2, A1, A2, Rpk, Rvk

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, Rpk, Rvke, Trc, HTrc.

\*Only with gold or silver versions

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

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 and curves	x	x	x
Roughness and waviness curves	x	x	x
Distance measurement	x	x	x
Multiple file format reports		x	x
Report printing		x	x
Form Talsurf 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



# PRODUCT LISTING

## Surface Roughness Testers

Cat. No.	EDP	Description
SR160	72584	SR160 display with 5mm traverse unit, pick-up, diamond stylus, calibration standards, manual, and carrying case.
SR300	21000	SR300 display with 17.5mm traverse unit, TalyProfile Lite software, pick-up, diamond stylus, calibration standard, manual and carrying case.
SR400	21001	SR400 display with 25mm traverse unit, TalyProfile Lite software, pick-up, diamond stylus, calibration standard, manual and carrying case.

## Accessories - SR160

Cat. No.	EDP	Description
SR-112-3188	72667	Magnetic base
SR-112-4545	20220	USB charger
SR-112-5085	72666	Hard transport case
SR-112-2937	20968	Extra reference standard

## Software

Cat. No.	EDP	Description
SR-112-3680	20952	TalyProfile Gold - 2D analysis
SR-112-3681	20953	TalyProfile Silver - 2D analysis

## Parameters

Cat. No.	EDP	Description
SR-112-4607	73038	AN-10 ISO 13565 automotive parameters for S116
SR-112-4608	73039	AN-11 statistics module for S116
SR-112-4609	73040	AN-12 ISO primary parameter set for S116

## Accessories - SR300 and SR400

Cat. No.	EDP	Description
SR-112-1517	20963	Support stand
SR-112-1534	20962	Reference standard
SR-112-2693	20964	Column and stand
SR-112-4545	20220	USB charger
SR-112-4570	20998	USB thermal printer
SR-112-4571	20999	Thermal paper
SR-112-1645	73033	Pair of 115mm (5.85") v-blocks
SR-112-2694	73036	Precision vise
SR-112-2695	73037	Ball joint vise

## Pick-Ups

Cat. No.	EDP	Description
SR-112-1510	20961	7.875" (200mm) extension rod with lead
SR-112-1502	20956	Standard pick-up with 200µin (5µm) stylus
SR-112-1503	20957	Standard pick-up with 400µin (10µm) stylus
SR-115-P28495	21004	Small bore pick-up
SR-112-1505	20959	Right angle pick-up
SR-112-1506	20960	Recess pick-up
SR-112-1524UB	73028	Pick-up with chisel edge stylus
SR-112-1525	73029	Pick-up lift mechanism
SR-112-1531UB	73030	Pick-up with slide skid
SR-112-1599UB	73032	Pick-up with shoe
SR-112-2672UB	73034	Recess pick-up (2µm, 80µin, tip radius)
SR-112-2673UB	73035	Small bore pick-up (2µm, 80µin, tip radius); SR-112-4701 is preferred
SR-112-4707	73041	O-Ring pick-up
SR-112-4708	73042	25mm recess pick-up
SR-112-4709	73043	15mm recess pick-up
SR-12-4710	73044	O-Ring pick-up narrow
SR-112-4712	73046	O-Ring pick-up; deep 25mm
SR-112-4713	73047	O-Ring pick-up; deep 25mm with 2µm tip
SR-112-4714	73048	Flat skid pick-up
SR-112-4715	73049	Standard 112/1502 pick-up with 2.5µm tip
SR-112-4716	73050	Side skid pick-up 112/1531 with 2µm tip

All accessories listed above are available for order. Please contact your local Starrett representative for additional or special requirements.

SR300/SR400



SR400 with included accessories

SR160



SR160 with included accessories

## STARRETT PRODUCT LINES

Band Saw Blades

Force Measurement

Jobsite & Workshop Tools

Laser Measurement

Metrology Equipment

Precision Granite

Precision Ground Solutions

Precision Measuring Tools

PTA & Hand Tools

Service

Webber Gage Blocks

## SURFACE ROUGHNESS TESTING EQUIPMENT



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