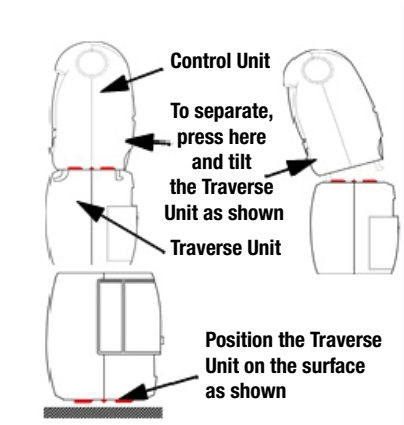
SR100 Surface Roughness Tester
Operating Guide

Getting Started

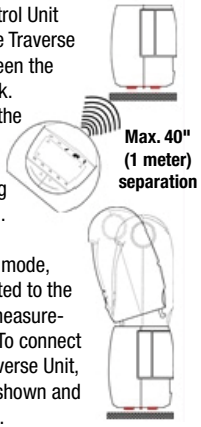
Storage. The SR100 is supplied with the Traverse Unit (bottom) connected to the Control Unit (top). Before use, separate the Traverse Unit from the Control Unit.

Note: To prevent damage to the stylus, store the SR100 with the units connected.



The SR100 can be operated in two modes: Remote or Connected.

Remote: Position the Control Unit within 40" (1 meter) of the Traverse Unit. Data is passed between the two units over the IrDA link. Note: Alignment between the Traverse Unit and Control Unit separation must be maintained during the measurement process.

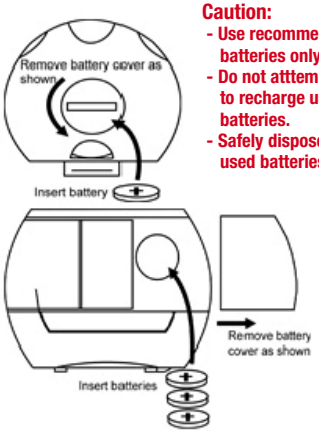


Connected: In connected mode, the Control Unit is connected to the Traverse Unit before the measurement is made, as shown. To connect the Control Unit to the Traverse Unit, insert the Control Unit as shown and tilt until the latch engages.

Inserting the Batteries

Remove battery covers as shown. Then, insert one 3V Lithium 2450 in to the Control Unit and three 3V Lithium 2450s in to the Traverse Unit as shown.

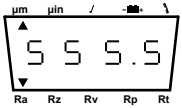
Caution:
- **Use recommended batteries only.**
- **Do not atttempt to recharge used batteries.**
- **Safely dispose of used batteries**



Then replace the battery covers. After the batteries have been changed, there will be a short delay when the SR100 is turned on.

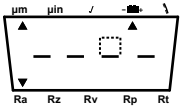
Turning On the SR100

When the Control Unit is not used for five minutes or more, it enters power save mode, turning the display off. Press any button to reactivate.

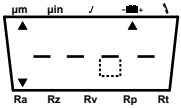


The Traverse Unit switches off completely after five minutes of inactivity. To reactivate, press the On button. An LED will flash to confirm activation.

Low Battery Indicators



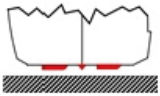
Control Unit



Traverse Unit

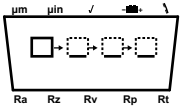
Set Up Procedure

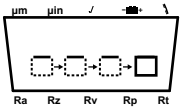
A new SR100 is fully set up out of the box. However, if the pick-up is changed or another alteration is made, field setup may be required using the following procedure:



Press the On button on the Traverse Unit. Position the traverse unit on the calibration standard in the correct orientation. First, press both selector buttons simultaneously and then press the right hand start button while still pressing both selector buttons.

The display will go through the following sequence over a 50 second period. The control unit must remain pointed at the traverse unit during this entire cycle.





Five values are stored and can be viewed by toggling the Selector button as follows:

1: Gain pot setting
2: Rz value (21.5 ±10%)
3: Speed pot setting
4: Rp value (Profile period signal (68 ±2%)
5: Can be ignored for this procedure

Note: If a setup error occurs, the procedure terminates and an E code is transmitted and displayed in the Control Unit (see E codes).

Calibrating the Gage

Position the Traverse Unit to measure the Calibration Standard included with the SR100 (DO NOT use other standards). Press Mode Select (on the Control Unit) until ✓ is indicated on Mode status.

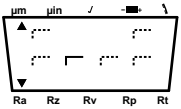
Press the Start button on the Control Unit to initiate the gage calibration procedure. The result will be display the Control Unit. The Ra value should be 5.81µm and the Rz value 21.5µm. If there is an error, an E code is displayed (see E Codes).

Measuring

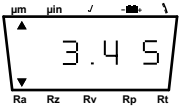
Operation of the Control Unit is identical in either the Connected or Remote mode. Position the Traverse Unit on the surface to be measured, then press Select on the Control Unit to select the parameter to be displayed upon completion of the measurement.

Select either English or metric units with the Mode button. If in remote mode, be sure to maintain line of sight of the infrared transceivers during the measurement.

Press either Start button to begin the measurement. The “measurement in progress” display is shown.



The measured parameter is displayed as shown. If there is an error, the appropriate E code is displayed (see E Codes).



All parameters (not just the selected parameter) are transmitted to the Control Unit at the same time and temporarily stored. The stored results may then be stepped through using the select buttons.

Specifications

Traverse length: 0.2" (5mm)

Measurement length: 0.16" (4mm)

Traverse speed: 0.08in/s (2mm/s)

Gauge range: 8000µin (200µm)

Gauge resolution: 2µin (0.05µm)

Display resolution: Ra. 0.4µin (0.01µm)

Display resolution: 1µin (0.1µm) for Rz, Rt, Rp, Rv

Cut off: 0.03" (0.8mm) ±15%

Uncertainty: 4µin (0.1µm) or 5% of result, to 95% confidence level

Results range: Ra. 1600µin (40µm) (See ISO 4288-1996)

Results range: Rz, Rt, Rp, Rv. 8000µin (199.9µm) (See ISO 4288-1996)

Stylus: Diamond. Radius: 123µin (5µm) nominal, 90º tip angle. Skid radius: .394" (10mm) nominal.

Filter type: 2CR, (200:1)

Sample spacing: .025µin (1um)

Stylus Force: 1gf (10mN) max at mid range

Batteries:
Control Unit: (1) 3V Lithium 2450
Traverse Unit: (3) 3V Lithium 2450

Units: µin or µm

Operating conditions: 50-95ºF (10-35ºC) 80% RH non-condensing

Size: 4.92 x 3.15 x 1.5" (125 x 80 x 38mm)

Weight: 7oz (200g)

Error Codes

E1: Infra Red communication error. Repeat operation.

E2: Measurement attempted when not calibrated. Calibrate the Traverse Unit.

E3: Traverse Unit - Oscillator fault. Retry. If fault is persistent, contact Starrett

E4: Traverse Unit - Motor Positioning fault. Retry. If fault is persistent, contact Starrett

E5: Traverse Unit - NVRAM Error. Retry. If fault is persistent, contact Starrett

E6: Traverse Unit - Profile Over-range. Retry measurement.

E7: Traverse Unit - Parameter Over-range. Retry measurement.

E8: Traverse Unit - Motor Speed Setup error. Retry Set up procedure.

E9: Traverse Unit - Gain Setup error. Retry Set up procedure.

E10: Control Unit - Oscillator fault. Retry. If fault is persistent, contact Starrett

E11: Traverse Unit - Calibration information download error. Try again.

E12: Traverse Unit - Not set up. Run the Set up procedure.

E13: <Reserved>

E14: Traverse Unit - Electronic Measurement error. Retry. If fault is persistent, contact Starrett

The L.S. Starrett Company
121 Crescent Street, Athol, MA 01331
978-249-3551