DATA COLLECTION

EDGE EXCLUSION
Determines perimeter boundary for active wafer surface. Use minimum 1mm per every 25mm substrate diameter.

FRONT EXCLUSION
Establishes inactive region relative to the major flat. ( preceding the value indicates BACK EXCLUSION.

SUBSTRATE DIA.
Toggle ( ) to designate substrate diameter.

MAX SIZE
Toggle ( ) to select upper limit of PMT range.

THRESHOLD
Indicates PMT sensitivity limit.

DATA CORRELATION
Indicates the number of times the signal must exceed threshold to be counted as a particle. Use DOUBLE except in special applications.

MAX HAZE
Automatically computed. 100 times MAX SIZE.

DYNE RANGE
Automatically computed. The percentage difference between MAX SIZE and THRESHOLD.

CHANGING MENU #
1. When MENU is displayed, press #.
2. Enter two-digit number (e.g., "09").

SORT PARAMETERS
Defines accept/reject criteria. Input desired values, if no sort criteria, leave blank. Physical sorting requires 2 or more indexers/cassettes. Set TRANSFER MODE = MULTI.

TWO INDEXERS: Accepted wafers placed sequentially in receiver, rejected wafers in original slot.

THREE INDEXERS: Accepted wafers in front receiver, rejected wafers in rear receiver.

SYSTEM CONFIGURATION

PRINTER OUTPUT
Toggle desired printer output.

AUTOPRINT
Automatic printout of selected PRINTER OUTPUT after scan.

TRANSFER MODE
Multi: Wafers are returned to the receiver (not sender) cassettes after measurement.

Single: Wafers are returned to the sender cassette after measurement.

CALLING HELP
1. Press [HELP] to display the Help Menu.
2. Use [ ] to highlight desired topic.

CASSETTE TILT
Should remain ON except for special applications.

See Help Menu: Particle Sizing from Scattering Cross-Section.

STATUS DISPLAY
Special function related to servicing the instrument. Leave ON or OFF.
DATA DISPLAY

DISPLAY MODE = COMPOSITE
Displays particle, area, zoom, and haze maps, and histogram. Toggle displays on and off with color keys.

PARTICLE MAP
Displays particles in yellow
1. Set upper and lower particle size limits to be displayed.
2. Press FLT to replot data or press START to scan.

HISTOGRAM
Displays number of particles versus scattering cross-section for the selected particle range.
1. Press SEL to select the cursor to be moved. A bar under the cursor indicates control.
2. Press ↓ → to move the cursor. The summary will automatically update.
3. Press FLT to replot the histogram in the particle size range defined by the cursors. The particle map for this range will also be plotted.
4. Press ABT to return to the original histogram.

ZOOM
Display 16x magnification of selected region on particle map. Identify size and coordinates of individual particles.
1. Turn off HISTOGRAM.
2. Press SEL. Zoom Square will appear.
3. Use ↑ ↓ ← → to move Square to region of interest.
4. Press FLT. The area within the square will be displayed at 16x magnification and the cursor (•) will appear.
5. Use ↑ ↓ ← → to move the cursor to the particle of interest.
6. Size and vert/horiz position will be displayed.
7. Press ORG for histogram for zoom area.
8. Press YEL for particle map with Area Zoom Square.
9. Press BLU for the last zoom map.
10. Press ABT to exit zoom map.

HAZE
Display haze in blue.
1. Set upper and lower haze limits
2. Press FLT to replot.

AREA MAP
Display area contamination in white.
1. Turn off HIST.
2. Press FLT.
3. To exit, press ABT.

DISPLAY MODE = PARTICLE
Classifies particles into three size bins. Displays the bins in yellow, orange, and blue.
1. Set Display Mode = PARTICLE
2. Input bin ranges.
   YEL displays smallest particles.
   ORG displays mid-range particles.
   BLU displays largest particles.

DISPLAY MODE = HAZE
Displays the haze in up to seven shades of blue. Disables particle map and histogram.
1. Set Display Mode = HAZE.
2. Set upper and lower haze limits.
PROGRAMMED SEQUENTIAL

(Mode: AUTOMATIC)
1. Load cassette.
2. Press [CASS] to initialize.
3. Select first cassette slot. Press [↑] and [↓] to select cassette slot followed by [ENT].
4. Select next slot(s).
5. Press [START] to scan. Wafers in highlighted slots will be measured from top to bottom of cassette and returned to receiver. (See TRANSFER MODE.)
6. Toggle to MANUAL mode to erase.

RANDOM-ACCESS

(Mode: MANUAL)
1. Load cassette.
2. Press [CASS] to initialize.
3. Press [↑] and [↓] to select cassette slot.
5. Wafers in highlighted slot will be measured and returned to receiver. (See TRANSFER MODE.)

CALIBRATION CHECK

1. Place the Calibration Standard into a cassette.
2. Set THRESHOLD AND MAX PARTICLE SIZE to include the entire range of documented calibration values.
3. Use Histogram Cursors to define replots of specific calibration values.
4. Verify documented calibration value with Summary Data MEAN value.

STOPLING SCAN

EMERGENCY STOP

Press [STOP] to prevent personal danger or damage to the Surfscan 4500. Pressing [STOP] automatically places the instrument into Manual Mode. If the wafer scan has already begun, rescan the wafer because a mid-scan halt affects data.

S CAN ABORT

To stop during normal operation, press [HOME]. Measurement will abort.

NORMAL SEQUENTIAL

(Mode: MANUAL OR AUTOMATIC)
1. Load cassette.
2. Press [CASS] to initialize.
3. Press [START] to scan. Wafers are measured in order from top to bottom of cassette and returned to receiver. See TRANSFER MODE.

AUTOMATIC/MANUAL MODE

Press [AUTO] to toggle between AUTOMATIC and MANUAL modes. When in automatic mode, “AUTO” will be displayed.

MULTIPLE SCAN MODE

Scan the same wafer multiple times without removing it from the puck.
1. Press [MENU] during the scan. The scan will be completed but the wafer will remain on the puck.
2. Press [START] to rescan the wafer.
3. Use Data comparison to calculate the Max., Min., Mean and STD of multiple scan data.

DATA COMPARISON

To store Summary Data for up to 25 measurements. The mean, standard deviation, minimum and maximum will be calculated and can be used to compare with another 25-wafer set.
1. While in Data Display, press [NXT].
2. Use cursor controls to select two ID# for display of Summary Data.
3. To store wafers from “CURRENT” column in “STORED” column, press [ENT].
4. Press [ABT] to exit Data Comparison.
5. To erase “current” column, remove the sender cassette for four seconds.
6. To erase “stored” column, press [PLT ABT].

REVERSE SEQUENTIAL

(Mode: MANUAL or AUTOMATIC
(TRANSFER MODE = MULTI)
1. Load cassette.
2. Press [START] to scan. Wafers are measured in order from bottom to top of cassette, and returned to receiver.