AIT
Advanced Instrument Technology

MDC
Materials Development Corp
Genève

**Resistivity & Sheet Resistance
Measuring System**

Model *CMT-SR2000N*

Specifications

Advanced Instrument Technology
www.mdc-europe.com

Contents

1. Introduction

The CMT-SR2000N is a full automatic system to measure and map Sheet Resistance and Resistivity of Silicon wafer.

This system can be operated by itself and furthermore, perfect remote control is available using a PC and exclusive software, and it gives various data analyses.

2. Features

➢ X-Y-Z axis full automatic system.

➢ Auto & Manual range selection.

➢ Systems for 8" wafer.

➢ Perfect remote control by operating software.

➢ Data analysis. (2D, 3D map, Data map, etc)

➢ ASTM & SEMI quick measurement mode.

3. Configuration

The system consists of following components.

➢ 4point probe head unit.
➢ Z-axis Robot arm.
➢ Revolution sample stage chuck. (X-Y Axis)
➢ Membrane keyboard panel.
➢ LCD display window.
➢ Remote control communication port.
➢ Vacuum hose connector. (200mmHg)
➢ Software (Windows ^{TM}.)
➢ Standard accessories
  - Power connection cable.
  - Remote control communication cable.
  - Operating & service guide.

4. Specifications

➢ Sheet resistance measurement
  - Measuring method   : Contacted by 4-point probe
  - Measuring range   : 1 mohm/sq ～ 2 Mohm/sq

➢ Resistivity measurement
  - Measuring method   : Contacted by 4-point probe
                             (Input thickness)

  - Measuring range   : 10.0 µohm·cm ～ 200.0 Kohm·cm

➢ Current Source
  - 10nA to 100mA
  - DVM 0V to 2,000mV
  - Accuracy: 0.2 % (KRISS Circuits)

➢ Measurement Accuracy
  - ± 0.5 % (VLSI Standard Wafer, When 23°C)

➢ 4-point probe (JANDEL ENG.)
  - Pin spacing   : 25 ～ 50 mils by 5mil increments.
  - Pin Load   : 10 ～ 250 gram/pin
  - Pin radius   : 12.5～500 microns (polished 2µ diamond)
  - Tolerance   : ± 0.01 mm
  - Needles   : Solid tungsten carbide φ 0.40 mm

➢ Operating software
  - Measurement condition creation.
                   : Wafer type, measure point interval, etc.
  - Save & load   : data, wafer type, measure point, etc.
  - Data analysis : 2D, 3D mapping, Data map, etc.
  - On/Off   : Remote, Vacuum.
  - Data & mapping printout.

➢ Measurement mode (S/W)
  -Auto measurement   : Point interval designation by user.
  -Quick measurement   : ASTM & SEMI Mode.
  -Point measurement   : Appointment on wafer by mouse.
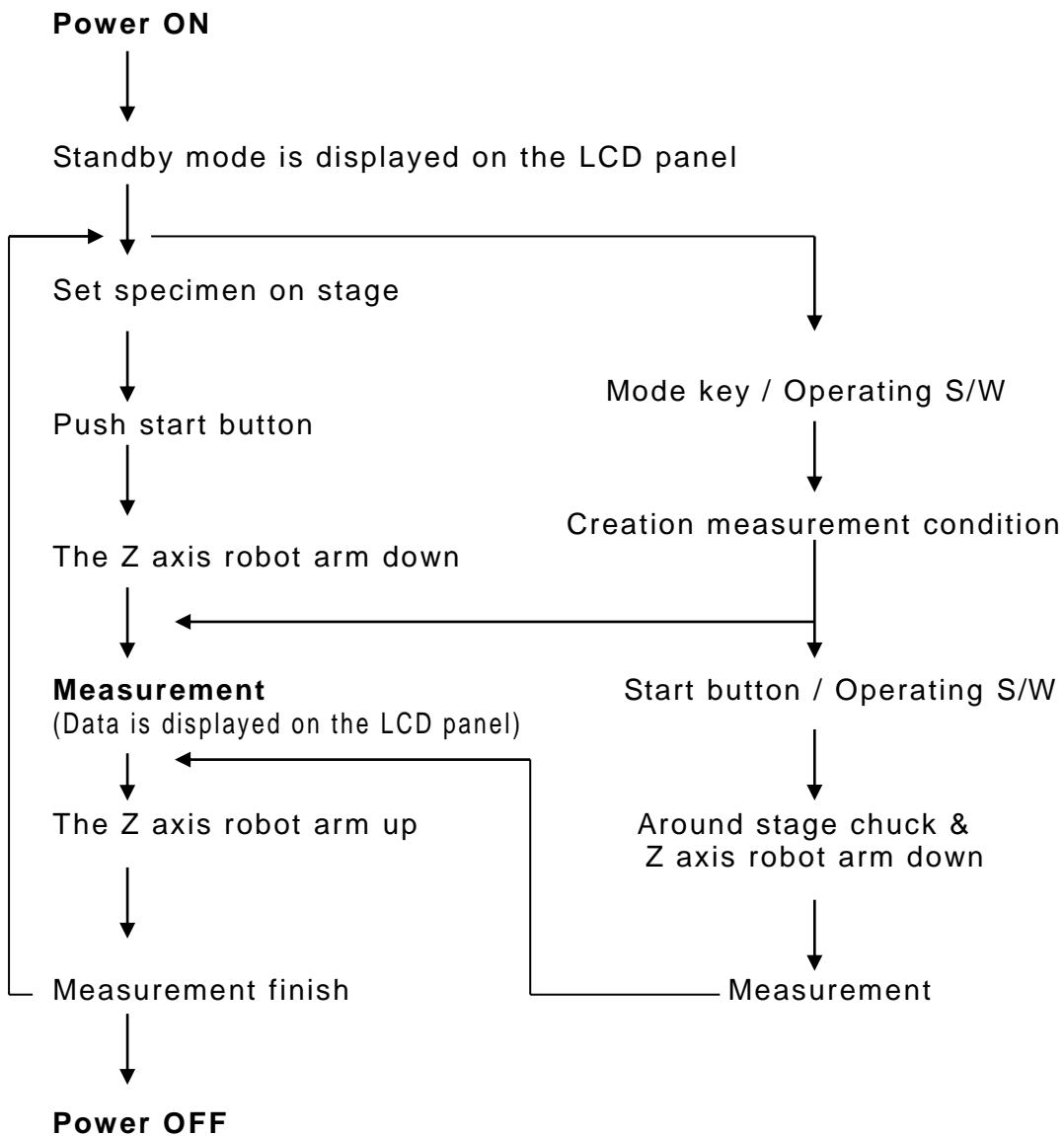 -Manual measurement   : Appointment on wafer by arrow key.

5. Specimen

➢ Wafer   : up to 8" (Size) & 6mm (Thickness)

6. Measuring time

➢ Approx. 3 ± 1 sec/point

7. Measuring flow

Power ON

↓

Standby mode is displayed on the LCD panel

↓

Set specimen on stage

↓   Mode key / Operating S/W

Push start button

↓   Creation measurement condition

The Z axis robot arm down

↓

Measurement
(Data is displayed on the LCD panel)

↓   Start button / Operating S/W

The Z axis robot arm up

↓   Around stage chuck &
       Z axis robot arm down

Measurement finish   Measurement

↓

Power OFF

8. Software [Windows ᵀᴹ]

- ➢ Operating personal computer :
  IBM PC/AT compatible PENTIUM～

- ➢ Connect com port(RS232C) of PC and operating com port of CMT-SR2000N.

9. Utility Requirements

- ➢ Power requirements (1 Line)
  - Line voltage : AC 220V ± 10%
  - Electric power : 55 W, 250 mA
  - Line frequency : 50 ~ 60 Hz

- ➢ Stage Chuck Vacuum requirements (1 Line)
  - Vacuum : About 200mmHg (1 Line)
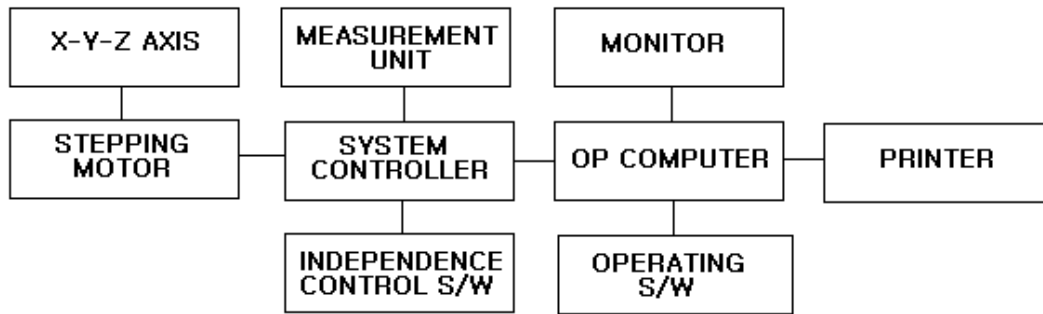 - Vacuum Hose : Urethane 4mm

10. Weight and Dimension

- ➢ Net Weight : 13.4 KG
- ➢ Dimension
  - Net : 562mm(W)×254mm(L)×250mm(H)
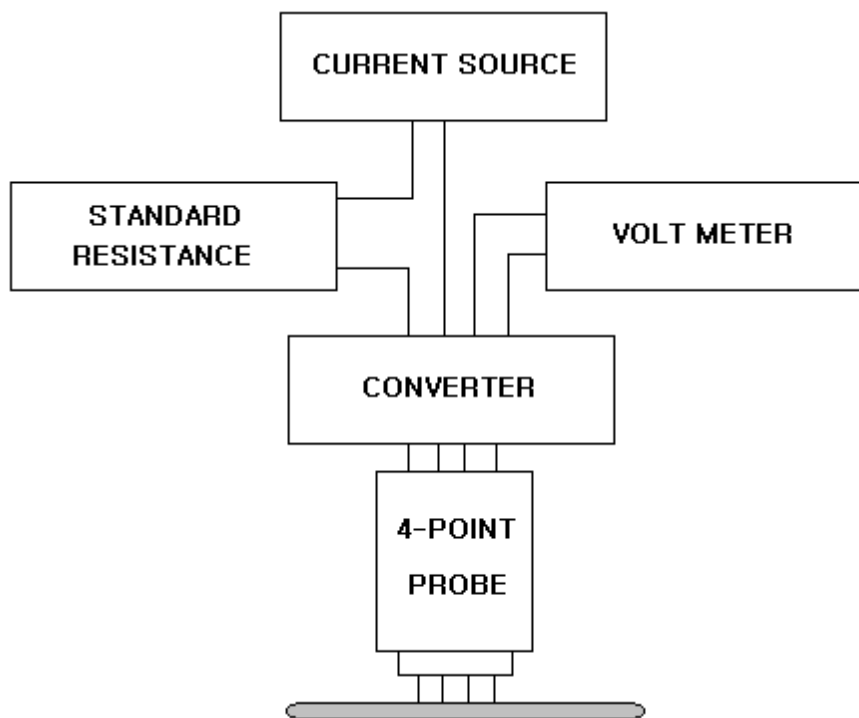 - Carton Packed : 710mm(W)×410mm(L)×400mm(H)

11. Operating Environment

- ➢ Temperature range : 23° ± 1°C
- ➢ Relative humidity : 30 ~ 70 %
- ➢ Avoid placing the system near a source of RFI, vibration and sources of gas.
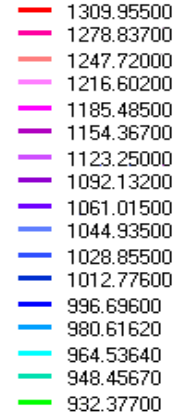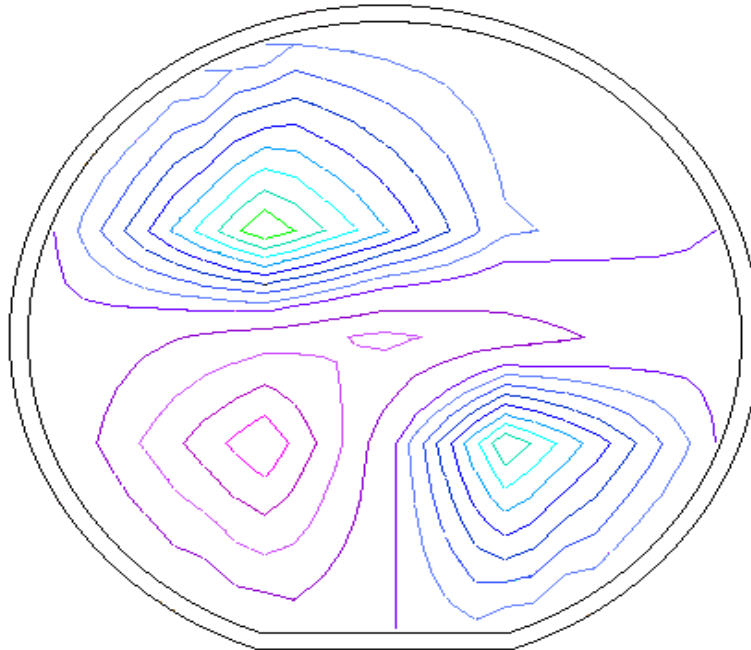- ➢ Avoid large changes in temperature.

12. System Construction Map
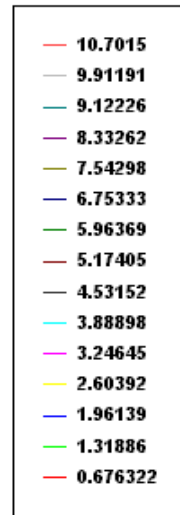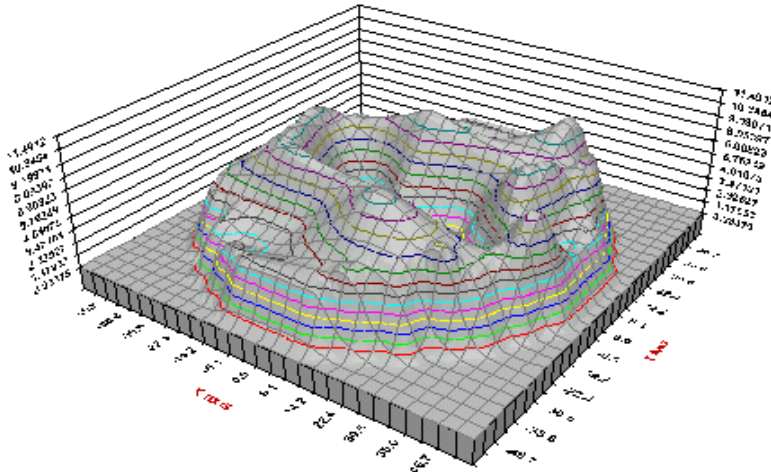
13. Measurement Construction Map

14. Mapping Sample

Contour Map Analysis [ohm / sq]

▬	1309.95500
▬	1278.83700
▬	1247.72000
▬	1216.60200
▬	1185.48500
▬	1154.36700
▬	1123.25000
▬	1092.13200
▬	1061.01500
▬	1044.93500
▬	1028.85500
▬	1012.77600
▬	996.69600
▬	980.61620
▬	964.53640
▬	948.45670
▬	932.37700

1. Sample ID : test000001
2. Sample Type : samtype001   [Size (mm) - Sample: 203.2,   Flat: 6,   Exclusion: 5]
3. Measure Mode : None
4. Thickness : 0.01
5. Date/Time :   오후 1:04:26

3D Map Analysis [ohm]

▬	10.7015
▬	9.91191
▬	9.12226
▬	8.33262
▬	7.54298
▬	6.75333
▬	5.96369
▬	5.17405
▬	4.53152
▬	3.88898
▬	3.24645
▬	2.60392
▬	1.96139
▬	1.31886
▬	0.676322

1. Sample ID : test000006
2. Sample Type : None   [Size (mm) - X: 101.6,   Y: 4,   Exclusion: 4]
3. Measure Mode : None
4. Thickness : 0.0
5. Date/Time : 1998년 11월 16일 월요일 오후 7:38:04
6. Op.ID : sjs
7. Analysis [ohm]
   1) Max : 11.49119   2) Min : 0.03379   3) Ave : 5.17405
   4) StDev : 0.66030   5) Uni : 99.41362   6) Max-Min : 11.45740