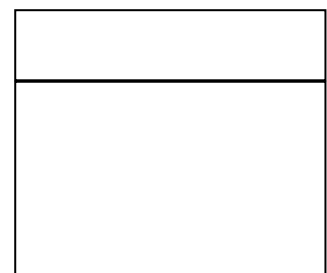


Technical Specification of ST4080-OSP

Designed for Organic Solderability Preservative



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I. System Appearance and dimensions



ST4080-OSP
(Figure is subject to change.)

II. Specification

This system is designed for measuring Organic Solderability Preservative(OSP) Thickness on a Cu Substrate by fine measurement spot as $0.135\mu\text{m}$.

This system has the auto-focusing function to deal with a real-pattern on the Substrate.

1. Function

1.1. Patterned Sub-micron-sized Thickness Measurement System

- ① Thickness measurement by Rotating Filter Wheel (RFW) applied by K-MAC(Patent)
- ② Measurement wavelength range : 420nm~640nm
- ③ Thickness measurement range : 350Å~3 μm (depending on the conditions)
- ④ Measurement spot size : 1.35 μm , 0.135 μm
- ⑤ Single layer thickness Measurement
- ⑥ Thickness computation from optically filtered 2D images
- ⑦ Measurement Result could be saved as Excel format.

2. Hardware Specification

2.1. Dimension and Control Units

- ① System Size : 500mm(W) x 610mm(L) x 640mm(H) (changeable)
- ② Weight : About 45Kg
- ③ Control unit : IBM compatible Computer based on XP
- ④ 2 Lens turret
 - Objective lens for thickness meas.: 5x (spot size 1.35 μm , view of 864X648 μm)
 - Objective lens for thickness meas.: 50x (spot size 0.135 μm , view of 86.4X64.8 μm)

2.2. Sample Plate

- ① Fine Manual stage of 300mm X 300mm

2.3. Frame(Body)

- ① All frame of system is Anodized.

2.4. Programmable Automatic Z Mechanism

- ① Z motion & Performance
 - Head moves in Z direction
 - 2 limit switches
 - Step motor
 - Travel range : 50mm
 - Max. velocity : 50mm/s
 - Motion Repeatability : $\pm 1\mu\text{m}$
- ② Auto-Focusing System
 - Passive type Auto-Focusing

2.5. Optical Measuring Head

- ① Rotating filter wheel for ST4080-OSP
 - Switching 30 optical filters : 23 band-pass and 2 void filters

- Used filter range : 420nm ~ 640nm
- Bandwidth of band pass filters : 10 nm
- ② 2D digital B/W CCD
 - Effective picture elements : 658(H) x 494(V)
 - Picture size : 640X480 pixels
 - Pixel size : 7.4 μ m x 7.4 μ m
 - Frame rate : Up to 60 fps
- ③ Illuminator
 - Tungsten-Halogen stabilized technical lamp
 - Specification : 12V, 100W
 - Color temperature : 3,100K
 - Average Lamp life : 1000 hours nominal

2.6.Measurement Computer

- ① Motion control, data acquisition and thickness measurement
- ② OS : Windows XP
- ③ Processor : PentiumIV 3.0GHz
- ④ Monitor : 1 LCD Monitor
 - Resolution of Desktop monitor : 1280X1024
 - Resolution of Notebook monitor : 1200X800
- ⑤ RAM/HDD: 2GB / 100GB

3. Software Specification

3.1. OPS Thickness Measurement Program

- ① Operation mode
 - OSP thickness measurement
 - Hardware control
 - Storing and handling data of measurement
 - Result display in 2D color and contour, etc

III. Measurement

1. Repeatability

1.1 Thickness Measurement

- ① Measured sample : SiO₂ on Si-Wafer
- ② Thickness : about 5000 Å
- ③ Repeat : 10 times
- ④ Repeatability : ±10Å

Utilities

2. Electricity

- ① AC110V / 240V 300W
- ② 50 / 60Hz \pm 1Hz
- ③ Grounding is required.

3. Maintenance Area

- ① Standard : 1 to 1.5 meter width around the system

IV. Spare parts

- ① Measurement bulb should be replaced every 1000hours.
- ② K-MAC Reference Sample should be replaced every 3 months.

V. Environmental Specification

- ① Insulation Resistance : Not less than 5M Ω with DC1000V
- ② Current Leakage : Not more than 30mA
- ③ Electromagnetic Environment : IEC 802 Compliant

Note) Specially designed units may not comply the standard.

- ④ Operating Temperature and Humidity : 20~25 $^{\circ}$ C $<$ \pm 0.5 $^{\circ}$ C / 12hour
40~50% \pm 1% RH without dewing
- ⑤ Temperature shift should not be more than 1 $^{\circ}$ C / 12 hour.
- ⑥ Cleanliness : Ambient should be cleaner than CLASS 1000
- ⑦ Floor Vibration : Design 0.5gal
 - Amplitude should not be more than 0.5 μ m for frequency less than 8Hz.
 - Acceleration should not be more than 0.25gal for frequency less than 8Hz.
(ISO VC -B Class)

Note) The customer may be requested to prepare special vibration Isolator for the System.

- ⑧ Withstanding Shock during Transportation : Acceleration should not more than 1G
- ⑨ Temperature & Humidity Range during Transportation
 - : 5~35 $^{\circ}$ C without dewing,
 - : 50% RH without dewing
- ⑩ Speed during Transportation
 - Highway Transportation : 70km/hr
 - Generally way Transportation : 40km/hr
- ⑪ Max. gradient during Transportation : 5 $^{\circ}$
(Staying time less than 30 min. at Max. gradient)

VI. Machine Layout