OPTIMA9850

Made by ***PWS JAPAN***

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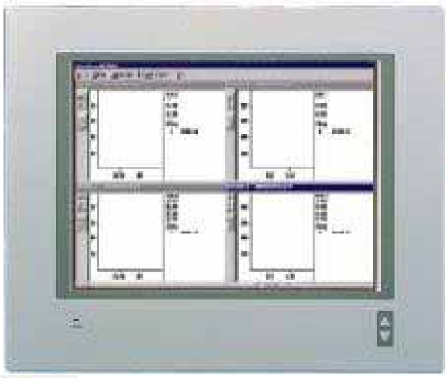

The Optima 9850 Wet Etch Endpoint controller provides optical in-situ monitoring and control of wet etch processes used in the manufacturing of TFT Flat Panel Displays.

Optical monitoring of such processes compensates for factors such as variation in panel film thickness, variations in the temperature of the etchant or the chemical strength/concentration of the etch solution.

The 9850 optical sensor emits IR light that strikes the surface of the panel being processed and the light reflected back is captured by an optical detector. The reflected light intensity is a measure of surface reflectivity. The sensor looks for changes in reflectivity caused by

——breakthrough to a different layer with a different refractive index, and

——thin film interference that materials such as oxides or nitrides produced during procesing.

The End Point Controller (EPC-PC) uses a proprietary signal processing algorithm to recognize the change in signal to detect endpoint.

In-Situ Optical Endpoint Detection results in:

- Increased throughput by determining the optical etch time
- Reduction in defects through elimination of under and over processing
- Reduction in costly off-line inspections

OPTIMA 9850 SPECIFICATIONS

SENSORS	1 to 8
Type	Optical Reflectance
Dimensions	22 x 40 x 33mm
Ambient Operating Temperature	<70 deg.C
Working Distance	250 – 350mm

END POINT CONTROLLER (EPC-PC)

Operating Software	Windows XP Home Edition
Processor	Pentium Processor 800MHz
Memory	PC2100 256k
Storage	60GB Internal Hard Drive
Reprocessing and Analysis	New Optima Software
Recipe Storage Capacity	90 Recipes with Up to 8 Steps
Offline Recipe Storage Capacity	Unlimited
Access Recipe Code	Yes
Power Requirements	95 - 132 VAC/ 180 – 264 VAC, 50/ 60Hz, 6 AMP (115VAC) / 4 AMP (230VAC)
Dimensions	325(W) x 165(H) x 400(D) mm
Weight	13kg

DISPLAY MODULE (DM)

Screen sizi	12.1 Inches
Color Touch Screen	800 x 600 bots
Power Requirements	AC100V~240VAC 40VA(Max) AC Adaptor
Ambient Operating Temperature	<50 deg.C
Dimensions	370(W) x 307(H) x 48(D)mm
Weight	6.0kg

APPLICATIONS

Al, SiO_x, $Si_x N_y$

OPTIONS

Data Storage	TCP-IP (GEM Spec) Connection is COM Porto or Ethernet (Time, Date, Result)

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END POINT CONTROLLER (EPC-PC)

External View

Front view

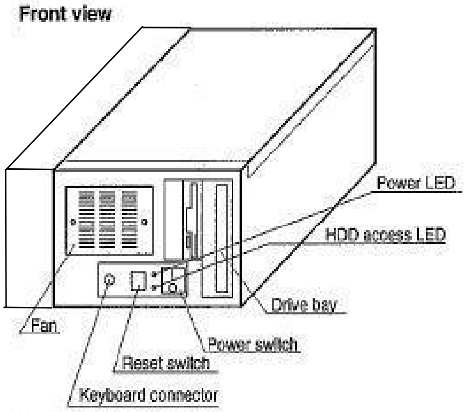


Figure 1. Front View

Rear view

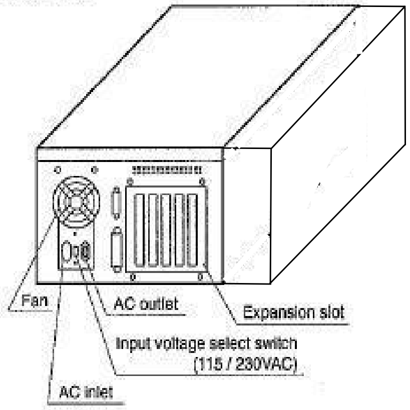


Figure 2. Rear View

Dimensions

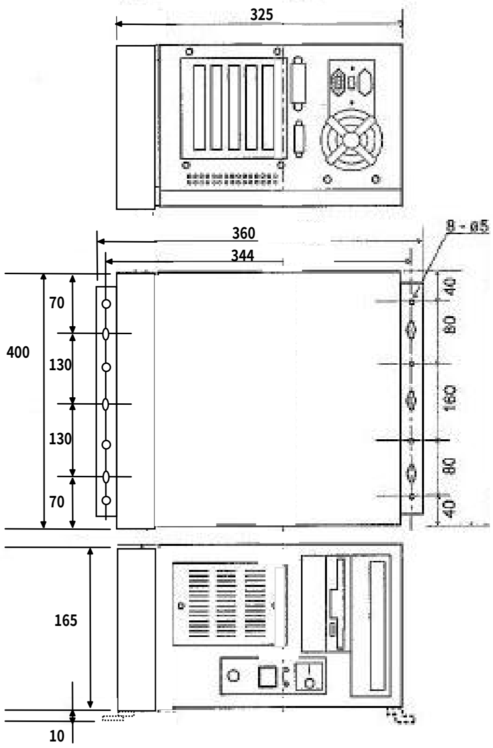


Figure 3. Main Unit Dimensions

DISPLAY MODULE (DM)

Part Names

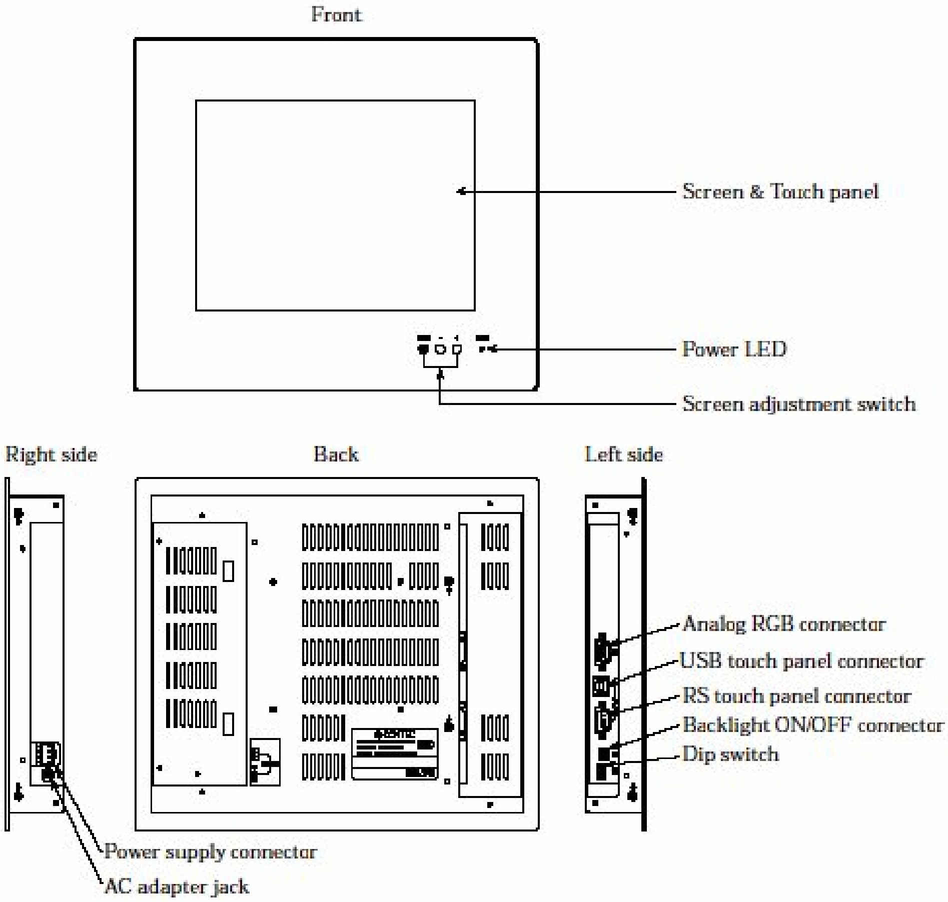


Figure 3.7. **Part Names**

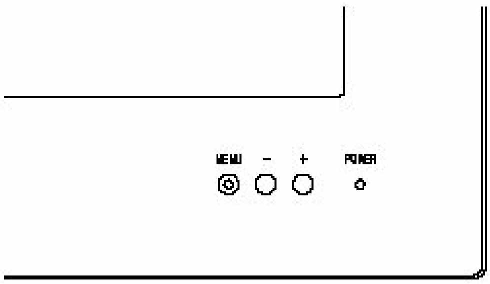


Figure 4

Optima Concept

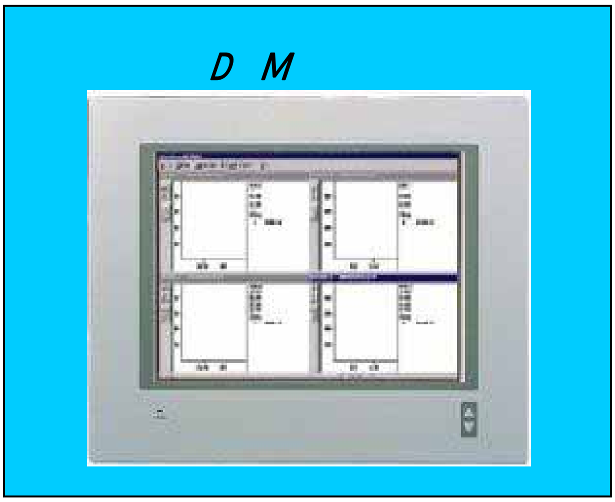
: The EPC-PC collects data, calculates endpoint, and interfaces with tools.

: The DM is the user interface.

Monitor Cable

To Sensor

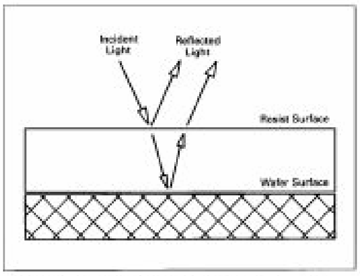
Up to 8 Sensors、Controls Tool and collects data.



Touch Panel Monitor
Used to create recipe and to analyze data

The Principle of Transparent Film Endpoint

- The Upper Left Figure Is An Example Of Thin-film Interference, Where Light Reflected From Wafer Surface Travels A Greater Distance Than That Reflected From The Transparent Surface
- The Two Surfaces Have Different Index Of Refraction And Interfere Constructively, Or Destructively Depending On Their Phase Relation As Determined By Film Thickness



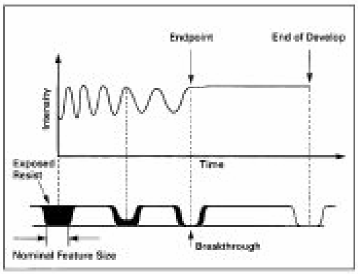


Figure 9 (above). Example of thin-film interference, where light reflected from wafer surface travels a greater distance than that reflected from resist surface. The two reflected signals thus interfere constructively or destructively, depending on their phase relation, as determined by resist thickness.

Figure 10 (top right). Example of typical sinewave signal observed during photoresist development, produced by interference of light reflected from surfaces of photoresist and substrate.

- *Selectivity is important*

The Reflectance Sensor

- The Sensor Incorporates Two Optical Systems:
  - One For Directing Pulsed Light At The Target
  - The Second For Focusing The Returned Light From The Target Into The Detector
- It Generates An Analog Output Signal Proportional To The Reflectance From The Target Surface

- When No Sensor Illumination Is Active, The Background Light Coming From The Target Is Measured To Be Subtracted Later From The Primary Signal. This Offers The Sensor Important Immunity To Ambient Light Conditions