# NXQ8006 Sapphire

**NEUTRONIX-QUINTEL**

With the increased demand for LED processing on compound semiconductor substrates up to 6", Neutronix Quintel has developed the NXQ8006 Sapphire Mask Alignment System that is dedicated for optimal performance in this sector. With a lower price point than the NXQ8008 as well as an industry leading throughput of over 200 wafers per hour in First Mask Mode and over 140 wafers per hour with auto alignment, the NXQ8006 Sapphire is one of the highest Return on Investment (ROI) mask aligners available in the marketplace. The Sapphire Optics feature a 6" Full Field broadband intensity of over 40 mw per square cm with a 350W Lamp, and an improved collimation angle as well as dual integration for enhanced proximity printing and light uniformity under +/-3% for excellent CD control. With a fourth software configurable cassette I/O added, the tool can run up to 100 wafers without interruption.

## HB LED
## LED



**NXQ8006 Sapphire HIGH VOLUME PRODUCTION MASK ALIGNER**

# NXQ8006 Sapphire PRODUCTION MASK ALIGNER

The NXQ8000 Sapphire Integrates the latest in Robotic Automation with a state of the art next generation design from Milara Corporation.  The Dual Arm Robot not only delivers lightning fast wafer transfer at twice the accuracy of competitors, but incorporates the latest motion control expertise from Logisol.  A 32 bit real time kernal delivers fast and accurate motion profiling along smooth and continuous trajectories.  With a rigid structural backbone milled from a single billet of aluminium and maintenance free brushless servo motors, the Milara Robot has a MTBF of an incredible 60,000 Hours!  Teamed with the Logisol Prealigner that is accurate to within +/-25 microns and is perfect for compound semiconductor applications since it can detect opaque, semi transparent and transparent wafers, it is a wafer transfer system combination that is hard to beat.

## Standard Features

- Wafer sizes from 2" to 6" diameter
- State if the art dual arm robot from Milara Corporation
- Logisol Pre-Aligner – detects opaque, semi transparent and transparent wafers
- Four software configurable cassette I/O stations
- Windows based menu driven Graphical User Interface
- Modular Lamp house design allowing easy conversion from Broadband and NUV to DUV
- Fully Motorized X-Y-θ Alignment. Controlled with Joystick or Computer
- Motorized top and bottom microscopes with recipe stored microscope positions
- Fiberoptic thru objective illumination with recipe stored intensity settings
- Easy manual tray-load for loading wafers or pieces
- Multiple contact and proximity exposure modes
- Precise control of contact force during WEC – Ideal for fragile substrates
- Chamber Purge Feature – Recipe driven electronic controlled regulator for purge gas in mask / wafer chamber.
- VideoView Splitfield/ Singlefield Microscope with Quadcam – Two high resolution CCD cameras per objective, switch between Wide View and High Magnification without refocusing!  Customer can select magnification range to meet specific needs.
- Large Gap Alignment and Pulsed Exposure Timer Sequencing Software Included
- Simple topside mask loading
- UltraSense constant power or constant intensity UV power supply with dual channel feedback loop
- Choice of UV exposure power supply –  350/500 Watt or 500/1KW
- Enhanced Printing Optics utilizing dual integration and collimation for excellent printing resolution and CD
- Active Shock Isolation table and Active Isolation from Robot Section
- Very Low maintenance – Z Axis air bearing guide set and air bearing frictionless ball seat for WEC
- Q-Vision Automatic Alignment Vision Recognition Software
  - Excellent Contrast on Textured and Transparent wafers allowing the most difficult alignment mark recognition
- Align for Speed or Accuracy, recipe configurable
- Smart Align Technology - Final alignment verification confirmed at print gap with software algorithms that recognize and adjust for alignment mark trends between align gap and print gap

## Optional Features

- Production Enclosure
- Automated mask changing
- Integrated bar code reader and SECS / GEM Software
- Optical Backside Alignment and Backside Infrared (IR)
- Fiberoptic Ring Illumination for oblique and dark field illumination
- Matrox Geometric Model Finder (synthetic pattern generation) Optional
- NUV (280-350nm) / MUV (280-450) / DUV (220-280nm) exposure optics
- 500 Watt / 1KW Constant Power / Constant Intensity power supply
- Edge Handling Robot, Pre-Aligner and alignment stage
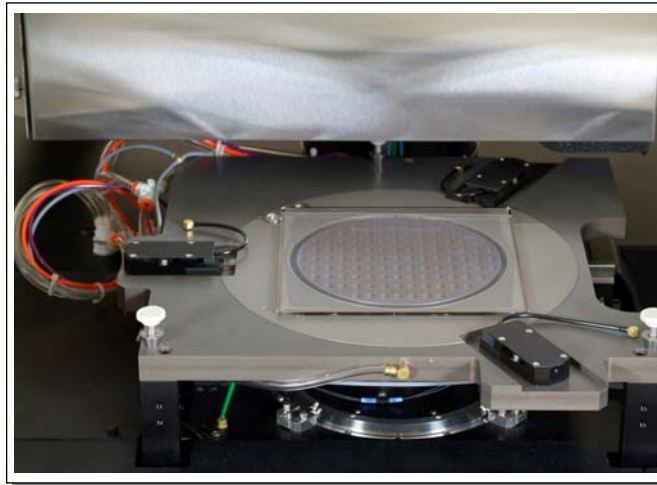
## Technical Data

**Exposure Modes**
- Soft, Pressure, Vacuum Contact and Proximity Printing Modes

**Print Resolution**
- Proximity                                    3um at 20um gap
- Soft Contact                                 2um
- Hard Contact                                 1um
- Vacuum Contact                               0.5um
  - Note:  Achievable resolution depends on many process conditions including wafer flatness, resist type and therefore might vary according to actual process.

**Cycle Time and Alignment Accuracy (1 sec exposure) with Dual Arm Robot**
- First Mask Mode                              200+ wph
- TSA Auto Alignment Mode (Contact)            140+ wph: +/- 0.5um 3 sigma
- TSA Auto Alignment Mode (Proximity)          140+ wph: +/- 0.5um 3 sigma
- BSA Auto Alignment Mode (Contact)            120+ wph: +/-0.75um  3 sigma
- BSA Auto Alignment Mode (Proximity)          120+ wph: +/- 0.75um 3 sigma

**Substrate Size**
- Round                                        2" to 6" up to 10mm thick
- Diameter Square                              2" to 4" up to 10mm thick

**Mask Size**
- 2.5" X 2.5" up to 7" X 7"

**Alignment Stage**
- Alignment Travel X-Y and Theta Motorized with automatic re-centering
- X-Y Movement                                +/- 4mm, 100nm resolution
- Theta Rotation Range                        +/- 7.5 degrees, 4x10e-5 resolution
- Mask/ Wafer separation                      0 – 1000um with 1um resolution

**Video View Microscope Travel Range**
- Left Microscope Travel X                    -12.5 to -87.5mm
- Right Microscope Travel X                   +12.5 to + 87.5mm
- R/L Microscope Tavel in Y                   +/- 12.7mm

**Top Side Microscopes**
- Quadcam – 2 CCD Cameras per objective
- 5x Objectives Standard, 2x, 10x and 20x optional
- Two high resolution CCD cameras per objective, switch between Wide View and High Magnification without refocusing!  Customer can select magnification range to meet specific needs.

Specifications depend on individual process conditions and can vary.   Not all specification may be valid simultaneously.

# NXQ8006 Sapphire PRODUCTION MASK ALIGNER

## Electronics

- Programming & Control PC based.
- Device Net Control System for pneumatics and sensors
- Ethernet Motor Control

## UV Lamphouse/ UV Exposure Optics

| | |
|---|---|
| UV Lamphouse | 350/500W or 500/1KW |
| Standard Exposure Optics | Broadband (350-450 nm) |
| Optional NUV | 280-350nm |
| Optional MID UV | 280-450nm |
| Optional DUV | 220-280nm |
| UV Uniformity | +/- 3%, 150mm |
| 6" Full Field Intensity (405nm probe) | 40 mw/cm2 |

## System Requirements

| | |
|---|---|
| Voltage | 110VAC/60Hz or 240VAC/50Hz |
| Compressed Air | 6.2 -7.6 bar (90-110 PSI) |
| Vacuum | -0.7 bar (21" Hg) |
| Nitrogen (or CDA) | 4.2 bar (60 PSI) |

## System/Module Data

| | |
|---|---|
| W x D x H | ~1622 x 1214x 1740mm (63.85" x 47.79"x 68.51") |
| Weight | 1700 lbs |