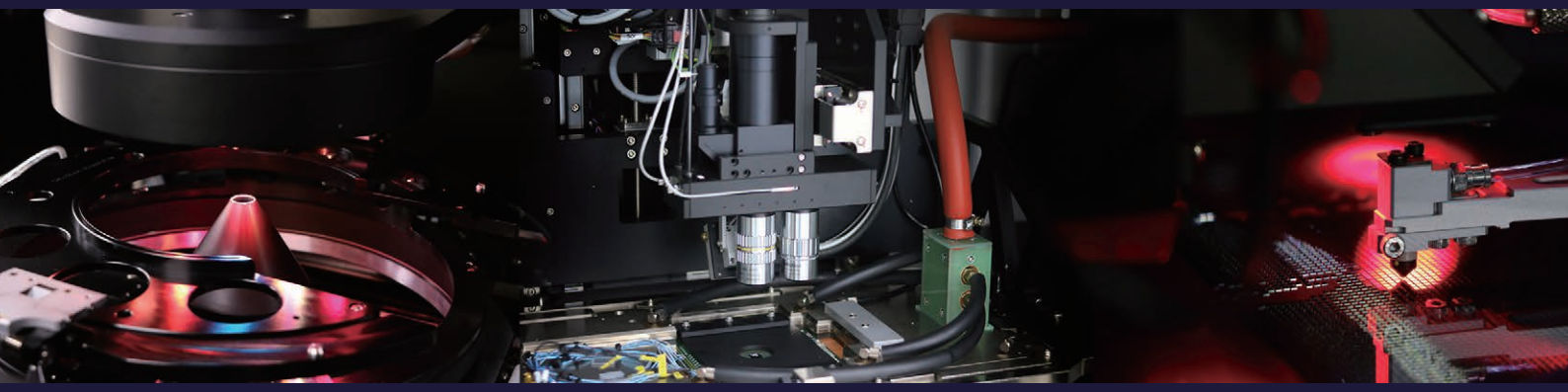
MPI Photonics Automation

Division Brochure



Wafer / Device Automated Probe, Test & Measurement, Sort and Inspection

MPI Photonics Automation

Your reliable technology partner specialized in optical testing systems with best automation capability for more than 20 years of experience

Established in 2001, MPI Photonics Automation (PA) Division is the world's leading manufacturer of automated test and measurement equipment for the Photonics, Optoelectronic, Semiconductor, and Laser industries. MPI's leading-edge technology enables a global installation base of more than 13,000 photonics systems worldwide operating 24/7.

We offer a comprehensive portfolio of solutions for automated wafer/device test, measurement, and inspection. This portfolio now includes applications such as Micro Display, Laser Diodes (LD) and Photodiodes (PD), and more. Our mission is to offer our customers the best production methodology via high throughput and high precision measurement solutions — **We are MPI Photonics Automation, We are Ready for the Test.**

For more information,
please visit mpi-corporation.com/pa.

Wafer Prober

Up to 8”
Wafer Handling

DUT Types
VCSEL / PD / µLED / Hybrid

Precision PTPA
Wafer / DUT / Probe

Various Optics Options
For Optical Measurements

High / Low
Temperature Testing

Production Flexibility
System Configuration

MPI TP80 Series | Top Side Probing Wafer Prober

Key Features

- Automated test solution from wafer to package level.
- Three top side optical test unit integrated in one tool.
- -40°C ~ +200°C thermal test range.
- Upward looking camera for accurate probe tip identification.
- Rigid platen design for installing probing mechanisms such as PCH, Positioners, or RF probes.
- Flexible configurations: up to two probers per loader (2P1L).
- A wide range of options to fit your exact test requirements.
  (optics/detectors, chucks, probing mechanisms, loaders, and more)

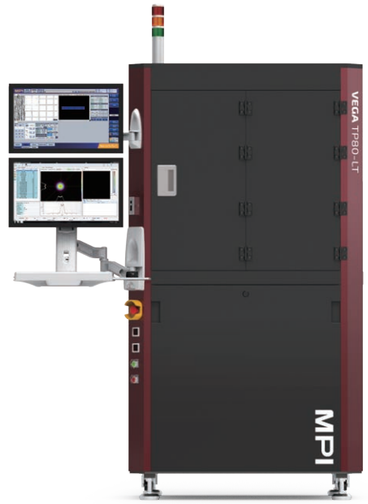
Applications

- High power VCSEL characterization: LIV, Spectrum, Far Field (FF) testing with automated procedure arrangement.
- High speed VCSEL / PD characterization: S-parameter, RIN and BERT test integration.
- Micro Display characterization: Pixel uniformity, Pixel color accuracy, and illumination pattern.
- Wafer Level Reliability (WLR): Device stress testing and characterization.

STANDARD

TP80-W1

Multi-site probing capability enables high-efficiency and comprehensive device characterization.



LOW TEMPERATURE

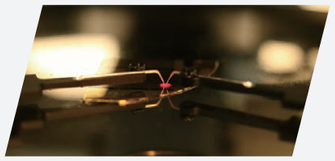
TP80-LT

Supports a broad range of temperature test with best optical testing system configuration.

WLBI / TEST AUTOMATION

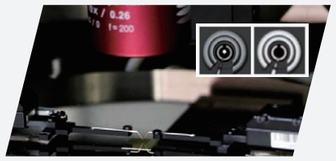
TP800-WLR

Wafer Level Burn-in and test solutions from engineering through production.



Photodetector Testing

VCSEL Key Parameters Test



Optical Input and Power Control

Various Accessory Options

Wafer Prober

Up to 8”
Wafer Handling

DUT Types
VCSEL / PD / µLED / Hybrid

4~256 Channels
High Pin Count Probing

Various Optics Options
For Optical Measurements

15°C ~ 90°C
High Temp. Test

Precision PTPA
Wafer / DUT / Probe

MPI FP80 Series | Flip Chip Probing Wafer Prober

Key Features

- Automated test solution from wafer to package level.
- Best probing solution for ultra small pad size as 5µm.
- Multi-site contact and probing workflow arrangement.
- Upward looking camera for accurate probe tip identification.
- Bottom stages integratable for up to 3 optical test units.
- MPI ThermalAir for wafer testing temp. range 15°C ~ 90°C.
- Vibration-isolation damping platform.
- High-efficiency dockable or standard wafer handling loader / unloader.
- A wide range of options to fit your exact test requirements.
  (optics/detectors, chucks, probing mechanisms, and more)

Applications

- High Power VCSEL characterization: Supports using Cantiliver or Vertical Probe Card for LIV, Spectrum, Near Field, Far Field testing.
- High Speed VCSEL / PD characterization: S-parameter, RIN, BERT, IV, Capacitance and Responsivity test integration.
- Micro Display (µLED wafer and hybrid wafer) characterization: Spectrum, Color accuracy, and IV characteristics.
- Flip Chip Wafer testing: Optimal prober with precision contact control for accurate testing.

STANDARD

FP80-WA

Precise positioning and probing for Flip Chip structure Photonic devices.

HIGH TEMPERATURE

FP80-T

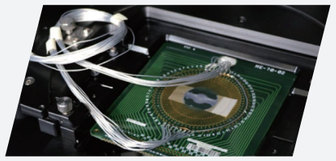
Reliable temperature test combined with MPI ThermalAir technology for mass production or product development.

TEST AUTOMATION

FP80-WA+LS800

Dockable with MPI LS800 Loader system for complete automation.

Multi-site Test Structure



MPI Probe Card Holder

Flexible System Platform

Upward Looking Camera

Die Prober

Up to 8”
Wafer Handling

Single Die or Package
LED Test

Short DUT & ISP Separation
Optimal Light Collection

Multi-site Test
High Volume Production

High / Low
Temp. Test & Control

DUT Types
LED / VCSEL / EEL/ Hybrid Device

MPI DP80 Series | Die / Package Prober

Key Features

- Ideal testing platform for singulated devices, including LED, LED CSP, VCSEL module, Edge Emitting Laser, edge coupling optical DUT, SiPh packaged device, power device, etc.
- Comprehensive product portfolio with expertise in mass production, high measurement accuracy, and flexibility.
- Mass production-centric solution with fast and accurate device handling capability, especially for small DUT size down to 150µm.
- High throughput production running: simultaneous handling and multiple parallel testing for increased UPH.
- Supports optical testing for top side emissive or edge side emissive devices.
- Probe Card or Socket as probing mechanism options to suit various testing requirement.
- Anti-vibration damping tool to increase test accuracy and stability.
- Switching capability between optical testing units for maximum flexibility and efficient adaptation to diverse test scenarios.

Applications

- SiPh device testing with best fiber coupling design and versatile Probe Card / Socket probing mechanism configurations.
- Optical module Transceiver/Receiver characterization: IV, optical power, and spectrum analysis for VCSEL/PD.
- Edge Emitting Laser/Bar characterization: LIV, spectrum, and beam quality.
- Power device: KGD testing post-wafer sawing for enhanced quality control.

THREE STATION TEST

DP80-3ST

Equipped with a multiple testing station structure to support VCSEL package or EEL module test.

SINGLE / DUAL STATION TEST

DP800-VC

High performance dual station testing structure design for CSP LED, Vertical LED, VCSEL package, or EEL test.

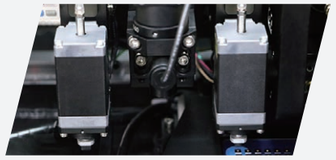
SIPH APPLICATION

DP80-1S-2D

Design for testing SiPh devices with best edge coupling capability.

EEL Package Testing

Single Die Test with Temp. Control



Flexible System Platform

Upward Looking Camera

Die Sorter / AVI System

4”~8”
Wafer Handling

SECS/GEM & MES
Compliance

Auto Focus
Best Image Quality

Vertical / 360° Rotation
Sorting Method

LED / LD / IC
Versatile DUT Support

MPI ST800 Series I Die Sorter

MPI AS800 Series I AVI System

Key Features

Die Sorter

- Pick and place capability for VCSEL / EEL / PD / LED / IC / CMOS / Bar or Array.
- Cost-effective vertical sorting / High speed quad. arm sorting options.
- Integrate the defect inspection capability of 2S AVI function.
- 4” ~ 8” wafer handing capability.
- Die size handling ranged from 0.15mm ~ 30mm with high aspect ratio.
- High speed PnP capability and supports various type of wafer.

AVI System

- Sophisticated software that supports both standard AVI procedures and customized plugin applications, including .NET or C DLL algorithms and Python plugin auto-run sequences.
- AI model training and defect classification.
- Simultaneous top side / back side inspection.
- Superior computing and data processing to boost productivity.
- “Auto Train” to instruct the golden template for defect inspection.
- Wafer height profiling & autofocus to achieve high compensation accuracy.
- Optional dockable loader for mass production requirements.

DOCKABLE SEMI AUTO DIE SORTER

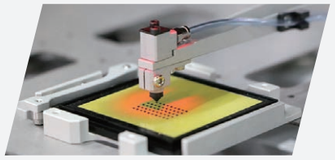
ST80-D

Superior 8” die sorting system with dockable capability to achieve higher UPH. Die size handling from 0.15 mm x 0.15 mm ~ 30 mm x 30 mm.

FULLY AUTO AVI SYSTEM

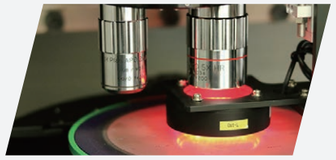
AS800

High accuracy AVI System with double-sided wafer inspection capability.

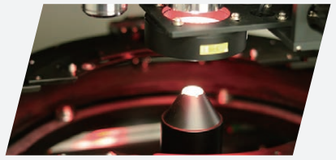


High Speed Sorting

Various Carrier Handling



Dual Vision AVI Inspection



Back Side Inspection

Tester Integration

MPI STARGAZER Series | Photonics Tester System

Testing Sequence Control

Flexibly select/edit test sequence & parameters

Production Data Reporting

Manage lab/production recipe via the intuitive software interface

Recipe Management

Real-time test results for DUT characterization and a comprehensive wafer report

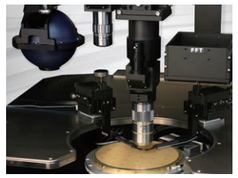
Seamless Integration

With selected top third-party measurement instruments through trusted partners to meet your specific test needs

Photo courtesy of Tektronix Inc.

Key Test Capability By Application

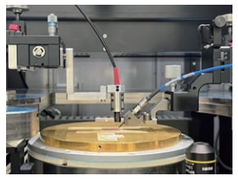
STARGAZER LD200



SENSING LASER

Current Control	Real-time current and voltage measurement Integration of SMU, power meter, and Driver IC
Spectrum Measurement	Precise spectrum measurement Integration of spectrum analyzer or spectrometer
Near Field Pattern (NFP) / M^2 Characterization	Near Field (NF) optics with large Field-of-view (FOV) Analytical tool for assessing NFP beam quality
Far Field Pattern (FFP) Characterization	FF optics for visible, NIR, and IR light ranges Analytical tool for evaluating FFP beam quality

STARGAZER LD200



DATACOM LASER

Current / Bias Control	Integration of SMU and power meter
LIV / Spectrum Measurement	Current / voltage measurement using meter Integration of spectrum analyzer or spectrometer
NFP / FFP Characterization	Integration of NF / FF optics Analytical tool for beam quality calculation
High-Speed characterization	S-parameter characterization using RF probe and optical VNA Test instrument integration for Relative Intensity Noise (RIN), Bit Error Rate (BER) testing

STARGAZER PD200

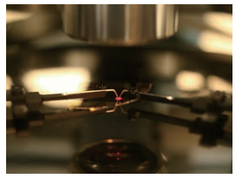
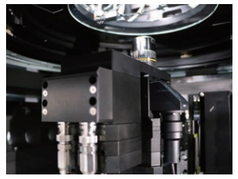


PHOTO DIODE

IV Sweeping	Dark Current / Photo Current measurement SMU integration for testing singulated / multi DUT
Responsivity	Illumination source control / Optical switch / Attenuator control
Capacitance	LCR measurement integration
High-speed Characterization	S-parameter characterization using RF probe and optical VNA Test instrument integration for Relative Intensity Noise (RIN), Bit Error Rate (BER) testing

STARGAZER MT200



MICRO LED

Current Control	Precision measurement and control with the integration of SMU and display driver
Color and Illumination Pattern	Integration of spectrometer, color meter, and conoscope
Uniformity	Dedicated tool for analyzing intensity and uniformity

Sustainable & Holistic Approach

Over the course of a quarter-century, the MPI PA team has developed an extensive understanding of customer requirements and application know-how. We are dedicated to using a comprehensive approach to assist our customers in optimizing, verifying, and enhancing their technologies.

Quality

- ISO 9001: 2015 Quality Management System (QMS) Certified
- Products and services meet customer and international regulatory requirements
- Continuously seeking product improvements and optimizing processes

Service & Support

- Service network in North America, Europe, China, and Taiwan
- Fast response for product and system support
- We offer customer-specific training courses with individually defined contents.

Environment

- ISO 14001: 2015 Environmental Management System (EMS) certifed
- ISO 14064-1:2018 Green House Gas (GHG) emission verified
- ISO 50001 Energy Management System (EnMS) implemented
- Conscientious manufacturing: no use of hazardous materials

Responsible Business Alliance

MPI is committed to complying with the Responsible Business Alliance (RBA) Code of Conduct to promote safe working conditions, worker rights, environmental responsibility, responsible sourcing of minerals, and business ethics.

MPI Photonics Automation

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