Inventing for your success,
inventing for the future

Company Profile

Lasertec

Be the first point of contact for worldwide customers searching for solutions.

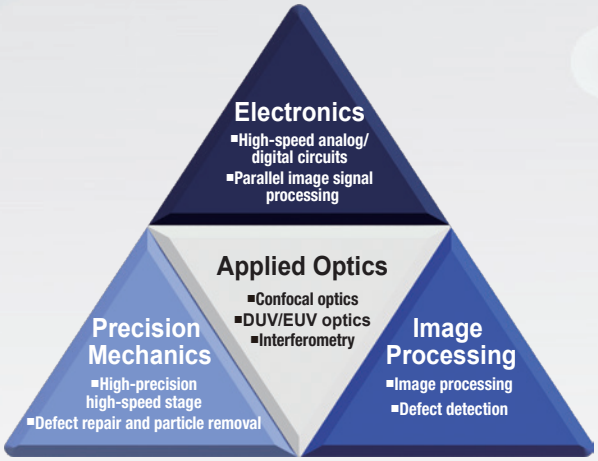
“Inventing for your success, inventing for the future” Corporate philosophy of Lasertec

Lasertec has been creating unique inspection and measurement systems that feature leading-edge technologies for many years. We capture market needs at an early stage and bring high-value solutions quickly to help customers at their R&D and production sites based on our proprietary technologies in applied optics. Thanks to our unique technologies, high quality, and good customer support, we have earned a good reputation and customer trust in fields such as semiconductor, energy and environment, laser microscope, and flat panel display.

Lasertec will keep creating new value and contribute to the progress of society.

Lasertec uses its proprietary optical technologies to help customers overcome new challenges.

The core technology that enables Lasertec to create epoch-making products is applied optics.



Lasertec has accumulated its own proprietary technologies by pursuing the ultimate possibility in the use of light for inspection and measurement. It began with our success in developing a "laser microscope" through the effort to use a laser light source to achieve high resolution. Since then, we have mastered a **“confocal optics”** technology that enables the construction of all-in-focus, three-dimensional images of samples. We have also succeeded in developing a **“DUV/EUV optics”** technology that addresses the need to use a shorter wavelength light source in semiconductor lithography that has emerged with scaling, and an **“interferometry”** technology that accurately measures very small shifts in the phase of light.

We combine these core technologies in applied optics with other technologies in peripheral areas to offer the best solution to each application. We meet various customer needs in this manner.

“ Let’s launch a product that is totally new to the world every year.” Spirit of the founders

In October 1976, we successfully developed the world’s first automated LSI photomask inspection system. The system contributed to quality improvement and cost reduction in the semiconductor industry, achieving a higher defect detection rate (from 60% to near 100%) and a significantly reduced inspection time (to 1/10 of what it used to be). It gave us a foundation for growth. Drawing on this success, we have launched more innovative products featuring unique optical technologies.
“A product that is totally new to the world” - by upholding the spirit of the founders and redefining it, we will keep enhancing our product development capability and strive for higher growth.



LSI photomask inspection system in 1976
(Winner of “Ten Best New Products Award” from Nikkan Kogyo Shimbun)

Rapid product development and good customer support

Advanced and unique products are developed in the shortest time possible

At Lasertec, engineers are responsible not only for product development but also for all stages of the product life cycle, i.e., planning, technology research, designing, prototyping, fabrication, delivery, installation and after-sale support. Armed with diverse experience from this process and highly motivated by professional spirit, our engineers take on tough challenges. This leads to the accumulation of unique knowhow and drives our rapid product development.





Technical support infrastructure for leading-edge customers worldwide

Leading-edge inspection and measurement systems are required to show good performance without interruption. Lasertec strives to maximize the uptime for all of its systems in use. We put in place technical support infrastructure to provide full on-site support and prompt backup in case of an emergency. Our global operations are assisting our customers' production and R&D efforts.



Environmental policy

Lasertec proactively takes on the growing challenge of global warming and other environmental issues as part of its efforts to contribute to solving social issues through business execution.

Mid- to long-term vision

We are striving to make the following vision come true in the mid- to long-term:

- We contribute to increasing the energy efficiency of electronics and industrial equipment around the world with the development of innovative inspection and measurement tools that are necessary for semiconductors, FPDs and others to achieve higher performance, higher production yields, and lower energy consumption.
- We contribute to facilitating the commercial application of next-generation power semiconductors using SiC and GaN and enhancing the performance and safety of lithium-ion and other rechargeable batteries, which are crucial for making electric vehicles more reliable and affordable.
- We anticipate mid- to long-term market growth for our products driven by an increase in demand for semiconductors with the advent of new applications such as 5G, AI, IoT, and autonomous driving, but we prevent it from causing a proportional increase in GHG emissions from our production and sales promotion activities by managing to reduce emissions per revenue effectively.
- We contribute to the realization of a sustainable society throughout our supply chain in cooperation with our manufacturing subcontractors and suppliers.

Semiconductor

Semiconductor-related systems

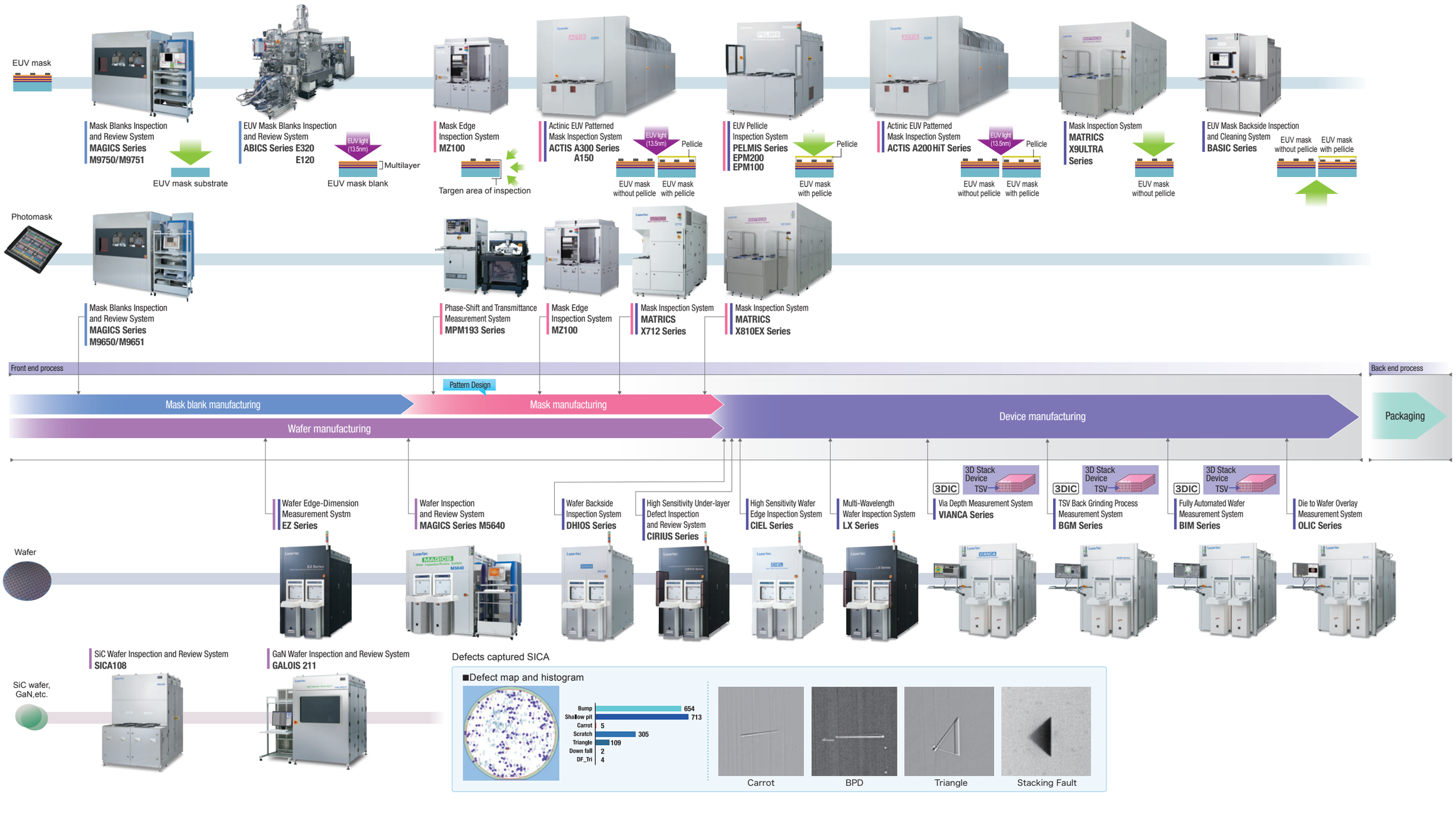
Inspection and measurement systems for semiconductor photomasks, mask blanks, and wafers

Lasertec provides highly accurate inspection and measurement systems essential for semiconductor manufacturing process.

Our inspection and measurement technologies have become an essential part of semiconductor production, which is evolving with the adoption of EUV lithography, new materials, and new architectures, enabling the further miniaturization of IC designs. In the area of semiconductor photomask-related inspection, which is our main business, we offer EUV mask blank inspection systems regarded as the de facto industry standard and photomask inspection systems for leading-edge lithography that have captured high market share.

In the area of wafer-related measurement and inspection, our systems offer a range of solutions to customer needs, including wafer-edge inspection, whole-wafer film-thickness inspection, silicon thickness measurement, and SiC wafer inspection.

Lasertec systems in the semiconductor manufacturing process



Microscope

Laser microscopes and lithium-ion battery-related systems

3D surface-profiling microscopes and lithium-ion battery observation systems

Lasertec provides high-performance, multifunctional 3D surface-profiling microscopes for R&D in cutting-edge technology areas, and systems for analyzing charge/discharge characteristics of lithium-ion batteries.

Our high-performance, multifunctional hybrid laser microscopes are widely used for R&D and quality control in a variety of industries including semiconductor materials, transparent films, coating materials, inorganic/organic materials, biological samples, metal parts, and plastic components. We offer customization to meet the needs of automatic transfer, inspection, and measurement for volume production applications. In the area of lithium-ion batteries, we provide a material analysis system based on our proprietary, cutting-edge technologies.

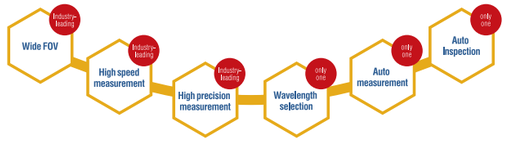
The multifunctional, high-performance OPTELICS HYBRID+

Combining white light confocal and laser confocal



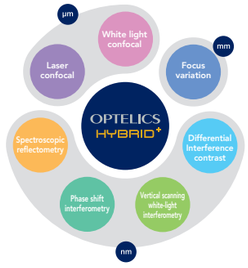
HYBRID+ features white light and laser confocal optics, offering the benefits of both technologies.

Achieving industry-leading performance



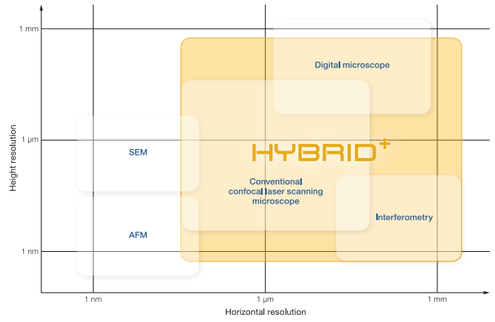
HYBRID+ achieves industry-leading performance in the various measurement and observation functions required for a confocal laser scanning microscope.

The 7-in-1 Microscope



Do more with less. Get seven functions in one system: focus variation, white light confocal, laser confocal, differential interference contrast, vertical scanning white-light interferometry, phase shift interferometry, and spectroscopic reflectometry.

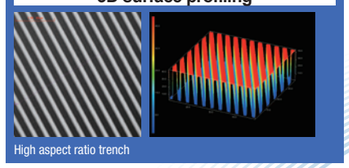
Meeting a wide range of measurement needs



HYBRID+ meets measurement needs on a wide range of scales from nanometers to millimeters.

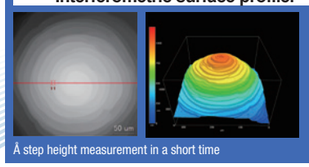
HYBRID+ application example

3D surface profiling



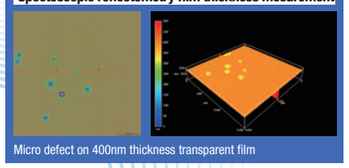
High aspect ratio trench

Interferometric surface profiler

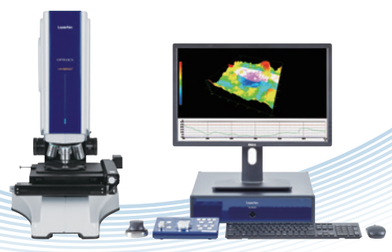


Å step height measurement in a short time

Spectoscopic reflectometry film thickness mesurement



Micro defect on 400nm thickness transparent film



OPTELICS HYBRID+

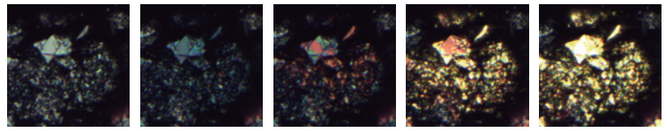
For analyzing charge/discharge characteristics of lithium ion batteries

Electro-Chemical Reaction Visualizing Confocal System

ECCS B520

- ***In-situ* observation of electrochemical reactions inside a charging/discharging battery**
  - Visualization of lithium ion intercalation
  - Quantification of the expansion and contraction of active materials
  - Analysis of dendrite formation mechanism

Graphite anode inside a lithium ion battery being charged



0% charged ▶ 33% charged ▶ 50% charged ▶ 75% charged ▶ 100% charged



Flat Panel Display

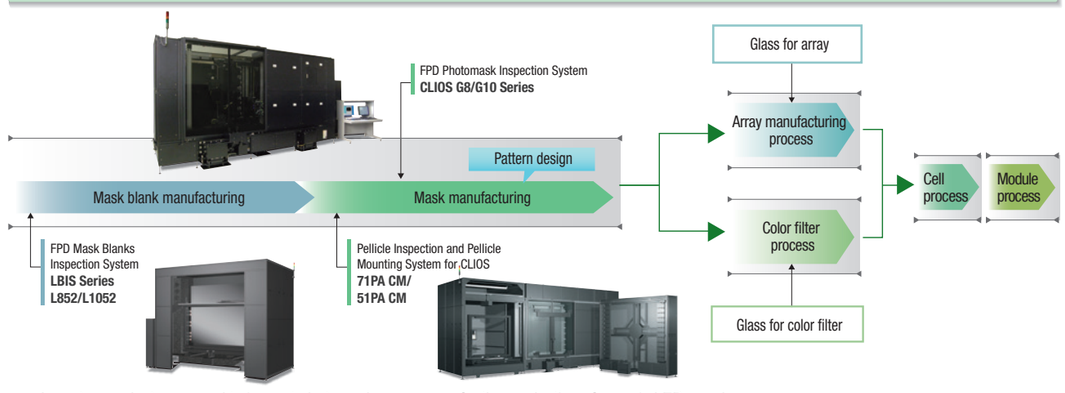
FPD-related systems

Systems used to inspect defects on FPD photomasks and mask blanks

Lasertec provides state-of-the-art inspection systems to support innovations in FPD technology.

Lasertec's inspection systems support innovations in liquid crystal and other flat panel display (FPD) technologies and facilitate the adoption of higher resolution FPDs. Our FPD photomask inspection systems have a track record of being regarded as de facto standard tools. We also offer a full lineup of solutions to cover inspection needs of the processes before and after photomask inspection. We upgrade the defect detection performance of our inspection systems in response to the introduction of finer patterns. We pride ourselves on making significant contributions to the quality improvement of FPD photomasks.

Lasertec systems used in FPD manufacturing process



Lasertec products are used to inspect photomasks necessary for the production of organic LED panels.

Company Outline

Name	Lasertec Corporation
Corporate office	2-10-1 Shin-yokohama, Kohoku-ku, Yokohama, 222-8552, Japan
Capital	931 million yen
Founded	July 1960
Business	Development, manufacturing, sale and service of the following products 1.Semiconductor-related systems 2.FPD-related systems 3.Laser Microscopes

Overseas

- Lasertec USA, Inc.
  Headquarters: Santa Clara
  US locations: Oregon, New York, Idaho, North Carolina,Texas, Arizona
  German branch: Dresden, Ireland branch: Kildare
  Israel branch: Kiryat Gat, Italy branch: Milan
- Lasertec Korea Corp.
  Headquarters: Hwaseong
  Other locations: Pyeongtaek, Cheonan
- Lasertec Taiwan, Inc.
  Headquarters: Hsinchu
  Other locations: Tainan, Taichung, Kaohsiung
- Lasertec China Co., Ltd.
  Headquarters: Shanghai (Pudong)
  Other locations: Shanghai (Lingang), Nanjing, Beijing, Amoy, Tianjin Shenzhen, Jinan
- Lasertec Singapore Pte. Ltd. (Singapore)

Milestones

1960 Tokyo ITV Laboratory is founded and starts to design and develop X-ray TV cameras

1962 NJS Corporation is established and starts exploring a wide range of technology development besides X-ray television.

1976  The world's first LSI photomask inspection system is developed and launched.

1985 The world's first color laser scanning microscope is developed and launched.

1986 NJS Corporation is renamed as Lasertec Corporation.
Lasertec U.S.A., Inc. is established in San Jose, CA.

1990 Lasertec is listed on the OTC stock market (code 6920).

1993 The world's first phase shift measurement system is developed and launched.

2000  Mask blank inspection system, MAGICS Series, is developed and launched

2001 Lasertec Korea Corporation is established in Seoul, Korea.

2002 Lasertec Corporation receives ISO9001: 2000 certification.

2004 Lasertec is listed on JASDAQ.

2006  Photomask defect inspection system, MATRICS Series, is developed and launched.

2008 New corporate head office and R&D center is inaugurated in Shin-yokohama.


Corporate office-R&D center

2009  SiC wafer inspection and review system, SICA, is developed and launched.

2010 Lasertec Taiwan, Inc. is established in Hsinchu, Taiwan.

2012 Lasertec is listed on the second section of the Tokyo Stock Exchange.

2013 Lasertec is listed on the first section of the Tokyo Stock Exchange.
Lasertec receives "Commissioner of the Japan Patent Office Award" as a company making good use of the industrial property rights system.

2017 Lasertec China Co., Ltd. is established in Shanghai, China.

 The world's first EUV mask blanks inspection & review system using EUV light (13.5nm wavelength) is developed and launched.

2019 Lasertec Singapore Service Pte. Ltd. is established in Singapore (renamed Lasertec Singapore Pte. Ltd. in 2023)

 The world's first actinic EUV patterned mask inspection system, ACTIS A150, is developed and launched.

2022 Real estate in Shin-yokohama is acquired to build a new R&D facility "Lasertec Innovation Park".

Lasertec Corporation www.lasertec.co.jp

Head Office 2-10-1 Shin-yokohama, Kohoku-ku, Yokohama, 222-8552, Japan Phone: +81-45-478-7111
Lasertec Innovation Park 555 Toriyama-cho, Kohoku-ku, Yokohama, 222-0035, Japan
Lasertec USA, Inc. 3131 Jay Street, Suite 110, Santa Clara, CA 95054, USA Phone: +1-408-437-1441
Lasertec Korea Corp. A-6F, 150, Dongtanyeongcheon-ro, Hwaseong-si, Gyeonggi-do, 18462, Korea Phone: +82-31-8015-0540
Lasertec Taiwan, Inc. Rm. 16, 7F., No. 81, Shuili Rd., East Dist., Hsinchu City, Taiwan (R.O.C.)
Lasertec China Co., Ltd. Building2 1st Floor unit1101 Sunplus Building 1077 ZuChongZhi Road, Zhang Jiang Hi-Tech Park, Pudong New Area, Shanghai, China 201203 Phone:+86 21-5083 0806
Lasertec Singapore Pte. Ltd. 51 Changi Business Park Central 2 #09-08 The Signature, Singapore 486066 Phone:+65 62161877