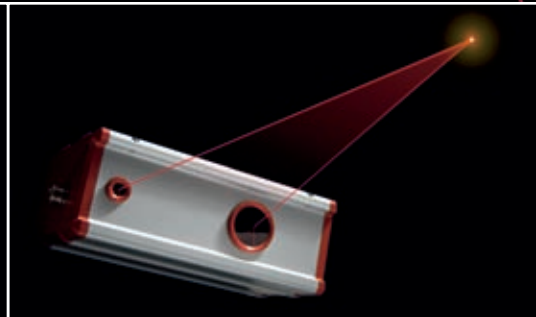
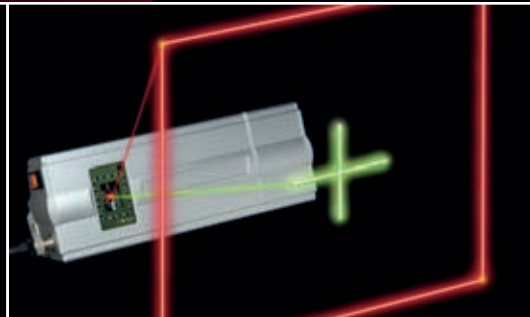
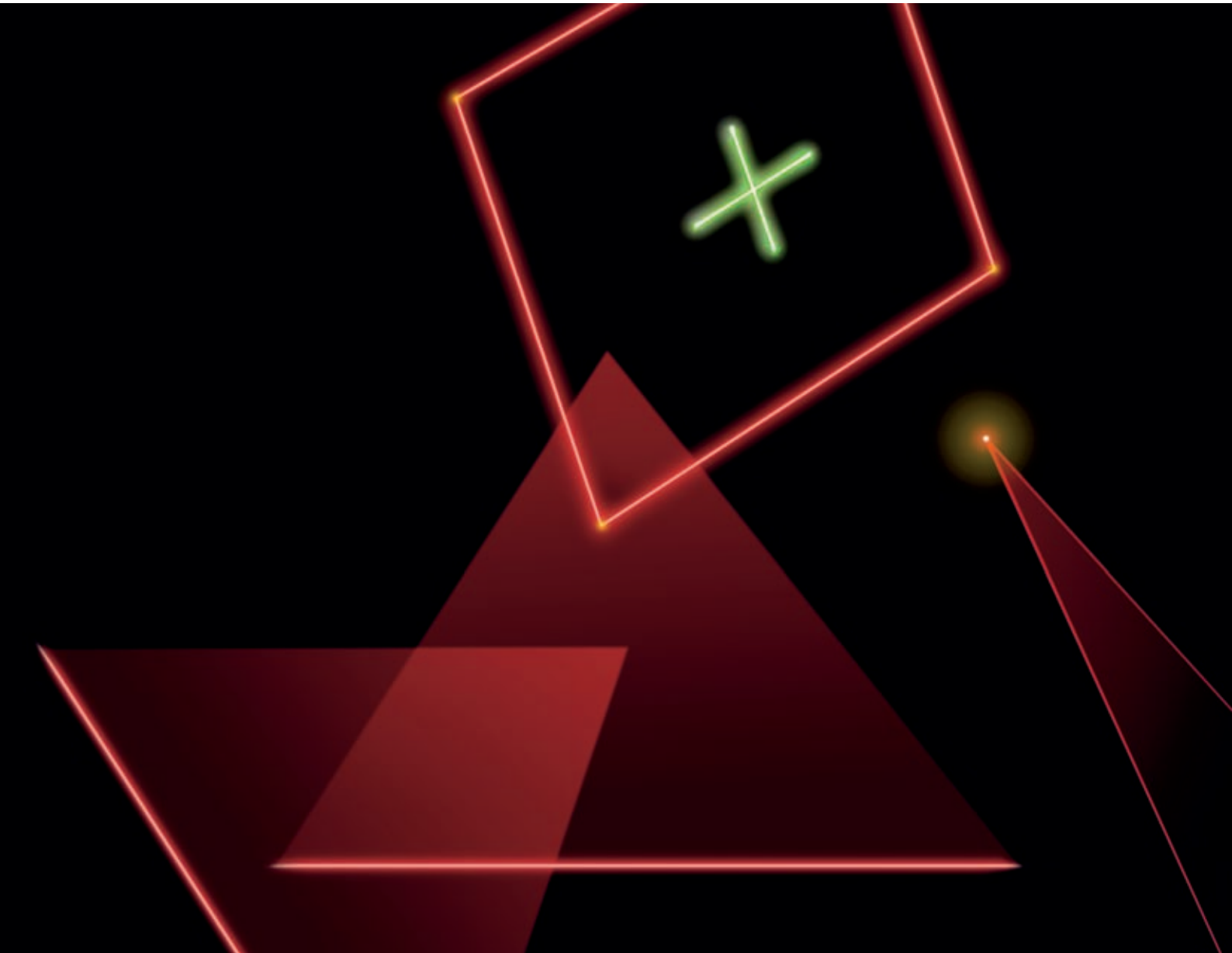


# PRODUCT CATALOG

 **LASER SENSORS, LASER PROJECTORS, LINE LASERS**  
for Measurement, Alignment and Positioning in Industry and Crafts

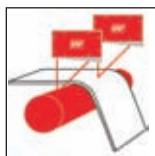
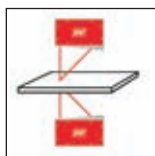
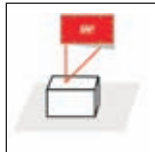




## MEASUREMENT WITH LAP LASER SENSORS.

### DISPLACEMENT, THICKNESS, WIDTH, HEIGHT, STRAIGHTNESS, FLATNESS.

Laser triangulation sensors provide non-contact displacement measurement of objects. By measuring against a reference plane or measuring with two sensors, the thickness, width or height can be determined. Also, by traversing or rotating either the sensors or the object in the longitudinal or transversal direction, the straightness, flatness, eccentricity, runout, diameter and cross-bow can be measured.

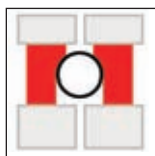
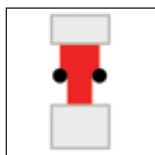
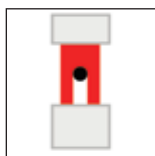


### MEASUREMENT APPLICATIONS.

- Single sensor:  
Displacement, vibration
- Single sensor using mechanical reference:  
Thickness, width, height, length, radius, diameter, ...
- Single sensor, moving object:  
Profile, eccentricity, runout, straightness, slack, loop, ...
- Dual sensors (differential):  
Thickness, width, height, length, ...
- Multiple combined sensors and/or moving objects:  
Flatness, cross profile, longitudinal profile, multiple dimensions, ...

### DIAMETER, OUT-OF-ROUND, GAP.

Laser Scan Micrometers consist of a transmitter and a receiver, measuring the shadow of one or more objects between them. They are the sensors of choice for measurement of bars, shafts, tubes and other round objects.



### MEASUREMENT APPLICATIONS.

- Object protruding into measurement field:  
Position, runout, ...
- Object completely within the measurement field:  
Diameter, centerline, ...
- Multiple objects:  
Diameters, gap, centerline distance, ...
- Multiple combined laser scan micrometers:  
Out-of-round, large diameter, three-point diameter (LAPpatent), profile, ...

# MEASUREMENT WITH LAP LASER SENSORS.

## LAP ATLAS LASER SENSORS.

Non-contact displacement measurement



|                                     |  |
|-------------------------------------|--|
| Measurement ranges                  | 2 mm, 5 mm, 10 mm, 30 mm, 70 mm, 100 mm                          |
| Measurement frequency               | up to 4 kHz, up to 10 kHz  |
| Linearity / Repeatability           | from $\pm 2 \mu\text{m}$ / from $\pm 1.5 \mu\text{m}$            |
| Output / Interfaces                 | Analog 4 - 20 mA, digital RS 485 / RS 232, Ethernet, Profibus DP |
| Laser type, wavelength, laser class | Diode, 670 nm (red), laser class 2                               |
| Power supply                        | 24 VDC   |
| Enclosure rating                    | IP 65  |
| Dimensions (H x W x D, mm)          | 32 x 80 x 65   |
| Weight                              | 250 g  |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing               |

## LAP POLARIS LASER SENSORS.

Non-contact displacement measurement



|                                     |  |
|-------------------------------------|--|
| Measurement ranges                  | 10 mm, 30 mm, 70 mm, 130 mm, 250 mm, 400 mm                      |
| Measurement frequency               | up to 4 kHz  |
| Linearity / Repeatability           | from $\pm 7 \mu\text{m}$ / from $\pm 4.5 \mu\text{m}$            |
| Output / Interfaces                 | Analog 4 - 20 mA, digital RS 485 / RS 232, Ethernet, Profibus DP |
| Laser type, wavelength, laser class | Diode, 670 nm (red), laser class 2                               |
| Power supply                        | 24 VDC   |
| Enclosure rating                    | IP 65  |
| Dimensions (H x W x D, mm)          | 39 x 168 x 109   |
| Weight                              | 1100 g   |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing               |

## LAP ANTARIS LASER SENSORS.

Non-contact displacement measurement



|                                     |  |
|-------------------------------------|--|
| Measurement ranges                  | customized, ANTARIS S: 300 - 2000 mm, ANTARIS L: 800 - 4000 mm   |
| Measurement frequency               | up to 4 kHz  |
| Linearity / Repeatability           | from $\pm 300 \mu\text{m}$ / from $\pm 200 \mu\text{m}$          |
| Output / Interfaces                 | Analog 4 - 20 mA, digital RS 485 / RS 232, Ethernet, Profibus DP |
| Laser type, wavelength, laser class | Diode, 670 nm (red), laser class 2                               |
| Power supply                        | 24 VDC   |
| Enclosure rating                    | IP 65  |
| Dimensions (H x W x D, mm)          | ANTARIS S: 124 x 320 x 200 ANTARIS L: 124 x 560 x 200            |
| Weight                              | ANTARIS S: 9.8 kg ANTARIS L: 13.4 kg                             |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing               |

## LAP METIS LASER MICROMETER.

Non-contact diameter measurement



|                                     |  |
|-------------------------------------|--|
| Measurement ranges                  | 0.2 - 45 mm, 0.5 - 90 mm, 1 - 120 mm, 1 - 150 mm, 1 - 180 mm |
| Measurement frequency               | 800 Hz, optional 1600 Hz                                     |
| Linearity / Repeatability           | from $\pm 8 \mu\text{m}$ / from $\pm 2 \mu\text{m}$          |
| Output / Interfaces                 | RS485 (up to 1.8 MBaud) / RS232, Ethernet, Profibus DP       |
| Laser type, wavelength, laser class | Diode, 670 nm (red), laser class 2                           |
| Power supply                        | 24 VDC $\pm 20 \%$   |
| Enclosure rating                    | IP 65  |
| Dimensions (H x W x D, mm)          | depends on model   |
| Weight                              | 1.5 - 11.5 kg, depends on model                              |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing           |

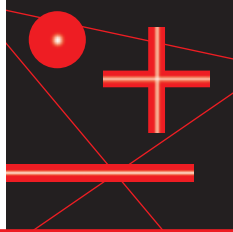
## LAP CALIX LASER SENSORS.

Non-contact thickness measurement



|                                     |  |
|-------------------------------------|--|
| Measurement ranges                  | 5 mm, 10 mm, 30 mm                                 |
| Measurement frequency               | up to 4 kHz  |
| Measurement uncertainty             | from $\pm 5 \mu\text{m}$ / $\pm 3.5 \mu\text{m}$   |
| Output / Interfaces                 | RS 485, Ethernet                                   |
| Laser type, wavelength, laser class | Diode, 670 nm (red), laser class 2                 |
| Power supply                        | 24 VDC   |
| Enclosure rating                    | IP 54  |
| Dimensions (H x W x D, mm)          | CALIX S: 530 x 463 x 56 CALIX L: 1080 x 463 x 80   |
| Weight                              | CALIX S: ca. 13 kg CALIX L: ca. 35 kg              |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing |

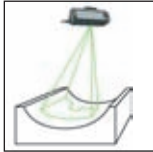
# ALIGNMENT USING LASER PROJECTORS.



## TEMPLATES, OUTLINES, PATTERNS, SHAPES.

Laser template projectors are used in industry and trade for alignment and positioning of complex shapes and parts.

They replace templates (vinyl, wood, cardboard, etc.) and cumbersome alignment procedures by projecting the required shapes and outlines from CAD drawings onto the work piece precisely to scale.



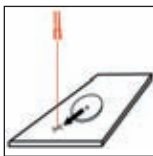
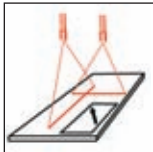
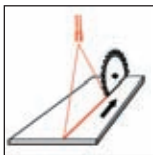
### APPLICATIONS.

- Positioning of plies for lay up of high performance composite parts and structures
- Positioning of reinforcements or cut outs of GRP parts in marine and automotive industry
- Positioning of pods and work pieces on CNC routers in wood and stone industry
- PCB assembly
- Parts and components placement
- Cable harness assembly
- Cable routing ...

## LINES, CROSS HAIRS, SPOTS.

Line, spot and cross hair lasers are used in industry and trade for placement and alignment of work pieces, parts and tools.

They replace rulers, stops, squares and the like and are indispensable in places where mechanical fixtures are impractical, or where both hands are required for work piece handling.



### APPLICATIONS.

- Cutting line display on frame saws, edgers, panel saws, miter saws, band saws, veneer shears, bridge saws, plate shears, ...
- Tool centerline display on drill presses and milling machines, ...
- Parts placement in assembly, production of pre-cast parts and glued constructions, sewing, pressing, printing, and thermoforming, ...
- Display of bending line at press brakes and tube benders, reference line for laying and stacking, ...

# ALIGNMENT USING LASER TEMPLATE PROJECTORS.

## LAP CAD-PRO LASER PROJECTORS.



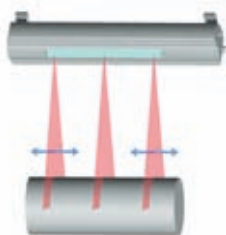
Production with 3 CAD-PRO laser projectors

LAP CAD-PRO laser projectors trace outlines and shapes from CAD files on flat or contoured surfaces. Calibration of the projectors by using reference targets ensures precise to-scale reproduction of the CAD drawing. Available projection colors are red, green, and yellow, depending on the projector model.

By combining multiple projectors, large scale projections are possible. The user friendly software automatically splits data among the projectors. Industry specific add-ons tailor the CAD-PRO for specific applications and provide for user guidance and structured work flow.

|                                     |   |
|-------------------------------------|---|
| Laser type, wavelength, laser class | red: Diode, 635 nm, green: DPSS, 532 nm, laser class 2M |
| Max. projection angle               | 80° x 80°   |
| Accuracy / line width               | ± 0.5 mm / < 1mm up to a distance of 4 m                |
| Connection                          | RS 485 / Ethernet by Interface                          |
| Enclosure rating                    | IP 54   |
| Power supply                        | 24 VDC  |
| Dimensions (L x W x H, mm)          | 300 x 110 x 110   |
| Weight                              | 3 kg  |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing      |

## LAP SERVOLASERS.



SERVOLASER operating with one fixed and two movable line laser modules

The LAP SERVOLASER is a modular laser positioning system. By controlling the modules with a PC or PLC, one or two lasers can be moved quickly and precisely to the required positions.

Additional fixed lasers can be added and the travel of the movable lasers can be designed to customer specifications. Dual movable lasers are available with symmetric or asymmetric travel.

|                                     |  |
|-------------------------------------|--|
| Range of movement                   | 400 mm, 600 mm, 1200 mm, 1600 mm, customized       |
| Positioning accuracy                | ± 0.3 mm in a distance of 1 m                      |
| Line width                          | < 1 mm in a distance of 1 m                        |
| Moving speed                        | up to 200 mm/sec                                   |
| Laser type, wavelength, laser class | Diode, 635 nm (red), laser class 2                 |
| Power supply                        | 24 VDC, max. 2A                                    |
| Dimensions (L x W x H, mm)          | 920 ... 2120 x 180 x 130                           |
| Enclosure rating                    | IP 54  |
| Weight                              | 26 ... 35 kg                                       |
| Ambient conditions                  | 0 - 40 °C, 35 - 85 % rel. humidity, non-condensing |

# ALIGNMENT WITH LAP LINE LASERS.

## LD LASERS.



- Focusable
- Surge protected
- Reverse polarity protected

|                        |  |
|------------------------|--|
| Projection             | Line (up to 20 m), crosshair or point          |
| Available output power | 1 mW, 3 mW, 5 mW, 10 mW, 15 mW, 30 mW          |
| Laser type, wavelength | Diode, 635 nm (red)                            |
| Power supply           | 4 - 6 VDC                                      |
| Enclosure rating       | IP 42  |
| Dimensions             | Length: 81 mm; ø front: 18.8 mm; ø back: 15 mm |

## HD LASERS.



- Focusable
- IP 67
- Robust housing

|                        |   |
|------------------------|---|
| Projection             | Line (up to 20 m), crosshair or point         |
| Available output power | 1 mW, 3 mW, 5 mW, 10 mW, 15 mW, 30 mW         |
| Laser type, wavelength | Diode, 635 nm (red)                           |
| Power supply           | 12 - 30 VDC, 12 - 20 VAC                      |
| Enclosure rating       | IP 67   |
| Dimensions             | Length: 140 mm; ø front: 25 mm; ø back: 20 mm |

## FD LASERS.



- IP 67
- Robust housing
- Surge protected

|                        |                                       |
|------------------------|---------------------------------------|
| Projection             | Line (up to 20 m)                     |
| Available output power | 1 mW, 3 mW, 5 mW, 10 mW, 15 mW, 30 mW |
| Laser type, wavelength | Diode, 635 nm (red)                   |
| Power supply           | 12 - 30 VDC, 12 - 20 VAC              |
| Enclosure rating       | IP 67                                 |
| Dimensions             | Length: 130 mm, ø 20 mm               |

## PD LASERS.



- ø 40 mm
- Surge protected

|                        |                                       |
|------------------------|---------------------------------------|
| Projection             | Line (up to 20 m)                     |
| Available output power | 1 mW, 3 mW, 5 mW, 10 mW, 15 mW, 30 mW |
| Laser type, wavelength | Diode, 635 nm (red)                   |
| Power supply           | 90 - 265 VAC                          |
| Enclosure rating       | IP 54                                 |
| Dimensions             | Length: 210 mm, ø 40 mm               |

## RD LASERS.



- Focusable
- Special optics
- Surge protected

|                        |                                       |
|------------------------|---------------------------------------|
| Projection             | Line (up to 22 m), crosshair or point |
| Available output power | 1 mW, 3 mW, 5 mW, 10 mW, 15 mW, 30 mW |
| Laser type, wavelength | Diode, 635 nm (red)                   |
| Power supply           | 90 - 265 VAC                          |
| Enclosure rating       | IP 54                                 |
| Dimensions             | Length: 210 mm; ø 55 mm               |

## UD LASERS.



- Small
- For low mounting positions
- Constant intensity line generator

|                        |  |
|------------------------|--|
| Projection             | Line (up to 12 m)                            |
| Available output power | 5 mW, 10 mW, 15 mW, 30 mW                    |
| Laser type, wavelength | Diode, 635 nm (red)                          |
| Power supply           | 4 - 6 VDC                                    |
| Enclosure rating       | IP 42  |
| Dimensions             | Length: 70 mm; ø front: 23 mm; ø back: 15 mm |

## ULTRALINE LASERS.



- Integrated ball joint bracket
- For low mounting positions
- Constant intensity line generator

|                        |   |
|------------------------|---|
| Projection             | Line (up to 12 m)   |
| Available output power | 5 mW, 10 mW, 15 mW, 30 mW   |
| Laser type, wavelength | Diode, 635 nm (red)   |
| Power supply           | 24 VDC or 230 VAC   |
| Enclosure rating       | IP 54   |
| Dimensions (L x W x H) | 24 VDC: 123 mm x 30 mm x 81 mm<br>230 VAC: 186 mm x 35 mm x 81 mm |

## PY LASERS.



- Green laser beam
- SUPERLINE optic
- Integrated cooling
- High temperature switch-off

|                        |                         |
|------------------------|-------------------------|
| Projection             | Line (up to 30 m)       |
| Available output power | 10 mW, 15 mW, 20 mW     |
| Laser type, wavelength | DPSS, 532 nm (green)    |
| Power supply           | 100 - 240 VAC           |
| Enclosure rating       | IP 54                   |
| Dimensions             | Length: 240 mm, ø 40 mm |

# ABOUT LAP.

## PRODUCTS AND SERVICES.

For more than 20 years, LAP has been developing, manufacturing and distributing Laser Measurement Systems, Line Lasers and Laser Template Projectors for industrial and medical applications.

Using our Laser systems our customers improve performance and increase the quality of their products as well as the effectiveness of their processes. To achieve this goal, we offer customer specific solutions or standard systems.

As a result of continuous product innovation, LAP has become a world leader in lasers for projection and measurement. LAP products are setting the standards in a wide range of markets from manufacturing to heavy industrial environments and medical applications.



## QUALITY MANAGEMENT.

"No matter what you contribute to LAP products:  
Make it so good that you would be fully satisfied if you were buying the products!"

Quality philosophy of LAP, QM hand book



LAP has been ISO 9001 certified since April 1996. Since 1998, LAP has been certified for medical products according to EN 46001, EN 13485 later.

LAP's Quality Management System is a living system and is part of the daily workmanship. The precision of the products reflects the systematic approach of operations. Development of new products follows existing rules, and rules follow new developments, facilitating the vivid, innovative work that our customers appreciate and have grown accustomed to.



Sensors, Line Lasers, Projectors  
Systems & Solutions




---

**LAP Laser LLC.**

Sales, Service

7669 Wooster Pike  
Cincinnati, OH 45227  
USA

Phone +1 (513) 271-4529  
Fax +1 (513) 271-3821  
Email info-us@lap-laser.com

---

**LAP GmbH  
Laser Applikationen**

Headquarter: Production, Sales, Service

Zeppelinstr. 23  
21337 Lueneburg  
Germany

Phone +49 (0)4131 9511-95  
Fax +49 (0)4131 9511-96  
Email info@lap-laser.com

---

**LAP Laser Applications  
Asia Pacific Pte Ltd**

Sales, Service

Block 750A, #07-02 Suite 8  
Technopark at Chai Chee  
Singapore 469001  
Singapore

Phone +65 6536 9990  
Fax +65 6533 6697  
Email info-asia@lap-laser.com

---

**LAP GmbH  
Laser Applikationen  
Представительство в Москве**

1, Казачий переулок 7  
119017 Москва  
Российская Федерация

Тел. +7 495 7304043  
Факс +7 495 7304044  
Email info-russia@lap-laser.com

---

**LAP Laser Applications  
Asia Pacific Pte Ltd  
Shanghai Representative Office**

Sales, Service

31/F Haitong Securities Tower  
689 Guang Dong Road  
Shanghai 200001  
China

Phone +86 (21) 5047-8881  
Fax +86 (21) 5047-8887  
Email info-asia@lap-laser.com

---

**Partners**

**[www.LAP-LASER.com](http://www.LAP-LASER.com)**



**L A S E R**

Sensors, Line Lasers, Projectors  
Systems & Solutions