



TECHNICAL DATA SHEET

SK1LP

SL-LASER projection system

► DESCRIPTION

SL-Laser's computer-controlled projectors are industry proven to be rugged and durable, even when placed in hostile climates. Exacting quality control standards ensure the SL projector keeps projecting your profits, even on high-precision ultra accurate 3D production forms & molds, ensuring efficient production.

SL-Laser customizes each installation for your particular needs and production process. This allows elimination of errors, waste is reduced, parts are consistently accurate and quality is assured.



3D laser projection facilitates the positioning of prepregs

With thousands of projectors successfully installed worldwide in various industries, SL-Laser systems have even become standard equipment included by some of the world's finest original equipment manufacturers (OEM's).

SL-Laser is a proven supplier of the European aerospace industry, along with race cars, speedboats and other high-tech market sectors. Exacting representation of 3D outlines in the production area of composite work pieces also opens limitless boundaries.

► PRODUCTS OVERVIEW

1. LASER PROJECTOR ProDirector 6

The **Laser Projector** generates its image from common CAD design and construction drawings.



The **laser projector** emits the desired outlines precisely into the production tooling or surface.

The sequence of the images for the necessary steps of work procedure can be controlled and retrieved via a remote unit.

The **laser projection** color of the laser is red or green.

A single laser dot is moved at a high rate of speed in both X and Y directions - moving so fast that a standing image is perceived by the human eye. The equipment can project at an infinitely variable angle from any



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direction, allowing the **laser projector** to be flexibly retrofit into an existing production process without positioning restrictions.

The **ProDirector 6** brings many advantages to the precast concrete component industry. Rails, shutters, form liners, accessory boxes, and architectural masonry are easily positioned with the laser light without measuring tapes.

The laser system can be installed in fixed locations and project onto moveable pallets or as a mobile trolley to move along rails above multiple setup zones. SL-Laser assures that you build to plan every time.

► ProDirector 6 SYSTEM SPECIFICATIONS:

Position Accuracy	$\pm 0.014''$ (0.35mm) at a distance of 15' over 17' x 17' (4.5m x 4.5m) area (equals to a 60° projection)
Field of View (FOV)	
Horizontal:	max. 80° (60° recommended)
Vertical:	max. 70° (60° rec.)
Laser:	5 mW maximum power, 0.9 mW "eye safe"-mode
Red:	625 - 640 nm laser diode,
Green:	532 nm diode-pumped solid state laser
Laser Class North America:	Class IIIa per 21CFR 1040 (CDRH)
International:	Class 2M per IEC/EN 60825-1:2007, CE certification
Power Requirement	80-240 VAC 50/60 Hz
Dimensions	
Length:	480 mm/18.9 "
Width:	170 mm /6.69 "
Height:	290 mm/12.2 "
Weight:	13,5 kg/29.76 lbs

2. LASER PROJECTOR PRODIRECTOR XS2

The smaller ProDirector XS2 is perfect for applications in tighter, confined spaces.



Mounting of the projector is flexible - from simple tripod or cart systems where mobility is required for custom solutions such as mounting in helicopter cockpits to assist in layout of complex cable and wiring connections.



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High tech production needs high tech solutions.

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Laser Class North America:	Class IIIa per 21CFR 1040 (CDRH)
International:	Class 2M per IEC/EN 60825-1:2007, CE certification
Power Requirement	80-240 VAC 50/60 Hz
Dimensions	
Length:	336 mm/13.2 "
Width:	117 mm/4.6 "
Height:	180 mm/7.0 "
Weight:	6.5 kg /14.33 lbs

3. POSITIONING LASER

The „Positioning laser“ combines sturdy durability and reliable accuracy in a versatile alignment laser.

SL Positioning laser modules consist of a laser diode, optics and driver electronics constructed in a rugged isolated housing.

A wide range of applications include the positioning of tools, fixtures and materials and the alignment of instruments and machines.



4. 3D SOFTWARE

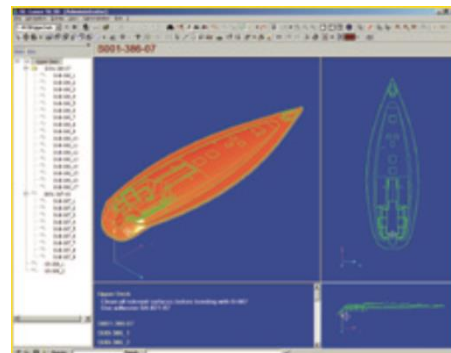


An intuitive user interface helps you to project your drawings with the click of a button. The SL-3D software can be used on an unlimited number of offline workstations.

SL-3D imports all common industry CAD/CAM data formats including Catia V4 and V5. All necessary steps for the work flow control can be prepared on an office PC away from the production environment.

SL-3D offers you a powerful and flexible way to assign one or more projectors to different tools on one workstation.

Control and documentation of the work flow is done individually for each tool. The wireless handheld allows a fast and efficient control of the laser projection system.



5. LASER PROJECTOR PRODIRECTOR XS2 MOBILE

For the work where space is limited: the smaller and lighter laser projector "ProDirector XS2 mobile" is now even more flexible, thanks to battery operation and Bluetooth connection.

The system is mounted on a tripod with wheels, the power comes from an industrial battery, enough for several hours. The projection data is sent wirelessly via Bluetooth directly to the projector. The combination of mobile ProDirector XS2 and our Tablet PC, also available in industrial quality, gives you more flexibility.

The SL3D Software is installed on the Tablet PC, you do not need a PC at the working area. This is an advantage in the interior of the helicopter, if cable connections or click-bond holders should be installed, where error-free positioning of workpieces is required.

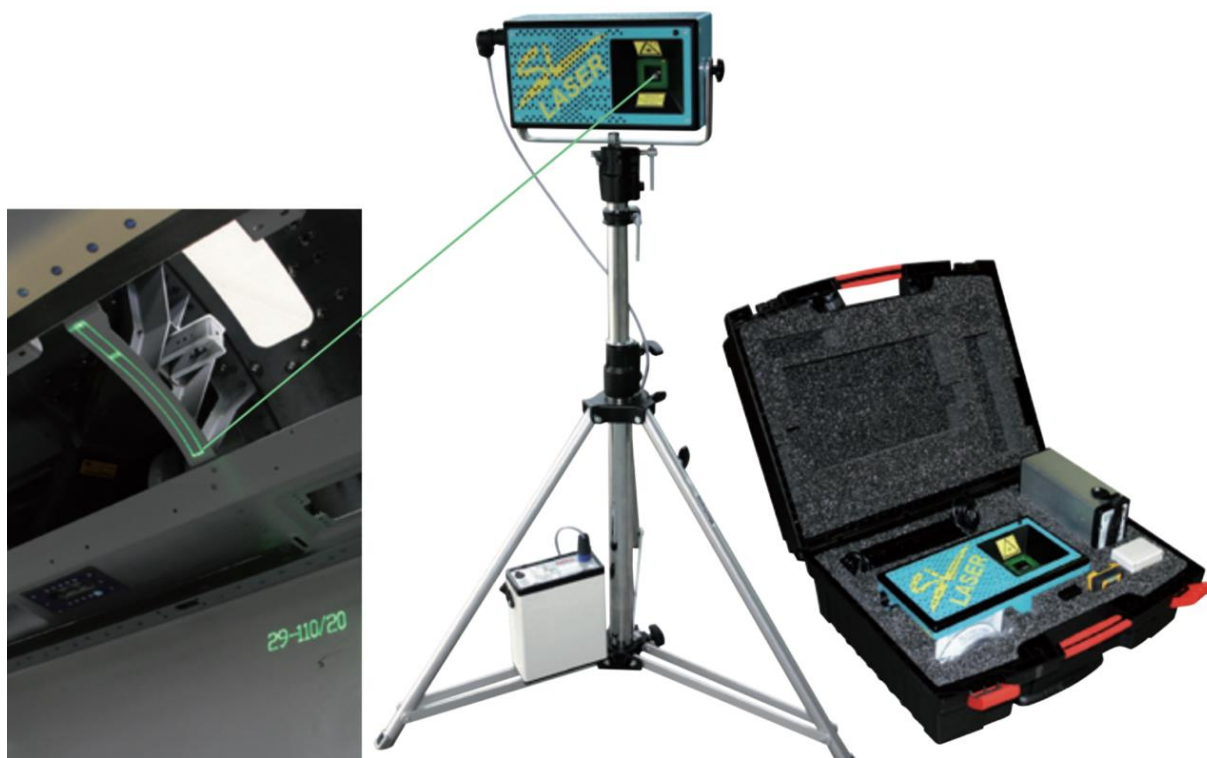


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Control the projector directly on the scene. These speeds and simplifies the workflow tremendously.



6. INDUSTRIAL PC

The Industrial PC is a fully compatible PC in rugged industrial enclosure.

The mobile rack is equipped with steerable wheels and brakes.

The operation of the PC via the keyboard: TKS-105a-TOUCH-FP-3HE-USB-GER and Rear mount Touchmonitor 1939L IntelliTouch 19" LCD from Tyco.

7. LASER MEASUREMENT SYSTEM PROCOLLECTOR





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2 in 1: Coordinate measurement tool and point projector for 2D and 3D objects.



Continuous product enhancement makes ProCollector a robust and flexible laser measurements system. The ProCollector's powerful collection of capabilities set it apart from its competitors. No manufacturer can afford the time consuming and inaccurate measurements associated with traditional point collection methods. The ProCollector laser measurements system provides the user a fast data acquisition without mistakes. With the use of the ProCollector laser measurements system inaccurate measures and transposed digits while writing the data are a thing of the past.

The process is easy and intuitive. Simply use the laser to shoot a few points to establish an origin of your drawing, then start collecting data. For 2D DXF drawings, only two points along a surface are needed for a straight line - the software will automatically calculate the corners. Irregular contoured surfaces like a wavy drywall backsplash or a flowing reception desk can be automatically scanned and saved as a curve - give ProCollector start and end points and watch it do the work.

In 3D mode, measuring complex geometry is still just point and click. Spaces like boat hull interiors that are difficult to measure by hand are easily measured with the

ProCollector laser measurements system.

The onscreen handheld display lets you see the results instantly as you build the drawing and allows you to pan, zoom and rotate 360 degrees to make sure you have the data you need before leaving the jobsite. Save it directly to DXF or IGES file format and email it back to the shop from your smartphone - no bulky templates to scribe and transport!

8. DIGITIZING SYSTEM PROCOLLECTOR ARM

ProCollector Arm is the freehand digitizer of choice when enhanced precision is required. It is fully integrated in the SL-3D software and allows you to digitize outlines with automatic creation of normal vectors for use with multi-projector systems.

Due to the easy and simple handling with the stylus you can create projection and production data simultaneously in record time.





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The ProCollector Arm is the ideal tool for the manufacturer migrating from an existing pattern library and template inventory to a CAD environment. Digital templating saves countless design hours and can quickly and accurately get you on a path to improved production efficiency and quality standards.

► APPLICATION

There are many applications that can benefit from laser projection:

- Composite ply assembly is a precision operation. Drawings, contours, outlines or positions are projected as a laser light beam on any surface, to make your working templates visible – all fully automated and controlled directly from your computer data.
- For helicopters, airplanes, or ships, many structural elements need to be fixed to the contoured hull. Traditional measuring and manual templating methods introduce a high potential for error. We project CAD data or digital forms directly onto the working area – at the speed of light.



► ADVANTAGES

- Simple to use, even for the unskilled worker
- Set-up times can be drastically reduced
- Machines and material are used more effectively
- No waste due to highest possible precision
- Quality can be reproduced and controlled easily
- Productivity is increased up to 100 percent
- Very fast return on investment

► NOTE



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Please contact us for more detailed information as well as for system development according to your technical specification.