



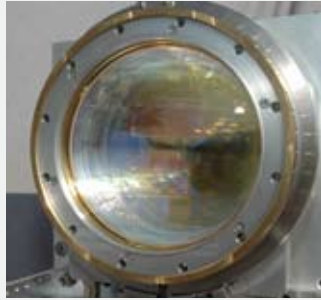
# The 3rd Dimension at the Speed of Light

Laser Processing Head RLSK

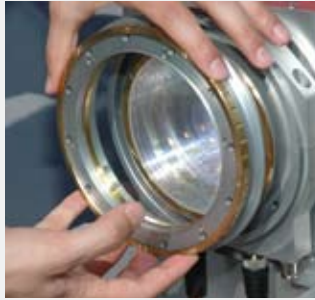
# Modules

## The Optics of 3D Precision

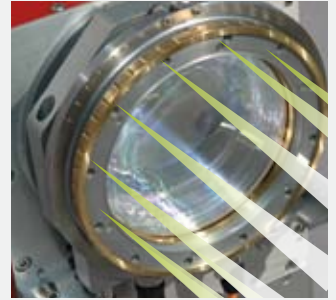
### Optics



High performance focusing lens system

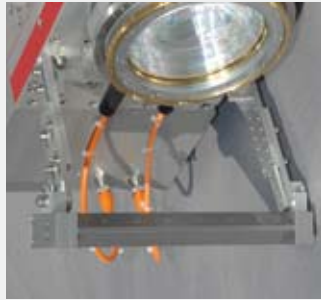


Easy cover slide exchange system



Workpiece illumination and sensors for process monitoring integrated in cover slide holder

### Protection



Adaptable cross jet for cover slide protection



Exchangable cover slide for additional protection of the collimation module



Electrical connection to integrated cover slide monitoring system

### Interfaces



Mechanical interface for adaptation to robot or handling machine

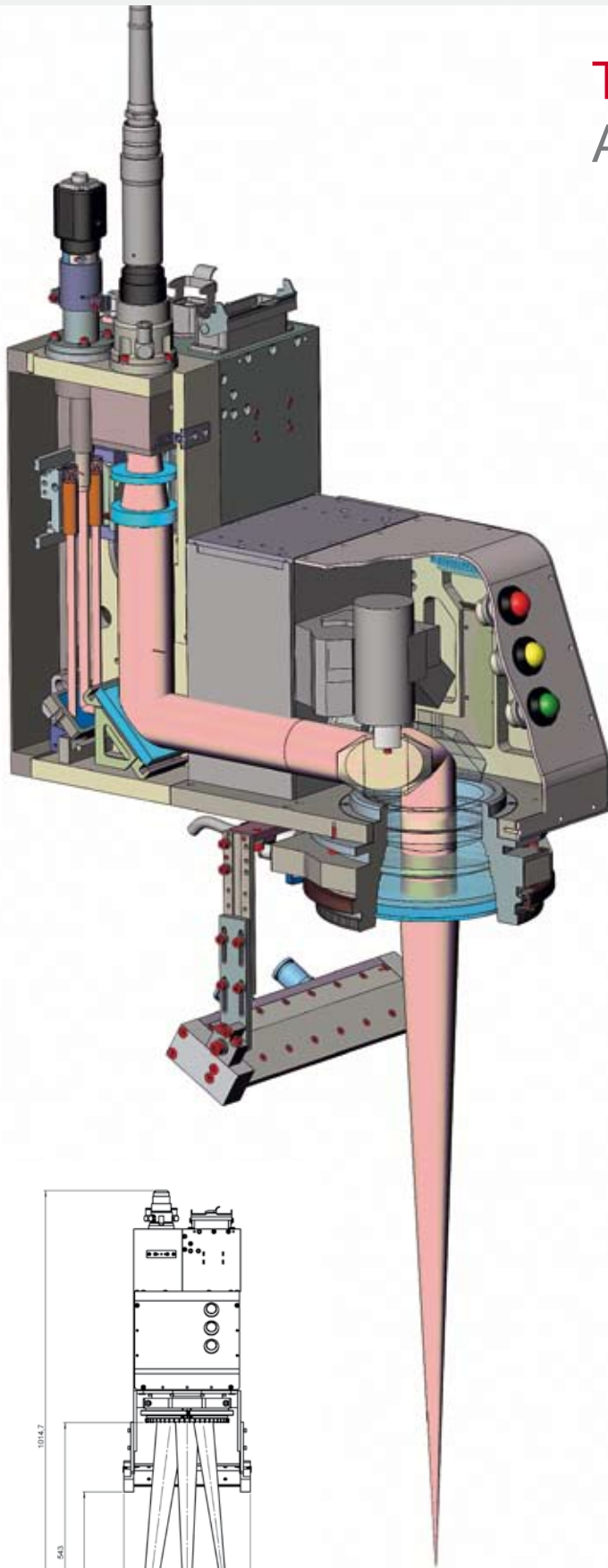


One sided access for supplies, interfaces, laser light cables (shown LLK-Auto) and CCTV camera



EPS electric pneumatic installation system with embedded system micro controller and electrical interfaces to PLC

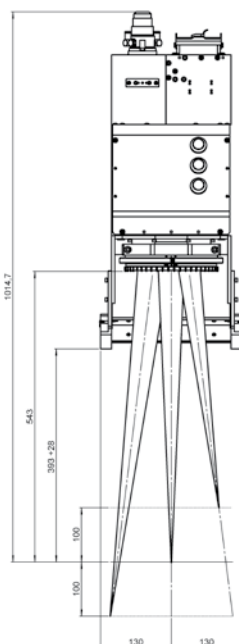
# Three Dimensions At the Speed of Light



The laser light is focused on the workpiece by the collimation module and the focusing module. Two scanner mirrors and a linear axis (which holds the collimation module) move the focus position around the workspace of  $200 \times 300 \times 200 \text{ mm}^3$  within milliseconds.

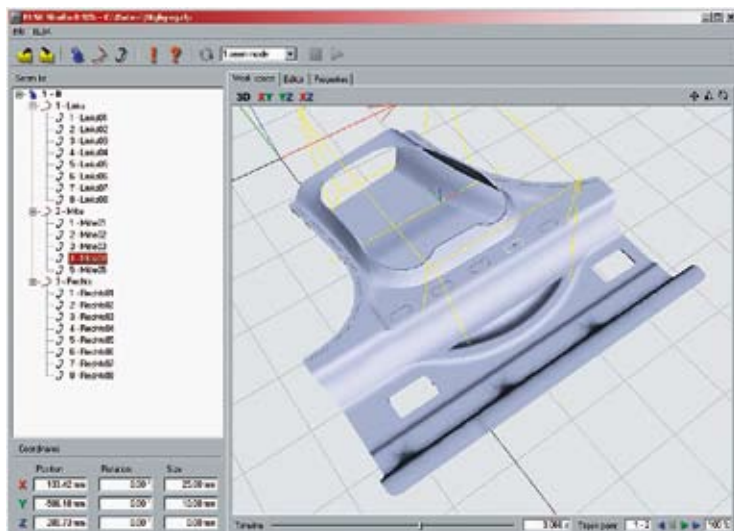
The unique optical design of the lens systems for collimation and focusing the laser beam guarantees a constant focus diameter for reliable process results over the entire work space.

The integrated linear axis is not only responsible for moving the collimation unit and therefore the focus position in the Z dimension but also serves the purpose of focusing two laser pointer beams in the position of the laser focus. This enables the user to go offline and pre-program the welding process with pinpoint precision. By also directly coupling the imaging system of the CCD camera to the linear axis system the laser process can be directly observed in the focus position where the work is being done.



# RLSK – Studio

## Easy Process Set-up



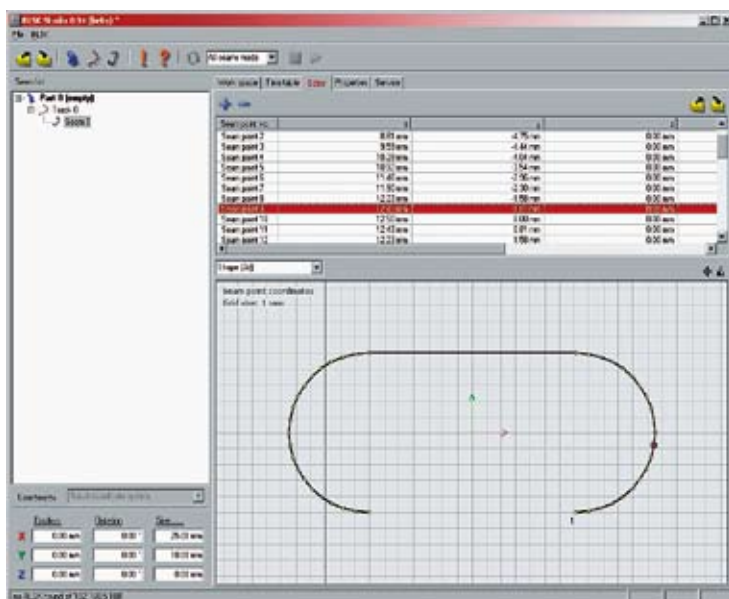
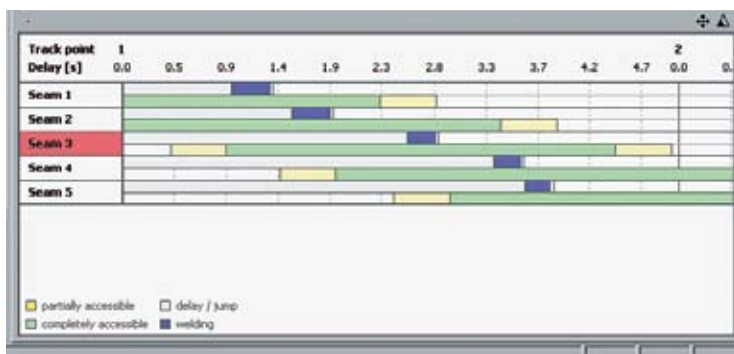
The RLSK Studio software enables the user to make use of the capability of remote laser processing with the RLSK, and to set up the entire process the easy way.

The precise positioning of the focus and the process features can easily be visualized using RLSK Studio.

The graphical user interface of RLSK Studio further assists in synchronizing the focus movement of the RLSK with the path of a coupled handling machine such as a robot.

### Main Features of RLSK Studio:

- Downloading and uploading of work pieces or component data
- Editing process sequences
- Editing the process features such as seam shapes, welding speed, laser power, laser power ramping, defocusing etc.
- Visualizing and optimizing the laser-on time
- Editing synchronization triggers and the handling machine track



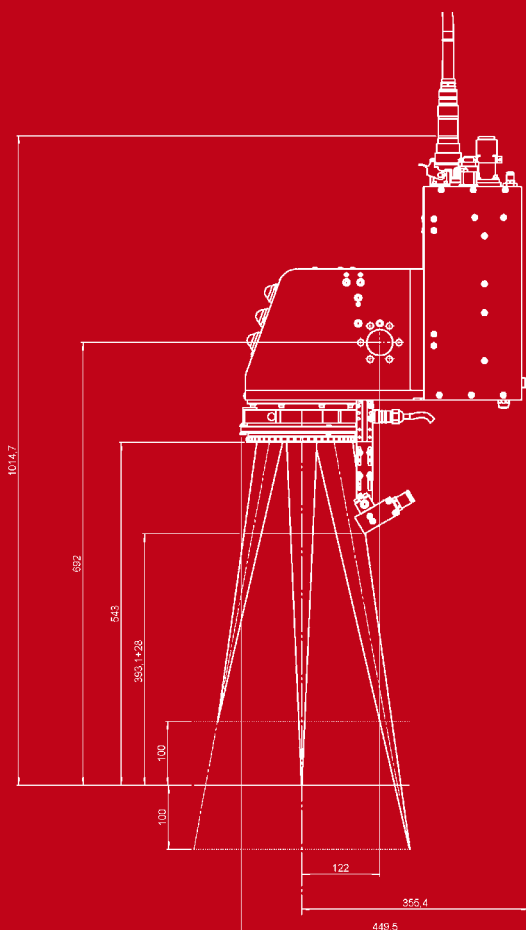
# As it Pioneers the Third Dimension, the Laser Processing Head RLSK Sets New Efficiency Standards among Solid-State Lasers.

While at first glance it might look like just another auxiliary gadget for busy robots, a closer look and full evaluation will show that this device is nothing less than the smart way to increase the utilization rate for your welding robots and thus cut costs.

Because unlike standard lasers using just a two-dimensional laser focus, the *HIGHYAG* remote head opens the door to the third dimension. Here, the laser beam is no longer guided horizontally across the workpiece only, but also allows vertical focusing at the predefined level.

A particularly valuable advance is that the *HIGHYAG* Remote Laser Processing Head will guarantee focus diameter constancy through any adjustment of the Z-axis focus.

The new mobility of the laser focus permits the *HIGHYAG* remote laser welding process to be guided along straighter robot works paths. Meaning, the manufacturing time per workpiece will be shortened, and welding robots will average a better degree of utilization—and that is a rationalization effect visible even at first glance.



# Technical Data

## Optical System

Focusing system (magnification @ focal length)	3.0 @ 450 mm *
Collimation system (magnification @ focal length)	1.0 @ 150 mm *
Max. average laser power	6 kW
Max. beam parameter acceptance (half angle) of laser light exiting fiber	97% power content within 115 mrad
Wavelength	1020 - 1080 nm *
Transmission	> 94%
Core diameter laser light cable	50 – 300 µm (recommended)
Laser light cable receiver	HIGHYAG LLK, LLK-Auto, LLK-B, QBH, *

## Work Space

X,Y	200 mm x 300 mm (@ Z = 0)
Z	± 100 mm
Working distance to cover slide	510 mm (@ Z = 0)
Positioning time 10% field diagonal (X,Y)	< 8 msec
Positioning time 100% field diagonal (X,Y)	< 25 msec
Positioning time 10% field stroke (Z)	< 15 msec
Positioning time 100% field stroke (Z)	< 30 msec
Max. processing speed	1 m/sec
Max. re-positioning speed	5 m/sec
Positioning accuracy	± 0.2 mm (X,Y), ± 0.5 mm (Z)

## CCTV Viewing

Magnification	1:5 (1 mm field distance is equivalent to 0.2 mm on the camera chip) *
Video system	CCIR
Interface CCTV viewing	C-Mount

## Dimensions

WxDxH	Approx. 382 mm x 451 mm x 493 mm (depending on configuration)
Weight	Approx. 35 kg (depending on configuration)

## Supply

Electrical	AC 230 V, 50 Hz, 1,5 kVA DC 24 V, max. 3 A
Pneumatics	≤ 1.0 MPa * Cross jet: ≤ 1.0 MPa, approx. 2000 l/min @ 0.6 MPa
Cooling	Flow rate 3 l/min, temperature 15 – 35 °C (avoiding condensation)
PLC / field bus system	Hard wired, *

*Subject to change without prior notice*

*\*Others on request*

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