

WELDEYE for ALO3

Illumination and Camera Modules for laser welding

Process visualization – Process monitoring – Quality control

Lessmüller Lasertechnik is the leading provider of online quality control systems for laser welding. The smart **WELDEYE** quality system has been customized to complement the **scansonic ALO3** laser head, supplying it with visualization and automated quality control functions for premium weld / braze quality. **WELDEYE ALO3** enables:

- Real-time process visualization, monitoring and quality assurance for tactile guided laser welding and brazing
- Synchronous recording, evaluation and documentation of image based data and process parameters (wire speed etc.)
- Online detection and auto-correction of weld faults before the weld fails for reduced scrap rate, test costs and rework
- Communication via standard fieldbuses (Profinet, Profibus, Ethercat, Devicenet, Ethernet/IP)

ALO3 is complemented with a smart no-contact, real-time inspection system, by the seamless integration of **WELDEYE** camera and illumination technology into the **scansonic ALO3** processing head.

The combination of the dynamic **WELDEYE camera AP 3.0** and an external powerful planar structured illumination by narrowband light source is a key technology for the visualization of the welding process area and its surrounding along the entire scanning range. During the active welding process, the process light is optimally suppressed by a narrowband filter. 300 images per second are alternately recorded with and without external illumination. In no-illuminated images the intensity of the reflected process light is examined. Illuminated images reproduce the regions around the process beam with high resolution, in particular the cooled seam surface together with the distribution profile of the light reflected off the seam. The actual seam profile is generated from image to image and compared with the reference. The image processing signals serve for quality control purposes and automated online determination of weld faults

Advantages:

- Crosschecking of the beam-wire position with **OPTIKCHECK** in the line production
- Measurement of the weld gap width directly before the welding process
- High industrial suitability due to replaceable protection glasses and cross jet, integrated directly into the illumination module
- Compact, robust, lightweight and cost-effectively designed system



WELDEYE camera module AP 3.0



WELDEYE illumination module LM4

Visualization, process monitoring and quality control with WELDEYE quality system:

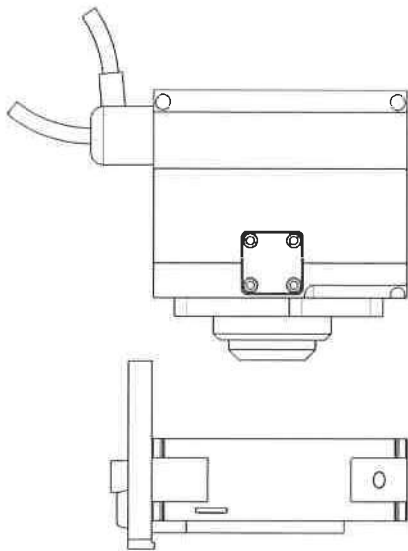
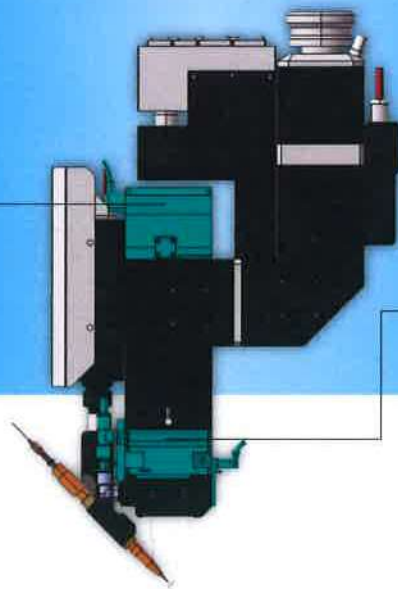


Quality control

Process monitoring

WELDEYE camera module

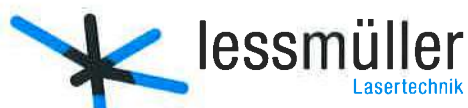
WELDEYE illumination module



Technical data:

Output power of illumination laser	max. 2 × 6 W
Wavelength of illumination laser	808 nm
Image rate (400 px × 400 px)	300 fps
Camera resolution	40 px/mm
Image pixel size	600 px × 200 px
Max. image size	16 mm to 18 mm × 6 mm
Pre-process area size in the welding direction	5 mm
Post-process area size in the welding direction	11 mm to 13 mm
Magnification, supported by scansonic welding optics	1:1 / 1:1.1 / 1:2.1 / 1:3.3 / 1:4 / 1:5.2 / 1:5.3
Other	Sequential switching from image size, image position, exposure and illumination time from image to image
Optical interface	Motor-driven narrowband filter
Internal data interface (incl. 8 m and 15 m cable)	Gigabit Ethernet
Internal sensor/actor interface (with camera)	CAN-BUS
External interfaces	Profinet, Profibus, Ethercat, Devicenet, Ethernet/IP
WELDEYE AP 3.0 camera module size	82 mm × 82 mm × 86 mm
WELDEYE LM4 illumination module size	82 mm × 82 mm × 60 mm
Weight	ca. 1200 g
External power supply	230 V
Internal power supply	24 V / max. 3 A

Our Service and Development team is available for the seamless integration of our system solutions into your manufacturing system as well as during on-site production.



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