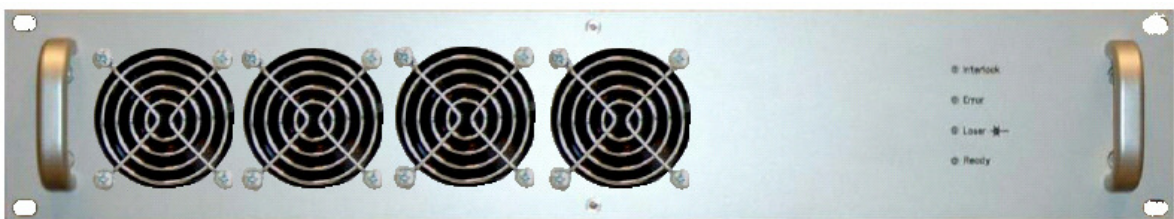


# *laser soldering system*

**LS-KE / LS-ES / LS-DS**



- *30 / 60 / 80W - laser diode*
- *wave length 810-950 nm*
- *working distance 76mm*
- *pilot laser*
- *optionally with solder feeder Mosquito A25*

## Automated laser soldering

At a multiplicity of applications there are joints, which must be soldered individually: Cables, plugs, special construction components and modules with only a few solder joints.

A further application is the use of special elements, e.g. plugs and pin-through-hole on SMD-Boards. Often single point soldering is required because of assembling, e.g. if a completely equipped PCB is inserted into a

housing and has to be connected with plugs or other components by soldering. Automation of these single point soldering processes does not only afford a cost-efficient mass production, it is also demanded to obtain a constant high quality. Thus, it cannot be done without automated single point soldering in the modern electronics manufacturing.

Laser soldering allows an accurate focusing and thus the soldering of

smallest solder joints. The special advantages of this procedure are:

- contactless heat transfer
- accurate focusing
- high power density
- high quality soldering joints with high process reliability

## Technical Data

Laser		Solder Wire Feeder (optional)	
Emitter	diode laser InGaAs	Diameter of solder wire:	0,5-1,4 mm
Optical power	up to 30W cw	Feed	0-24 mm/s
Focus	0,3 x 0,4 mm	Power motor	1,7 W
Focal distance	100mm	Ration of planetary gear:	1:166
Wave length	810 nm ± 4nm	Stroke pneumatic axis	30 mm
Pilot laser	<1mW / 670nm	Angle Laser-Feeder	-30° to + 30°
Interfaces:	24V IO / RS232 / analog		

## Technical description

The source of the laser is a laser diode in the laser tool, where the laser beam is generated and modulated. With the optical system the laser beam is focused accurately on the solder joint. The required temperature at the solder joint is generated by absorption. The application of energy can be controlled precisely. This procedure is suitable both for reflow soldering with soldering paste and soldering with solder wire.

For selective reflow soldering the soldering paste is dispensed first. The solder process occurs in two steps. During the first step the soldering paste is warmed up slowly and the solder joint is preheated. In the second step the soldering paste is totally melted. A meniscus is formed at the solder joint and the contact is completely covered with solder.

For soldering with solder wire the laser is switched on with adjusted power. After the preheating-time the solder wire is fed during the solder feeding time at a defined speed. Subsequently, the after-heating time begins, so that the solder can disperse evenly.

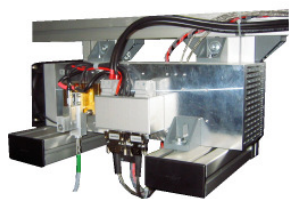
In addition to the heat energy, the solder wire feeding is very important for an accurate soldering process. The fed solder is continuously detected with a miniaturised rotary encoder. The micro-processor of the control unit evaluates the signals and compensates any disturbance. At the end of the forward solder feeding the rotating direction of the motor is returned and the solder wire is moved backward for a defined short distance.

This allows an accurately constant melting of the solder wire and thus perfectly identical appearing solder joints.

The laser control unit includes the power supply for the laser tool and makes the communication with the laser tool and the cooling unit possible. The system is generally controlled and monitored by the serial interfaces RS232 and the digital IOs. At the front display are additional control elements placed.



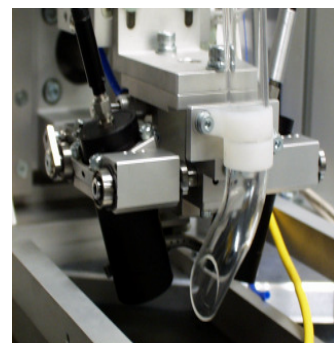
compact system



laser diode + controller



single - laser



double - laser