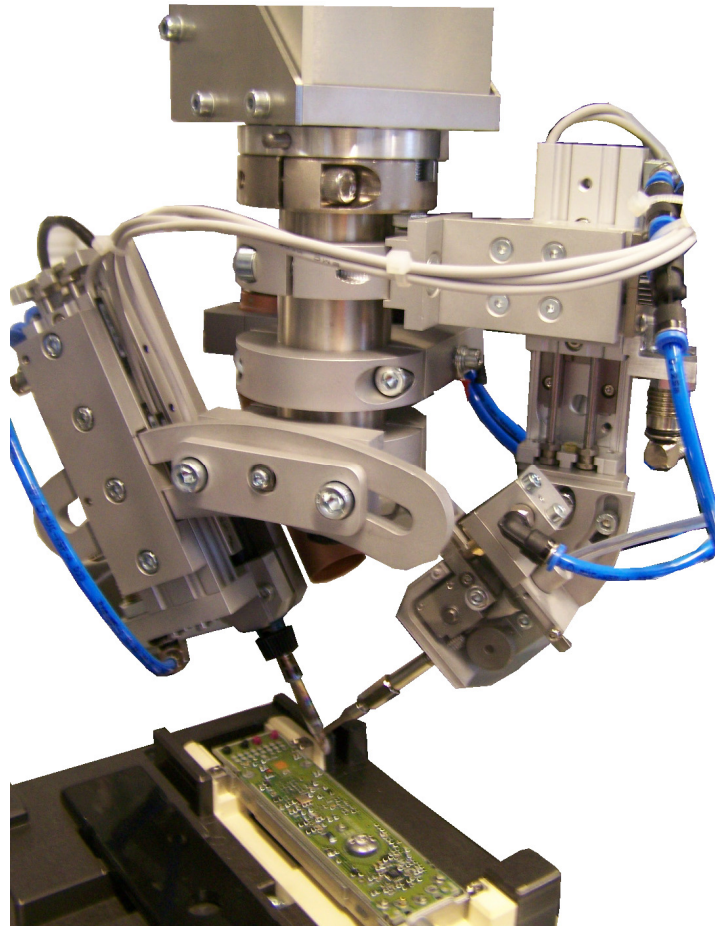


Automated soldering iron

with the robot tool LK3



- *150 W soldering iron with digital temperature control*
- *standard soldering tips*
- *temperature monitoring*
- *solder wire feeder Mosquito A25*
- *automatic cleaning of soldering iron*

Automated soldering iron

A multitude of applications still require joints to 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 SMT boards. Often single point soldering is required because of assembly, e.g. if a complete 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 allow a cost-efficient mass production, it is also demanded to obtain a constant high quality. Thus, modern electronics manufacturing it cannot do without automated single point soldering.

Automated soldering with hot iron is not only one of the most applied soldering procedures, it is also an all-purpose method. Due to the high precision of the robot the soldering tip is always working at the same position. The parameters are set reproducibly.

Technical data

Solder Iron

Power	150 W
Temperature soldering tip	150-450 °C
Stroke pneumatic axis	50 mm
Angle soldering iron	-30° to +30°

Solder feeder (optional)

Diameter solder wire	0,5-1,5 mm *
Feed	0-24 mm/s *
Power motor	1,7 W
Ration of planetary gear	1:166*
Stroke pneumatic axis	30 mm
Angle solder feeder	-30° bis + 30°

Control Unit

Dimensions 19"-unit (w x h x d)	440 x 132 x 233 mm 3HE x 84 TE
Dimensions benchtop case(WxHxD)	340 x 135 x 250 mm
Current Connection	223 V AC, 100 W
Interfaces	24 V IO / RS-232 (opt.)

Technical description

In automated contact soldering the soldering iron is put to the solder joint by a pneumatic actuator. When the joint is warmed up to the soldering temperature the solder wire is fed by the automatic feeder. Subsequently, the solder feeder is moved back. The solder tip stays at the joint for a specified time so that the solder wets the whole joint optimally and a meniscus is formed. The process can be optimally adjusted with the following parameters:

- Pre-heating time and power
- Soldering power
- Solder wire feeding speed
- Solder wire feeding time
- Post-heating time and power

Depending on the geometric tolerances at the solder joint, feeding the solder wire in two steps can be of advantage. After a very short preheating time the solder wire is fed. Then it melts at the solder tip and flows down onto the solder joint. Thus, the surface is increased and the heat conduction is improved.

The soldering tips are very important for the automatic process. Because the heater has much power (150 W, so heat up time is less than 9 s), normal "standard tips" with double coating are used. This increases the life time and reduces the cost. Also the variety of different types is very large. The special mounting system for the soldering ensures the correct position of the tip after changing tips.

Soldering with hot iron requires regular cleaning of the solder tip. This should be done before each soldering cycle in order to ensure identical conditions for each joint. Therefore, the soldering iron is moved to a cleaning station with rotary brushes, where the remaining solder and any residue is removed. In addition to the heat energy, the solder wire feeding is very important for an accurate soldering process. The solder wire is transported by two hardened and knurled wheels with adjustable pressure for motion without slip. The pneumatic pressure unit allows a very precise pressure adjustment and a pressure relief during production pauses.

Features:

- temperature offset for soldering tip
- pneumatic axis for soldering iron and for solder feeder
- universal holder for solder wire spools
- automated cleaning station for soldering tips
- large variety of stand soldering tips

Options:

- function "pre-tinning"
- solder feeder with pneumatic pressure unit to reduce pressure during production pauses
- RS-232 interface adjust and control the temperature by machine interface

The wire feed rate is continuously monitored with a miniature rotary encoder. The microprocessor of the control unit evaluates the signals and compensates any disturbance. Furthermore, the control unit detects any solder wire hold-up and the end of the solder wire.

The process control works with 24V-signals or via the RS-232 interface. The integrated microcontroller relieves the supervisory control unit from real-time process control and permits a reliable soldering process.

The parameters are adjusted by a menu-driven display and soft-keys. In an alternative version, the parameters can be set via RS-232 interface.



Control unit and soldering iron