

ONYX 29

Automated repair of SMD circuit boards



ONYX 29

The ONYX 29 combines ease of use, precision and process automation. The integrated vision system ensures precise component alignment. Thanks to the integrated automatic functions, the multifunctional hot gas head can be used for the following repeatable processes:

- Soldering and desoldering of components.
- Contactless removal of residual solder.
- *Optional dispenser for dispensing applications.*
- *Various options are available for other process applications.*

MAIN FEATURES

- **2000 W multi-function hot gas heating head:** Soldering of components, removal of components, site cleaning (contactless removal of residual solder) and *optional dispensing solutions.*
- **Customized applications available on request.**
- **All axes have motorized,** closed-loop motion control.
- **Manual motion via integrated hand-wheels** for fast and precise positioning of the hot gas head.
- **Automatic and overall process control.**
- **Up to eight thermocouple ports** to control process temperature.
- **Large board handling for boards up to 500 mm x 500 mm.**
- **Board carrier handles irregularly shaped assemblies** without additional (special) fixtures.
- **Various bottom preheaters with a performance of up to 6000 W** including integrated board cooling.
- **Automatic closed loop force control of the Z-axis** for automated picking, fluxing, placement and removal processes in order to protect sensitive parts.
- **Closed loop gas flow control** from 8 to 80 l/min.
- **The MFOV system allows you to view components with dimensions up to 70 mm x 70 mm** and enables an excellent adjustment of the image contrast.
- **Automatic contactless site cleaning** for removal of residual solder with a motorized X / Y / Z system.



AUTOMATED REPAIR OF CIRCUIT BOARDS

Serial repairs with reproducible results and the highest quality are guaranteed thanks to the following parameters:

- High placement accuracy of <math><10 \mu\text{m}</math>
- Integrated force measurement
- Motorized axes

This consistency and quality standard also applies for many other applications as well.

The open design of the ONYX 29 means that there is no limit to the length of PCBs that can be processed. The open architecture of the ONYX 29 and the variety of closed-loop controlled parameters of the new VisualONYX™ application software enable simple laboratory applications as well as highly complex, repetitive manufacturing processes and the highest precision.

APPLICATION RANGE

Repairs

Misaligned equipment can be precisely repositioned and faulty components can be reliably replaced.

Prototyping

The ONYX 29 can automatically assemble and solder components on small and large PCBs with high efficiency allowing the reuse of expensive components.

Post-assembly

Components that are missing at the time of assembly can be placed and soldered later, or individual components that cannot be handled by the existing production machines can be retrofitted with the ONYX 29.

Assembly

The ONYX 29 provides an efficient solution for assembling PCBs with a minimal number of components.

Components

ZEVAC's standard gas nozzles from the proven ONYX and DRS selective soldering machines can be used on the ONYX 29 without modification. The ONYX 29 can easily handle all electronic SMD components and all customer specific components.

Reuse, Recycle, Upcycle

Components are salvaged from defective products when replacing them, BGAs are re-balled and PCBs updated with the latest generation of components in order to upgrade, redesign, extend product life and reduce e-waste.



MULTIFUNCTIONAL HEATING HEAD

Multiple applications

The same heater head can be used for the following applications:

- Hot air or nitrogen soldering of all SMT components (incl. lead-free).
- Non-contact site solder removal.
- *An optional tool can be mounted to automatically remove all residual solder from the PCB.*
- *An optional dispenser unit can be mounted for dispensing applications.*
- **Customized applications available on request.**



PRE-HEATER AND BOARD SUPPORT

Uniform preheating / easy access

The 4-zone preheater (4 x 1500 W) can be easily adapted to boards of any size.

Uniform preheating, mechanical supports and a spring-loaded print holder ensure minimum board deformation.

- 1 Preheater with 4 zones (1500 W each)
- 2 Board holder

Force sensor system

All movements from the soldering head to the board and component pick-up are measured with a force measurement system with closed-loop control.



VISION

New MFOV (Multiple Field of View) Vision System

With the new fully motorized MFOV vision system, the entire range of SMT components (from 01005 components to large BGA's up to 70 mm x 70 mm, *optional up to 110 mm x 110 mm*) can be placed with superior accuracy.

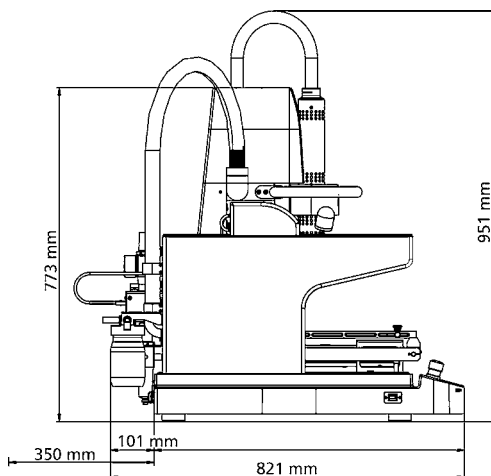
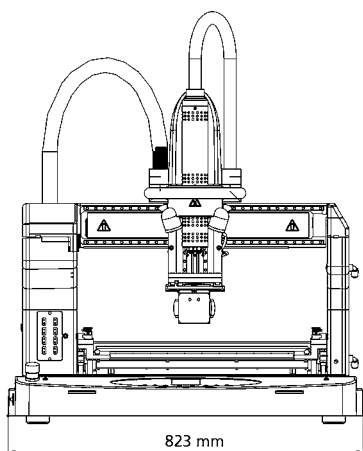
Built-in LED illumination to the top side (component) and to the bottom side (board layout) ensures optimum contrast for the integrated camera system used for positioning.

- 1 MFOV vision system
- 2 Adjustable vision LED illumination

TECHNICAL DATA

Product designation	ONYX 29
Max. board size (W x D)	500 mm x 500 mm (longer available on demand)
Robot working area	400 mm x 400 mm
Board thickness range	up to 6 mm
Max. component height	20 mm bottom side (optional 30 mm), 30 mm top side (optional 70 mm)
Vision system object size	0.2 mm x 0.2 mm - 70 mm x 70 mm
Component and board illumination	Adjustable LED lights
Top heater power	2000 W
Hot gas flow range	20 - 80 l/min (closed-loop controlled flow)
Preheater system	4 independent zones of 1500 W each, heated size: 490 mm x 490 mm
Gas pressure	4 - 6 bar
Temperature range	20 - 475 °C
Hot gas	Air or nitrogen
Cooling gas	Heater element by-pass pneumatic system
Power requirements	3 x 400 / 230 VAC 3 PNE 50 HZ 16 A
Controller	Computer controlled, Windows, VisualONYX™
Dimensions (W x D x H)	823 mm x 821 mm x 951 mm
Weight	140 kg

DIMENSIONS



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