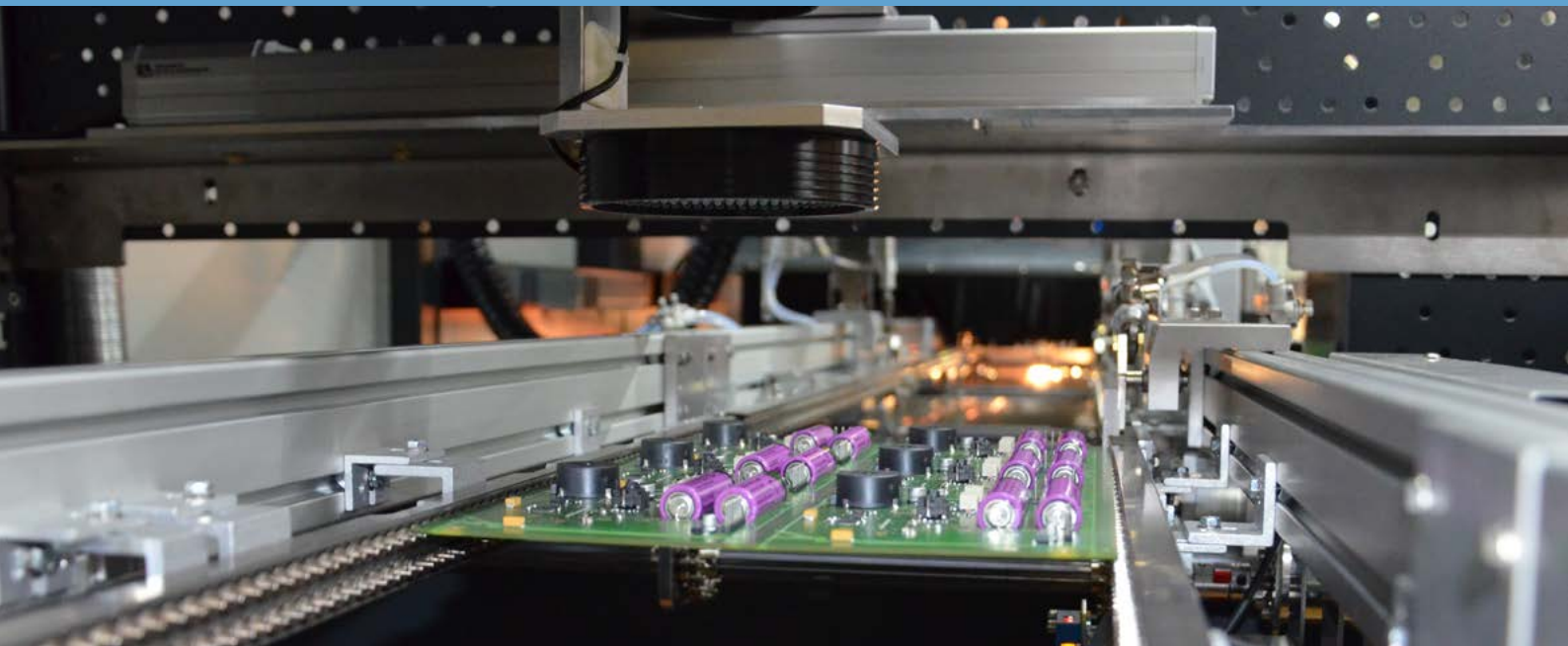


# VERSASCAN & VERSAEYE

## Board examination systems



# Ersa VERSASCAN & VERSAEYE Board examination systems



VERSAFLW 4/55 with  
VERSASCAN and VERSAEYE module

## Why board examination systems?

- Documentation of the solder quality
- Traceability
- Industry 4.0
- No waste of materials



**IPC-HERMES-9852**  
The global standard for "M2M" in SMT assembly

One major growth motor in the electronics industry are the increasing digital networks in both the industrial and private sectors, including the automotive industry and e-mobility. However, in the production of electronic assemblies, equipment manufacturers and EMS providers are faced with enormous cost pressure. "Zero-defect strategies" are a major component when it comes to taking up these challenges. In order to achieve stable quality, and meet the associated demand for zero-defects, permanent monitoring of the

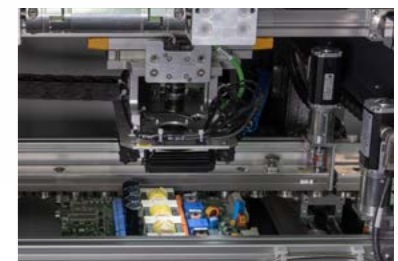
assembly's specific side conditions and the process parameters of the soldering systems is indispensable.

The primary requirements in terms of printed circuit boards and components, such as wettability, soldering heat requirement, soldering heat resistance, layout, etc. have to be assumed as constants and presupposed in a soldering process. These preconditions cannot be adequately controlled in a soldering system but are essential for the quality of the soldering process.

Arising from this fact, the soldering system process inspection can only monitor some of the parameters, which contribute essentially to the quality of the electronic assembly.

The aim of a "zero-defect strategy" in soldering is therefore to eliminate those soldering system factors, which can directly influence the process, from the outset. In addition, the soldering results should be inspected and documented immediately after the soldering system.

For this purpose Ersa has developed the VERSASCAN and VERSAEYE modules. The VERSASCAN is used to check THT-equipped PCBs in front of the machine to detect errors before they occur; the VERSAEYE is used to verify and document the soldering quality after the soldering process.



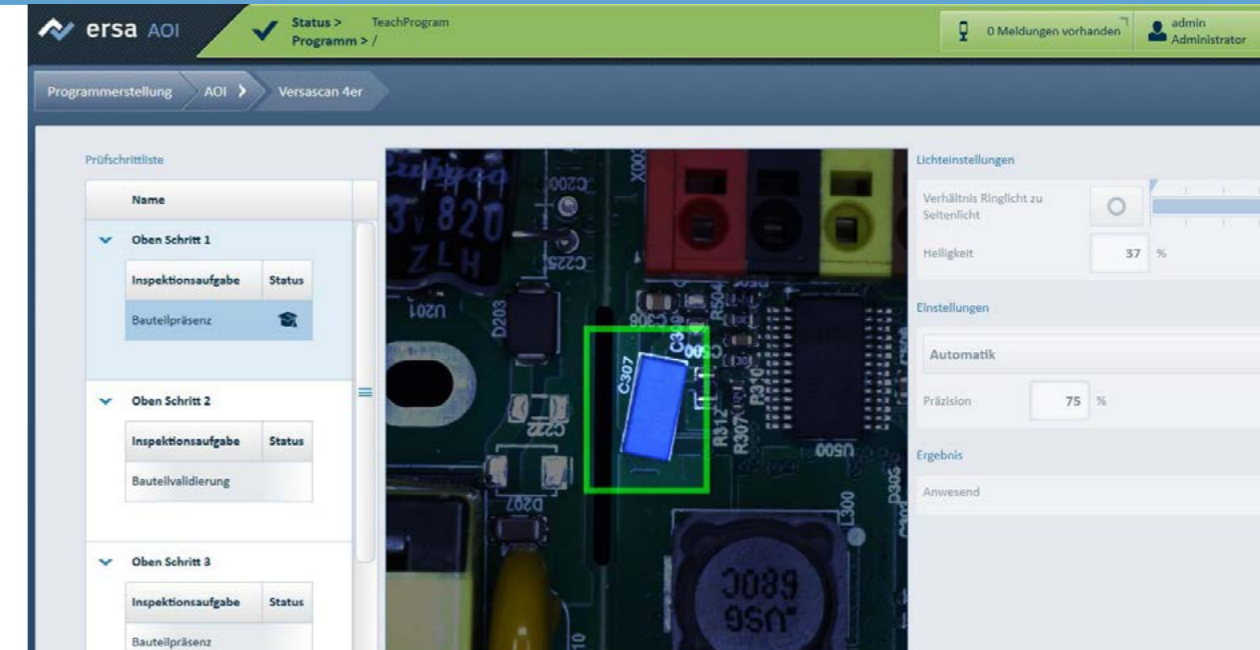
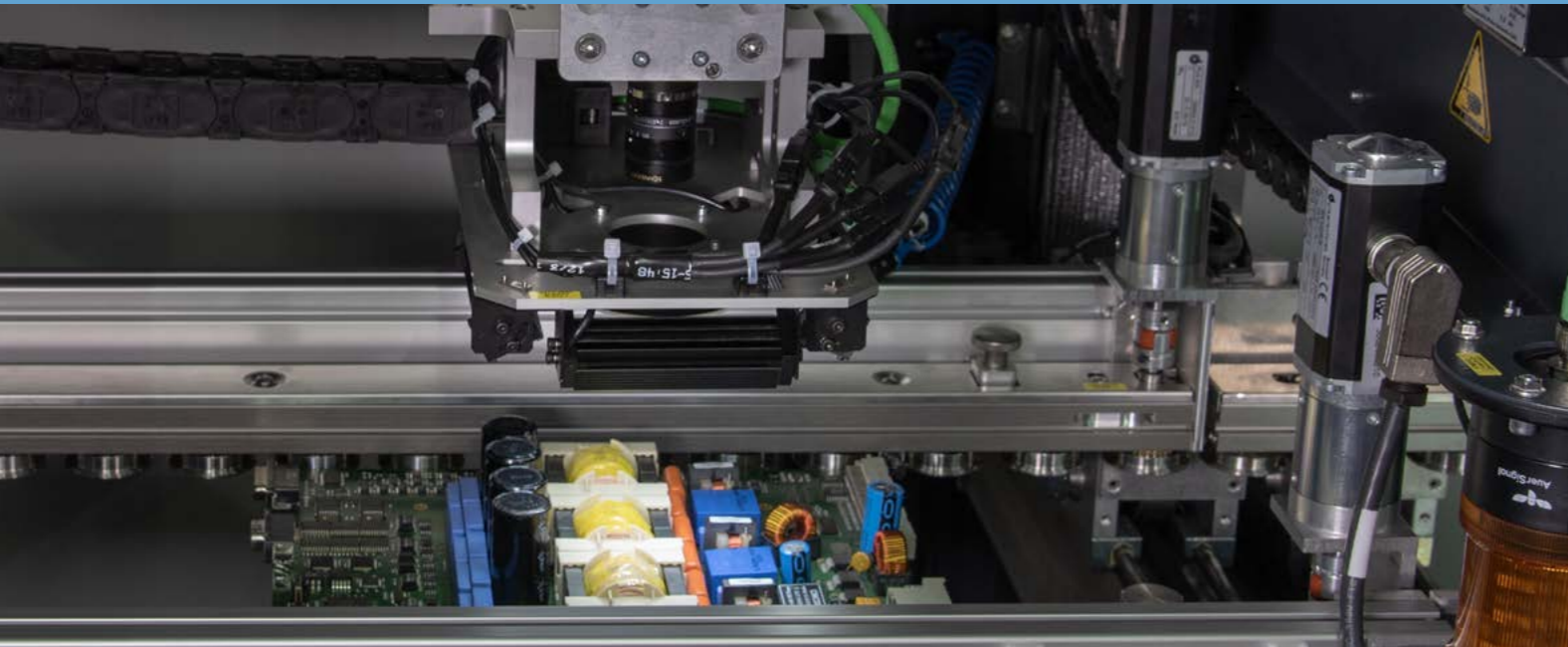
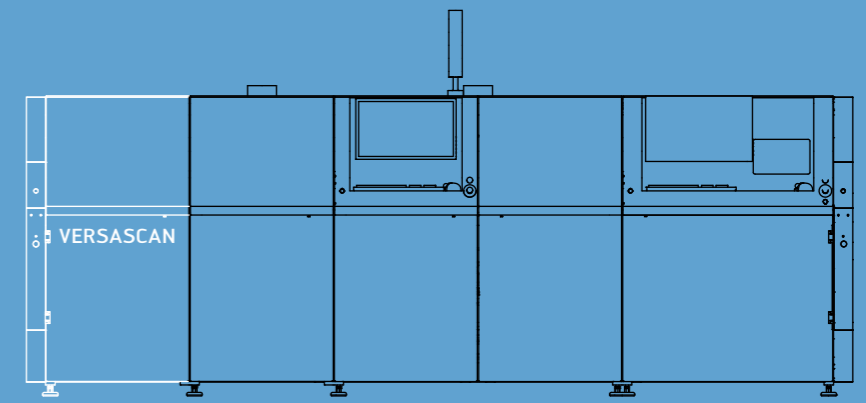
Ersa  
VERSASCAN  
module



Ersa  
VERSAEYE  
module

# Ersa VERSASCAN

## Recognizes errors before they occur



### VERSASCAN Highlights

- Recognition of multicores on PCBs and work piece carriers
- Bad board detection (up to 100 Data Matrix Codes)
- PCB direction recognition
- Detection of incompletely assembled PCBs
- Detection of components with wrong polarization
- Detection of misplaced components
- Vision and reading system can be integrated above or beneath the conveyor level

The VERSASCAN module consists of a solid, powder-coated welded frame, control cabinet, cover with glass door and a width-adjustable pin-and-chain conveyor. The module is completely integrated into the VERSAFLOW selective soldering system. In this way, width adjustment and conveyor speed are adapted to the machine. As a result no throughput time is lost. On the contrary, it allows the user to recognize errors before they occur which leads to an increased throughput. Before the PCB is processed in the soldering

machine the high-resolution camera checks the following criteria:

- Complete assembly of the PCB
- Correct placement of the components
- Polarity of the components

For this purpose the camera compares the image of the current PCB with a reference image. The X-Y axis system with built-in endocentric optics detects up to 100 codes as well as the PCB direction.

Bad board detection is used to identify defective components and to exclude the PCB or, in case of a PCB panel, to exclude the defective single PCB of the panel from the production process. This prevents defective PCBs from being soldered and reduces waste. Furthermore, valuable production time as well as equipment and resources such as flux, solder and energy are saved while maximizing throughput. In this way, errors can be corrected before soldering whereby rework costs are eliminated.

The results are logged and are then available for example as an XML file for follow-up processes. In order to be able to use the VERSASCAN in a ready-to-operate mode, it is possible to make preparations in the run-up of production based on CAD files or an offline programming. In this way, one can always be one step ahead.

At customer's request it is possible to go individually into adaptable sizes from 50 x 50 mm up to 508 x 508 mm.



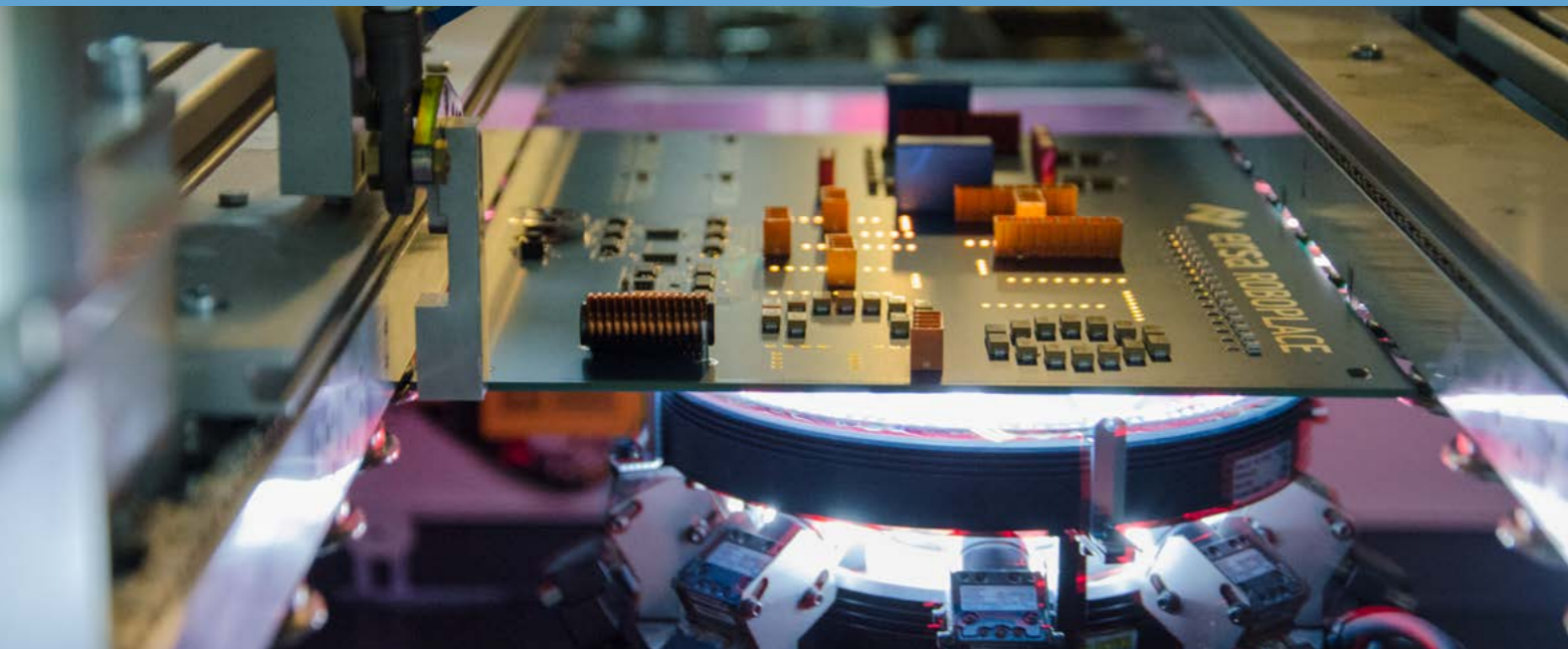
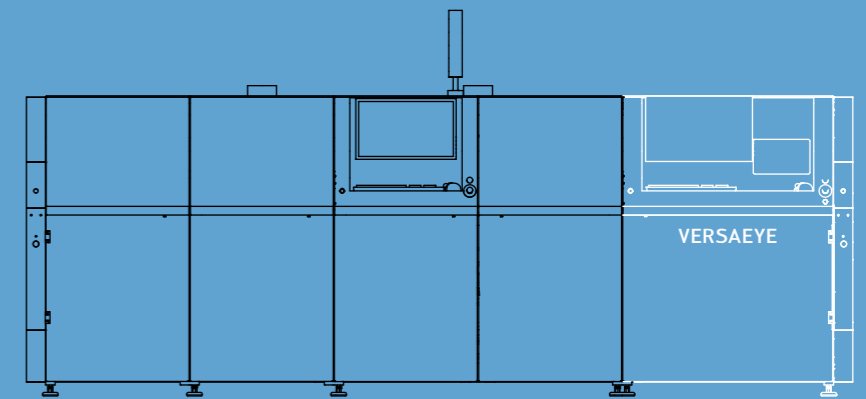
Component recognition



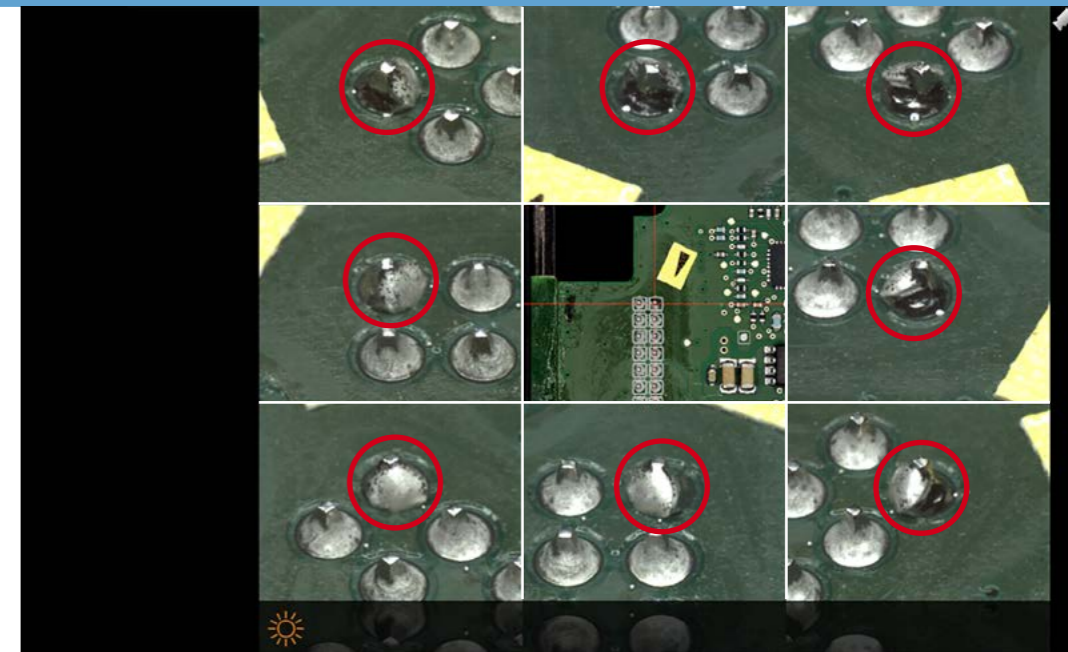
Component recognition

# Ersa VERSAEYE

## Analysis, documentation and traceability for the customers of our customers



Thanks to the lateral cameras a detailed error analysis is possible. As you can see in the sample image: the poor wetting is only visible from a certain angle.



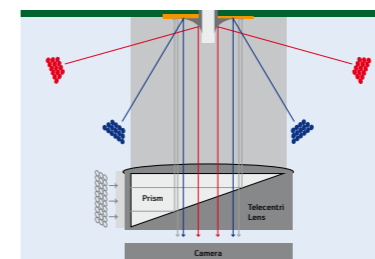
- VERSAEYE highlights**
- System optimized for wave and selective soldering systems
  - Compatible with work piece carriers
  - Modular Inspection of the solder joints from the bottom side
  - Available with up to 9 cameras per module
  - I/O-Interface OK/NG
  - Classification of inspection results at any time

The VERSAEYE inspection system is available in two versions. In the first version, the VERSAEYE module is integrated in the soldering system. The second version is a stand-alone module that can be positioned anywhere in the production line. Both versions consist of a solid, powder-coated frame. Servomotors move the axis system of the VERSAEYE in X-, Y- and Z-direction.

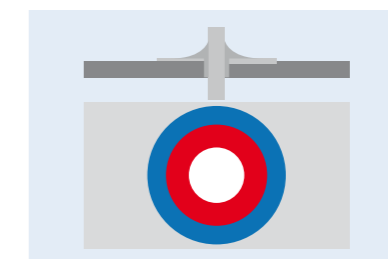
The VERSAEYE inspection system is equipped with 9 cameras. 8 cameras are arranged in a ring around the central camera. In this way, 360° inspections can be carried out. The central camera is equipped with a special lens, which prevents image distortion and allows for a precise inspection. Different reflection angles are realized by the innovative two-color ring lighting. Based on the reflection the software creates a color scheme of blue, white and red, and depending on the respective color shares it is detected whether the solder joint is good.

The software has been optimized for THT applications. Due to histogram programming, solder bridges, solder balls, poorly wetted solder joints or partially open solder joints etc. can be detected. The inspection results can be documented completely of course, and the traceability of the assembly is guaranteed. Error analyzes can also be created.

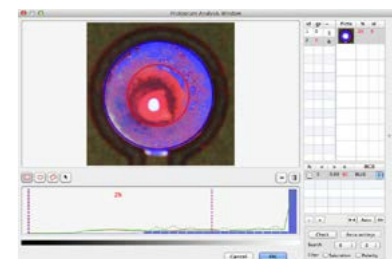
The handling of the PCBs can be carried out directly or via a workpiece carrier. The PCB conveyor is designed as a width-adjustable pin-and-chain conveyor which allows for a flexible product change.



3 different reflection angles for fillet detection

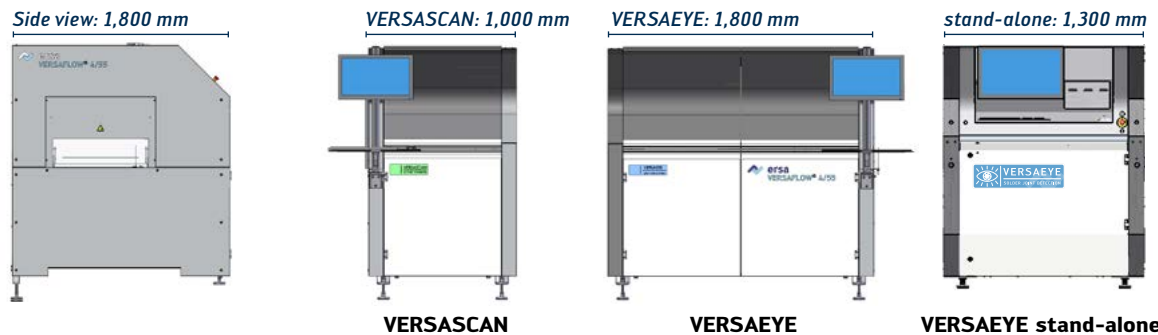


Reflection of a good solder joint



Screenshot software analysis

# Technical data VERSASCAN & VERSAEYE



Dimensions (for VERSAFLOW 4/55)			
Length	1,000 mm	1,800 mm	1,300 mm
Width	1,800 mm	1,800 mm	1,800 mm
Height	1,700 mm	1,700 mm	1,700 mm
Weight	ca. 500 kg	ca. 700 kg	ca. 700 kg
Feeding	manual/automatic	manual/automatic	manual/automatic

Conveyor system			
PCB top side clearance	120 mm	135 mm	135 mm
PCB bottom side clearance	115 mm	30 mm	30 mm
Working range	508 x 508 mm	508 x 508 mm	508 x 508 mm
Conveyor speed	1 – 15 m/min	1 – 15 m/min	1 – 15 m/min

Inspection			
Field of view	35 x 35 mm	38 x 38 mm	38 x 38 mm
Inspection speed	1 Field of View per 1,9 s	1 Field of View per 1,5 s	1 Field of View per 1,5 s

Electrical data			
Voltage	400 V	400 V	400 V
Power tolerance range	±10 %	±10 %	±10 %
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Power consumption	ca. 3 kW	ca. 3 kW	ca. 3 kW
Safety fuse	no separate safety fuse necessary		3x 16 A

Environmental specs/noise level			
Ambient temperature	15 – 35 °C	15 – 30 °C	15 – 30 °C
Permanent sound level	< 60 dB (A)	< 60 dB (A)	< 60 dB (A)

**America**  
Kurtz Ersa, Inc.  
usa@kurtzersa.com

**Asia**  
Kurtz Ersa Asia Ltd.  
asia@kurtzersa.com

**Vietnam**  
Kurtz Ersa Vietnam Company Limited  
info-kev@kurtzersa.com

**Mexico**  
Kurtz Ersa México, S.A. de C.V.  
info-kmx@kurtzersa.com

**China**  
Ersa Shanghai  
info-esh@kurtzersa.com

**France**  
Ersa France  
info-efr@kurtzersa.com

Ersa GmbH | Leonhard-Karl-Str. 24  
97877 Wertheim/Germany

Tel. +49 9342 800-0  
info@ersa.de | www.ersa.com

 **kurtz ersa**