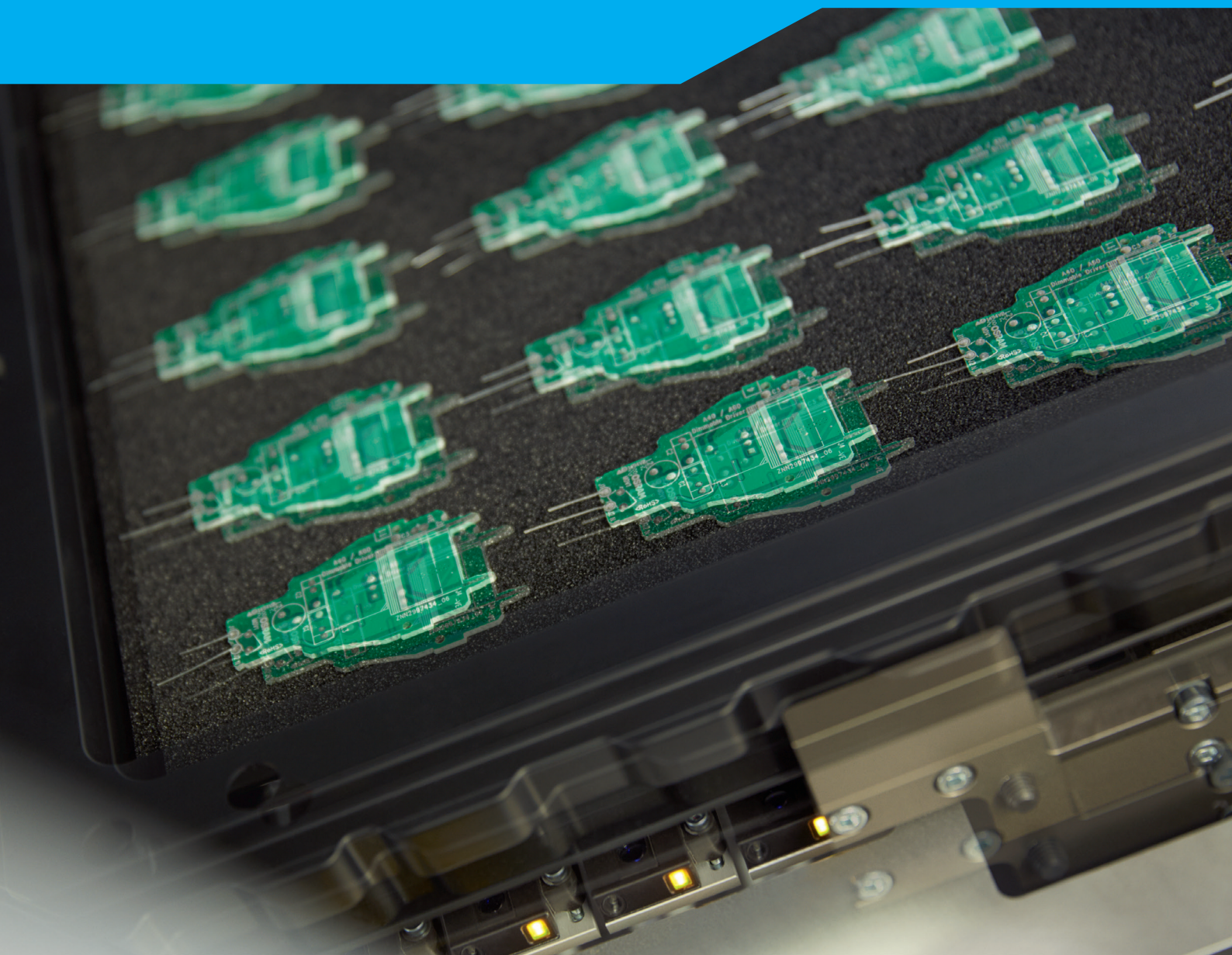
SCHUNK Electronic Solutions Portfolio overview

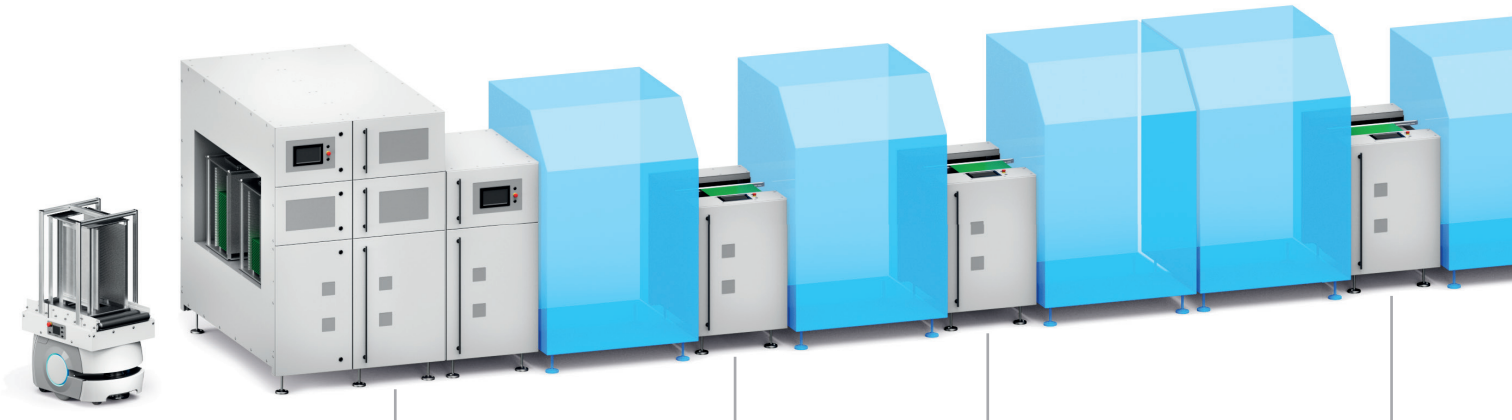
Your reliable partner for global electronics manufacturing of tomorrow

Hand in hand for tomorrow



Efficient solutions for the electronics production of tomorrow

SCHUNK Electronic Solutions supports you throughout the entire electronics manufacturing process with systems that increase quality, efficiency, and process reliability. From precise board handling and reliable depaneling to efficient storage – our solutions can be flexibly integrated into your existing line.



Your Process

Handling

From Stand-alone routers to end-of-line solutions

SCHUNK Electronic Solutions provides you with customized solutions for every production concept, from compact stand-alone routers to fully integrated end-of-line solutions with handling, process integration, and storage. Our modular and scalable approach fits seamlessly into your electronics production process, increases quality, shortens cycle times, and sustainably reduces costs per assembly.





AOI	Cleaning	Flipping
Dispensing	Heat staking	Separation
ICT test	Laser marking	Pin insertion
Other processes on request		

Customer processes

Flexible. Reliable. Precise. Efficient separation with high product diversity

Whether a compact entry-level solution or a powerful high-end machine: our SAR series offers the right solution for every requirement in automated depaneling technology.

A promise of quality – in every SAR:

- **Precision at maximum speed:** repeat accuracy of up to ±0.02 mm in the X/Y/Z direction
- **Reliable productivity:** technical availability ≥98%
- **More output, less downtime:** double shuttle for minimal cycle and set-up times
- **Future-proof integration:** MES interfaces for the smart factory
- **First-class edge quality:** reproducibly clean, burr-free milling results
- **Maximum compatibility:** fits all SCHUNK workpiece carrier in the product range
- **Clean process:** up to 70% less dust pollution with dust-reduce booster
- **Reliable and fast starting:** automated program start teaching and position correction via vision system

The most important data at a glance:

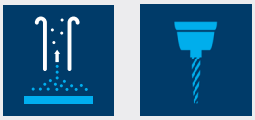
Technical specifications

Machine type		Compact	1300	1700
Milling accuracy with vision system	[mm]	±0.01	±0.01	±0.01
Positioning accuracy	[mm]	±0.02	±0.02	±0.02
Min. panel size X- and Y-direction	[mm]	100 x 80	100 x 80	100 x 80
Max. panel size X- and Y-direction	[mm]	430 x 350	430 x 350	500 x 600
Monoshuttle for long boards Max. panel size X- and Y-direction			430 x 775	500 x 1125
Max. component height on milling side	[mm]	10	20	20
Max. component height on non-milling side	[mm]	30	60	60
Max. component height on non-milling side with high shuttle	[mm]		105	105
Dust-reduce booster (70% less dust)		●	●	●
Sawing disc head			●	●

SAR-Compact

Efficient. Economical. Beginner-friendly.

The SAR-Compact makes it easy to get started with automated depaneling, it is economical and safe and ideal for small to medium batch sizes.



Dust-reduce booster | Milling



SAR-1300

Precision. Flexibility. Productivity.

The SAR-1300 combines the highest level of precision and productivity, is flexibly configurable and can be adapted to any challenge.



Dust-reduce booster | Milling | Sawing



SAR-1700

Large format. Powerful. Customizable.

The SAR-1700 extends the performance of the SAR series to include an extra large work area; ideal for large panel layouts and the highest demands. Flexible use with milling machine, saw or combined.

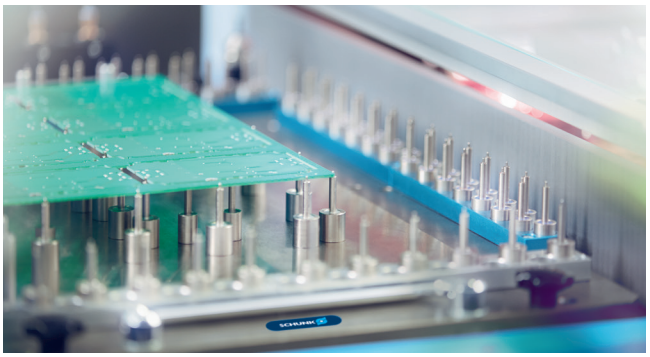


Dust-reduce booster | Milling | Sawing



Secure mounting for optimal process reliability

SCHUNK workpiece carriers provide sensitive assemblies with the secure hold they need, fixing PCBs precisely, protecting them from damage and creating the basis for stable, automated processes with consistently high quality.

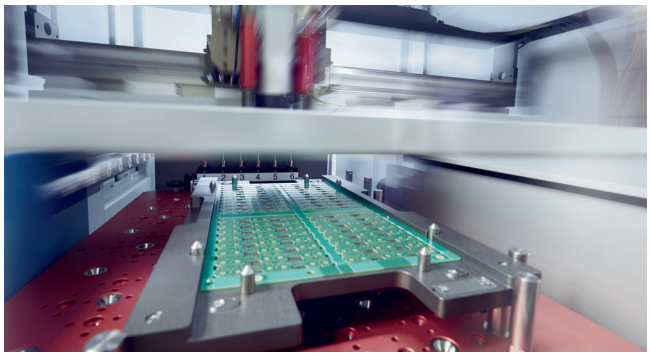


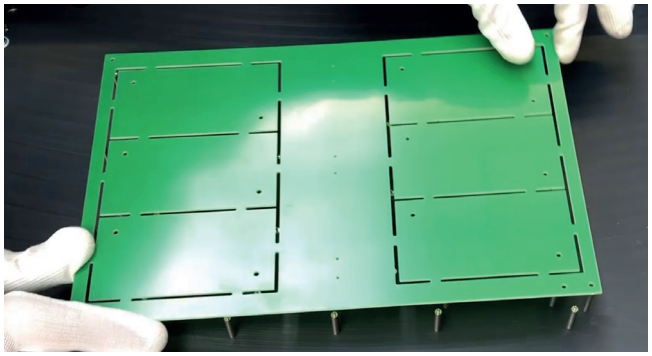
MAGNOPLATE

- **Flexible & universal:** a patented system that makes customized carriers redundant
- **Fast & efficient:** magnetic pins configurable via software, product change in minutes
- **Cost-saving & process-reliable:** ideal for applications with a wide range of variants and for stable production processes

Individual workpiece carriers

- **Precise & stable:** accurate fixing of the PCBs for the highest possible process reliability
- **Safe:** no falling out, even with small assembly groups
- **Convenient:** Removal plates enable fast, stress-free handling





Do-it-yourself workpiece carriers

- **Independent:** fast production of product-specific workpiece carriers directly on the depaneling machine
- **Economical:** ideal solution for sample production
- and small to medium quantities
- **Flexible:** short response times and cost-effective alternative to special carriers

NEW

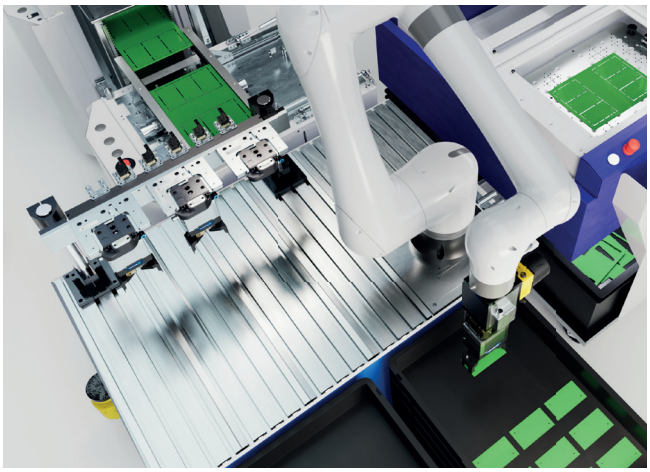
Start flexibly, grow securely

The mobile CoBot from SCHUNK scales your stand-alone processes flexibly, works safely without a protective grille, can be docked quickly, and is versatile for loading and unloading as well as palletizing. This allows you to automate exactly when your production requires it.



Your benefits at a glance:

- **Scalable & cost-efficient:** low initial costs, grows with increasing production quantities
- **Flexible retrofitting:** simply connect to stand-alone docking machines or separate again
- **Efficient & safe:** takes over loading and unloading and palletizing, moves without a protective grille thanks to the area scanner, can be used in operator or automatic mode



Automatic gripper change between pneumatic and servo grippers via the integrated gripper station.

Laser cutting: highest quality for sensitive assemblies

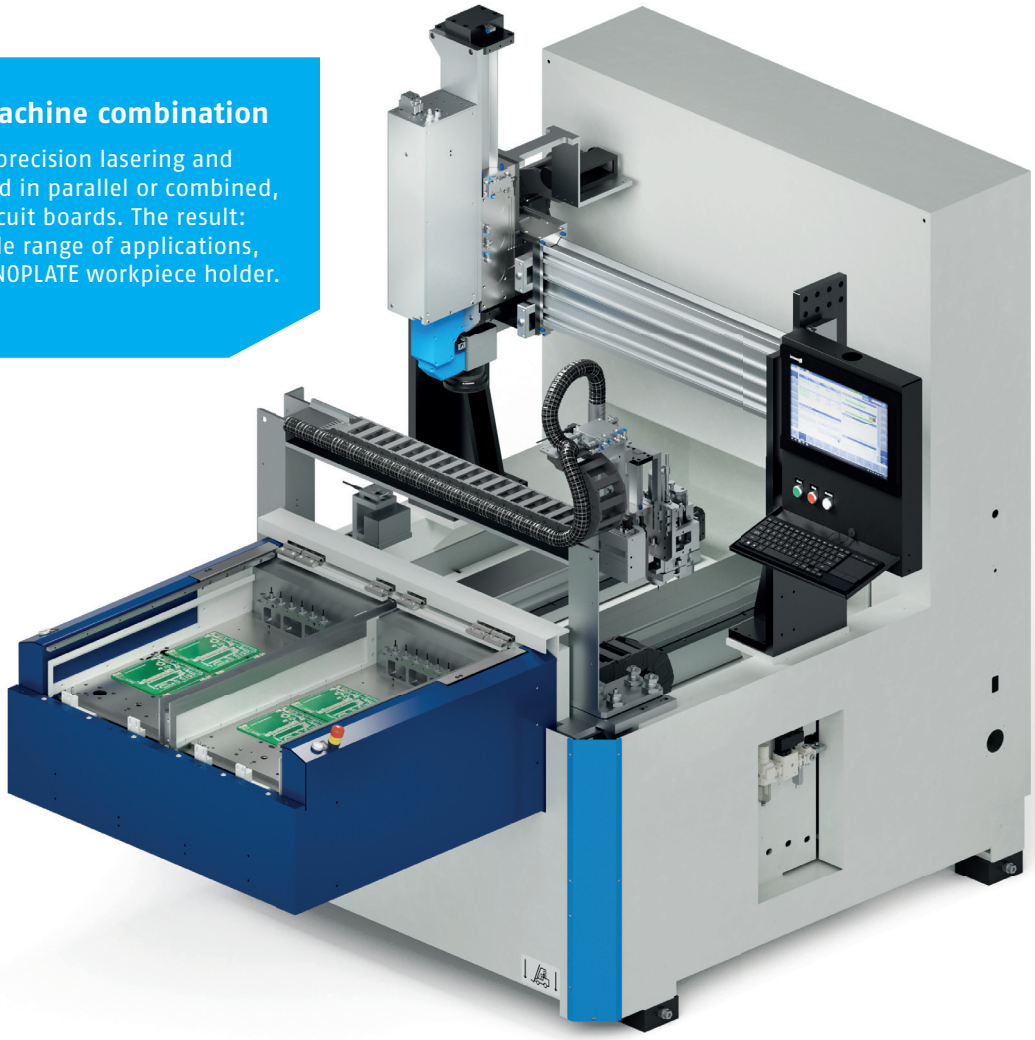
Laser depaneling optimally complements mechanical processes and expands the range of potential uses in electronics production. The non-contact process works precisely and cleanly, reduces mechanical stress, and ensures the highest quality for sensitive assemblies.

The strengths of laser depaneling with SCHUNK

- **No mechanical contact with the component**
  dust and stress-free
- **Broad portfolio of laser sources**
  for optimum processing for every material
- **Versatile material processing**
  one machine for a wide variety of materials
- **Highest technical cleanliness**
- **Layout flexibility**
  due to narrow separating gap (miniaturization)
- **Cost savings possible** through layout adjustments and low maintenance requirements
- **Reliable workpiece carriers**
  including Magnoplate

Unique laser-milling machine combination

The SAL-1300 combines high-precision lasering and efficient milling – can be used in parallel or combined, e.g., for rigid-flex printed circuit boards. The result: maximum flexibility for a wide range of applications, including the use of the MAGNOPLATE workpiece holder.



Precise separation – regardless of the material

The most important data at a glance:

Material	Thicknesses	Specification	Result
FR-4	0.3 – 1.6 mm	Standard material for printed circuit boards	Burr-free, clean-cut edges
Polyamide / Kapton	flexible	Sensitive, susceptible to deformation	No cracks, no warping
IMS (aluminum or copper core)	Rigid, metal-based	High-thermal conductivity	Clean and quick separation without residue
Ceramic	Brittle, hard	High-performance material	Precise, particle-free cuts
Rigid-flex	Combined	Combination of rigid and flexible areas	Material-appropriate separation of both zones in one process (laser + milling)

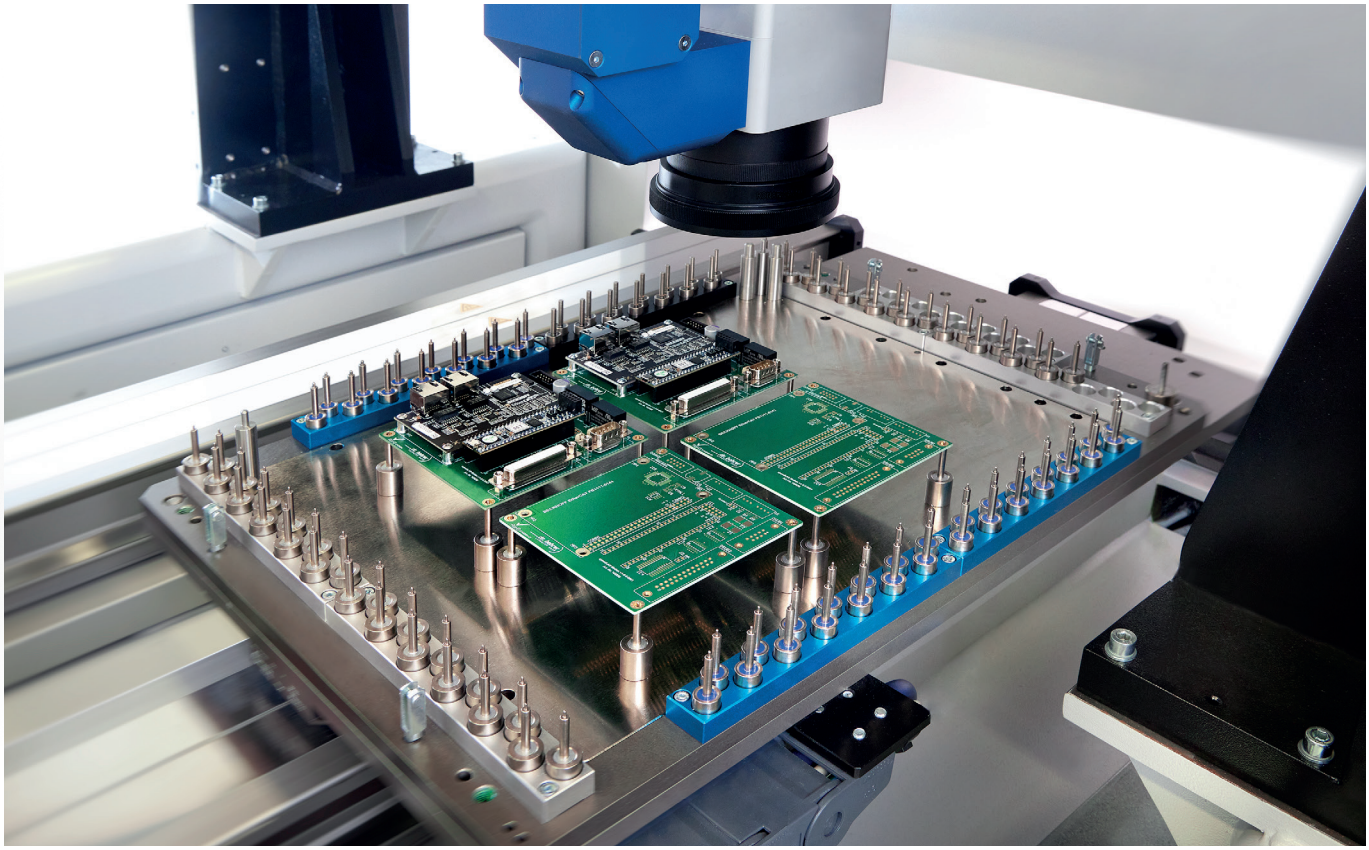
NEW

Also available as inline solution ILL-2800

Fast. Gentle on components. Process reliable.

The ILL-2800 impresses with its double shuttle system, flexible laser sources and maximum precision for the most demanding applications directly in the line, and it can be combined with other processes.





The laser cuts without contact and is therefore particularly gentle on components, as neither vibrations nor dust are generated.

End-of-line solutions from a single source

SCHUNK Electronic Solutions has long been more than just a specialist for depaneling systems. With our broad portfolio, we now cover complete process chains, from board handling systems to the depaneling process through to the integration of downstream steps and efficient storage. Our systems are scalable and can be retrofitted so that your production can grow and keep pace with the future requirements. Everything perfectly coordinated, everything from a single source.



Board handling systems | **Inline routers**

Your advantages:

- **One contact** for the entire process chain
- **Optimal compatibility and process reliability**
- **Flexible expandability –** systems grow with your requirements
- **Increased efficiency** through end-to-end automation

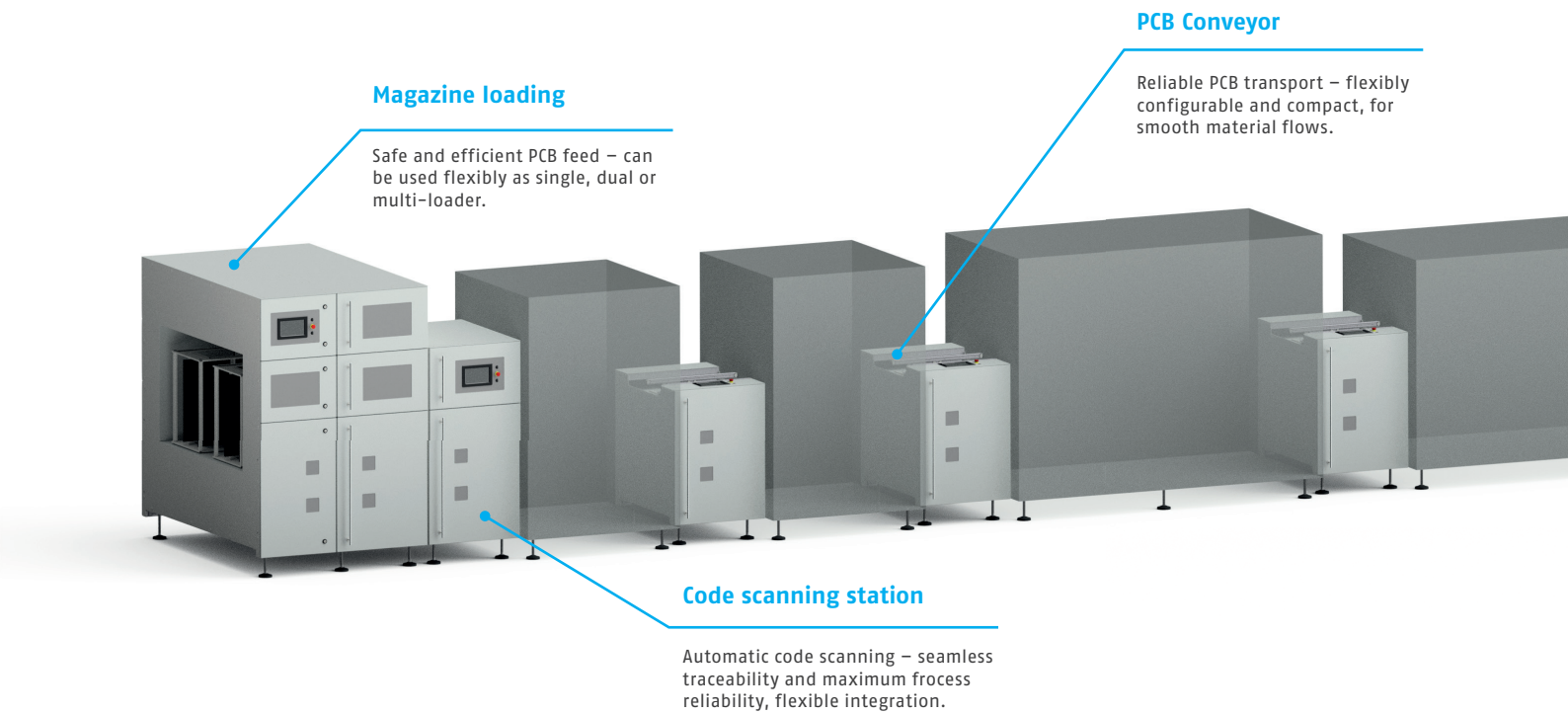


Process discs | Storage rack

NEW

Efficient automation begins with the right handling by SCHUNK

Efficient processes start with a reliable material flow. The board handling systems from SCHUNK ensure smooth handovers between the process steps and adapt flexibly to any line structure. They are precise in their positioning, stable in their process and offer maximum availability. This creates the basis for consistent and automated electronics production.

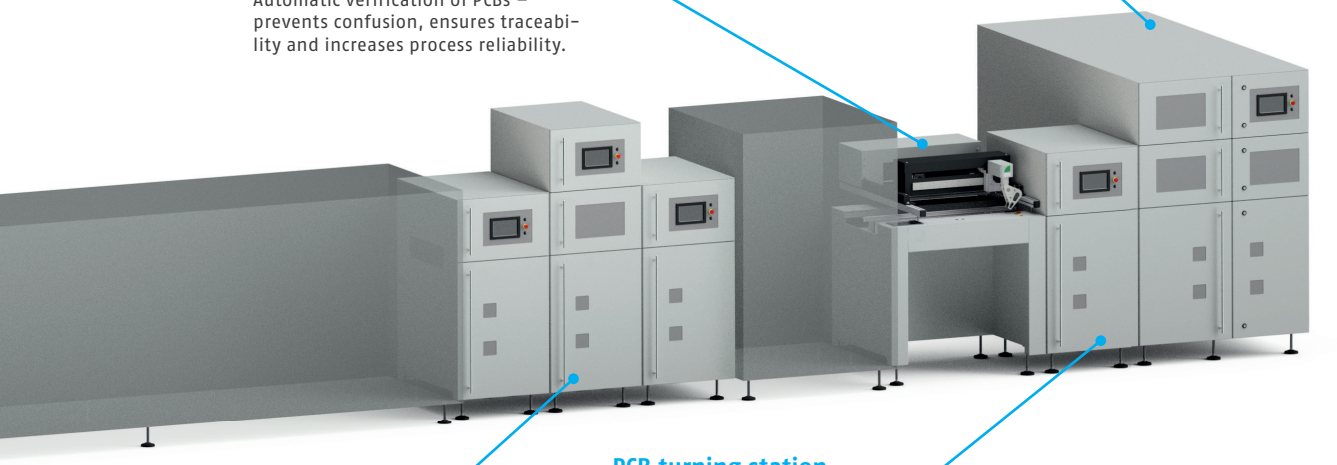


Magazine unloading

Automatic storage of finished PCBs – safely, efficiently and available as a single, dual or multi-unloader.

PCB verification

Automatic verification of PCBs – prevents confusion, ensures traceability and increases process reliability.



PCB turning station

Automatic turning of the PCBs – compact, can be flexibly integrated and is reliable.

PCB buffer with infeed and outfeed conveyor

Ensures even material flow, compensates for cycle time differences and prevents downtimes.

Modular. Flexible. Integrated. Inline router for smart manufacturing.

SCHUNK inline routers are synonymous with fully automated depaneling with maximum precision and process integration. They combine flexibility, cost-effectiveness and reliability, and are suitable for medium to high quantities with low to medium variance. They can be seamlessly integrated into any production line or as an island solution for the end-of-line.



Dust-reduce booster | Milling

ILR-Compact

Compact. Reliable. Flexible.

The ILR-Compact offers a powerful entry into inline depaneling: compact, reliable, and versatile configuration.



Dust-reduce booster | Milling

ILR-Performance

Modular. Efficient. Flexible.

The ILR-Performance is the next generation of inline routers: with maximum flexibility and performance.

A promise of quality – in every ILR:

- **High availability**
  ≥98% technical availability
- **Compatible**
  with all SCHUNK board handling systems
- **MES interfaces**
  Future-proof integration into smart factory environments
- **SCHUNK linear motor axes**
  High-speed + precision (±0.02 mm)
- **Dust-reduce booster**
  Up to 70% less dust pollution
- **Vision systems**
  Automated program teaching and position correction

SCHUNK CSS – easy commissioning of new products

SCHUNK CSS supports the operator during the setup of new products, eliminating the need for manual teaching. The system significantly simplifies commissioning, reduces potential sources of error, and ensures greater speed, precision, and convenience in daily operation.




Dust-reduce booster

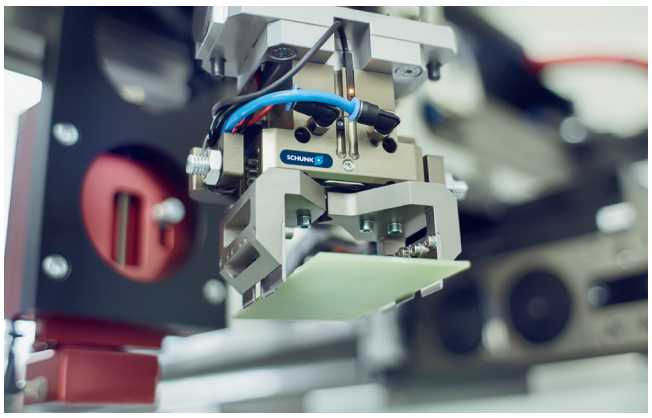

Milling


Sawing

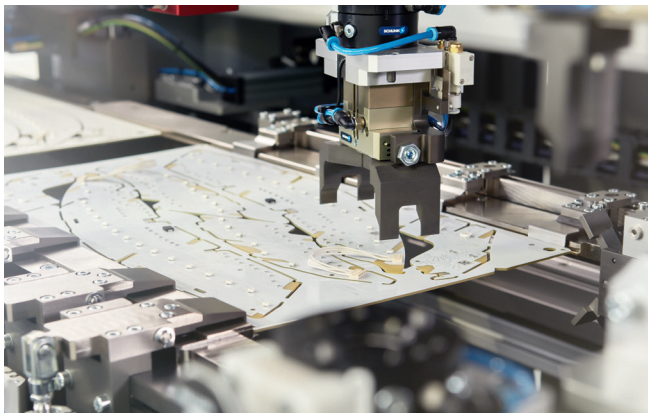
ILR-2800

Powerful. Uncompromising. High-end.

The ILR-2800 is the high-end inline solution: maximum productivity, flexible, and thanks to the combination with workpiece carriers, uncompromisingly precise. Flexible use with a milling cutter, saw or both combined.



Greater flexibility and shorter set-up times in PCB handling thanks to the compact servo gripper with gripper finger change.



Various feed options allow maximum flexibility in terms of panel layout.

The most important data at a glance:

Technical specifications

Machine type		Compact	Performance	2800
Milling accuracy with vision system	[mm]	±0.01	±0.01	±0.01
Positioning accuracy	[mm]	±0.02	±0.02	±0.02
Min. panel size X- and Y-direction	[mm]	On request	On request	100 x 80
Max. panel size X- and Y-direction	[mm]	460 x 350	460 x 364	430 x 350
Max. component height on milling side	[mm]	20	20	20
Max. component height on non-milling side	[mm]	57	80	60
Integration of additional processes			Process disc	Rotary indexing table
Dust-reduce booster (70% less dust)		●	●	●
Sawing disc head				●



The modular multi-gripper grips several individual circuits simultaneously and ensures short cycle times and high flexibility. The ERD torque module reliably transmits pneumatic and sensor signals during the rotary movement.

Efficiently automate a diverse range of variants

Many variants and small quantities often make automation look unattractive. But with increasing quantities, you quickly reach your limits. SCHUNK inline routers show that high-mix-low-volume can also be automated economically – with a flexible, process reliable, and future-proof solution.

Key features for your high-mix-low-volume production:

- **Fast set-up & loading:** automatic data synchronization with MES/Hermes, reduced set-up times thanks to CSS
- **Servo gripper with gripper station:** quick changeover to different panel layouts without manual intervention
- **Seamless traceability:** inline scanner and bad board detection ensure quality
- **Flexible unloading:** palletizer with KLT boxes and intermediate foam layers or ejection of faulty assemblies
- **Automatic track width adjustment at the infeed:** quick changeover to different panel layouts without manual intervention



Your benefits:

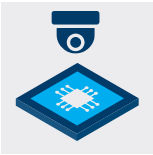
- **Efficiency** despite wide range of variants
- **Maximum flexibility** with changing assemblies
- **Shorter set-up times,** reduced handling effort
- **Reliable process** through traceability and bad board detection

Process diversity directly in the line

With the process discs from SCHUNK, the inliner becomes a genuine all-rounder. They can be flexibly combined to form individual process chains – from precise depaneling through to additional automated work steps.

Core processes

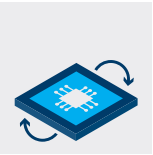
Standardized process solutions, can be combined in a process disc or implemented as a single unit



AOI
Ensuring quality directly in the line



Cleaning
Removes dust and residues for clean assemblies



Flipping
Efficient change of direction for subsequent processes

NEW

Advanced processes

Process modules for additional functions, can be flexibly integrated and combined



Pin insertion
Precise insertion of pins directly in the line – efficient and process-reliable



Dispensing
Precise application of adhesive or potting compounds – directly integrated into the line



Heat staking
Robust joining of components by thermal forming – reliable and automated



ICT test
Electrical function tests immediately after separation



Laser marking
Labeling and marking of components with the laser

Processes on request

Customer-specific processes can be implemented on request.

Customized storage – as individual as your processes

The process does not end after depaneling, but rather continues seamlessly. With SCHUNK storage systems, you have numerous options at your disposal to forward assemblies to the next work step in a safe, orderly, and process-oriented manner. Flexible, efficient, and reliable.

Organized storage

Palletizing

- Organized storage in trays, with high process reliability
- Flexible adaptation to different tray formats
- Compact design, saves space in the line
- High capacity for efficient series production

Magazine unloader

- Organized storage of finished PCBs in magazines
- Safe and reliable at the end of the line
- Available as single, dual or multi-unloader
- Saves handling effort and keeps things tidy

Flexible storage

Storage in small parts boxes

- Flexible storage for different assemblies
- Optionally available with foam inserts for secure transport
- Particularly well-suited for applications with high variant diversity
- Reduces set-up time thanks to easy handling

Storage on flat belt + automation

- Storage on flat belt as basis for flexible handling
- Expandable with 2D Grasping Kit or other automation solution
- Ideal for high flexibility and customizable process chains
- Enables fast transfer to downstream processes or work steps

Direct handover

Seamless storage on transfer systems (e.g. TS belt)

- Handover directly to the desired subsequent process step
- Shortens throughput times and increases overall efficiency
- Perfect for continuous, automated process chains

Storage options available as required

Not every production line is the same – that's why we adapt our storage system exactly to your requirements. Whether special boxes, individual carriers or direct transfer to the next process: Together we develop the right solution for your workflow.



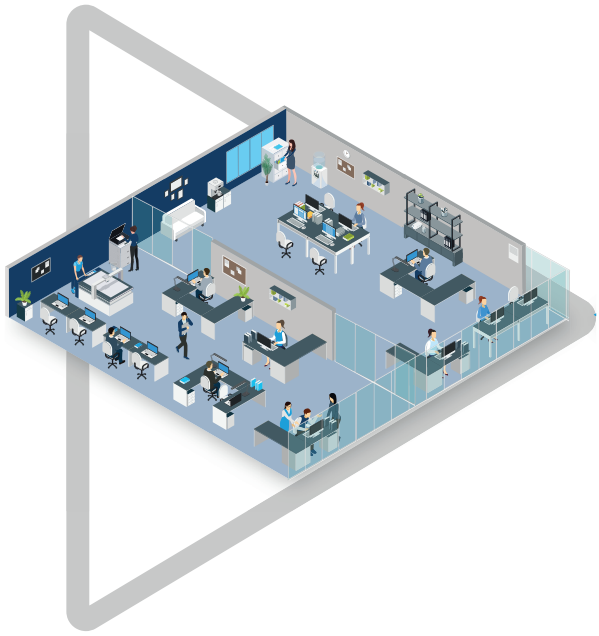
SCHUNK Solutions

Customized solutions from SCHUNK Electronic Solutions

1 **Understanding challenges**



2 **Developing solutions**



Individual requirements? We make it possible.

Thanks to our **modular system, decades of mechanical engineering expertise** and our **in-house software development,** SCHUNK Electronic Solutions has already completed numerous projects – also far beyond the field of electronics production.

Our strengths for your solution

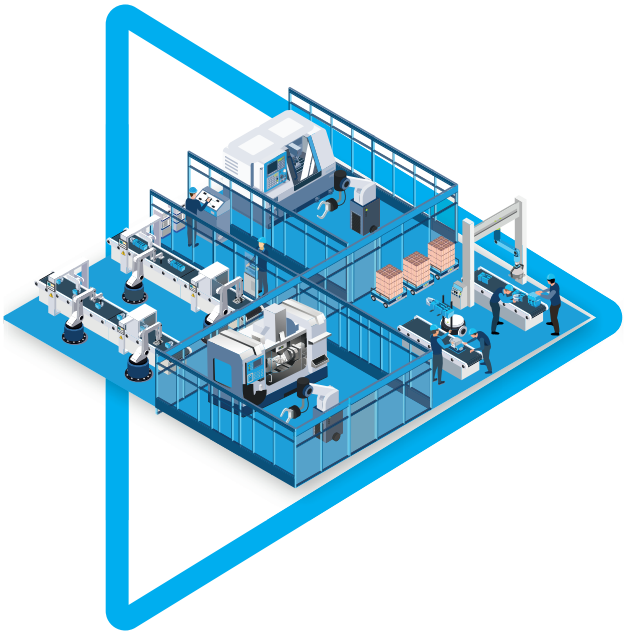
- **In-house machining department:** fast and flexible production of special parts for custom projects
- **In-house linear axes:** the basis for precise and adaptable machine concepts
- **In-house development & assembly:** short distances, fast response times
- **Laser expertise:** through close partnership with Dr. Bohrer Lasertec for applications such as cleaning or laser cleaning, laser structuring, laser welding

Examples of special solutions

Our special solutions always result from genuine customer requirements – and they show how flexible our modular system is:

- **Inline pick-and-place machine based on the ILR:** integrated directly into the line, for efficient process chains
- **Press-fit system based on the SAR-1300 with double shuttle:** precise connection technology combined with high productivity
- **Dispensing system based on the SAR:** flexible with single or double shuttle for different volumes and processes
- **Logistics and palletizing system:** large dimensions, modularly expandable and perfect for automated material flows

3 Manufacturing and assembly



4 On-site support



Everything from one source: development, manufacturing and innovation

- Tailor-made machine concepts for your individual processes
- High flexibility and fast implementation of special designs
- Access to state-of-the-art laser and automation technology

On-site support – delivery and after sales

As a trusted partner, we take care of your concerns and support you throughout all steps.

Contact partner for support and details



Worldwide service
Wherever you call home – SCHUNK is close to you!

If you have any questions, individual concerns or need advice, our experienced contact partner will be happy to assist you.

- **Individual advice**
- **Project planning and design**
- **Assembly, instruction, commissioning**

Interested?

Find out more about our product portfolio and our technologies for efficient and future-proof processes in electronics production. We will be happy to help you find the right solution for your requirements.

Tel.: +49-7725-9166-0
sales.ses@de.schunk.com

All technical data at a glance:

		Inline-Router			Stand-Alone-Router		
		Compact	Performance	2800	Compact	1300	1700
Machine dimensions							
Length	[mm]	1900	2000	2800	1300	1325	1727
Width	[mm]	2115	2115	1880	1607	1386	1636
Height	[mm]	2285	2285	2020	1642	1930	1930
Operating height	[mm]	950	950	950	894	930	930
Weight	[kg]	3300	3500	3500	700	1600	2200
Speed of axes							
X- and Y-linear motor axis	[mm/s]	2000	2000	2000	1000	2000	2000
Z-linear motor axis	[mm/s]	1000	1000	1000	1000	1000	1000
Accuracy							
Repeat accuracy	[mm]	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
Positioning accuracy	[mm]	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02
Milling accuracy with vision system	[mm]	±0.10	±0.10	±0.10	± 0.10	±0.10	±0.10
Workspace							
Max. panel size X- and Y-directions	[mm]	460 x 350	460 x 364	430 x 350	430 x 350	430 x 350	600 x 500
XXL-milling area for large panels						430 x 775	600 x 1125

PCB characteristics							
PCB thickness	[mm]	0.5 – 3.2 (further PCB data on request)					
Max. component height on milling side	[mm]	20	20	10	10	20	20
Max. component height on non-milling side (with high shuttle)	[mm]	57	80	60	30	60 (105)	60 (105)
PCB materials		CEM, FR-4, IMS (Al), CU (further PCB data on request)					
Availability							
Technical availability		≥ 98 %					
Noise level							
Measured at a distance of 1.2 m around the machine		≤ 75 db (A)					
System control							
IPC control with DIN 66025 programming		●	●	●	●	●	●
Windows operating system		WIN 10					
Power supply							
Voltage		400 V/ 50Hz/ >16A					
Compressed air		0.6 mPa (6 bar)					
Ambient temperature		+18°C – +40°C					
Relative air humidity		15 % – 80 %					
RCD > 100 mA: Connection over RCD not possible (please contact SCHUNK)		●	●	●	●	●	●
Options (most common ones)		**Compact**	**Performance**	**2800**	**Compact**	**1300**	**1700**
Strong spindle (Jäger spindle)		Standard	Standard	Standard	●	●	Standard
Automatic tool change and broken tool control		Standard	Standard	Standard	●	●	●
Diameter control		●	●	●	●	●	●
Milling brush holding-down device		Standard	Standard	Standard	Standard	Standard	Standard
Programmable milling brush holding down device		●	●	●		●	●
Dust-reduce booster		●	●	●	●	●	●
Milling bit head		Standard	Standard	Standard	Standard	●	●
Sawing disc head / sawing and milling combination				●		●	●
Single-handling / Single-shuttle		Standard	●	Standard	●	●	●
Double-handling / Double-shuttle			Standard		Standard	●	●
Fast acting panel feeder		●	●				
Automatic width adjustment at the infeed		●	●	●			
Flex-clamp (for frameless panels)			●				
CSS		●	●				
Detection of good and bad parts		●	●	●	●	●	●
Traceability		●	●	●	●	●	●
Vision system for program teaching		●	●			●	●
Vision system for recognition of PCB position		●	●	●	●	●	●
CAD/CAM software for generating milling program		●	●	●	●	●	●
Gripper station		●	●				
Automatic gripper finger change		●	●				
Gripper coding		●	●				
Quick-change gripper heads (pneumatic and servo grippers)		●	●				
Automatic gripper finger measurement		●	●	●			
Auto teaching and auto calibration		●	●				
Palettizing systems		●	●	●			
Board handling systems		●	●	●			
Process disc (process integration e.g. ICT)			●				
Rotary indexing table (process integration e.g. ICT)			●	●			
Integrated cleaning station			●	●			
Integrated AOI			●	●			
Integrated turning station		●	●	●			

SCHUNK Electronic Solutions GmbH
Am Tannwald 17
D-78112 St. Georgen
Tel. +49-7725-9166-0
schunk.com
info@de.schunk.com

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