kurtz ersa

REFLOW

Soldering Systems

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REFLOW
COMPETENCE
SINCE 1987

GLOBAL. AHEAD. SUSTAINABLE.

Ersa Reflow Soldering Systems

Always the Right Performance

For almost 40 years, Ersa has been setting standards in reflow soldering – from the entry-level HOTFLOW ONE model to the powerful flagship HOTFLOW THREE, which sets the benchmark in high-volume soldering, to the EXOS 10/26 vacuum oven for void-free soldering results. Whatever your requirements in electronics manufacturing, Ersa reflow systems offer maximum quality, cost-effectiveness, and sustainability!

High-performance reflow soldering

SMD technology dominates the assembly of electronic components. With several thousand components per assembly no longer being uncommon, chip designs are becoming increasingly smaller. At the same time, the variety of components is growing. High-performance reflow ovens such as the Ersa HOTFLOW models and the Ersa EXOS with vacuum module are setting the industry benchmark. They provide consistent temperature distribution for reliable heat transfer, enabling the safe soldering of heavy components while protecting smaller ones from overheating. They also offer maximum machine availability, ease of maintenance and added value.

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Requirements for a reflow system:

- Optimal heat transfer
- Maximum throughput
- Stable and homogeneous temperature profiles with minimal ΔT across the process width
- Maximum machine availability
- Optimal energy balance
- Minimal energy consumption
- Excellent serviceability
- Traceability

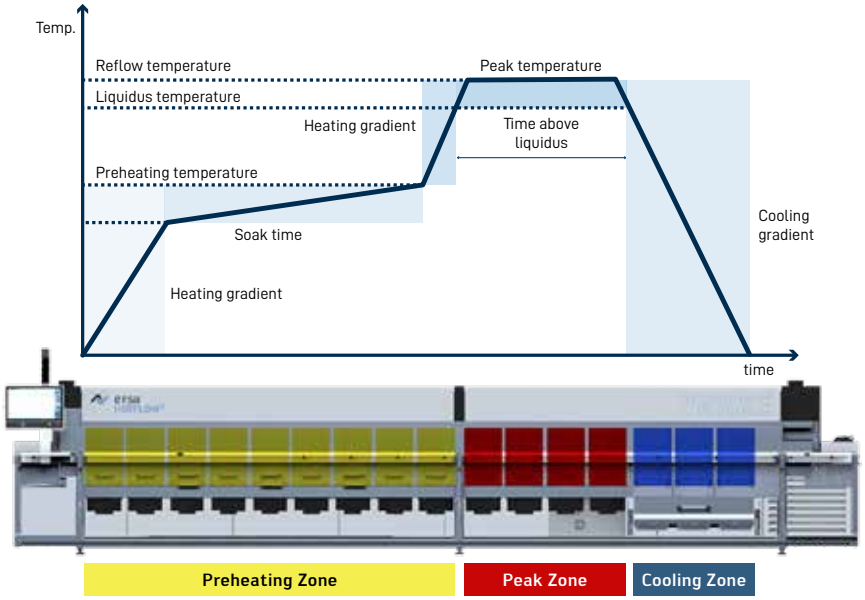
This is how reflow soldering systems work (with and without nitrogen):

Preheating zone

The preheating zone thermally prepares the assembly for the soldering process. It equalizes the temperature of different components and activates the flux contained in the solder paste to create optimal conditions for soldering.

Peak zone

In the peak zone, the temperature exceeds the melting point of the solder paste, causing the solder to melt and wet the PCB pads and component leads. Stable and reproducible process temperatures ensure the solder joints' reliability.



Cooling

After the soldering process, the assemblies are cooled in a controlled manner, with the cooling speed being adapted to the assembly design. This creates optimal conditions for subsequent process steps such as AOI, manual inspection, and assembly handling.

Heat transfer

The efficiency of the heat transfer in modern reflow systems directly influences quality, productivity, and operating costs. HOTFLOW reflow soldering systems optimize energy transfer to achieve a minimum ΔT with the lowest possible energy consumption.

Process gas cleaning

The purity of the process zone is crucial for machine availability, stability, and reproducibility of soldering processes. Contamination mainly originates from solder pastes and PCB materials. The No-Clean management system removes these residues to prevent their accumulation on assemblies and in the process chamber.

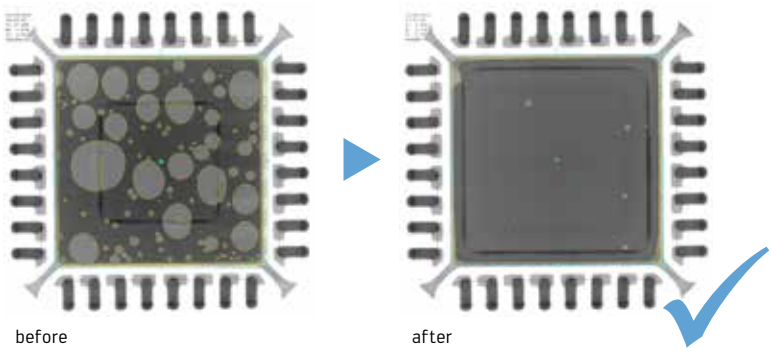
Reflow soldering with vacuum module for void reduction of up to 99 %:

Vacuum oven

Nitrogen oven

Atmospheric oven

When exposing an electronic assembly to vacuum in the peakzone during the solder liquidus, the so called voids move to the vacuum area and thus leave the solder joints in an attempt to equalize the pressure. This improves thermal heat dissipation in SMT components such as power semiconductors and high-performance LEDs.



before after

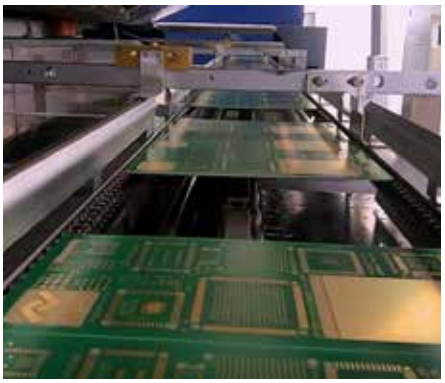
The void rate can be reduced by up to 99% in the vacuum chamber of the Ersa EXOS 10/26.

The One for everyone
Ersa HOTFLOW ONE

The ideal entry-level reflow oven with unrivaled price-performance ratio

HOTFLOW ONE reflow soldering systems provide ideal thermal performance, a uniform cross-profile, and excellent zone separation for outstanding soldering results. High-quality components and easily accessible maintenance and cleaning areas ensure maximum availability. Intuitive operation via an industrial PC with touchscreen provides for convenient programming and comprehensive process data management. MES interfaces and traceability connections are also available, of course. The HOTFLOW ONE impresses with its attractive price and offers excellent TCO values and fast ROI.

Optimized energy transfer
Ersa HOTFLOW ONE reflow soldering systems are designed for optimal thermal performance, with features such as optimized energy transfer, minimized ΔT and increased zone separation. This ensures repeatable and excellent soldering results.



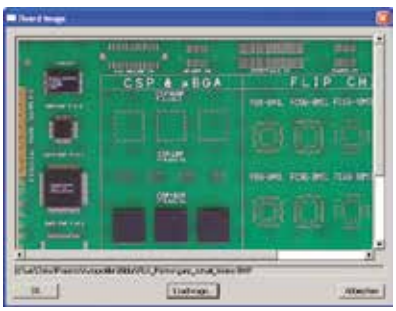
Low-mass conveyor system

The HOTFLOW ONE features a low-mass conveyor system with center support that can be executed as a single- or dual-track system. The maximum conveyor width is 516 mm. Whether single or dual track, the result is productivity combined with excellent soldering quality.

Software hightlights

Thanks to process data recording, all processes can be precisely documented with the user-friendly ERSASOFT machine controller. The Autoprofiler allows for quick offline profile definition, and the integrated order management system and helpful online support ensure efficient and secure workflows.

Automatic process evaluation with 6 parameters – Display of gradients with up to 17 profiles



Ersa Autoprofiler: Offline profile creation for maximum machine availability

- **Compact machine dimensions**
- **Top- and bottom-side convection modules in all zones**
- **Low-mass conveyor system with single or dual track**
- **Industrial PC with touchscreen**
- **ERSASOFT process data recording with energy consumption management**

The benchmark in reflow soldering.
Ersa HOTFLOW THREE

The best reflow performance in every aspect: Quality. Efficiency. Flexibility. Cleaning. Connectivity.

With the HOTFLOW THREE, Ersa is making a clear statement for further increased quality in soldering. Its unique selling point: the SMART CONVECTION POWER UNIT (SCPU®). This exclusively developed motor and control unit ensures an optimized soldering profile and thus even better soldering results. Individual zones can be controlled separately, enabling perfect adaptation to the requirements of material and solder paste. In addition, the SCPU® and the high-performance cooling unit installed in the cooling zone only consume the power that is actually required. Absolutely precise injection and monitoring of nitrogen reduces consumption to a minimum. The result is further enhanced machine availability coupled with maximum productivity, short maintenance times and intuitive operation via ERSASOFT 5 – while keeping consumption low.

Extremely fast profile change
The HOTFLOW THREE is unbeatable when it comes to fast profile change! In combination with the high-precision Ersa SCPU® motor and control unit, permanent temperature monitoring, high-performance cooling unit, and optimally insulated machine housing, the new profile is ready to go in record time, even without opening the cover.

It runs and runs and runs

Depending on the configuration, the HOTFLOW THREE impresses with a machine availability (OEE) of up to 12 weeks and more of continuous operation without maintenance intervals. This is possible due to the patented three-stage Ersa Smart Cleaning System consisting of SMART ELEMENTS® (preheating zone), SMART PYROLYSIS CLEANER (peak zone), and SMART CONDENSATION UNIT for condensate separation in the cooling zone.

Perfect ease of maintenance

The HOTFLOW THREE also impresses when it comes to maintenance – servicing the cooling zone and cleaning the filter systems is easily done from the front. The doors of the machine housing can be removed quickly and easily without any tools and then stored at the system to save space. The components of the Ersa Smart Cleaning System are easy to access and can be pulled out on telescopic rails.

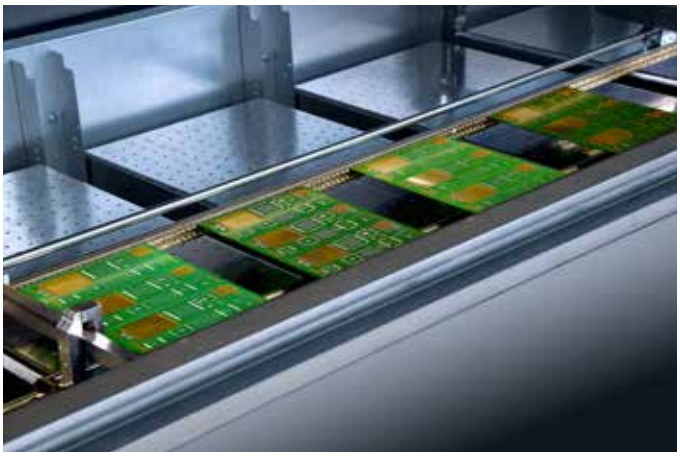
Future-proof user interface

Thanks to its future-proof interface and Kurtz Ersa CONNECT, the HOTFLOW THREE is ideally equipped for all digital services and precise process data recording.

- **High-speed profiling**
- **Patented Smart Cleaning System**
- **Perfect accessibility**
- **Industrial PC with touchscreen**

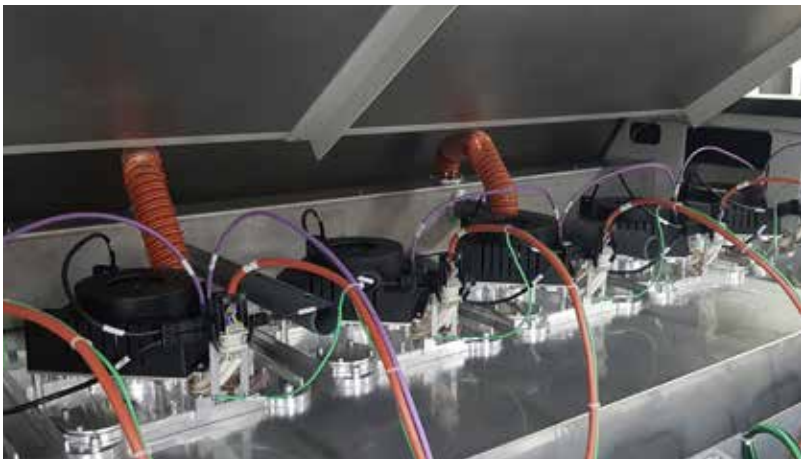
Highly flexible conveyor system

The HOTFLOW THREE, available with 16, 20, or 26 heating zones, offers single-track and variable dual-track conveyor systems. Conveyor width is up to 686 mm for single track; for dual track systems it is up to 2 x 300 mm or 510 mm. All versions are equipped with center support, which can be activated or deactivated as an option. Conveyor speed can be set individually as required. With dual track systems, both tracks can even be operated at different conveyor speeds.



Unique SMART CONVECTION POWER UNIT (SCPU®)

The SMART CONVECTION POWER UNIT (SCPU®) is the motor and control unit of the HOTFLOW THREE. It was developed exclusively for Ersa and is perfectly matched. Therefore it operates with high efficiency and reduces energy consumption and noise: Depending on the selected configuration, the HOTFLOW THREE reduces nitrogen consumption by 25%, power consumption by up to 10%, and heat radiation by 20%. And at the same time, the system is three times more quiet



Smart cooling system combined with perfect insulation

In the electronics manufacturing hall, operators benefit from the perfect insulation, low noise level and optimal room climate provided by the HOTFLOW THREE. While it provides pleasant cooling in summer thanks to its smart, high-performance cooling system, it can also be used to maintain comfortable, warm temperatures in winter.

Lowest operating noise

The HOTFLOW THREE is not only the benchmark in terms of machine availability and soldering quality, but also in terms of noise insulation. Thanks to its well-insulated cover, the machine operates at a continuous noise level of less than 60 dB(A), subject to the machine configuration. This means it remains well below the legal requirements and ensures a pleasant, quiet environment for both operators and the production area.

further Information
HOTFLOW THREE

Highly efficient motor control

Highly flexible conveyor system

Perfect sound insulation

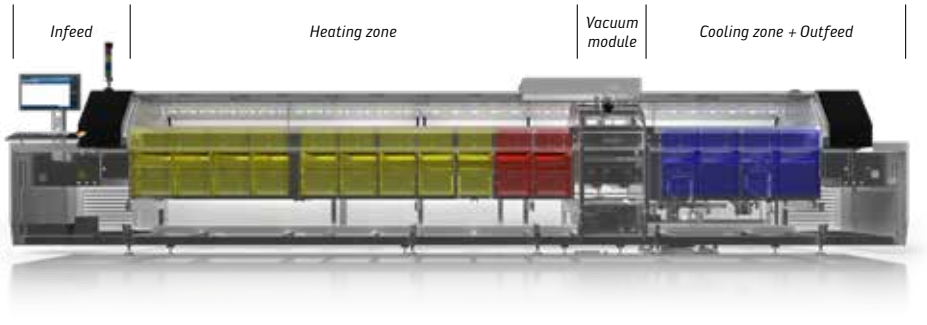
Smart Cooling System

How to avoid voids?

Ersa EXOS® 10/26

Inline reflow soldering with convection and vacuum. Thanks to its innovative conveyor system and reliable processes, the Ersa EXOS ensures pore-free solder joints at maximum throughput and minimum footprint.

Voids are air pockets in SMT solder joints that reduce the cross-section and heat dissipation in BTC power semiconductors and LEDs. This can lead to thermal overload and component failure. Even a void content of 5 – 10% increases thermal resistance and creates hot spots. However, the electronics manufacturing industry sometimes requires pore-free solder joints, especially for high-reliability technology and power electronics. Consequently. the void rate must me be minimized in reflow soldering to meet this requirement. With the EXOS® 10/26, Ersa offers a convection reflow soldering system with a vacuum chamber that reduces the void rate by up to 99%.



Innovative conveyor system

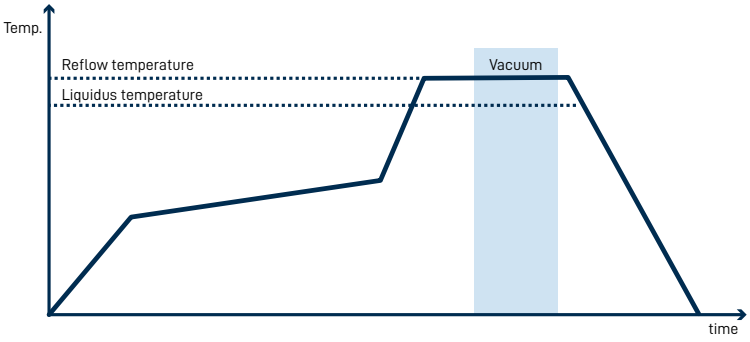
The EXOS® offers a conveyor system divided in four segments: infeed, preheating zone with peak zone, vacuum module, and cooling zone each have their own transport system. The dual-track conveyor maximizes throughput and optimizes PCB guidance. The infeed module ensures simultaneous loading so that assemblies reach the vacuum chamber at the same time.

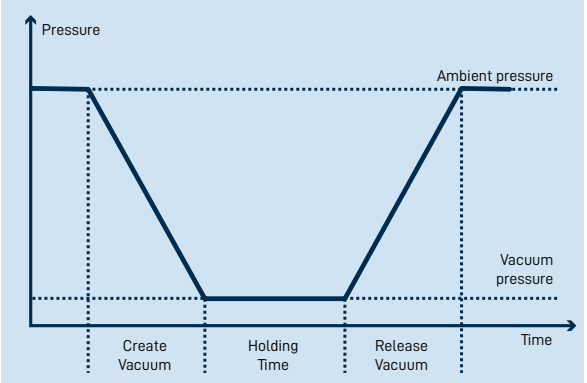
Medium-wave emitters for optimal temperature profiles

With its optimized convection heating, EXOS® offers the smallest ΔT available on the market in the process tunnel. Medium-wave emitters and heating plates keep the temperature in the vacuum chamber stable, thus ensuring the liquidus of the solder joints during void reduction. All heating systems also minimize the heat load on the machine components.

Efficient vacuum module

The EXOS® vacuum module guarantees high process reliability with separately controllable parameters such as target pressure level and holding time, as well as sensors for monitoring the vacuum chamber. The integrated vacuum unit does not require any additional floor space. With its easily accessible drives and quick-release fasteners, it is quick and easy to maintain, just like the entire system.





Roller conveyor in the vacuum module

The low-maintenance roller conveyor in the EXOS® vacuum module is stable and does not require any lubricants. This prevents lubricant residues on assemblies, which significantly improves assembly quality. Thanks to quick-release fasteners, conveyor rails and center supports can be changed within seconds – contributing to short maintenance times.

Conveyor system segmented in four parts including assembly synchronization – no external infeed module required

Maintenance-friendly and lubricant-free roller conveyor in the vacuum module

Optimal temperature profiles thanks to medium-wave emitters in the vacuum module

Partially integrated vacuum pump on separate carrier for quick and easy maintenance

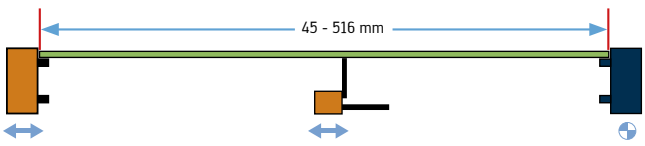
Innovative SMART ELEMENTS® cleaning system

HOTFLOW ONE – Technical Data

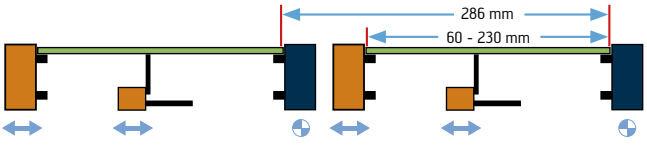
Dimensions (basic machine)	HOTFLOW ONE 14	HOTFLOW ONE 20
Length x width x height	4.77 m x 1.35 m x 1.38 - 1.54 m	6.27 m x 1.35 m x 1.38 - 1.54 m
Height (open)	1.71 - 1.87 m	1.71 - 1.87 m
Weight	1,450 kg	1,900 kg
Paint	RAL 7035/7016	RAL 7035/7016
Conveyor system		
Conveyor width	50 - 516 mm	50 - 516 mm
Dual-track conveyor	2 x 230 mm	2 x 230 mm
Board clearance	± 35 mm	± 35 mm
Conveyor speed	20 - 200 cm/min	20 - 200 cm/min
Conveyor height from floor	820 - 980 mm	820 - 980 mm
Pin-and-chain conveyor	3/4/5 mm	3/4/5 mm
Center support pin height	19 mm	19 mm
Process zone		
Heating zones	7 top/bottom	10 top/bottom
Heating length	2.61 m	3.73 m
Cooling zone	2 top/bottom	3 top/bottom
Cooling length	0.74 m	1.12 m
Cooling		
Cooling zones and cooling medium	2 zones, air	3 zones, air
Electrical data		
Power	5-wire system, 3 x 400 V, N, PE	5-wire system, 3 x 400 V, N, PE
Frequency	50/60 Hz	50/60 Hz
Max. fuse rating	3 x 80 A	3 x 100 A
Reduced rating (with extended heating time)	33 kW	44 kW
Exhaust		
Exhaust stacks	2 x 150 mm	2 x 150 mm
Exhaust volume per stack	300 m³/h (feeding) 400 m³/h (discharge)	300 m³/h (feeding) 400 m³/h (discharge)
Noise level		
Permanent noise level	<65 dB (A)	<65 dB (A)

Conveyor systems – single-track and dual-track

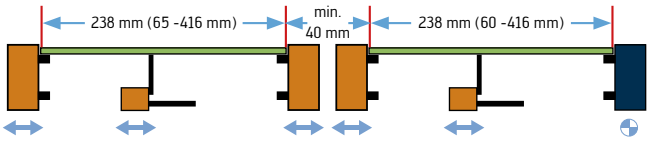
Single-track: Center support and 1 variable rail – working width 516 mm



Dual-track: 2x center support and 2 variable rails



Dual-track: 2x center support and 3 variable rails

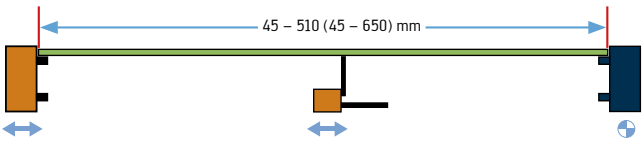


HOTFLOW THREE – Technical Data

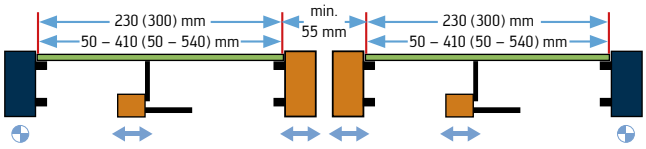
Dimensions (basic machine)	HOTFLOW THREE 16	HOTFLOW THREE 20	HOTFLOW THREE 26
Length x width x height	5.65 m x 1.77 m x 1.51 - 1.67 m	6.60 m x 1.77 m x 1.51 - 1.67 m	7.73 m x 1.77 m x 1.51 - 1.67 m
Height (open)	2.12 - 2.28 m	2.12 - 2.28 m	2.12 - 2.28 m
Weight	3,500 kg	4,000 kg	4,500 kg
Paint	RAL 7035/7016	RAL 7035/7016	RAL 7035/7016
Conveyor system			
Conveyor width	50 - 510/650 mm	50 - 510/650 mm	50 - 510/650 mm
Dual-track conveyor	2 x 50 - 230 (300) mm	2 x 50 - 230 (300) mm	2 x 50 - 230 (300) mm
Board clearance	± 35 mm	± 35 mm	± 35 mm
Conveyor speed	20 - 200 cm/min	20 - 200 cm/min	20 - 200 cm/min
Conveyor height from floor	820 - 980 mm	820 - 980 mm	820 - 980 mm
Pin-and-chain conveyor	3/4/5 mm	3/4/5 mm	3/4/5 mm
Center support pin height	19 mm	19 mm	19 mm
Process zone			
Heating zones	8 top/bottom	10 top/bottom	13 top/bottom
Heating length	3 m	3.8 m	5.0 m
Cooling zone	3 top/bottom	3 top/bottom	3 top/bottom
Cooling length	1.17 m	1.38 m	1.38 m
Nitrogen technology			
Pressure of nitrogen supply	6 - 12 bar	6 - 12 bar	6 - 12 bar
Supply line	11 mm inner diameter	11 mm inner diameter	11 mm inner diameter
Cooling			
Cooling zones and cooling medium	3 zones, with water cooling	3 zones, with water cooling	3 zones, with water cooling
Cooling system	Internal chiller; internal chiller and/or external cooling water supply		
Electrical data			
Power	5-wire system, 3 x 400 V, N, PE	5-wire system, 3 x 400 V, N, PE	5-wire system, 3 x 400 V, N, PE
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Max. fuse rating	3 x 80 A	3 x 100 A	3 x 100 A
Reduced rating (with extended heating time)	as of 44 kW	as of 49 kW	as of 54 kW
Exhaust			
Exhaust stacks	2 x 150 mm	2 x 150 mm	2 x 150 mm
Exhaust volume per stack	400 m³/h	400 m³/h	400 m³/h
Noise level			
Permanent noise level	<60 dB (A)	<60 dB (A)	<60 dB (A)

Conveyor systems – single-track or dual-track with up to two different speeds

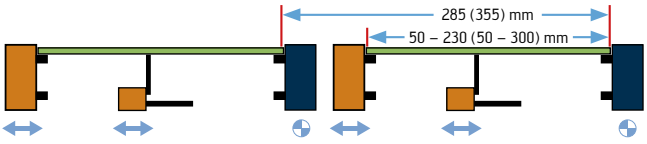
Single-track: Center support and 1 variable rail – working width 510/650 mm



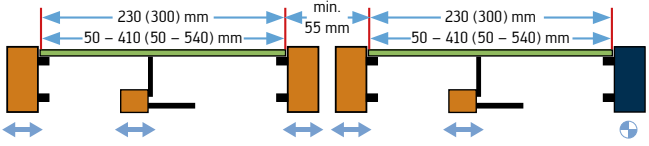
Dual-track: 2x center support and 2 variable rails



Dual-track: 2x center support and 2 variable rails



Dual-track: 2x center support and 3 variable rails

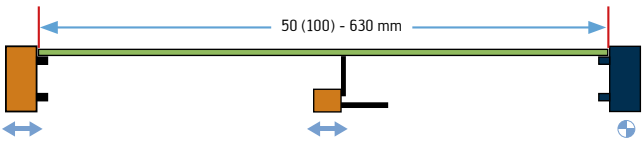


EXOS® 10/26 – Technical Data

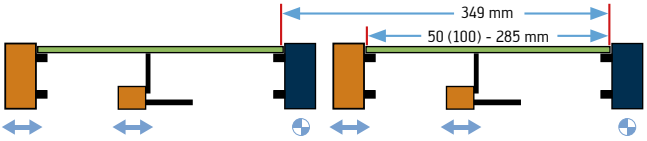
Dimensions (basic machine)	with vacuum chamber 400 mm	with vacuum chamber 600 mm
Length x width x height	7.88 m x 2.20 m x 1.59 - 1.70	8.06 m x 2.20 m x 1.59 - 1.70 m
Height (open)	1.97 - 2.08 m	1.97 - 2.08 m
Weight	5,000 kg	5,000 kg
Paint	RAL 7035/7016	RAL 7035/7016
Conveyor system		
Conveyor width	50 - 630 mm	50 - 630 mm
Dual-track conveyor	2 x 285 mm	2 x 285 mm
Board clearance	± 35 mm	± 35 mm
Conveyor speed	20 - 200 cm/min	20 - 200 cm/min
Conveyor height from floor	820 - 980 mm	820 - 980 mm
Pin-and-chain conveyor	5 mm	5 mm
Center support pin height	11 mm	11 mm
Process zone		
Heating zones with vacuum	11 top/bottom	11 top/bottom
Heating length	4.60 m	4.75
Cooling zone	4 top/bottom	4 top/bottom
Cooling length	1.40 m	1.40 m
Vacuum chamber		
Max. PCB length	400 mm	600 mm
Final pressure	up to 10 mbar	up to 10 mbar
Nitrogen technology		
Pressure of nitrogen supply	6 - 12 bar	6 - 12 bar
Supply line	8 mm inner diameter	8 mm inner diameter
Cooling		
Cooling zones and cooling medium	4 zones with water cooling	4 zones with water cooling
Cooling system	Internal chiller; internal chiller and/or external cooling water supply	
Electrical data		
Power	5-wire system, 3 x 400 V, N, PE	5-wire system, 3 x 400 V, N, PE
Frequency	50/60 Hz	50/60 Hz
Max. fuse rating	3 x 100 A	3 x 100 A
Reduced power (with extended heating time)	55 kW	55 kW
Exhaust rating		
Exhaust stacks	2 x 150 mm	2 x 150 mm
Exhaust volume per stack	400 m³/h	400 m³/h
Noise level		
Permanent noise level	< 70 dB (A)	< 70 dB (A)

Conveyor systems – single-track and dual-track

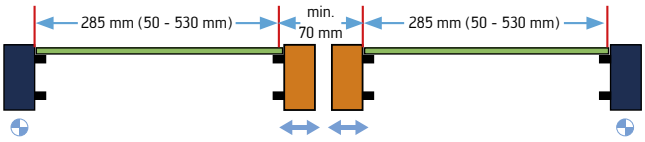
Single-track: Center support and 1 variable rail – working width 630 mm



Dual-track: 2x center support and 2 variable rails



Dual-track: 2 variable rails



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- Certified and individual personnel qualification
- Process and machine training – 24/7, worldwide, device-independent

EDUCATION
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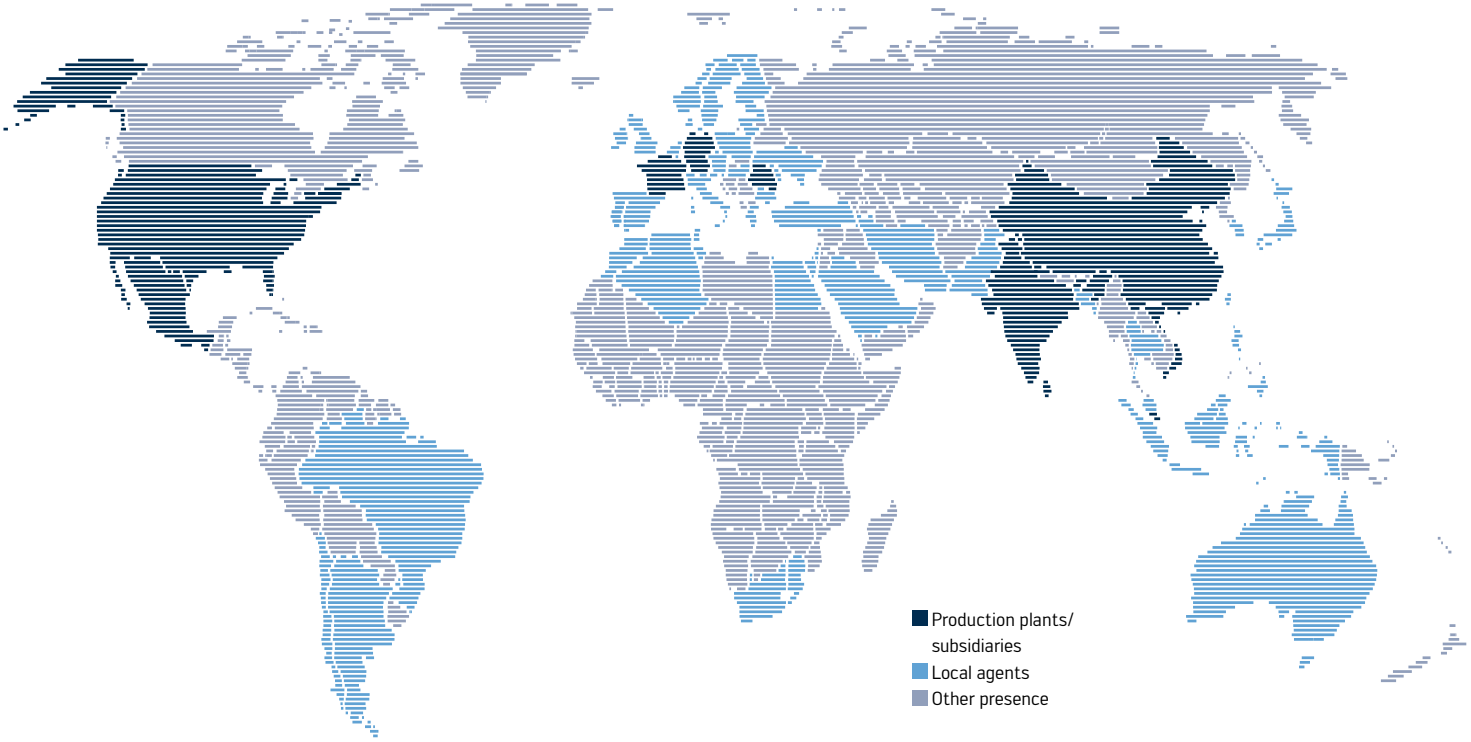
further information and registration online:

ELECTRONICS PRODUCTION EQUIPMENT

Worldwide presence



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