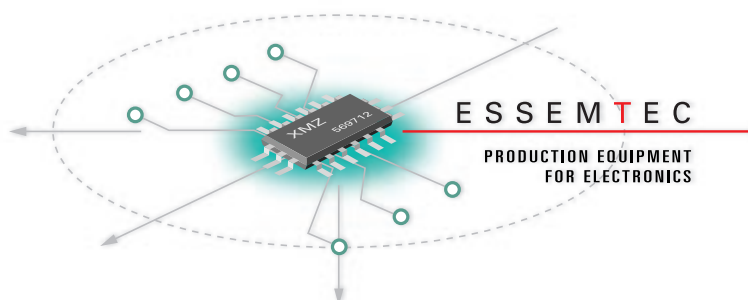


RO400FC

ITRONIK

Reflow Oven

Full convection oven for
small to midsize volume productions



RO400FC

Hot air full convection reflow oven

Soldering of complex SMD boards and new package technologies requires a well-controlled soldering process. The RO400FC uses full convection only to heat PCBs homogenously. The convection technology uses vertical laminar flow, which offers an efficient heat transfer with the lowest delta T values. This technology makes the RO400FC suitable for lead free solders as well.

Zone temperatures – three preheat and one peak – are fully programmable, as is the closed-loop-controlled conveyor speed. Zone temperatures are measured within the airflow at the board height to guarantee highly reproducible soldering conditions.

The universal mesh belt or the precise chain conveyor transports single or double-sided boards up to 400mm (15.7") width.



- / full convection heating for even temperature distribution
- / for standard or lead free soldering
- / high air volume for low thermal stress of components
- / vertical, laminar flow for efficient heat transfer
- / mesh belt / single chain conveyor / double chain conveyor
- / closed loop conveyor drive system for controlled speed
- / integrated microprocessor control
- / easy profile selection
- / flying thermocouple for temperature profiling
- / SMEMA interface
- / ESSEMTEC RO-SOFT profiling software
- / built-in overheat security switches



Hot air convection

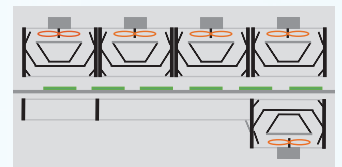
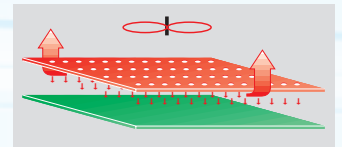
The RO400FC is equipped with 5 special oven steel hot air convection modules (4 top / 1 bottom within the reflow zone). Each module contains a high volume blower and unique airflow construction for ideal heat transfer. An additional double fan cooling zone at the exit cools down the PCB's quickly.

The convection technology applies the same temperature everywhere on the board independent of component size or color, making programming as easy as possible.

Vertical laminar airflow

To provide the best possible heat transfer and to run the oven with a stable profile, a physically ideal airflow is used. The vertical air stream provides an efficient heat transfer. The ability to work with lower gas temperatures leads to lower thermal stress to components. Even small components will not be shifted during the reflow procedure while enough heating power is provided for difficult boards.

A unique hole pattern in each chamber ensures perfect overall heat distribution. This allows soldering of difficult boards and lead-free paste.



Microprocessor control

The integrated microprocessor control with LCD display provides an easy-to-use operator interface and storage capacity of up to 28 profiles. Each heating zone is continuously monitored and the temperature is balanced within tight limits. By measuring zone temperatures at board level, programming is made easy. Even high mass boards can be properly soldered. In standard operations, only one or two different profiles will need to be used for soldering a large variety of different boards.

A hood switch detects if the cover is open. This, in combination with two emergency switches, offers the highest operator security. All control electronics are fully accessible from the front of the oven for easy service access.

Temperature measurement on board level



LCD display and keyboard



Security switch of hood



Chain conveyor system

Instead of the standard mesh belt conveyor, a chain conveyor for double-sided PCB's or inline applications can be installed. Conveyor width adjustment is motorized and the parallelity of the system is guaranteed. An optional, freely-adjustable center support rail can be individually positioned in between the two chain rails and can be lowered when not required.

A double chain system is also available, allowing two different board widths to pass through the oven at the same time. With this solution, a serial production can run on one rail, while prototyping boards can be soldered at the same time.

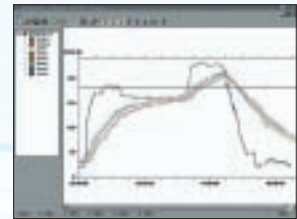
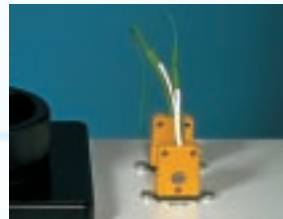


SMEMA interface

Integrated SMEMA connectors provide the ability to link the RO400FC with any other compatible equipment.

Temperature profiling

With the optional flying thermocouples, temperatures can be recorded directly on the board and displayed on the machine's LCD display. The optional RO-SOFT profiling software permits graphic display of the recorded profiles with overlaid reference profiles for verifications. Additionally, all heating zones can be monitored online.



Monitor stand

Also available is a swivel arm for directly attaching a PC monitor and keyboard to the oven.

Turn key solutions

ESSEMTEC also manufactures manual, semiautomatic and fully automatic pick-and-place, printing, and dispensing systems as well as other re-flow ovens and can therefore offer complete production lines. Either stand alone or fully automatic solutions can be provided by «one source».



Technical data

RO400FC

	Mesh belt	Chain conveyor	Double chain conveyor
Number of heating zones (number of heating chambers)	4 / (5)		
Transport width	400 mm (15.75")	60–400 mm (2.36"–15.74")	2x185 mm (7.3") up to 1x320 mm (12.6") + 1x50 mm (1.9")
Transport speed	0.2–1.8 m/min. (7.9"–70"/min.)		
Entrance height (max.) Top/Bottom	30 mm (1.37") / 0	30 mm (1.37") / 20 mm (0.78")	30 mm (1.37") / 20 mm (0.78")
Process zones	Process length: 2320 mm (91.34") / Heating zone: 1680 mm (63.78")		
Infeed/outfeed length	300 mm (11.8") / 200 mm (7.87")		
Overall dimensions	2800 x 900 x 1350 mm (110.2 x 35.4 x 53.2")		
Weight	660 kgs (1455 lbs)		
Air circulation approx.	3000 m³/h (106000 ft³/h)		
Temperature measurement	directly within airstream on PCB height		
Extraction nozzles	2 x Ø 150 mm (2 x Ø 5.9")		
Required air exhaust per nozzle approx.	150 m³/h (5300 ft³/h)		
Temperature at air exhaust	< 50°C		
Continuous sound pressure	< 66 dB (A)		
Power supply	400 V / 50/60 Hz, max. 25 A per phase (optional with transformer 208/240/277/480 V)		
Consumption during heat up / heat up time	~ 16.6 kW/h approx. 30 min.		
Consumption during operation, approx.	~ 6 kW/h		



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