



MINILABOTRON 2000, 2 kW, 2450 MHz

The Minilabotron 2000 is an easy-to-use microwave-assisted reactor, engineered as a system specifically designed for the laboratory use (chemistry, biochemistry etc.) Figs. 1a & 1b.



Fig. 1a. Minilabotron 2000 and support (option)

The Minilabotron 2000 has the flexibility to meet all laboratory requirements; the system can be easily configured to perform different applications including reactions in liquid phase, solid phase and gas phase in homogeneous and heterogeneous mixtures.

The Minilabotron 2000 is constructed of high-grade stainless steel, with high degree of finishing, i.e. inside and outside surfaces are covered by a non-corrosive, high impact resistant resin layer.

The double jacket of the oven allows the operation of the reactor at very high temperature whilst the outside of the oven remains at room temperature.

The microwave cavity is designed and dimensioned to provide a very uniform microwave field.

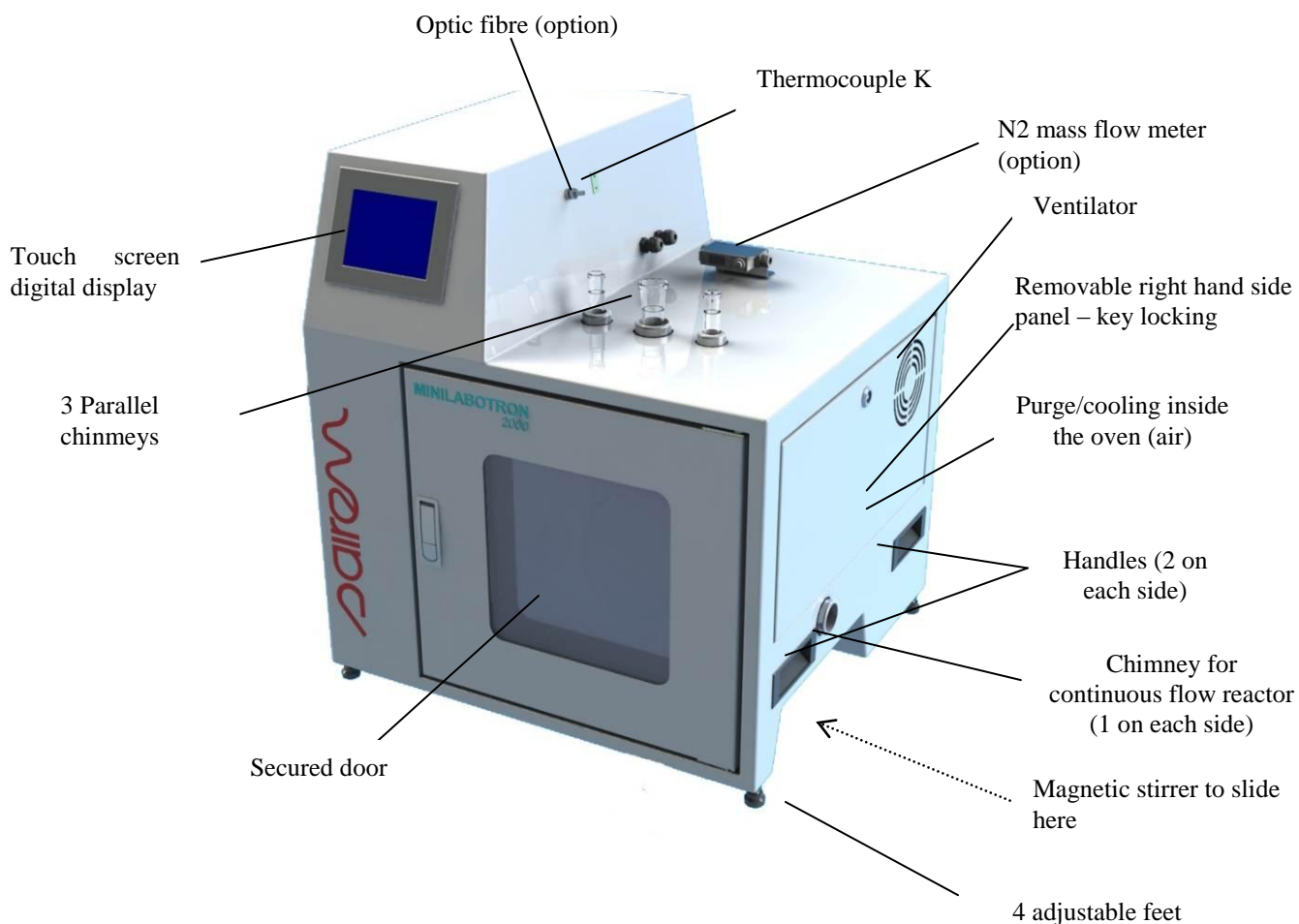


Fig. 1b. Minilabotron 2000

The reliable operation of the magnetron, i.e. the electronic tube that produces microwaves, is assured via reflected power monitoring. This system uses a high quality directional coupler and an interlock that monitors and displays the value of the reflected power (as percentage of the set/demanded forward power) to ensure safe and efficient operation of the reactor. In addition, temperature sensors are placed at many points on the microwave cavity to avoid the operation ‘empty oven’, i.e. without charge.

The continuous control and monitoring of the forward power, reflected power & temperature are achieved via an integrated PLC/digital display.

The Minilabotron 2000 can be used with batch reactors - Fig. 2a and equally with continuous flow reactors - Figs. 2b; the connectivity of these reactors does not require tools.

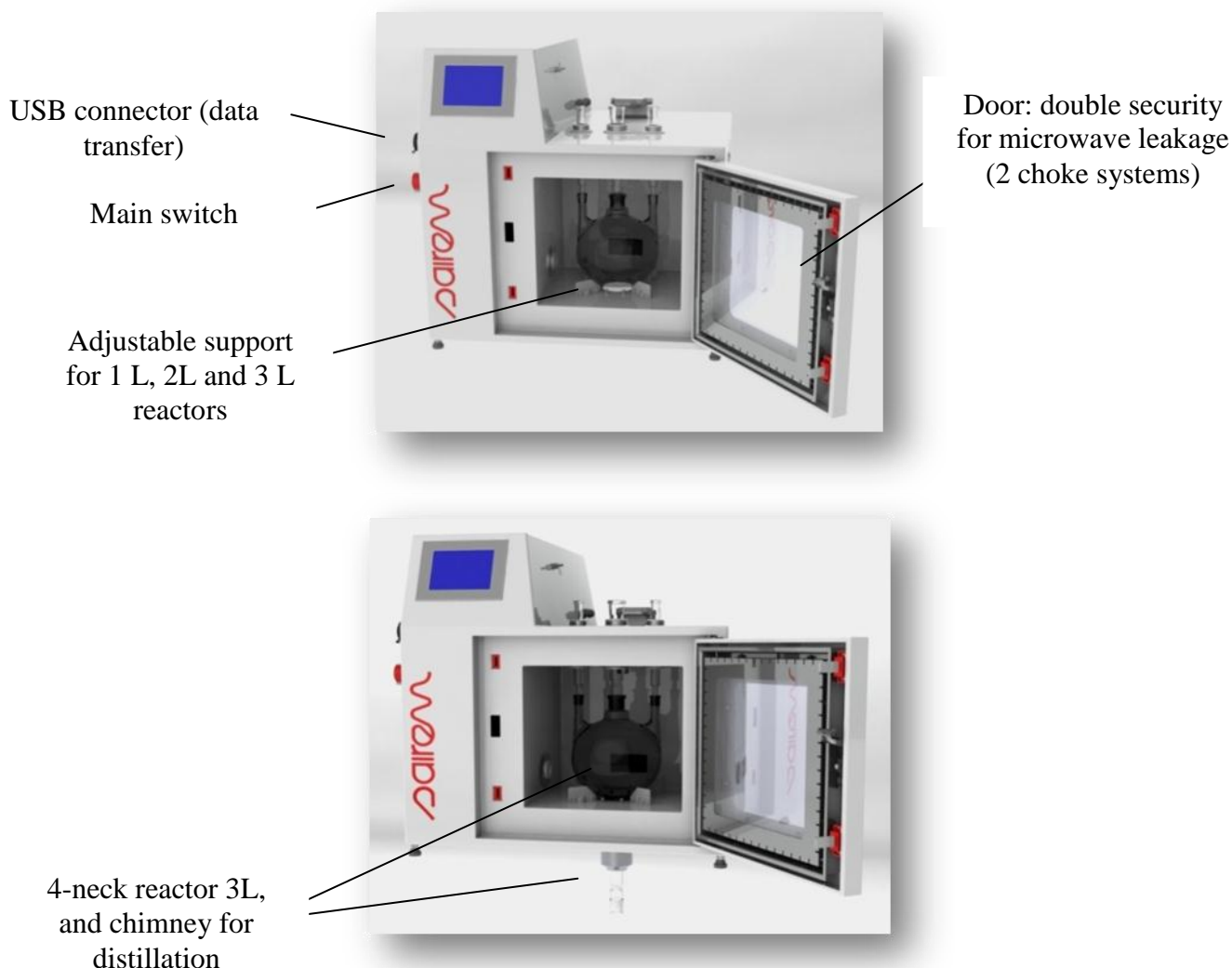


Fig. 2a. Minilabotron 2000 with batch reactors 3 L (3-neck or 4-neck) central joint NS 29/32F, lateral joints NS 19/23F) & 4-neck (3 necks on top and 1 neck on bottom, NS 29/32M)

The temperature measurement is performed both via IR – temperature measurement inside the oven (batch and continuous flow reactors) and thermocouple – outside the microwave cavity, at the exit of the continuous flow reactor; an inside-reactor optic fibre temperature measurement (for temperatures up to 250 °C) can be also ordered as an option.

The batch reactor features stirring system either by mechanical stirrer (to be mounted at the upper part of the batch reactor) or by magnetic stirrer (through the lower part of the oven) – not supplied.

The continuous flow reactor features SAIREM's innovative SPIN, Fig. 2c, reactor proven to improve yield, selectivity and safety of liquid-liquid and liquid-vapour reactions.

For protection against splashing, all the connections with the reactor are made inside the microwave cavity and accessible from outside the system; for all cases involving the use of highly volatile molecules, the Minilabotron 2000 is equipped with continuous gas purging via ¼" NPT.

The small footprint makes the Minilabotron 200 easily integral within a laboratory standard fume hood.



Fig. 2b. Minilabotron 2000 with column type reactor or SPIN – horizontal and vertical, 2 joints NS 29/32M

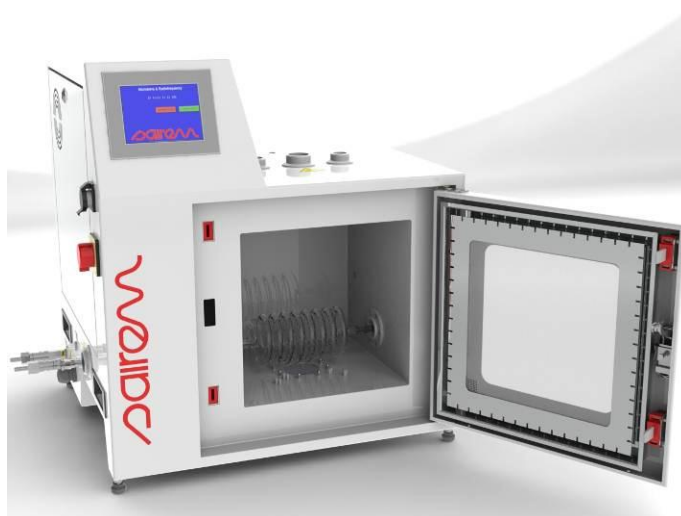


Fig. 2c. Minilabotron 2000 with SPIN type reactor – horizontal, 2 joints NS 14/23M (internal V ~ 200 mL)

MAIN TECHNICAL PARAMETERS

| REF. | MINILABOTRON 2000 |
|---|---|
| Microwave frequency | 2450 MHz |
| Maximum power | 2 kW continuous wave (CW), adjustable from 0 to 2 kW with 10 W step; pulsed function in option |
| Microwave cavity | Stainless steel, anti-corrosive paint inside and outside Dimensions: 300 x 300 x 300 mm |
| Doors | ¼ wave choke, double safety closed system, sight window and LED illuminated inside |
| Safety | Door double security by contact; Reflected power limitation by PLC and bidirectional coupler; Temperature sensors inside the microwave cavity; Internal gas purging ¼" NPT; Reactor connections made inside the microwave cavity via standard cone connections (tool-free); 'Beep' system for signalling end of reaction time Microwave cavity purge (compressed air etc.) |
| Temperature control | IR (from -30 to 950 °C) & thermocouple (type K, Inconel, up to 900 °C) or optic fibre (from -80 to 250 °C) |
| Gas addition (in to reactor) | Integrated mass flow meter & electromagnetic valve 0.2 – 10 L/min – option |
| Reactors (Pyrex) | Batch or continuous flow SPIN or column type: <ul style="list-style-type: none"> • Batch 3-neck flask: top lateral parallel joints NS14/23F and central joint NS 29/32F; • Batch 4-neck flask: top lateral parallel joints NS14/23F and central joint NS 29/32F, bottom central joint NS 29/32M; • Column reactor (diam. 40 mm, L = 275 mm): 2 joints NS 29/32M. • SPIN reactor: 2 joints NS 14/23 =M |
| Reactor stirring | Magnetic or mechanical (via NS 29/32F joint) – stirrers not provided |
| Control | Forward power, reflected power, time and temperature via integral PLC/digital display. |
| Electrical requirements | 208/230 VAC, 60 Hz ; 220/240 VAC, 50 Hz 20 A |
| Magnetron cooling | Water, 2 L/min, with integrated electro-valve for control |
| Max. overall dimensions (H x L x W) with connectors, weight | 700 x 580 (1000)* x 700 mm, 70 kg |

*With front door opened

