OUR RANGE OF PLUG&SPRAY DEVICES
TO BE USED AS COMPONENTS OR EVALUATION KITS

MICRONICE™ TECHNOLOGY

P&S-T45
Plug&Spray Integrated Tank

P&S-360
Plug&Spray Omnidirectionnal

Compact & lightweight – Silent operation – Monodispersed aerosol – Variable flowrate
No liquid pressure – No temperature rise – Low energy – No dead volume

P&S-T45 Kit with integrated tank enables you to nebulize small amounts of liquid in the vertical down. It is ideal for applications requiring control of micro-volumes as for medical or technical aerosols or deposition of thin films. It is used to evaluate the nebulization capacity of liquids.

P&S-360 Kit with remote tank enables you to aerosolize large amounts of liquid with omnidirectional orientation (360 °), head-up through its pump. This multi-use kit fits all your needs especially in humidification or dissemination in the air. It is used for continuous operation for deposit applications.

To cover all your needs, we offer you to choose from three droplets sizes *:

4 Microns
Fine aerosols
Surfaces don’t get wet

12 Microns
Diffusion, humidification
Surfaces don’t get wet

40 Microns
Liquid deposition
Wet surfaces

* Other droplets sizes are available on request and subject to conditions
* The droplets sizes were measured with tap water as a reference. It is possible that they change slightly with the sprayed liquid
OUR TECHNOLOGY
MICRONICE™

PRINCIPLE

The TEKCELEO patented MICRONICE™ technology is a breakthrough spray technology based on a very low energy consumption amplified piezoelectric mesh vibratory aerosol generator. Thanks to the expertise of our team, we have developed a micro-perforated membrane device which, when vibrating at a certain frequency, expels the liquid as fine droplets perfectly calibrated by the tiny holes (monodispersed). (Droplets distribution measurements upon request: Sympatec Helos particle size analyser).

BENEFITS

- Compact and lightweight electronic nebulization device without speed and pressure from the liquid
- MICRONICE™ nebulization technology using a vibrating membrane, developed and patented by TEKCELEO
- Mono dispersed aerosol (centered on a specific particle size)
- Different types of liquids can be nebulized
- No temperature rise (no liquid alteration and no changing state)
- Low energy consumption (batteries or rechargeable cells) (hand-held devices)
- Capacity to generate small droplets (< 5 µm)
- Silent operating
- Ability to nebulize micro-volumes (electronic control)
- Droplet size can be selected by design
- No dead volume (liquid completely nebulized)

APPLICATION EXAMPLES

- **Drop deposit of micro-volumes**: chemical reagents, organic samples, ink, nano suspensions, thin organic and metallic layers...
- **Chemical molecules deposit** for surface treatment
- **Diffusion**: perfume, fragrance, disinfectant, pheromone, bactericide...
- **Aerosoltherapy**: respiratory route drug delivery
- **Precise humidification**: room, materials, organic tissues...
- **Evaporative cooling**
- **Chemical analysis**: source of mono dispersed particles
- **Process for powder and filaments generation**: spray dryer
PLUG & SPRAY
Integrated Tank P&S-T45
Preliminary data subject to change without notice

MAIN CHARACTERISTICS
- Product: water-based solution, alcoholic solution, and suspensions
- Particle size: 4µm or 12 µm (standard)
- Flow rate: from Respectively 1ml/min or 3ml/min
- Variable flow rate: from 30% to 100% (PWM)
- Vertical tilt: max. 45°
- Energy consumption: < 3W
- Battery operated or plugged into the power supply.
- Fluidic response time # 20 ms
- Noise : <35dBa

COMPONENTS OF P&S-T45 KIT
- Aerosol head generator with tank
- ECU (aerosol head)
- Cable ECU-aerosol head
- Cable power supply
- Accessory : tripod

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Aerosol head type</th>
<th>Droplet size (1)</th>
<th>Flow rate (2)</th>
<th>GSD (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 µm ± 1 µm</td>
<td>1 mL/min ± 0,2 ml</td>
<td>1,4</td>
</tr>
<tr>
<td></td>
<td>12 µm ± 3 µm</td>
<td>3 mL/min ± 0,5 ml</td>
<td>1,7</td>
</tr>
</tbody>
</table>

(1) Other particle sizes (« water reference ») are available on request
(2) The particle size and the flow rate depend on the liquid
(3) Geometric Standard Deviation

Electronic Control Unit (specific software for each head type)
- Power supply: Mains or built in rechargeable battery
- ON/OFF button or TTL signal to the BNC.
- PWM Interface : 3,3 Vdc (option)
- Cable main-ECU length : 200 cm (78 inch)
- Cable ECU-aerosol head length: 60 cm (24 inch)
TECHNICAL DRAWING

Electronic Control Unit (mm)

Aerosol Head (mm)

HOW TO ORDER?

To order a kit, please contact us and inform the references of products that interest you:

<table>
<thead>
<tr>
<th>Plug &amp; Spray</th>
<th>References P&amp;S-T45</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIT (P&amp;S-XXX-YY)*</td>
<td>P&amp;S-T45-M04</td>
</tr>
<tr>
<td></td>
<td>P&amp;S-T45-M12</td>
</tr>
<tr>
<td>Aerosol Head (H-XXX-YY)**</td>
<td>H-T45-M04</td>
</tr>
<tr>
<td></td>
<td>H-T45-M12</td>
</tr>
<tr>
<td>Accessories</td>
<td>Tripod</td>
</tr>
<tr>
<td></td>
<td>TRIPOD</td>
</tr>
</tbody>
</table>

* XXX: Nebulizer Type
T45 - Integrated Tank
360 – Remote Tank (omnidirectional)

** YY: Aerosol head (droplet size)
M04 - 4 microns
M12 - 12 microns

H: Nebulizer Head

[1] The size of the electronic control unit can be highly decreased by reducing the number of options (battery, liquid end detection).
[2] On demand, a unique ECU can run several nebulizers.
**PLUG & SPRAY**

Ominidirectional **P&S-360**

Preliminary data subject to change without notice

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**MAIN CHARACTERISTICS**

- **Product:** water-based solution, alcoholic solution, and suspensions
- **Particle size:** 4µm, 12µm or 40µm.
- **Flow rate:** Resp. 1ml/min, 3ml/min, 25ml/min
- **Variable flow rate:** from 30% to 100% (PWM)
- **Aerosol orientation:** 360° (omnidirectional)
- **Energy consumption:** < 3W
- **Response time:** ≈ 1 ms
- **Noise:** <35dB

**COMPOSANTS DU KIT P&S-360**

- **Aerosol Head**
- **ECU Aerosol**
- **ECU Pump + (Fan)**
- **Accessory : Pump or (fan)**
- **Plastic tubes**
- **Connecting cables**
- **Cable mains-ECU**
- **Accessory: Tripod**

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Aerosol head type</th>
<th>Droplet diameter (µm)</th>
<th>Flowrate (mL/min)</th>
<th>GSD</th>
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</thead>
<tbody>
<tr>
<td>4 µm ± 1 µm</td>
<td>1 mL/min ± 0,2 mL</td>
<td>1,4</td>
<td></td>
</tr>
<tr>
<td>12 µm ± 3 µm</td>
<td>3 mL/min ± 0,5 mL</td>
<td>1,7</td>
<td></td>
</tr>
<tr>
<td>40 µm ± 3 µm</td>
<td>25 mL/min ± 2 mL</td>
<td>1,8</td>
<td></td>
</tr>
</tbody>
</table>

1. Other particle sizes (« water reference ») are available on request
2. The particle size and the flow rate depend on the liquid
3. Geometric Standard Deviation

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Power supply : mains</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON/OFF button or TTL signal to the BNC.</td>
<td>Controlled by aerosol head ECU</td>
</tr>
<tr>
<td>PWM Interface : 3,3 Vdc (option)</td>
<td>Cable ECU-aerosol head length: 60 cm (24 inch)</td>
</tr>
<tr>
<td>Cable main-ECU length : 200 cm (78 inch)</td>
<td>Cable main-ECU length : 200 cm (78 inch)</td>
</tr>
<tr>
<td>Cable ECU-aerosol head length: 60 cm (24 inch)</td>
<td>Cable ECU(aerosol )-ECU(pump) length: 100 cm</td>
</tr>
</tbody>
</table>

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**TEKCELEO**

We Accelerate Innovation

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Tel : +33 4 92 28 05 16 – contact@tekceleo.fr

1180, route des Dolines – Athéna B – 06560 Valbonne France
HOW TO ORDER?

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<table>
<thead>
<tr>
<th>Plug &amp; Spray</th>
<th>References P&amp;S-360</th>
</tr>
</thead>
</table>
| KIT (P&S-XXX-YY)* | P&S-360-M04  
                | P&S-360-M12  
                | P&S-360-M40 |
| Aerosol Head (H-XXX-YY)** | H-360-M04  
                            | H-360-M12  
                            | H-360-M40 |
| Accessories | Fan : FAN  
              | Reservoir : TANK  
              | Tripod : TRIPOD |

* XXX: Nebulizer Type  
** YY: Aerosol head (droplet size)

- T45 – Integrated Tank  
- 360 – Remote Tank (omnidirectionnal)  
- H: Nebulizer Head  
- M04 - 4 microns  
- M12 - 12 microns  
- M40 - 40 microns

[1] The size of the electronic control unit can be highly decreased by reducing the number of options (battery, liquid end detection).
[2] On demand, a unique ECU can run several nebulizers.
Technical specification of the ECU KIT (Aerosol):

- Supply Voltage 12 V dc (other voltage upon request)
- Energy consumption: < 3VA
- Battery operated (autonomy 1:30 hour) or main power.
- Supply and control of the nebulizer head (nozzle)
- Automatic liquid detection ON/OFF
- Control of the ECU Accessories (Pump and/or Fan)
- Control of the aerosol flow rate through the BNC connector
- ON/OFF control options:
  - ON/OFF button (manual)
  - TTL signal via the BNC connector
  - Frequency signal (PWM conversion) via the BNC connector (see table)
  - Supply voltage (ON) or not (OFF)
- Each nozzle type (M04, M12 or M40) needs a specific software
- Each ON/OFF control needs a specific software
- ECU KIT is able to control the ECU Accessories via a RCA connector.
- In and Out pins are: jack connector for 12V dc supply, RCA connector for controlling the ECU Accessories, BNC connector for ON/OFF or flow rate control, output connector for the nebulizer head.

```
<table>
<thead>
<tr>
<th>Frequency (Hz)</th>
<th>Period (ms)</th>
<th>Flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>2,500</td>
<td>0%</td>
</tr>
<tr>
<td>461</td>
<td>2,169</td>
<td>25%</td>
</tr>
<tr>
<td>598</td>
<td>1,967</td>
<td>34%</td>
</tr>
<tr>
<td>596</td>
<td>1,766</td>
<td>44%</td>
</tr>
<tr>
<td>639</td>
<td>1,564</td>
<td>53%</td>
</tr>
<tr>
<td>784</td>
<td>1,362</td>
<td>63%</td>
</tr>
<tr>
<td>862</td>
<td>1,161</td>
<td>72%</td>
</tr>
<tr>
<td>1043</td>
<td>0,959</td>
<td>81%</td>
</tr>
<tr>
<td>1321</td>
<td>0,757</td>
<td>91%</td>
</tr>
<tr>
<td>1800</td>
<td>0,556</td>
<td>100%</td>
</tr>
<tr>
<td>2500</td>
<td>0,400</td>
<td>100%</td>
</tr>
</tbody>
</table>
```

Table for ON/OFF and flowrate frequencies correspondance