

PAL SYSTEM
Ingenious sample handling

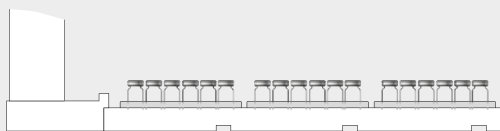


PAL LSI - 稳健可靠的 样品前处理平台

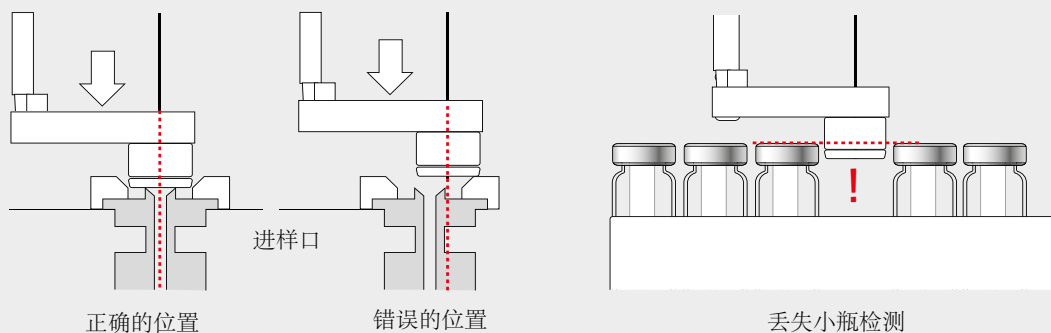


PAL LSI: 创新科技提高生产力

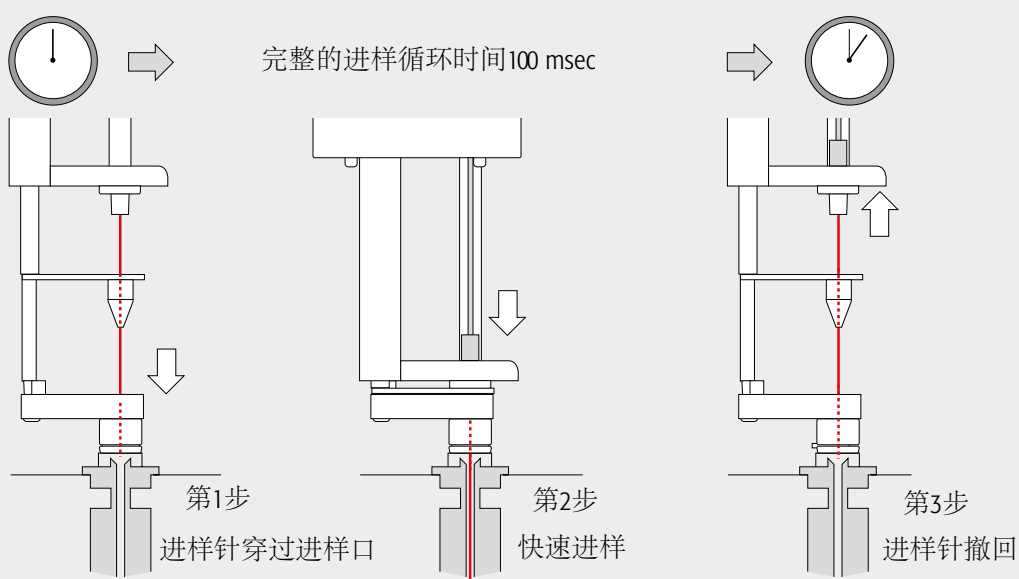
大样品容量: 一个样品托盘可以放置162个2mL小瓶。标准长度的PAL LSI可容纳四个样品托盘，也就是648个2mL小瓶。可选的Peltier样品盘还可以对样品控温。



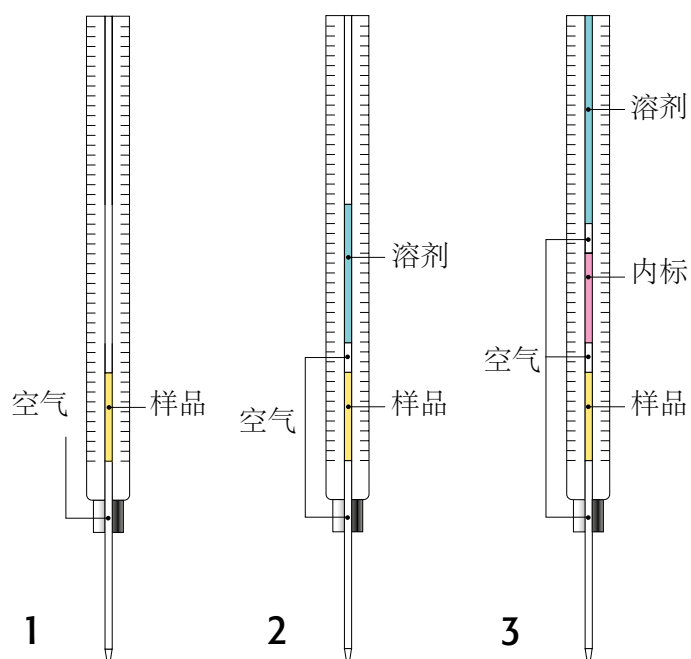
过程安全: 专有驱动技术能够检测丢失的小瓶和进样针在进样口中的正确位置。进样针弯曲的除外。



快速进样: 进样速度可达100ms，减少了GC进样口中的歧视效应， $C_{40}/C_{20} > 0.98$ 。



可重现的结果得益于优化的进样方式



只有完美的进样方式能够提供可重复的结果。从一个简单的进样 (1) 到夹层内标 (3)：PAL LSI可以精确地处理体积为100 μ L的液体样品。与PAL Sample Control 软件相结合，可以完全控制液体样品抽吸和推出的所有参数。这对于完美的进样至关重要。进样针的范围从1.2 μ L到100 μ L不等。在示例 (3) 中，内标被夹在转移溶剂和样品之间。不同液体之间的空气间隙阻止了不同液体的混合。这些步骤的精确控制是好的重现性的基础。

样品瓶转移










PAL LSI是一种能够在其工作区域内达到任何三维位置的机器人。它能够运输小瓶，或者读取条形码或将小瓶转移到温度控制模块中，例如将样品转移到孵化炉中加热或者转移到电子制冷柜中将样品冷却至4 $^{\circ}$ C。





根据工作需要，灵活
配置PAL LSI

灵活性: PAL LSI 很多的可选模块

| | |
|--|---|
| <p>的 可 的</p> <p>deep MTPsb</p> <p>1, 2, 10 and 20 mL, 9Vb96 / 384d well plates. V, 2 mL</p> |  |
| <p>eJVbV• F3Q b</p> |  |
| <p>标准清洗模块可以使用多达四种不同的溶剂清洗进样针 (4 × 10mL溶剂瓶, 1 × 10mL废液瓶)。废液瓶的位置也可以选择使用废液管。大体积清洗模块适用于大体积清洗 (2 × 100mL溶剂瓶, 1个废液管)。</p> |  |
| <p>The Fast Wash Module is preferred when low carry-over is required. It also cleans syringes incl. the outside of the needle (gauge 19 – 26) with 2 different solvents.</p> |  |
| <p>The Solvent Module allows adding liquids (with three 100 mL solvent containers)</p> |  |
| <p>The Vortex Mixer Module offers efficient mixing for dilution / extraction.</p> <ul style="list-style-type: none"> – Standard vial sizes: 2 mL / 10 mL / 20 mL – 1 additional slot for custom specific vials – Provides efficient mixing with up to 2000 rpm |  |
| <p>The Agitator Module provides 6 positions for 20 mL vials for incubation and agitation of samples.</p> <ul style="list-style-type: none"> – Temperature range 40 – 200 °C – Agitation speed 250 – 750 rpm – Optional adapters for 2 mL or 10 mL vials |  |
| <p>The Barcode Reader Module reads horizontal 1D barcodes labels on 2 mL, 10 mL and 20 mL vials. The two scanners allow the identification of vials irrespective of the position of the barcode on the vials. Therefore it ensures highest process safety and traceability.</p> |  |
| <p>With the Valve Drive Module different injection or switching valves can be configured. A wide variety of different valve types can be used.</p> |  |

For more options/modules please contact your local Value Added Reseller or visit www.palsystem.com.

Ingenious Master Software



PAL Sample Control

Easy to use routine software

PAL Sample Control software is the user-friendly tool for the daily routine jobs. Just a few clicks and sample lists are generated or imported. Now PAL Sample Control starts the operation and the data acquisition. Since PAL Sample Control interfaces seamlessly with major chromatographic or MS data systems only one sample list has to be handled. Different user levels ensure process safety.

Productivity

PAL Sample Control allows overlapping of multiple sample procedures. It optimizes automatically the timing of various steps in a sample preparation process and generates a schedule that minimizes the runtimes of sequences. This increases sample throughput greatly and boosts productivity.

Powerful Method Editor

While PAL Sample Control is straightforward to use in the daily operations it is also a powerful tool for the generation of tailored methods. A set of tested methods that comes with every system can be used as templates and optimized or tailored for specific workflows. Furthermore a large number of building blocks (tasks) for method development are part of the software. These building blocks make it easy to generate new methods, even for complex workflows.

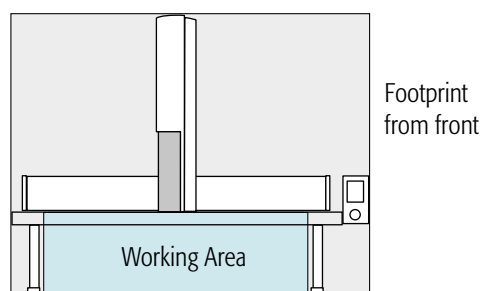
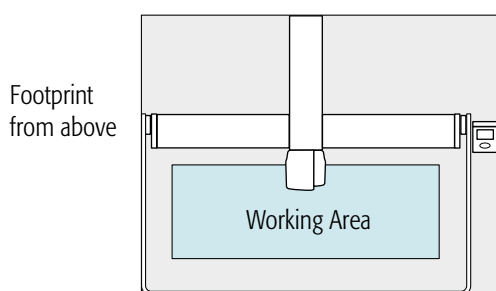
PAL Sample Control is the common platform for PAL RTC, PAL RSI, and PAL LSI, and is shipped with every PAL System.

Supported CDS and MS-Data Systems

- Analyst
- ChemStation LC/GC/MSD
- Chromcard
- ChromPerfect
- ChromQuest
- Clarity
- Empower 2
- EZChrom
- MassHunter GC/MS, LC/MS
- Master Lab
- QuanLab
- Xcalibur

Dimensions

| | PAL LSI compact x-axis length | PAL LSI standard x-axis length |
|--|---|---|
| Working Area | Width: 420 mm (16.8 inches) Depth: 255 mm (10.0 inches) Height: 420 mm (16.8 inches) | Width: 735 mm (28.9 inches) Depth: 255 mm (10.0 inches) Height: 420 mm (16.8 inches) |
| Footprint Instrument dimensions with standard legs | Width: 600 mm (24.0 inches) Depth: 795 mm (31.8 inches) Height: 770 mm (30.8 inches) | Width: 915 mm (36.6 inches) Depth: 795 mm (31.8 inches) Height: 770 mm (30.8 inches) |



| | | |
|-----------------|--|--|
| Sample Capacity | 2 Tray Plates Up to 420 x 1 mL vials 324 x 2 mL vials 90 x 10 / 20 mL vials 6 x MT/DW plates | 4 Tray Plates Up to 840 x 1 mL vials 648 x 2 mL vials 180 x 10 / 20 mL vials 12 x MT/DW plates |
|-----------------|--|--|

Application Specifications*

| Type | Specifications | Comment |
|---|--|--|
| Injection volume | 0.1 - 100 μ L | Depending on syringe, available syringes are 1.2 / 5 / 10 / 25 and 100 μ L, needle length 57 mm |
| LC Liquid injection, repeatability (UV) | Full loop < 0.1 % RSD Partial loop < 0.15 % RSD | 20 μ L loop, 4 x overfill, 100 μ L syringe 10 μ L in 20 μ L loop, 100 μ L syringe |
| LC Liquid injection, linearity (gravimetric) | R > 0.9999 | 20, 40, 60, 80, 100 μ L, n=3 each level |
| GC liquid injection, repeatability | < 0.60 % RSD | Alkanes C14, C15, C16, 1 μ L, split mode |
| GC liquid injection, linearity (gravimetric) | R > 0.9999 | 20, 40, 60, 80, 100 μ L, n=3 each level |
| GC needle discrimination | C40 / C20 > 0.98 | Restek Florida Mix 1 μ L, 100 ms fast split/splitless injection |

*Detailed conditions for the determination of specifications upon request



Distributed by:

The PAL System is one of the most used and successful sample preparation and handling platforms.

- 40'000 systems worldwide are proof of the PAL Systems' reliability and flexibility. PAL Systems are developed and manufactured under an ISO 9001 / 13485 quality management system. Every PAL System has passed a performance test before leaving the factory.
- The PAL LSI is designed for the accurate and precise handling of liquid samples.
- The PAL LSI can transport objects, like vials from and to any position within its working area.
- The PAL LSI is available with compact or standard x-axis length.
- The PAL LSI, like all members of the PAL family, can be upgraded if the need for more functionality or sample capacity arises.

For more information on the PAL System visit:

www.palsystem.com



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