AI POWERED

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2000H series

HEADSPACE AUTOSAMPLERS

Made to meet the needs of static headspace injection for GC and GC/MS analysis.

2100H

2000H

2000HT

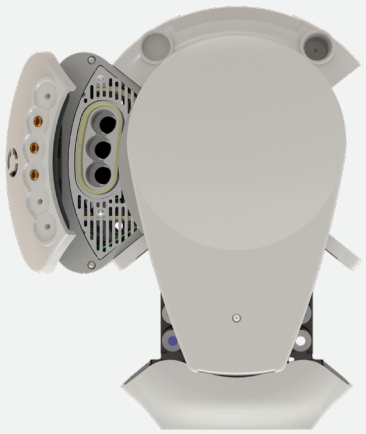
COMPARE MODELS

	2100H	2000H	2000HT
Sample Capacity	14 samples: 20 or 10ml	42 samples: 20, 10 or 6ml	42 samples: 20, 10 or 6ml
Removable Rack	-	√	√
User Interface	Keypad	Touchscreen	Touchscreen
Quick-fix Mounting Kit	√	√	√
AI functionalities	√	√	√
Oven Position(s)	1	6	3
Oven Temperature Range	Off; 40-150°C	Off; 40-170°C	Off; 40-300°C
Shaking Capability	YES (Sussultatory)	YES (Orbital)	YES (Orbital)
Programmable Injection Volume	√	√	√

2000HT: EXTENDS SUPPORT TO HIGH-TEMPERATURE POLYMER ANALYSIS

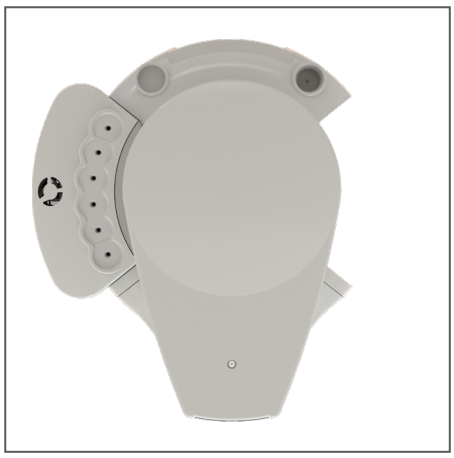
2000HT is the first and only high-temperature headspace autosampler that enables the execution of high-temperature headspace applications in a syringe-based system without the constraints and limitations induced by valve&loop systems.

By its **extended oven and syringe temperature range**, the **2000HT** can accommodate the widest range of applications: standard headspace applications that require temperatures lower than 150°C and **special high-temperature applications related to heat-induced degradation studies, analysis polymers and other high-boiling compounds**, such as phthalate esters or cyclic siloxanes.



KEY **FEATURES:**

- **Fits all GCs and GC/MSs**
- **Easy to operate and maintain**
- **The lowest total cost of ownership in the industry**
- **Empowered by AI**



Vial checking

Vial gripping

Vial loading in the oven

Vial unloading after conditioning

FITS ALL GCs AND GC/MSs

HTA headspace autosamplers are the **most compact on the market**, with a near-to-zero requirement for bench space.

They are fully **self-contained** and can be **interfaced with any gas chromatograph**, allowing access to HTA's proven headspace technology regardless of the GC brand or model currently used in your laboratory. Furthermore, there is **no requirement to modify the GC inlet or GC oven** as often requested by competitor products, thus providing exceptional operational flexibility.

The **2000H** series **can serve both the front and rear injectors** in most supported GCs. The injector selection is made directly by the sequence list, avoiding difficult set-up operations or re-installation to pass from one injector to the other. Furthermore, the rotating head design ensures that the **injection port is always free** for manual injections or maintenance.

The **2000H** series takes advantage of our **quick-fix mounting kit**, thereby allowing for autosampler easy relocation across the lab with no service engineer or tool required. Therefore, you are enabled to address any workload peak you may experience **in less than a 5-minute move** of the HTA autosampler from one GC to another, **swap** HTA autosamplers or **share** HTA autosamplers among several GCs.

OPERATIONS: HOW IT WORKS

The robotic vial processing operation allows for sample analysis in a straightforward and systematic way. The sample vials are transported into the heated oven for conditioning, accommodating up to 6 samples

simultaneously, depending on the autosampler model, and allowing for the next sample to be analysed immediately after the previous sample.

While in the oven, **the samples are simultaneously heated and shaken** to facilitate the state change and to reach equilibrium. A heated, gas-tight syringe is then moved over the oven and the headspace sample is withdrawn. After sample injection, the syringe is automatically cleaned, by purging with inert gas.

The **high-quality touchscreen** provides easier system accessibility and usability for both novices and experienced users. Besides the touch screen, the **2000H** series can be also controlled by a PC with optional HTA Autosampler Manager software, available in standard or **CFR 21 Part 11** version (see the dedicated brochure for additional information). The HTA Autosampler Manager enables convenient **method development**: progressive tests can be executed so that successive samples receive incremental changes in method parameter setpoints for time and temperature.

PROVEN SUPERIOR TECHNOLOGY FACILITATES EASY OPERATION AND MAINTENANCE

The **2000H** series has been engineered with the most advanced technologies to provide an unmatchable experience in terms of easiness of use, analytical performance, and data robustness.

The high-performance, gas-tight heated syringe is a simple and robust system. It eliminates the dead volume and absorption effects, typical of sample loops and transfer lines, which can also impede their detection at very low levels. The HTA syringe-only concept allows for sequential injections, even with samples characterised by highly dissimilar features, so the most chemically active compounds can be analysed without needing to change any of the sample pathways.

Furthermore, it permits **adjustable sample volumes without loop changes**: No complicated error-prone operations, such as vial pressurisation, valve switching, loop filling or heated transfer lines are involved. Therefore, you can extract more data from the samples in less time and at the lowest possible cost per sample.

Vial leakage check - a proprietary technology[1] - **can be included in your method**. In such a scenario, the pressure inside vials of the same batch is monitored by a heuristic procedure to check against anomalous values that are indicative of a vial leakage problem.

Specific functionalities have been engineered to elevate MSD potentialities and next-generation analysers. Such analysers are more susceptible to some phenomena than conventional GCs, thus the **2000H** series implements **sampling and injection methods to reduce septa stress** to minimise contamination of the liner and analyser.

THE LOWEST COST OF OWNERSHIP, THE GREENEST TO PROTECT OUR PLANET

Be environmentally conscious and choose the HTA headspace autosampler as the **2000H** series has been designed to conserve electricity, gas, and any valuable resources, allowing you to save money while doing the right thing.

No carrier gas is needed because gas is used only for purging between samples. **No o-rings** or seals to replace, saving hours of unnecessary downtime. **No magnetic or special caps are required**, because vial transport is positive and reliable.

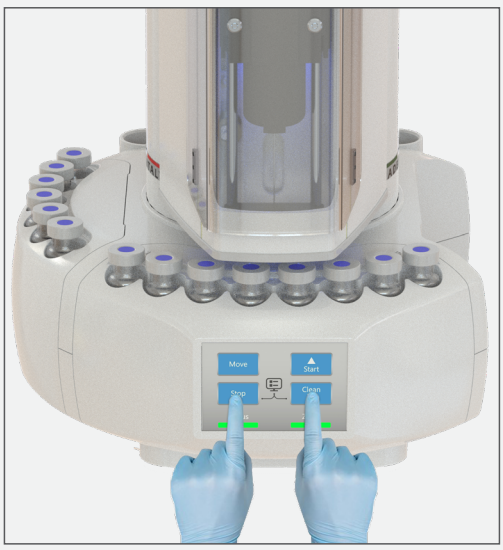
Furthermore, **eco-saving** settings are available to instruct the system to shut off or minimise heating when the run is completed, and **prep-run support** allows to reduce GC gas consumption.

2100H: BEST FIT FOR SMALL BATCH ANALYSIS

Analysing small batches of samples? Get precision and performance with a system that is perfectly sized for your needs. The **2100H** offers automated processing of up to 14 samples, with the vials lifted individually into the heating zone for conditioning and immediately returned to their position after injection. Furthermore, a vial can be heated and shaken during the GC run of the previous vial specified in the sequence, resulting in decreased time between two consecutive GC runs.

The PC can perform quick sets of autosampler parameters while all the routine operations can be managed by its **convenient start-stop keypad**. The **LED bar** provides colour-coded status information that is easy to see. A **virtual screen on the PC** automatically shows when an informative message is available or it is activated by double thumb pressure on the keypad.

The **2100H** is a **quality, cost-effective alternative to manual headspace**. While manual sampling techniques are simple and inexpensive, they are also tedious, subject to human error and do not provide robust and consistent data, whereas automation ensures consistent and reliable results, while also freeing up laboratory personnel for more productive tasks.



ARTIFICIAL INTELLIGENCE

HTA Monitor – PC utility – is the engine at the foundation of our Artificial Intelligence (AI) capabilities[1].
Learn below how AI can boost your lab productivity!

INSTRUMENT PARAMETER OPTIMIZATION

Supports users by suggesting programming or setting changes for **smooth, efficient analysis flow**. It also includes **injection-to-injection optimisation** so that time between injections is automatically calculated for ideal sample throughput.

SUPPORT FLEXIBLE WORKING STYLES

Virtual screen (**2100H**) and **screen mirroring** (**2000H** and **2000HT**) enable the control of the autosampler from the PC without the need to stand in front of the autosampler. A replica of your autosampler touchscreen is made available to perform every task from the same familiar user interface.

AUTOMATED CONSUMABLES TRACKING

Automated consumables tracking with alert notifications **minimise unexpected downtime** and waste due to unnecessary replacement. Consumables consumption tracking goes far above preventive maintenance counters! **Expiration dates and performance tests**, including correct GC inlet septum installation, are available. Furthermore on each start-up, a **system integrity test**[4] can be performed to check whether syringe maintenance or replacement is needed.

PREDICTIVE MAINTENANCE

Self-diagnostic tests are automatically performed when the autosampler is not running or when a request is made to diagnose instrument status. The **HTA AI engine** detects the need to **schedule maintenance in advance** to offer extended uptime and lower operating cost. While preventive maintenance achieves robustness by over-maintaining your instrument, **predictive maintenance** allows performing maintenance to your valuable equipment only when needed in the necessary amount. In short, predictive maintenance offers the same benefit as preventive maintenance at a fraction of the cost.

EASY SERVICE CONNECTION

You can **contact tech support by scanning a QR code** and passing all relevant information about your instrument, configuration and issue. In most cases, before you even ask a question, we will have given you the answer!

CONTINUOUSLY IMPROVING

The AI engine regularly receives software updates via the internet. These updates add and improve functionalities: enable the automatic update function to always stay up to date. AI engine updates do not affect the operations of the autosamplers, so they are safe and well-accepted even in highly regulated contexts.

TECHNICAL SPECIFICATIONS

General features

Syringe volume:	2.5ml (standard); optional: 1 and 5ml
Cleaning system:	Inert gas flush (inlet: 1/8"; max pressure: 1bar)
Maintenance:	preventive counters; system integrity check[4]; predictive maintenance functionalities by AI
Electrical control:	LAN and TTL
Target illumination:	Yes

Tray capacity

2000H/2000HT:	42 vials (20ml); optional: 6 and 10ml (1 removable rack)
2100H:	14 vials (20ml); optional: 10ml

Conditioning

Oven positions:	1 (2100H) 6 (2000H) 3 (2000HT)
Oven temperature:	off; 40-150°C (2100H) off; 40-170°C (2000H) off; 40-300°C (2000HT)
Shaking method:	sussultatory (2100H) orbital (2000H and 2000HT)
Shaker speed:	from very low to very high
Shaking cycles:	on/off 0-9.9min
Incubation time:	0-999min

Sampling

Syringe temperature:	off; 40-150°C (2000H and 2100H) off; 40-150°C (2000HT)
HT Syringe temperature:	150-250°C (2000HT)
Sample volume:	steps of 0.01ml
Sample homogenization:	up to 15
Sample speed:	0.5-100ml/min
Vial leakage check[1]:	optional

Injection

Injection speed:	0.5-100ml/min
Pre/Post dwell time:	0-99sec
Enrichment:	up to 15
Dwell time between injections:	0-100min

Physical features

Dimensions (WxHxD):	280x640x320mm (2100H) 330x640x320mm (2000H and 2000HT)[3]
Weight:	8.0kg (2100H) 10.0kg (2000H and 2000HT)
Power supply:	100-240±10%Vac; 50-60Hz; 60W (2100H) 120W (2000H and 2000HT)

Software

HTA Monitor:	included for free virtual Touch Screen and AI functionalities
HTA Autosampler Manager:	60-days free trial full autosampler PC programming

HTA Monitor PC requirements

Software:
- Microsoft Windows 7, Windows 8.1, Windows 10, Windows 11 PC Edition only (excluding mobile devices and appliances)
- PC is expected to run Windows OS with the latest update installed (unless differently specified)
- Additional required software: Microsoft .NET Framework 4.5.2
- Administrator account for software installation only

Hardware:
- RAM: 2GB
- Disk space (for installation): 6GB
- LAN port
- 1024x768 Minimum
- Some functionalities require Internet access

[1] Patented technology
[3] Tray and oven cover in closed position
[4] An optional accessory required

Some functionalities require the usage of HTA software:
- progressive mode, vial leakage check and CFR 21 Part 11 require HTA Autosampler Manager
- some AI functionalities require HTA Monitor

It is not required to have HTA Monitor and CDS on the same PC.
The PC is required for setup, service and programming 2100H.

When it comes to designing and manufacturing robotics solutions, there's no company more dedicated, experienced and knowledge about the scientific industry than HTA. We offer an extensive collection of analyser front-ends and sample preparation workstations designed to fit applications in analytical chemistry, life sciences and clinical laboratories. This even includes GC, LC and ICP autosamplers. HTA manufactures in Italy under a certified UNI EN ISO 9001:2015 and 13485:2016 quality management systems.

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