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HT4000A

CHROMATOGRAPHY

SAMPLE PREP WORKSTATION

HT4000A - sample preparation workstation - allows **automation of sample preparation** procedures by taking care of a large number of operations such as **liquid handling, purification or filtration, tracking** and further sample processing such as **vortex, automatic uncap/ recap, and weigh**.

The **modular design** allows easy configuration and affordable costs. The liquid handling module is included in each configuration, while all other modules are included, according to your requirements. **You get your HT4000A instrument tailored and designed to fit it to your lab workflow:** furthermore, by adding or removing modules, you are quickly able to deploy an additional or different sample prep procedure.



FREE AUTOMATION PROJECT

Provide your HTA's sales rep with your sample prep procedure: **an automation consultant will take care to configure your HT4000A workstation so that you can make a proper evaluation of the benefits it can bring to your lab.**

LIQUID HANDLING

HT4000A's liquid handling head is equipped with a syringe that ranges from 500 nanoliters to 10 milliliters: for larger volume requirements, multiple dispensation cycle or peristaltic pump modules can be integrated. **HT4000A** definitively allows a wide range of sample volume to be handled. **HT4000A** offers

aspiration, dispensation, sample displacing, serial and parallel dilution, single and multiple derivatisation, pH spiking, reagent and standard addition. Regardless of whether your sample or solvent is extremely volatile or viscous, we provide you with the capability you **need to perform the tasks effectively.**

TRACKING

Barcode information can be acquired in automated (integrated barcode reader) or operator-assisted (bar-code gun) mode. Equip **HT4000A** with a **barcode reader module** to confirm sample identity, to add this information in an execution report or to the store information in a database or LIMS. Handling the barcode is, typically, advisable when the same sample vessel needs to be reprocessed several times, such as with weight application: in such

a case, an empty sample vessel is processed first, to acquire the tare information and then - even days or weeks later - reprocessed to acquire the gross weight. By storing the barcode information in the database, it is possible to automatically recover tare information and calculate the net weight. For enforced GLP requirement, **HT4000A** can be equipped with **SyringeID that provides automatic identification of the used syringe to process samples.**

CLEANING & SOLVENT MANAGEMENT

HT4000A cleaning procedures are chromatographic grade. Besides standard functionalities, carry-over can be further contrasted by equipping the unit with the **external needle cleaning module** or with the **active washing module** whenever an excess of solid impurities may be present in the sample to be processed.

No compromise in terms of solvent capacity and solvent selection: **HT4000A** has a wide capacity to accommodate the most challenging requests. Solvents can be located in vials (for accurate micro-volume dispensing) or in bottles (for large-volume dispensing).

VORTEX, UNCAP & RECAP

Vortex station is used to help perform effective mixing of solvents and standards, to assist solubilisation or to avoid stratification and therefore to avoid the lack of representativeness of the sample. **Uncap & Recap station** is designed for screw cap vials allowing

HT4000A to remove and hold the cap, while solvents are added or a sample is aspirated from the vessel. At the end of the liquid handling operation, the cap is put back and the vial can be therefore be replaced on the rack.

MOVE OBJECTS

By including gripping capability, sample vessels can be moved across modules or positions allowing further automation. Some stations, such as micro balance, vortex and barcode readers require samples to be processed one at a time in a different place

to the rack in which they have been prepared. **HT4000A features several types of gripper:** the passive gripper, used for crimped vials and centering handles, and the **active gripper**, for more complex objects, such as unsealed and screw cap tubes.

CONDITIONING

You have been offered with several options to perform the thermal conditioning. When the whole sample rack needs to be conditioned, it is available the **cooling option:** it allows to preserve samples from thermal degradation and to avoid undesirable

phase changes. When the sample should be treated individually, the **reaction cell and the vial heater** modules are available: the sample is transferred in such modules and the reaction can take place.



PURIFICATION

Purification and filtration are common steps in many sample prep procedures. **HT4000A** supports several of them: we have automated

Micro Extraction by Packed Sorbent (MEPS) and Liquid/Liquid extraction (LLE); if you need **SPE or filtration** automation check **HT4000E** brochure.

INJECTION

Most of our sample prep workstations are used offline, without automatic sample loading/injecting into the analyser. They are, in fact, typically feeding samples for more than one analyser. However, in several other scenarios they are directly connected to the analyser

by the use of **an injection valve (for LC and IC applications) or by an injection port.** In such cases, HT4000A also takes care to pass the information about data acquisition start to the analyser, by the usage of external trigger or CDS direct link.

WEIGH

HT4000A can be integrated with a micro balance. In such a scenario, the sample vessel is moved onto the weighing platform in order to collect weight information and then back to its position in the rack. Typically, applications include the **gravimetric dispensation** (sample

is weighed before and after adding a solvent); **automatic tare/gross weight acquisition** (in order to calculate and save net weight information); **check sample quantity** or to check if the sample quantity is inside the window of validity to be further processed.

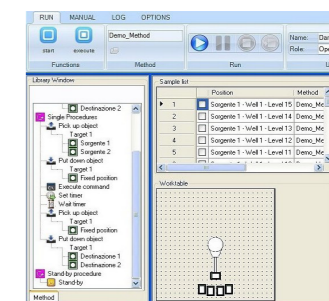
SAMPLE VESSELS

The most common sample vessels are supported: **vials (2/4/6/10/20/40ml), test tubes, tube blocks, plates, Vacutainers** and several more. More than one type of vessel can be placed on the same rack at the same time: in fact, typically, sample preparation procedure requires some sample reformatting steps that **HT4000A** can perform very well. Open vessels are supported as per those that are sealed. In the latter case,

they may be used with pierceable septa/seals or with screw caps: in fact, **HT4000A** can be equipped with an uncap/recap module when piercing a septum is not advisable. In terms of sample capacity, 1 sample deck is the standard configuration. However, a 2 sample deck version is also applicable for the most demanding applications.

THE SOFTWARE

HTAPREP – lab automation software – offers powerful method development by a simple drag & drop approach and **smart sample processing:** complex routine and experiments can be defined in a few easy steps. Learn more on the brochure dedicated to HTAPREP.



WHY MOVE TO AUTOMATION

There are a number of reasons why you should automate the sample prep procedures you currently run manually: increase **productivity** by running 24/7; improve **repeatability and traceability**; **lower operator's health and safety risks** by reducing exposition to hazardous chemicals and **reduce cross-lab CV** by increasing method robustness and facilitating method transfer.

TECHNICAL SPECIFICATIONS

General features

Syringe volume:

Standard: 100, 250, 500µl and 1, 2.5, 10ml
Nano Volume Opt.: 5, 10, 25, 100µl

Physical features

Dimensions (WxHxD)¹:

Weight:

Power supply:

310x705x690mm

Start from 12kg

100-240±10%Vac; 50-60Hz; 60VA²

¹Most common modules accounted

²Additional power supply may be required depending on the modules



When it comes to designing and manufacturing robotics solutions, there's no company more dedicated, experienced and knowledgeable in the scientific industry than HTA. We offer an extensive collection of analyzer 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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