



# Master P&T

PURGE & TRAP SAMPLER

**Архангельск** (8182)63-90-72  
**Астана** (7172)727-132  
**Астрахань** (8512)99-46-04  
**Барнаул** (3852)73-04-60  
**Белгород** (4722)40-23-64  
**Брянск** (4832)59-03-52  
**Владивосток** (423)249-28-31  
**Волгоград** (844)278-03-48  
**Вологда** (8172)26-41-59  
**Воронеж** (473)204-51-73  
**Екатеринбург** (343)384-55-89  
**Иваново** (4932)77-34-06  
**Ижевск** (3412)26-03-58  
**Казань** (843)206-01-48

**Калининград** (4012)72-03-81  
**Калуга** (4842)92-23-67  
**Кемерово** (3842)65-04-62  
**Киров** (8332)68-02-04  
**Краснодар** (861)203-40-90  
**Красноярск** (391)204-63-61  
**Курск** (4712)77-13-04  
**Липецк** (4742)52-20-81  
**Магнитогорск** (3519)55-03-13  
**Москва** (495)268-04-70  
**Мурманск** (8152)59-64-93  
**Набережные Челны** (8552)20-53-41  
**Нижний Новгород** (831)429-08-12  
**Новокузнецк** (3843)20-46-81

**Новосибирск** (383)227-86-73  
**Омск** (3812)21-46-40  
**Орел** (4862)44-53-42  
**Оренбург** (3532)37-68-04  
**Пенза** (8412)22-31-16  
**Пермь** (342)205-81-47  
**Ростов-на-Дону** (863)308-18-15  
**Рязань** (4912)46-61-64  
**Самара** (846)206-03-16  
**Санкт-Петербург** (812)309-46-40  
**Саратов** (845)249-38-78  
**Севастополь** (8692)22-31-93  
**Симферополь** (3652)67-13-56  
**Смоленск** (4812)29-41-54

**Сочи** (862)225-72-31  
**Ставрополь** (8652)20-65-13  
**Сургут** (3462)77-98-35  
**Тверь** (4822)63-31-35  
**Томск** (3822)98-41-53  
**Тула** (4872)74-02-29  
**Тюмень** (3452)66-21-18  
**Ульяновск** (8422)24-23-59  
**Уфа** (347)229-48-12  
**Хабаровск** (4212)92-98-04  
**Челябинск** (351)202-03-61  
**Череповец** (8202)49-02-64  
**Ярославль** (4852)69-52-93

## THE INNOVATIVE WAY FOR WATER ANALYSIS DELIVERING PERFORMANCE IN REGULATED ENVIRONMENTS

**DANI Master P&T - Purge&Trap Sampler offers the most reliable, high performing Purge&Trap volatiles extraction technique for ultra-trace VOCs analysis.**

With its innovative design, Master P&T eliminates any risk of carryover and significantly improves chromatographic efficiency. Excellent analytical performance is guaranteed by the instant desorption trap that assures the complete transfer of the analytes and their injection into the analytical column in a very narrow band to preserve chromatographic resolution.

In order to maximize purging efficiency and minimize the migration of water to the GC or the GC/MS system, the innovative Dew Stop device efficiently removes water maintaining volatile compounds recovery unaffected.

The use of a precise flow of inert gas through the original and specifically design needle enables the volatiles to be swept from the sample and focused in a sorbent packed trap. The instrument configuration and process design allows a smooth extraction without the formation of foam. Analytes are then thermally desorbed and introduced into the gas chromatographic column. The highest recovery of the volatiles and the optimal injection result therefore in an unmatched sensitivity.

Master P&T fully complies with the official norms requirements ensuring at the same time superior analysis performance thanks to the accurate and precise control of the entire sampling process, along with the automatic standard addition, the overlapping incubation time capability, and the absence of cross-contamination.

The intuitive control through the software offers an easily management of all the operating parameters and analytical conditions offering a completely automated solution and allowing the unattended analysis of up to 65 samples with the true fastest cycle time in the industry.

INNOVATIVE DESIGN FOR HIGH EFFICIENCY

INNOVATIVE DESIGN FOR HIGH EFFICIENCY

FULLY COMPLIANT WITH OFFICIAL NORMS

FULLY COMPLIANT WITH OFFICIAL NORMS

NO CARRYOVER

NO CARRYOVER

ENHANCED ACCURACY AND SENSITIVITY

ENHANCED ACCURACY AND SENSITIVITY

INCREASED EFFICIENCY AND PRODUCTIVITY

INCREASED EFFICIENCY AND PRODUCTIVITY



Master

## IN-VIAL P&T EXTRACTION TO ELIMINATE CROSS-CONTAMINATION

Forget cross-contamination and carryover issues of traditional P&T approach by using the most versatile in-vial purging process. The inert gas directly flows through the liquid sample into a 20 mL disposable vial, stripping the purgeable compounds into a trap kept at sub-ambient temperature for sample enrichment. The use of disposable vials for each sample is a more versatile approach that features several benefits:

- ✓ No liquid sample path in common between the samples to minimize cross-contamination;
- ✓ No glass vessel avoiding heavy foaming formation;
- ✓ No need of foam protection systems thanks to the exclusive foamless needle;
- ✓ One less step of sample manipulation;

No additional workload of cleaning glassware or time-consuming line purging are requested.

Nevertheless, the entire sample flow path, including the dual needle, undergoes an automated cleaning cycle during the baking phase.

In addition, the inert material of the entire sample flow path prevents carryover effects, corrosion, and sample loss caused by adsorption and reactivity.

## MAXIMUM FLEXIBILITY

The advanced design of the Master P&T allows unprecedented flexibility and upgradeability. When in need to analyze solid matrices, the system can be upgraded simply by installing the exclusive kit. It is therefore possible to obtain all the performance of a Dynamic Headspace Sampler easily.

Furthermore, the Master P&T is compatible with all the major gas chromatographic systems commercially available.



## SUPERIOR ANALYTICAL PERFORMANCE

Due to the high amount of moisture transferred with the volatiles, the stripping of the volatiles from water-based samples is critical. When introduced into the GC in large amount, water may seriously affect separation and detection, compromising the overall quality of the analytical results.

Master P&T incorporates an innovative Dew Stop device which efficiently removes water regardless of the analytes, maintaining volatile compounds recovery unaffected. For extra convenience, the built-in water elimination device is programmable.

## REPEATABILITY AND ACCURACY

A sophisticated electronic flow control of all parameters and the highly precise regulation of the purging gas flow-rate allow an unmatched repeatability and accuracy of the analytical results.

Moreover, the system delivers the complete automation of the standard addition to enhance analytical precision allowing, thus, the automatic obtaining of the calibration curves. The addition of up to 6 standard solutions directly into the vial, programmable by the user, avoids losses of volatiles and maintains sample integrity. A major sample preservation is also guaranteed by the possibility to refrigerate the sample tray.

## UNMATCHED SENSITIVITY

Superior sensitivity is obtained through the constant sweeping of the thermostatted sample, promoting the enrichment of the volatile compounds on the sorbent trap.

Analytes are focused in a small volume packed trap which, owing its intrinsic characteristics, can be rapidly thermally desorbed and introduced into the gas chromatographic column. This results in a superior chromatographic separation across the entire chromatogram.

The electronically cooled device of the trap, able to cool down to  $-10^{\circ}\text{C}$  without the need of cryogenic liquids, is available.

Using selected sorbent materials, the efficient concentration of trace level analytes is achievable over a wide range of volatility.



**FULLY COMPLIANT WITH MOST RECENT NORM VERSIONS**

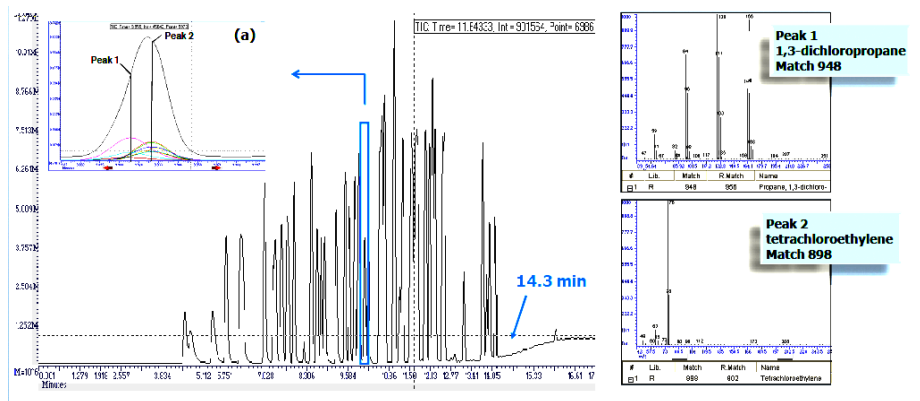
EPA methods involving P&T technique for the analysis of VOCs in different matrices can be challenging. The DANI Master P&T permits to overcome the major areas of concern easily allowing:

- ✓ High number of samples/day;
- ✓ Analysis of a high number of compounds;
- ✓ Internal standards/surrogates addition;
- ✓ No cross-contamination and no carryover effect;
- ✓ Detection and determination of compounds at trace levels;

**DETERMINATION OF PURGEABLE ORGANIC COMPOUNDS IN WATER BY CAPILLARY GC/MS ACCORDING TO US EPA 524.3 / 524.4**

The U.S. Environmental Protection Agency (EPA) strictly regulates the assessment of drinking water quality through method 524 in which detection limits and instrumentation requirements are established. Official guidelines require the monitoring of VOCs contaminants in drinking water at progressively lower concentration level and typically the P&T extraction technique is indicated to reach the requested limit of detection. The Master P&T guarantees the achievement of the limits imposed and, furthermore, thanks to the possibility of choosing between He and N2 as purging gas (independently by the carrier gas), fulfills the latest norm requirements.

Figure x shows the TIC of a mixture containing 52 compounds. The separation was completed in about 14 minutes and the DANI Master TOF MS allowed the possibility to discriminate within coeluted compounds due to the powerful deconvolution capability.



**EPA METHOD 8260 [VOLATILE ORGANIC COMPOUNDS BY GC/MS]**

In addition to EPA 524, other VOC methods may also be run using this configuration with a triple layer trap. For example, **US EPA Method 8260 B** for VOCs in ground and surface water, sludge, waste solvents, oily wastes, soils and sediments is a similar method with higher detection limits, that would particularly benefit from the absence of cross-contamination and absence of carryover effect offered by the the DANI Master P&T.

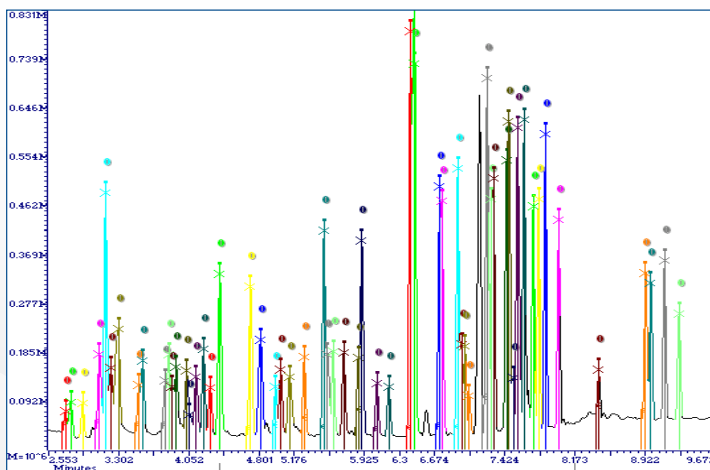
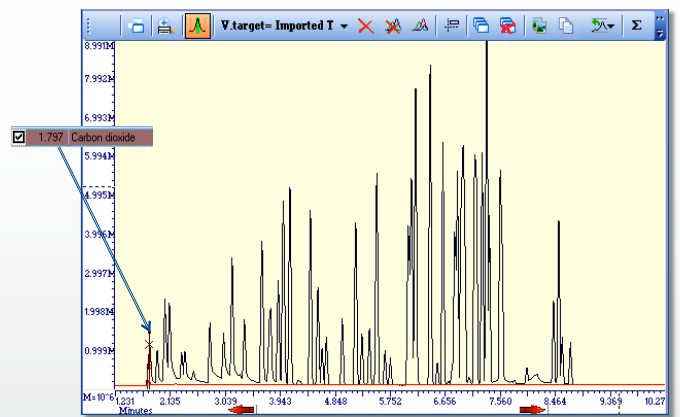


Figure x shows the Fast Chromatogram (TIC) of a 68 VOCs mixture.



Example of No Carryover Effect.  
Black line: 5mL water spiked 200ppb  
Red Line: blank

## ENHANCED PRODUCTIVITY WITH EXTENDED AUTOMATION AND THE FASTEST CYCLE TIME IN THE INDUSTRY

Unlike conventional P&T systems, the Master P&T maximizes productivity through the overlapped sample heating capability during the incubation step. The system automatically controls that the sample is heated during the GC run of the previous one, assuring a correct time synchronization for highly repeatable incubation time. Up to 18 vial positions are available for simultaneous incubation, fully synchronized with the GC analysis time. Moreover, Master P&T's cycle time is 15 minutes - against an average of 17 minutes of the other systems in the market.

The combined Master AS Automatic Sampler provides high sample tray capability of up to 65 positions for extended sample throughput. Besides, it permits the complete automated addition of up to 6 standard solutions and/or surrogates directly into the vial, avoiding losses of volatiles and maintaining the sample integrity.

## USER-FRIENDLY INSTRUMENTAL CONTROL

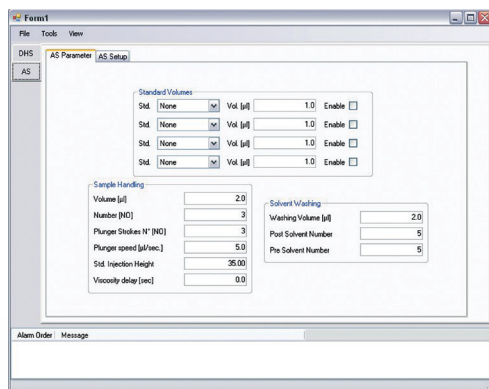
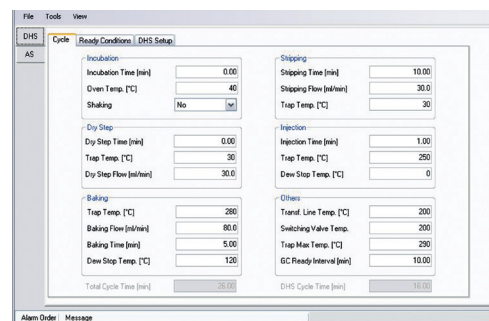
### Intuitive touch-screen

Operating parameters can be set and controlled through a user-friendly touch screen display for a quick and easy set up.

Diagnostic tools are readily available as electronic leak check and independent control of all the vials and vial handling movements.

### Stand-alone Manager Software

Anytime the system is connected to third party GC, a stand-alone Manager software offers a straightforward method and sequence set up enabling automated analysis. Methods and sequences can be easily edited, stored and uploaded to the instrument.



### Full control within Clarity Chromatography Station.

Clarity DS is the acquisition and reprocessing GC and GC/MS platform for the entire DANI Master line products.

Full featured Data Systems, Clarity allows the user to easily edit and keep under control all the operative parameters.

KEY TECHNICAL POINTS				
Capacity	18-place electrically driven carousel	Focusing Trap	Packed Focusing Trap	
Samples	standard 20mL headspace vials with crimped or screw magnetic caps and PTFE coated silicone rubber septa		Sorbent Material	Tenax GR (different materials on request)
			Stripping Temperature	10°C above ambient to 40°C, increment 1°C
Methods	Up to 25 methods stored		Dry step Temperature	10°C above ambient to 40°C, increment 1°C
Oven	Temperature: 40 to 300°C, increment 1°C Time: 0 to 999 min, increment 0.01 min Shaking: no, slow, fast		Injection Temperature	40 to 450°C, increment 1°C
Switching Valve	Temperature: 40 to 300°C, increment 1°C			

**По вопросам продажи и поддержки обращайтесь:**

**Архангельск** (8182)63-90-72  
**Астана** (7172)727-132  
**Астрахань** (8512)99-46-04  
**Барнаул** (3852)73-04-60  
**Белгород** (4722)40-23-64  
**Брянск** (4832)59-03-52  
**Владивосток** (423)249-28-31  
**Волгоград** (844)278-03-48  
**Вологда** (8172)26-41-59  
**Воронеж** (473)204-51-73  
**Екатеринбург** (343)384-55-89  
**Иваново** (4932)77-34-06  
**Ижевск** (3412)26-03-58  
**Казань** (843)206-01-48

**Калининград** (4012)72-03-81  
**Калуга** (4842)92-23-67  
**Кемерово** (3842)65-04-62  
**Киров** (8332)68-02-04  
**Краснодар** (861)203-40-90  
**Красноярск** (391)204-63-61  
**Курск** (4712)77-13-04  
**Липецк** (4742)52-20-81  
**Магнитогорск** (3519)55-03-13  
**Москва** (495)268-04-70  
**Мурманск** (8152)59-64-93  
**Набережные Челны** (8552)20-53-41  
**Нижний Новгород** (831)429-08-12  
**Новокузнецк** (3843)20-46-81

**Новосибирск** (383)227-86-73  
**Омск** (3812)21-46-40  
**Орел** (4862)44-53-42  
**Оренбург** (3532)37-68-04  
**Пенза** (8412)22-31-16  
**Пермь** (342)205-81-47  
**Ростов-на-Дону** (863)308-18-15  
**Рязань** (4912)46-61-64  
**Самара** (846)206-03-16  
**Санкт-Петербург** (812)309-46-40  
**Саратов** (845)249-38-78  
**Севастополь** (8692)22-31-93  
**Симферополь** (3652)67-13-56  
**Смоленск** (4812)29-41-54

**Сочи** (862)225-72-31  
**Ставрополь** (8652)20-65-13  
**Сургут** (3462)77-98-35  
**Тверь** (4822)63-31-35  
**Томск** (3822)98-41-53  
**Тула** (4872)74-02-29  
**Тюмень** (3452)66-21-18  
**Ульяновск** (8422)24-23-59  
**Уфа** (347)229-48-12  
**Хабаровск** (4212)92-98-04  
**Челябинск** (351)202-03-61  
**Череповец** (8202)49-02-64  
**Ярославль** (4852)69-52-93

**Единый адрес для всех регионов: [drs@nt-rt.ru](mailto:drs@nt-rt.ru) || [www.danimaster.nt-rt.ru](http://www.danimaster.nt-rt.ru)**



**A SCENT OF FUTURE**