GL Sciences

Olfactory Detection Port for GC or GCMS

PHASER PRO

GC-O



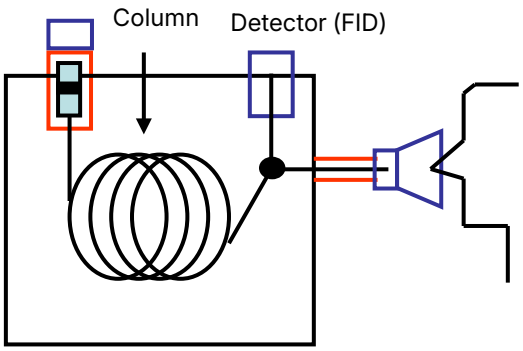
Sniffer / GC-O
For all common GC's
No Cold-Spot

What is GC/O System?

The human nose is an incredible detector for aroma/malodor components. GC/O (Gas Chromatography / Olfactometry) is a technique used for detection of odor compounds by the human nose. Combining GC (instrumental analysis) and nasal (sensory evaluation) information is important in the analysis of aromas and odors in foods, beverages, flavors and fragrances.
In the GC/O, the outlet of the GC column is split, one end is connected to a detector (FID or MS) for compound analysis, the other end is connected to a nose cone used to sniff and identify the compounds.

The GC/O covers a wide scope of applications, in fragrances, foods, pharmaceuticals, packaging, and chemical industries.





At the column outlet, the compounds are split to detector and sniffer, using nose to identify the compounds that were separated on the column.

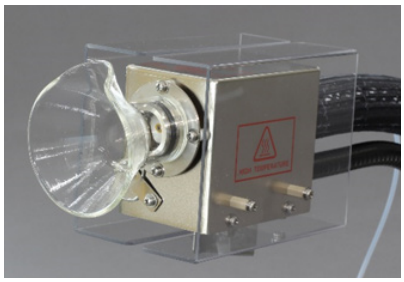
PHASER Pro Sniffing Port

The PHASER Pro is the latest edition of the sniffing port. A temperature-programmable transfer line is introduced in this instrument, that can be programmed as the GC oven. This results in a stable split ratio (sniffing flow rate/ detector flow rate). Heat stress at the nose and thermal degradation of the compounds are prevented, making it possible to perform olfactory detection with higher accuracy and sensitivity.

The transfer line has been designed in such a way that there are no cold spots along the line. This allows high precision evaluation of odors. High-boiling or adsorptive compounds are not trapped inside the transfer line. The target compounds are obtained without loss.

PHASER Pro Sniffing Port

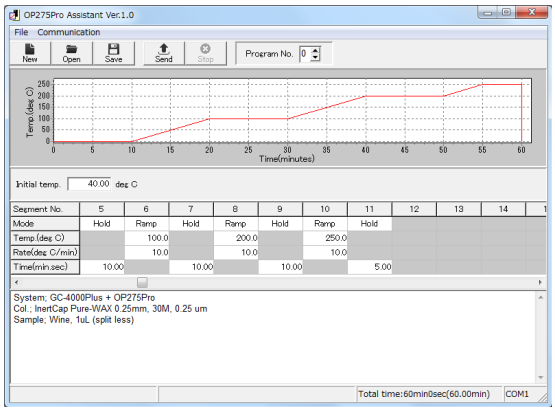
- Transfer line temperature maximum of 300 °C
- Transfer line without cold spots
- Efficient detection of high boiling components
- Air purge humidifier protects nasal mucosa against drying
- Compatible with any GC make
- Reduced nasal heat stress
- Reduced thermal degradation of analyte



Standard supplied Nose Cone

Programmable transfer line

The temperature from the transfer line of the PHASER Pro can be programmed over time. Programming the temperature of the transfer line can result in different Odor.



Temperature program is set via control software, PHASER Pro Assistant.

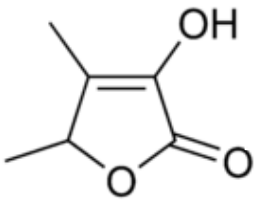


Comparison of GC/O for Programmed and Isocratic Temperature

Analysis of Sotolon

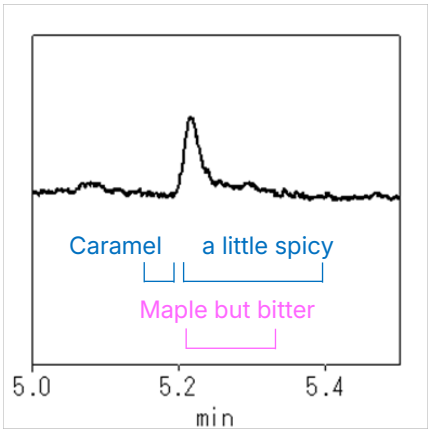
Conditions:

System	: GC-FID
Column	: InertCap 5, 0.25 mm I.D. x 30 m, df = 0.25 µm
Col. Temp	: 50 °C (1 min) - 15 °C/min - 250 °C
Carrie Gas	: He, 200 kPa
Injection	: Splitless
Injection Vol.	: 1 µL
Sample	: Sotolon 10 ppm in EtOH

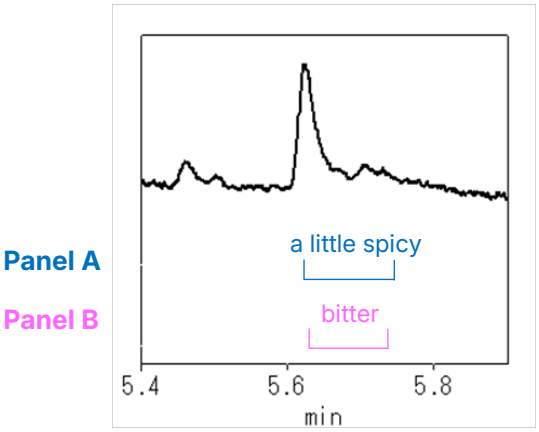


Sotolon
Boiling point
:184 °C

Transfer line temperature at peak detection : 133 °C
Transfer line temperature: 50 °C (1 min) - 15 °C/min - 250 °C



Transfer line temperature at peak detection : 250 °C
Transfer line temperature: isocratic



Two panels performed sensory tests at the same conditions and for the same samples

When the transfer line is isothermal at 250°C, "spicy" or "bitter" is only perceived. However, applying programmed temperature, the panel was able to perceive changes of Odor; from "sweet" to "caramel" and "bitter" to "maple". The Odor with the programmed temperature function was perceived over an increased period of time.

Analysis of Fatty Alcohol

Compound	Transfer line temperature at detection of compound	Panel A		Panel B	
		Transfer line 250 °C, iso	TL temp. programmed	Transfer line 250 °C, iso	TL temp. programmed
1-Butanol	62 °C	Oil	Cheese to Oil	N.D.	Cheese
1-Pentanol	70 °C	Oil	Oil, Offensive	N.D.	N.D.
1-Hexanol	82 °C	Hexanol	Grassy Hexanol	Grassy	Greenly
1-Heptanol	97 °C	Oil	Grassy	Oily	Sweet

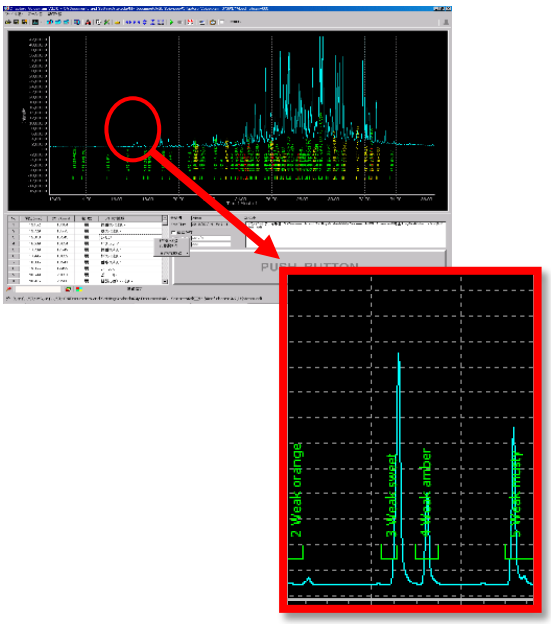
Two panels performed sensory tests at the same conditions and for the same samples

When using the programmed temperature function, odors changes due to concentration changes were perceived according to the rise of the peak. For example, 1-Butanol was perceived as Oil when using an isocratic program. While it was perceived as cheese to oil when using a temperature program.

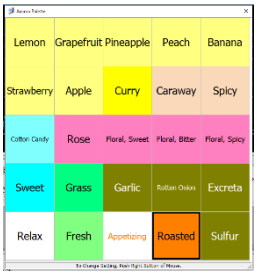
Olfactory Voicegram

The Olfactory Voicegram Interface Kit is dedicated software for recording and analyzing odor information. Because the odor often contains multiple compounds and some peaks may be adjacent, retention time and information about the quality and intensity of the odor are important. In the Olfactory Voicegram, clicks, audio recordings and manipulations of Aroma Pallet add valuable information to the chromatogram.

Analysis screen



Aroma pallet



Register the characteristics of each odor on Aroma Pallet, and couple it to the chromatogram only by mouse click.

Odor Voice recording function

The optional Voice Recording software enables panelists to record their aroma observations at specific retention times during the GC run.

Once the GC analysis is complete, the recorded voice observations can be converted into text and displayed directly on the chromatogram. This provides a clear correlation between detected compounds and the panelist's sensory observations, making it easier to identify and interpret aroma-active compounds.

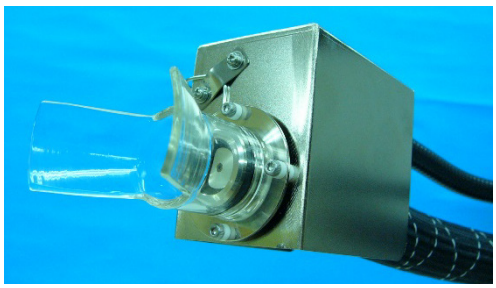
Options

Y-Nose Cone

The Y-Nose Cone does not cover the entire nose, so odor and heat sensations are reduced. This nose cone is used when you need to identify subtle odor components.

- Reducing nasal heat stress

- Improving separation between odors

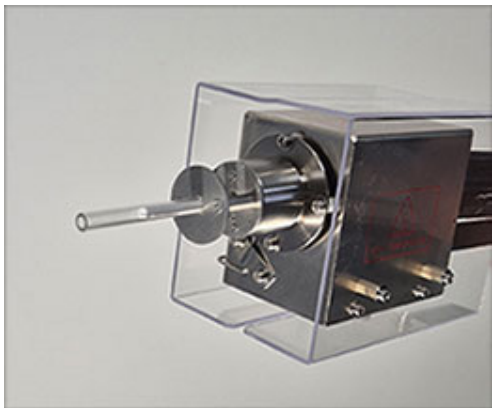


Part Number	Description
2702-18506	Y- Nose Cone

NOTE: Conical nose cone is a standard accessory

Fractionation collection adaptor

Instead of using the human nose for detection it is possible to change the nose cone to a fraction collection adaptor. In the adaptor a thermal desorption tube can be placed for collecting the sample.After collection, the thermal desorption tube can be analyzed.



Part Number	Description
2702-GL0033	PHASER Fraction Collection Attachment Assembly, for tube with 5 mm OD
2702-GL0037	PHASER Fraction Collection Attachment Assembly, for tube with 1/4-inch OD

Specifications (Sniffing Port PHASER Pro)

Model	PHASER Pro
Temp. control method	SSR zero cross PID control
Operation temp. range	0-300 °C (0.1 °C step)
Temp. control range	Room temperature +20 °C to 300 °C
Temp. gradient setting	0~20 °C/min, (0.1 °C/min step)
Number of temp. programs	8
Number of segment	Max. 32
Segment setting time	0 min 0 sec ~ 99 min 59 sec
Auxiliary gas	He, N2
Flow control device	Mass flow control valve
Inlet port	1/8″ tube connection
Outlet port	1/16″ tube connection
Moist air	Clean air
Flow control device	Speed control valve
Inlet port	1/8″-1/8″ tube connection
Outlet port	1/8″-1/8″ tube one-touch connection
Inputs and outputs	USB port (for temperature setting software)
	START IN
Supplied pressure range	0.1 ~ 0.6 MPa
Splitter connection	Deactivated capillary tube connection (male nut type)
Size	Controller: 96 (W) X 230 (D) X 300 (H) mm (excluding protrusions)
	Transfer line: Outer dia. 35 mm X length 1000 mm
Weight	Controller: Approx. 4 kg
	Transfer line: Approx. 1.8 kg
Temp./Humidity Range	5 ~ 35 °C / 10 ~ 85 %, no condensing water
Power	200 to 240V AC, 50/60 Hz/ Max.230VA
CE	Yes

Ordering Information

Main instruments (installation kit included)

Part Number	Description
2403-3121	PHASER Pro incl. Installation Kit (no Voice Software), 115V, for LECO
2403-3122	PHASER Pro with Voice Software and Installation Kit, 115V, for LECO
2403-3123	PHASER Pro incl. Installation Kit (no Voice Software), 230V, for LECO
2403-3124	PHASER Pro with Voice Software and Installation Kit, 230V, for LECO
2403-3125	PHASER Pro incl. Installation Kit (no Voice Software), 115V, for Agilent
2403-3126	PHASER Pro with Voice Software and Installation Kit, 115V, for Agilent
2403-3127	PHASER Pro incl. Installation Kit (no Voice Software), 230V, for Agilent
2403-3128	PHASER Pro with Voice Software and Installation Kit, 230V, for Agilent
2403-3129	PHASER Pro incl. Installation Kit (no Voice Software), 115V, for Shimadzu
2403-3130	PHASER Pro with Voice Software and Installation Kit, 115V, for Shimadzu
2403-3131	PHASER Pro incl. Installation Kit (no Voice Software), 230V, for Shimadzu
2403-3132	PHASER Pro with Voice Software and Installation Kit, 230V, for Shimadzu
2403-3133	PHASER Pro incl. Installation Kit (no Voice Software), 115V, for Thermo
2403-3134	PHASER Pro with Voice Software and Installation Kit, 115V, for Thermo
2403-3135	PHASER Pro incl. Installation Kit (no Voice Software), 230V, for Thermo
2403-3136	PHASER Pro with Voice Software and Installation Kit, 230V, for Thermo

The PHASER Pro is standard supplied with capillaries, 4 port microchannel connector, nuts and ferrules and SplitManager software in order to make a working installation. A personal computer is not included.

Contact

GL Sciences B.V.
Dillenburgstraat 7c
5652AM Eindhoven
The Netherlands
Tel.: +31 (0)40 2549531
info@glsciences.eu
www.glsciences.eu