GL Sciences

High Performance Mutimode Inlet for Gas Chromatography

OPTIC-4

4th generation OPTIC

OPTIC-4 is the ultimate among high performance inlet systems for gas chromatography. Designed to be installed easily onto virtually any make or model of gas chromatograph, OPTIC-4 offers the widest range of injection modes for a vast array of sample types.

One inlet, more analytical options

The patented low thermal mass design of the inlet body together with direct resistive heating provide fast linear temperature programming up to 600 °C at rates as high as 60 °C/s. In addition to standard sampling modes, the programmable inlet can operate effectively with Large Volume Injections, Cold Injections, Pyrolysis or Thermal Desorption sample introduction. With the options for sub-ambient cooling, cryogenic trapping and automated liner exchange, OPTIC-4 is the world's most versatile inlet for Gas Chromatography.




Why OPTIC-4 Inlet?

- Works from cryogenic temperatures (-180 °C) to very high temperatures (600 °C)
- Heats up quickly with the ramp rate ranging from 0.1 °C/sec to 60 °C/sec
- Cools quickly with any of the three available cooling options - less than 100 sec from 600 °C down to 40 °C
- Has uniform temperature profile
- Allows up to nine temperature and flow steps to be programmed
- Accommodates injections of a wide range of sample volumes
- Shows no discrimination up to C100
- Inert, shows minimal decomposition or degradation of labile compounds
- Offers full electronic pressure/flow control including septum purge flow
- Supports direct (in-inlet) sampling techniques like pyrolysis, thermochemolysis and thermal desorption (single and multi-shot)
- Equipped with special solvent sensor in the split line for automated solvent venting
- Offers cryotrap option with quick cooling and heating ramp rates (up to 60 °C/sec)
- Offers automated liner exchange option
- Provides multiple cooling options for inlet and cryogenic trap (compressed air, liquid CO2 and liquid N2)
- Compatible with most makes of GC's and autosamplers
- Compatible with 11 mm septa, Merlin Microseal™ and plug type septa
- Compatible with SilTite™ metal ferrules
- Offers interface solutions for LC-GC, LCxGC or SEC-Py-GC/MS

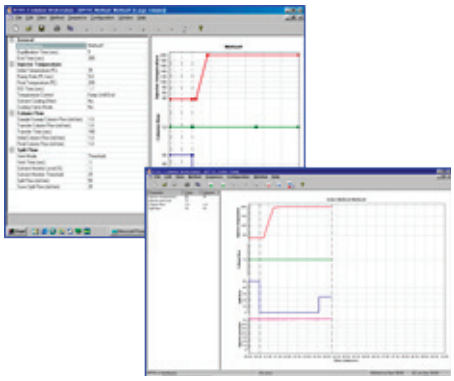
Large Volume Injections saves time and improves performance!

By increasing injection volume from 1-2 µL to 100 µL or higher with the OPTIC inlet, analytical sensitivity is greatly enhanced for analytes with low concentrations. In addition, tedious sample pretreatment procedures may be simplified by eliminating or shortening the solvent evaporation step, which is not only time-consuming but also subject to chemical loss. Alternatively, a lesser amount of sample can be collected for predetermined detection limits.

Liners for
Large Volume Injections

Control software

Evolution Workstation software offers state of the art OPTIC inlet control in a user-friendly way. Based on years of experience it extends OPTIC-4 features and optimizes the analytical output.



- Standard supplied with every OPTIC-4
- Complete status information at any moment during run or standby state
- Real-time graphical run-time parameters display
- Multiple columns configuration can be set
- Easy, on-click analytical method definition and development
- Automatic generation of a method optimisation sequence
- Possibility to save the run-time data for every injection
- Direct control of the instrument in standby state
- Up to 9 steps for both pressure or flow programming
- System and method log files
- Password protection with two access levels
- Build in column flow/pressure calculator
- Modulator control for GCxGC
- Deans' Switch control
- Windows 7, 8, 10 compatibility
- Integration into Master Lab, Chemstation, MassHunter, Clarity, Analyst, EZChrom and Xcalibur by the Chronos master software
- Integration into Shimadzu GCMS Solution (contact Shimadzu)
- Free updates

Options

Automated Liner Exchanger (LINEX)

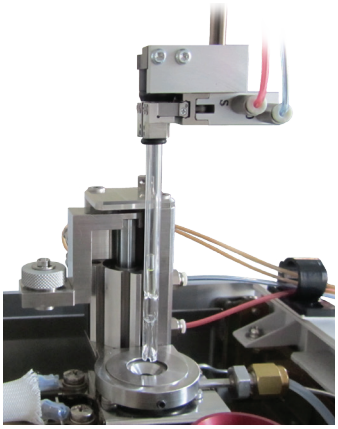
- LINEX-DMI option. Dirty Matrix Introduction by placing the sample in a micro-vial, inserted into an inlet liner – minimal sample preparation is required.
- LINEX-TD option enables direct (in-injector) Thermal Desorption of samples.
- Automated Capping-De-Capping (CDC) Station allows using LINEX with capped (sealed from both sides) liners.

Inlet with ¼ inch x 3½ inch liners / TD tubes

- Special for Thermal Desorption
- Temperature heating ramp rates: 0.1 – 30 °C/sec

Flow technology

- OPTIC-4 has a backflush option, contains an extra flow or pressure module
- OPTIC-4 has GCxGC options



LINEX, Automatic liner exchanger

Sub-ambient Inlet Cooling

- OPTIC-4 inlet can be cooled down to-50 °C if using CO2 cooling option
- OPTIC-4 inlet can be cooled down to-180 °C if using LN2 cooling option

CryoTrap

Cryogenic cold trapping is frequently used for narrowing the chromatographic band and improving the detection limit. The cryotrap uses LN2 or CO2 for cooling, due to our low thermal mass the cooling is really fast. The CryoFocus has direct heating of the cooling chamber, resulting in very fast heating of the trap.
After trapping the analytes must be released from the cryotrap using a highly accurate and very fast heating ensuring that they are introduced onto the column in a very sharp band. With a fast heating cryo-trap better detection limit and better resolution can been seen on the detector.

Specifications

General

- Dimensions: 34 cm x 14 cm x 34 cm (h x w x d), weight: 6.7 kg (controller)
- Ambient operating temperature range: 18 – 40 °C, ambient operating humidity: 40 – 70 %
- Mains power: 100 - 240 VAC, 50-60 Hz
- Typical power consumption: 150 W, maximum power consumption: 450 W

Inlet

- Full electronic pressure/flow control
- Maximum operating temperature: up to 600 °C at a GC oven temperature of 35 °C
- Cooling: air (down to 35 °C), LCO2 (down to -50 °C), LN2 (down to -180 °C)
- Temperature ramp rates: 0.1 - 60 °C/sec
- Up to nine temperature program ramps including negative

EFC

- Full electronic control of column, split and septum purge flows
- Pressure range: 7 -700 kPa
- Total flow range: 5 - 500 ml/min He (main channel), 1 - 100 ml/min He (aux. channel)
- Pressure sensor: accuracy : ± 1 % full scale, repeatability: ± 0.2 % full scale
- Flow sensors: accuracy : ± 1 % full scale, repeatability: ± 0.2 % of full scale
- He, N2 or H2 as carrier gas at a maximum pressure of 700 kPa
- Solvent sensor in the split line

Interfaces

- LAN and USB
- Four auxiliary relay outputs (30 V/500 mA max.)
- Remote start/stop to GC and autosampler

Software

- Method and sequence definition and development
- Real-time system status display
- Automatically generated optimization sequences
- Direct control of the instrument in Standby mode
- System run log file
- Password protection with two access levels

Cryogenic Trap Option

- Operating temperature range : -150 °C to +350 °C
- Temperature ramp rates: 1 - 60 °C/sec
- Cooling: LN2 from pressurized (150 -200 kPa) vessel