

# NovaPID

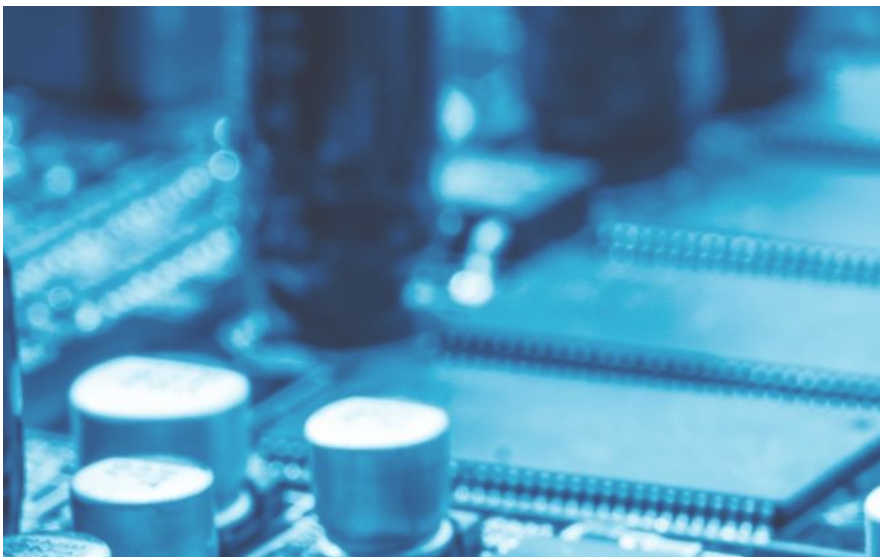
An Advanced Photoionization Detector For  
Gas Chromatography



March, 2019

Copyright © 2018 Nanova Environmental, Inc.

The content of this document is subject to change without notice.



## NovaPID

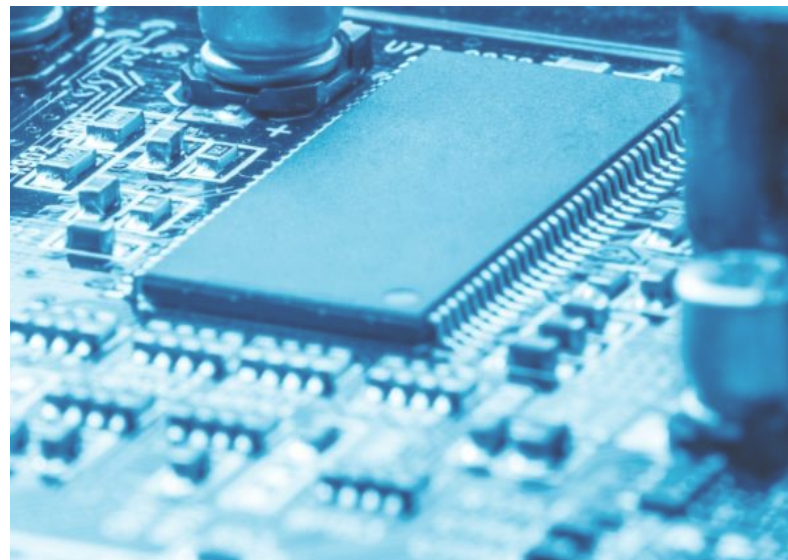
### An advanced photoionization detector for gas chromatography

The NovaPID is a revolutionary photoionization detector designed especially for use in gas chromatography. Users can easily install or uninstall the PID in most gas chromatograph with the built-in connection column. The adoption of micro technology and enhanced EMI shielding dramatically improved its sensitivity. The NovaPID is also highly flexible to be customized, users are welcome to choose the suitable connection column and the UV lamp.

## UNLIMITED APPLICATION

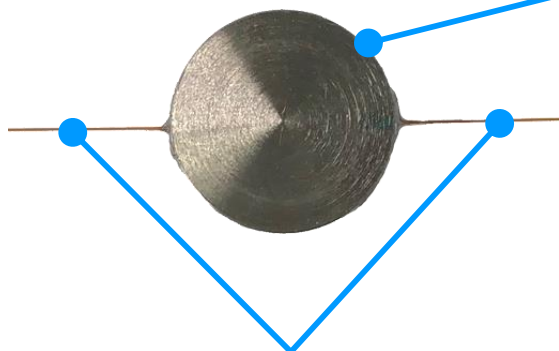
The NovaPID is ideal for various applications no matter in a benchtop GC or a portable GC.

- Environment air monitoring
- Petro chemistry plants
- Oil refinery plants
- Organic product manufacturing
- Food processing & manufacturing
- Chemical production monitoring
- Pharmaceutical analysis
- Warehouse monitoring
- Hygiene & safety monitoring
- Accident research
- Military research & inspection
- Academic research



# USER-FRIENDLY DESIGN

## Gas Flow Unit



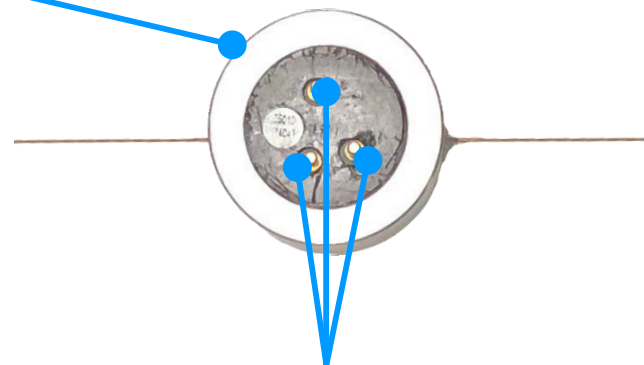
**Capillary Column**

The PID can be easily connected to a GC using a capillary connector by the attached capillary columns.. They are not direction sensitive. The gases can enter the NovaPID ionization chamber from either end, while the other end goes to vent.

## Metal Chassis

The ionization chamber is enclosed in a metal chassis which well protects the PID from EM and RF interferences, ensuring a high sensitivity of the PID.

## Signal Processing Unit

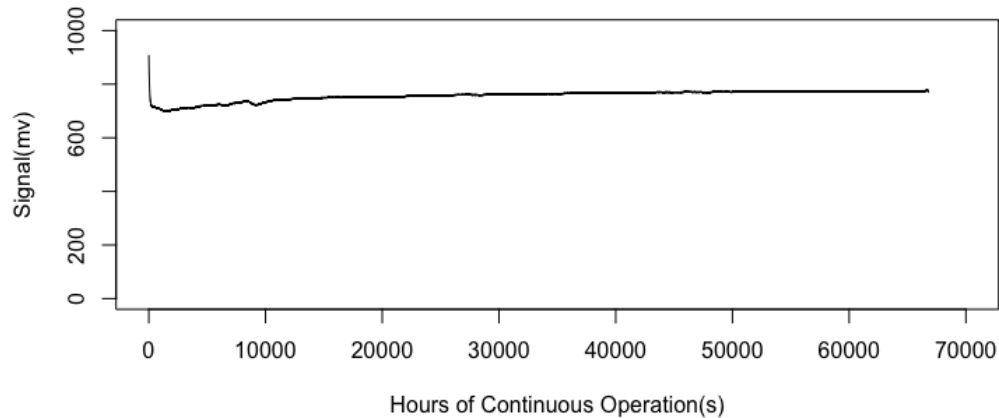


**Connection Pins**

The pins at the bottom of the PID are to be connected to circuits for signal collection, power supply and ground protection, separately.

# STABILITY

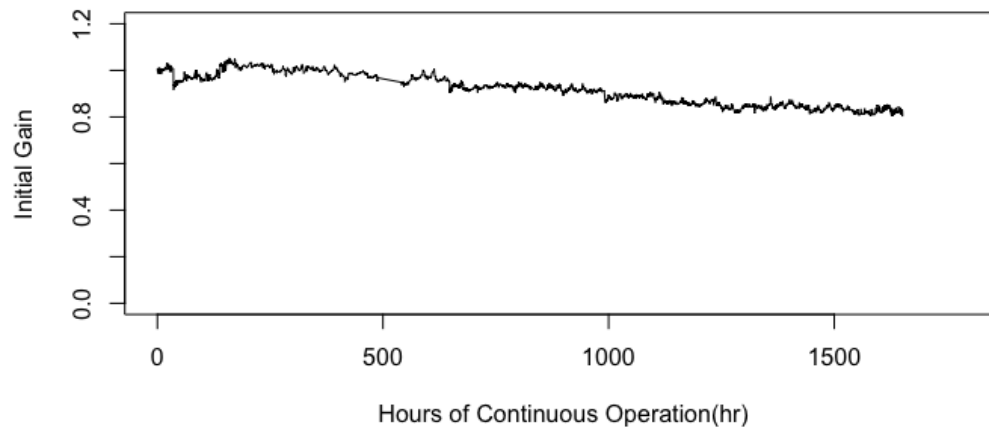
### Continuous Monitoring of 5ppm Isobutylene Using NovaPID - 16 Hours



The sample was delivered from a pressurized cylinder containing 5ppm calibration gas (Isobutylene in air), and the data from NovaPID was collected in a laboratory setting.

The PID stabilized after two minutes, and the signal was consistent around 700mV for 16 hours.

### Continuous Monitoring of Toluene Using NovaTest P300 - 1800 Hours

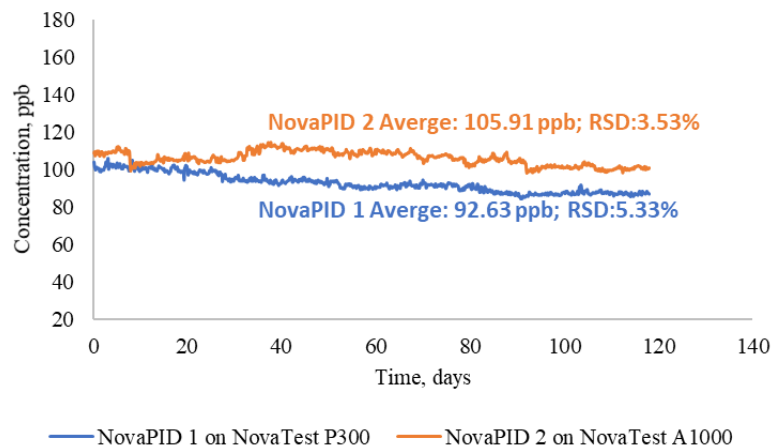


NovaPID was installed and further tested on NovaTest P300 compact GC. 100ppb Toluene sample was injected into P300 for PID stability test.

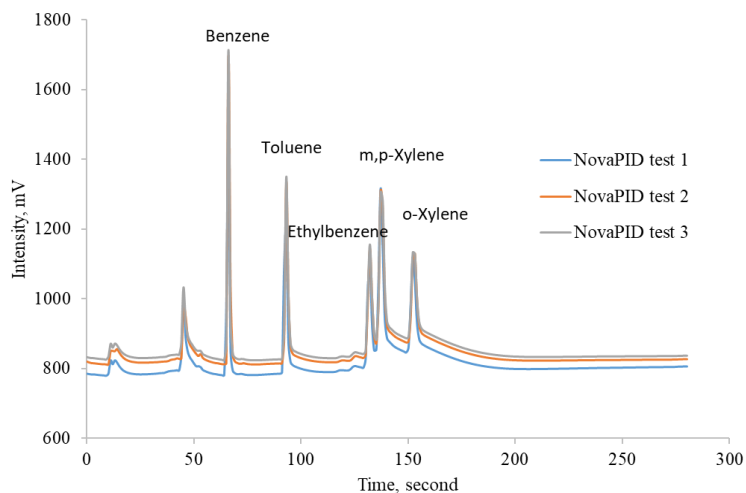
The signal maintains stability within a 20% margin after 1800 hours.

2 NovaPIDs were installed on NovaTest P300 compact GC and NovaTest A1000 GC air online monitoring system for continuous testing, separately. Both tests were conducted under same experimental settings and a sample of 100 ppb toluene were used. The tests were run continuously for 117 days.

The gradual signal decreases of the PIDs were less than 30% after 117 days of continuous tests.



## REPRODUCIBILITY



A NovaPID was installed on the NovaTest P100 for repeated tests. A BTEX sample at a concentration of 1 ppm was used for the test. The sampling time was 0.2 min while the carrier gas flow rate was 2.2 ml/min.

The results of the 3 repeated tests were merged into one chart as shown in the left figure. Great repeatability is indicated and the peak shapes of the 3 tests are nearly identical.

The full width at half maximum (FWHM) of benzene, toluene, ethylbenzene, m,p-xylene, and o-xylene was 1.5, 2.0, 2.3, 2.5 and 2.5 s, separately.

# COMPATITIVE PERFORMANCE

The performance of the NovaPID was compared to that of a commercial FID by installing both detectors onto a same GC system and analyzing same compounds.

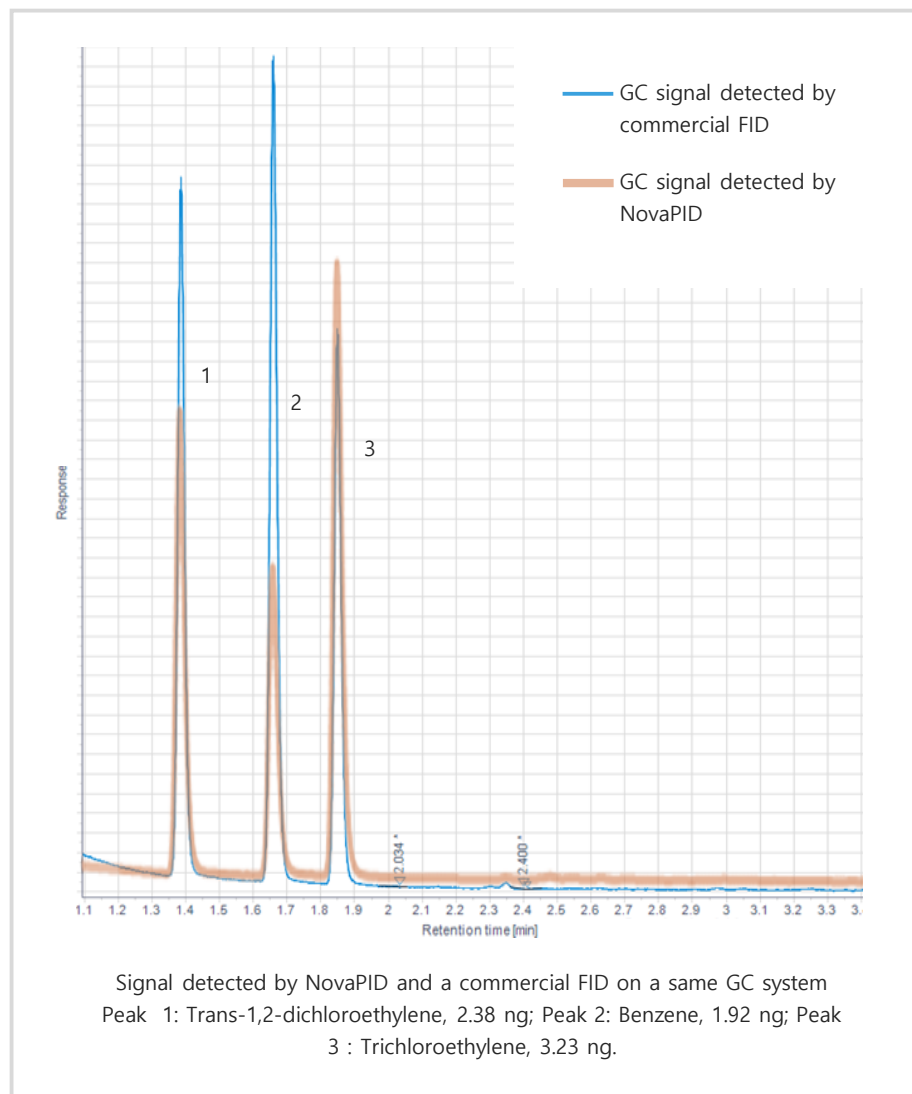
GC system: NovaTest P100 compact GC;

Column: RTX-Vms, 0.25mm x 1.4  $\mu$ m df;

Flow rate at the end of the detector: 1.5 mL/min;

Programming temperature: 40 °C for 1 min, then heated to 150 °C with ramp speed 50 °C/min, kept 150 °C for 1 min.

The results of both detectors were merged in the one chart. The NovaPID has competitive performance under the same experimental condition, i.e., the full width at half maximum (FWHM) of the peaks are almost the same, both detectors well detected the chemicals at several ng.



## SPECIFICATIONS

Weight	54 g
Detection Range	10 pg – 100 ng
Detectable Compounds	Organic or inorganic chemicals under gaseous condition with ionization potential of less than 10.6 eV (theoretical)
Dynamic Range	10 <sup>5</sup>
Operating Temp.	0 °C to 60 °C
Lamp Current	24 mA – 36 mA
Supply Voltage	3.3 V – 5.5 V positive power voltage
Output Signal	0 – 2.9 V
Power Consumption	80 mW ~ 200 mW depending on supply voltage
Connection Type	Capillary column
UV Lamp	10.6 eV
Lamp Life	> 6000 hrs



**For more information about the device, please visit us at**

[www.nanovaenv.com](http://www.nanovaenv.com)

Copyright © 2018 Nanova Environmental, Inc.

The content of this document is subject to change without notice in future editions.



Nanova  
Environmental

**Nanova Environmental, Inc.**

3338 Brown Station Rd, Columbia, MO 65202, United States

[www.nanovaenv.com](http://www.nanovaenv.com)

[info@nanovenv.com](mailto:info@nanovenv.com)

+1 (573)-476-6355