# THE MOST COMPACT HELIUM ANALYSIS SOLUTION

## KA CONFIG 2 –PERMANENT GAS ANALYSIS IN HELIUM


## SOLUTION FEATURES

- **Performance** :
  - Down to < 15 ppb LOD based on Epd* technology (< 5 ppb with eLOD)
  - Linearity: < 1%
- **Ultra compact**
- **Robustness**
  - **µInProve*** GC valve
  - **µSense*** GC platform
  - Solid state Epd* sensor
- **Optional automated multi-stream analysis**
  - Analyse multiple streams sequentially
  - High sample integrity with iS$^4$
- **Full data analysis and reporting software**

## KEY SPECIFICATIONS

- Impurities: $H_2$. $O_2$. $N_2$, $CH_4$, CO, $CO_2$
- Measurement range: 10 ppm to 100 ppm
- Matrix: Helium
- LDL: < 15 ppb

## TYPICAL APPLICATIONS

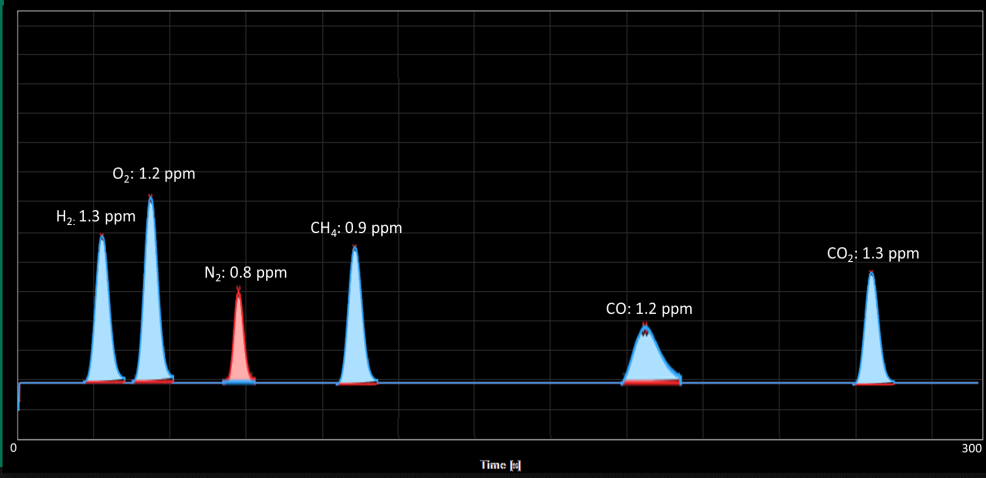
- Bottling centre
- Filling station
- Quality control

This helium quality analysis solution is the most compact on the market. Thanks to ASDevices high quality components, it delivers unsurpassed performance and all the features required for industrial gas manufacturers or any other application that needs argon quality analysis .

With the Epd* sensing technology which can be used with helium carrier gas, only simple chromatographic methods are used which improves design robustness and overall operational cost.

*Patent pending

## CHROMATOGRAM EXAMPLE: IMPURITIES IN ARGON



## APPLICATION PERFORMANCE HIGHLIGHTS

In the field of chromatography, most GC integrators use LOD to define the sensitivity of the GC system. The LOD is typically calculated using 3 times the signal to noise (SNR) using a peak of relatively high intensity. This is a good starting point to compare detector performance but it ignores many factors associated with the chromatographic method itself.

We have over 30 years of experience in the measurement of ultra-trace analytes. We know very well that just using a LOD calculation to measure the performance is not robust. At trace level, you may lose the impurities inside the column. So the real limit of detection can be higher. Also, baseline shape as well as matrix interference, which causes drift, dramatically impact the performance.

For that reason, we use both LOD and MDL. The MDL is the **method detection limit**. Instead of purely looking at the signal intensity vs the detector noise, this method involves injecting consecutively a sample with a known precise concentration close to the expected limit of detection. As a rule of thumb, this test is typically done 3 times above the expected limit of detection. This test is more robust when compare to standard LOD, because it takes into account all factors.

Here, we are providing both, the LOD and MDL. The tests were done using our iGCS dilution system. So always be careful when looking at LOD. Not everybody use the same definition.

### LIMIT OF DETECTION (LOD) AND METHOD LIMIT OF DETECTION (MDL)

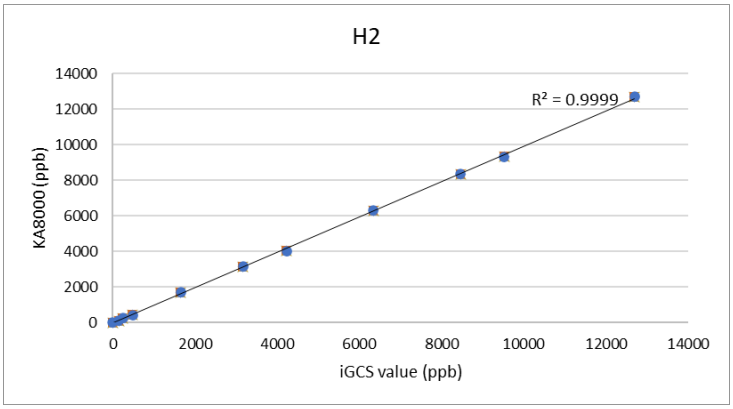
| | Analysis # | H2 [PPB] | O2 [PPB] | N2 [PPB] | CH4 [PPB] | CO [PPB] | CO2 [PPB] | Ar [PPB] |
|---|---|---|---|---|---|---|---|---|
| | 1 | 56.0 | 32.0 | 58.0 | 37.0 | 46.0 | 44.0 | 49.0 |
| | 2 | 63.0 | 35.0 | 68.0 | 35.0 | 74.0 | 64.0 | 45.0 |
| | 3 | 50.0 | 23.0 | 47.0 | 40.0 | 47.0 | 41.0 | 51.0 |
| | 4 | 63.0 | 40.0 | 59.0 | 52.0 | 44.0 | 50.0 | 48.0 |
| | 5 | 69.0 | 37.0 | 70.0 | 40.0 | 47.0 | 56.0 | 44.0 |
| | 6 | 62.0 | 42.0 | 50.0 | 57.0 | 70.0 | 32.0 | 52.0 |
| | 7 | 66.0 | 30.0 | 51.0 | 41.0 | 60.0 | 40.0 | 46.0 |
| | 8 | 63.0 | 40.0 | 68.0 | 40.0 | 47.0 | 44.0 | 44.0 |
| | 9 | 62.0 | 42.0 | 59.0 | 52.0 | 60.0 | 50.0 | 52.0 |
| | 10 | 69.0 | 38.0 | 51.0 | 55.0 | 44.0 | 41.0 | 49.0 |
| Without eLOD | σ | 5.7 | 6.1 | 8.4 | 8.1 | 11.2 | 9.1 | 3.1 |
| | MDL | 17.2 | 18.2 | 25.1 | 24.4 | 33.7 | 27.3 | 9.4 |
| | LOD | 5 | 6 | 3 | 8 | 10 | 9 | 10 |
| With eLOD | σ | 0.8 | 0.3 | 0.2 | 1.5 | 2.2 | 1.1 | 2.2 |
| | MDL | 2.3 | 1.0 | 0.5 | 4.6 | 6.7 | 3.4 | 6.7 |
| | LOD | 0.8 | 0.4 | 0.2 | 1.6 | 2.3 | 1.5 | 2.3 |

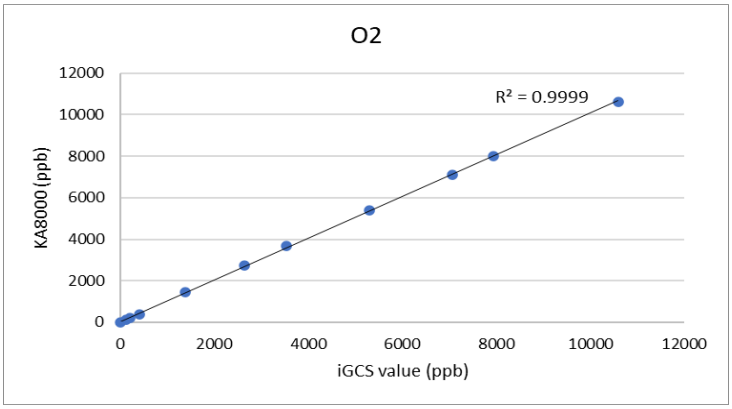
### LINEARITY DATA

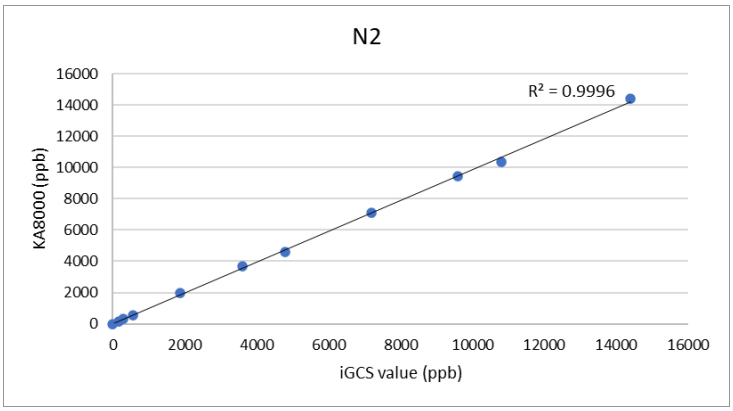
| H2 [PPB] | | O2 [PPB] | | N2 [PPB] | | CH4 [PPB] | | CO [PPB] | | CO2 [PPB] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Reference | Reading | Reference | Reading | Reference | Reading | Reference | Reading | Reference | Reading | Reference | Reading |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 151 | 121 | 126 | 145 | 171 | 122 | 162 | 175 | 157 | 124 | 135 | 153 |
| 249 | 249 | 207 | 223 | 282 | 307 | 268 | 266 | 260 | 275 | 223 | 219 |
| 488 | 443 | 407 | 388 | 553 | 519 | 526 | 505 | 511 | 500 | 438 | 434 |
| 1656 | 1718 | 1382 | 1443 | 1877 | 1954 | 1786 | 1934 | 1734 | 1711 | 1486 | 1571 |
| 3174 | 3152 | 2649 | 2755 | 3599 | 3700 | 3425 | 3640 | 3324 | 3252 | 2849 | 2697 |
| 4233 | 4044 | 3533 | 3665 | 4800 | 4603 | 4566 | 4571 | 4433 | 4340 | 3800 | 3515 |
| 6350 | 6301 | 5300 | 5402 | 7200 | 7122 | 6850 | 6827 | 6650 | 6592 | 5700 | 5589 |
| 8466 | 8360 | 7066 | 7117 | 9600 | 9470 | 9133 | 9227 | 8867 | 8648 | 7600 | 7494 |
| 9525 | 9328 | 7950 | 7984 | 10800 | 10369 | 10275 | 10389 | 9975 | 9783 | 8550 | 8413 |
| 12700 | 12700 | 10600 | 10600 | 14400 | 14400 | 13700 | 13700 | 13300 | 13300 | 11400 | 11400 |

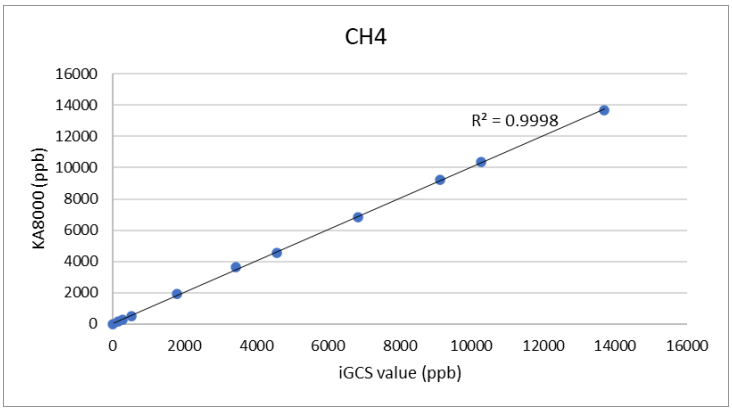
 

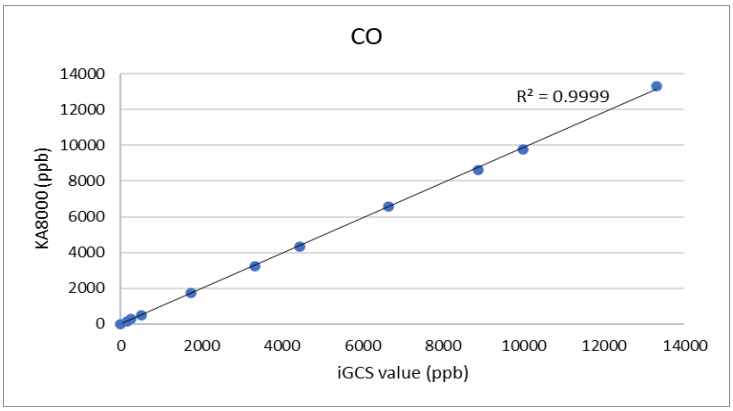
## LINEARITY CHART EXAMPLES

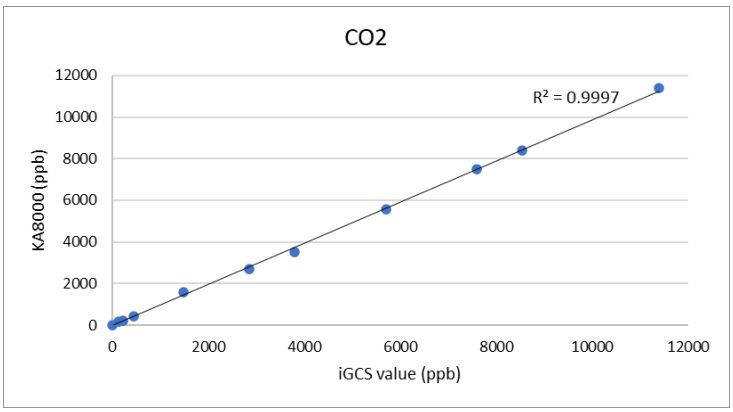


# µSense™ COMPACT PANELMOUNT OR PORTABLE GC PLATFORM


FOR GC INTEGRATORS THAT NEED A COMPACT GC SOLUTION, THIS ROBUST AND EASY TO CONFIGURE OEM GC IS THE PERFECT SOLUTION. IT CAN BE CUSTOMISED WITH DIFFERENT TYPES OF DETECTORS, VALVES, ELECTRONICS MODULES, ETC..

## FEATURES

- Quick and easy configuration, no mechanical work required
- Up to 2 isothermal zones for columns
- Up to 3 chromatographic GC valve
- Up to 3 Electronic Pressure Controllers
- 1 gas detector : Epd**, ePID*, eDID**, TCD, FID, others
- Designed for panel mount. Optional 19'' rack mounting plate available.
- Based on ASDSense Embedded robust GC software
- I/O modules: Isolated 4-20 mA outputs, Relay board, RS-232, Ethernet, Modbus

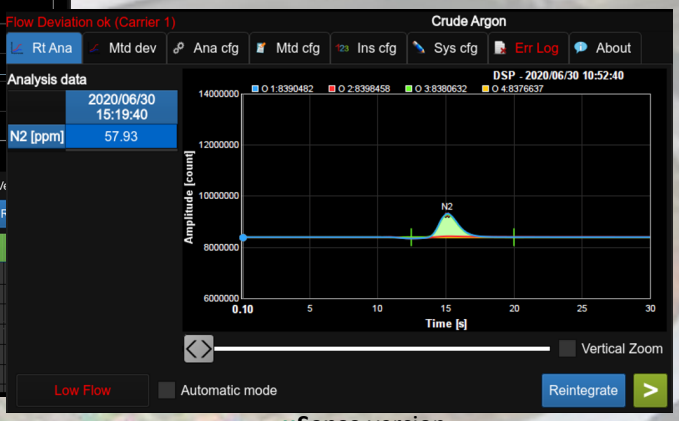

  

# ASDSense

## PROCESS GC SOFTWARE

### EASE OF USE, ROBUSTNESS, INNOVATIVE


**iMov** and **GCSense** version

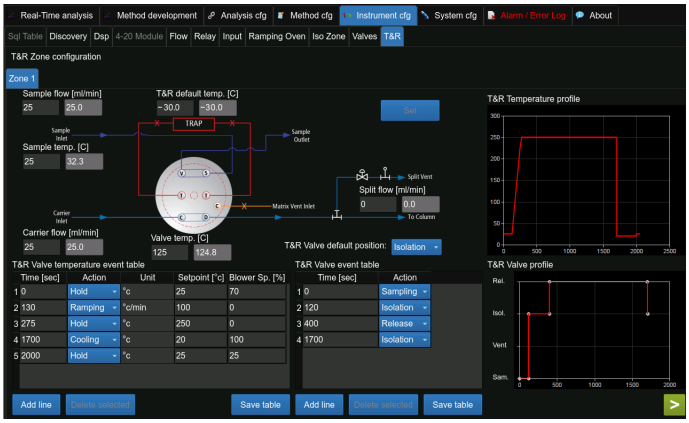



**µSense** version

THE ASDSense IS A POWERFUL GC SOFTWARE THAT RUNS ON ALL OUR OEM GC PLATFORM. IT HAS BEEN DESIGNED TO BE ROBUST FOR 24/7 PROCESS USE WITH LABORATORY LIKE DATA ANALYSIS FEATURES. ITS INTUITIVE AND FEATURE RICH SUCH AS MULTIPLE INNOVATIVE ADVANCED SIGNAL PROCESSING ALGORITHM, MAKES THE MOST POWERFUL AND VERSATILE PROCESS GC SOFTWARE.

## FEATURES

- **Based on Industrial Real-Time Operating System**
- **Designed based on software redundancy for reliability**
- **Advanced signal processing**
  - ELOD (Enhanced LOD) algorithm
  - Peak remodeling
  - Baseline cancellation
- **Multi-methods capability with automatic sampling system synchronisation**
- **Data analysis**
  - Data and chromatogram review
  - Statistical analysis
- **Multiple calibration models available**
  - Linear and quadratic
  - Multi-points calibration
- **Password protected user access (3 levels)**
- **IIoT Ready**
- **Remote control**
- **Support MQTT IIoT protocol for M2M communication**
- **Digital relays, 4-20 mA, RS-232, Ethernet, Modbus**



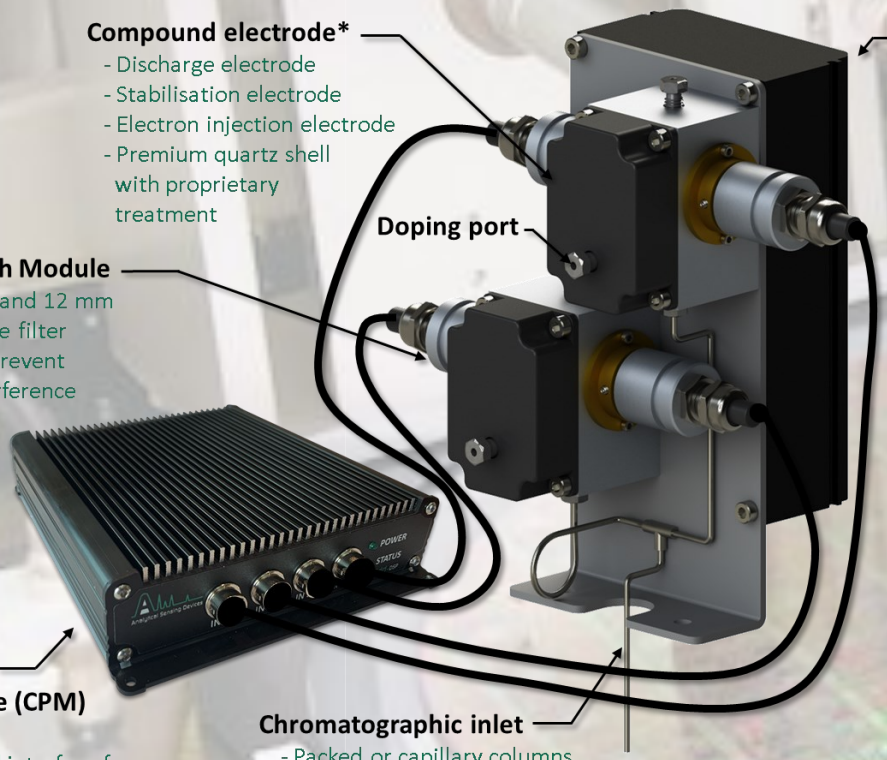

Trap and Release menu


Flow diagnostic menu

# SePdd NG™ SCALABLE ENHANCED PLASMA DISCHARGE DETECTOR

## A NEW SENSING TECHNOLOGY AND TOOLSET FOR CHROMATOGRAPHY




THE SEPDD IS A SCALABLE EPD* BASED DETECTOR ARCHITECTURE. IT IS NOT JUST A GC DETECTOR, IT'S A COMPLETE SYSTEM. AVAILABLE IN 3 CONFIGURATIONS (DUO, TWIN AND QUATTRO), OPTIMISE AND SIMPLIFY YOUR CHROMATOGRAPHY LIKE YOU NEVER DID BEFORE. WITH THE CPM PLATFORM, TURN THE SEPDD INTO A FULL FEATURE COST-EFFECTIVE GC SOLUTION.

## FEATURES

- **Up to 2 detectors for the price of one**
  - **SePdd** available in Duo, Quattro and Twin versions
- **Epd technology***
  - Discharge cell available in metal or ceramic
  - Unique compound electrode* that can withstand high temperature, high pressure and sub-atmospheric pressure
  - Plasma stabilisation and electron injection electrodes*
- **Optimised for packed, µPacked and Capillary columns**
- **Using configurable optical wavelength module**
- **Integrate it on any existing GC platform**
- **ppt to % measurement range**
- Alternative to DID, PDHID, ECD, FPD, PFPD, SCD, FID, TCD, Mass Spectrometer and former PED technologies
- Compatible with argon, helium, nitrogen, oxygen, $CO_2$ and hydrogen carrier

# µInProve™ PURGED LIP SEALING VALVE

## THE MOST RELIABLE AND DURABLE VALVE

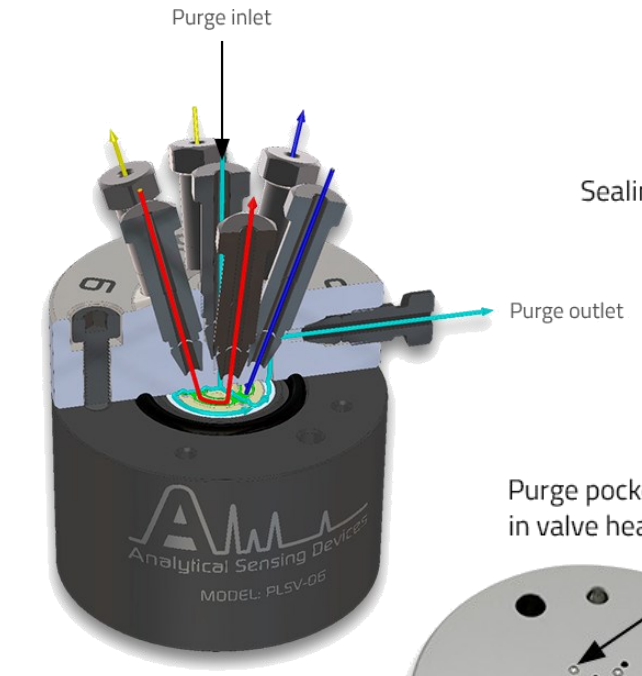
THE PLSV (PURGED LEAP SEALING VALVE) IS A DISRUPTIVE ANALYTICAL VALVE TECHNOLOGY THAT EXCEEDS THE LIFETIME OF A DIAPHRAGM VALVE AND HAS THE CONSTANT PRESSURE DROP AND THE SIMPLICITY OF A CONICAL ROTARY VALVE.

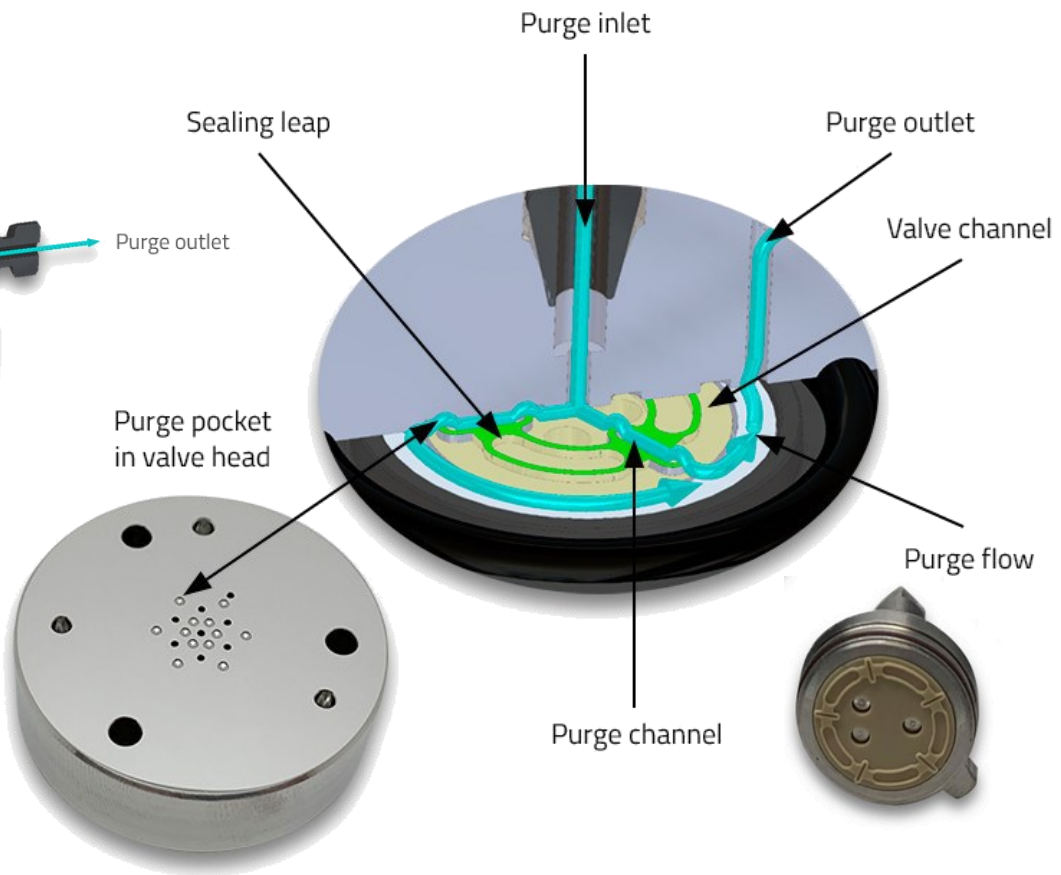
BY DESIGN, IT IS ALSO IMPOSSIBLE FOR THIS VALVE TO DEVELOP A CROSS PORT LEAK. THIS NEW TECHNOLOGY IS BASED ON A REDUCED SEALING SURFACE AREA OFFERED BY THE VALVE'S INSERT THAT REPLACES THE TRADITIONAL ROTOR AND AN INNOVATIVE PURGE SYSTEM.

THIS REVOLUTIONARY TECHNOLOGY HAS BEEN DESIGNED TO MEET OUR MOST ELEVATED STANDARDS THAT WE DEMAND FOR.

## PLSV TECHNOLOGY FEATURES

- **No leak** - Inboard/outboard and cross port leaks are impossible due to unique purge technology[patent pending]
- **Long life time** - Over 1 million actuations in UHP applications due to unique reduced surface area insert technology[patent pending]
- **Constant pressure drop** - No change in pressure/flow drop characteristic across temperature range and life span
- **No dead volume** - Internal flow path contains no unswept volume
- **Small footprint** - With the use of our electrical or pneumatic compact actuator, install multiple valves in a constrained space, replacing diaphragm valve in existing



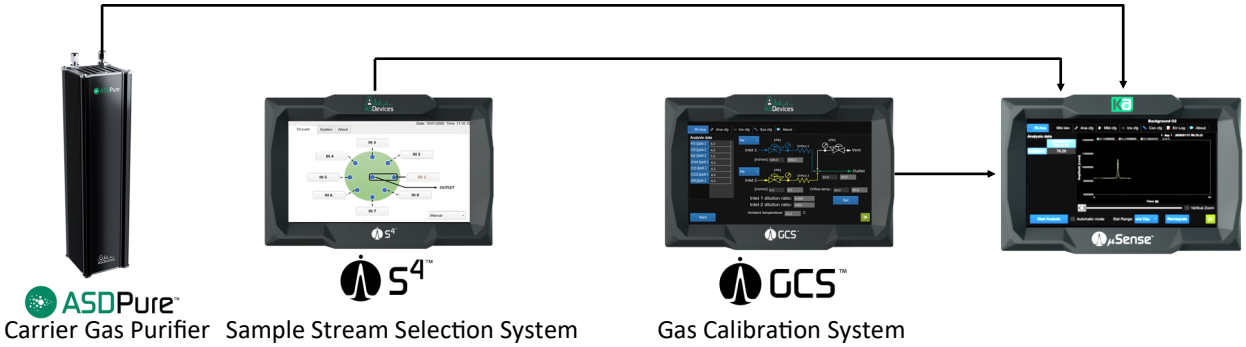

  

| SPECIFICATIONS | |
|---|---|
| Analytical range [ppm] | 0-10 or 0-100 |
| Limit of detection (3σ) [ppm] | 0.015 ppm or 0.05% range whichever is larger |
| Enhanced Limit of detection (eLOD) [ppm] | 0.005 ppm or 0.02% range whichever is larger |
| Linearity [%] | < 1% |
| Repeatability (σ) [%] | < 1% full scale range |
| Sensing technology | Enhanced Plasma Detector (Epd) |
| Chromatographic valve | uInprove PLSV |
| Carrier gas inlet pressure requirement [PSIG] | 90 |
| Sample gas inlet pressure requirement [PSIG] | 5 to 15 |
| Carrier gas type | Purified helium 5N |
| Dimension (H x W X D) [mm] | 132 x 202 x 610<br>The instrument is provided with a 19'' rackmount mounting plate |
| Communication | RS-232, Ethernet, 4-20 mA (Optional) |

| ORDERING MODEL NUMBER | IMPURITIES | MATRIX(ES) |
|---|---|---|
| KA5000-CFG9-PACK1-AAA | $H_2$, $O_2$, $N_2$, $CH_4$, CO | Helium |
| KA5000-CFG9-PACK2-AAA | $H_2$, $O_2$, $N_2$, $CH_4$, CO, $CO_2$ | Helium |
| KA5000-CFG9-PACK3-AAA | $CO_2$ | Helium |

***NOTE:*** *AAA IN THE MODEL NUMBER REPRESENTS THE RANGE. USE 010 FOR 10 PPM AND 100 FOR 100 PPM*

## CHROMATOGRAPH WITH RECOMMENDED ACCESSORIES




Carrier Gas Purifier  Sample Stream Selection System  Gas Calibration System