

# High Purity Analyser

PG410 | PG425



- Low level impurities in bulk gases
- Limit of detection: < 10 ppb
- ASTM D2504, D2505
- Diaphragm valves with internal purge option

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## High Purity Analyser

Bulk quantity industrial gases are frequently used in the petrochemical application field. Analysis of impurities is of prime importance for product quality. The GAS High Purity Analyser (HPA) is the standard tool for defining the exact specification of bulk gases in accordance with ASTM D2504, D2505.

### Instrumentation

The trace gas analyser is available on Thermo Trace GC 1600 or CompactGC<sup>4.0</sup>, equipped with a Pulsed Discharge Detector (PDD/ PDHID), one purged diaphragm valve, and a separation column suitable for the required components.

For handling the bulk component, optional features are available, including backflush, heart-cut, and trapping options. Please contact us for further information.

### Specification

- Thermo Trace GC1600 or CompactGC<sup>4.0</sup> with one diaphragm gas switching valve and Pulsed Discharge Detector (PDD)
- one capillary or packed column
- Chromeleon chromatography data system
- Runtime: depending on required components
- Minimum detectability: see table
- Repeatability: < 1 %



Figure 1 High Purity Analyser

### Results

Figure 2 shows an example chromatogram; figure 3 displays the limit of detection ( $3\sigma/n$ ), while figure 4 reports repeatability.

|                 |          |
|-----------------|----------|
| H <sub>2</sub>  | < 20 ppb |
| O <sub>2</sub>  | < 10 ppb |
| N <sub>2</sub>  | < 10 ppb |
| CH <sub>4</sub> | < 10 ppb |
| CO              | < 20 ppb |
| CO <sub>2</sub> | < 10 ppb |

Figure 3 Limit of detection, based on  $3\sigma/n$  for each component.

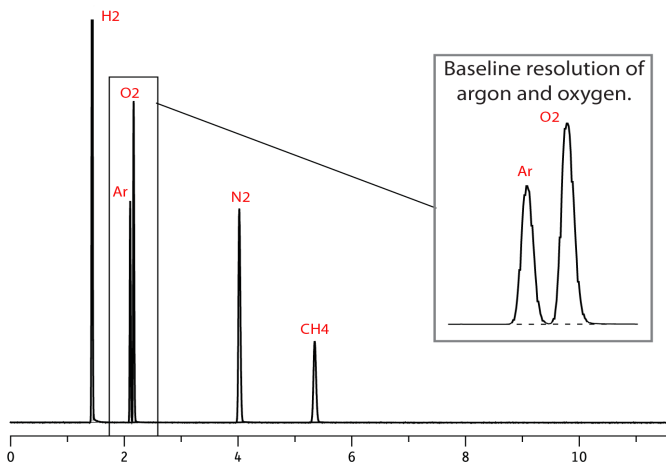


Figure 2 Example chromatogram HPA, including argon/oxygen separation

| Inj. No. | Injection Name Selected Peak: | Area pA*min           |              |          |          |                 |
|----------|-------------------------------|-----------------------|--------------|----------|----------|-----------------|
|          |                               | BackDetector Hydrogen | Oxygen/Argon | Nitrogen | Methane  | Carbon monoxide |
| 76       | HP mix repeatability          | 19.1419               | 128.0336     | 52.5880  | 137.3778 | 66.9799         |
| 77       | HP mix repeatability          | 19.0546               | 127.7394     | 52.2930  | 137.8404 | 66.8278         |
| 78       | HP mix repeatability          | 19.1606               | 127.8858     | 52.2376  | 138.1658 | 66.8532         |
| 79       | HP mix repeatability          | 19.2118               | 128.1375     | 52.3762  | 138.6659 | 67.4800         |
| 80       | HP mix repeatability          | 19.2232               | 128.5649     | 52.1210  | 138.9492 | 67.4995         |
| 81       | HP mix repeatability          | 19.2887               | 128.2764     | 52.2102  | 138.5774 | 67.0324         |
| 82       | HP mix repeatability          | 19.2745               | 128.1268     | 52.3552  | 139.0833 | 67.7506         |
| 83       | HP mix repeatability          | 19.3573               | 128.4626     | 52.1678  | 138.3944 | 67.1328         |
| 84       | HP mix repeatability          | 19.3072               | 128.4414     | 52.3882  | 138.6392 | 66.7665         |
| 85       | HP mix repeatability          | 19.2289               | 128.3447     | 52.2726  | 138.4434 | 67.1574         |
|          | Maximum                       | 19.3573               | 128.5649     | 52.5880  | 139.0833 | 67.7506         |
|          | Average                       | 19.2249               | 128.2013     | 52.3010  | 138.4137 | 67.1480         |
|          | Minimum                       | 19.0546               | 127.7394     | 52.1210  | 137.3778 | 66.7665         |
|          | Standard Deviation            | 0.0889                | 0.2656       | 0.1341   | 0.5100   | 0.3289          |
|          | Relative Standard Deviation   | 0.46%                 | 0.21%        | 0.26%    | 0.37%    | 0.49%           |

Figure 4 Repeatability

Ordering information PG41X - ABCDE HPA on Trace GC 1600  
PG425 - ABCDE HPA on CompactGC<sup>4.0</sup>

| code X | 0 | 1 | 2 | 3 |
|--------|---|---|---|---|
|--------|---|---|---|---|

For the selection of options ABCDE (e.g. valve type and passivation, pump and vacuum sampling, rotameter and sample connections, pressure and moisture sensors, hydrogen sensor for safety shut-off, power plug type and more), [see the options table in the order guide.](#)

## About GAS

Global Analyser Solutions provides GC & GC-MS solutions for Energy, Refinery, Chemical and Environmental markets. Our analysers address a broad spectrum of measuring requirements with high precision and reliability. Please reach out for more information on our website.

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