



## CO-CO<sub>2</sub> analyser

PG300 | 310



- CO, CH<sub>4</sub>, CO<sub>2</sub> in H<sub>2</sub>, permanent gases and hydrocarbons
- Robust analyser with reliable diaphragm valves
- UOP 603
- Limit of detection: <50 ppb

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## CO-CO<sub>2</sub> analyser

The GAS CO-CO<sub>2</sub> analyser for hydrocarbon and hydrogen samples is the customised solution for analysing CO, CH<sub>4</sub> and CO<sub>2</sub> in several gas matrices such as hydrogen, hydrocarbon streams and industrial gases. A typical application is the analysis of sub-ppm levels in ethylene or propylene. The analyser complies with UOP 603-13.

### Principle of operation

Figure 1 illustrates the principle of the CO-CO<sub>2</sub> analyser. The instrument includes a high-performance diaphragm valve for injection and back-flushing, two packed columns, a methaniser to convert CO and CO<sub>2</sub> into methane, and a Flame Ionisation Detector (FID). Column 1 (Hayesep) separates the components of interest from the bulk gas, which is effectively removed through back-flushing. Column 2 separates the components of interest, see figure 2. An optional second valve is available for heart-cutting high levels of methane.

### Specification

- Thermo Trace GC1600 with one diaphragm gas switching valve (rotary valves are optional), methaniser and Flame Ionisation Detector (FID)
- 2 packed columns
- Runtime 4.5 minutes
- Minimum detectability: 50 ppb
- Repeatability: < 1 %
- Optional: additional valve for heart-cutting of high levels of methane (>1%, see figure 2)

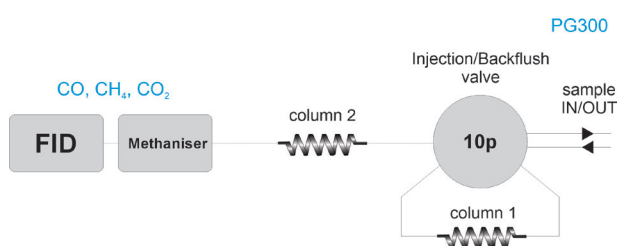


Figure 1 CO-CO<sub>2</sub> analyser.

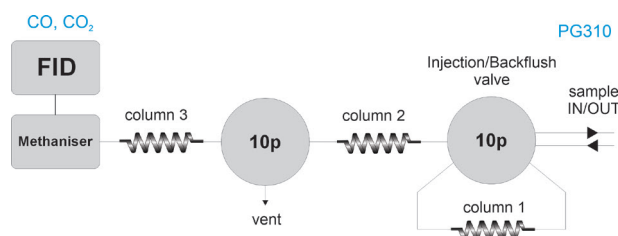


Figure 2 CO-CO<sub>2</sub> analyser with optional heart-cut valve.

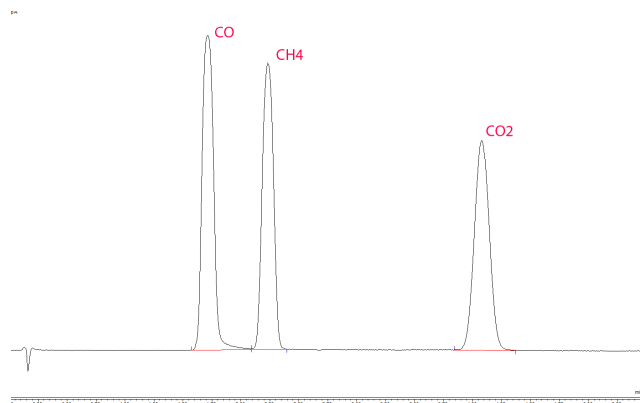


Figure 3 Chromatogram CO-CO<sub>2</sub> analyser. 5 ppm concentration level.

| Inj. No.                    | Injection Name<br>Selected Peak: | Type | Area<br>pA*min |       |       |
|-----------------------------|----------------------------------|------|----------------|-------|-------|
|                             |                                  |      | FID_Back<br>CO | CH4   | CO2   |
| 10                          | Reproducibility FID Back Unknown |      | 1.851          | 1.679 | 1.586 |
| 11                          | Reproducibility FID Back Unknown |      | 1.840          | 1.677 | 1.584 |
| 12                          | Reproducibility FID Back Unknown |      | 1.841          | 1.674 | 1.591 |
| 13                          | Reproducibility FID Back Unknown |      | 1.849          | 1.675 | 1.593 |
| 14                          | Reproducibility FID Back Unknown |      | 1.851          | 1.671 | 1.596 |
| 15                          | Reproducibility FID Back Unknown |      | 1.840          | 1.667 | 1.582 |
| 16                          | Reproducibility FID Back Unknown |      | 1.840          | 1.665 | 1.582 |
| 17                          | Reproducibility FID Back Unknown |      | 1.817          | 1.664 | 1.579 |
| 18                          | Reproducibility FID Back Unknown |      | 1.828          | 1.670 | 1.589 |
| 19                          | Reproducibility FID Bac Unknown  |      | 1.824          | 1.660 | 1.587 |
| Maximum                     |                                  |      | 1.851          | 1.679 | 1.596 |
| Average                     |                                  |      | 1.838          | 1.670 | 1.587 |
| Minimum                     |                                  |      | 1.817          | 1.660 | 1.579 |
| Standard Deviation          |                                  |      | 0.012          | 0.006 | 0.005 |
| Relative Standard Deviation |                                  |      | 0.64%          | 0.38% | 0.33% |

Figure 4 Repeatability CO-CO<sub>2</sub> analyser

### Results

Figure 3 & 4 show the results of the CO-CO<sub>2</sub> analyser. The minimum detectability is <50 ppb and the repeatability is <1% RSD.

|                      |                                                                |            |            |            |
|----------------------|----------------------------------------------------------------|------------|------------|------------|
| Ordering information | PG30X - ABCDE Standard CO-CO <sub>2</sub> analyser             |            |            |            |
|                      | PG31X - ABCDE CO-CO <sub>2</sub> analyser with heart-cut valve |            |            |            |
| code X               | 0                                                              | 1          | 2          | 3          |
| GC model, power      | 1600, 230V                                                     | 1610, 230V | 1600, 115V | 1610, 115V |

For selecting 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. [www.gassite.com](http://www.gassite.com)