

Natural Gas Analyser

ES140



- Robust and cost-effective
- High precision calorific value reporting
- Optional fourth analysis channel
- GPA 2286/2186 and ISO 6974-6.

Get ready for tomorrow's analytics

Natural Gas Analyser

The GAS ES140 Natural Gas Analyser complies with several international standards, including GPA 2286/2186 and ISO 6974-6.

Principle of operation

The GAS ES140 Natural Gas Analyser (Figure 1) measures all components of interest, including hydrocarbons C_1 - C_6 in only 7 minutes. Heavier hydrocarbons (up to C_{20}) can also be analysed but require a longer analysis time. Three independent channels are used for the analysis of (1) permanent gases, (2) hydrocarbons, and (3) hydrogen. Micropacked columns offer low carrier gas consumption and are mounted in the valve oven for isothermal operation, while capillary columns are used in the temperature-programmed oven for fast and detailed hydrocarbon analysis. Sulfinert tubing ensures optimal analysis of sulphur components. Diaphragm valves and InstantConnect detector technology result in a robust and flexible instrument with >99% uptime. The instrument offers high precision and repeatability for accurate calorific value reporting (Figure 4). The analyser can be expanded by a fourth channel, using FPD or PFPD for low level sulphur components.

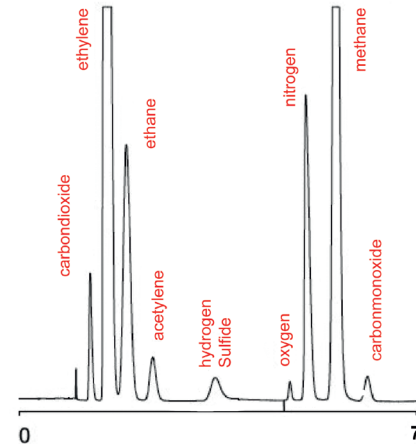


Figure 2 Chromatogram upper channel (TCD, permanent gases)

Instrument specification

- Thermo GC1600 with two InstantConnect TCDs, FID, XXL external valve oven, 5 diaphragm valves (rotary valves optional), 5 packed columns and 1 capillary column
- Chromeleon CDS data system with optional NGA calculation pack for calorific value calculation
- Runtime 7 minutes (up to C_6)
- Minimum detectability < 0.01 %

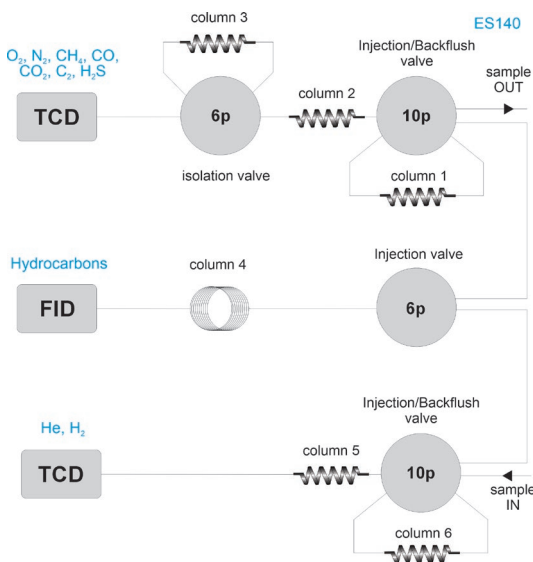


Figure 1 Diagram ES140 analyser

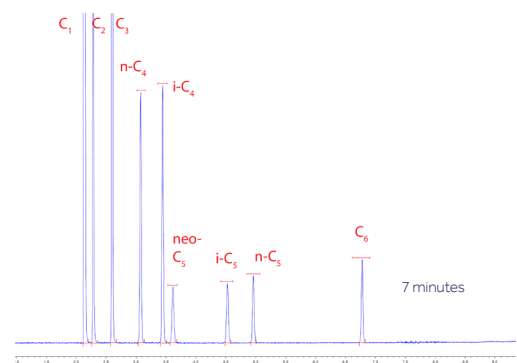


Figure 3 Chromatogram middle channel (FID, C_1 - C_6 hydrocarbons)

Natural gas calculations						
Instrument	Trace1300 NGA	Sequence name	Data G.A.S. NGA pack			
Instrument Method	Initial gas injection	Data Vault	ChromeleonLocal			
Processing Method	New Processing Method	Report Template	G.A.S. NGA Report Template			
Data File	NGA mix repro TCDs	Seq. Line	10			
Injection Date	08/Jul/2014	Peaks	9			
Injection Time	13:21					
Calculation Type	Total					
Physical property report for the dry gas - combustion at 15°C according to ISO 6976						
Metering at 0°C and 101.325kPa						
	Molar basis	Mass basis	Volumetric basis	Calories	Wobbe index	BTU
Sup. Calorific Value	897.41 kJ/mol	49.60 MJ/kg	40.13 MJ/m ³	9987.52 kcal/m ³	50.74 MJ/m ³	1077.55 BTU/ft ³
Inf. Calorific Value	809.73 kJ/mol	44.75 MJ/kg	36.23 MJ/m ³	8650.79 kcal/m ³	45.78 MJ/m ³	972.27 BTU/ft ³
Mean mol weight	18.093 g/mol					
Compression factor	0.9972					
Relative Density	0.6261					
Density	0.8094 kg/m ³					
Metering at 15°C and 101.325kPa						
	Molar basis	Mass basis	Volumetric basis	Calories	Wobbe Index	BTU
Sup. Calorific Value	897.41 kJ/mol	49.60 MJ/kg	38.04 MJ/m ³	9084.12 kcal/m ³	48.09 MJ/m ³	1020.97 BTU/ft ³
Inf. Calorific Value	809.73 kJ/mol	44.75 MJ/kg	34.32 MJ/m ³	8196.57 kcal/m ³	43.99 MJ/m ³	921.22 BTU/ft ³
Mean mol weight	18.093 g/mol					
Compression factor	0.9972					
Relative Density	0.6258					
Density	0.7669 kg/m ³					
Metering at 20°C and 101.325kPa						
	Molar basis	Mass basis	Volumetric basis	Calories	Wobbe index	BTU
Sup. Calorific Value	897.41 kJ/mol	49.60 MJ/kg	37.59 MJ/m ³	8926.14 kcal/m ³	47.27 MJ/m ³	1003.44 BTU/ft ³
Inf. Calorific Value	809.73 kJ/mol	44.75 MJ/kg	33.73 MJ/m ³	8055.83 kcal/m ³	42.65 MJ/m ³	905.40 BTU/ft ³
Mean mol weight	18.093 g/mol					
Compression factor	0.9978					
Relative Density	0.6257					
Density	0.7538 kg/m ³					

Figure 4 NGA Calorific value report

Ordering information	ES140X - ABCDE			
code X	0	1	2	3
GC model, power	1600, 230V	1610, 230V	1600, 115V	1610, 115V

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. www.gassite.com