	Biogas
Analytical hardware	2 parallel isothermal GC modules with narrow-bore capillary column technology in combination with MEMS based analytical components One of the channels uses a molsieve column which is protected against CO_2 and water by two filtercartridges that filter both the carriergas and the samplegas
Analysis output	Full composition of biogas as specified below, heating value, density, Wobbe index
Gascompositions	Allowed sample gas ranges: N2 : 0 - 15% CH4 : 60 – 100% O_2 : 0 – 4%* H_2 : 0 – 5% CO_2 : 0 – 8% C_2 : 0 – 12% C_3 : 0 – 6% i-C_4 : 0 – 3% n-C_4 : 0 – 3% H_2S : 2ppm – 1% COS : 2ppm – 1% * PTB approved O_2 concentration is 0 – 3% Minimum detection limit: N_2 : 50 ppm CH_4 : 50 ppm O_2 : 50 ppm H_2 : 10 ppm CO_2 : 5 ppm C_2 : 5 ppm C_3 : 10 ppm i-C_4 : 10 ppm n-C_4 : 10 ppm H_2S : 2 ppm COS : 2 ppm Advised calibration gas comp. N_2 : 8.0% CH_4 : Balance O_2 : 2.0% H_2 : 1.0% CO_2 : 2.0% C_2 : 4.0% C_3 : 3.0% i-C_4 : 0.5% n-C_4 : 0.5% H_2S : * COS : * * depending on expected concentrations in the sample
Analysis cycle time	5 minutes
Performance heating value measurement	
Uncertainty Repeatability	<0.20 % for all calculated properties (based on a single point calibration) <0.03 % for all calculated properties
General specification	
Ambient conditions	Temperature: -20 °C to +55 °C (provided heated version is used)
Dimensions	Base Ø 37 cm x Height 37 cm (Ø 14" x Height 14")
Weight	<30 kg
Approvals	ATEX II2G E Ex d IIB T4 IP 66, vibration and shock test in accordance with IEC 60068-2-31 and 64 EMC according to EN 61000-6-2 and EN 61000-6-4 PTB Metrological Certificate Reference No. PTB-3.31-4016861
Power supply	24 VDC, 18 W nominal (50 W start-up peak) for non-heated version 24 VDC, 120 W nominal (170 W start-up peak) for heated version (ambient < 0 °C)
Interfaces	Ethernet UTP 10 Base-T for ModBus TCP/IP and PC link Two RS 232/485 ports for ModBus RTU or ASCII 3 analogue Inputs for local sensors (4-20 mA or 0-10 VDC)
Analyser	Complete stand-alone operation, including all calculations and generation of report formats, without need for operator intervention. Calculations in acc. with ISO 6976, GPA 2172 or GOST 22667
PC requirements	Windows 2000 or Windows XP professional edition (Service Pack 1 or higher) 1000 MHz processor, 512 MB RAM, CD-rom player, free Ethernet port
Data logging	History Log: local storage of last 35 days of all analytical data (analysis, events, alarms, averages, last chromatogram, calibration data) in accordance with API Report 21.1. All data available on remote workstation in XML format
Sample conditioning (integrated)	Integral part of analyser. Consists of pressure regulators for each stream, particle filters and double block and bleed stream selection for up to 4 streams and 1 calibration gas. The internal sample conditioning system also contains a programmable sample bypass 0-20 Nl/hr.
Sample conditioning (external)	Membrane filter required for sample gas. Since H_2S forms an aggressive acid in the presence of free water it is essential that the forming of free liquids is prevented. Therefore the sample gas should be dry at all times and kept above the water dew point.
Carrier gases	Helium & Argon: Quality N5.0, supply pressure 5.5 barg, consumption ± 8 ml/min Pressure regulator should contain a safety relief set at 6.5 barg. Argon: Caution! The Argon carrier gas must be led through a moisture filter in order to protect the molsieve column against water.
Calibration gas	Supply pressure 2 barg nominal. Consumption ± 600 ml/day (@ atmospheric pressure)

Source: APN EnCal 3000 biogas 27/04/2010