

RMG GAS ANALYZER RGQ 5

The RMG gas analyzer RGQ 5 uses the correlation method to measure important quantities of fuel gases which are required for control purposes. A short response time and a low inlet pressure make the device universally applicable.



RGQ 5 SPECIFICATIONS

The RGQ5 is a low investment gas analyzer designed for the continuous measurement of combustible gases. Every second, the device displays the measured values for superior calorific value (Hs), inferior calorific value (Hi), upper and lower Wobbe index (Ws and Wi), density (ρ), real gas factor (Z), stoichiometric air-fuel ratio (s-AFR), methane number (MN) and the volume fractions of CO₂ and H₂.

Gas flows at a low flow rate (50 ml/min) through ¼" NPT connections into the RGQ 5. A 4-20 mA analog signal and a Modbus RTU interface are available as output signals.

The RGQ 5 uses patented gas viscometer technology in combination with other micro-electromagnetic sensors (MEMS). The analyzer was specially developed for biomethane injection, hydrogen admixture, combustion control, gas network monitoring and other stationary applications.

The sensor units are designed in 4 different variations. These have been developed for different accuracies and gas compositions.

RGQ 511 Extended

Standard version with viscosity and thermal conductivity sensor

RGQ 522 Renewable

Additionally with CO₂ sensor

RGQ 513 Hydrogen

Additionally with H₂ sensor

RGQ 524 Ultragreen

Additionally with CO₂ and H₂ sensor (on request)

Construction variants

As basic version the pure measuring unit is available. In the extended version, the measuring unit is mounted on a metal plate for wall mounting together with an inlet filter, pressure reducer and adjustable bypass. Optionally, this plate can be mounted together with a heater in a plastic housing with viewing window.

Features

Measured values:

- Wobbe Index (Ws & Wi)
- Superior and inferior calorific value (Hs & Hi)
- H₂ and CO₂ Vol-% (optional)
- Density, relative density & compressibility
- Air/fuel ratio
- Methane number MN

Accuracy:

- Measurement uncertainty $\leq 1\%$ of measured value

Maintenance-free and reliable:

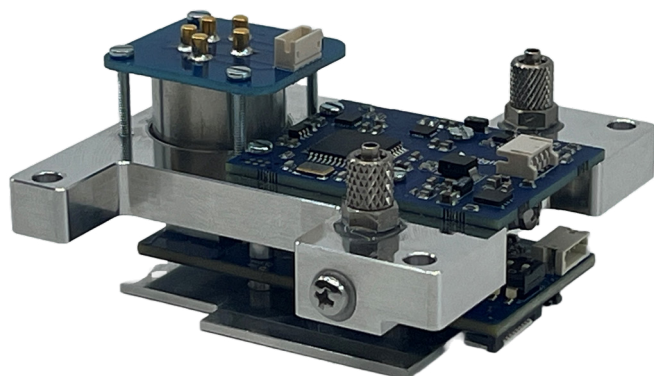
- No moving parts
- No chemical sensors

Fast and consistent measurement:

- Viscosity data every 7 seconds
- Thermal conductivity and CO₂ reading every second

Additional features:

- No carrier gas required
- Certified, explosion-proof housing for gas group IIC, i.e. also for hydrogen
- Built-in gas flow reducer
- Interfaces: 4-20 mA, Modbus RTU
- Power supply: 24 VDC
- Plug and play installation & operation
- Easy replacement of the sensor unit
- CE, ATEX & IECEX certificate (optional)



TECHNICAL DATA

Output data

Measured value	Units	Reference conditions
Wobbe index (Ws & Wi)	MJ/m ³ , kWh/m ³ , BTU/scf	EU basic conditions 25°C/0°C at 1,01325 bar(a), 0/0°C, 15/0°C, 15/15°C, 20/20°C, 25/20°C at 101325 Pa and 60°F at 14.696 psi absolute
Calorific value superior Hs		
Calorific value inferior Hi		
Density ρ	kg/m ³ , lbm/scf	Volume, 20.946% O ₂
Relative density		
Compressibility Z		
Air/fuel ratio λ		
Methane number		
CO ₂ ¹⁾ & H ₂ ²⁾ concentration	Mole%	

¹⁾ For models with CO₂ Sensor, RGQ 522 „Renewable“ und RGQ 524 „Ultragreen“

²⁾ For models with corresponding correlation model, RGQ 513 „Hydrogen“ and RGQ 524 „Ultragreen“

To be used for all gases with the following composition

Methane	CH ₄	70-100 Mole%	Propane	C ₃ H ₈	0-5 Mole%
Ethane	C ₂ H ₆	0-20 Mole%	Butanes	C ₄ H ₁₀	0-3 Mole%
Carbon dioxide	CO ₂	0-3 Mole% 0-20 Mole% ¹⁾	Higher alkanes		0-1 Mole%
Hydrogen	H ₂	≤ 0.5 Mole% 0-30 Mole% ²⁾	Nitrogen	N ₂	0-15 Mole%
Water gaseous	H ₂ O	≤ 0.1 Vol%	Oxygen	O ₂	≤ 3 Vol%
Dust, liquid		Not tolerant	Sulphur	H ₂ S	≤ 0.01 Vol%
Calorific value Hs	738 to 1324 BTU/ SCF (30°F -77°F) / 7.64 to 13.89 kWh/m ³ (25°C/0°C)				

Environmental requirements

Operating temperature	32°F to 122°F / 0 to 50°C
	optional extended temperature range -20°C to 70°C with limited accuracy
Storage temperature	-40°F to 158°F / -40°C to 70°C
Bursting pressure	< 3.63 psig / < 250 mbar gauge pressure
Operating pressure	13.92 to 15.94 PSIA (1.45 PSIG) / 960 to 1100 mbar absolute (0-100 mbar gauge pressure)
Flow velocity	50 ml/min (+/- 10%), adjustable on request
Humidity	0-95% relative humidity, non-condensing

Electrical and mechanical specifications

Interface	Modbus RTU (RS485), analog output (4-20mA current loop)
Supply voltage	24V, < 2W
Dimensions and weight	5.51" x 5.31" x 4.92" and 5.73 Lbs. / 140mm x 135mm x 125mm and 2.6kg
Gas fittings	2 x 1/4" FNPT

Certificates

Protection class	IP66
ATEX & IECEx certificate	 II 2G Ex db IIC T6 Gb

VARIANT RGQ 3

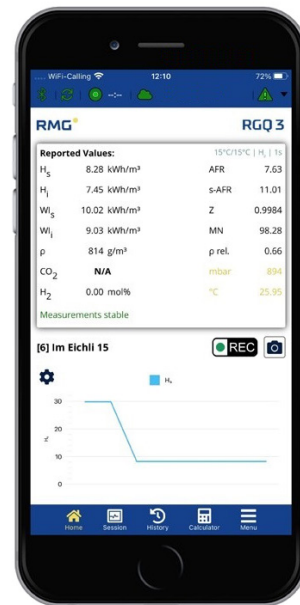
The sensor unit of the RGQ 5 is also available as a mobile variant RGQ 3 with cloud connection.
The operation as well as the display of the measured values takes place via a smartphone with an RMG app.

Measured values:

- Wobbe index (Ws & Wi)
- Superior & inferior calorific value (Hs & Hi)
- H₂ and CO₂ Vol-% (optional)
- Density, relative density & compressibility
- (stoichiometric) air/fuel ratio
- Methane number MN



Accuracy	▶ ≤ 1% from measured value
Maintenance-free and reliable	▶ No moving parts ▶ No chemical sensors
Fast and consistent measurement	▶ Viscosity data every 7 seconds ▶ Thermal conductivity and CO ₂ reading every second
Additional features	▶ Built-in inlet pressure regulation up to max. 72 PSIG (5 bar) ▶ Interface: Bluetooth ▶ Power supply: battery, USB charging socket ▶ Plug and play installation & operation



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