Technical Data



Rapidox 6100 QU4D

Multi-Gas Pumpback Analyser SF₆ | C4-FN | C5-FK | Clean Air

Features

- Portable and user-friendly
- Multi-switchgear compatibility
- Handles up to 4 types of insulating gases SF₆, C4-FN, C5-FK and Clean Air
- Measures up to 8 gases per channel
- Customisable options
- Featuring IR technology
- Battery operated
- Integrated thermal printer
- IP66 Peli case for protection
- Rapid Analysis and data logging
- 7" Colour LCD touch-screen interface





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29 Stephenson Road, St Ives, Cambridge PE27 3WJ. UK +44 (0)1480 462142 sales@cambridge-sensotec.co.uk The new **Rapidox 6100 QU4D** is a fullyautomatic zero-emissions multi-gas pumpback analyser for measuring gas compartments containing $SF_6 - C4-FN - C5-FK - Clean Air$, all combined in a single portable instrument. The modular design allows the customer to purchase only the gas types they require with the potential to upgrade the instrument in the future. The Rapidox will measure the gas purity, water-content and contamination gases in each gas type in all current high voltage switchgear, circuit breakers and transformers as well as gas bottles. It is a fully portable lithium battery powered instrument.

Exceptional accuracy and stability are provided when measuring the purity of the compartment gas, through specially selected sensors. The modular configuration allows for up to eight compatible gases to be analysed in each gas type, simultaneously, using one analyser. The Rapidox is fully compatible with mixtures of SF₆ & CF₄, C4-FN & CO₂/O₂, C5-FK & CO₂ and Clean Air mixtures of N₂ and O₂, together with toxic contamination gases such as SO₂, HF, H₂S & CO in SF₆, CO C4-FN & C5-FK and NO₂ in Clean Air. The unit also measures the water content of the gas in dewpoint or ppm to ensure dryness is acceptable.

The Rapidox 6100 QU4D is housed neatly into a tough Peli transport case and supplied with sample hoses, DN8 and DN20 coupling accessories. Once powered and connected, the operator can select which gas type to work with and the Rapidox configures the measurement screen correctly. If the user is changing gas type, the unit will run a purge cycle to clean the existing gas from the analyser and into an external recovery bag. During the measurement, the Rapidox automatically removes a small quantity of pressurised gas from the electrical equipment or gas cylinder, controlled with an auto gas pressure sensing function. A vacuum purge cycle and internal gas storage system ensures that no air can contaminate the gas sample and that no test gas is able to escape during the testing period.

Rapidox 6100 QU4D

Multi-Gas Pumpback Analyser

All measured gases are analysed and data logged simultaneously with only a few minutes required to achieve a stable reading. A powerful 10 bar compressor then returns the gas to the electrical equipment at high pressure. Results are displayed on screen and printed using the inbuilt thermal printer if required. The unit has multiple safety features built in to ensure the cycle is completed correctly without gas loss or cross contamination.

The analyser is pre-programmed with all current IEC and CIGRE test configurations, with the ability to create customised test parameters.

Please contact Cambridge Sensotec for further information or to discuss your requirements.



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Electrical Insulating Gas

SF₆ is an extremely stable, non-flammable and highly electronegative gas with excellent dielectric properties. It is commonly used in medium and high-voltage electrical equipment as an electrical insulator, arc-quenching and cooling medium. It remains the dominant insulating gas in the electricity industry. However, SF₆ is classified as a major greenhouse gas with a very high Global Warming Potential (GWP) and must be kept within a closed circuit to avoid any deliberate release into the atmosphere.

New SF₆ replacement gases such as C4FN (known as G3 or Novec 4710) and C5FK (known as Air Plus or Novec 5110) are being used more commonly for low to medium voltage applications. Whilst these gases have much improved GWPs they remain harmful to the atmosphere and must be equally controlled.

Other gas types such as Clean Air (also known as Dry Air) are used on low to medium voltage applications because they have no GWP or it is very small. However these gases are not always suitable to use in high voltage transmission.

For the power transmission and distribution network, gas insulation technology using SF₆ and its alternatives remains essential. To protect personnel, equipment and the environment regular gas analysis should be adopted within the maintenance schedule. The early identification of any decomposition products and moisture within these gases will help avoid unnecessary shutdowns, outages and failures, in addition to reducing maintenance expenditures.

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Robust Peli case with integrated trolley and carry handles



Integrated thermal printer



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Response times

Rapidox 6100 QU4D

Multi-Gas Pumpback Analyser

SF₀ - Sulphur Hexafluoride	"Specification 0-100%. Accuracy ±0.5% Calibration Recommended Every 12-24 months Life Span >5 years Sensor Type – Infrared (IR)"
H ₂ O - Dew Point	"Specification -60°C to ±20°Cdp. (10 - 24,000ppmV) Reading is corrected to either RT or 20°C Accuracy ±2°Cdp of reading Calibration Recommended every 12 months by Sensor Exchange Life Span 2-3 years Sensor Type – Polymer"
SO ₂ - Sulphur Dioxide	"Specification 0-100ppm OR 0-500ppm. Accuracy ±2% full-scale Calibration Recommended Every 12-24 months Life Span 2-3 years Sensor Type - Electrochemical"
HF - Hydrogen Fluoride	"Specification 0-10ppm OR 0-30ppm. Accuracy ±2% full-scale Calibration Recommended Every 12-24 months (using HCl gas) Life Span up to 4 years Sensor Type - Electrochemical"
CF₄* - Tetrafluoromethane	"Specification - 0-80%. Accuracy ±1% of reading Calibration - N/A Sensor Type - N/A (measured by balance of SF ₆ + Air reading)"
H ₂ S - Hydrogen Sulphide	"Specification 0-100ppm Accuracy ±2% full-scale Calibration Recommended Every 12-24 months Life Span up to 4 years Sensor Type - Electrochemical"
CO - Carbon Monoxide	"Specification 0-1,000ppm Accuracy ±2% full-scale Calibration Recommended Every 12-24 months Life Span up to 4 years Sensor Type - Electrochemical"
Air / O ₂	"Specification 0-20%. Accuracy ±5% full-scale based on oxygen component Calibration Recommended Every 12-24 months Life Span up to 5 years Sensor Type - Electrochemical O2 scaled to read as Air"
CO₂ - Carbon Dioxide	"Specification 0-200%. Accuracy ±0.5% Calibration Recommended Every 12-24 months Life Span 5 years Sensor Type - Infrared (IR)"
C4-FN & C5-FK	"Specification 0-100%. Accuracy ±0.5% Calibration Recommended Every 12-24 months Life Span 5 years Sensor Type – Infrared (IR)"
NO₂ - Nitrogen Dioxide	"Specification 0-100ppm Accuracy ±2% full-scale Calibration Recommended Every 12-24 months Life Span up to 4 years Sensor Type - Electrochemical"

* For analysers containing a CF₄ sensor, the measurement of Air is also a requirement. All sensor replacements are to be carried out by Cambridge Sensotec

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Specifications

	Rapidox 6100 QU4D
Ambient Operating Conditions	-10°C to +40°C, 10-90% RH, 800-1100mbara
Warm-up Time	3-4 minutes at 20°C
Charging Voltage	90-260 VAC, 50/60Hz
Battery Life	Up to 8 hours. 4-6 hour charge
Sample Connections	Rectus style fitting compatible with famous brands
Data Outputs	Excel compatible data via USB memory stick
Data Storage	4GB internal data storage allowing for approximately 1 year of continuous monitoring
Compressor	Up to 10 Bar with up to 15 cycles per battery charge
Measurement Time	8 minutes
Pressure Range	0.3-10 Bar; displayed on screen
Gas Flow Rate	0.5L.min ⁻¹
Max Inlet Pressure	35 Bar gauge
Display	7" (180mm) Colour LCD touch screen interface with soft menu keys
Printer	Integrated thermal printer allows output of results on demand
Analyser Dimensions	270mm(H) x 560mm(W) x 450mm(D)
Weight	21kg (Total instrument and case)
Warranty	2 years

Due to continuous product development necessary changes to specifications may be made without prior notice. Issue no: D62-202-1



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