



## Rapidox 3100C: SF<sub>6</sub> - SO<sub>2</sub> - Dewpoint Multi-Gas Analyser



### Description

SF<sub>6</sub> is a man-made gas used in high-voltage switchgear because of its great arc quenching capabilities. Partial discharges and leaks over time eventually cause the SF<sub>6</sub> to decompose into highly corrosive compounds. It is therefore essential to monitor the condition of the SF<sub>6</sub> to protect the equipment from spark damage and corrosion.

The Rapidox 3100C is a multi-gas analyser for the simultaneous measurement of SF<sub>6</sub> (0-100%), SO<sub>2</sub> (0-100ppm) and dewpoint (-65+20°C). The analyser is designed for controlling and monitoring the quality of SF<sub>6</sub> in gas insulated sub-stations and circuit breakers. The analyser not only measures the SF<sub>6</sub> gas content in air or nitrogen over the full range, but also measures the moisture content of the SF<sub>6</sub> which is essential when monitoring the dielectric strength of the gas. The decomposition products of SF<sub>6</sub> can be identified by analysing the SO<sub>2</sub> content of the gas; this forms from the breakdown of SOF<sub>2</sub> and SOF<sub>4</sub> after an electrical discharge. The analyser incorporates an electrochemical SO<sub>2</sub> sensor to measure ppm levels of sulfur dioxide. All three gases can be monitored and data-logged simultaneously and just a few minutes are required to get a stable reading.

Regular checking of SF<sub>6</sub> gas insulated substations allows fault preventative maintenance programs to be implemented, and increases the life cycle of the SF<sub>6</sub>.

The analyser has a gas output nozzle allowing all sampled gas to be recovered and recycled, ensuring that no SF<sub>6</sub> gas is released into the atmosphere (in accordance with the Kyoto agreement)

### Features

- Continuous gas sampling of SF<sub>6</sub> - SO<sub>2</sub> - Moisture (dp OR ppmv)
- High precision catharometer for SF<sub>6</sub> analysis over the range 0-100%
- Electrochemical SO<sub>2</sub> sensor for trace analysis of contamination gas 0-100ppm
- Ceramic dew-point sensor for moisture analysis -65°C to +20°C dp (or ppmv)
- Sensor accuracy ± 1% of the full scale
- Input pressure 0.5 to 6 bar
- Gas flow rate 0.5 - 1 litre per minute controlled by flow gauge
- Programmable alarms (low and high condition) with outputs and visual warning.
- RS232 / RS485, 0-5V or 4-20mA current loop outputs (both user programmable).
- On-Board Windows data logging software with MS-Excel compatible graphing.

### Applications

- Controlling SF<sub>6</sub> quality in switches, bus bars & and circuit breakers in Gas Insulated substations (GIS)
- SF<sub>6</sub> insulated devices in power stations
- Checking for the build up of corrosive decomposition products such as SO<sub>2</sub> present in the SF<sub>6</sub>
- Measuring the moisture content of SF<sub>6</sub> gas by using a dewpoint analyser
- Applying a condition based maintenance program (CBM) to extend the life cycle of the SF<sub>6</sub>
- Detecting the presence of leaks and SF<sub>6</sub> discharge
- Indication of arcing and breakdown through the build up of corrosive by-products

### Technical Data: Analyser

Voltage	110 / 220V ac 50/60 Hz
Analyser dimension	350mm X 263mm X 150mm
Weight	7 kg
Display	16 X 2 character (9mm) back lit
Warm up time	3-4 minutes at 20°C
Normal operating temperature	5-35°C
Outputs	0-5V logarithmic (user programmable) 4-20mA logarithmic (user programmable) RS232 / RS485: data streamed every 0.1 second

### Technical Data: Sensors

SF <sub>6</sub> Sensor	Catharometer 0-100% scale ± 1% FS accuracy
Moisture Sensor	Ceramic Dew-Point Sensor -65°C to +20°C dp. ± 2°C FS accuracy
SO <sub>2</sub> Sensor	Electrochemical Cell 0-100ppm ± 2% FS accuracy
Life expectancy	3 to 5 years
Measuring Time	Approx. 5 minutes
Sensor Drift	<2% of span per month

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