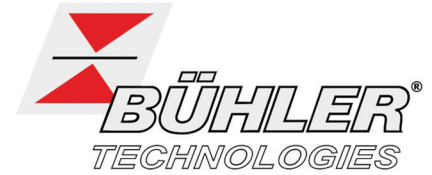
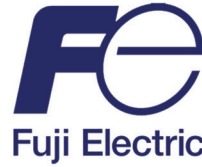




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# DRM Technic

Suppliers of Gas Analysis Equipment

**Ultramat 23 Analyser**  
IR-Sensitive, Oxygen, H<sub>2</sub>S

## ULTRAMAT 23 GAS ANALYSER FOR IR-SENSITIVE GASES, OXYGEN AND H<sub>2</sub>S

The Ultramat 23 Gas Analyser can measure up to 4 gas components (3 infrared gases, plus O<sub>2</sub>). For oxygen analysis, it can be equipped with either an electrochemical or paramagnetic measuring cell.

It is specified for use in emission measurement systems and for process and safety monitoring



### FEATURES

**19" Rack Mounting or Portable Configurations Available | Large Backlit LCD | RS 485  
Two Measurement Ranges per Gas Component | Three Binary Inputs and Eight Relay Outputs  
Simple, Fast User Programming | Automatic Correction of Atmospheric Pressure Variations**

### SPECIFICATIONS

Product No.	Ultramat 23
Components Measured	Up to Three of the Following Simultaneously - CO, CO <sub>2</sub> , NO, SO <sub>2</sub> , CH <sub>4</sub> ; plus O <sub>2</sub>
Analog Outputs	Up to 4, Floating, 0/2/4 to 20 mA, Linearised
Serial Interface	RS 485
Warm-up Time	Approx. 5 Min.; Max. Accuracy Achieved After Approx. 45 Minutes
AUTOCAL Function	Automatic Analyser Calibration with Ambient Air; Cycle Time Adjustable
Dimensions	177 x 483 x 360 mm (19" rack mounting); 170 x 465 x 392 mm (portable)
Weight	Approx. 10 kg
Fittings	Tube Diameter 6mm or 1/4"
Protection Degree	IP21 (EN 60529)
Power Supply	100 /120/230 V AC; 50/60 Hz
Power Consumption	Approx. 50 VA
Sample Gas Pressure	0.5 to 1.5 Bar Absolute
Sample Gas Flow	66 to 120 l/h (1.1 to 2 l/min)
Sample Gas Temp.	0 to 50 °C
Sample Gas Humidity	< 90% RH; Dependent on Measuring Task
Ambient Temp.	+5 ... +45 °C (operation); -20 ... +60 °C (transport and storage)
Pressure Variations	700 to 1200 mbar

CONTACT US: DRM Technic, 15C Raleigh Hall Industrial Estate, Stafford, Staffordshire, ST21 6JL

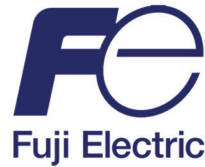
DRM/U23/  
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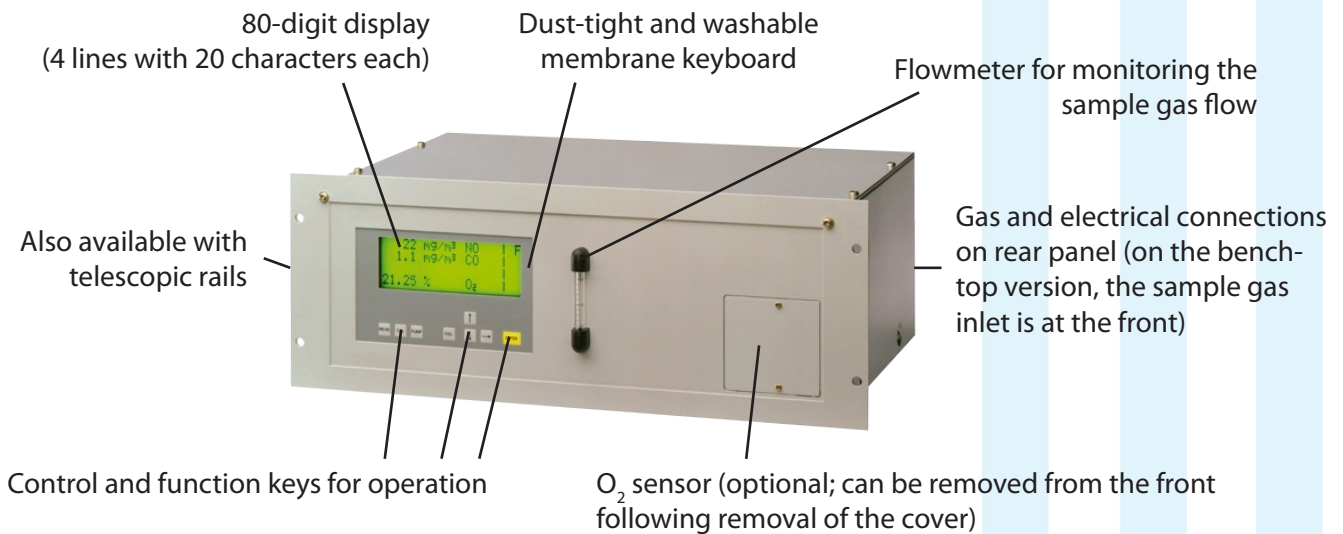


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## ULTRAMAT 23 DESIGN (AS A 19" RACK UNIT)



## GENERAL INFORMATION

### DESIGN

19" rack (4 HU) | Flow indicator for sample gas on front plate  
Gas connections for sample gas inlet and outlet as well as zero gas | Pipe diameter 6mm or 1/4"

### DISPLAY AND CONTROL PANEL

Operation based on NAMUR recommendation | Simple, fast parameterisation and commissioning of analyser  
Large, backlit LCD for measured values | Menu-driven inputs for parameterisation, test functions and calibration  
User help in plain text | 6-language operating software

### INPUTS/OUTPUTS

Three binary inputs for sample gas pump on/off, triggering of autocal and synchronisation of several devices  
Eight relay outputs can be freely configured for fault, maintenance request, maintenance switch, limits, measuring range identification, and external solenoid valves | Galvanically isolated analogue outputs  
Eight additional binary inputs and relay outputs (optional)

### COMMUNICATION

RS485 present in basic unit (connection from the rear) | Available options: RS485/RS232 Converter;  
RS485/Ethernet Converter; RS485/USB converter; incorporation in networks via PROFIBUSS DP/PA interface;  
SIPRO GA software as service and maintenance tool

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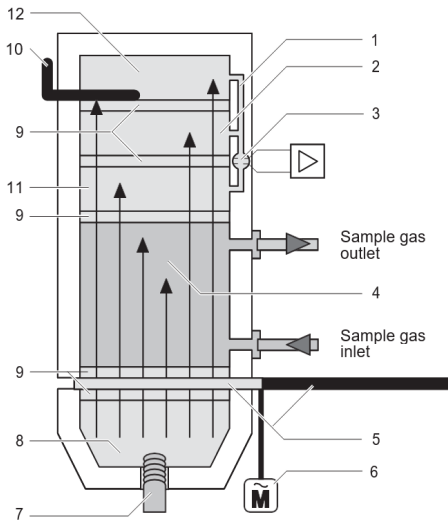


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Suppliers of Gas Analysis Equipment

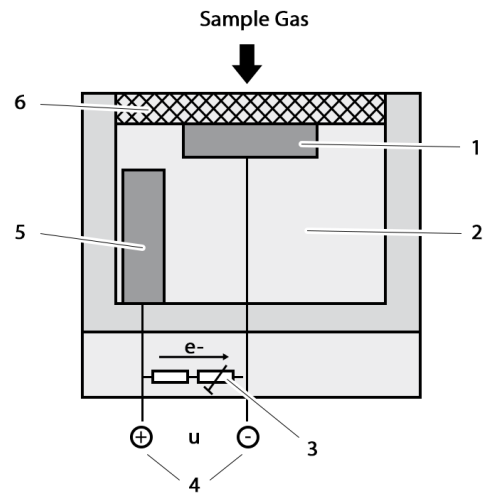
**Ultramat 23 Analyser**  
IR-Sensitive, Oxygen, H<sub>2</sub>S

## COMBUSTION GASES INFRARED MEASUREMENT PRINCIPLE



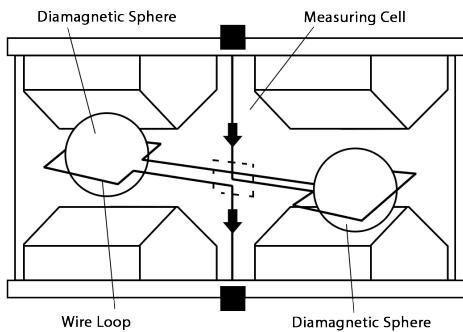
- |                           |                           |
|---------------------------|---------------------------|
| 1 - Capillary             | 7 - IR Source             |
| 2 - Second Detector Layer | 8 - Reflector             |
| 3 - Microflow Sensor      | 9 - Window                |
| 4 - Sample Cell           | 10 - Slide                |
| 5 - Chopper Wheel         | 11 - First Detector Layer |
| 6 - Chopper Motor         | 12 - Third Detector Layer |

## OXYGEN (O<sub>2</sub>) ELECTROCHEMICAL MEASUREMENT PRINCIPLE

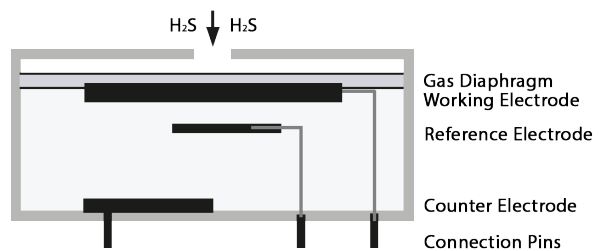


- |   |
|---|
| 1 - Gold Cathode  |
| 2 - Electrolyte (acetic acid)                                 |
| 3 - Thermistor and Load Resistor for Temperature Compensation |
| 4 - Signal Output   |
| 5 - Lead Anode  |
| 6 - Oxygen Diffusion Membrane Made of FEP                     |

## OXYGEN (O<sub>2</sub>) PARAMAGNETIC MEASURING PRINCIPLE



## HYDROGEN SULPHIDE (H<sub>2</sub>S) ELECTROCHEMICAL MEASUREMENT PRINCIPLE



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## TECHNICAL DATA OF INFRARED MEASUREMENT

Measuring Ranges	Dependent on Application
Influencing Variables	Drift with Auto-Cal: Negligible Drift without Auto-Cal: < 2% of Smallest Measurement Range / Week
Response Time (T <sub>90</sub> )	Dependent on Dead Time and Selectable Damping
Damping	Adjustable from 0 to 99.9 sec (electrical time constant)
Output Signal Noise	< ± 1% of Smallest Possible Measurement Range
Display Resolution	Dependent on Select Measuring Range
Output Signal Resolution	< 0.1 % of Output Signal Span
Characteristic	Linearised
Linearisation Error	< 1% of Full-Scale Value (in largest measurement range) < 2% of Full-Scale Value (in smallest measurement range)
Repeatability	≤ 1% of Smallest Measurement Range

## TECHNICAL DATA OF OXYGEN MEASUREMENT WITH ELECTROCHEMICAL SENSOR

Measuring Ranges	0 ... 5% or 0 ... 25% O <sub>2</sub> , Programmable
Influencing Variables	Drift with Auto-Cal: Negligible   Drift without Auto-Cal: Typical 1% O <sub>2</sub> / year in air
Residual Gases	Residual Gases Containing Heavy Metals, H <sub>2</sub> S and Halogens Result in Analyser Failures; O <sub>2</sub> Concentration < 0.5 % are Only Permissible for a Short Time
Output Signal Noise	< 0.5% of Full-Scale Value
Response Time (T <sub>90</sub> )	Dependent on Dead Time and Selectable Damping
Display Resolution	< 0.2% of Full-Scale Value
Output Signal Resolution	< 0.2 % of Output Signal Span
Service Life	Approx. 2 Years with 21% O <sub>2</sub>
Repeatability	≤ 0.05% O <sub>2</sub>

## ESSENTIAL CHARACTERISTICS

Near maintenance free w/ maintenance request alert | Automatic atmospheric pressure variation corrections  
 Calibration only required every 12 months | Sample gas flow monitoring w/ error messages  
 Two freely configurable undershooting and overshooting limit values per component  
 Two measuring ranges per component can be set within specified limits

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