

## OXYGEN ANALYZER

*MB O<sub>2</sub>-ANALYZER (SPS)*



- PLC-controlled
- Oxygen measurement: < 1 ppm to 255 ppm
- Probe cell with silver cathode and lead anode immersed in a special cell liquid

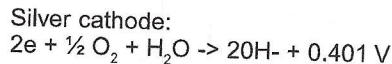
## Measuring Principle

### Oxygen measurement

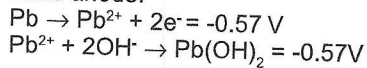
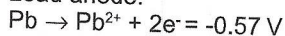
The probe cell works in accordance with the principle of the fuel cell. The cell consists of a silver cathode and a lead anode immersed in a caustic potash solution (cell liquid) serving as an electrolyte. A pump conducts a defined gas flow rate for measurement through the oxygen probe cell. The traces of oxygen contained in the gas destined for measurement encounter the net-shaped silver cathode, whereupon the oxygen produces hydroxyl ions in the highly alkaline portion of the electrolyte.

Shown in a simplified way the following chemical reactions take place:

Silver cathode:



Lead anode:



The EMF produced in these chemical reactions is used via an amplifier as measured value.

The measuring range is from <1ppm to 255 ppm

## Technical Data

### Measuring range

Oxygen meas.: ... <1 ppm to 255 ppm

### Internal oxygen probe cell

Probe cell with silver cathode and lead anode immersed in a special cell liquid

Location: ..... Integrated in the analyzer

Gas temperature: 20 °C to 25 °C (temp. stabilized)

Gas flow rate: ... 40 l/h

### Internal oxygen calibration cell

Calibration cell with platinum cathode and platinum anode immersed in a special liquid

Location: ..... Integrated in the analyzer

Gas temperature: 20 °C to 25 °C (temp. stabilized)

Gas flow rate: ... 40 l/h

## Technical Data

### Measurement electronics

Oxyg. meas.

electronics: ..... Electronic PC board

Location: ..... Integrated in the analyzer

Optim. ambient

temperature: .... 15 °C to 30 °C (temp. stabilized)

### Gas sampling

Internal batching pump

### Monitoring

System operation panel or **MB SSD-DIS®** (optional item)

### Catalyzer

Integrated catalyzer for producing the calibration gas

### Connections

Gas inlet / outlet: 6 mm Swagelok® screw fitting

Recorder output: 3-pole diode receptacle:  
0 V to 4,5 V (no-load operation)/  
0 V to 2,5 V (5 Ω)

Power supply: ... 230 V or 115 V

Option: ..... Additional function for oxygen measurement on several systems

### Dimensions

Front panel: ..... 177 mm x 483 mm

Depth: ..... 350 mm

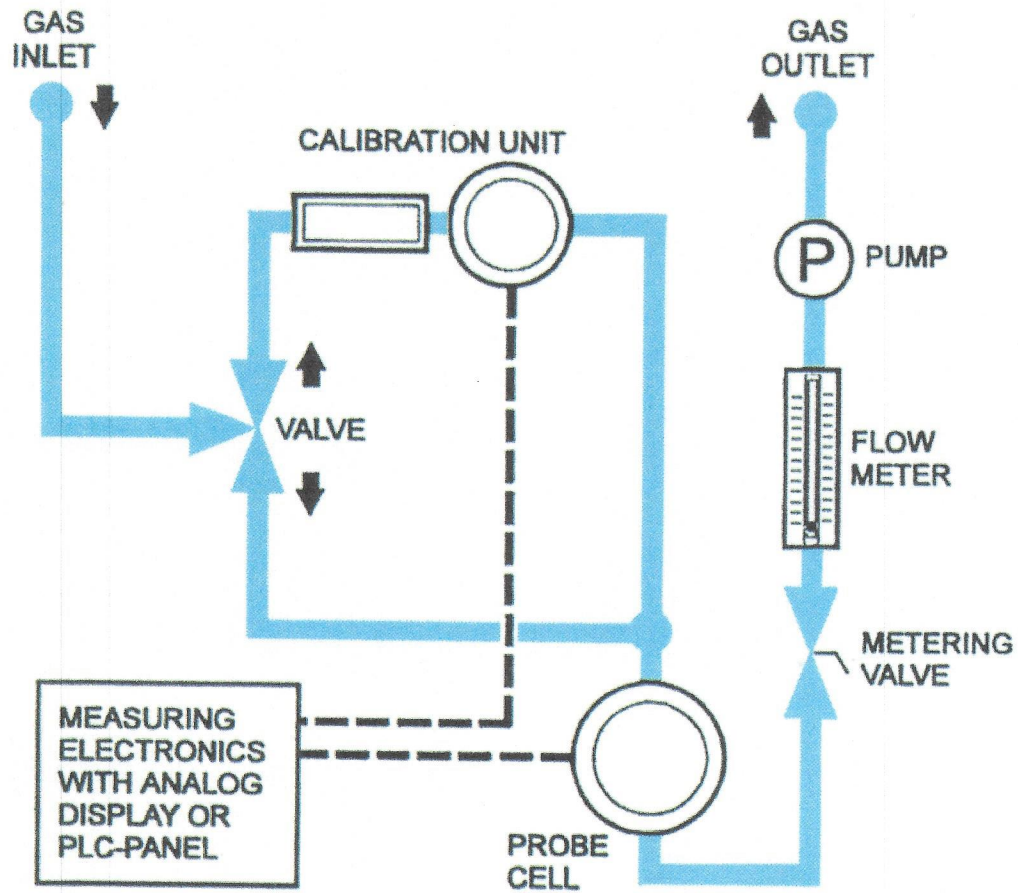
### Power supply

230 V / 50 Hz, 1 ph

115 V / 60 Hz, 1 ph

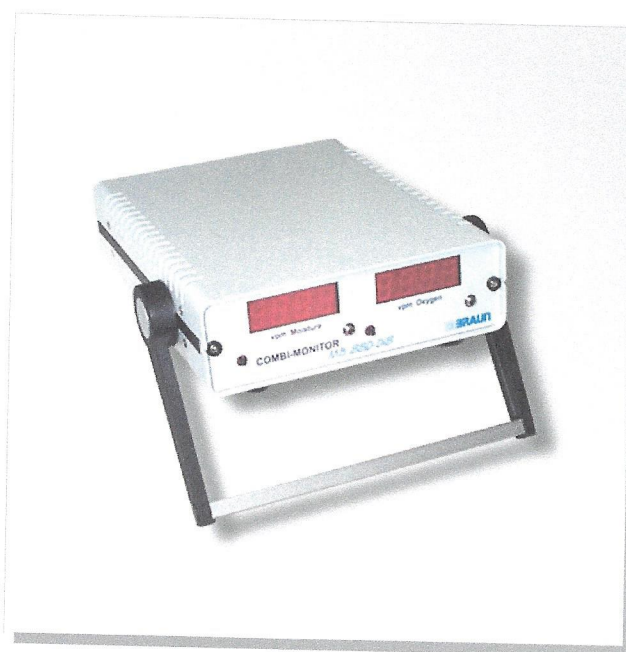


Drawing



## COMBI-MONITOR

*MB SSD-DIS*



- External monitor for 2 probes
- Oxygen and/or moisture
- Large LED displays
- Easy to use



## General Information

### Combi-Monitor

The combi-monitor **MB SSD-DIS®** has been designed to supply up to two M. Braun probes for oxygen and/or for moisture with DC-power and to display the measured values of the probes.

3 ½ digit LED digital voltmeters are used for display. They are individually adjusted for the output voltage range of the probes (0 to 10 V DC) as well as for their display range:

Displ. range	Probe	Unit	Measurement
0 to 500	<b>MB MO-SE-1®</b>	vpm	Moisture
0 to 1000	<b>MB OX-SE-1®</b>	vpm	Oxygen
0 to 25.0	<b>MB OX-SE-3®</b>	vol%	Oxygen

## Construction

### Combi-Monitor

The **MB SSD-DIS®** contains a stabilized power supply with a widerange input and a 24 VDC output for the supply of the connected probes and the internal DC/DC converter (24V/5V) that drives the LED display.

## Technical Data

### Dimensions

Overall dimens.:	Length:	175 mm
	depth:	225 mm
	height:	55 mm

## Technical Data

### Electrical connection

Power supply: . . . 115 V / 60 Hz  
230 V / 50 Hz

### Ambient conditions

Ambient temper.: + 15°C to + 30°C

Storage: . . . . . - 10°C to + 50°C

### Display

3 ½ digit LED voltmeters individually calibrated for a standard 0 to 10 V DC input range

0 to 1000 vpm oxygen:	<b>MB OX-SE-1®</b>
0 to 25 vol% oxygen:	<b>MB OX-SE-3®</b>
0 to 500 vpm moisture:	<b>MB OS-SE-1®</b>

### Electrical accuracy of display

Accuracy ref.  
to input volt.: . . . . + 15°C to + 30°C

Temperature drift:  $8 \times 10^{-5}$  per °C

## Ordering Information

Ordering names	Combi monitor for
MB SSD-DIS (01/M1)	<b>MB OX-SE-1®</b> / <b>MB MO-SE-1®</b>
MB SSD-DIS (03/M1)	<b>MB OX-SE-3®</b> / <b>MB MO-SE-1®</b>
MB SSD-DIS (01/01)	<b>MB OX-SE-1®</b> / <b>MB OX-SE-1®</b>
MB SSD-DIS (01/03)	<b>MB OX-SE-1®</b> / <b>MB OX-SE-3®</b>
MB SSD-DIS (03/03)	<b>MB OX-SE-3®</b> / <b>MB OX-SE-3®</b>
MB SSD-DIS (M1/M1)	<b>MB MO-SE-1®</b> / <b>MB MO-SE-1®</b>



Since 1974, M. Braun has been designing, building and perfecting gloveboxes, containment systems and gas purification systems for use in research specialized material handling, welding, pharmaceutical processing and production. Our twenty plus years of experience have enabled us to develop our system technology and to learn what our customers expect and deserve in a controlled environment. M. Braun assures your project quality and success with the rigid Certified Quality System (CQS) inspection program.



M. Braun offers a full line of standard and custom glovebox systems including vacuum ovens, analyzers, freezers, etc. Our experience allows us to design cost efficient solutions based on previously tested standards for equipment integration and process configuration. M. Braun will produce layout drawings to meet customer specifications and will work closely with customer designers, process managers and system end users to ensure optimum functionality, performance and reliability for each project.



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