Multi Component Gas Analyser BA 3 select

The BA 3 select is a gas analyser for 19” rack mounting with a modular design which can be expanded from 1-channel all the way to 3-channel O₂ analyser.

One specific advantage of the analyser is the modularity. This also allows for easily upgrading measuring cells. The user is then able to adapt his equipment to changing measuring requirements inexpensively.

The analyser is standard equipped with touchscreen. Along with a clear menu structure this ensures intuitive, particularly user-friendly equipment operation.

Of course the customer is provided with analogue and digital status-, limit- and alarm messages required for effective monitoring. Extensive analysis functions (e.g. interfering gas correction and graphic display of response characteristics) complete the ease of use.

<table>
<thead>
<tr>
<th>Feature</th>
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</thead>
<tbody>
<tr>
<td>Up to three separate gas paths</td>
</tr>
<tr>
<td>O₂ measurement paramagnetic, electro-chemical and/or ZrO₂</td>
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<tr>
<td>Modular, maintenance-friendly layout</td>
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<tr>
<td>User-friendly touchscreen</td>
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<tr>
<td>All relevant limit- and status alarms</td>
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<tr>
<td>Optional: Graphic flow display via screen</td>
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<tr>
<td>Optional: Up to three float flow meters</td>
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<tr>
<td>Optional: Up to three built-in pumps</td>
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<tr>
<td>Optional: Pressure- and temperature compensation</td>
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</tbody>
</table>
Technical Data

General

Housing
- Dimensions: 19" rack mount housing, 3 HE
  - H x W x D, style 1: 5.2 x 17.3 x 16.7 in
  - H x W x D, style 2: 5.2 x 17.3 x 13.2 in
- Protection class: IP 20
- Weight: max. 15 lb
- Display and control: 4.7" touchscreen display

Electric supply
- Voltage: 230 V AC or 115 V AC (note nameplate on the unit)
  - Mains frequency: 50/60Hz
  - Max. power input: 60 W

Ambient parameters
- Ambient temperature: 50 °F … 113 °F
- Relative humidity: < 75 %
- Ambient pressure: 12.7 PSI to 17.4 PSI
- Transport and storage temperature: 41 °F - 149 °F

AUTO cal. function
Optional for each measuring channel: Zero gas (air) + span gas

Warm up time
Minimum 30 min (up to 2 h recommended for high-precision measurements)

Sample gas connections

Gas paths
- Max. three separate gas paths (with auto cal. function)
- Screw-in connection: 6 mm PVDF for 4/6 tube

Inlet parameters
- Gas inlet temperature: 41 °F to 122 °F
- Sample gas pressure (absolute): 12.7 PSI to max. 26.1 PSI, reduced to max. 17.4 PSI with internal pump
- Sample gas conditioning: purified/filtered (<15 µ filtration) sample gas with dew point < 50 °F (always 5 K below ambient temperature)

Signal inputs and outputs

Analogue output: 0-20 mA / 4-20 mA / 0-10 V / 2-10 V inside unit variable by channel
- Limit relay: 2x per measuring channel (125 V AC, 0.5 A / 30 V DC, 1 A)
- Status relay: Error, service, calibration, measuring range (125 V AC, 0.5 A / 30 V DC, 1 A)
- Binary inlets: 1x per channel + 2 x per unit: designed for 24V, potential-free
- 24 Volt output: 1x per channel (for supply binary inputs), protected by T250mA
- Serial port: RS 232

Parts in contact with sample gas

Component | Materials in contact with media
--- | ---
Pump | PET, PPS
Flow regulator | PTFE, stainless steel (1.4571)
Gas lines | FPM (Viton), stainless steel (1.4571)
Solenoid valves | PVDF or stainless steel (1.4571)
Gas ducts | PVDF or stainless steel (1.4571)
Flow rate | PVDF, borosilicate glass
Measuring cell | ZrOx cell, Paramagnetic cell, EC cell
  - ZrOx ceramic: 1.4571
  - Borosilicate glass: 1.4401
  - Platinum-iridium alloy: ABS
## Measuring cells

<table>
<thead>
<tr>
<th></th>
<th>ZrOx cell*</th>
<th>Paramagnetic cell</th>
<th>EC cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Largest measuring range (MR)</td>
<td>0-10000 vpm (0-21 Vol.%)</td>
<td>0-100 %</td>
<td>0-25 %</td>
</tr>
<tr>
<td>Smallest measuring range</td>
<td>0-10 vpm</td>
<td>0-1 %</td>
<td>0-10 %</td>
</tr>
<tr>
<td>Response time t90***</td>
<td>&lt; 4 sec</td>
<td>&lt; 5 sec</td>
<td>&lt; 15 sec</td>
</tr>
<tr>
<td>Linearity deviation</td>
<td>&lt; 1 % FS (&lt; 2 % FS within the smallest MR)</td>
<td>&lt; 0.2 Vol.%</td>
<td>&lt; 1 % FS</td>
</tr>
<tr>
<td>Zero drift</td>
<td>&lt; 1 % FS /week</td>
<td>&lt; 0.2 Vol.% /week</td>
<td>&lt; 2 % FS /week</td>
</tr>
<tr>
<td>Measurement value drift</td>
<td>&lt; 0.3 % FS / week</td>
<td>&lt; 0.2 % MW /week</td>
<td>&lt; 2 % FS /week</td>
</tr>
<tr>
<td>Repeatability</td>
<td>1 % FS (2 % within the smallest MR)</td>
<td>1 % FS</td>
<td>1 % FS</td>
</tr>
<tr>
<td>Detection limit</td>
<td>0.1 vpm within MR 0-10 vpm</td>
<td>0.1 %</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Pressure compensation</td>
<td>optional</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Thermal stabilisation</td>
<td>yes</td>
<td>yes</td>
<td>-</td>
</tr>
</tbody>
</table>

* Two cell types available: (A) catalytically active cell (CAC) => not for flammable carrier gases. (B) catalytically inactive cell => suitable if traces of flammable gases are present (< 10 vpm H2, CO, CH4)

** Optional for unit with modified calibration routine

*** Signal damping adjustable fr. 1 sec to 20 sec

### Abbreviations:

FS ...from span
MW ...from measurement
r.F. ...relative error

### Oxygen measurement

There are three different cells available for measuring oxygen. The most cost-efficient electrochemical O2 cell can be used for measuring in the %-range.

A maintenance flap at the front of the housing for easy access to the cell ensures low-cost, easy maintenance. In addition, extra durable and ultra-precise paramagnetic cells may be used for measuring in the %-range. A zirconium dioxide (ZrO2) cell may be selected for accurate oxygen trace measurement. This is also available in a catalytic inactive version.

### Options for integration

Options currently available:
- Built-in pump(s)
- Gas analysis filter
- Float Flow Meter

### Gas connections

- up to 3x pipe fitting (Ø6 mm)
- up to 3x PVDF hose screw connections (Ø4/6 mm)
BA 3 select

Equipment overview