Technical data sheet

Series:

B-DETECTION PLUS m

Gas Measurement System B-DETECTION PLUS m

Production status: F02

- **Ergonomic gas measurement unit for easy connection to either breathing air compressor or breathing air cylinder**
- **Various measurement options - thanks to optional adapters for filling hose, Nitrox application and higher pressure ranges**
- **Alarm and fault warnings when limits specified in EN 12021:2014 are exceeded[1]**

[1] Humidity and VOC measurement (volatile organic compounds) are optional

As a portable case solution, B-DETECTION PLUS m gives you the freedom to carry out reliable breathing air measurements whenever and wherever you want. As with the stationary variants, the compliance with the limit values of EN 12021:2014 for CO_2, CO, O_2, as well as optionally for absolute humidity and VOC's (volatile organic components as in vaporized oily substances) can be reliably and extremely precisely controlled.
The measurements can be saved in the B-CONTROL MICRO data logger and thereafter simply transferred to a computer in Excel format by applying an SD card.
For harsh ambient conditions, the transport case is dustproof and jet-water proof acc. IP65.

TECHNICAL DATA

B-DETECTION PLUS m	
Medium	Air; Nitrox (max. 40% O_2)
Permissible charging rate (inlet AIRBOX)	4 - 420 bar
Permissible charging rate	no restriction
Permissible operating temperature	+5°C … +45°C
Permissible storage temperature	-10°C … +50°C
Max. permissible impact stress	2 g
Operating pressure (sensors)	Ambient air pressure (approx. 1013mbar)
Maximum permissible ambient humidity	0 to 90% non-condensing
Permissible operating environment	Non-explosive only
Operating voltage / frequency	90 – 260VAC, 50/60Hz
Power consumption	max. 30 W
Flow rate CO, O_2, CO_2, VOC sensor	0.5 … 1.5 l/min
Flow rate dew point sensor	2.0 … 5.5 l/min
Gas intake connection	G5/8“ (M16×1.5)
Connection of ambient air pump (option) and test gas inlet	6 mm
Weight	8.0 kg [1]
Dimensions (H × W × D)	464 × 366 × 180 mm

1 Weight basic variant. Weight with full equipment: 9.3 kg.

Status: 18/08/2023

Sensor modules

The sensors of the B-DETECTION PLUS are arranged to provide optimal operating conditions for each sensor.
The following sensor modules are supplied as a standard in the B-DETECTION PLUS Gas Measurement System:

Oxygen (O_2)	
Medium	Air; nitrox (max. 40 % O_2)
Measurement cell type	Electrochemical
Measurement range	0 % … 40 % O_2
Accuracy of full scale (FS) At calibration temperature At ± 10 ° C deviation from calibration temperature Throughout temperature range 5 ° C to + 45 ° C	 ± 1.0 % ± 1.0 % ± 1.0 %
Warm-up time	60 s
Replacement interval	As required

Carbon monoxide (CO)	
Medium	Air; nitrox (max. 40 % O_2)[1]
Measurement cell type	Electrochemical with 3 electrodes
Measurement range	0 ppm to 25 ppm (parts per million)
Accuracy of full scale (FS) At calibration temperature At ± 10 ° C deviation from calibration temperature Throughout temperature range 5 ° C to + 45 ° C	 ± 1.0 % ± 2.0 % ± 3.5 %
Warm-up time	60 s
Replacement interval	As required

1 For Nitrox applications, the accuracy of the sensor may be impaired.

Carbon dioxide (CO_2)	
Medium	Air; nitrox (max. 40 % O_2)
Measurement cell type	Non-dispersive infrared sensor
Measurement range	0 … 2000 ppm (parts per million)
Accuracy of full scale (FS) At calibration temperature At ± 10 ° C deviation from calibration temperature Throughout temperature range 5 ° C to + 45 ° C	 ± 0.5 % ± 2.5 % ± 4.0 %
Warm-up time	180 s
Service life	approx. 7 years

Status: 18/08/2023

OPTIONAL: To measure absolute humidity, a dew point sensor can be integrated in the gas sampling unit. The display is in mg / m³.

Dew point sensor	
Medium	Air; nitrox (max. 40 % O_2)
Measurement range	-70...+60 °C (-94...+140 °F) / 10 ... 40000 ppm
Permissible storage temperature	-40°C to +60°C
Measurement accuracy at 20°C	± 2°C (±3.6 °F) / 1 ppm + 20% of displaced value
Response times 63 % [90 %] at +20°C gas temperature and 1 bar	-60 °C → -20°C 5s [15s] -20°C→ -60°C 45s [10 min]
Calibration interval	2 years
Housing	Stainless steel (AISI 316L)
IP rating of housing	IP66
Mechanical connection	ISO G1/2” or NPT 1/2
Weight	90 g

In addition, oil can optionally be measured as oil vapour[1]:

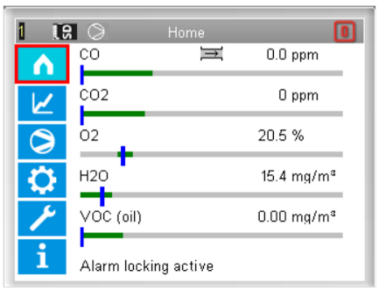
Volatile organic compounds (VOC)	
Medium	Air; nitrox (max. 40 % O_2)
Measurement sensor type	Photoionization detector (PID)
Measurement range	0…1 ppm (parts per million; isobutene as calibration gas)
Detection limit	5 ppb (parts per billion; isobutene as calibration gas)
Storage temperature range	-20 … +60°C
Relative humidity range	0…90 % non-condensing
Warm-up time	180 s
Sensor lamp life	6,000 operating hours

1 DIN EN 12021:2014 defines limits for oil content. Reliable measurement of oil vapour content of the air. Sensor calibration based on isobutene. Oil mist limits as set forth in DIN EN 12021:2014 are not measured.

B-CONTROL Display

The control allows the selection of a tailor-made measuring profile for the respective measurement on the compressor or cylinder.

All measurement values are clearly shown in the display of the B-CONTROL MICRO + net Gas Measurement System. Limits can be adjusted as required using the respective control unit keypad. If the limits are exceeded, an error message is displayed.



Gas measurement values displayed by the B-CONTROL MICRO (+ net)

Status: 18/08/2023

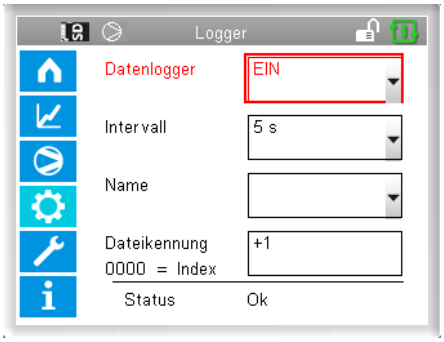
Monitoring

The values measured are monitored by the electronic system. As soon as a measurement value exceeds a predefined alert limit, an optical warning is triggered (message appears on the display and flashing lights).

Alarm limit values can be set as required. Two alarm limits can be set per sensor. Default alarm limit values are set to comply with the DIN EN 12021:2014 standard.

Data logger

The B-CONTROL's data logger function allows all measurement values within a definable interval to be logged and exported in Excel format using an SD card (B-CONTROL MICRO). The BAUER Excel analysis tool also provides a detailed overview of the measured values for individual respiratory air measurements. The logger can be swiftly started and stopped via a key combination.



Data logger display

Gas sampling unit

The ergonomic gas sampling unit can be connected to both +200 bar and 300 bar breathing air cylinders. The built-in bleed valve enables simple venting, thus simple detaching of the unit from either a breathing air compressor or a breathing air cylinder.

The dew point sensor may be optionally integrated in the gas sampling unit, too.

Gas sampling unit

Status: 18/08/2023

System check

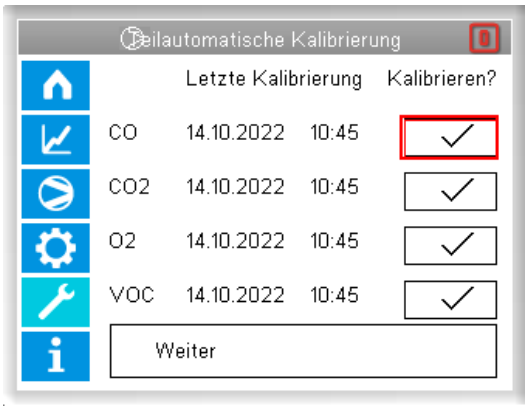
To ensure precise measurements as well as to lengthen the service life of the device, the following inspection intervals are recommended:

Inspection types	Inspection intervals
Visual and leakage check	Monthly (after 1 month)
Function check	Quarterly (after 3 months; sensor calibration whenever required)
Sensor replacement	As required
Calibration of sensors	Dew point: every 2 years (sensor to be returned to BAUER as part of an exchange program) Other sensors: whenever required
Inspection records	3 years

For further maintenance-related information, please refer to the works operating instructions and the works maintenance plan. A testing gas kit for sensor checks is available separately from BAUER.

Calibration

The sensors can be semi-automatically calibrated. In this case, all sensors are calibrated together. The menu navigation provides simple step-by-step instructions. A selection of sensors can be made individually via the B-CONTROL. During calibration, the flow rate is monitored and a timer is started.



Calibration menu display

Furthermore, an expert calibration is also possible. A manual calibration of the sensors is possible in the corresponding software menu and is recommended every 12 months for the CO2 and VOC sensor (PID). Same applies in case of CO and/or CO2 sensor exchange only.
If a replacement assembly (PCB including CO and O2 sensor) is applied, then the CO and O2 sensors are already calibrated at BAUER KOMPRESSOREN in order to ensure the highest possible sensor accuracy.

Calibration gases are available separately from BAUER, too.

Status: 18/08/2023

OPTIONS

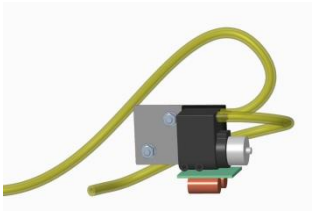
Battery

The integrated battery enables measurements without external power supply for the duration of approx. 5 hours. The long-lasting lithium iron phosphate battery type allows an extraordinary high number of charge cycles during its entire operational life time.

Lithium iron phosphate battery	
Nominal capacity	1500 mAh
Standard voltage	3.2 V
Max. continuous discharge current	4.5 A

Ambient air pump

Enables analysing the gas composition of the ambient (= compressor intake) air.



Ambient air pump

Filling hose adapter

Enables air quality measurement directly from the compressor by connecting to (one of) the systems filling hose(s) or -valve(s).

Nitrox cylinder adapter

Enables connection to Nitrox cylinders 200/300.

Breathing air cylinder adapter up to 500 bar

Enables connection to breathing air cylinders suitable for filling pressures >300 bar.

Carrying strap

Enables easy transport of the B-DETECTION PLUS m gas measurement unit.

Status: 18/08/2023

Connection to B-APP

B-APP offers features such as product-specific news, videos and calculation tools on the subject of compressed (breathing) air.

In addition, the B-APP enables the remote control and monitoring of systems with the new BAUER control B-CONTROL MICRO +net. The connection to the compressor or the B-DETECTION PLUS gas measuring unit can be made either directly via local WLAN or via B-CLOUD.

B-APP can be downloaded free of charge from the App Store (iOS) or Google Play (Android).

Controlling the unit with the B-APP

Weitere Information sowie Informationen zu den technischen Voraussetzungen siehe www.bauer-kompressoren.com

B-LINK

WLAN Access Point/Client for setting up a WLAN for communication of B-CONTROL MICRO +net with the B-APP (remote function) or B-CLOUD.

- Preconfigured as access point: direct WLAN connection with a device (smartphone, tablet).
- Client: For connection to existing WLAN (home router, DSL router, company network). Configuration to be executed by the customer.
- The WLAN module is installed at a suitable location in the compressor and connected ready for operation. Any necessary adjustment to the configuration are made by end user.

B-LINK

B-LINK 4G

As aforementioned, however additionally equipped with mobile radio function (4G)

- Industrial 4G LTE Wi-Fi router for IoT applications
- Dimensions: 83 × 25 × 74 mm (without antennas)
- Incl. 10 m Ethernet cable for connection to the B-CONTROL MICRO +net
- Ready for mobile radio operation ex works. Configuration for WLAN to be executed by end user.

A suitable SIM card (4G/LTE) or a mobile phone contract must be organised by the customer and is not included in the scope of delivery. Depending on the local conditions, installation or mounting is carried out on site outside the compressor unit or B-DETECTION. Not suitable for operation in North America.

Status: 18/08/2023

RULES, STANDARDS AND GENERAL INFORMATION

Relevant EU directives (where applicable)

- EU Pressure Equipment Directive (2014/68/EU)
- EU Low-Voltage Directive 2014/35/EU
- EU Electromagnetic Compatibility (EMV) 2014/30/EU
- Safety requirements for electrical measurement, control, and laboratory use EN 61010-1 July 2011

Applicable national standards and technical specifications, in particular

- T 021: Gas detection equipment and devices for toxic gases/vapours and oxygen - Use and operation

Documentation:	1 × operating manual and parts list with explod89ed view drawing on DVD
Model:	In line with the state of the art according to DIN, VDE, TÜV and Accident Prevention regulations
Testing:	In line with Bauer standard, as per DIN EN 10204 - 3.1

Otherwise the **General Terms and Conditions of** BAUER KOMPRESSOREN (AGB) in the version valid at the time of contract conclusion apply. These Terms & Conditions can be viewed and downloaded at the website www.bauer-kompressoren.com, or sent by BAUER on request.

All information is given without assumption of liability and subject to technical changes.

Status: 18/08/2023