

# B-DETECTION PLUS THE NEXT GENERATION

ONLINE GAS MEASUREMENT SYSTEMS



## BECAUSE “ROUGHLY” ISN'T IN YOUR VOCABULARY

Even when your compressor is operated and maintained in line with professional standards, critical conditions may cause breathing air to become contaminated with hazardous substances. The consequences may be serious, endangering health or even life. Breathing air thus requires continuous monitoring. The same applies to unreliable measurement of breathing air, for example when technically unsuitable sensors are used. BAUER tackled the problem by developing its own gas measurement system in-house. The new B-DETECTION PLUS Gas Measurement System is your reliable partner for measurement needs. It is available in two versions: B-DETECTION PLUS i (integrated into your compressor<sup>1</sup>) and the standalone B-DETECTION PLUS s.

### WHY END-TO-END MONITORING OF BREATHING AIR IS VITAL

- › Avoids accidents caused by excessive CO in breathing air cylinders
- › Helps to mitigate environmental pollution from rising levels of CO<sub>2</sub>
- › Prevents freezing of scuba regulators and rust formation in the cylinder caused by excessive humidity of the compressed air
- › Supports operators with respect to liability issues in case of accidents
- › Protects own and others' health



### RELIABLE AIR QUALITY CHECK

The new B-DETECTION PLUS Gas Measurement System monitors the quality of the breathing air produced by your system in compliance with the Breathing Air Standard, DIN EN 12021:2014<sup>1</sup>. Automatic, continuous and ultra-reliable.



### LEGAL CERTAINTY

When one or more limit values are exceeded, the compressor shuts down automatically. The system also runs a LiveCheck of all sensors before powering up. These safeguards ensure that breathing air cylinders are filled with nothing but pure, clean air at all times. All measurement values can be logged using the B-CONTROL MICRO and exported to an SD card as Excel files. As the system operator, this provides you with a high level of legal certainty.



### SMARTPHONE INTERACTION

The new B-APP sends all current gas measurement data to your smartphone, enabling you to check the quality of breathing air going into your cylinders at all times.



### PLUG AND PLAY

Supplied fully integrated with your compressor system, or as a standalone version for retrofitting: the B-DETECTION AIRBOX includes a full range of all necessary accessories in a single unit for rapid, simple retrofitting to existing systems.



### SIMPLE SERVICE ACCESS

The integrated B-DETECTION PLUS i includes a connector for fast system testing, located under the front panel. The front panel can be opened with a single movement to introduce the test gas through the connector provided.

<sup>1</sup> Can be integrated into compressors from the new MINI-VERTICUS and VERTICUS series, available from spring 2017.

<sup>1</sup> Residual oil (VOC) and humidity monitoring optional. Residual oil measurement based only on volatile organic compounds (VOCs). Sensor calibration based on isobutene.

## THE NEW B-DETECTION PLUS

### CONTINUOUS MONITORING OF YOUR BREATHING AIR QUALITY



Standalone version: B-DETECTION PLUS s

**B-DETECTION PLUS Gas Measurement System monitors the quality of the breathing air you produce:** measuring CO, CO<sub>2</sub>, O<sub>2</sub> as standard and offering options for absolute humidity and residual oil (VOC)<sup>1</sup>. Automatic, continuous and ultra-reliable.

The B-CONTROL compressor control unit enables you to monitor compliance with the limit values of the DIN EN 12021:2014 Breathing Air Standard at all times<sup>1</sup>. If limit values are exceeded, the control unit displays a visual warning and shuts down the system before contaminated air can pass into the cylinders being filled.

In cases where limit values are briefly exceeded, an automatic flush valve (optional) discharges contaminated air to the outside without interrupting operation of the system.

**LifeCheck function runs at every system startup:** Measurement is performed by high-quality sensors with LifeCheck function for maximum reliability.

**Automatic shutdown if flow is blocked:** To ensure continuous flow of air and guarantee correct measurement values, an integrated flow monitor automatically shuts down the compressor if the flow is interrupted or reduced, e.g. caused by piping kinks or blocked filter elements.

#### ADDITIONAL FEATURES

- ▶ Use of high-quality sensors with temperature compensation and additional pressure-compensated CO<sub>2</sub> sensor for extreme measurement precision
- ▶ **All measurement values are logged:** A data logger function enables all measurement values within a defined period to be logged and exported as an Excel file using an SD card.

<sup>1</sup> Absolute humidity and residual oil (VOC) monitoring optional. Residual oil measurement based only on volatile organic compounds (VOCs). Sensor calibration based on isobutene.

### B-DETECTION PLUS I FOR INTEGRATION INTO COMPRESSOR SYSTEMS

If desired, B-DETECTION PLUS i can be integrated into your new VERTICUS or MINI-VERTICUS system with B-CONTROL MICRO or B-CONTROL II control unit at the factory. To ensure optimum operating conditions for the sensors and maximize service life, B-DETECTION i is installed in the cold air flow. Both the gas measurement system itself and the gas extraction unit that regulates the inlet pressure of the B-DETECTION PLUS are integrated into the compressor.

**A single control unit for all components:** So convenient – simply read off the current air quality values from your compressor control unit. You can also make any changes to your B-DETECTION PLUS settings there too.

**Practical:** A connector for testing and calibration gases is located under the front panel of VERTICUS and MINI-VERTICUS systems, for fast and straightforward system testing at any time.

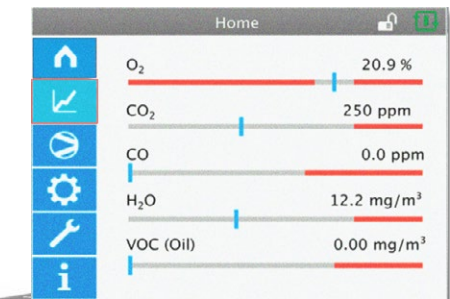
### B-DETECTION PLUS S FOR RETROFITTING AND FURTHER COMPRESSOR SYSTEMS

The new gas measurement system is also available as a standalone model, B-DETECTION PLUS s. Offering the same range of functions, it is designed for separate wall mounting and can be used with further BAUER systems or retrofitted to existing systems.

Air quality levels are displayed on the B-CONTROL MICRO control unit of the standalone gas measurement system, which can also log measurement values. The B-DETECTION PLUS s can also automatically shut down the compressor system if contamination levels rise. Measurement values can be transmitted to the control unit, depending on the model<sup>1</sup>.

In addition, if the quality of the intake air needs to be verified, the B-DETECTION PLUS s can integrate an ambient air pump for periodic measurement of ambient air. If the intake air shows permanently raised CO<sub>2</sub> levels, we strongly recommend the use of an AERO-GUARD CO<sub>2</sub> Absorber.

<sup>1</sup> Transmission of measurement values from the B-DETECTION PLUS s control unit to compressor control system is only possible for BAUER compressors with B-CONTROL MICRO compressor control unit with colour display.



B-DETECTION PLUS i, integrated into a BAUER VERTICUS system

## THE EXPERT SYSTEM FOR STANDARD-COMPLIANT MEASUREMENT

### B-DETECTION PLUS: MEASUREMENT IN COMPLIANCE WITH DIN EN 12021:2014<sup>1</sup>

Enormous engineering and technological expertise are needed to develop a gas measurement system that delivers correct and accurate readings in compliance with the Breathing Air Standard under a wide range of conditions. This is particularly important where the sensor system is concerned.

Instead of going for quick fixes, we took the time to design a perfect gas measurement system, with sensors that are optimized for their specific medium and for the compressor system's field of application.

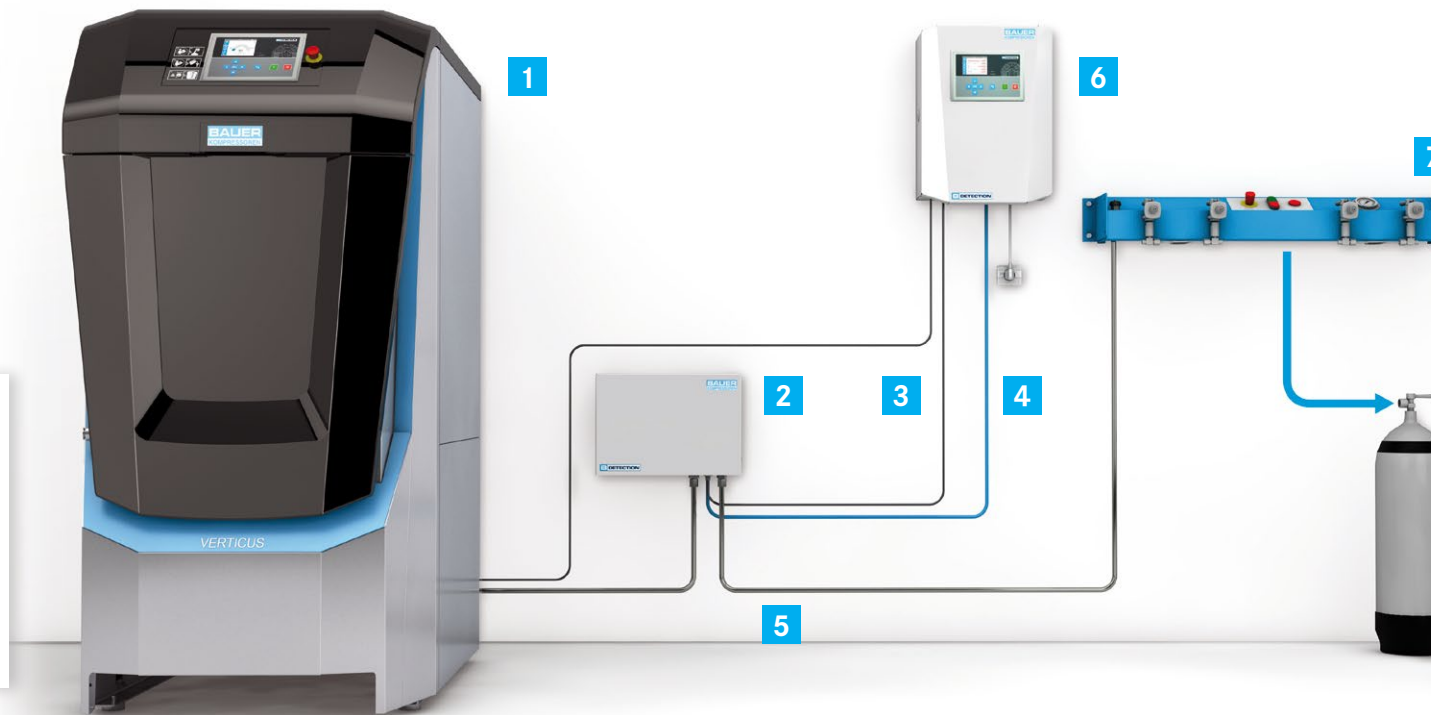
Depending on the model, CO and oxygen sensors may run the risk of drying out if the system operates for many hours per day; this destroys the sensors. For systems in continuous operation, we supply a humidifier unit to ensure optimum measurement conditions and lengthen the service life of the sensor.

**We provide legal certainty:** In case of conflict, the integrated data logger function enables you to provide evidence at all times that your filling processes have supplied only pure breathing air in compliance with the standard.

When it comes to extraction of oil and VOCs, B-DETECTION PLUS and our Original BAUER Filter Cartridges are the perfect team. The cartridges have been tested and certified for their reliability in removing residual oil<sup>2</sup> by the accredited Institute of Energy and Environmental Technology (IUTA). And the special sensor supplied as optional with the B-DETECTION PLUS provides ultra-reliable monitoring of VOCs (volatile organic compounds).

1. High-pressure compressor
2. B-DETECTION AIRBOX
3. Data cable
4. Gas hose
5. High-pressure piping
6. B-DETECTION PLUS s
7. External filling panel

Breathing Air Standard, DIN EN 12021: 2014-07	
	Limit values
Oxygen (O <sub>2</sub> )	21 % ± 1 %
Carbon monoxide (CO)	5 ppm
Carbon dioxide (CO <sub>2</sub> )	500 ppm
Oil	0,5 mg/m <sup>3</sup>
H <sub>2</sub> O	25 mg/m <sup>3</sup>



<sup>1</sup> Absolute humidity and residual oil (VOC) monitoring optional. Residual oil measurement based only on volatile organic compounds (VOCs). Sensor calibration based on isobutene.

<sup>2</sup> Measurement in compliance with EN 8573 industrial standard

## PLUG AND PLAY

### FAST AND SIMPLE TO INSTALL OR RETROFIT

Supplied fully integrated with your compressor system, or as a standalone version for retrofitting: the B-DETECTION AIRBOX includes the full range of functions, including the gas sampling device and optional automatic flushing system, in a single unit. It is quick and simple to retrofit to existing systems. An extensive range of accessories are available

#### OPTIONAL ACCESSORIES

- › **Gas humidifier:** For systems in operation for more than one hour per day, the additional humidification hose is recommended to maximize the service life of the electrochemical sensors (CO, O<sub>2</sub>).
- › **Automatic flush valve:** In cases where limit values are briefly exceeded, an automatic flush valve (registered as a utility patent) discharges contaminated air to the outside without interrupting operation of the system. This is particularly recommended for fully automatic operation of the system to avoid unnecessary interruption to compressor operation.
- › **Ambient air pump:** An additional pump installed in the measurement system enables the gas composition of the intake air to be analysed. Where the CO<sub>2</sub> content of the intake air is permanently at levels of 450 ppm or over, we recommend using an AERO-GUARD CO<sub>2</sub> Absorber.
- › **B-APP:** The new B-APP sends all current gas measurement data to your smartphone, allowing you to enable you to check the quality of breathing air going into your cylinders at all times<sup>1</sup>.

<sup>1</sup> As a requirement, the B-CONTROL MICRO (+Net) compressor control unit must have a valid IP address and be connected to the same local area network (LAN/WLAN) as the smartphone.

## TECHNICAL DATA

B-DETECTION PLUS	
<b>MEASUREMENT VALUES</b>	
Carbon dioxide (CO <sub>2</sub> ), carbon monoxide (CO), oxygen (O <sub>2</sub> ), absolute humidity <sup>1</sup> , VOC <sup>1</sup>	
<b>SYSTEM LIMITATIONS</b>	
Maximum system pressure	350 bar
Maximum permissible charging rate compressor	850 l/min
Permissible operating temperature	+5°C... +45°C
<b>MEASUREMENT METHOD</b>	
CO <sub>2</sub>	Non-dispersive infrared spectroscopy (NDIR)
CO, O <sub>2</sub>	Electrochemical
Absolute humidity	Via dew point
VOC (oil)	Photoionization detector (PID)
<b>MEASUREMENT VALUES AND MEASUREMENT ACCURACY<sup>4</sup></b>	
CO <sub>2</sub>	0... 2.000 ppm ± 2.5 % Full scale
CO	0 ... 25 ppm ± 2 % of measurement range final value
O <sub>2</sub>	0 % ... 40 % O <sub>2</sub> ± 1 % of measurement range final value
Dew point	-70 ...+60°C / 10 ... 40,000 ppm ± 2°C / 1 ppm + 20% of displayed value
VOC (oil)	0 ... 1 ppm (based on isobutene as calibration gas)
<b>FURTHER TECHNICAL SPECIFICATIONS</b>	
Operating voltage	integrated: 24 VDC; stand-alone: 100-250 VAC, 50/60 Hz
Flow rate	1.0 ... 3.0 l/min
Weight	integrated: 3 kg; stand-alone: 8.5 kg
Dimensions W x H x D [mm] with access	integrated: 160 x 260 x 92; stand-alone: 462 x 354 x 184
<b>SYSTEM TEST/CALIBRATION</b>	
Visual and tightness test	Monthly
Function check <sup>2</sup>	Min. 3-monthly
System check <sup>3</sup>	Annually
Calibration	CO <sub>2</sub> and PID sensor: annually and after replacing sensor; dew point sensor: every 24 months

1 Optional extra

2 Includes test with testing gas; kit with testing gas cylinders and pressure reducer (flow meter) available from BAUER KOMPRESSOREN

3 System check includes replacement of electrochemical sensors (CO and O<sub>2</sub>)

4 Accuracy valid at max. +/- 10 °C deviation from calibration temperature.

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May be subject to technical changes