

Instructions for installation and operation

Measurement accessories METPOINT[®] OCV for the measurement in systems up to 40 bar



Dear customer,

Thank you for deciding in favour of the METPOINT[®] OCV measuring device with sampling probe. Please read these installation- and operating instructions carefully before mounting and starting up the METPOINT[®] OCV measuring device, and follow our directions. Perfect functioning of the METPOINT[®] OCV, and thus exact measurement and monitoring of the residual oil content in compressed air, can only be guaranteed when the provisions and notes stipulated here are strictly adhered to.

These instructions for installation and operation are a supplement to the installation and operating instructions METPOINT[®] OCV for the installation and operation of the measurement accessories to be applied in systems with an operating pressure of 40 bar.

The installation and operating instructions of the integrated components are not substituted by these, and they shall still be applied in their entirety. They should always be available during the operation of METPOINT[®] OCV in systems with an operating pressure of 40 bar.

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2 Operating conditions

2.1 Operating conditions METPOINT[®] OCV

Max. permissible operating overpressure PS:	16 bar g
Working pressure compressed air:	7 bar g
Min. / max. permissible operating temperature	
of the sensor unit:	+5℃ / +55℃
Min. / max. permissible operating temperature	
of the evaluation unit:	+5℃ / +50℃
Min./max. ambient temperature:	+5℃ / +45℃
Supply voltage:	230 VAC 50 Hz

See also the separate instructions for installation and operation of the METPOINT[®] OCV.

2.2 Operating conditions ball valve 3/8" for METPOINT[®] OCV

Max. permissible operating overpressure PS:	40 bar g
Working pressure compressed air:	38 bar g
Min. / max. permissible operating temperature:	-30°C / +60°C
Min./max. ambient temperature:	+5℃ / +45℃

2.3 Operating conditions pressure reducer for METPOINT[®] OCV

Max. permissible operating overpressure PS:	40 bar g
Max. inlet pressure compressed air:	40 bar g
Max. outlet pressure compressed air:	10 bar g
Min. / max. permissible operating temperature:	-30°C / +60°C
Min./max. ambient temperature:	+5℃ / +45℃

See also Chapter "Details pressure reducer", page 15 and Chapter "Appendix" (pressure governor), page 19.

3 General advice

Check, prior to reading the operating instructions, whether or not these instructions correspond to the device.



Read these installation and operating instructions carefully prior to any intervention regarding the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar.

The operating instructions must be accessible at all times at the place of application of the device.



To ensure safe operation, the device must only be operated and maintained in accordance with the indications in the operating instructions. In addition, the national and operational statutory provisions and safety regulations, as well as the accident prevention regulations required for the respective case of application, need to be observed during employment. This applies accordingly when accessories are used.

Non-observance of the installation and operating instructions involves risks for persons and systems.



System performance tests, installation, setting and service measures must only be carried out by authorised skilled personnel.



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In the event of improper use of the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar, or in the event of non-observance of these instructions, warranty and liability claims are excluded.

If you have any queries regarding these instructions, please contact BEKO TECHNOLOGIES GMBH.

This symbol stands for actions which can also be implemented by the operators, provided that they are skilled and authorised accordingly.

4 Safety instructions

In addition to these operating instructions, it is imperative to adhere to the relevant accident prevention regulations, the generally accepted safety rules, the EU directives and country-specific standards and provisions.

4.1 Safety labelling

Safety instructions whose non-observance represents a threat to life and physical condition or can lead to property damage are labelled in accordance with DIN 4844 and ANSI Z535.

Safety pictograms in accordance with DIN 4844



4.2 Signal words in accordance with ANSI

Danger!	Imminent hazard Serious injury or death
Warning!	Potential hazard Serious injury or death
Caution!	Imminent hazard Injury or property damage
Notice!	Potential hazard Injury or property damage
Important!	Additional advice, info, hints No danger

4.3 General safety instructions

DANGER!



Compressed gas!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed gas or through bursting plant components.

It is the obligation of the operator to ensure that the connected pressure generator is protected against the exceeding of the maximum operating overpressure and of the temperature limits at the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar.

Make sure that the system is pressureless prior to integrating the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar into the compressed gas system!

Any installation works must only be carried out on the pressureless system. Only use fittings and connecting elements that are approved for this application. It is of vital importance to observe the specifications of the respective manufacturer.

Unpressurise the plant prior to any maintenance or repair works!

Check all connections prior to the initial start-up and retighten them if necessary.

Do not exceed the max. permissible operating pressure (see type plate).

The max. permissible operating overpressure is specified on the type plate and in the technical data (see "Technical data" section).

Sudden impact through pressure build-up can cause damage and escape of compressed gas.

Avoid a sudden pressure build-up by operating the valves slowly.

Maintenance, inspection and installation works must be carried out by authorised and skilled personnel only. Prior to undertaking any measures on the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar, the skilled personnel shall read up on the device by carefully studying the operating instructions. The operator is responsible for the adherence to these provisions. The respective directives in force apply to the qualification and expertise of the skilled personnel.

Never make structural modifications to the plant!

Use genuine spare parts and accessories only!

The general safety and accident prevention regulations apply!



DANGER!

Supply voltage!

The operation and maintenance of electrically-powered machines and devices must only be undertaken by correspondingly qualified and authorised personnel. Prior to carrying out service measures, no matter which type, the following notes must be considered:

Make sure that no parts of the system are energised and that the METPOINT[®] OCV cannot be connected with the electric supply mains during service measures.



WARNING!

Unauthorised interventions!

Any modification of the components that has not been checked and approved by the manufacturer is potentially dangerous and will void any warranty and liability on the manufacturer's part.



In the event of fire, do not use water to extinguish it (neither in the vicinity of the system nor directed directly at the system).

4.4 Special advice for plants under pressure in accordance with the 97/23/EC Pressure Equipment Directive

The proper use of the measuring device is the basic requirement for safe operation. Therefore, the user must proceed as follows:

- The METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar must only be employed within the pressure and temperature range limits indicated by the manufacturer on the type plate.
- No welding measures must be undertaken at the housing parts of the devices.
- The maximum operating pressure indicated by the manufacturer on the type plate must not be exceeded. It is the user's responsibility to install the appropriate safety and control devices.
- The documents related to the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar (manual, operating instructions, manufacturer's declaration etc.) must be kept safe for future reference.
- No objects whatsoever must be installed at or placed on the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar and the connecting lines.



DANGER!

High pressure!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components.

Never make structural modifications to the plant!

Use genuine spare parts and accessories only!



WARNING!

Unauthorised intervention!

Unauthorised interventions may endanger persons and plants and lead to malfunction.

Unauthorised interventions, modification and abuse of the pressure devices are prohibited. User of the devices must observe the local and national pressure equipment regulations in the country of installation.

4.5 Special safety instructions



IMPORTANT!

Compressed air!

Exceeding the maximum pressure can lead to damaging the plant.

Observe the indications regarding the maximum pressure on the type plate!

IMPORTANT!

Operational reliability at risk!

Incorrect installation can compromise the operational reliability and affect service measures.

Do not exceed the permissible volume flow and working pressure!

Do not operate below the working pressure!

NOTE!



Service measures!

Any service measures on the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar must only be carried out on the de-activated, pressureless and de-energised METPOINT[®] OCV.

5 Field of application and proper use of the METPOINT[®] OCV 40 bar measurement accessories

The METPOINT[®] OCV measurement accessories serve to expand the operating pressure range of the METPOINT[®] OCV to 40 bar. With this, the stationary measurement and monitoring of the vaporous and gaseous residual oil content of the compressed air (ISO 8573:2001) in systems with an operating pressure of40 bar is possible. Any other use is considered improper.

The manufacturer and the marketer shall not be liable for the consequences of improper use; the user and operator alone is responsible for all risks that may arise.

The proper employment and use of the METPOINT[®] OCV according to directions requires the exact compliance with the installation instructions, in particular in respect of:

- The place of installation, installation conditions
- The voltage supply and frequency
- Pressure, temperature and humidity of the inlet air
- Ambient temperature
- The measuring device is supplied as accepted in the factory. The user only needs to establish the connections with the supply mains and interconnect the components, which is described in the following chapters.



WARNING!

Employment for the prevention of dangerous conditions!

A device of the METPOINT[®] OCV series must not be employed as the sole means of preventing dangerous conditions at machines and plants.

Machines and plants must be constructed in such a manner that defective conditions do not lead to a dangerous situation for persons or plants.



WARNING!

Improper use!

The METPOINT[®] OCV measuring devices and the accessories offer state-of-the-art technology and are operationally safe. Residual risks may emanate from the measuring device and the accessories when improperly installed, employed, or operated by untrained personnel.



The METPOINT[®] OCV measuring devices and their accessories must only be used by qualified and authorised personnel and exclusively in accordance with the technical data.

6 Technical data

Name	Measurement accessories METPOINT® OCV for the measurement in systems with an operating pressure of up to 40 bar
Manufacturer	BEKO TECHNOLOGIES GMBH Germany, 41468 Neuss, Im Taubental 7
Medium	Compressed air, free from aggressive, corrosive, caustic, toxic, flammable, and fire-accelerating constituents
Connection sensor unit	G 3/8" internal thread
Connection measuring probe	3/8" external thread
Connection ball valve	G 3/8" internal thread
Connection pressure reducer	1/4 NPT internal thread
Max. permissible operating overpressure	METPOINT [®] OCV 16 bar(g) Ball valve for METPOINT [®] OCV 40 bar(g) Pressure reducer for METPOINT [®] OCV 40 bar(g)
Operating overpressure METPOINT [®] OCV	7 bar(g)
Operating overpressure ball valve	38 bar(g)
Operating overpressure pressure reducer	Primary pressure 38 bar(g) Secondary pressure 7 bar(g)
Min./max. permissible operating temperature	+5 ℃ / +50 ℃
Min./max. ambient temperature	+5℃ / +45℃
Supply voltage METPOINT [®] OCV	230 V AC 50 Hz

7 Transport and set-up

IMPORTANT!



Danger through damaged components!

Under no circumstances should you start up damaged components. Defective components can impair the operational reliability and cause further damage.

The function and service life of the METPOINT[®] OCV in the version for the measurement in systems with an operating pressure of 40 bar depends on the conditions at the place of installation. This place must meet the following requirements:

- 1. Weather-proof and frost-free installation within a building.
- 2. The ambient temperature must not drop below or exceed the indications on the type plate.
- 3. The installation conditions in the separate installation and operating instructions need to be observed and followed.

8 Operating principle of the METPOINT[®] OCV 40 bar

The METPOINT[®] OCV in the version for an operating pressure of 40 bar was developed for the detection of vaporous and gaseous hydrocarbons in compressed air that is free from aggressive, caustic, toxic, flammable, and fire-accelerating constituents.

To determine the residual oil content in systems with an operating pressure of up to 40 bar(g), a partial volume flow can be taken from the system, and the system pressure reduced to 7 bar(g). With the reduced operating pressure, the medium flows through the METPOINT[®] OCV.



The measuring probe of the METPOINT[®] OCV is integrated into the pipework system of the customer. The provided ball valve allows for the separation of the METPOINT[®] OCV from the system for maintenance and calibration, without needing to interrupt the compressed-air supply. For the reduction of the operating pressure, a special pressure reducer is installed.

For the tubing from the pressure reducer to the METPOINT[®] OCV, a stainless steel pipe \emptyset 6 x 1 mm is used. The length of the pipework must not exceed 1000 mm.

The medium travels at approximately 2 l/min through the METPOINT[®] OCV, which means that the "loss" of compressed air through the measurement in the withdrawn partial flow is negligible.

9 Description structure and components



- 1 Sensor unit METPOINT[®] OCV (component part METPOINT[®] OCV)
- 2 Pressure reducer (measurement accessories)
 - Connection between the pressure reducer and the ball valve, 1m stainless steel
- 3 pipe 6 x 1 mm (measurement accessories)
- 4 Ball valve 3/8" (measurement accessories)
- 5 Sampling probe (component part METPOINT[®] OCV)

10 Details pressure reducer

The pressure reducer is intended for a maximum primary pressure of 40 bar(g). The secondary pressure is adjusted to 7 bar(g) and can be read at the manometer.



No further settings are required on the part of the customer.

11 Installation

11.1 Mechanical installation

The installation of the METPOINT[®] OCV and of the 3/8" ball valve is carried out in accordance with the specifications in the separate instructions for the installation and operation of the METPOINT[®] OCV.

The sensor unit of the METPOINT® OCV must be fixed on the part of the customer.

The pressure reducer is firmly connected with the inlet into the sensor unit and is fixed in the factory using a holding plate.

The connection between the pressure reducer and the ball valve can be flexibly designed. For this purpose, the supplied stainless steel pipe 6×1 mm and fittings must be used.

The installation can be implemented by the customer, but we recommend having the device installed and started up by our service crew.

11.2 Electrical installation / connection to the electric mains

The electrical installation of the METPOINT[®] OCV is carried out in accordance with the specifications in the separate instructions for the installation and operation of the METPOINT[®] OCV.

12 Start-up

12.1 Initial start-up

Please proceed according to the description in the separate instructions for installation and operation in order to start up the $METPOINT^{\oplus}$ OCV.

12.2 Restart

When the METPOINT[®] OCV is started up after a long rest period, please proceed as if you were starting up the device for the first time.

Check, above all after service measures or repair, whether or not the components are tubed completely and electrically connected. If this is not the case, carry out the installation properly.

Check all of the pipe joints for tightness.

13 Removal from service



DANGER!

High pressure!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components.



Unpressurise the plant prior to any maintenance or repair works!



DANGER!

Supply voltage!

Contact with non-insulated parts carrying supply voltage involves the risk of an electric shock resulting in injury and death.

The connection to the electric mains and the corresponding protective equipment must comply with the legal provisions in force at the place of installation of the METPOINT[®] OCV; the connection and installation must be carried out by correspondingly qualified skilled persons.



NOTE!

No repair and maintenance measures under supply voltage!

De-energise all connector cables prior to repair or maintenance!

The repair and maintenance measures must only be carried out by correspondingly qualified personnel and in accordance with the legal stipulations in force!

The general safety regulations in accordance with UVV and VDE shall apply, as well as all relevant safety regulations of the country where the devices are operated.

Switch off the compressor.

Slowly decompress the system.

Disconnect the device from the power supply.

14 Maintenance

The METPOINT[®] OCV in the version for an operating pressure of 40 bar must be subjected to regular inspections and service measures through authorised skilled personnel.

For the maintenance of the METPOINT[®] OCV, the specifications in the separate installation and operating instructions apply.

Use original BEKO spare parts only.

14.1 Care

 NOTE!

 Aggressive cleaning agents and solvents must not be used!

14.2 Calibration

For the calibration of the METPOINT[®] OCV, the specifications in the separate installation and operating instructions apply.

15 Appendix



1. Application

A

1.1 Designated use

Use the pressure regulator M51, E51, M52 and E52 for gases dissolved under pressure, compressed gases or liquified gases. The pressure control panel reduces an inlet pressure to an as constant as possible outlet pressure. This equipment can be used in explosion endangered areas because they don't have an own potential source of ignition (ignition risk assessment according to DIN EN 13463-1)

1.2 Non-designated use

Do not use the pressure regulator for liquids. Do not use unsuitable gas types or corrosive gases. Do not use at temperatures below -30°C or above +60°C.

The system has to be used according to this operating instructions and especially the safety instructions!

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1.3 Technical data



2. Safety instructions

- All items of information marked with A are important safety instructions.
- 2.2 This pressure regulator correspond to state-off-the-art technology and to the demands of the existing standards and regulations.
- 2.3 Changes or modifications are not allowed to be made to the pressure regulator without the prior consent of the manufacturer.
- 2.4 Pressure regulators must be operated by suitable trained personnel.
- 2.5 Improper handling and use can evolve risks for the user and other persons as well as damage to the device.
- 2.6 Code of practice and guidelines Pressure Equipment Directive 97/23/EC
- 2.7 All parts comming in contact with oxygen must be kept in oil-free and grease-free condition.
 - Fire or explosion hazard!

Smoking or open fire in the vicinity of your gas supply system is strictly prohibited! 2.8 Fire or explosion hazard!

- 2.9 The gas cylinder valve has always to be opend slowly!
- 2.10 Only for gases, which are indicated in the labelling at the pressure regulator for gas cylinder.
- 2.11 The pressure regulator must not be exposed to ambient temperatures below -30°C and above +60°C°.

A Special attention has to be paid to the country specific laws, regulations and procedures concerning the use of this type of equipment.

3. Labelling



- 1 type of regulator
- 2 ordering no.
- 3 max, inlet pressure
- 4 max. outlet pressure
- 5 date of manucacture

4. Installation

- Before starting read the specifications of this instruction for use and observe it while working
- 4.2 Check, that the shut-off valve connections are without any damage (blow through if nessesary).
 - In case of a damage, the pressure regulator must not be connected.
- 4.3 When installing the pressure regulator in a pipe-line it is essential to ensure that the pipe axes coincide with the connection axes of the regulator.
- 4.4 Before mounting, check that the threads and the connection seals are in perfect condition.
- 4.5 A shut-off valve should be arranged in the supply line of the pressure regulator, so that the pressure gauge of the regulator can be observed when opening the shut-off valve.
- 4.6 A shut-off valve is required in the line between the regulator and the outlet when there is no facility for shutting off the line on the tapping point. The distance between the regulator and the shut-off valves must be min. 20x nom. diameters of the pipe.

For NPT fittings, wind teflon tape (PTFE) clockwise around 1/4-18 NPT thread (wind around 5 to 10 times) leaving the first thread turn free. Screw the parts together, ensuring a gas tight seal.

- 4.7 Hoses which are attached to hose coupling nipples must be secured with hose clips. Check their suitability for the application (rated pressure). Mounted pipes must be in a clean and dry condition. The sealing caps have to remove immediately before mounting.
- 4.8 Pipe mounting in a compression ring fitting:

Plug-in the burr-free pipe into the screwed connection. Tighten the union nut with a suitable spanner 1 1/4 turns while holding the counterpart in position with a second spanner.

5. Start-up

The high pressure and the low pressure shut-off valves must be closed before unscrewing the adjusting spindle as far as possible. Then screw it approximately halfway back.

Then open the high pressure shut-off valve slightly (only a fraction of a turn for small flow rates), so that the inlet pressure of the regulator rises slowly to its full value and the outlet pressure to approx, half of the maximum value. After this filling procedure is completed, open the high pressure shut-off valve completely.

Adjust the outlet pressure with the hand knob. Open the low pressure shut-off valve and, when the required flow rate has been reached, readjust the outlet pressure with the hand knob.

6. Operation and maintenance

- 6.1 Pressure regulators are always to be protected against damage (visual inspections in regular intervals).
- 6.2 Pay attention to a perfect status of seals, sealing surfaces and pressure gauges.
- 6.3 In case of malfunctions, e. g. an increase in the outlet pressure during the supply, or in case of leakage versus atmosphere or a defective pressure gauge, shut down the upstream gas supply and take the pressure regulator out of operation.

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7. Dimensions



8. Shut-down

- 8.1 For short-term interruption of work
 - Close the shut-off valve at the consumer unit.
- 8.2 For longer interruptions or at the end of the work:
- Close the gas cylinder valve and the shut-off valve at the consumer unit.
- 8.3 Before disassembly pay attention that pressure gauges and indicate zero.

9. Repair

- 9.1 Repairs may only be carried out in authorized workshops by expert persons.
- 9.2 Only original spare parts may be used. The materials have been adapted to the gas type in each instance. So always specify the gas type.
- 9.3 In case of unauthorized repairs or use of non-original spare parts, any form of liability for resulting damages will expire as well as the manufacturer's warranty.
- 9.4 After beeing repaired, the pressure regulator must be checked with respect to proper function, leak-tightness and cleanliness of the gas-wetted surfaces.

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Headquarters:

Deutschland / Germany BEKO TECHNOLOGIES GMBH Im Taubental 7 D-41468 Neuss Tel.: +49 (0)2131 988 0 beko@beko.de

Česká Republika / Czech Republic BEKO TECHNOLOGIES s.r.o. Mlýnská 1392 CZ - 562 01 Usti nad Orlici Tel.: +420 465 52 12 51 info.cz@beko.de

Italia / Italy BEKO TECHNOLOGIES S.r.I Via America 14 I - 10071 Borgaro Torinese (TO) Tel.: +39 011 4500 576 info.it@beko.de

Scandinavia BEKO TECHNOLOGIES AS P.O.Box 12 N-1393 Vollen Leangbukta 31 N-1392 VETTRE Tel.: +47 31 29 10 50 kjell@beko-technologies.no

臺灣 / Taiwan BEKO TECHNOLOGIES Co.,Ltd 16F.-5, No.79, Sec. 1, Sintai 5th Rd., Sijhih City, Taipei County 221, Taiwan (R.O.C.) Tel.: +886 2 8698 3998 info@beko.com.tw Benelux BEKO TECHNOLOGIES B.V. Vaartveld 25 NL - 4704 SE Roosendaal Tel.: +31 165 320 300 info@beko.nl

France BEKO TECHNOLOGIES S.à.r.l. Zone Industrielle 1 Rue des Frères Remy F- 57200 Sarreguemines Tel.: +33 387 283 800 beko@wanadoo.fr

日本 / Japan BEKO TECHNOLOGIES K.K KEIHIN THINK 8 Floor 1-1 Minamiwatarida-machi Kawasaki-ku, Kawasaki-shi JP-210-0855 Tel.: +81 44 328 76 01 info@beko-technologies.co.jp

South East Asia BEKO TECHNOLOGIES S.E.Asia (Thailand) Ltd. 75/323 Romklao Road Sansab, Minburi Bangkok 10510 Thailand Tel.: +66 (0) 2-918-2477 BEKO-info@beko-seasia.com

United Kingdom BEKO TECHNOLOGIES LTD. 2 West Court Buntsford Park Road Bromsgrove GB-Worcestershire B60 3DX Tel.: +44 1527 575 778 beko@beko-uk.com 中华人民共和国 / **China** BEKO TECHNOLOGIES (Shanghai) Co. Ltd. Rm.606 Tomson Commercial Building 710 Dongfang Rd. Pudong Shanghai China P.C. 200122 Tel.: +86 21 508 158 85 beko@beko.cn

India

BEKO COMPRESSED AIR TECHNOLOGIES Pvt. Ltd. Plot No.43/1, CIEEP, Gandhi Nagar, Balanagar, Hyderabad - 500 037, INDIA Tel.: +91 40 23080275 eric.purushotham@bekoindia.com

Polska / Poland BEKO TECHNOLOGIES Sp. z o.o. ul. Chłapowskiego 47 PL-02-787 Warszawa Tel.: +48 (0)22 855 30 95 info.pl@beko.de

España / Spain

BEKO Tecnológica España S.L. Polígono Industrial "Armenteres" C./Primer de Maig, no.6 E-08980 Sant Feliu de Llobregat Tel.: +34 93 632 76 68 info.es@beko.de

USA

BEKO TECHNOLOGIES CORP. 900 Great SW Parkway US - Atlanta, GA 30336 Tel.: +1 (404) 924-6900 beko@bekousa.com

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