Operating instructions **EN**

Bourdon tube pressure gauge
Model 131.11 + Option ATEX
NS 40 [1 ½"], 50 [2"], 63 [2 ½"]

14143225.03 · 10/2024 EN/DE

Contents

Declarations of conformity, see www.wika.com
Data sheet, see www.wika.com

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1. General information

- The instrument described in the operating instructions has been designed and manufactured using state-of-the-art technology. All components are subject to stringent quality and environmental criteria during production. Our management systems are certified in accordance with ISO 9001 and ISO 14001.
- These operating instructions contain important information on handling the instrument. Working safely requires that all safety instructions and work instructions are observed.
- Observe the relevant local accident prevention regulations and general safety regulations for the instrument‘s range of use.
- The operating instructions are part of the product and must be kept in the immediate vicinity of the instrument and readily accessible to skilled personnel at any time. Pass the operating instructions on to the next operator or owner of the instrument.
- Skilled personnel must have carefully read and understood the operating instructions prior to beginning any work.
- In case of a different interpretation of the translated and the English operating instructions, the English wording shall prevail.
- If available, the provided supplier documentation is also considered to be part of the product in addition to these operating instructions.
- The general terms and conditions contained in the sales documentation shall apply. Subject to technical modifications.
- Further information:
  - Internet address: www.wika.de / www.wika.com
  - Relevant data sheet: PM 01.05

Explanation of symbols

WARNING!
... indicates a potentially dangerous situation that can result in serious injury or death, if not avoided.

Information
... points out useful tips, recommendations and information for efficient and trouble-free operation.

2. Safety

WARNING!
Before installation, commissioning and operation, ensure that the appropriate instrument has been selected in terms of measuring range, design and specific measuring conditions.

WARNING!
Observe the information given in the applicable conformity evaluation for constructive safety “h” (EN ISO 80079-36 and EN ISO 80079-37) and the relevant country-specific regulations for installation and use in hazardous areas (e.g. IEC 60079-14, NEC, CEC). Non-observance can result in serious injury and/or damage to the equipment.

- Check the compatibility with the medium of the materials subjected to pressure!
- In order to guarantee the measurement accuracy and long-term stability specified, the corresponding load limits must be observed.
- Due to potential ignition hazards (e.g. static discharge), the packaging material must not be put in the hazardous area.
- Non-observance can result in serious injury and/or damage to the equipment.
- Only qualified persons authorised by the plant manager are permitted to install, maintain and service the instruments.

Further important safety instructions can be found in the individual chapters of these operating instructions.

2.1 Intended use

The pressure gauge is used for measuring pressure in hazardous areas of industrial applications. Use in zone 1/21 or zone 2/22 is allowed, for permissible medium temperature see chapter 3.1 “Permissible temperature ranges”. For indoor use only.

Only use the instrument in applications that lie within its technical performance limits (e.g. max. ambient temperature, material compatibility, ...).

→ For performance limits see chapter 3 “Specifications”.

The instrument has been designed and built solely for the intended use described here, and may only be used accordingly.
The manufacturer shall not be liable for claims of any type based on operation contrary to the intended use.

Refrain from unauthorised modifications to the instrument in order to ensure safe operation.

2.2 Personnel qualification

WARNING!
Risk of injury should qualification be insufficient!
Improper handling can result in considerable injury and damage to equipment.
The activities described in these operating instructions may only be carried out by skilled personnel who have the qualifications described below.
Keep unqualified personnel away from hazardous areas.

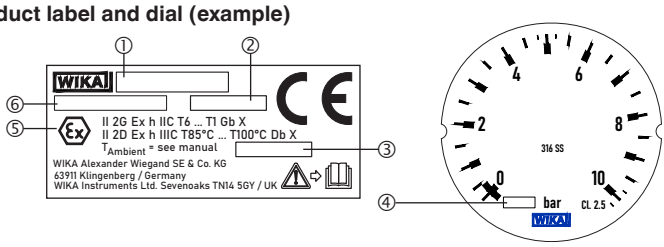
Skilled personnel
Skilled personnel are understood to be personnel who, based on their technical training, knowledge of measurement and control technology and on their experience and knowledge of country-specific regulations, current standards and directives, are capable of carrying out the work described and independently recognising potential hazards.

Special knowledge for working with instruments for hazardous areas:
The skilled personnel must have knowledge of ignition protection types, regulations and provisions for equipment in hazardous areas.

Special operating conditions require further appropriate knowledge, e.g. of aggressive media.

2.3 Labelling / safety marks

Product label and dial (example)



① Model
② Date of manufacture
③ Maximum permissible pressure PS
④ Serial number
⑤ ATEX marking, see table 1
⑥ Article number

Table 1: Legend ATEX marking

Marking	Designation	Meaning
II	Instrument group	The unit may be used in hazardous areas, except within the mining industry.
2G	Instrument category 2	Suitable for gases in zone 1
2D	Instrument category 2	Suitable for dusts in zone 21
h	Ignition protection type	Constructive safety for non-electrical instruments in hazardous areas in accordance with EN ISO 80079-36 and EN ISO 80079-37.
T*	Temperature class	See chapter 3.1 “Permissible temperature ranges”
Gb/Db	Equipment protection level (EPL)	In accordance with EN ISO 80079-36 and EN ISO 80079-37
X	Special conditions for safe use (X conditions)	See chapter 4.1 “Special conditions for safe use (X conditions)”

Explanation of symbols

Before mounting and commissioning the instrument, ensure you read the operating instructions!

3. Specifications

Nominal size in mm
40 [1 ½"], 50 [2"], 63 [2 ½"]

Scale ranges
0 ... 1 to 0 ... 1,000 bar or 0 ... 15 to 0 ... 15.000 psi

Pressure limitation

Steady: 3/4 x full scale value
Fluctuating: 2/3 x full scale value
Short time: Full scale value

Temperature effect

When the temperature of the measuring system deviates from the reference temperature +20 °C [+68 °F]: max. ±0.4 %/10 K of full scale value

Ingress protection per IEC/EN 60529

- IP54
- IP65 (only selectable for scale ranges from 0 ... 16 bar [0 ... 250 psi] and centre back mount)

3.1 Permissible temperature ranges

The permissible medium temperature does not only depend on the instrument design, but also on the ignition temperature of the surrounding gases, vapours or dusts. Both aspects have to be taken into account.
When mounting the instrument it must be ensured that, taking into consideration the influence of convection and heat radiation, no deviation above or below the permissible ambient and media temperatures can occur. The influence of temperature on the indication accuracy must be observed.

Potentially explosive gas atmosphere

Required temperature class (ignition temperature of gas or vapour)	Maximum permissible temperature range	
	Medium	Ambient
T6	-40°C …+60°C	-40°C …+60°C
T4 ... T1	-40°C …+100 °C	-40°C …+60°C

Attention! With gaseous substances, the temperature may increase as a result of compression warming. In these cases it may be necessary to throttle the rate of change of pressure or reduce the permissible medium temperature.
The surface temperature of the instrument mainly depends on the medium temperature of the application. The instrument itself does not contain any heating sources.
For determining the maximum surface temperature, besides the medium temperature also other influences such as the ambient temperature and, if applicable, the solar irradiation must be taken into account. For prevention, consider the maximum medium temperature as maximum surface temperature, if it is not possible to determine the real surface temperature even in the case of expected malfunctions.

Potentially explosive dust atmosphere
For dusts, the procedure specified in ISO/IEC 80079-20-2 for determining the ignition temperature has to be applied. The ignition temperature is determined separately for dust clouds and dust layers, respectively. For dust layers, the ignition temperature depends on the dust layer thickness per IEC/EN 60079-14.

The materials used limit the surface temperature to max. 100 ° C. The surface temperature must not exceed the medium temperature.

The permissible maximum medium temperature must not exceed the lowest determined value, even in case of a malfunction.

The instruments must not be used in areas in which an atmosphere consisting of explosive hybrid mixtures (dusts mixed with gases) can occur.

Materials

Wetted parts:	Stainless steel
Movement:	Stainless steel
Dial and pointer:	Aluminium
Case:	Stainless steel
Window:	Laminated safety glass

CE conformity
Pressure equipment directive, PS > 200 bar; module A, pressure accessory

4. X conditions and commissioning

4.1 Special conditions for safe use (X conditions)

- The permissible temperature ranges of the operating instructions must be observed.
- All accessories (e.g. valves or attachment components) must be assessed in combination with the delivered instruments by the end user.
- Avoid any kind of external impact. External impacts can generate sparks through friction processes between different materials.
- Pressure surges must be avoided at all costs. Open the shut-off valves slowly.
- Any increase in temperature as a result of compression warming has to be avoided. If necessary, the rate of change of pressure has to be throttled or the permissible medium temperature has to be reduced.
- Media which might react with the materials used and can cause a spontaneous self-ignition are not permissible.
- Avoid exposure to substances or environment conditions that might affect the materials of the instrument negatively. The materials used are specified in the operating instructions.
- Avoid handling of substances that are liable to spontaneous combustion.

4.2 Installation

- Nominal position per EN 837-1 / 9.6.7 figure 9: 90° (⊥)
- Process connection lower mount or back mount
- In order to avoid any additional heating, the instruments must not be exposed to direct solar irradiation while in operation!
- Instruments must be connected to the equipotential bonding of the plant via the process connection. This is why electrically conductive seals/sealing tape should be used at the process connection. Alternatively, other measures for integration into the equipotential bonding must be taken.
- The instruments should be protected against coarse dirt and wide fluctuations in ambient temperature.

4.3 Permissible vibration load at the installation site

- The instruments should always be installed in locations free from vibration.
- If necessary, it is possible to isolate the instrument from the mounting point, e.g. by installing a flexible connection line between the measuring point and the instrument and mounting the instrument on a suitable bracket.
- If this is not possible, the following limit values must not be exceeded:

  Frequency range < 150 Hz
  Acceleration < 0.5 g (5 m/s²)

4.4 Mechanical connection

In accordance with the general technical regulations for pressure measuring instruments (e.g. EN 837-2 “Selection and installation recommendations for pressure gauges”).

Installation with open-ended spanner

Sealing of the process connections

When screwing the instruments in, the force required for sealing must not be applied through the case, but only through the spanner flats provided for this purpose at the square block of the connection shank, and using a suitable tool. For sealing the process connections with parallel threads, use flat gaskets, lens-type sealing rings or WIKA profile sealings at the sealing face ①. With a tapered thread (e.g. NPT thread), sealing is made in the thread ②. The torque depends on the sealing used. In order to orientate the measuring instrument so that it can be read as well as possible, a connection with clamp socket or union nut should be used.

5. Maintenance and cleaning

- The instruments are maintenance-free.
- The instrument should be checked once or twice every year. For this the instrument must be disconnected from the process to check with a pressure testing device.
- Clean the instrument with a moist cloth.
- Do not use other cleaning processes than manual rubbing to prevent electrostatic charging.
- The legibility of the marking must be observed during time in use but at least during inspection periods of three years. If any harm of the legibility is found please contact the manufacturer to renew the marking.
- Repairs must only be carried out by the manufacturer or appropriately qualified skilled personnel.

6. Return and disposal

Strictly observe the following when shipping the instrument:
All instruments delivered to WIKA must be free from any kind of hazardous substances (acids, bases, solutions, etc.) and must therefore be cleaned before being returned.

WARNING!
Physical injuries and damage to property and the environment through residual media
Residual media in the dismounted instrument can result in a risk to persons, the environment and equipment.

- ► With hazardous substances, include the material safety data sheet for the corresponding medium.
- ► Clean the instrument, see chapter 5 “Maintenance and cleaning”.

When returning the instrument, use the original packaging or a suitable transport packaging.

Disposal
Incorrect disposal can put the environment at risk.
Dispose of instrument components and packaging materials in an environmentally compatible way and in accordance with the country-specific waste disposal regulations.

Annex: EU declaration of conformity

WIKA

EU-Konformitätserklärung
EU Declaration of Conformity

Dokument Nr. 14138737 **Revision** 03
Document No. ***Issue***

Wir erklären in alleiniger Verantwortung, dass die mit CE gekennzeichneten Produkte
We declare under our sole responsibility that the CE marked products

Typenbezeichnung **131.11 + Option ATEX**
Type Designation

Beschreibung **Rohrfedermanometer, CrNi-Stahl**
Description ***Bourdon tube pressure gauge, stainless steel***

gemäß gültigem Datenblatt PM 01.05
according to the valid data sheet

mit den nachfolgenden relevanten Harmonisierungsvorschriften der Union übereinstimmen
are in conformity with the following relevant Union harmonisation legislation

Angewandte harmonisierte Normen
Applied harmonised standards

2014/68/EU	Druckgeräterichtlinie (DGRL) [1] *Pressure Equipment Directive (PED)* [1]	
2014/34/EU	Explosionsschutz (ATEX) [2] *Explosion protection (ATEX)* [2]	
Ex	II 2G Ex h IIC T6 ... T1 Gb X II 2D Ex h IIIC 85 °C ... 100 °C Db X	EN ISO 80079-36:2016 EN ISO 80079-37:2016

(1) PS > 200 bar: Modul A, druckhaltendes Ausrüstungsteil
PS > 200 bar: Module A, pressure accessory

(2) Modul A „interne Fertigungskontrolle“. Die Dokumentation ist hinterlegt unter der Nummer 222/24 bei der Notifizierten Stelle der EU, IBExU Institut für Sicherheitstechnik GmbH (EU ID-Nr. 0637).
Module A “Internal Control of Production”. The Documentation is deposited under registration number: 222/24 at Notified Body of EU, IBExU Institut für Sicherheitstechnik GmbH (EU ID-Nr. 0637).

Unterzeichnet für und im Namen von / *Signed for and on behalf of*
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Klingenberg, 2024-10-18

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