

Pre-volume deflagration flame arrester Model 910.21



Measuring assemblies with model 910.21



Part of your business

Declarations of conformity, see www.wika.com
Specifications see data sheet at www.wika.com
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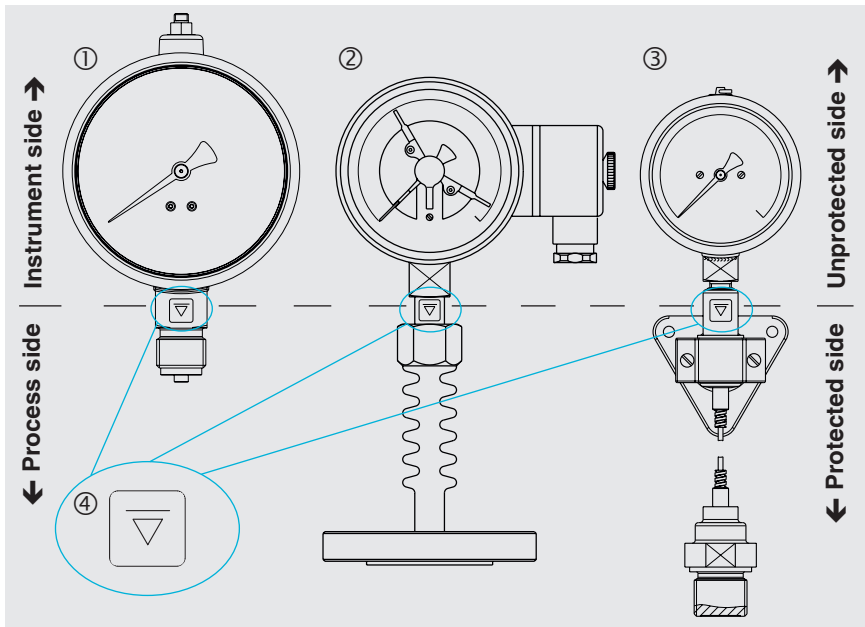
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Declarations of conformity can be found online at www.wika.com.

1. Design and function

The pre-volume deflagration flame arrester of the model 910.21 is an integral part of measuring assemblies for mounting in areas with requirements to EPL Ga (zone 0). The small gap width in the pre-volume deflagration flame arrester enables the flow of fluids, but prevents the flame from passing from the instrument side to the process side in the event of a failure.

Examples of measuring assemblies with integrated pre-volume deflagration flame arrester



- ① Pressure gauge
- ② Contact pressure gauge mounted to diaphragm seal via cooling element
- ③ Pressure gauge mounted to diaphragm seal via capillary
- ④ Position symbol for zone separation. See chapter 2.4 "Labelling, safety marks"

2. Safety

Supplementary operating instructions

- ▶ These operating instructions apply in conjunction with the documentation enclosed with the supplied WIKA measuring assembly. This document contains only part of the documentation, therefore the user must take into account all documents included in the delivery (e.g. operating instructions for pressure gauge).

2.1 Intended use

The model 910.21 pre-volume deflagration flame arrester is connected professionally at the factory to a measuring instrument to form a measuring assembly and protects the process side against flame penetration from the instrument side. The measuring assemblies may only be used in hazardous environments for which the measuring instrument is certified.

The unprotected volume of the connected measuring instrument must be $\leq 2,300 \text{ cm}^3$.

The II G marking permits use in areas that may be endangered through explosive gas, mist, vapour or air mixtures. Use in underground or surface mining operations is not permitted.

Flammable gases and vapours occurring during operation may be classified into explosion group IIC with a nominal gap width of $\geq 0.29 \text{ mm}$. The use for explosive gas, mist, vapour or air mixtures which are volatile (e.g. acetylene, carbon disulfide) or for chemically instable substances is not permitted.

Only use the measuring assembly with integrated model 910.21 in applications which fulfil the required operating conditions.

→ see chapter 3 "Operating conditions".

The measuring assembly 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.

2.2 Responsibility of the operator

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.

The model 910.21 pre-volume deflagration flame arrester must only be used in combination with additional protective measures.

For the safety of the system, the operator is obliged to carry out an ignition source analysis. The responsibility for classification of zones lies with the plant manager and not the manufacturer/supplier of the equipment.

Proper mounting

The operator must provide sufficient mechanical protection on the protected side. This applies particularly for measuring assemblies with capillaries. Depending on the version, these are factory-protected with a wall thickness of at least 0.2 mm. The system operator may have to take extended protective measures, if necessary.

Sealings must be suitable for the medium, operating temperature, ambient conditions and also process connection. A carry-through between zones must be prevented. Therefore, the mounting of the measuring assembly to the process must be technically leak-tight. The leak tightness must be checked by the operator at regular intervals. The process connection must be carried out professionally corresponding to the selected connection form. The mechanical fastening of the measuring assembly must have at least the same strength as the vessel or the pipe.

Ensure that, when a cooling section is fitted, it is not dirty and there is no dust lying on it, otherwise the cooling action cannot be guaranteed.

The installation must be carried out in such a way that ingress protection IP67 in accordance with IEC/EN 60529 is guaranteed on the protected side.

Grounding and equipotential bonding

The measuring assembly with integrated model 910.21 must be included in the equipotential bonding of the plant.

Pressure limitation

Ensure that the maximum permissible pressure of the measuring assembly is not exceeded at any time. If varying or different pressures are to be expected in the system, components must be used that can withstand the maximum expected pressure spikes.

2.3 Ex marking and working range

Ex marking



Marking	Designation	Meaning
	CE marking	European conformity
	Specific marking for explosion protection	Ex symbol
II	Symbol of the equipment group	Equipment intended for use in other places than underground parts of mines, and in those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust and an explosive atmosphere.
G	Ex atmosphere	For areas in which explosive gas, vapour, mist or air mixtures are present.
IIC	Suitable atmosphere	Flammable gases and vapours occurring during operation may be classified into explosion group IIC with a nominal gap width of $\geq 0.29 \text{ mm}$. The use for explosive gas, mist, vapour or air mixtures which are volatile (e.g. acetylene, carbon disulfide) or for chemically instable substances is not permitted.

2.4 Labelling, safety marks

Materials of wetted parts

Product label

The product label of the pre-volume deflagration flame arrester is fitted to the measuring assembly as an additional product label.



- ① Model
- ② Serial number
- ③ Date of manufacture



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

Marking of the zone separation with the position symbol

Instrument side = unprotected side



Process side = protected side

This symbol is placed on the measuring assembly in a suitable position and indicates the installation location of the pre-volume deflagration flame arrester.

2.5 Special conditions for safe use (X conditions)

1. The unprotected volume shall not exceed 2.3 l.
2. The screw connection on the non-protected side shall not exceed G $\frac{1}{2}$ ".
3. The connection on the protected side and to the process shall be welded or screwed to provide a technically sealed connection.
4. Flammable gases and vapours occurring during operation may be classified into explosion group IIC with MESG ≥ 0.29 mm.
5. The maximum permissible operating pressure shall not exceed 110 kPa.
6. The permissible range of the service temperature reads -40 °C up to +60 °C.
7. The scope of the examination does not include stabilized burning. This shall be considered with the application.
8. The protected side shall be observed.
9. This protection system is not suitable for potentially explosive gas-, mist-, vapour-/air mixtures which are volatile (acetylene, carbon disulfide) or chemically instable.

Explanations of the above conditions

Condition	Explanations
1, 2, 3	Compliance with these conditions is ensured by the overall assessment and the constructive design of the measuring assembly by the manufacturer.
5	The definition of the operating pressure corresponds to the ambient pressure of the measuring assembly.
6	The measuring point for the permissible temperature in the final application is the position symbol of the zone separation. See chapter 2.4 "Labelling, safety marks"
8	The position symbol of the zone separation marks the protected side of the measuring assembly. See chapter 2.4 "Labelling, safety marks"

3. Operating conditions

The testing of the operating conditions must be carried out for the complete measuring assembly. This document contains only part of the documentation, therefore the user must take into account all documents included in the delivery (e.g. operating instructions for pressure gauge).

Operating conditions	
$L_u/D=n/a$	Ratio of the pipe length of the unprotected side to the pipe diameter
BC:c	Classification under stabilised combustion, combustion classification c (no burn time)
$-40\text{ °C} \leq T_0 \leq 60\text{ °C}$	Permissible operating temperature
$P_0 = 1.1\text{ bar}$	Maximum ambient pressure
$V_0 = 2,300\text{ cm}^3$	Maximum internal volume on the unprotected instrument side

Pressure limitation

The limit values for static load, alternating load and overload depend on the measuring assembly and must be taken into account by the operator. Pay attention to the product label(s) of the measuring assembly.

Permissible ambient temperature for EPL Ga (zone 0)

If an explosive atmosphere is present, the temperature at the pre-volume deflagration flame arrester and in the upstream area (instrument side) must not exceed +60 °C [+158 °F]. Observe the permissible temperatures for the entire measuring assembly.

Materials

The materials used for the wetted parts (mostly stainless steel) are indicated on the measuring assembly.

4. Maintenance

The measuring assemblies are maintenance-free.
Repairs must only be carried out by the manufacturer.

Annex: EU declaration of conformity



EU-Konformitätserklärung EU Declaration of Conformity

Dokument Nr. 14441024.01
Document No.

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

Typenbezeichnung 910.21
Type Designation

Beschreibung Volumendeflagrationssicherung
Description Pre-volume deflagration flame arrester

gemäß gültigem Datenblatt AC 91.02
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

2014/34/EU Explosionsschutz (ATEX)
Explosion protection (ATEX)



II G IIC

(1)

EN ISO 16852: 2016

(1) EU-Baumusterprüfbescheinigung PTB 20 ATEX 4002 X von Physikalisch-Technischen Bundesanstalt (PTB) (Reg.-Nr. 0102).
EU type-examination certificate PTB 20 ATEX 4002 X von Physikalisch-Technischen Bundesanstalt (PTB) (Reg. No. 0102).

Unterzeichnet für und im Namen von / Signed for and on behalf of

WIKAL Alexander Wiegand SE & Co. KG

Klingenberg, 2021-05-20

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