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Safety Instructions
OUSAF12, OUSAF21, OUSAF22, OUSAF44, OUSAF46, OUSTF10

Process photometer sensors

UK Ex II 2G Ex db IIC T5 Gb

Endress+Hauser
People for Process Automation

OUSAF12, OUSAF21, OUSAF22, OUSAF44, OUSAF46, OUSTF10

Process photometer sensors

Table of contents

Associated documentation

This document is an integral part of the following Operating Instructions:
- Operating Instructions OUSAF12, BA00497C
- Operating Instructions OUSAF21, BA00471C
- Operating Instructions OUSAF22, BA00472C
- Operating Instructions OUSAF44, BA00416C
- Operating Instructions OUSAF46, BA01349C
- Operating Instructions OUSTF10, BA00500C

Supplementary documentation

Competence Brochure CP00021Z
- Explosion Protection: Guidelines and General Principles
- www.endress.com

Certificates and declarations

EXP-1 Lamp: CSAE 23UKEX1015X

Identification

The nameplate provides you with the following information on your device:
- Manufacturer identification
- Extended order code
- Serial number
- Safety information and warnings
- Ex marking on hazardous area versions

► Compare the information on the nameplate with the order.

Type code

Type	Version				
	010 [1]	020 [2]	030 [3]	040 [4]	050 [5]
OUSAF12- OUSAF22- OUSTF10-	* * *	* * *	A/B/C/D C/D B	4 4 4	* * *
	No Ex-relevance		For use in hazardous areas II 2G Ex db IIC T5 Gb		No Ex-relevance

1) Wavelength
2) Calibration
3) Lamp
4) Lamp approval
5) Assembly

Type	Version											
	010 [1]	020 [2]	030 [3]	040 [4]	050 [5]	060 [6]	070 [7]	080 [8]	090 [9]	100 [10]	110 [11]	120 [12]
OUSAF21-	*	*	C/D	4	*							
	No Ex-relevance		For use in hazardous areas II 2G Ex db IIC T5 Gb		No Ex-relevance							

1) Wavelength combination
2) Calibration/Validation
3) Lamp
4) Lamp approval
5) Process connection
6) Nominal diameter
7) Optical pathlength
8) Window material
9) Sealing material
10) Air purge
11) Certificate
12) Options

Type	Version			
	010 [1]	020 [2]	030 [3]	040 [4]
OUSAF44- OUSAF46	* *	* *	E E	* *
	No Ex-relevance		For use in hazardous areas II 2G Ex db IIC T5 Gb	No Ex-relevance

1) Wavelength
2) Calibration/Validation
3) Lamp approval
4) Assembly

Certificates and approvals

Declaration of Conformity

With this declaration of conformity, the manufacturer guarantees that the product conforms to UK statutory requirements:
- The Electromagnetic Compatibility Regulations SI 2016 No. 1091
- The Equipment and Protective Systems Intended for use in Potentially Explosive Atmosphere Regulations SI 2016 No. 1107
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations SI 2012 No. 3032

Compliance is verified by adherence to the standards listed in the Declaration of Conformity.

Hazardous area approvals

UK II 2G Ex db IIC T5 Gb

Approved Body

EXP-1 Lamp: CSA Group Testing UK Ltd

Safety instructions

The process photometer measuring point, consisting of the certified process photometers OUSAF12, OUSAF21, OUSAF22, OUSAF44, OUSAF46 or OUSTF10 and measuring cable CUK80 may only be connected to the CM44P transmitter via the certified safety barrier MTL7760 ac.
- The electrical connection must be established as illustrated in the relevant control drawings in this document and the installation instructions in the Operating Instructions for the process photometer.
- The process photometers may be used in environments that contain flammable gases and vapors and are assigned to apparatus groups IIA, IIB, IIC, temperature class T5.
- Installation must be performed by trained personnel in compliance with applicable standards and guidelines, e.g. IEC/EN 60079-14 or ANSI/NFPA-70 and as specified in the Operating Instructions for the particular process photometer and the transmitter to be connected.
- Inspection and maintenance of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice e.g. EN 60079-17.
- Sensor repairs must be performed by trained personnel in compliance with applicable standards and guidelines, e.g. IEC/EN 60079-19 and as specified in the sensor's Operating Instructions and the Operating Instructions for the transmitter to be connected.
- Component parts which are installed as accessories or replacement parts in these process photometers must be mounted by trained personnel in compliance with the manufacturer's documentation.
- If the process photometer can come into contact with aggressive substances, the user must take suitable protective measures to ensure that the confirmed level of protection of the measuring system is not compromised. Examples of aggressive substances include acidic liquids or gases that corrode metal, or solvents that can damage polymeric materials. Suitable protective measures involve regular checks as part of routine inspections, or checks to verify the resistance of the materials to special chemicals using the material data sheet.
- The optical receiver with photodiodes is operated in the current mode. The photodiodes generate energy below the voltage, current and power limits that are specified in IEC/EN 60079-11, Section 5.7. Therefore the equipment is categorized as a simple apparatus.
- The process photometers are assigned to temperature class T5, which permits a maximum surface temperature of 100 °C (212 °F).

- One or two approved safety barriers MTL7760 ac are used to separate the safe area from the area classified as hazardous. The safety barrier must be connected as illustrated in the relevant control drawings in this document and the installation instructions in the Operating Instructions for the process photometer.
- The approved safety barriers and the CM44P transmitter may not be installed in the hazardous environment.
- The explosions-protected lamp EXP-1 has been developed and manufactured according to SI 2016 No. 1107 and also complies with the following standards:
  - EN 60079-0 Electrical apparatus for explosive gas atmospheres
  - EN 60079-1 Explosive atmospheres. Equipment protection by flameproof enclosures "d"
- The CUK80 measuring cable must be protected against electrostatic charge.
- The OUA260/CUA261 flow assemblies may only be used in the hazardous area with stainless steel adapters.

Specific conditions of use

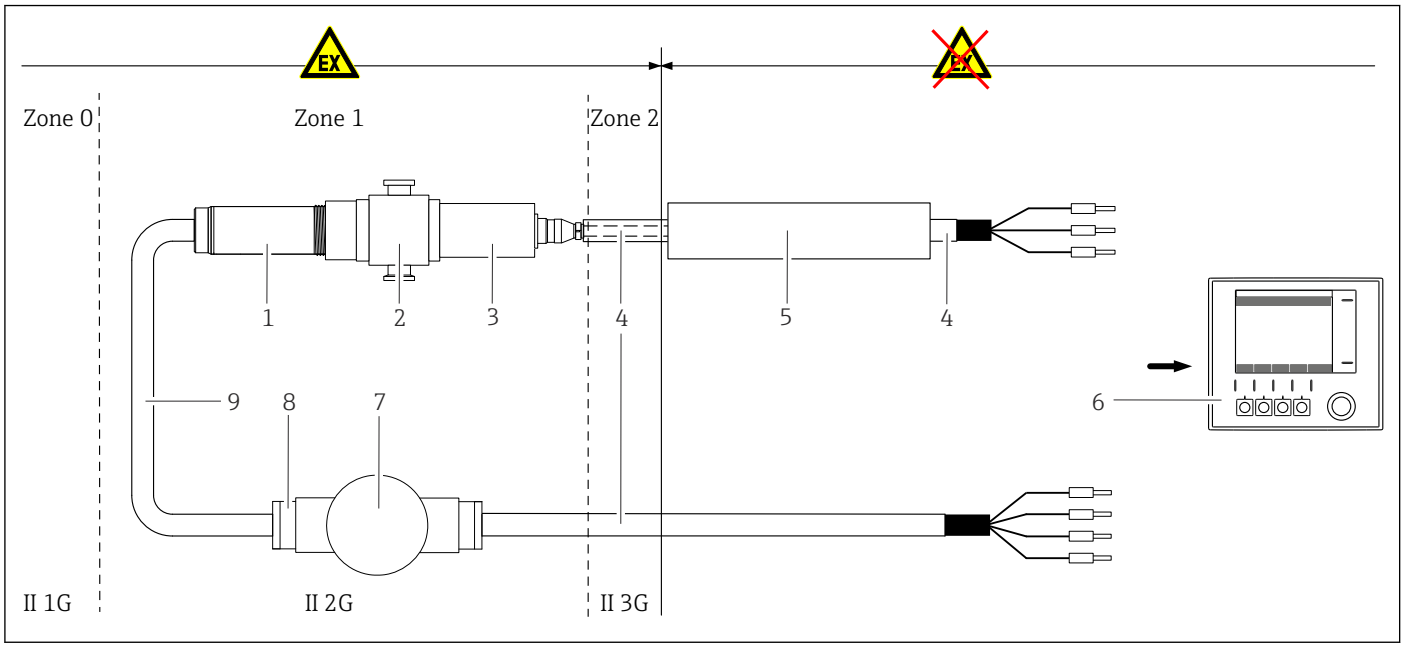
- The explosion-protected lamp EXP-1 must cool down before the housing is opened. After switching off the power supply, first wait for 5 minutes before you open the photometer housing.
- The explosion-protected lamp EXP-1 must be installed in such a way that the front window is protected against mechanical damage.
- The explosion-protected lamp EXP-1 has a permanently connected cable end which must be connected to an external circuit according to the instructions in these Safety Instructions and the installation instructions in the Operating Instructions for the process photometer.
- In accordance with clause 7.5 of EN IEC 60079-0:2018, the equipment must be connected to ground and the resistance shall not exceed 10^9 Ω.

Temperature class

Photometer	Process temperature	Ambient temperature	Temperature class
OUSAF12	0 to 90 °C (32 °F to 190 °F) (continuous operation) max. 130 °C (266 °F), for max. 2 h	-20 to 40 °C (0 to 100 °F)	T5 ≤ 100 °C (≤ 212 °F)
OUSAF21			
OUSAF22			
OUSAF44			
OUSAF46			
OUSTF10			

If the specified process temperatures are complied with, temperatures that are not permitted for the respective temperature class will not occur on the equipment.

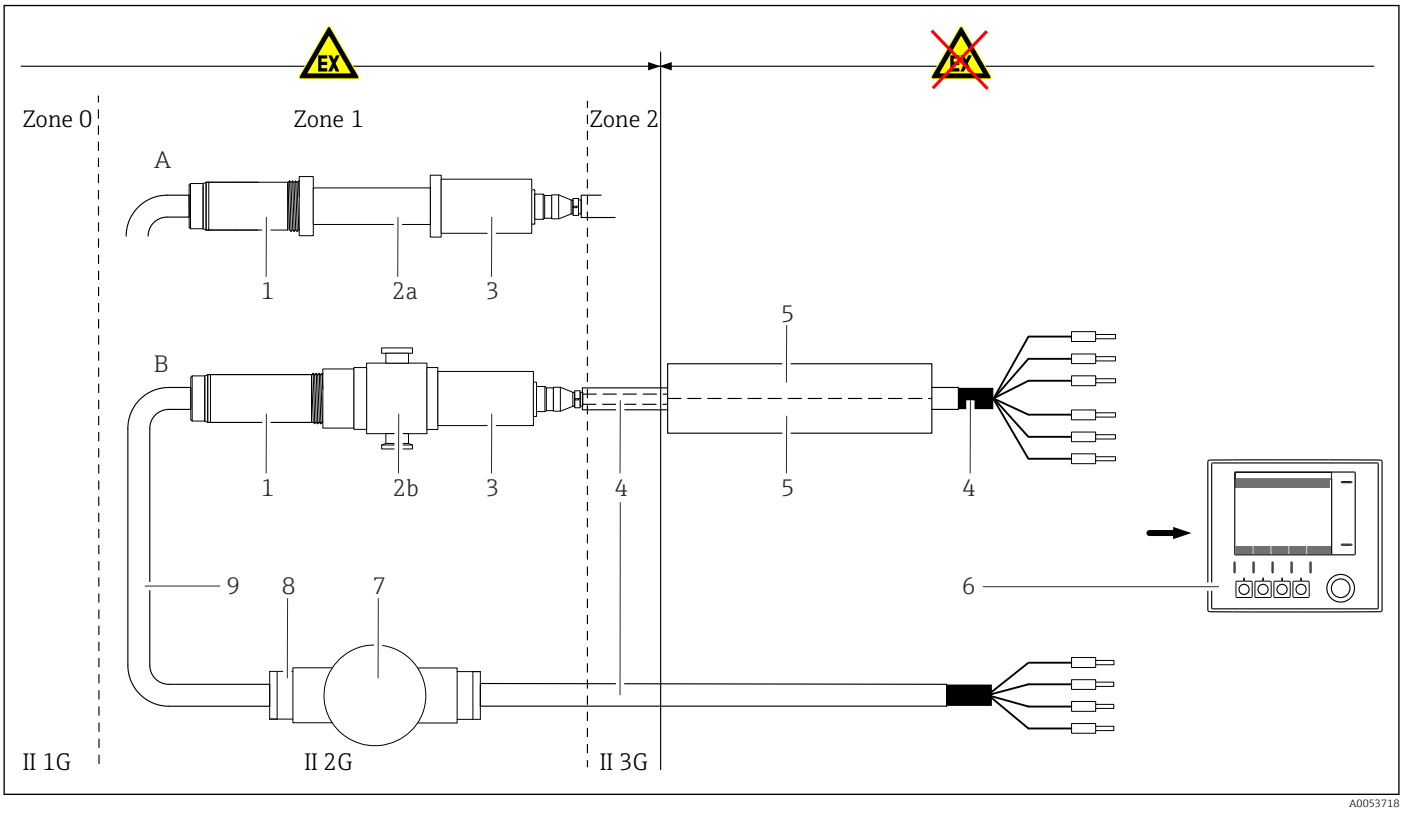
Installation conditions **OUSAF12**



1 *Control Drawing CM44P with OUSAF12*

1 *UKCA approved EXP-1 lamp*
2 *Flow assembly OUA260 or CUA261*
3 *Intrinsic safe optical detector*
4 *CUK80 cable set, conduit or armored cable*
5 *MTL7760AC intrinsic safety barrier (supplied with CUK80 cable set, attach to earth ground)*
6 *Liquiline CM44P*
7 *Certified Ex db IIC Gb junction box, suitably for UKCA (supplied by customer, attach to earth ground)*
8 *Certified Ex db IIC Gb cable gland, suitably for UKCA (supplied by customer)*
9 *Steel braided power cable (integrated in EXP-1 lamp)*

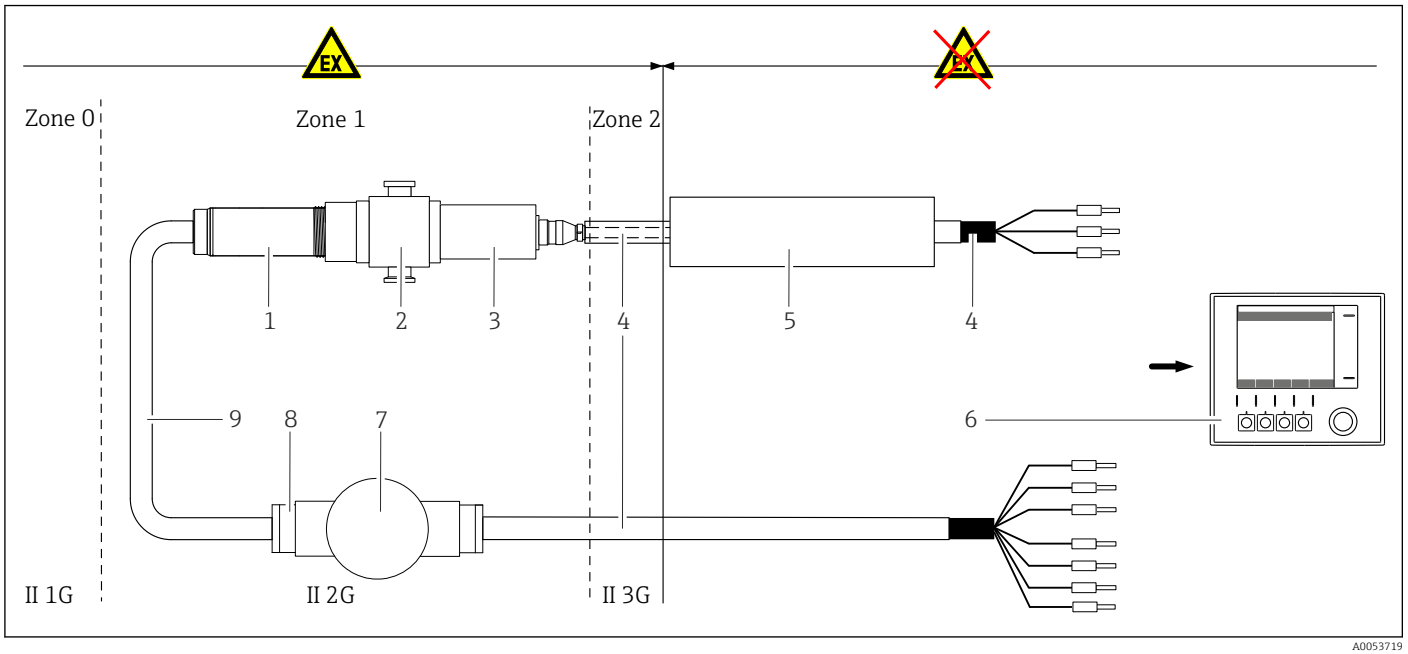
OUSAF21, OUSAF22, OUSTF10



2 *Control Drawing CM44P with OUSAF21, OUSAF22, OUSTF10*

A Sensor OUSAF21
B Sensor OUSAF22 or OUSTF10
1 UKCA approved EXP-1 lamp
2a Flow assembly of OUSAF21 sensor
2b Flow assembly OUA260 or CUA261
3 Intrinsic safe optical detector
4 CUK80 cable set, conduit or armored cable
5 MTL7760AC intrinsic safety barriers (2 needed, supplied with CUK80 cable set, attach to earth ground)
6 Liquiline CM44P
7 Certified Ex db IIC Gb junction box, suitably for UKCA (supplied by customer, attach to earth ground)
8 Certified Ex db IIC Gb cable gland, suitably for UKCA (supplied by customer)
9 Steel braided power cable (integrated in EXP-1 lamp)

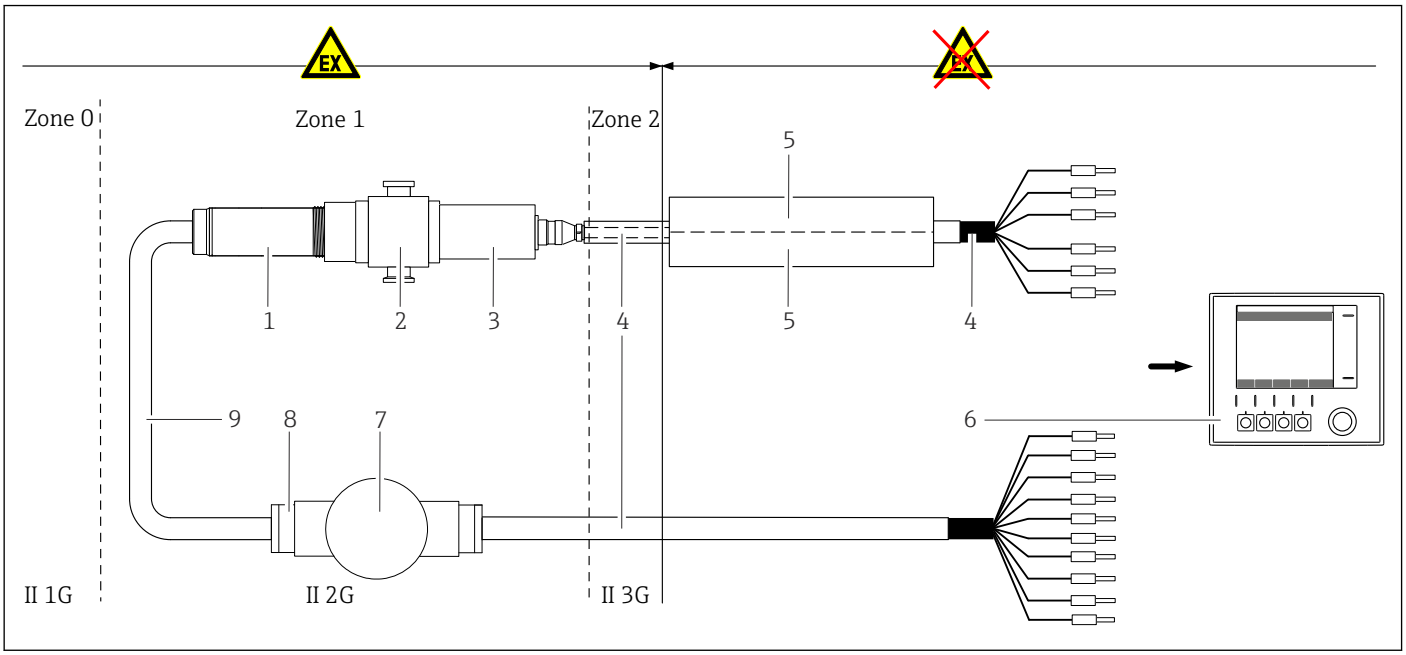
OUSAF44



3 *Control Drawing CM44P with OUSAF44*

1 *UKCA approved EXP-1 lamp*
2 *Flow assembly OUA260 or CUA261*
3 *Intrinsic safe optical detector*
4 *CUK80 cable set, conduit or armored cable*
5 *MTL7760AC intrinsic safety barriers (supplied with CUK80 cable set, attach to earth ground)*
6 *Liquiline CM44P*
7 *Certified Ex db IIC Gb junction box, suitably for UKCA (supplied by customer, attach to earth ground)*
8 *Certified Ex db IIC Gb cable gland, suitably for UKCA (supplied by customer)*
9 *Steel braided power cable (integrated in EXP-1 lamp)*

OUSAF46



4 *Control Drawing CM44P with OUSAF46*

1 *UKCA approved EXP-1 lamp*
2 *Flow assembly OUA260 or CUA261*
3 *Intrinsic safe optical detector*
4 *CUK80 cable set, conduit or armored cable*
5 *MTL7760AC intrinsic safety barriers (2 needed, supplied with CUK80 cable set, attach to earth ground)*
6 *Liquiline CM44P*
7 *Certified Ex db IIC Gb junction box, suitably for UKCA (supplied by customer, attach to earth ground)*
8 *Certified Ex db IIC Gb cable gland, suitably for UKCA (supplied by customer)*
9 *Steel braided power cable (integrated in EXP-1 lamp)*

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