IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate history:
Issue 0 (2023-03-01)

Certificate No.: **IECEx KDB 22.0001X**

Status: **Current**

Issue No: 1

Date of Issue: 2025-11-26

Applicant: **Airoptic Sp. z o.o.**
ul. Rubież 46B
61-612 Poznań
Poland

Equipment: **GasEye Extractive Ex1 / Ex1 ET**

Optional accessory:

Type of Protection: **Ex pxb; Ex op is**

Marking: Ex op is pxb IIC T* Ga/Gb

Ex op is pxb IIIC T** Da/Db

Approved for issue on behalf of the IECEx Certification Body: **mgr inż. Piotr Madej**

Position: **Head of ExCB**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Główny Instytut Górnictwa, Kopalnia Doświadczalna "BARBARA"
(Central Mining Institute Experimental Mine "Barbara")
ul. Podleska 72
43-190 Mikołów
Poland

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Manufacturer: **AIROPTIC Sp. z o.o.**
ul. Rubież 46B
61-612 POZNAŃ
POLAND
Poland

Manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-2:2014 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
Edition:6

IEC 60079-26:2021 Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection
Edition:4.0

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

PL/KDB/ExTR22.0001/01

Quality Assessment Report:

PL/KDB/QAR19.0001/03

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

GasEye Extractive Ex1.

The GasEye Extractive Ex1 is a versatile gas analyzing tool for industrial process applications. A process gas sample is continuously fed into the analyzer where it is analyzed in real time utilizing laser absorption spectroscopy. It can be configured to operate in the near-infrared (NIR), mid-infrared (MIR) and infrared (IR) wavelength range thereby allowing to analyze the majority of gases of interest in the industrial process monitoring.

GasEye Extractive Ex1 ET.

GasEye Extractive Ex1 ET (with an extended temperature) is a comprehensive tool for gas analysis in industrial processes, which uses the GasEye Extractive Ex1 analyzer with additional equipment. All equipment was installed in an additional enclosure made of stainless steel. The housing has been equipped into a convection heater controlled by a thermostat. The thermostat maintains the temperature inside the housing above 15°C.

Description of the technical parameters and specyfication explosion-proof equipments and compoents are included in CoC Attachment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Temperature class of the **GasEye Extractive Ex1** (T* for gas) or the maximum surface temperature (T** for dust) depends on the process temperature of the controlled medium in accordance with the manufacturer's manual.
- External parts of the **GasEye Extractive Ex1** made of plastic should be cleaned with a damp cloth, with the addition of antistatic fluids.
- Temperature class of the **GasEye Extractive Ex1 ET** (T* for gas) or the maximum surface temperature (T** for dust) depends on the process temperature of the controlled medium in accordance with the manufacturer's manual.
- **GasEye Extractive Ex1 ET** device must be protected against direct sunlight.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Technical modifications.

Changes to technical parameters.

Updating the Ex components used.

Standards have been updated.

A special conditions of use have been changed.

Annex:

CoC_KDB_22_0001_01_Attachment_1.pdf

Description:

GasEye Extractive Ex1

The GasEye Extractive Ex1 is a versatile gas analyzing tool for industrial process applications. A process gas sample is continuously fed into the analyzer where it is analyzed in real time utilizing laser absorption spectroscopy. It can be configured to operate in the near-infrared (NIR), mid-infrared (MIR) and infrared (IR) wavelength range thereby allowing to analyze the majority of gases of interest in the industrial process monitoring.

GasEye Extractive Ex1 utilizes 1 to 8 lasers to analyze one or more gases. The GasEye Extractive Ex1 system is assembled in one stainless-steel wall-mounted enclosure. Gas analysis is carried out in a cuvette installed inside a pressurized enclosure.

Technical parameters:

Power input Un:	230 VAC (100~240VAC)
Power consumption:	< 300W
Degree of protection:	IP 66
Ambient temperature:	
-20°C ÷ +50°C	Temperature class **T6** Maximum surface temperature **85°C**
-20°C ÷ +60°C	Temperature class **T5** Maximum surface temperature **100°C**
-20°C ÷ +60°C	Temperature class **T4** Maximum surface temperature **135°C**
-20°C ÷ +60°C	Temperature class **T3** Maximum surface temperature **200°C**

Technical parameters of the purging system:

Solenoid valve input pressure:	1.4 barG – 8 barG
Minimal pressure for pre-purge:	1.4 mbarG
Air pre-purge time:	
7 min for minimum flow	40 l/min
Nitrogen pre-purge time:	
31 min for minimum flow	10 l/min
9 min for minimum flow	30 l/min
Argon pre-purge time:	
18 min for minimum flow	10 l/min
9 min for minimum flow	30 l/min
Minimum overpressure during continuous operation:	1.4 mbarG
Maximum pressure during continuous operation:	24 mbarG

Główny Instytut Górnictwa
Kopalnia Doświadczalna „BARBARA"
ul. Podleska 72, 43-190 Mikołów, POLAND
tel. +48 32 32 46 551, fax. +48 32 32 24 931
www.gig.eu

Minimum protective gas flows during continuous operation:

1. The process gas in the containment system is a non-flammable gas.
   Protective gas: air or nitrogen or argon.

   Minimum protective gas flow during continuous operation: 10 l/min

2. The process gas in the containment system is a flammable gas below 80% UEL
   Protective gas: nitrogen or argon.

   Minimum protective gas flow during continuous operation: 10 l/min

3. The process gas in the containment system is a flammable gas.
   Protective gas: air.
   Minimum continuous flow rate:
   a) for process gas in the containment system with LEL ≥5%: 30 l/min
   b) for process gas in the containment system with LEL ≥4%: 40 l/min
   c) for process gas in the containment system with LEL ≥3%: 50 l/min
   d) for process gas in the containment system with LEL ≥2.5%: 60 l/min
   e) for process gas in the containment system with LEL ≥2%: 70 l/min

Limitations of the containment system:
Maximum inlet/outlet pressure 0.3 barG
Maximum input flow 0.3 l/min

Additional equipment of the GasEye Extractive Ex1 spectrometer system:

1.Purging system controller

Producer: Pepperl+fuchs
Model: 6500-01-EXT1-PNO-LNO
IECEx certificate No.: IECEx UL 16.0003X
Marking:

Ex eb q ib [ib pxb] IIC T4 Gb
Ex tb ib [ib pxb] IIIC T135°C Db
Ex eb q ib [ib pyb] IIC T4 Gb
Ex tb ib [ib pyb] IIIC T135°C Db
(Ta: -20°C÷+70°C)

2.Purging system vent

Producer: Pepperl+fuchs
Model: EPV-6500-07
IECEx certificate No.: IECEx UL 15.0147X
Marking:

Ex ib [pxb] IIC T4 Gb
Ex ib [pxb] IIIC T135°C Db
Ex ib [pyb] IIC T4 Gb
Ex ib [pyb] IIIC T135°C Db
(Ta: -20°C÷+70°C)

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3.Solenoid operator

Producer: Nass magnet
Type: 1259..
IECEx certificate No.: IECEx PTB 08.0023
Marking:

Ex ia IIC T6 Gb lub Ex ia IIB T6 Gb	(Ta: -40°C÷+50°C)
or	
Ex ia IIC T4 Gb lub Ex ia IIB T4 Gb	(Ta: -40°C÷+85°C)

or

Producer: Nass magnet
Type: 1262..
IECEx certificate No.: IECEx PTB 13.0009
Marking:

Ex ia IIC/IIB T6 Ga Ex tb IIIC T80°C Db	(Ta: -40°C÷+50°C)
or	
Ex ia IIC/IIB T4 Ga Ex tb IIIC T130°C Db	(Ta: -40°C÷+85°C)

GasEye Extractive Ex1 ET

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Technical parameters:

Power input Un:	230 VAC (100~240VAC)
Power consumption:	< 400W
Degree of protection:	IP 66
Ambient temperature:	
-30°C ÷ +60°C	Temperature class **T4** Maximum surface temperature **135°C**
-30°C ÷ +60°C	Temperature class **T3** Maximum surface temperature **200°C**

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Technical parameters of the purging system:

Solenoid valve input pressure:	1.4 barG – 8 barG
Minimal pressure for pre-purge:	1.4 mbarG
Air pre-purge time:	
7 min for minimum flow	40 l/min
Nitrogen pre-purge time:	
31 min for minimum flow	10 l/min
9 min for minimum flow	30 l/min
Argon pre-purge time:	
18 min for minimum flow	10 l/min
9 min for minimum flow	30 l/min
Minimum overpressure during continuous operation:	1.4 mbarG
Maximum pressure during continuous operation:	24 mbarG

Minimum protective gas flows during continuous operation:

1. The process gas in the containment system is a non-flammable gas.
   Protective gas: air or nitrogen or argon.

   Minimum protective gas flow during continuous operation: 10 l/min

2. The process gas in the containment system is a flammable gas below 80% UEL
   Protective gas: nitrogen or argon.

   Minimum protective gas flow during continuous operation: 10 l/min

3. The process gas in the containment system is a flammable gas.
   Protective gas: air.

   Minimum continuous flow rate:

   a) for process gas in the containment system with LEL ≥5%: 30 l/min
   b) for process gas in the containment system with LEL ≥4%: 40 l/min
   c) for process gas in the containment system with LEL ≥3%: 50 l/min
   d) for process gas in the containment system with LEL ≥2.5%: 60 l/min
   e) for process gas in the containment system with LEL ≥2%: 70 l/min

Limitations of the containment system:	
Maximum inlet/outlet pressure	0.3 barG
Maximum input flow	0.3 l/min

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The following explosion-proof equipment is used in the GasEye Extractive Ex1 ET:

No.	Device / Component	Manufacture/Type	Marking	Certificate
1.	GasEye Extractive	Airoptic/Ex1	Ex op is pxb IIC T* Ga/Gb Ex op is pxb IIIC T** Da/Db	IECEx KDB 22.0001X
2.	Enclosure	Radiolex/ RSA-ATEX-OH-116-060	Ex eb IIC Gb Ex tb IIIC Db	IECEx OBAC 25.0003U
3.	Purge control system	Pepperl+Fuchs/ 6500-01-EXT1-PNO-LNO	Ex eb q ib [ib pxb] IIC T4 Gb Ex tb ib [ib pxb] IIIC T135°C Db Ex eb q ib [ib pyb] IIC T4 Gb Ex tb ib [ib pyb] IIIC T135°C Db	IECEx UL 16.0003X
4.	Purging system vent	Pepperl+Fuchs/ EPV-6500-07	Ex ib [pxb] IIC T4 Gb Ex ib [pxb] IIIC T135°C Db Ex ib [pyb] IIC T4 Gb Ex ib [pyb] IIIC T135°C Db	IECEx UL 15.0147X
5.	Solenoid operator	Nass magnet/1259..	Ex ia IIC T6/T4 Gb Ex ia IIB T6/T4 Gb	IECEx PTB 08.0023
		Nass magnet/1262..	Ex ia IIC/IIB T6/T4 Ga Ex tb IIIC T80°C/130°C Db IP65	IECEx PTB 13.0009
6.	Junction box	CE-TEK/CEP 252512	Ex e IIC T6/T5 Gb Ex tb IIIC T85°C/T100°C Db	IECEx EXV 18.0002U
7.	Convection type heater 100W	STEGO France SAS/ CREx020 02052.0-10	Ex db IIC T5 Gb Ex tb IIIC T100°C Db IP66 Ex db I Mb	IECEx EPS 16.048X
8.	Temperature switch	STEGO France SAS /REx 011	Ex db IIC T6 Gb Ex tb IIIC T85°C Db Ex db I Mb	IECEx EPS 16.0054X
9.	Cable glands	AGRO/ EX1126.20.140 - M20 EX1126.17.100 - M16	Ex db eb IIC Gb Ex ta IIIC Da	IECEx PTB 12.0055X
		Hummel/ HSK-M-Ex-d 1.622.2000.50 - M20 1.622.1600.50 - M16	Ex db IIC Gb Ex ta IIIC Da	IECEx KEM 07.0013X
		Hummel/ 1.642.2000.50 - M20 1.642.1600.50 - M16	Ex eb IIC Gb Ex ta IIIC Da	IECEx KEM 07.0014X
10.	Breath drain	Eaton/ DP-E-3-0-04-s2	Ex eb IIC Gb Ex tb IIIC Db	IECEx ITS 16.0014X
		Bimed Teknik Aletler/ BDRVX-1MBNS.K01	Ex eb IIC Gb Ex tb IIIC Db	IECEx IMQ 14.0003X

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