



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 No.:	IECEx BVS 13.0075X	Page 1 of 4	<u>Certificate history:</u>
Status:	Current	Issue No: 3	Issue 2 (2018-05-23) Issue 1 (2015-05-19) Issue 0 (2013-07-09)
Date of Issue:	2020-10-01		
Applicant:	HAMILTON Bonaduz AG Via Crusch 8 7402 Bonaduz Switzerland		
Equipment:	Sensor types VisiPro DO Ex *** and VisiTrace DO Ex *** = Sensor shaft length in mm 120 ... 600		
Optional accessory:			
Type of Protection:	Intrinsic Safety "i"		
Marking:	Ex ia IIC T6/T5/T4/T3 Ga, details see Ratings Ex ia IIIC T135°C Da		

Approved for issue on behalf of the IECEx
Certification Body:

Jörg Koch

Position:

Head of Certification Body

Signature:
(for printed version)

Date:

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:

DEKRA Testing and Certification GmbH
Certification Body
Dinnendahlstrasse 9
44809 Bochum
Germany

 **DEKRA**
On the safe side.



IECEX Certificate of Conformity

Certificate No.: **IECEX BVS 13.0075X**

Page 2 of 4

Date of issue: 2020-10-01

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Manufacturer: **HAMILTON Bonaduz AG**
Via Crusch 8
7402 Bonaduz
Switzerland

Additional
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 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0

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:

[DE/BVS/EXTR13.0075/03](#)

Quality Assessment Report:

[DE/TUR/QAR12.0005/02](#)



IECEx Certificate of Conformity

Certificate No.: **IECEx BVS 13.0075X**

Page 3 of 4

Date of issue: 2020-10-01

Issue No: 3

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

General product information:

The sensor type VisiPro DO Ex *** or type VisiTrace DO Ex *** is used to measure the dissolved oxygen in process liquids, vapours, gases and dusts.

The measuring procedure is based on the so called luminescence quenching which uses the property that the luminescence of certain organic pigments is quenched if oxygen is present.

The sensor type VisiPro DO Ex *** or type VisiTrace DO Ex *** consists of two parts, the sensor head with plug-in connector and the sensor shaft (diameter 12 mm) which is contacted with the process media.

The sensor's electronic parts are safely fixed in a combined metal / plastic housing. Most parts of the electronic circuit are fully encapsulated.

The connection of the sensor (HART interface) is made by two pins of a 4-pin plug-in connector (M12), pin 2 and pin 3 are connected to the sensor.

Ratings

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

The sensor type VisiPro DO Ex *** or type VisiTrace DO Ex *** may be used in the following ambient / process temperature range:

Temperature class and ambient / process temperature range - see ratings (Gas, EPL Ga or Gb).

Maximum input power and ambient / process temperature range - see ratings (Dust, EPL Da or Db).

The sensor type VisiPro DO Ex *** or type VisiTrace DO Ex *** has to be mounted at the mounting location electrostatically conductive ($\leq 1 \text{ M}\Omega$).

For sensor type VisiPro DO Ex *** or type VisiTrace DO Ex ***:

Along to the intrinsically safe circuit potential equalisation has to be provided because in case of a fault the intrinsically safe circuit has to be regarded as connected to the metal housing.



IECEx Certificate of Conformity

Certificate No.: **IECEX BVS 13.0075X**

Page 4 of 4

Date of issue: 2020-10-01

Issue No: 3

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

The sensors were tested in accordance to the standards listed on page 1.

No technical changes

Annex:

[BVS_13_0075X_Hamilton_Annex_Issue3.pdf](#)



IECEx Certificate of Conformity



Certificate No.: IECEx BVS 13.0075X Issue No: 3
Annex
Page 1 of 1

Ratings:

(for type VisiPro DO Ex *** and type VisiTrace DO Ex ***)

For usage in areas where **EPL Ga** or **Gb** equipment is required, the following values are valid:

Intrinsically safe supply-/signal circuit (HART interface), connection via plug-in connector

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		750	mW
Maximum internal capacity	C_i		1.2	nF
Maximum internal inductivity	L_i		negligible	

Bluetooth interface

Nominal radiated power	P_n	2.5	mW
Radiated power by fault	P_o	< 750	mW
Frequency		2.4	GHz

Ambient temperature range of the sensor head with plug-in connector and process temperature range of the sensor shaft depend on temperature class:

Temperature class	Ambient temperature range	Process temperature range
T3	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_p \leq +130\text{ °C}$
T4	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_p \leq +125\text{ °C}$
T5	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_p \leq +85\text{ °C}$
T6	$-20\text{ °C} \leq T_a \leq +35\text{ °C}$	$-20\text{ °C} \leq T_p \leq +35\text{ °C}$

An uncoupling of the temperature of the sensor head with respect to the process temperature is to be guaranteed by appropriate measures.

For usage in areas where **EPL Da** or **Db** equipment is required, the following values are valid:

Intrinsically safe supply-/signal circuit (HART interface), connection via plug-in connector

Maximum input voltage	U_i	DC	30	V
Maximum input current	I_i		100	mA
Maximum input power	P_i		see table	
Maximum internal capacity	C_i		1.2	nF
Maximum internal inductivity	L_i		negligible	

Bluetooth interface

Nominal radiated power	P_n	2.5	mW
Radiated power by fault (depend on P_i)	P_o	< 750, 650, 550	mW
Frequency		2.4	GHz

Ambient temperature range of the sensor head with plug-in connector and process temperature range of the sensor shaft depend on the maximum input power P_i :

Maximum input power P_i	Ambient temperature range	Process temperature range
750 mW	$-20\text{ °C} \leq T_a \leq +40\text{ °C}$	$-20\text{ °C} \leq T_p \leq +40\text{ °C}$
650 mW	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_p \leq +70\text{ °C}$
550 mW	$-20\text{ °C} \leq T_a \leq +60\text{ °C}$	$-20\text{ °C} \leq T_p \leq +100\text{ °C}$

An uncoupling of the temperature of the sensor head with respect to the process temperature is to be guaranteed by appropriate measures.