

EU-Type Examination Certificate Supplement 3

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 13 ATEX E 065 X**

Product: **Sensor type VisiPro DO Ex *****
Sensor type VisiTrace DO Ex ***

Manufacturer: **HAMILTON Bonaduz AG**

Address: **Via Crusch 8, 7402 Bonaduz, Switzerland**

This supplementary certificate extends EU-Type Examination Certificate No. BVS 13 ATEX E 065 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 13.2129 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018
EN 60079-11:2012

General requirements
Intrinsic Safety "i"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:



II 1G Ex ia IIC T6/T5/T4/T3 Ga
II 1D Ex ia IIIC T135°C Da

(details see parameters)

DEKRA Testing and Certification GmbH
Bochum, 2020-09-28


Managing Director

13 Appendix

14 EU-Type Examination Certificate

BVS 13 ATEX E 065 X Supplement 3

15 Product description

15.1 Subject and type

Sensor type VisiPro DO Ex ***

Sensor type VisiTrace DO Ex ***

*** = Sensor shaft length in mm 120 ... 600

15.2 Description

Reason for the supplement:

The sensors were tested in accordance to the standards listed on page 1.
No technical changes

Description of Product:

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.

15.3 Parameters

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

15.3.1 For usage in areas where Category 1G (EPL Ga) or 2G (EPL Gb) equipment is required the following values are valid:

15.3.1.1 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	

15.3.1.2 Bluetooth interface

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

- 15.3.1.3 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.

- 15.3.2 For usage in areas where Category **1D (EPL Da)** or **2D (EPL Db)** equipment is required, the following values are valid:

- 15.3.2.1 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	

- 15.3.2.2 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

- 15.3.2.3 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.

16 Report Number

BVS PP 13.2129 EU, as of 2020-09-28

17 Special Conditions for Use

- 17.1 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 Parameters 15.3.1.3 (Gas).
Maximum input power and ambient / process temperature range – see Parameters 15.3.2.3 (Dust).
- 17.2 The sensor type VisiPro DO Ex *** or type VisiTrace DO Ex *** has to be mounted at the mounting location electrostatically conductive ($< 1\text{ M}\Omega$).
- 17.3 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.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.