1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3	EU - Type Examination Certificate Number:	**Baseefa18ATEX0081X – Issue 1**
4	Product:	**500 PRO and 500 PRO HT Analogue pH/ORP Sensor**
5	Manufacturer:	**ABB Limited**
6	Address:	**Oldends Lane, Stonehouse, Gloucestershire, GL10 3TA**

7 This re-issued certificate extends EU Type Examination Certificate No. Baseefa18ATEX0081X to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, 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.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0: 2012 + A11: 2013 **EN 60079-11: 2012**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 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.

12 The marking of the product shall include the following :

Ⓔx II 1 G Ex ia IIC T4 Ga (-5°C ≤ T_a ≤ +100°C)

SGS Fimko Oy Customer Reference No. **0614** Project File No. **19/0600**

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13 **Schedule**

14 **Certificate Number Baseefa18ATEX0081X – Issue 1**

15 Description of Product

The 500 PRO and 500 PRO HT Analogue pH/ORP sensors are devices for measuring the pH level or Oxidation-Reduction Potential of a process medium. The sensors are available in a standard model and a "Hot Tap" model. The difference between the models is enclosure shape and application. The "Hot Tap" model allows the end user to insert the sensor in to the process medium through use of a special valve not covered by this certification while the process is active.

The 500 PRO models covered by this certificate are described by the part number/ordering code as follows:

APS521	XX	XX	X	XX
I	II	III	IV	V

Where:

I	Signifies the model reference;
II	Signifies the sensor type and may be P2 (pH Sensor – general purpose bullet shaped glass), P3 (pH Sensor – general purpose flat shaped glass), P4 (pH Sensor – low resistance and temperature glass), P5 (pH Sensor – HF/Acid resistant glass), P6 (pH Sensor – high performance, coating resistant and high temperature glass) or R2 (ORP Sensor)
III	Signifies the body type and may be K1 for a 3/4" threaded insertion/immersion - no sensor guard (flush) or K2 for a 3/4" threaded insertion/immersion - notched sensor guard.
IV	Signifies the connection type and may A for a tagged lead; N for a BNC type connector or V for a VarioPin Cable connector
V	Signifies integrated cable length and may be 00 (No integrated cable – only available with the VarioPin Option), 01 (1 m integrated cable), 03 (3 m integrated cable), 05 (5 m integrated cable) or 10 (10 m integrated cable).

The 500 PRO HT models covered by this certificate are described by the part number/ordering code as follows:

APS525	XX	XX	Y0	Y0	X	XX
I	II	III	IV	V	VI	VII

Where:

I	Signifies the model reference;
II	Signifies the sensor type and may be P2 (pH Sensor – general purpose bullet shaped glass), P3 (pH Sensor – general purpose flat shaped glass), P4 (pH Sensor – low resistance and temperature glass), P5 (pH Sensor – HF/Acid resistant glass), P6 (pH Sensor – high performance, coating resistant and high temperature glass) or R2 (ORP Sensor)
III	Signifies the body type and may be K3 for a hot-tap ball valve insertion - no sensor guard (flush) or K4 for a hot-tap ball valve insertion - notched sensor guard.
IV	Signifies an option to provide a protective sheath to the sensor. Y0 signifies no protective sheath and certification does not cover protective sheath for use in this application.
V	Signifies the accessory hardware for fitting of the protective sheath. Y0 signifies no accessory hardware.
VI	Signifies the connection type and may A for a tagged lead or N for a BNC type connector
VII	Signifies integrated cable length and may be 01 (1 m integrated cable), 03 (3 m integrated cable), 05 (5 m integrated cable) or 10 (10 m integrated cable).

The equipment is formed of a moulded plastic enclosure that is resistant to most aggressive substances. The sensing part of the assembly is glass part that may be curved (bullet shaped) or flat. The glass is either filled with a conductive liquid or empty depending on the application. Surrounding the sensing head there is the first of two PTFE junctions that hold a reference liquid required for the sensor to function.

The pH and ORP sensors are differentiated by the glass bullet or flat sensing head used. The pH sensor can be identified by means of a colouration of the glass that may or may not be present and, more importantly, no wiring passing through the surface of the glass. The OPR sensor can appear the same as the pH sensor. The primary identifiable feature that differentiates between the two type of sensors is that protruding from the glass there is a wire that is considered the sensing head.

Electrical connections are then made to either the plug and socket arrangement or directly to the barrier via a coaxial cable to a maximum length of 10 m.

The sensor is exposed, in its end-use application, a process medium that may have a maximum pressure of up to and including 10 bar.

The 500 PRO sensors are barrier powered device considered against the level of protection "ia" with the following input entity and load parameters.

U_i: 15 V
I_i: 20 mA
P_i: 120 mW
C_i: 15 nF
L_i: 30 µH

16 Report Number

GB/BAS/ExTR19.0301/00

17 Specific Conditions of Use

1. The plastic enclosure is a potential electrostatic hazard. Clean only with a damp cloth and do not mount in a high velocity dust laden atmosphere.
2. The stainless steel threaded connector is a potential electrostatic hazard. Ensure that the earth connection on the connector is provided with an earth connection as described in the instructions.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
3KXA004131U0001*[1]	1 of 1	B	11/01/19	AG Ref Wire Sleeved (Yellow) and Terminal
3KXA004133U0001*[1]	1 of 1	B	16/01/19	PTFE Liquid Junction Machined

Number	Sheet	Issue	Date	Description
3KXA004314U0007*[1]	1 of 1	D	10/09/19	0.75 Inch pH Body (500) IS CE & WEEE Information
3KXA004338U0007*[2]	1 of 1	B	13/11/19	500 – IS ATEX – IECEx Marking

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
3KXA004009U0007*[1]	1 of 1	A	03/05/18	500 D IS General Assembly
3KXA004116U0001*[1]	1 of 1	A	19/07/18	pH Element Wire Sleeved and Terminated
3KXA004130U0001*[1]	1 of 1	A	19/07/18	AG Ref Wire Sleeved (Violet) and Terminal
3KXA004145U0001*[1]	1 of 1	A	10/07/18	Body 3/4" NPT Notched PVDF
3KXA004147U0001*[1]	1 of 1	A	10/07/18	Body 3/4" NPT Flat PVDF
KXA004152U0001*[1]	1 of 1	2	19/07/18	VP Cable
3KXA004154U000*[2]	1 of 5	3	29/05/18	pH Analogue Sensor – Manufacture
3KXA004154U000*[2]	2 of 5	3	29/05/18	pH Analogue Sensor – SMT
3KXA004154U000*[2]	3 of 5	3	29/05/18	pH Analogue Sensor – SPT
3KXA004154U000*[2]	4 of 5	3	29/05/18	pH Analogue Sensor – Top
3KXA004154U000*[2]	5 of 5	3	29/05/18	pH Analogue Sensor – AST
3KXA004171U0001*[1]	1 of 1	A	10/07/18	Body Hot Tap Notched (PVDF) GP Elect
3KXA004173U0001*[1]	1 of 1	A	10/07/18	Body Hot Tap Flat (PVDF) GP Elect
3KXA004180U0001*[1]	1 of 1	A	19/07/18	Molex M12 Digital B Coded Connector Assembly
3KXA004189U0001*[1]	1 to 2	B	25/07/18	Pt100 Assy Glass
3KXA004191U0001*[1]	1 to 2	B	25/07/18	Pt1000 Assy Glass
3KXA004192U0001*[1]	1 of 1	A	19/07/18	Pt100 Assy, Terminated 1 mm Width
3KXA004193U0001*[1]	1 of 1	A	19/07/18	Pt1000 Assy, Terminated 1 mm Width

Note 1: Drawings marked as *[1] are associated and held with IECEx certificate IECEx BAS 18.0047X and are also associated with IECEx certificate IECEx BAS 18.0055X and ATEX certificates Baseefa18ATEX0071X and Baseefa18ATEX0081X.

Note 2: Drawings marked as *[2] are associated and held with IECEx certificate reference number IECEx BAS 18.0055X and are also associated with ATEX certificates Baseefa18ATEX0081X.

20 Certificate History

Certificate No.	Date	Comments
Baseefa18ATEX0081X	22 August 2018	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0: 2012 + A11: 2013 and EN 60079-11: 2013 is documented in Test Report No. GB/BAS/ExTR18.0172/00 and held with project 18/0325.
Baseefa18ATEX0081X Issue 1	27 November 2019	To permit minor constructional changes to the equipment construction not affecting the concept of protection and revision of the notified body number on the marking plate. The assessment is documented in Test Report No. GB/BAS/ExTR19.0301/00 and held with project 19/0600.
For drawings applicable to each issue, see original of that issue.		