

1 EU - Type Examination Certificate

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: ExVeritas 20ATEX0699X Issue: 2

4 Equipment: Flarephase 250, Flarephase Cryo, Flarephase 350, FlarePhase 250 Bias-90,
FlarePhase Cryo Bias-90 and FlarePhase 350 Bias-90 Fluenta ultrasonic transducers

5 Manufacturer: Fluenta AS

6 Address: Haraldsgate 90, N-5501, Haugesund, Norway

7 This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

8 ExVeritas, Notified Body number 2804 in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to design and construction of equipment and protective systems for use in potentially explosive atmospheres given in Annex II to the Directive

9 Compliance with the applicable Essential Health and Safety Requirements has been assured by compliance with the following Standards and section 16 of this certificate:

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

10 If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design, construction, examination and tests of the specified equipment or protective system in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment shall include the following:

 II 1G Ex ia IIC T* Ga (Ta = -40°C to +60°C)

(* Refer to description)

Schedule

13 Description of Equipment or Protective System

The Fluenta *Flarephase 250*, *Flarephase Cryo*, *Flarephase 350*, *FlarePhase 250 Bias-90*, *FlarePhase Cryo Bias-90* and *FlarePhase 350 Bias-90* ultrasonic transducers comprises an enclosure made in titanium where three galvanic insulated piezoelectric crystals are installed. The transducer is partially encapsulated where a limiting circuit is included.

The internal piezoelectric crystals circuits are infallibly segregated between themselves, hence the following entity parameters apply to each of the three circuits:

$$U_i = 5 \text{ V}$$

$$I_i = 0.81 \text{ A}$$

$$P_i = 1.01 \text{ W}$$

$$C_i = 2 \text{ nF}$$

$$L_i = 0 \text{ H (negligible)}$$

The models *Flarephase 250*, *Flarephase Cryo*, *FlarePhase 250 Bias-90* and *FlarePhase Cryo Bias-90* are identical regarding the internal parts, while the model *Flarephase 350* and *FlarePhase 350 Bias-90* provide different insulating materials for the segregation of the internal circuits.

The models Fluenta *Flarephase 250*, *Flarephase Cryo* and *Flarephase 350* provide enclosures that are inserted in the process at 180° bias and the models *FlarePhase 250 Bias-90*, *FlarePhase Cryo Bias-90* and *FlarePhase 350 Bias-90* are inserted in the process at 90° bias.

The temperature class is in function of the ambient and process temperature, the following table shall be considered by the end user to determine the temperature class.

<i>Flarephase 250, Flarephase Cryo, FlarePhase 250 Bias-90 and FlarePhase Cryo Bias-90</i>	
Temperature class	Process temperature range (Tp)
T5	$-200^{\circ}\text{C} \leq T \text{ process} \leq +90^{\circ}\text{C}$
T4	$-200^{\circ}\text{C} \leq T \text{ process} \leq +125^{\circ}\text{C}$
T3	$-200^{\circ}\text{C} < T \text{ process} \leq +190^{\circ}\text{C}$
T2	$-200^{\circ}\text{C} < T \text{ process} \leq +260^{\circ}\text{C}$
Approved process temperature range: -200°C to $+260^{\circ}\text{C}$.	

<i>Flarephase 350 and FlarePhase 350 Bias-90</i>	
Temperature class	Process temperature range (Tp)
T5	$-40^{\circ}\text{C} \leq T \text{ process} \leq +90^{\circ}\text{C}$
T4	$-40^{\circ}\text{C} \leq T \text{ process} \leq +125^{\circ}\text{C}$
T3	$-40^{\circ}\text{C} < T \text{ process} \leq +190^{\circ}\text{C}$
T2	$-40^{\circ}\text{C} < T \text{ process} \leq +285^{\circ}\text{C}$
T1	$-40^{\circ}\text{C} < T \text{ process} \leq +435^{\circ}\text{C}$
$T^* = T_p + 15 \text{ K}$	$+435^{\circ}\text{C} < T \text{ process} \leq +450^{\circ}\text{C}$
Approved process temperature range: -40°C to $+450^{\circ}\text{C}$	
<i>NOTE: The marked process temperature is related to the safety requirements. The probe is operational for a temperature range from -40°C to $+350^{\circ}\text{C}$.</i>	

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Issue 2

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Schedule

14 Descriptive Documents

14.1 Associated Report and Certificate History:

Report Number	Cert Issue Date	Issue	Comment
R2642/A/1	15/10/2020	0	Initial issue of the Prime Certificate
R3104/A/1	10/05/2021	1	The previously approved model Fluenta Flarephase is now called Flarephase 250 or Flarephase Cryo. The model Fluenta Flarephase 350 is a new model included on this issue.
R3494/A/1	24/08/2021	2	Inclusion of models Fluenta <i>FlarePhase 250 Bias-90</i> , <i>FlarePhase Cryo Bias-90</i> and <i>FlarePhase 350 Bias-90</i> .

14.2 Compliance Drawings:

Issue 0

Title:	Drawing No.:	Rev. Level:	Date:
FlarePhase Transducer Head GA	77.190.001	A	14/07/2020
FlarePhase Transducer Welding Drawing	77.190.002	A	05/05/2020
Vent Holder	77.190.005	A	06/05/2020
Breather Bolt	77.190.007	A	06/05/2020
Match PCB and casting potting resin	77.190.009	A	10/08/2020
FlarePhase Transducer Extension Rod	77.190.025	A	29/11/2019
FlarePhase ATEX and IECEx Label	77.190.212	A	20/09/2020
Breather Vent Assembly	77.190.353	A	06/05/2020
FlarePhase Transducer Assembly - GA Drawing	77.190.362	A	04/05/2020
FlarePhase Match PCB Schematic	77.190.800	A	19/09/2020
FlarePhase Match PCB Layout - 19-Sep-2020	63.190.300	A	19/09/2020
FlarePhase Match PCB BOM	74.190.101	A	19/09/2020
FlarePhase General, Safety and Maintenance Manual	62.190.027	A	20/09/2020

Issue 1

Title:	Drawing No.:	Rev. Level:	Date:
FlarePhase Transducer Head GA	77.190.001	A	14/07/2020
FlarePhase Transducer Welding Drawing	77.190.002	A	05/05/2020
Vent Holder	77.190.005	A	06/05/2020
Breather Bolt	77.190.007	A	06/05/2020
Match PCB and casting potting resin	77.190.009	A	10/08/2020
FlarePhase Transducer Extension Rod	77.190.025	A	29/11/2019
FlarePhase 250 ATEX and IECEx Tag Plate	77.190.212 (*)	B	29/03/2021
FlarePhase Cryo ATEX and IECEx Tag Plate	77.190.213 (*)	A	29/03/2021
FlarePhase 350 ATEX and IECEx Tag Plate	77.191.212 (*)	A	29/03/2021
Breather Vent Assembly	77.190.353	A	06/05/2020
FlarePhase Transducer Assembly - GA Drawing	77.190.362	A	04/05/2020
Fluenta FGM Flare Gas Meter FlarePhase 350 Transducer Assembly	77.191.362 (*)	A	29/03/2021
FlarePhase Match PCB Schematic	77.190.800	A	19/09/2020
FlarePhase Match PCB Layout - 19-Sep-2020	63.190.300	A	19/09/2020
FlarePhase Match PCB BOM	74.190.101	A	19/09/2020
FlarePhase General, Safety and Maintenance Manual	62.190.027 (*)	B	29/03/2021
1A - HS Flare Gas Meter Transducer Protection Concept Description 005	72.190.300 (*)	A	08/04/2021

(*) Drawings changed or included on this issue.

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Title:	Drawing No.:	Rev. Level:	Date:
FlarePhase Transducer Head GA (*)	77.190.001	B	14/07/2020
FlarePhase Transducer Welding Drawing	77.190.002	A	05/05/2020
FlarePhase Bias-90 Transducer Assembly – Welding Instruction and Specification (*)	77.192.002	A	11/08/2021
Vent Holder	77.190.005	A	06/05/2020
Breather Bolt	77.190.007	A	06/05/2020
Match PCB and casting potting resin	77.190.009	A	10/08/2020
FlarePhase Transducer Extension Rod	77.190.025	A	29/11/2019
FlarePhase Bias-90 Extension Rod (*)	77.192.025	A	11/08/2021
FlarePhase 250 ATEX and IECEx Tag Plate	77.190.212	B	29/03/2021
FlarePhase 250 Bias 90 ATEX and IECEx Tag Plate (*)	77.192.212	A	11/08/2021
FlarePhase Cryo ATEX and IECEx Tag Plate	77.190.213	A	29/03/2021
FlarePhase Cryo Bias 90 ATEX and IECEx Tag Plate (*)	77.192.213	A	11/08/2021
FlarePhase 350 ATEX and IECEx Tag Plate	77.191.212	A	29/03/2021
FlarePhase 350 Bias 90 ATEX and IECEx Tag Plate (*)	77.192.214	A	11/08/2021
Breather Vent Assembly	77.190.353	A	06/05/2020
FlarePhase Transducer Assembly - GA Drawing	77.190.362	A	04/05/2020
Fluenta FGM Flare Gas Meter FlarePhase 350 Transducer Assembly (*)	77.191.362	A	29/03/2021
FlarePhase Bias-90 Transducer Assembly - GA Drawing (*)	77.192.362	A	11/08/2021
FlarePhase 350 Bias-90 Transducer Assembly - GA Drawing (*)	77.192.364	A	11/08/2021
FlarePhase Match PCB Schematic	77.190.800	A	19/09/2020
FlarePhase Match PCB Layout - 19-Sep-2020	63.190.300	A	19/09/2020
FlarePhase Match PCB BOM	74.190.101	A	19/09/2020
FlarePhase & FlarePhase Bias-90: General, Safety and Maintenance Manual	62.190.027	C	16/08/2021
1A - HS Flare Gas Meter Transducer Protection Concept Description 005	72.190.300	A	08/04/2021

(*) Drawings changed or included on this issue.

15 Conditions of Certification

15.1 Special Conditions for Safe Use

- Enclosure is manufactured in titanium alloy and must be protected against impacts during the installation and use.
- FlarePhase ultrasonic transducers require connection to a FlareAmp and FlareAmp Controller.

15.2 Conditions for Use (Routine tests)

- None

16 Essential Health and Safety Requirements

Essential Health and Safety Requirements are addressed by the standards listed in section 9 and where required the report listed in section 14.1

The manufacturer shall inform the Notified Body of any modifications to the design of the product described by this schedule.

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