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Type Examination Certificate

for Electrical Equipment used in Potentially Explosive Atmosphere

Issued by Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port CH65 4LZ, UK		
Applicant	Flexim Flexible Industriemesstechnik GmbH Boxberger Str. 4, 12681 Berlin, Germany	
Manufacturer name	Flexim Flexible Industriemesstechnik GmbH Boxberger Str. 4, 12681 Berlin, Germany	
Product name	Ultrasonic Transducer	
Type/model code	Type abcdefg See attachment 2	
Type of protection	Powder filling, Dust ignition protection by enclosure	
Group, Temperature Class and EPL	IIC, T6, T5, T4, T3, T2, Gb, IIIC, IIIA, T80°C...T230°C Db	
The equipment shall be marked with the following	Ex q IIC T6...T2 Gb Ex tb IIIC T80 °C...T230°C Db See attachment 1	
Ratings	See attachment 2	
Special condition for safe use	See attachment 3	
Certificate number	CML 21JPN5217X	
Term of validity	From 17-06-2021 to 16-06-2024	

This is to certify that the equipment specified above complies with the requirements stipulated in Ordinance on Examination of Machines and Other Equipment of the Ministry of Health, Labour and Welfare, Japan.

Issue date: 17-06-2021

Signature of chief examiner:

Attachment 1: Equipment marking

Type	Marking	
abcdNf1	Ex q IIC T6...T3 Gb	Ex tb IIIC T80 °C...T185°C Db
abc1Ef3, abc1Sf3, abc1Nf3	Ex q IIC T6...T3 Gb	Ex tb IIIC T80 °C...T160°C Db
abF1Nf3	Ex q IIC T6...T3 Gb	Ex tb IIIA T80 °C...T160°C Db
abc2E85, abc2EW5	Ex q IIC T6...T2 Gb	Ex tb IIIA T80 °C...T230°C Db
abcdLlg	Ex q IIC T6...T5 Gb	Ex tb IIIC T80 °C...T85°C Db

Attachment 2: Type/model code/Ratings

Ultrasonic Transducer type abcdefg

a	Application area	C - Liquids, G - Gases (not relevant for explosion protection)
b	Sensor class	D, L, R or T (not relevant for explosion protection)
c	Working frequency	F – 150 kHz, G – 200 kHz, H – 300 kHz, K – 500 kHz, M – 1 MHz, P – 2 MHz, Q – 4 MHz
d	Style Code	1 or 2 (not relevant for explosion protection)
e	Temperature range	L – low temperature (80 °C) S – steam (155°C) N – normal temperature (155°C/180 °C) E – high temperature (225 °C)
f	Type of construction	8 - armored cable I – IP68 W – pluggable connection
g	Wedge material	1 – PEEK, 3 – PPSU, 5 – PI

max. ultrasonic power density at the surface of the transducer < 65 mW/cm²

Excitation by impulse groups of 1 up to n needle impulses with the following parameters:

Impulse peak voltage: < 160 V
 Impulse peak current: < 4 A
 Middle high frequency power: < 1 W

Operating temperature range for EPL Gb

Types	abG1LI1	abF1N83	abG1N81	abM2E85
	abK1LI1	abG1N83	abK1N81	abP2E85
	abM2LI1	abH1N83	abM2N81	abQ2E85



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CML 21JPN5217X

Issue: 0

	abP2LI1	abK1N83	abP2N81	abM2EW5
	abF1LI3	abM1N83	abQ2N81	abP2EW5
	abG1LI3	abP1N83	abG1NW1	abQ2EW5
	abH1LI3	abQ1N83	abK1NW1	
	abK1LI3	abG1E83	abM2NW1	
	abM1LI3	abK1E83	abP2NW1	
	abP1LI3	abG1S83	abQ2NW1	
		abH1S83		
		abK1S83		
		abM1S83		
		abF1NW3		
		abG1NW3		
		abH1NW3		
		abK1NW3		
		abM1NW3		
		abP1NW3		
		abQ1NW3		
		abG1EW3		
		abK1EW3		
		abG1SW3		
	abH1SW3			
	abK1SW3			
	abM1SW3			
Temperature class	min. and max. ambient or operation temperature range			
T _A min	-40°C	-50°C	-55°C	-45°C
T2	-			+225°C
T3	-	+155°C	+180°C	+190°C
T4	-	+125°C		
T5	+80°C	+90°C		
T6	+75°C			

Operating temperature range for EPL Db

abcdLIg	-40 °C to + 80 °C
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This certificate shall only be copied in its entirety and without change
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本証明書の複写に際しては
 全体を変更なしに行うこと

abcdNf1	-55 °C to +180 °C
abc1Ef3, abc1Nf3 and abc1Sf3	-50 °C to +155 °C
abc2Ef5	-45 °C to +225 °C

The transducer's surface temperature for type of protection Ex tb ($T_{\text{###}}^{\circ}\text{C}$) depends on the pipe temperature (T_p) and the ambient temperature (T_A). It is the higher of the two:

$T_p + 5 \text{ K}$ or $T_A + 5 \text{ K}$

Attachment 3: Special condition for safe use

1. The ultrasonic transducers must be operated with the measuring transmitter type FLUXUS or PIOX listed in the manual. All connections to the cable shall be made in the safe area or in equipment that is suitably approved for the EPL. The connectors may only be disconnected when the transmitter is switched off.
2. The ultrasonic transducer shall be mounted on the pipes in such a way that the plastic surface is facing the pipe and is therefore not accessible.
3. The permissible operating temperatures of the transducer are dependant on the Ex-zone, the demanded temperature class and the used transducer type.
The temperatures are provided in the table in the safety instructions.
4. The ultrasonic transducers abcde8g, abcdLlg may only be operated in the supplied transducer pipe mounting fixture in order to ensure protection against mechanical danger.