



OIML Certificate

OIML Member State
The Netherlands

Number R 117/2019-A-NL1-23.02 revision 1
Project number 3739563
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Issuing authority NMI Certin B.V.
Person responsible: M.Ph.D. Schmidt

Applicant and Manufacturer Oil & Gas Measurement Limited
Denmark House, St. Thomas Place
ELY, Cambridgeshire, CB7 4EX
United Kingdom

Identification of the certified type An ultrasonic **measurement transducer** intended to be used as a part of a non-interruptible dynamic measuring system.
Brand: Metering & Technology SAS
Type: DFX-MM
DFX-LV

Characteristics See following page(s)

This OIML Certificate is issued under scheme A.

This Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML Type Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R 117-1: 2019 "Dynamic measuring systems for liquids other than water"

Accuracy class 0,3; 1,0

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above.
This Certificate does not bestow any form of legal international approval.

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Type Evaluation Report(s) is not permitted, although either may be reproduced in full.

Issuing Authority **NMI Certin B.V., OIML Issuing Authority NL1**
5 July 2024

Certification Board

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The conformity was established by the results of tests and examinations provided in the associated reports:

- No. NMI-16200659-01 dated 23 February 2016 that includes 6 pages;
- No. NMI-16200659-02 dated 23 February 2016 that includes 13 pages;
- No. NMI-3595548-01 dated 11 April 2023 that includes 44 pages;
- No. NMI-3739563-01 dated 05 July 2024 that includes 43 pages.

Characteristics of the measuring instrument

In Table 1 the general characteristics of the DFX series common to both DFX-MM and DFX-LV are presented.

In table 2 and table 3 the characteristics of DFX-MM are presented.

In table 4 and table 5 the characteristics of DFX-LV are presented.

The construction of the DFX series measuring instrument is recorded in the Documentation folder no. 16200659-2.

Table 1 General characteristics of DFX series

Manufacturer's trademark	Oil & Gas Measurement Limited
Accuracy class	0,3 or 1,0; See table 2 and 4 for type DFX-MM and type DFX-LV
Measurement principle	Ultrasonic
Path angle	Various
Sound frequency	1 MHz -2 MHz
Environment Classes	M1 / E2 / H3
Ambient temperature range	- 25 °C ... + 55 °C
Straight pipe length requirements	Upstream 10D (+ flow straightener) Downstream 5D
Electrical power	230 VAC/50 Hz; 24 VDC; Earth connection of the internal power supply not to be connected.
Identification of software	Version: 15.1110 / Checksum: 0x6C428B12
	Version: 20.0514 / Checksum: 0x2D298303

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Table 2 Characteristics of type DFX-MM

Number of sound paths	32 (total 16 transducers)
Liquid temperature range	- 5 °C ... + 35 °C; (accuracy class 0,3) - 25 °C ... + 55 °C (accuracy class 1,0)
Density range	725 ... 1050 kg/m ³
Maximum viscosity	1398 mPa·s
Minimum Reynolds number	1.000
Maximum pressure	105 bar(g)

Table 3 Characteristics of the DFX-MM family of instruments

Type	Size	Minimum flow rate [m ³ /h]	Maximum flow rate [m ³ /h]	MMQ [m ³]	Remarks
DFX-MM04	4" (100 mm)	15	400	0,5	
DFX-MM06	6" (150 mm)	30	800	2	
DFX-MM08	8" (200 mm)	60	1500	2	
DFX-MM10	10" (250 mm)	90	2500	5	
DFX-MM12	12" (300 mm)	130	3200	5	
DFX-MM14	14" (350 mm)	160	3800	10	
DFX-MM16	16" (400 mm)	200	5000	10	
DFX-MM18	18" (450 mm)	310	5000	20	
DFX-MM20	20" (500 mm)	390	5000	20	

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Table 4 Characteristics of type DFX-LV

Number of sound paths	15 (total 10 transducers)
Liquid temperature range	- 5 °C ... + 35 °C (accuracy class 0,3)
Density range	630 ... 950 kg/m ³
Maximum viscosity	19,8 mPa·s
Minimum Reynolds number	10.000
Maximum pressure	10 bar(g)

Table 5 Characteristics of the DFX-LV family of instruments

Type	Size	Minimum flow rate [m ³ /h]	Maximum flow rate [m ³ /h]	MMQ [m ³]	Remarks
DFX-LV04	4" (100 mm)	15	322	0,5	
DFX-LV06	6" (150 mm)	65	644	2	
DFX-LV08	8" (200 mm)	120	644	2	
DFX-LV10	10" (250 mm)	200	644	5	Requires an automatic checking device to detect and generate an alarm when the flow rate is outside the restricted flow range
DFX-LV12	12" (300 mm)	250	3000	5	
DFX-LV14	14" (350 mm)	320	3200	10	
DFX-LV16	16" (400 mm)	400	4000	10	
DFX-LV18	18" (450 mm)	520	5200	10	

Note : Before taken into use the DFX-LV meter shall be calibrated on the product it is going to measure or on a product with similar properties (density and viscosity) at operating temperature and pressure (if possible).

This calibration should cover the entire Reynolds range (taking into account the operating ranges e.g. flow rate and viscosity) of the measuring system in which the measurement device is used.



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Certificate history:

This revision replaces the previous version

Revision	Date	Description of the modification
0	11 April 2023	First release
1	5 July 2024	Addition of the meter type DFX-MM. Extension of the meter specification for type DFX-LV.