OIML Certificate

OIML Member State
The Netherlands

Number R117/2019-A-NL1-23.01 revision 0
Project number 2451649

Issuing authority	NMi Certin B.V.
Person responsible:	M.Ph.D. Schmidt
Applicant and Manufacturer	KROHNE Ltd. 34 – 38 Rutherford Drive Park Farm Industrial Estate Wellingborough NN8 6AE United Kingdom
Identification of the certified type	A **measurement transducer** Type: OPTIMASS 2000; OPTIMASS 6000
Characteristics	See page 2 and further.

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 / 0.5

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**
13 January 2023

Certification Board

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INSPECTION RvA I 122

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

Report number	Issue date	Number of pages
Measurement sensor: OPTIMASS 2000		
NMi-2451649-05	13 January 2023	11
Measurement sensor: OPTIMASS 6000		
NMi-245164901	24 November 2022	23
MFC400 electronics		
NMi-2451649-02	24 November 2022	46

Characteristics of the measurement transducer
In tables 1 to 4, the general characteristics of the measuring instrument are presented.
The construction of the measurement transducer is recorded in documentation folders TC11487-2 for the measurement sensor and TC11484-1 for the electronics.

Table 1 General characteristics applicable to all OPTIMASS measurement sensors

- Density range: 685 … 1100 kg/m^3
- Accuracy class: 0.3 and 0.5
- Environmental classes: M3 / E3 / H3
- Ambient temperature range: -40 … +55 °C
- Intended for the measurement of: Oil and oil products, chemicals and potable liquids,

Sensor Type(1)	**Oil and oil products, chemicals, and potable liquids**	**Liquefied gases under pressure**	**Liquefied gases below -10 °C, cryogenic liquids, LNG, LCO_2**
	Accuracy class		
	0.3; 0.5	**1.0**	**1.5**
OPTIMASS 2000	**M**	-	-
OPTIMASS 6000	**M D V**	-	-

Notes:
(1) This table indicates the approved measurements: **M** for Mass, **D** for density, and **V** for volume.

Table 2 Specific characteristics of the OPTIMASS 2000 measurement sensors

Sensor size	DN100	DN150	DN250	DN400		
Maximum flow rate [t/h]	220	500	1200	2985		
Minimum flow rate, class 0.3 [t/h]	11	25	60	150		
Minimum flow rate, class 0.5 [t/h]	6	16	40	100		
Minimum Measured Quantity [kg]	200	200	500	1000		
Maximum viscosity [mPa·s]	25	2	2	25		

Further characteristics of the OPTIMASS 2000:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	100 bar(g)		NA	NA
Temperature range liquid for mass measurement	-5 °C … +85 °C		NA	NA
Temperature range liquid for density and volume measurement	NA		NA	NA

Table 3 Specific characteristics of the OPTIMASS 6000 measurement sensors

Sensor size	DN8	DN10	DN15	DN25	DN50	DN80
Maximum flow rate [t/h]	0,6	1,2	3,8	19	35	80
Minimum flow rate, class 0.3 [t/h]	0,03	0,06	0,19	0,95	1,75	20
Minimum flow rate, class 0.5 [t/h]	0,015	0,03	0,095	0,475	0,875	10
Minimum Measured Quantity [kg]	1	1	1	5	50	50
Maximum viscosity [mPa·s]	25					

Sensor size	DN100	DN150	DN200	DN250		
Maximum flow rate [t/h]	180	320	560	1000		
Minimum flow rate, class 0.3 [t/h]	28	70	148	270		
Minimum flow rate, class 0.5 [t/h]	14	35	74	135		
Minimum Measured Quantity [kg]	200	100	100	200		
Maximum viscosity [mPa·s]	25					

Further characteristics of the OPTIMASS 6000:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	100 bar(g)		NA	NA
Temperature range liquid for mass measurement	-5 °C … +85 °C		NA	NA
Temperature range liquid for density and volume measurement	-5 °C … +85 °C		NA	NA

Table 4 General characteristics of the MFC400 electronics

Environmental classes	M3 / E3 / H3
Ambient temperature range	-40…+55 °C; condensing humidity
Power supply voltage	24 VDC 100…240 VAC, 50…60 Hz

Software identification

ER version	Main software	User interface	Sensor electronics	SIL IO (exi)	IO2 software	Modbus
ER 2.1.2_	V6.1.2_ 0x01B6	V2.1.2_ 0xBEF4CBA2	V2.0.1_ 0xF9F6	V1.0.2_ 0x1A2B	V5.0.2_ 0xA6FE	V1.0.1_ 0x353D6ABA
ER 2.1.3_	V6.1.2_ 0x01B6	V2.1.3_ 0xAC61F43F	V2.0.1_ 0xF9F6	V1.0.2_ 0x1A2B	V5.0.2_ 0xA6FE	V1.0.1_ 0x353D6ABA
ER 2.1.4_	V6.1.3_ 0x71F9	V2.1.4_ 0xB29DFE9A	V2.0.1_ 0xF9F6	V1.0.3_ 0x443D	V5.0.2_ 0xA6FE	V1.0.1_ 0x353D6ABA
ER 2.1.5_	V6.1.3_ 0x71F9	V2.1.4_ 0xB29DFE9A	V2.0.1_ 0xF9F6	V2.0.0_ 0xA75B	V5.0.2_ 0xA6FE	V1.0.1_ 0x353D6ABA
ER 2.1.6_	V6.1.4_ 0x331C	V2.1.6_ 0x75E94DAF	V2.0.1_ 0xF9F6	V2.0.0_ 0xA75B	V5.0.2_ 0xA8FE	V1.2.0_ 0x6289E485

The ER number is directly linked to the hardware and the software of the instrument. If either one is updated, the number changes.

The MFC400 flow transmitter may only be used in combination with Coriolis measurement sensors manufactured by KROHNE Ltd.

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Revision History

Revision	Date	Change(s)
0	13-01-2023	Initial issue