

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 1 of 8

Issuing authority
Person responsible: NMI Certin B.V.
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Applicant and
Manufacturer: Endress+Hauser Flowtec AG
Kägenstrasse 7
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Identification of the
certified type: **A measurement transducer**
Type: Promass F 300 DNx^[1]; Promass F 500 DNx^[1];
Promass O 300 DNx^[1]; Promass O 500 DNx^[1];
Promass X 300 DNx^[1]; Promass X 500 DNx^[1];
Promass Q 300 DNx^[1]; Promass Q 500 DNx^[1];

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 / 1.0 / 1.5

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.

This certificate and supporting reports comply with the requirements of OIML-CS-PD-07 clause 6.2.

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[1] With x denoting the size of the meter (diameter of the in- and outlet in mm).

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14 May 2024

Certification Board

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OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 2 of 8

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

Report number	Issue date	Number of pages
NMi-2466149-03	2 January 2023	63
Measurement sensor: Promass F		
PF/6491	2 July 1996	77
CVN-302404-01 rev. 1	27 June 2003	15
CPC-407631-1	31 March 2005	42
CPC-412432-1	31 March 2005	32
CPC-10200667-1	9 August 2010	7
NMi-10201056-1	29 March 2012	6
NMi-12200688-01	3 December 2013	6
NMi-14200053-01	16 April 2014	6
NMi-15200446-01	22 June 2016	5
NMi-1902055-01	31 August 2018	11
NMi-2389303-02	12 February 2021	11
NMi-2463103-01	12 February 2021	11
NMi-3147081-01	8 September 2022	16
NMi-3619040-01	15 March 2024	15
NMi-3619045-01	15 March 2024	13
Measurement sensor: Promass O		
NMi-12200149-1	24 May 2012	6
Measurement sensor: Promass Q		
NMi-15200323-01a	12 February 2021	11
NMi-1901704-01	31 August 2018	10
NMi-2389303-01	12 May 2020	29
NMi-2389303-03	12 February 2021	10
NMi-2466149-01	12 August 2022	56
NMi-3147081-01	8 September 2022	16
Measurement sensor: Promass X		
NMi-11200539-01	2 April 2012	6
Promass 300/500 electronics		
NMi-16200475-01a	2 January 2023	31
NMi-1901185-01	1 November 2017	35
NMi-2202829-01	3 December 2019	40
NMi-3619036-01	15 March 2024	12

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 3 of 8

Characteristics of the measurement transducer

In Tables 1 to 6, the general characteristics of the measuring instrument are presented.

The construction of the measurement transducer is recorded in documentation folders TC7149-8 for the measurement sensor and TC10822-4 for the electronics.

Table 1 General characteristics applicable to all Promass measurement sensors

- Density range: 300 ... 1400 kg/m³ for mass measurement
400 ... 1400 kg/m³ for volume and density measurement
- Maximum viscosity: 1000 mPa·s
- Accuracy class: 0.3; 0.5; 1.0 and 1.5
- Environmental classes: M3 / E2 + E3^[2] / H3
- Ambient temperature range: -40 ... +55 °C
- Intended for the measurement of: Oil and oil products, chemicals, potable liquids, liquefied gases under pressure measured at temperatures equal and above -10 °C and liquified gases under pressure measured below -10 °C.

Sensor Type ^[3]	Oil and oil products, chemicals, and potable liquids	Liquefied gases under pressure ≥ -10°C (i.a. LPG, LCO ₂ ^[4])	Liquefied gases below -10 °C (i.a. cryogenic liquids, LNG, LCO ₂)
	Accuracy class		
	0.3; 0.5	1.0	1.5
Promass F	M D V	M D V	M
Promass O	M D V	M D V	M
Promass X	M D V	M D V	M
Promass Q	M D V	M D V	M

[2] Environmental class E3 only applicable in combination with DC-DC convertor and an OIML R117:2019 approved flow computer which is also certified for class E3.

[3] This table indicates the approved measurements: **M** for Mass, **D** for density, and **V** for volume.

[4] Liquefied CO₂ (LCO₂) is approved for mass only.

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 4 of 8

Table 2 Specific characteristics of the Promass F measurement sensors

Sensor size	DN8	DN15	DN25	DN40	DN50
Maximum flow rate [kg/min]	30	100	300	700	1000
Minimum flow rate [kg/min] ^[5]	1,5	5	15	37,5	58,3
Minimum flow rate [kg/min] ^[6]	0,75	2,5	7,5	18,75	29,15
Minimum Measured Quantity [kg]	2	5	20	20	20

Sensor size	DN80	DN100	DN150	DN250
Maximum flow rate [t/h]	180	270	720	2200
Minimum flow rate [t/h] ^[5]	9	14	32	90
Minimum flow rate [t/h] ^[6]	4,5	7	16	45
Minimum Measured Quantity [kg]	200	200	500	1000

Further characteristics of the Promass F:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	100 bar(g)			
Temperature range liquid for mass measurement	-10 °C ... +200 °C			-200 °C ... +85°C
Temperature range liquid for density and volume measurement	-10 °C ... +90 °C			NA

[4] For accuracy class 0.3 and 0.5
[5] For accuracy class 1.0 and 1.5

Table 3 Specific characteristics of the Promass O measurement sensors

Sensor size	DN80	DN100	DN150	DN250		
Maximum flow rate [t/h]	180	270	720	2200		
Minimum flow rate [t/h] ^[7]	9	14	32	90		
Minimum flow rate [t/h] ^[8]	4,5	7	16	45		
Minimum Measured Quantity [kg]	200	200	500	1000		

Further characteristics of the Promass O:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	258 bar(g)			
Temperature range liquid for mass measurement	-10 °C ... +200 °C			-40 °C ... +90 °C ^[9]
Temperature range liquid for density and volume measurement	-10 °C ... +90 °C			NA

Table 4 Specific characteristics of the Promass X measurement sensors

Sensor size	DN350					
Maximum flow rate [t/h]	3353					
Minimum flow rate [t/h] ^[10]	137					
Minimum flow rate [t/h] ^[11]	68,5					
Minimum Measured Quantity [kg]	1000					

Further characteristics of the Promass X:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	100 bar(g)			
Temperature range liquid for mass measurement	-10 °C ... +180 °C			-10 °C ... +85 °C
Temperature range liquid for density and volume measurement	-10 °C ... +90 °C			NA

[7] For accuracy class 0.3 and 0.5

[8] For accuracy class 1.0 and 1.5

[9] Product temperature range for measuring liquefied CO₂ (LCO₂)

[10] For accuracy class 0.3 and 0.5

[11] For accuracy class 1.0 and 1.5

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 6 of 8

Table 5 Specific characteristics of the Promass Q measurement sensors

Sensor size	DN25	DN50	DN80	DN100	DN150	DN200
Maximum flow rate [t/h]	20	80	200	400	850	1500
Minimum flow rate [t/h] ^[12]	0,45	2	6	14	16	24
Minimum flow rate [t/h] ^[13]	0,225	1	3	7	8	12
Minimum Measured Quantity [kg]	10	20	100	200	200	200

Sensor size	DN250					
Maximum flow rate [t/h]	2400					
Minimum flow rate [t/h] ^[12]	50					
Minimum flow rate [t/h] ^[13]	25					
Minimum Measured Quantity [kg]	500					

Further characteristics of the Promass Q:

Accuracy Class	0.3	0.5	1.0	1.5
Maximum pressure	100 bar(g)			
Temperature range liquid for mass measurement	-10 °C ... +200 °C			-200 °C ... +90 °C
Temperature range liquid for density and volume measurement	-10 °C ... +200 °C			NA

^[12] For accuracy class 0.3 and 0.5

^[13] For accuracy class 1.0 and 1.5

Table 6 General characteristics of the Promass 300 and Promass 500 electronics

Environmental classes	M3 / E2 + E3 ^[14] / H3					
Ambient temperature range	-40...+55 °C; condensing humidity					
Power supply voltage	24 VDC 100...240 VAC, 50...60 Hz 24 VDC / 100...240 VAC, 50...60 Hz					
Software identification						
	Version number	Checksum		Version number	Checksum	
		Modbus	Hart		Modbus	Hart
	01.00.02 ^[15]	0xE87F	0x321F	01.02.00	0x5645	-
	01.00.03 ^[15]	0x79B5	0x1585	01.02.01	0x559B	-
	01.00.04	0xE109	0xB075	01.02.02	0x0A92	-
	01.01.01	0xA476	0x977D	01.02.03	0xECE3	-
	01.01.02	0x2AAB	0xED44	01.05.00	0xA9EE	0xB4A1
	01.01.03	0x6A37	0x86FC	01.05.01	0x2B95	0x59D4
	01.01.04	0x6D79	0x674	01.05.02	0xF1B7-	0xE6B5
	01.01.05	0x4670-	0x559B	01.05.03	-	0xD79D
	01.01.06	-	0x0891	01.06.00	0x8894	0x4BDD
	01.01.07	-	0xB7B2	01.06.01	0x58FD	0x9BB4

The Promass 300 and Promass 500 flow transmitters may only be used in combination with Coriolis measurement sensors manufactured by Endress+Hauser Flowtec AG.

Certificate history

Revision	Date	Description of the modification
0	2 January 2023	Initial release.
1	30 May 2023	Addition of software version 01.06.01.
2	15 March 2024	Addition of: - Environmental class E3 - Liquid CO ₂ applications for Promass O - Minimum density lowered for mass measurements.

[14] Environmental class E3 only applicable in combination with DC-DC convertor and an OIML R117:2019 approved flow computer which is also certified for class E3.

[15] This software version is only allowed for the Promass 300 electronics.



OIML Certificate

OIML Member State
The Netherlands

Number R117/2019-A-NL1-22.10 revision 3
Project number 3619036
Page 8 of 8

Revision	Date	Description of the modification
3	14 May 2024	Adding accuracy class 1.0 to Promass O.