OIML Certificate

OIML Member State
The Netherlands

Number R117/2007-A-NL1-21.02 revision 3
Project number 3800938

Issuing authority Person responsible:	NMi Certin B.V. M.Ph.D. Schmidt
Applicant and Manufacturer	Emerson Process Management Flow B.V. Neonstraat 1 6718 WX Ede The Netherlands
Identification of the certified type	A **measurement transducer** Type: CMFxxx[1]; CMFHCx[1]
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 117-1:2007 "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.

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.

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[1] With xxx or x denoting the size of the measurement sensor.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
11 September 2024

Certification Board

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INSPECTION RvA I 122

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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		
CVN/201269	10 July 2002	80
CVN-410178-01	21 December 2005	6
CVN-410178-02	21 December 2005	8
CVN-410178-03	21 December 2005	8
CVN-410178-04	21 December 2005	6
C-SP/603876	12 July 2006	23
CPC-802620-1	11 June 2009	25
CPC-9200041-1	15 October 2009	5
CPC-9200087-1	15 October 2009	6
NMi-10200543-1	11 January 2011	4
NMi-10200543-2	5 April 2011	6
NMi-2591028-01	30 September 2021	9
NMi-3073006-01	14 November 2022	10
NMi-3073006-02	23 November 2022	10
NMi-3800938-01	11 September 2024	11
MVD series electronics		
CVN-201269	10 July 2002	80
CPC-307228-1	21 February 2005	35
CPC-607580-1	26 April 2007	32
CPC-610406-2	29 January 2008	31
CPC-710466-1	19 November 2008	32
NMi-11200214-01	17 May 2011	13
NMi-11200345-02	20 October 2011	8
NMi-1901208-01	5 July 2018	30
5700 electronics		
NMi-14200115-01	4 December 2015	68
NMi-14200115-02	4 December 2015	52
NMi-14200115-06	22 April 2016	21
NMi-15200770-01	4 February 2016	9
NMi-2571596-01	30 September 2021	38

Characteristics of the measurement transducer
In Table 1 to Table 7, the general characteristics of the measuring instrument are presented.
The construction of the measurement transducer is recorded in documentation folders:
- TC7056-14 for the measurement sensor.
- TC7057-17 for the MVD series electronics.
- TC8519-4 for the 5700 electronics.

Table 1 General characteristics applicable to the CMF series of measurement sensors

- Density range: 400 … 1100 kg/m^3
- Maximum viscosity: 1080 mm^2/s (cSt) under actual operating conditions
- Accuracy class: 0.3; 0.5; 1.0; and 1.5
- Environmental classes: M3 / E2+E3 / H3
- Ambient temperature range: -40 … +55 °C
- Intended for the measurement of: Oil and oil products, alcohol, chemicals, potable liquids, liquefied gases under pressure, and cryogenic liquids

Further characteristics of the CMF and CMFHC series measurement sensor:

Accuracy Class	0.3	0.5	1.0	1.5
Temperature range liquid for mass measurement	-10 °C … +250 °C			-200 °C … +50 °C
Temperature range liquid for density and volume measurement	-10 °C … +150 °C			

Table 2 Specific characteristics of the CMF series of measurement sensors

Sensor type		CMF010y	CMF025y	CMF050y	CMF100y
Maximum flow rate [kg/min]		1,8	36	110	450
Minimum flow rate [kg/min] Accuracy class 0.3	MVD700	0,033[H, L, M] 0,067[P]	0,46	2,72	11,4
Minimum flow rate [kg/min] Accuracy class 0.5; 1.0; 1.5	MVD700	0,017[H, L, M] 0,033[P]	0,23	1,36	5,7
Minimum flow rate [kg/min] Accuracy class 0.3	MVD800	0,033[H, L, M] 0,067[P]	0,45	1,3	7,83
Minimum flow rate [kg/min] Accuracy class 0.5	MVD800	0,017[H, L, M] 0,033[P]	0,23	0,65	3,92
Minimum flow rate [kg/min] Accuracy class 1.0; 1.5	MVD800	0,017[H, L, M] 0,033[P]	0,18	0,57	2,3
Minimum Measured Quantity [kg]		0,05	0,5	5	10
Maximum pressure [bar(g)]		25	25	25	25

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Sensor type		CMF200y	CMF300y	CMF350y	CMF400y
Maximum flow rate [kg/min]		1450	4500	4920	6804
Minimum flow rate [kg/min] Accuracy class 0.3	MVD700(◈)	36	114	453[A, B, C, E] 226[H, L, M, P]	680(i) 680(ii) 1700(iii)
Minimum flow rate [kg/min] Accuracy class 0.5;	MVD700(◈)	18	57	226[A, B, C, E] 113[H, L, M, P]	680(i) 340(ii) 850(iii)
Minimum flow rate [kg/min] Accuracy class 1.0; 1.5	MVD700(◈)	18	57	226[A, B, C, E] 113[H, L, M, P]	680(i) 340(ii) 340(iii)
Minimum flow rate [kg/min] Accuracy class 0.3	MVD800(◈◈)	21,7	73,3	138,3	1000(iii)
Minimum flow rate [kg/min] Accuracy class 0.5;	MVD800(◈◈)	10,8	36,7	75	500(iii)
Minimum flow rate [kg/min] Accuracy class 1.0; 1.5	MVD800(◈◈)	7,3	23	75	250(iii)
Minimum Measured Quantity [kg]		20	200	500	500
Maximum pressure [bar(g)]		25	25	25	25

Notes:
- y is a letter which indicates the type of material the meter is built of.
  Where there are different possibilities for a characteristic, the actual letter is indicated in superscript.
- The CMF400 did get a mechanical improvement, therefore the following distinction applies:
  (i) Serial number up to 411000
  (ii) Serial number from 411000 up to 14200000
  (iii) Serial number higher than 14200000
- **(◈)** Qmin in combination with the MVD700 Core Processor.
  (◈◈) Qmin in combination with the MVD800 Enhanced Core Processor and/or 5700 internal core processor.

Table 3 Specific characteristics of the CMFHC series of measurement sensors

Sensor type		CMFHC2y	CMFHC3y	CMFHC4y	
Maximum flow rate [kg/min]		12600	22000	30000	
Minimum flow rate Class 0.3 [kg/min]	MVD700 (◈)	1136	2268	3400	
Minimum flow rate Class 0.5 [kg/min]		568	1134	1700	
Minimum flow rate Class 1.0 [kg/min]		284	567	850	
Minimum flow rate Class 1.5 [kg/min]		227	453	680	
Minimum flow rate Class 0.3 [kg/min]	MVD800 (◈◈)	491	1059	1661	
Minimum flow rate Class 0.5 [kg/min]		245	530	830	
Minimum flow rate Class 1.0 [kg/min]		123	265	415	
Minimum flow rate Class 1.5 [kg/min]		123	213	332	
Minimum Measured Quantity [kg]		1000	1000	1000	
Maximum pressure [bar(g)]		25	25	25	

Notes:
- y is a letter which indicates the type of material the meter is built of.
  Where there are different possibilities for a characteristic, the actual letter is indicated in superscript.
- (◈) Qmin in combination with the MVD700 Core Processor.
  (◈◈) Qmin in combination with the MVD800 Enhanced Core Processor and/or 5700 internal core processor.

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Table 4 General characteristics of the MVD series electronics

Environmental classes	M3 / E3 / H3 (700, 800, 820, 1700, 2700, 3500, 3700) M2 / E2 / H3 (2500)
Ambient temperature range	-40…+55 °C; condensing humidity
Power supply voltage	24 VDC 18… 30 VDC 18…100 VDC / 85…265 VAC, 50…60 Hz

Table 5 Software versions of the MVD series electronics

Version	Checksum	Version	Checksum	Version	Checksum
700 Core Processor					
2.0	51FF	2.7	F666	3.2	18D0
2.1	2B3F	2.8	1DEA	3.3	B0D1
2.2	9005	3.0	D00D	3.40	73A9
2.3	D75B	3.0–ETO17153	97D6	3.42	F00C
2.4	474F	3.11–ETO19413	14AD	3.50	11AA
2.5	14AD	3.12	1F1B	3.52	3C4A
2.6	D732	3.13–ETO18951	8BF8		
800 Enhanced Core Processor					
3.11	891378AB	3.91–ETO21156	65F98DD7	4.60	DDB76E3C
3.21	9893B999	3.94	47EB3E10	4.70	AEB92E3F
3.30	A73D25DA	3.96	756C1BFD	4.80	F1583A44
3.42	7FA82CE8	4.00	C582F843	4.9	6083BF9B
3.50	D9343F05	4.02	8D61C368	5.08	4D368E71
3.52	132CCB63	4.14	40860C63	5.10	82C541D9
3.6	A9CA4E81	4.20	2983A9BE	5.20	BD69FDD6
3.61–ETO17170	9AA358FF	4.21–ETO21931	D6349259	5.22	F4A8D922
3.7	BE73CD62	4.40	B280233F	5.23–ETO45214	B1D70450
3.71–ETO18982	580D32B6	4.42	D7BA0841	5.30	65828884
3.8	8CA8E7D1	4.50	6B48C624	5.33	BF3164F6
3.81–ETO20775	7931CE3D	4.51–ETO32353	BC1660E8	5.40	0218C30B
3.9	58CB3E0C	4.51–ETO33244	D7B81135		

Version	Checksum	Version	Checksum	Version	Checksum
800 Remote Dual Core Processor					
1.00	52FB 1CF0	1.30	AC56C460	1.50	F42A4B2C
1.10	787951AA	1.40	8B64EF94		
1.20	3B7249F6	1.41	073C45F2		
1700 / 2700 / 2500					
3.2, 3.3, 3.4, 3.4.1, 3.5.3*)		3.6, 3.7, 4.1, 4.2*)		4.0, 4.1, 4.2**)	
5.0/1.0	7A7F0B39	6.4/1.3	B77B25C9	7.1/1.3	88FB1B5C
5.1/1.0	95F0BC47	6.5/1.3	88FB1B5C	7.2/1.3	9ECE81F1
5.12/1.0	A14FBFB9	6.6/1.3	9ECE81F1	7.3/1.3	4A5365D4
5.2/1.0	746CBE79	6.7/1.3	4A5365D4	8.0/1.3	1E1467F9
6.0/1.1	BB615B55	6.8/1.3	1E1467F9	8.02/1.3	201465F9
6.1/1.2	13176BE6	6.82/1.3	201465F9		
6.11–ETO19266	9B13F21A	7.0/1.3	B77B25C9		
3500 / 3700					
7.0/1.1	A1C34F1C	8.1/1.3	4279A001	8.41–ETO26097	31D36D05
7.1/1.1	D5783FCF	8.14/1.3	62F125F2	8.43–ETO31478	E35DF3C0
7.2/1.1	20609FD3	8.2/1.4	368139C5	8.50/1.5	1C146AF7
8.0/1.2	158A12BD	8.21–ETO23686	D507F464	8.51–ETO22243	B18A0CB3
8.02–ETO18947	1CC007C4	8.3/1.4	8F65A9E9		
8.03–ETO19299	2D6104C2	8.4/1.4	227B10D2		

Notes:

*) Software versions for the 1700 / 2700 which do not have a checksum.
**) Software versions for the 2500 which do not have a checksum.

Table 6 General characteristics of the 5700 electronics

Environmental classes	M3 / E3 / H3
Ambient temperature range	-25…+55 °C (if the display is the primary indication) -40…+55 °C (if an approved external display is used as primary indication)
Power supply voltage	21… 90 VDC 100…240 VAC, 50…60 Hz

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Table 7 Software versions of the 5700 electronics

Version	Checksum	Version	Checksum	Version	Checksum
Transmitter Software (Weights & Measures)*)					
1.20 (1.0)	2DF0D8E9	3.0 (3.0)	06108400	4.1 (4.0)	AFE0673B
1.30 (1.1)	ADE631BB	3.1 (3.0)	2DE64BB2	4.2 (4.0)	627B3E99
1.85 (2.0) ETO28130	0EA71B41	3.2 (3.0)	8CB1FE4B	4.30 (4.0)	AC509A54
2.00 (2.0)	2F52132D	4.0 (3.0)	0E4997D5		
2.10 (2.0)	23DD3385	4.07 (4.0)	44477758		
Internal Core Processor					
4.02	8D61C368	4.60	DDB76E3C	5.20	BD69FDD6
4.14	40860C63	4.70	AEB92E3F	5.22	F4A8D922
4.20	2983A9BE	4.80	F1583A44	5.30	65828884
4.40	B280233F	4.90	6083BF9B	5.33	BF3164F6
4.42	D7BA0841	5.08	4D368E71	5.40	0218C30B
4.50	6B48C624	5.10	82C541D9		
PIC Firmware					
8.0	0000DE9C				
LCD PIC Firmware**					
3.0	000081D5 (1.20)	3.0	00007442 (1.30 and later)		

Notes:

*) The transmitter software and the Weights & Measures (W&M) software form a matched set. Please note that the W&M software does not have a checksum and means W&M is licensed.

**) The number between brackets, is the transmitter software which belongs to the stated checksum.

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Certificate history
This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	30 September 2021	-
1	14 November 2022	- Addition of liquefied gases. - Increased maximum pressure. - Lowered minimum density. - Mistake in documentation folder number for the measurement sensors corrected. - Mistake in minimum flow rates for the CMFHC family of measurement sensors corrected.
2	23 November 2022	Addition of the CMF010, CMF025 and CMF050 sensors.
3	11 September 2024	Lowering Qmin in combination with the MVD800 Enhanced Core Processor or 5700 internal core processor.