

**OIML Member State**  
The Netherlands

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Project number 2627001  
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Issuing authority  
Person responsible: NMi Certin B.V.  
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Identification of the  
certified type **A measurement transducer**  
Type: Fxxx<sup>[1]</sup>

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 117-1:2007** "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.

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

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**  
24 October 2022

#### Certification Board

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The conformity was established by the results of tests and examinations provided in the associated report(s):

Report number	Issue date	Number of pages
<b>Fxxx measurement sensor</b>		
CPC-607073-02	25 November 2009	20
CPC-700915-01	25 November 2009	19
CPC-9200685-1	12 May 2010	10
CPC-11200060-01	15 July 2011	12
NMi-11200823-01	24 January 2012	7
NMi-11200823-02	24 January 2012	6
NMi-10201042-1	23 July 2013	6
NMi-15200566-01	13 October 2015	9
NMi-1900496-01	16 March 1017	14
NMi-2248752-01	19 December 2019	66
NMi-2627001-01	24 October 2022	27
<b>MVD series electronics</b>		
CVN-201269	10 July 2002	80
CPC-307228-1	21 February 2005	35
CPC-610406-2	29 January 2008	142
CPC-710466-1	19 November 2008	64
NMi-11200214-01	17 May 2011	13
NMi-11200345-2	20 October 2011	10
NMi-1901208-1	5 July 2018	114
<b>5700 electronics</b>		
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 Tables 1 to 6, the general characteristics of the measuring instrument are presented. The construction of the measurement transducer is recorded in the following documentation folders:  
Fxxx Measurement sensor - TC7050-8;  
MVD series electronic - TC7057-17 or  
5700 electronics - TC8519-4.

## Measurement Sensor Fxxx

**Table 1 General characteristics applicable to all measurement sensors**

- Density range:	450 ... 1100 kg/m <sup>3</sup>
- Maximum viscosity:	435 mPa·s @ 20 °C
- Accuracy class:	0.3; 0.5; 1.0 and 1.5
- Environmental classes:	M3 / E2 / 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 above -10 °C and cryogenic liquids.

**Table 2 Specific characteristics of the measurement sensors**

Sensor type	F025y	F050y	F100y	F150y
Maximum flow rate [kg/min]	23	68	272 <sup>A, B, H, S</sup> 183 <sup>J, P</sup>	500
Minimum flow rate Class 0,3 [kg/min]	0,9 <sup>H, S</sup> 3,0 <sup>A, B, P</sup>	9	36	50
Minimum flow rate Class 0,5 [kg/min]	0,45 <sup>H, S</sup> 1,5 <sup>A, B, P</sup>	4,5	18	30
Minimum flow rate Class 1,0 [kg/min]	0,225 <sup>H, S</sup> 0,75 <sup>A, B, P</sup>	2,25	36 <sup>A, B, H, S</sup> 9 <sup>J, P</sup>	20
Minimum Measured Quantity [kg]	1	5	10	20
Maximum pressure [bar(g)]	100 <sup>A, S</sup> 148 <sup>B, H</sup> 160 <sup>P</sup>	100 <sup>A, S</sup> 148 <sup>B, H</sup> 345 <sup>P</sup>	100 <sup>A, S</sup> 185 <sup>B, H</sup> 357 <sup>J</sup> 430 <sup>P</sup>	100 <sup>S</sup>
Approved measurements	<b>M D V</b>	<b>M D V</b>	<b>M D V</b>	<b>M D V</b>

Sensor type	F200y	F300y	F300y Enhanced version	F400 y)
Maximum flow rate [kg/min]	725	2268	2268	5450
Minimum flow rate Class 0,3 [kg/min]	116	362	150	227
Minimum flow rate Class 0,5 [kg/min]	58	181	90	114
Minimum flow rate Class 1,0 [kg/min]	58	181	90	114
Minimum Measured Quantity [kg]	20	200	50	100
Maximum pressure [bar(g)]	100 <sup>A, S</sup> 148 <sup>B, H</sup>	100 <sup>A, S</sup> 148 <sup>B, H</sup>	100 <sup>S</sup>	100 <sup>S</sup>
Approved measurements	<b>M D V</b>	<b>M</b>	<b>M D V</b>	<b>M D V</b>

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**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 approved measurements are indicated with: M for Mass, D for Density and V for Volume.

**Further characteristics of the measurement sensor:**

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

**Note:** For accuracy class 1.5, the F-sensors are approved for mass measurement only.

**MVD series electronics**

**Table 3 General characteristics of the MVD series electronics**

Environmental classes	M3 / E2 + 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 4 Software versions of the MVD series electronics**

Version	Checksum	Version	Checksum	Version	Checksum
<b>700 Core Processor</b>					
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		

Version	Checksum	Version	Checksum	Version	Checksum
<b>800 Enhanced Core Processor</b>					
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		
<b>800 Remote Dual Core Processor</b>					
1.00	52FB 1CF0	1.30	AC56C460	1.50	F42A4B2C
1.10	787951AA	1.40	8B64EF94		
1.20	3B7249F6	1.41	073C45F2		
<b>1700 / 2700 / 2500</b>					
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		

Version	Checksum	Version	Checksum	Version	Checksum
<b>3500 / 3700</b>					
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.

**5700 electronics**

**Table 5 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

**Table 6 Software versions of the 5700 electronics**

Version	Checksum	Version	Checksum	Version	Checksum
<b>Transmitter Software (Weights &amp; Measures)<sup>*)</sup></b>					
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	4.3 (4.0)	AC509A54
2.00 (2.0)	2F52132D	4.0 (3.0)	0E4997D5		
2.10 (2.0)	23DD3385	4.07 (4.0)	44477758		

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Version	Checksum	Version	Checksum	Version	Checksum
<b>Internal Core Processor</b>					
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		
<b>PIC Firmware</b>					
8.0	0000DE9C				
<b>LCD PIC Firmware**)</b>					
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.

**Certificate history:**

This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	30 September 2021	-
1	24 October 2022	Addition of F150 and F400 measurement sensor size; Update of $Q_{\min}$ flow rates for F025 sensor; Software update.