

OIML Member State
The Netherlands

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Project number 3733420
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Issuing authority
Person responsible: NMi Certin B.V.
M.Ph.D. Schmidt

Applicant &
Manufacturer: Advanced Flow Solutions, Inc, d/b/a Liquid Controls
9201 N I-35 Service Rd,
Oklahoma City, OK 73131
United States of America

Identification of the
certified type: **A measurement sensor**
Type: DM; M(S)xxx; BMxxx
(see table 1, where the description **xxx** is indicating the meter size and (S)
the use of pressure containing sphere as either S, SAA, SC or SB).

Meter types BMxx and DMxx are no longer produced by Liquid Controls LLC.

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 and 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.

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.

Issuing Authority: **NMi Certin B.V., OIML Issuing Authority NL1**
23 November 2023

Certification Board

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This document is issued under the provision that no liability is accepted and that the applicant shall indemnify third-party liability.

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This document is digitally signed and sealed. The digital signature can be verified in the blue ribbon at the top of the electronic version of this certificate.



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

- No. NMI-1901792-01 dated 8 August 2018 that includes 66 pages;
- No. NMI-2273797-01 dated 5 April 2019 that includes 27 pages.

Characteristics of the measuring instrument

In Table 1, the general characteristics of the measuring instrument are presented. The construction of the measuring instrument is recorded in the Documentation folder number TC11255-2.

The complete family of meter consists of one family (which are of similar construction) and have the following flow characteristics indicated in table 3.

Table 1 General characteristics of the family of instruments of type M(S)xx

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
M5	0,3	1½" (DN 40)	0,31	28	275	50	See note (1)
M(S)7	0,3	2" (DN50)	0,68	50	500	50	
M10	0,3	2" (DN50)	0,68	55	550	100	
M(S)15	0,3	3" (DN80)	1,84	100	1000	100	
M25	0,3	3" (DN80)	1,84	115	1150	100	
M(S)40	0,3	3" (DN80)	5,11	170	1700	200	
M(S)40	0,3	4" (DN100)	5,11	170	2300	200	
M60	0,3	4" (DN100)	9,5	280	2800	200	
M80	0,3	6" (DN150)	9,5	330	3300	500	
M(S)75	0,3 ^H	4" (DN100)	14,9	540	3300	500	
	0,5 ^L			340	3300		
M(S)120	0,3 ^H	6" (DN150)	23,81	760	3785	1000	
	0,5 ^L						
M(S)120	0,3 ^H	8" (DN200)	23,81	455	4545	1000	
	0,5 ^L						

Notes to table 1:

- H** Indicates accuracy class approved on High viscosity oil of 18 cSt @ 20 °C.
- L** Indicates accuracy class approved on Low viscosity oil of 0,82 cSt @ 20 °C.
- (1) Maximum pressure for meter model:
 - M: 1034 kPa or 1965 kPa
 - MS: 1896 kPa
 - MSA: 1965 kPa
 - MSB: 5102 kPa
 - MSC: 10204 kPa

Table 2 General characteristics of the family of instruments of type BMxx¹

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
BM250 (S)	0,3	2 ½" (DN 65)	2,27	115	1140	100	1034
BM950 (S)	0,3	3" (DN80)	2,27	115	1500	200	
BM450 (D)	0,3	3" (DN80)	4,54	200	2050	200	
BM550 (D)	0,3	4" (DN100)	4,54	220	2280	500	
BM350 (D)	0,3	4" (DN100)	4,54	125	2800	500	
BM650 (T)	0,3	4" (DN100)	6,81	300	3000	500	
BM850 (T)	0,3	6" (DN150)	6,81	200	4250	500	

Note to table 2:

S, D or T between brackets stands for respectively Single, Double or Triple Chamber configuration

Table 3 General characteristics of the family of instruments of type DMxx¹

Type	Accuracy Class	Flange size [inch]	Cyclic Volume [L]	Qmin [L/min]	Qmax [L/min]	MMQ [L]	Pmax [kPa]
DM (S)	0,3	4" (DN100)	5,75	200	2500	200	1034

¹ This measuring sensor was previously placed on the market under the name "Avery Hardoll" until 1 January 2021. It is no longer produced by Liquid Controls LLC.

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Note to table 3:

(S) between brackets stands for Single Chamber configuration.

Table 4 Further general characteristics of the meters

Environmental classes	M3
Ambient temperature range	-25 ... +55 °C
Product temperature range	-5 ... +35 °C
Intended for the measurement of	Hydrocarbon based oils (fuels), with maximum viscosity of 20 mPa·s at 20 °C

Production location

The measurement sensor is produced at one of the following production locations:

- Liquid Controls LLC, 9201 N I- 35 Service Rd, Oklahoma City, OK 73131, United states of America
- SAMPI SpA, Via A. Verspucci, 1, 55011, Altopascio, Lucca, Italy
- Idex India Private Limited, Survey No. 256, GIDC Manjusr, Dist: Vadodara 391770, Gujarat, India

Revision History

This revision replaces the previous versions.

Revision	Date	Change(s)
Initial	2 July 2020	Initial issue
1	25 February 2021	Meter types BMxx and DMxx are no longer produced by Liquid Controls LLC effective 1 January 2021.
2	29 March 2021	Add production location.
3	10 September 2021	Manufacturer name changed and added production location
4	23 November 2023	Added/deleted production location.