



MARINE DIVISION

Certificate number: 27839/A2 BV

File number: AP4292

Product code: 3744H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Micro Motion Inc.

Boulder, CO - UNITED STATES OF AMERICA

for the type of product

FLOW METER

Coriolis Flow and Density Meters - Elite and F-Series

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships.

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 11 Jun 2017

For BUREAU VERITAS,

At BV PORT EVERGLADES CENTRE, on 25 Feb 2013,

Flavio Rosas



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

Micro Motion Coriolis Flow and Density Meters for liquid and gas flow and density measurements.

Flow Transmitter - Model 1700 and 2700

Flow Transmitter and Controller - Model MVD3350 and MVD3700

Flow Sensor Elite - Model CMF200, CMF300 and CMF400

Flow Sensor Elite High capacity - Model CMFHC2, CMFHC3 and CMFHC4

Flow Sensor F-Series - Model F025, F050, F100, F200 and F300

1.1 - Main Specifications of Coriolis Flow Sensors Elite with core processor model 800:

Designation	CMF200	CMF300	CMF400	CMFHC2	CMFHC3	CMFHC4
Size (mm):	50 to 75	75-100	100 to 150	150 to 200	200 to 250	250 to 300
Flow Range (Ton/h or m ³ /h):	87.1	272	545	1306	2550	3266
Sensor rating (bar):	102	102	102	102	102	102
Wetted part material:	316L stainless steel or Nickel Alloy C22					
Process Connection:	Flange AINSI 150/300/600/900 RF and DIN PN40/PN100/PN160					
Output Signal:	Frequency four wires signal					
Ingress Protection Index:	Core processor: IP66					
Hazardous area classification:	Ex ib IIB/IIC T1-T5 (See note)					

Note: Refer to ambient and process temperature limits stipulated for each sensor in product data sheet.

1.2 - Main Specifications of Coriolis Flow Sensors F-Series with core processor model 800:

Designation	F025	F050	F100	F200	F300
Size (mm):	6	12	25	50	75
Flow Range (Ton/h or m ³ /h):	2.72	8.16	62.65	87.1	272
Sensor rating (bar):	102	102	102	102	102
Wetted part material:	316L stainless steel or Nickel Alloy C22				
Process Connection:	Flange AINSI 150/300/600/900 RF and DIN PN40/PN100/PN160				
Output Signal:	Frequency four wires signal				
Ingress Protection Index:	Core processor: IP66				
Hazardous area classification:	Ex ib IIB/IIC T1-T5 (See note)				

Note: Refer to ambient and process temperature limits stipulated for each sensor in product data sheet.

1.3 - Main Specifications of Transmitters and Controllers:

Designation	1700	2700	MVD 3350	MVD 3700
Function :				
Mass / volume flow	X	X	X	X
Temperature		X		X
Density		X		X
Concentration		X		X
Local display	2-line		Multi-line	
Input Signal:				
Frequency / pulse			X	X
Discrete		X		X
4 wires Coriolis	X	X		X
Output Signal:	4-20mA, Frequency/pulse, Discrete, Hart, Modbus			
Supply Voltage:	100 to 30 VDC or 85 to 265 VAC		18 to 30 VDC or 85 to 265 VAC	
Installation:				
Field	X	X		
Remote	X	X	X	X
Hazardous area classification:	Suitable for Zone 1 and 2 (Note)			

Note: Approval differs according to the output option. Refer to product data sheet

1.4 - Software version of Transmitters and Controllers:

Flow transmitter 1700/2700: version 6.1

Flow controller MVD3350: version 8.14

Flow controller MVD3700: version 8.1

2. DOCUMENTS AND DRAWINGS:

Product Data Sheet "Certified Marine Bunker Measurement Solution" PS-001334 Revision D dated January 2012
 Product Data Sheet "Technical Overview and Specification Summary" PS-00232 Revision L dated August 2012
 Product Data Sheet "Elite - Coriolis Flow and Density Meters" PS-00374 Revision U dated September 2012
 Product Data Sheet "Elite High Capacity - Coriolis Flow and Density Meters" PS-001042 Revision G dated March 2011
 Product Data Sheet "F-Series - Coriolis Flow and Density Meters" PS-00603 Revision M dated August 2012
 Product Data Sheet "Series 3000 Transmitters and Controllers" PS-00292 Revision C dated March 2008
 Product Data Sheet "Series 1000 and 2000 Transmitters with MVD Technology" PS-00400 Revision M dated December 2012

3. TEST REPORTS:**Intertek:**

EMC Tests, Report No. 3196553BOX-001B dated June 25, 2010
 Environment and Vibration Tests, Report No. G100044687DET-001 dated June 22, 2010
 Environment Tests, Report No. G100709939GRR-001 dated July 30, 2012
 EMC Tests, Report No. G100759186GRR-001 dated September 6, 2012
 Environment Tests, Report No. G1007599186GRR-002 dated September 27, 2012
 Vibration Tests, Report No. G1007599186GRR-002a dated October 19, 2012
 DC Power Supply Tests, Report No. G100759186GRR-002C dated January 29, 2013

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Test Report on EMC Test, Report No. CPC-710466-1 06-412(E) dated November 19, 2008

Ex Certificates:

Flow Sensors Elite Series: BVS06ATEXE045X dated June 10, 2011
 Flow Sensors F-Series: BVS03ATEXE176X dated November 4, 2009
 Flow Transmitters 1700/2700: DMT01ATEXE082X dated August 20, 2012
 Flow Transmitters/Controllers MVD3350/3700: DMT02ATEXE252X dated September 2, 2010

4. APPLICATION / LIMITATION:

4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.
 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
 4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31S/41S.**
 4.4 - The equipment fulfils the EMC requirements for installation in General power Distribution Zone.
 4.5 - To comply with the RF emission limits, ferrite beads must be installed on all cables connected to flow transmitters/controllers model MVD3350 and MVD3700 as specified in the Installation Instructions (document MMI-20017681 page 28-30).

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The **Coriolis Flow Sensor and Flow transmitters/Controllers** are to be supplied by **MICRO MOTION Inc.** in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.
 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320.
 5.3 - **MICRO MOTION Inc.** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products:

MICRO MOTION Inc.
7070 Winchester Circle
Boulder, CO
UNITED STATES OF AMERICA

and

MICRO MOTION Inc.
Av. Miguel de Cervantes 111
31100 Chihuahua
MEXICO

and

EMERSON PROCESS MANAGEMENT FLOW BV
Neonstraat 1, 6718 WX Ede
NETHERLANDS

5.4 - Each equipment is to be supplied with manual(s) for installation, use and maintenance.

6. MARKING OF PRODUCT:

- Trade name,
- Date of manufacture and serial number,
- Equipment type number or model identification under which it was type-tested.
- Ex marking, as relevant.

7. OTHERS:

7.1 - This approval is given with the understanding that:

**MICRO MOTION Inc.
7070 Winchester Circle
Boulder, CO
UNITED STATES OF AMERICA**

will accept full responsibility for informing shipbuilders, ship-owners or their sub-contractors of the proper methods of use and general maintenance of the transmitters and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate n° 27839/A1 BV issued on 21/08/2012 by the Society.

***** END OF CERTIFICATE *****