IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx UL 13.0067X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2015-09-30) Issue 0 (2014-03-14)
Date of Issue:	2019-11-14		
Applicant:	**Malema Engineering Corp.** 1060 S. Rogers Circle Boca Raton, FL 33487 **United States of America**		
Equipment:	**Flow Switch**		
Optional accessory:			
Type of Protection:	**Encapsulation "mb"**		
Marking:	Ex mb IIC T3 Gb Ex mb IIIC T150°C Db -40°C to +145°C		

Approved for issue on behalf of the IECEx Certification Body: **Erin LaRocco**

Position: **Staff Engineer**

Signature: (for printed version) Erin LaRocco

Date: 2019-11-14

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

UL LLC
333 Pfingsten Road
Northbrook IL 60062-2096
United States of America

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Certificate No.: **IECEx UL 13.0067X**

Date of issue: 2019-11-14

Issue No: 2

Manufacturer: **Malema Engineering Corp.**
1060 S. Rogers Circle
Boca Raton, FL 33487
United States of America

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"
Edition:4.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

US/UL/ExTR13.0070/02

Quality Assessment Report:

US/UL/QAR13.0006/04

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Flow Switch Type M-50X, M-60X, M-100X, and M-200X is composed of a reed relay encapsulated in a non-metallic capsule inside an enclosure. When fluid flows through the unit, it causes a magnetic piston to move against the spring force. As soon as the piston travels beyond the flow set point, the magnet piston actuates the encapsulated hermetically sealed reed switch. Decreasing the flow below the set point causes the reed switch to de-actuate. The reed switch can be either SPDT or SPST. The enclosure can be stainless steel 316, brass, Monel, or Hasteloy.

Please see Annex for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- The field wire leads shall only be installed with metallic conduit with the termination suitability protected with an Ex type of protection as appropriate.
- A fuse rated not less than 1A, 250 VDC/VAC with a breaking capacity not less than 1500A shall be connected externally and suitability protected with an Ex type of protection as appropriate.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 1: Manufacturer is adding a new encapsulate material and raising the upper ambient temperature from +75°C to 145°C

Issue 2: Updates to IEC 60079-0, 7th Edition and IEC 60079-18, Edition 4.1. Deletes ambient temperature range -40°C to +75°C and T6 and T80°C under Ex marking, and adds alternate cable sizes.

Annex:

Annex to IECEx UL 13.0067X Issue 2.pdf

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Certificate No.: IECEx UL 13.0067X

Issue No.: 2

TYPE DESIGNATION

Nomenclature

M	50X	S	1	1	1	0	0	0
I	II	III	IV	V	VI	VII	VIII	IX

I. Series
M – M Series

II. Model Number
50X
55X
60X
65X
70X
75X
100X
200X

III. Material Code (Body Material)
S – 316SS
B – Brass
M – Monel
H – Hasteloy

IV. Port Size
Not critical to the protection method

V. Contact Configuration (Switch)
1 – SPST N.O.
2 – SPST N.C.
3 – SPDT

VI. Flow Range
Not critical to the protection method

VII. Mounting (Optional)
Not critical to the protection method

VIII. Pistons (Optional)
Not critical to the protection method

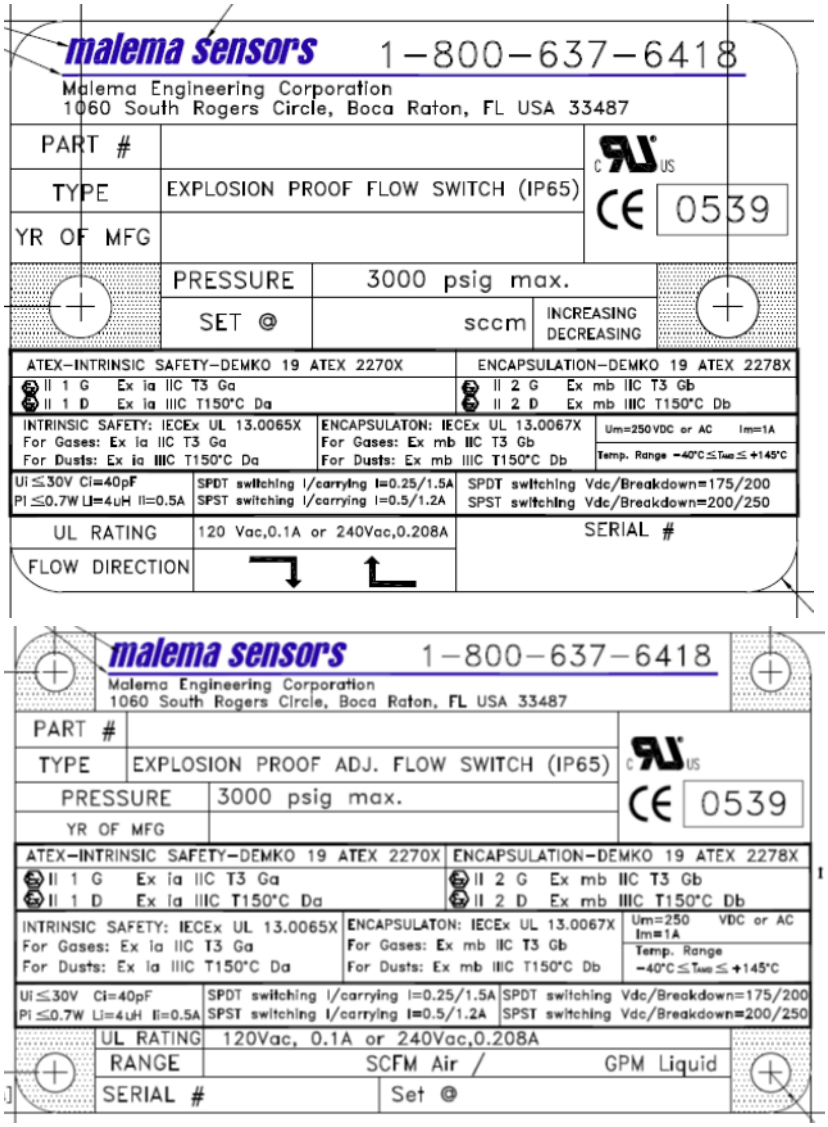
IX. Seals (Optional)
Not critical to the protection method

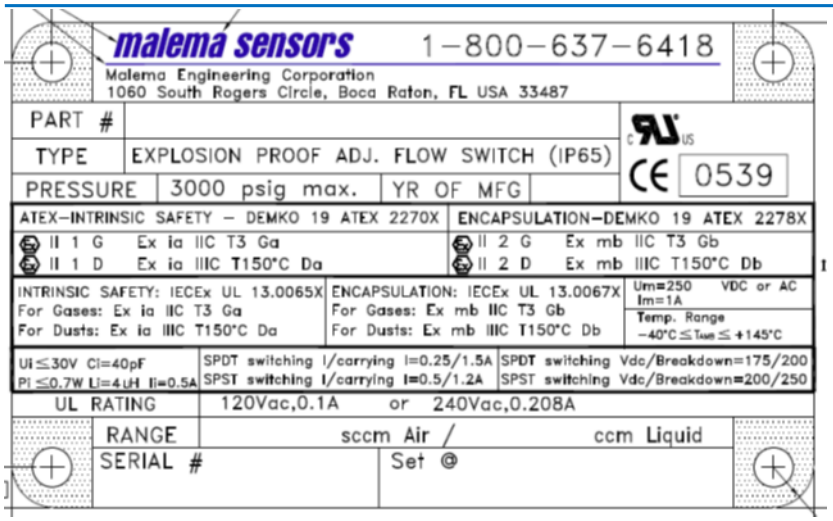
PARAMETERS RELATING TO THE SAFETY

For SPDT:
Voltage switching/breakdown = 175VDC/200VDC
Current switching/carrying = 0.25A/1.5A
For SPST:
Voltage switching/breakdown = 200VDC/250VDC
Current switching/carrying = 0.5A/1.2A

MARKING

Marking has to be readable and indelible; it has to include the following indications:





ROUTINE EXAMINATIONS AND TESTS

Each pieces of equipment defined above has to have successfully passed; before delivery:

- Visual inspections - Each piece of “m” equipment shall be subjected to a visual inspection. No damage shall be evident, such as cracks in the compound, exposure of the encapsulated parts, flaking, inadmissible shrinkage, swelling, decomposition, failure of adhesion or softening.
- Dielectric strength test – The test shall be conducted between the reed switch and the equipment enclosure at minimum 1500 V r.m.s.at 48 Hz to 62 Hz or 2100 V d.c. for at least 1 second. Alternatively, 1.2 x test voltage may be applied and maintained for at least 100 ms. The test shall be deemed as passed if no breakdown or arcing occurs during testing.