

EXPRO ActiveSONAR QEX1000 models –

HAZARDOUS AREA Certification Guide

Model #	QEX1000F-A-ABF (ATEX/UKEX/IECEX/EAC Zone 1)	QEX1000F-x-D ("US Div 2")	QEX1000F-A-C ("Canadian Div 2")
Country of intended use?	This model is intended for use in Europe, UK, Australia, New Zealand, and other countries accepting ATEX Zone 1 and/or IECEx EPL Gb certified equipment, and in countries accepting EAC Zone 1 certified equipment.	This model is intended for use in the United States and other countries accepting United States-certified Class I, Division 2 equipment.	This model is intended for use in Canada and other countries accepting Canadian –certified Class I, Division 2 equipment.
Surface or Mining?	Only certified for Surface use (Group II). Not certified for Mining (Group I).	Only certified for Surface use. Not certified for Mining.	Only certified for Surface use. Not certified for Mining.
Explosive Gas or Dust or Flyings?	Only certified for Explosive Gas (G). Not certified for Dust (D).	Only certified for Explosive Gas (Class I). Not certified for Dust (Class II) or Flyings (Class III).	Only certified for Explosive Gas (Class I). Not certified for Dust (Class II) or Flyings (Class III).
What Zone?	Zone 2 (EUR/UK/EAC) - OK Zone 1 (EUR/UK/EAC) – OK Zone 0 (EUR/UK/EAC)– Not Certified	Zone 2 (US) - OK (*1) Zone 1 (US) – Not Certified Zone 0 (US) – Not Certified	Zone 2 (CAN) - OK (*1) Zone 1 (CAN) – Not Certified Zone 0 (CAN) – Not Certified
What Division? (only applies to US & Canada)	Div 2 – Not recognized in EUR/UK/EAC Div 1 – Not recognized in EUR/UK/EAC	Div 2 (US) – OK Div 1 (US) – Not Certified	Div 2 (CAN) – OK Div 1 (CAN) – Not Certified
What Explosion Protection Level? (only applies to IECEx)	EPL Gc – OK EPL Gb – OK EPL Ga – Not certified	EPL Gc – Not recognized in US EPL Gb – Not recognized in US EPL Ga – Not recognized in US	EPL Gc –Not recognized in CAN EPL Gb -Not recognized in CAN EPL Ga –Not recognized in CAN
What Gas Groups? [Note: Propane is a typical group D or group IIA gas. Ethylene is a typical group C or group IIB gas. Hydrogen is a typical group B gas. Acetylene is a typical group A or group IIC gas.]	IIA – OK IIB – OK IIB+H2 – Not Certified IIC – Not Certified D – Not recognized in EUR/UK/EAC C – Not recognized in EUR/UK/EAC B – Not recognized in EUR/UK/EAC A – Not recognized in EUR/UK/EAC	IIA – Not recognized in US IIB – Not recognized in US IIB+H2 – Not recognized in US IIC – Not recognized in US D – OK C – OK B – Not Certified A – Not Certified	IIA – Not recognized in CAN IIB – Not recognized in CAN IIB+H2 – Not recognized IIC – Not recognized in CAN D – OK C – OK B – Not Certified A – Not Certified
What is required minimum T-rating? [Note: The T-rating indicates the worst-case temperature that could be generated on the outside surface of the meter. T6 is the coolest at 85°C. T4 is 135°C. The required minimum T-rating is based on the Autoignition Temperature of the explosive gasses present.]	T1 – OK T2 – OK T3 – OK T4 – OK T4A – Not recognized in EUR/UK/EAC T5 – OK only if pipe contents are below +90°C. T6 – OK only if pipe contents are below +75°C.	T1 – OK T2 – OK T3 – OK T4 – OK T4A – OK only if pipe contents are below +90°C. T5 – OK only if pipe contents are below +90°C. T6 – OK only if pipe contents are below +75°C.	T1 – OK T2 – OK T3 – OK T4 – OK T4A – OK only if pipe contents are below +90°C. T5 – OK only if pipe contents are below +90°C. T6 – OK only if pipe contents are below +75°C.
What is required Ingress Protection rating of enclosures?	IP20 to IP66 – OK IP67 – Not OK (*2) IP68 – Not certified Type 4X – Not certified (*3)	IP20 to IP66 – OK IP67 – Not OK (*2) IP68 – Not certified Type 4X – OK (*3)	IP20 to IP66 – OK IP67 – Not OK (*2) IP68 – Not certified Type 4X – OK (*3)

Model #	QEX1000F-A-ABF (ATEX/UK/IECEX/EAC Zone 1)	QEX1000F-x-D ("US Div 2")	QEX1000F-A-C ("Canadian Div 2")
What is ambient air temp at meter location?	Only certified for range: -45°C to +60°C	Only certified for range: -45°C to +60°C	Only certified for range: -45°C to +60°C
What is the maximum temperature of pipe contents?	Only certified if less than +125°C. For max temperatures between +100°C and +125°C it is certified only if special conditions are met. (*4)	If the "x" field in the QEX1000F-x-D model number is ... "A", then only certified if less than +125°C. For max temperatures between +100°C and +125°C it is certified only if special conditions are met. (*4) "B" then only certified if less than +100°C. (*4)	Only certified if less than +125°C. For max temperatures between +100°C and +125°C it is certified only if special conditions are met. (*4)
What is the minimum temperature of pipe contents?	If less than -45°C, then special conditions apply. (*4)	If less than -45°C, then special conditions apply. (*4)	If less than -45°C, then special conditions apply. (*4)
Ex Safety Instructions for additional safety information [Includes the markings.]	Expro p/n ECD00062	Expro p/n ECD00062	Expro p/n ECD00062
Hazardous Area certificates	FM09ATEX0038X FM22UKEX0015X IECEX FMG 09.0005X TC RU C-US.ГБ04.В.00601(EMI p/n ECD00065RU)	FM 3037424	FM 3037424C
EU Declaration of Conformity	EU - Expro p/n ECD00025 EAC - Expro p/n ECD00063RU	Not applicable outside of Europe.	Not applicable outside of Europe.
Installation Manual	EU/UK - Expro p/n EML00027 EAC - Expro p/n EML00027RU	Expro p/n EML00027	Expro p/n EML00027
Manufacturer	Expro Meters, Inc.		
For questions or for copies of any of the listed documents, please contact us at:	Telephone: +1 203.303.5691 E-mail: ExproMetersTechnical@exprogroup.com		

Notes:

*1 – The US and Canadian models are certified for Class I, Division 2 (not Class I, Zone 2). However, the US and Canadian Electric Codes permit the use of equipment marked Class I, Division 2 in areas classified as Class I, Zone 2.

*2 – The Transducer Assembly, TA1000, is certified as IP67. However, the other two enclosures (FT1000 and JB1000) are certified as IP66. Since they are installed in close proximity to each other, the system rating should be considered IP66, not IP67.

*3 – The US and the Canadian Transmitter, FT1000, and Junction Box, JB1000, enclosures are certified and marked TYPE 4X. The ATEX/UK/IECEX system's enclosures are not so marked, but the FT1000 and JB1000 enclosures and glands are identical to those of the Canadian system.

*4 – For the ATEX/UK/IECEX system, the Canadian system, or the QEX1000F-A-D US system, if the process temperature extremes can be below -45°C or between +100°C and +125°C then the certification requires that a temperature probe must be used to verify that the temperature at a special temperature sensing hole in the Transducer Assembly remains between -45°C and +100°C. The QEX1000F-B-D US system is not certified for process temperatures above +100°C. See ECD00062 for the detailed temperature limitations.

1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No:** FM09ATEX0038X

4 **Equipment or protective system:** Model QEX1000 Series ActiveSONAR™
(Type Reference and Name) Flowmeter System

5 **Name of Applicant:** Expro Meters Inc

6 **Address of Applicant:** 50 Barnes Industrial Park N
Wallingford, CT 06492
United States of America

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26th February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3034211EC dated 29th May 2009.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-18:2015+A1:2017
and EN 60529:1999+A1:2000+A2:2013

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



For the QEX1000 ActiveSONAR Flowmeter System consisting of TA1000, JB1000 and FT1000 electrical sub-assemblies:

II 2 G Ex db mb IIB T6...T4 Gb Ta = -45°C (-50°C) to +60°C

TA1000 Transducer Assy: II 2 G Ex mb IIB T6...T4 Gb Ta = -45°C to +60°C

JB1000 Junction Box Assy: II 2 G Ex db IIB T6...T4 Gb Ta = -50°C to +60°C

FT1000 Transmitter Assy: II 2 G Ex db IIB T6...T4 Gb Ta = -50°C to +60°C



Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.

Issue date: 13th April 2022

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals Europe Limited, One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmaprovals.com www.fmaprovals.com

F ATEX 020 (Dec/2020)



Page 1 of 4

SCHEDULE



Member of the FM Global Group

to EU-Type Examination Certificate No. FM09ATEX0038X

13 Description of Equipment or Protective System:

The Model QEX1000 Series ActiveSONAR Flowmeter System is a family of clamp-on flowmeters designed to attach to the outside of a process pipe and use ultrasonic signals to measure properties of the fluid or gas flowing within. An array of encapsulated “mb” ultrasonic transducers (TA1000 Series Transducer Assy) on one side of the pipe communicates ultrasonically with a similar array on the opposite side. The driver and receiver electronics are located in a separate flameproof “db” enclosure (FT1000 Series Flow Transmitter Assy) and extract the flow information from the ultrasonic signals. That module is powered by external DC power connections and provides I/O signals to the customer which includes the measured flow information. An additional flameproof “db” enclosure (JB 1000 Series Junction Box Assy), located between the electronics enclosure and the transducer arrays, houses the electrical interconnections.

The parts of the QEX1000 Series have Degree of Protection IP66 or IP67, with IP67 for the TA1000 Series Transducer Assy and IP66 for the other parts of the system.

The specific models described by this Certificate are as follows:

QEX1000a-b-c Flow Meter System consisting of the following TA1000, JB1000 and FT1000 electrical sub-assemblies:

a = alphanumeric string indicating general configuration and application (Not Ex safety related)

b = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)

c = alphanumeric string, to include “A” for ATEX certification

TA1000-aaa-bbb-cc-de-Agh-ii-1-k-l. Transducer Assy

a = alphanumeric indicating pipe (Not Ex safety related)

b = alphanumeric indicating the set of transducer components (limited to those elements listed in ECD00021)

c = alphanumeric indicating primary transducer interface (Not Ex safety related)

d = 1 or 2 Protective cover material

e = alphanumeric indicating cover features (Not Ex safety related)

g = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q,R,S, or T. Cable gland

h = alphanumeric indicating cable length (Not Ex safety related)

i = alphanumeric indicating language (Not Ex safety related)

k = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)

l = alphanumeric string, to include “A” for ATEX certification

JB1000-Ebc-1-e-ff-1-h-i. Junction Box Assy

b = alphanumeric indicating non-Ex safety-related enclosure options

c = A, B, C, or D. Ex safety-related enclosure options.

e = alphanumeric indicating bracket (Not Ex safety related)

f = alphanumeric indicating language (Not Ex safety related)

h = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)

i = alphanumeric string, to include “A” for ATEX certification

FT1000-aa-Ecd-Afg-hh-i-jj-1-k. Flow Transmitter Assy

a = alphanumeric indicating software (Not Ex safety related)

c = alphanumeric indicating non-Ex safety-related enclosure options

d = A or B. Ex safety-related enclosure options.

f = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q,R,S, or T. Cable gland

g = alphanumeric indicating cable length (Not Ex safety related)

h = alphanumeric indicating electronics option (Not Ex safety related)

i = alphanumeric indicating communication protocol (Not Ex safety related)

j = alphanumeric indicating language (Not Ex safety related)

k = alphanumeric string, to include “A” for ATEX certification

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

SCHEDULE



Member of the FM Global Group

to EU-Type Examination Certificate No. FM09ATEX0038X

14 Specific Conditions of Use:

1. Special temperature measurements are required if process temperatures can exceed 100°C. See instructions in ECD00022 or ECD00062.
2. Special gland and cable selection requirements may apply. See instructions in ECD00022 or ECD00062.

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
23 rd June 2009	Original Issue.
05 th April 2010	<u>Supplement 1:</u> Report Reference: – Supplement 1 to Report No 3034211EC dated 01 st April 2010 Description of the Change: An alternate construction of the Transducer Housing Module can be provided to accommodate a thicker transducer element.

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals Europe Limited, One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmapprovals.com www.fmapprovals.com

SCHEDULE



Member of the FM Global Group

to EU-Type Examination Certificate No. FM09ATEX0038X

Date	Description
07 th May 2014	<p><u>Supplement 2:</u> Report Reference: – 3034211rev130515 dated 21st April 2014 Description of the Changes:</p> <ul style="list-style-type: none">• Update to Edition 6 of EN 60079-0• Update to Edition 3 of EN 60079-18• Minor updates to product identification• Revisions to the multi-transducer insert assembly, not affecting Ex Safety• Introduction of a combined safety instruction document ECD00062 that includes all of the instructions of the current ECD00022, in addition to ATEX, US, and Canada safety instruction.• Updates to the marking to show the new safety instruction document, update the web site, and remove the phone number.• Remove the “tall cover” options from the Flow Transmitter Assembly Clarification of Specific Conditions of Use
15 th December 2020	<p><u>Supplement 3:</u> Report Reference: – RR224365 dated 14th December 2020. Description of the Changes:</p> <ul style="list-style-type: none">• Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809• Update from EN 60079-0:2012 +A1:2013 to EN IEC 60079-0:2018• Update EN 60079-1 from 2007 to 2014• Update EN 60079-18 from 2009 to 2015 +A1:2018• Update EN 60529:1999 +A1:2000 +A2:2013• Minor updates to product labels and this certificate as a result of the above• Minor updates to combined safety instruction document ECD00062, which includes all of the instructions of the current ECD00022• Minor revisions to product and documentation not affecting Ex Safety
13 th April 2022	<p><u>Supplement 4:</u> Report Reference: – RR231809 dated 11th April 2022. Description of the Change: Minor revisions to labels, instructions, and model code structure related to additional UK certification.</p>

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals Europe Limited, One Georges Quay Plaza, Dublin. Ireland. D02 E440
T: +353 (0) 1761 4200 E-mail: atex@fmapprovals.com www.fmapprovals.com

Blueprint Report

Expro Meters Inc (106831)

Class No IEC

Original Project I.D. 3034210

Certificate I.D. FM09ATEX0038X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>
ECD00021	05	QEX1000 Certification Drawing - ATEX	RR224365
ECD00022	04	QEX1000 Ex Safety Instructions - IECEX/ATEX/UKCA	RR231809

EU Declaration of Conformity

(No. ECD00025)

Herewith declare that the Product: **ActiveSONAR™ QEX1000 Flow Metering System**

with model numbers: QEX1000x-x-Ay Flow Metering System

comprised of : FT1000-x-x-x-x-x-x-Ay Flow Transmitter Assy
JB1000-x-x-x-x-x-x-Ay Junction Box Assy
TA1000-x-x-x-x-x-x-x-Ay Transducer Assy (qty 2)
MA1000-x-x-x-x-x-x-Ay Mounting Clamp Assy
DOC1000-ABY-x-x-Ay Documentation Package
FTB1000-x-x-x-x-Ay Flow Transmitter Bracket
INK1000-x-x-x-x-Ay Installation Kit

and optional: CAK1000-x-x-x-x-x-x-Ay Cover Assy Kit

(where x represents 1 or more alphanumeric characters
and y represents 0 or more alphanumeric characters)

The Undersigned, representing the Manufacturer:

Expro Meters, Inc., 50 Barnes Park North, Wallingford, CT 06492 USA

This Declaration of Conformity is issued under the sole responsibility of the Manufacturer, and further declare that the Products are in conformity with the provisions of the following EU Directives when installed in accordance with the installation instructions and with the Ex Safety Instructions (ECD00022 or ECD00062) provided with the QEX1000 Flow Metering System:

2014/30/EU	Electromagnetic Compatibility (EMC) Directive [QEX1000 is categorized as Group 1, Class A ISM equipment.]
2014/34/EU	Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres (ATEX) Directive
2011/65/EU	Restriction of Hazardous Substances (RoHS2)

and that the standards referenced below have been applied:

EN 55011:2009 + A1:2010	Industrial, Scientific, and Medical (ISM) Radio-Frequency Equipment – Electromagnetic Disturbance Characteristics – Limits and Methods of Measurement (CISPR 11:2003)
EN 61326-1:2013	Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 1: General Requirements
EN 61326-2-3:2013	Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 2-3: ... Transducers ...

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**

2. **Certificate No:** FM20US0093X
3. **Equipment:** Model QEX1000 Series ActiveSONAR™
(Type Reference and Name) Flowmeter System

4. **Name of Listing Company:** Expro Meters Inc

5. **Address of Listing Company:** 50 Barnes Industrial Park N
Wallingford, CT 06492
United States

6. The examination and test results are recorded in confidential report number:

3037424 dated 29th January 2010

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3810:2005, NEMA 250:2003, ANSI/IEC 60529:2004
ANSI/UL 60079-0:2019, ANSI/UL 60079-1:2015 & ANSI/UL 60079-18:2019

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

Flameproof and Encapsulated for Zone 1, AEx db mb IIB T6...T4 Gb, and Suitable for use in Class I, Division 2, Groups C and D hazardous (classified) locations; indoors and outdoors (Type 4X, IP66 or IP67) with an ambient temperature rating of -45°C or -50°C to +60°C.

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

14 December 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



US Certificate Of Conformity No: FM20US0093X

11. The marking of the equipment shall include:

For the QEX1000 ActiveSONAR Flowmeter System consisting of the following TA1000, JB1000 and FT1000 electrical sub-assemblies:

CL I Div 2 Gp CD, Zn 1 AEx db mb IIB T6...T4 Gb Ta = -45°C (-50°C) to +60°C; Type 4X, IP66 or IP67

- TA1000 Transducer Assy: CL I Div 2 Gp CD, Zn 1 AEx mb IIB T6...T4 Gb Ta = -45°C to +60 °C, IP67

- JB1000 Jn. Box Assy: CL I Div 2 Gp CD, Zn 1 AEx db IIB T6...T4 Gb Ta = -50°C to +60 °C, Type 4X IP66

- FT1000 Flow Transmitter Assy: CL I Div 2 Gp CD, Zn 1 AEx db IIB T6...T4 Gb Ta = -50°C to +60°C, Type 4X, IP66

12. **Description of Equipment:**

The Model QEX1000 Series ActiveSONAR Flowmeter System is a family of clamp-on flowmeters designed to attach to the outside of a process pipe and use ultrasonic signals to measure properties of the fluid or gas flowing within. An array of encapsulated “mb” ultrasonic transducers (TA1000 Series Transducer Assy) on one side of the pipe communicates ultrasonically with a similar array on the opposite side. The driver and receiver electronics are located in a separate flameproof “db” enclosure (FT1000 Series Flow Transmitter Assy) and extract the flow information from the ultrasonic signals. That module is powered by external DC power connections and provides I/O signals to the customer which includes the measured flow information. An additional flameproof “db” enclosure (JB 1000 Series Junction Box Assy), located between the electronics enclosure and the transducer arrays, houses the electrical interconnections.

The parts of the QEX1000 Series have environmental ratings of Type 4X and Degree of Protection IP66 or IP67: with IP67 for the TA1000 Series Transducer Assy, Type 4X as well as IP66 for the JB1000 Series, and IP66 for the other parts of the system.

The specific models described by this Certificate are as follows:

QEX1000a-b-D. Flow Meter System consisting of the following TA1000, JB1000 and FT1000 electrical sub-assemblies:

a = alphanumeric string indicating general configuration and application (Not Ex safety related)

b = A or B. Operational process temperature

TA1000-aaa-bbb-cc-de-fgh-ii-1-k-D. Transducer Assy

a = alphanumeric indicating pipe (Not Ex safety related)

b = alphanumeric indicating the set of transducer components (limited to those elements listed in ECD00027) (Not Ex safety related)

c = alphanumeric indicating primary transducer interface (Not Ex safety related)

d = 1 or 2 Protective cover material

e = alphanumeric indicating cover features (Not Ex safety related)

f = B or C. umbilical cable. (“B” is only permitted when the TA1000 “k” field is “B”).

g = 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S, or T. Cable gland

h = alphanumeric indicating cable length (Not Ex safety related)

i = alphanumeric indicating language (Not Ex safety related)

k = A or B. Operational process temperature (“B” is only permitted for systems where the QEX1000 “b” field is “B”).

JB1000-Ebc-1-e-ff-1-h-D. Junction Box Assy

b = alphanumeric indicating non-Ex safety-related enclosure options

c = A, B, C, or D. Ex safety-related enclosure options.

e = alphanumeric indicating bracket (Not Ex safety related)

f = alphanumeric indicating language (Not Ex safety related)

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

SCHEDULE



US Certificate Of Conformity No: FM20US0093X

h = A or B. Operational process temperature (“B” is only permitted for systems where the QEX1000 “b” field is “B”).

FT1000-aa-Ecd-efg-hh-i-jj-1-D. Flow Transmitter Assy

a = alphanumeric indicating software (Not Ex safety related)

c = alphanumeric indicating non-Ex safety-related enclosure options

d = A or B. Ex safety-related enclosure options.

e = B or C. umbilical cable. (“B” is only permitted for systems where the QEX1000 “b” field is “B”).

f = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,I,J,K,L,M,N,P,Q,R,S, or T. Cable gland

g = alphanumeric indicating cable length (Not Ex safety related)

h = alphanumeric indicating electronics option (Not Ex safety related)

i = alphanumeric indicating communication protocol (Not Ex safety related)

j = alphanumeric indicating language (Not Ex safety related)

13. Specific Conditions of Use:

1. Special temperature measurements are required if process temperatures can exceed 100°C. See instructions in ECD00036 or ECD00062.
2. Special gland and cable selection requirements may apply. See instructions in ECD00036 or ECD00062.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
29 th January 2010	Original Issue.
14 th December 2020	<u>Supplement 2:</u> Report Reference: – RR224365 dated 14 th December 2020. Description of the Changes: <ul style="list-style-type: none">• Update to new FM Approvals United States certificate format• Update FM Class 3600 from 2011 to 2018• Update from ANSI/ISA 60079-0:2013 to ANSI/UL 60079-0:2019• Update from ANSI/ISA 60079-1:2009 to ANSI/UL 60079-1:2015• Update from ANSI/ISA 60079-18:2012 to ANSI/UL 60079-18:2019• Minor updates to product markings and this certificate as a result of the above• Other minor revisions to product and documentation not affecting safety

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE



To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS**

2. **Certificate No:** FM20CA0041X
3. **Equipment:** Model QEX1000 Series ActiveSONAR™
(Type Reference and Name) Flowmeter System

4. **Name of Listing Company:** Expro Meters Inc

5. **Address of Listing Company:** 50 Barnes Industrial Park N
Wallingford, CT 06492
United States

6. The examination and test results are recorded in confidential report number:

3037424 dated 29th January 2010

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CAN/CSA-C22.2 No. 60079-0:2019, CAN/CSA-C22.2 No. 60079-1:2016,
CAN/CSA-C22.2 No. 60079-18:2016, CAN/CSA-C22.2 No. 94:1991, CAN/CSA-C22.2 No. 60529:R2010,
and CAN/CSA-C22.2 No. 61010-1:2004

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

Flameproof and Encapsulated Ex db mb IIB T6...T4 Gb, and Suitable for use in Class I, Division 2, Groups C and D, hazardous locations; indoors and outdoors (Type 4X, IP66 or IP67) with an ambient temperature rating of -45°C or -50°C to +60°C.

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

14 December 2020

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



Canadian Certificate Of Conformity No: FM20CA0041X

11. The marking of the equipment shall include:

For the QEX1000 ActiveSONAR Flowmeter System consisting of the following TA1000, JB1000 and FT1000 electrical sub-assemblies:

CL I Div 2 Gp CD, Ex db mb IIB T6...T4 Gb Ta = -45°C (-50°C) to +60°C, Type 4X, IP66 or IP67

- TA1000 Transducer Assy: CL I Div 2 Gp CD, Ex mb IIB T6...T4 Gb Ta = -45°C to +60 °C, IP67
- JB1000 Junction Box Assy: CL I Div 2 Gp CD, Ex db IIB T6...T4 Gb Ta = -50°C to +60 °C, Type 4X, IP66
- FT1000 Flow Transmitter Assy: CL I Div 2 Gp CD, Ex db IIB T6...T4 Gb Ta = -50°C to +60°C, Type 4X, IP66

12. **Description of Equipment:**

The Model QEX1000 Series ActiveSONAR Flowmeter System is a family of clamp-on flowmeters designed to attach to the outside of a process pipe and use ultrasonic signals to measure properties of the fluid or gas flowing within. An array of encapsulated “mb” ultrasonic transducers (TA1000 Series Transducer Assy) on one side of the pipe communicates ultrasonically with a similar array on the opposite side. The driver and receiver electronics are located in a separate flameproof “db” enclosure (FT1000 Series Flow Transmitter Assy) and extract the flow information from the ultrasonic signals. That module is powered by external DC power connections and provides I/O signals to the customer which includes the measured flow information. An additional flameproof “db” enclosure (JB1000 Series Junction Box Assy), located between the electronics enclosure and the transducer arrays, houses the electrical interconnections.

The parts of the QEX1000 Series have environmental ratings of Type 4X and Degree of Protection IP66 or IP67: with IP67 for the TA1000 Series Transducer Assy, Type 4X as well as IP66 for the JB1000 Series, and IP66 for the other parts of the system.

The specific models described by this Certificate are as follows:

QEX1000a-b-C. Flow Meter System consisting of the following TA1000, JB1000 and FT1000 electrical sub-assemblies:

- a = alphanumeric string indicating general configuration and application (Not Ex safety related)*
- b = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)*

TA1000-aaa-bbb-cc-de-Agh-ii-1-k-C. Transducer Assy

- a = alphanumeric indicating pipe (Not Ex safety related)*
- b = alphanumeric indicating the set of transducer components (limited to those elements listed in ECD00039) (Not Ex safety related)*
- c = alphanumeric indicating primary transducer interface (Not Ex safety related)*
- d = 1 or 2 Protective cover material*
- e = alphanumeric indicating cover features (Not Ex safety related)*
- g = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q,R,S, or T. Cable gland*
- h = alphanumeric indicating cable length (Not Ex safety related)*
- i = alphanumeric indicating language (Not Ex safety related)*
- k = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)*

JB1000-Ebc-1-e-ff-1-h-C. Junction Box Assy

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

SCHEDULE



Canadian Certificate Of Conformity No: FM20CA0041X

- b = alphanumeric indicating non-Ex safety-related enclosure options*
- c = A, B, C, or D. Ex safety-related enclosure options.*
- e = alphanumeric indicating bracket (Not Ex safety related)*
- f = alphanumeric indicating language (Not Ex safety related)*
- h = alphanumeric. Operational process temperature [never exceeding 125°C] (Not Ex safety related)*

FT1000-aa-Ecd-Afg-hh-i-jj-1-C. Flow Transmitter Assy

- a = alphanumeric indicating software (Not Ex safety related)*
- c = alphanumeric indicating non-Ex safety-related enclosure options*
- d = A or B. Ex safety-related enclosure options.*
- f = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,I,J,K,L,M,N,P,Q,R,S, or T. Cable gland*
- g = alphanumeric indicating cable length (Not Ex safety related)*
- h = alphanumeric indicating electronics option (Not Ex safety related)*
- i = alphanumeric indicating communication protocol (Not Ex safety related)*
- j = alphanumeric indicating language (Not Ex safety related)*

13. Specific Conditions of Use:

1. Special temperature measurements are required if process temperatures can exceed 100°C. See instructions in ECD00048 or ECD00062.
2. Special gland and cable selection requirements may apply. See instructions in ECD00048 or ECD00062.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
29 th January 2010	Original Issue.
14 th December 2020	Supplement 2: Report Reference: – RR224365 dated 14 th December 2020. Description of the Changes: <ul style="list-style-type: none">• Update to new FM Approvals Canadian certificate format• Update from CAN/CSA E60079-0:2011 to CAN/CSA C22.2 No. 60079-0:2019• Update from CAN/CSA E60079-1:2011 to CAN/CSA C22.2 No. 60079-1:2016• Update from CAN/CSA E60079-18:2012 to CAN/CSA C22.2 No. 60079-18:2016

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

SCHEDULE



Canadian Certificate Of Conformity No: FM20CA0041X

	<ul style="list-style-type: none">• Minor updates to product markings and this certificate as a result of the above• Other minor revisions to product and documentation not affecting safety
--	---



THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx FMG 09.0005X Issue No: 2 Certificate history:
Status: **Current** Page 1 of 4 Issue No. 2 (2014-04-22)
Date of Issue: **2014-04-22** Issue No. 1 (2010-04-01)
Applicant: **Expro Meters, Inc.** Issue No. 0 (2009-06-18)
50 Barnes Park North
Wallingford, CT 06492
United States of America

Electrical Apparatus: **Series QEX1000 ActiveSONAR Flowmeter System**
Optional accessory: *Consisting of Flow Transmitter, Junction Box, and Transducer Assemblies*

Type of Protection: **Ex d mb IIB T6...T4 -45°C(-50°C)≤Ta≤+60°C Gb IP66/67**

Marking: Flow Transmitter Assy:
Ex d IIB T6...T4 -50°C≤Ta≤+60°C Gb IP66
Junction Box Assy:
Ex d IIB T6...T4 -50°C≤Ta≤+60°C Gb IP66
Transducer Assy:
Ex mb IIB T6...T4 -45°C≤Ta≤+60°C Gb IP67

Approved for issue on behalf of the IECEx
Certification Body:

J. E. Marquedant

Position:

Manager, Electrical Systems

Signature:
(for printed version)

Date:

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 the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

FM Approvals LLC
1151 Boston-Providence Turnpike
Norwood, MA 02062
United States of America





IECEx Certificate of Conformity

Certificate No: IECEx FMG 09.0005X Issue No: 2
Date of Issue: 2014-04-22 Page 2 of 4
Manufacturer: **Expro Meters, Inc.**
50 Barnes Park North
Wallingford, CT 06492
United States of America

Additional Manufacturing
location(s):

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 electrical apparatus 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 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0
IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:6
IEC 60079-18 : 2009 Explosive atmospheres Part 18: Equipment protection by encapsulation "m"
Edition:3

*This Certificate **does not** indicate compliance with electrical 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/FMG/ExTR09.0011/00 US/FMG/ExTR09.0011/01 US/FMG/ExTR09.0011/02
US/FMG/ExTR09.0011/03

Quality Assessment Report:

US/FMG/QAR09.0006/00 US/FMG/QAR09.0006/01 US/FMG/QAR09.0006/02



IECEx Certificate of Conformity

Certificate No: IECEx FMG 09.0005X

Issue No: 2

Date of Issue: 2014-04-22

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

QEX1000a-b-B ActiveSONAR Flowmeter System consisting of the following electrical sub-assemblies

a = alphanumeric string indicating general configuration and application (Not Ex safety related)

b = alphanumeric. Operational process temperature [never exceeding+125°C] (Not Ex safety related)

TA1000-aaa-bbb-cc-de-Agh-ii-1-k-B. Transducer Assy

a = alphanumeric indicating pipe (Not Ex safety related)

b = alphanumeric indicating the set of transducer components (limited to those elements listed in ECD00020)

c = alphanumeric indicating primary transducer interface (Not Ex safety related)

d = 1 or 2 Protective cover material

e = alphanumeric indicating cover features (Not Ex safety related)

g = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q,R,S, or T. Cable gland

h = alphanumeric indicating cable length(Not Ex safety related)

i = alphanumeric indicating language (Not Ex safety related)

k = alphanumeric. Operational process temperature [never exceeding+125°C] (Not Ex safety related)

JB1000-Ebc-1-e-ff-1-h-B. Junction Box Assy

b = alphanumeric indicating non-Ex safety-related enclosure options

c = A, B, C, or D. Ex safety-related enclosure options.

e = alphanumeric indicating bracket (Not Ex safety related)

f = alphanumeric indicating language (Not Ex safety related)

h = alphanumeric. Operational process temperature [never exceeding+125°C] (Not Ex safety related)

FT1000-aa-Ecd-Afg-hh-ij-1-B. Flow Transmitter Assy

a = alphanumeric indicating software (Not Ex safety related)

c = alphanumeric indicating non-Ex safety-related enclosure options

d = A or B. Ex safety-related enclosure options.

f = 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G,H,J,K,L,M,N,P,Q,R,S, or T. Cable gland

g = alphanumeric indicating cable length(Not Ex safety related)

h = alphanumeric indicating electronics option(Not Ex safety related)

i = alphanumeric indicating communication protocol (Not Ex safety related)

j = alphanumeric indicating language (Not Ex safety related)

CONDITIONS OF CERTIFICATION: YES as shown below:

Specific Conditions of Use:

1. Special temperature measurements are required if process temperatures can exceed 100°C. See instructions in ECD00022 or ECD00062.
2. Special gland and cable selection requirements may apply. See instructions in ECD00022 or ECD00062.



IECEX Certificate of Conformity

Certificate No: IECEx FMG 09.0005X

Issue No: 2

Date of Issue: **2014-04-22**

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 2: