

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:** FM13ATEX0082X

4 **Equipment or protective system:
(Type Reference and Name)** 640i and 780i Insertion and In-line Thermal Mass
Flowmeters

5 **Name of Applicant:** Sierra Instruments Inc.

6 **Address of Applicant:** 5 Harris Court, Building L
Monterey, CA 93940
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 26 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:

3048285 dated 25th April 2014

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 60079-0:2012 + A11:2013, EN 60079-1:2014, EN 60079-31:2014 and
EN 60529:1991 + 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:



II 2 G Ex db IIC T3 Gb Ta = -20°C to +60°C; IP66

II 2 D Ex tb IIIC T200°C Db Ta = -20°C to +60°C; IP66

Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.

Issue date: 19th March 2019

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

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SCHEDULE



Member of the FM Global Group

to EU-Type Examination Certificate No. FM13ATEX0082X

13 Description of Equipment or Protective System:

The 640i and 780i Insertion and In-line Thermal Mass Flowmeters are used for gas flow measurement applications. The flowmeters integrate configuration, validation and diagnostics in a probe-mounted or remotely-mounted housing. When remotely-mounted, the electronics enclosure can be mounted up to 200 feet away from the remote probe enclosure. All variables can be monitored on an optional, viewable display. The flowmeters can also provide 4-20 mA flow and temperature output, alarm output and an optional pressure output. The 640i is suitable for insertion into pipes or ducts from three inches up to 72 inches while the 780i can go in-line to 8-inch flow bodies. For probes longer than 13 inches, a seal is required within 13 inches of the probe and enclosure.

The 640i and 780i Insertion and In-line Thermal Mass Flowmeters operate on 24 Vdc or 100-240 Vac. The flowmeters are intended for use in an ambient temperature of -20°C to +60°C and with process temperatures of -40°C to +200°C at a pressure of 300 psi (in-line) or 500 psi (insertion).

640i-a-3-b-c-d-e-f-g-h-0-i-i-i-j. Insertion Thermal Mass Flowmeter.

a = Multivariable VT or VTP.

b = Probe L06, L09, L13, L18, L24, L36, L48, L(*) or L(*) M5. *Specify probe length (max 48 inches).

c = Mounting M0, M1, M1-M2(*), M3, M4(*), M8(*), M9 or M15(*). *Specify pipe O.D.

d = Enclosure E2 or E4(*). *Specify cable length.

e = Power P2 or P3.

f = Output V4 or V6*. *VTP only.

g = Display DD or NR.

h = Pressure MP1*, MP2*, MP3*, MP4* or N/A†. *VTP only. †For VT or E4.

i = Gas 0, 1, 1A, 2, 2A, 3, 4, 4A, 6, 6A, 7, 7A, 8, 8A, 10, 10A, 11, 12, 12A or 99.

j = Digital Communication: DP1*, DP2*, FF*, MB*, HART* or Blank. *only available in P2 Power option.

780i-a-3-b-c-d-e-f-g-0-h-h-h-i. In-line Thermal Mass Flowmeter.

a = Multivariable VT or VTP.

b = Flow Body N2, N3, N4, N5, N6, N7, N8, N9, N10, F2, F3, F4, F5, F6, F7, F8, F9, F10, FD6, FD7, FD8, FD9, FD10, GD4, GD5, GD6, GD7, GD8, GD9 or GD10.

c = Enclosure E2 or E4(*). *Specify cable length.

d = Power P2 or P3.

e = Output V4 or V6*. *VTP only.

f = Display DD or NR.

g = Pressure MP1*, MP2*, MP3*, MP4* or N/A†. *VTP only. †For VT or E4.

h = Gas 0, 1, 1A, 2, 2A, 3, 4, 4A, 6, 6A, 7, 7A, 8, 8A, 10, 10A, 11, 12, 12A or 99.

i = Digital Communication: DP1*, DP2*, FF*, MB*, HART* or Blank. *only available in P2 Power option.

14 Specific Conditions of Use:

1. The flameproof joints are not intended to be repaired. Consult the manufacturer for additional information.
2. A suitably certified conduit sealing device is required within 13 inches of the enclosure for probes longer than 13 inches.

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.

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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
1 st May 2014	Original Issue.
20 th August, 2014	<u>Supplement 1:</u> Report Reference: 3052971 dated 8 th August 2014 Description of the Change: Alternate flame arrester and accompanying documentation changes.
03 rd October 2014	<u>Supplement 2:</u> Report Reference: 3040602rev140723 dated 1 st October 2014 Description of the Change: Communications option added to the Model code.
13 th April 2015	<u>Supplement 3:</u> Report Reference: 3053711 dated 10 th April 2015 Description of the Change: Revised in-line probe design and other accompanying and minor documentation changes. Correction of Supplement 2 report reference.
14 th June 2018	<u>Supplement 4:</u> Report Reference: PR449880 dated 8 th June 2018 Description of the Change: Update to the latest edition of the EN 60079-1 and EN 60079-31 standards which required changing "d" to "db" and revising the specific conditions of use.
15 th November 2018	<u>Supplement 5:</u> Report Reference: RR215729 dated 13 th November 2018 Description of the Change: Updates to correct drawing part list to use previously evaluated probe assemblies.
19 th March 2019	<u>Supplement 6:</u> Description of the Change: Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.

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Blueprint Report

Sierra Instruments Inc (1000002381)

Class No 3615

Sierra Instruments Inc (1000002381)

Class No 3615

Original Project I.D. 3048285

Certificate I.D. FM13ATEX0082X

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>
22-0576	A	CONN, RING TERMINAL, #10, 16-14 AWG
36-0015	A	ADHESIVE, SEALANT, RTV SILICONE
39-1659	A	PCA, MODBUS TO FF BUS CONVERTER
39-1720	A	MODBUS TO HART, OEM
41-2205	B	PRESSURE SENSOR FITTING
41-4457	1	BUSHING, ENCLOSURE, 640i
41-4458	A	RETAINING RING, FLAME ARRESTOR
41-4463-X	C	ENCLOSURE, 640i
41-4487	B	DISK, FLAME ARRESTOR, 640i
41-4530	4	ADAPTER, BUSHING, 640I/780I REMOTE
41-4575-X	C	SENSOR HOUSING, .75 OD , 640i
41-4638-X	A	ENCLOSURE, REMOTE, 640i
41-5037	B	PIN, SENSOR HOUSING, 640i
41-5042-X-X	2	WELDMNT, 780i, 1/2 INCH
41-5043-X-X	2	WELDMNT, 780i, 3/4 INCH
41-5044-X-X	2	WELDMNT, 780i, 1 INCH
41-5059-X-X	2	WELDMNT, 780i, 1.5 INCH
41-5179-XXX	A	SHAFT, INS MTR, 640i
41-5258-XXX	A	WLDMNT, PROBE SHAFT, 640i
43-0247-XX-X-X	C	WELDMNT, PROBE ASSY, .75 O.D. INSERTION METERS, 640i
43-0256-XX	4	WELDMNT, .25 IN-LINE FLOW BODY
43-0268	A	ASSEMBLY, FLAME ARRESTOR, 640i
43-0274-XX	E	SENSOR ASSEMBLY, 640i FR PROBE WELDMNT & ASSY. .75 OD, W/FLANGE INSERTION METERS, 640i
43-0296-XX-XX	5	WELDMNT, PROBE ASSY, IN LINE METERS, 780i, .5", .75", 1"
43-0304-XX	B	LABEL, AGENCY APPROVAL, ATEX, ENCL BACK, 640i/780i
47-0501	B	LABEL, RMT ENCL, ATEX, 640i/780i
47-0502	B	Mobi
52-0195	3.2	640I Terminal PCA
52-0198	A	640I Power PCA
52-0199	A	640I Display RS232 PCA
52-0201	A	640 I Main PCA
52-0202	A	640I Remote J-Box PCA
52-0209	A	PCA, TERM, PROFIBUS DP, 640S
52-0219	A	WIRING, SENSOR HOUSING, 640I/780I
54-0372-XX	14	640i/780i ENCLOSURE USAGE
99-1636	3	640i/780i APPROVAL AGENCY OVER-VIEW
99-1685	D	QuadraTherm 640i/780i Series Insertion and In-Line Mass Flow Meters Instruction Manual
IM-640i/780i	12.28	Appendix for ATEX and IECEx Certified EX Units Instruction Manual
IM-QuadraTherm-ATEX and IECEx	D	



<u>Last Report</u>	<u>Electronic Drawing</u>
3048285	Yes (pdf)
3048285	Yes (pdf)
7/23/14	Yes (pdf)
7/23/14	Yes (pdf)
RR215729	Yes (pdf)
3048285	Yes (pdf)
3052971	Yes (pdf)
PR449880	Yes (pdf)
3052971	Yes (pdf)
3048285	Yes (pdf)
3053711	Yes (pdf)
3048285	Yes (pdf)
PR449880	Yes (pdf)
3053711	Yes (pdf)
3053711	Yes (pdf)
3053711	Yes (pdf)
3053711	Yes (pdf)
PR449880	Yes (pdf)
RR215729	Yes (pdf)
3053711	Yes (pdf)
3048285	Yes (pdf)
3052971	Yes (pdf)
PR449880	Yes (pdf)
3053711	Yes (pdf)
3053711	Yes (pdf)
PR449880	Yes (pdf)
PR449880	Yes (pdf)
7/23/14	Yes (pdf)
3048285	Yes (pdf)
3048285	Yes (pdf)
3048285	Yes (pdf)
3048285	Yes (pdf)
3048285	Yes (pdf)
7/23/14	Yes (pdf)
3048285	Yes (pdf)
PR449880	Yes (pdf)
RR215729	Yes (pdf)
RR215729	Yes (pdf)
PR449880	Yes (msw14)