

# CERTIFICATE OF CONFORMITY



Member of the FM Global Group

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

2. **Certificate No:** FM21US0123X
3. **Equipment:** 645S, 745S and TM100 Series Thermal Mass Gas Flow Meter and Temperature Transmitter  
(Type Reference and Name)
4. **Name of Listing Company:** Sierra Instruments Inc
5. **Address of Listing Company:** 5 Harris Court,  
Monterey, California 93940, USA

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

PR461840 dated 17<sup>th</sup> May 2022

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

FM 3600:2022, FM 3615:2022, FM 3616:2022, FM 3810:2021, NEMA 250:1991, ANSI/UL 60079-0:2013, ANSI/UL 60079-1:2015, ANSI/IEC 60529:2004, ANSI/UL 61010-1:2012

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:**

Explosionproof for Class I, Division 1, Groups B, C and D; Dust-ignitionproof for Class II, Division 1, Groups E, F and G; Class III, Division 1; Flameproof for Class I, Zone 1, AEx db IIB+H2 T4 Gb hazardous (classified) locations, indoors and outdoors (Type 4X, IP66/67) with an ambient temperature rating of -40°C to +70°C.

### Certificate issued by:

J.E. Marquardt  
VP, Manager - Electrical Systems

18 September 2023

Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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

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F 347 (Apr 21)



## SCHEDULE

US Certificate Of Conformity No: FM21US0123X



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### 11. The marking of the equipment shall include:

Class I Division 1, Groups B, C, D; T4 Ta = -40°C to +70°C; Type 4X, IP66/67

Class II, Division 1, Groups E, F, G, Class III, Division 1; T4 Ta = -40°C to +70°C; Type 4X, IP66/67

Class I, Zone 1, AEx db IIB+H2 T4 Gb Ta = -40°C to +70°C, Type 4X, IP66/67

### 12. Description of Equipment:

**General** - The 645S, 745S and TM100 Series Thermal Gas Mass Flow Meter and Temperature Transmitters are used for measuring the mass flow of gases as well as the process gas temperature all in one package. The flowmeters are available for inline or insertion applications. The product features 4-20mA and/or pulse outputs and is also available with an optional display/configuration panel. Digital communications options include USB, HART and RS485 Modbus.

**Construction** - The 645S, 745S and TM100 Series Thermal Gas Mass Flow Meter and Temperature Transmitter consists of a single compartment electronics housing with thread-on window cover and a probe inserted through the housing base forming a cylindrical joint. The enclosures are provided with two (2) ¾ inch NPT openings.

**Ratings** - The 645S, 745S and TM100 Series Thermal Gas Mass Flow Meter and Temperature Transmitters operate at 12-28 Vdc (6W). The transmitters are rated for use in an ambient temperature range of -40°C to +70°C. The transmitter probes are rated for use in a process temperature range of -40°C to +121°C at a maximum pressure of 740 psi.

See Annex for model codes.

### 13. Specific Conditions of Use:

1. The flamepaths of the equipment are not intended to be repaired. Consult the manufacturer if repair of the flamepath joints is necessary.

2. Refer to the manufacturer's instructions to reduce the potential of an electrostatic charging hazard on the equipment enclosure.

### 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:

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F 347 (Apr 21)



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Date	Description
17 May 2022	Original Issue.
18 September 2023	<u>Supplement 1:</u> Report Reference: PR466793 dated 18 September 2023. Description of the Change(s): Minor model code revisions and associated documentation changes. Standards updated to latest editions where changes between versions are considered non-technical.

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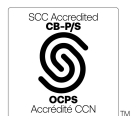
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F 347 (Apr 21)



Page 3 of 4

## SCHEDULE

US Certificate Of Conformity No: FM21US0123X



# ANNEX

## 645S Series and TM100 Series Insertion

### Description of Equipment:

#### *a-b-c-d-e. Thermal Mass Gas Flow Meter and Temperature Transmitter (Insertion).*

a = Model 645S or TM100.

b = Probe 04I, 05I, 06I, 07I, 08I, 09I, 10I, 11I, 12I, 13I, 14I, 15I, 16I, 17I, 18I, 19I, 20I, 21I, 22I, 23I, 24I, 25I, 26I, 27I, 28I, 29I, 30I, 31I, 32I, 33I, 34I, 35I, 36I, 15R, 18R, 24R, 30R or 36R.

c = Sensor material SH, SJ, SL or BLANK.

d = Display D0 or DD.

e = Output BH, P1 or RS.

## 745S Series and TM100 Series Inline

### Description of Equipment:

#### *a-b-c-d-e. Thermal Mass Gas Flow Meter and Temperature Transmitter (Inline).*

a = Model 745S or TM100.

b = Flow body 075F, 10F, 15F, 20F, 25F, 30F, 40F, 60F, 125F, 10FC, 15FC, 20FC, 25FC, 30FC, 40FC, 60FC, 125FC, 075P, 10P, 15P, 20P, 25P, 30P, 40P, 125P, 10PC, 15PC, 20PC, 25PC, 30PC, 40PC or 125PC.

c = Sensor material SH or BLANK.

d = Display D0 or DD.

e = Output BH, P1 or RS.

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