

CERTIFICATE OF CONFORMITY

FM Approvals

**1. EQUIPMENT CERTIFICATE OF CONFORMITY PER US REQUIREMENTS FOR
EXPLOSIVE ATMOSPHERES
FIRE PROTECTION**

2. Certificate No:

FM24US0019X

**3. Equipment:
(Type Reference and Name)**

**Talentum Series 16000 Flame Detectors, Part
Nos.16519 (IR3 Exd), 16589 (IR3), 16591 (UV/IR2)**

4. Name of Listing Company:

FFE Ltd

5. Address of Listing Company:

**9 Hunting Gate, Hitchin, Hertfordshire, SG4 0TJ,
United Kingdom**

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

3059453 dated 6th June 2018

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

**FM 3260:2021, FM 3600:2022, FM 3615:2022, FM 3616:2022, ANSI/ISA 60079-0:2013,
ANSI/ISA 60079-1:2013, ANSI/IEC 60529:2020**

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. Approval Guide Listing Category:

**Alarm Signal Initiating Devices, Fire Detection, Flame-Actuated
Detectors, Flame, Explosive Atmospheres - US**

11. Equipment Ratings:

See Annex

Certificate issued by:



**J.E. Marquedant
VP, Manager - Electrical Systems**

7 October 2025

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. One Technology Way, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

F 322 (Feb 25)



CERTIFICATE OF CONFORMITY
US Certificate of Conformity No: FM24US0019X



12. The marking of the equipment shall include:



See Annex

13. Description of Equipment:

The Talentum Series 16000 flame detectors include models 16519 (IR3 Exd), 16589 (IR3 standard), and 16591 (UV/IR2 standard).

Model 16519 is housed in an aluminum explosionproof enclosure rated IP66 and suitable for hazardous locations, while models 16589 and 16591 are housed in zinc alloy standard enclosures rated IP65.

All three models operate on a 14–30 VDC supply, with a nominal voltage of 24 VDC.

In standby mode, they consume approximately 8 mA, increasing to 28 mA in alarm condition.

Each detector includes fire and fault relays (RL1 and RL2), which are configurable via internal DIL switches. RL1 activates upon flame detection, and RL2 can be set for fault indication or pre-alarm signaling. The detectors support latching and non-latching alarm modes, with response time settings ranging from 1 to 8 seconds.

Sensitivity is selectable, with FM Approved operation requiring the high (Class 1) setting. The detectors are capable of detecting fires from fuels such as n-heptane, methylated spirits, and JP4 jet fuel at distances up to 25 meters. Field-of-view varies by model: standard units (16589 and 16591) have a $\pm 40^\circ$ viewing angle, while explosionproof unit (16519) has a $\pm 30^\circ$ angle.

The detectors include status LEDs (green for power, red for fire, yellow for test) and a signal processing system that compares incoming optical signals to stored flame profiles. Fault conditions result in reduced supply current and deactivation of the fault relay. The detectors are equipped with terminals for power and relay outputs.

14. Specific Conditions of Use:

See Annex

15. Test and Assessment Procedure and Conditions:

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

16. Schedule Drawings

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

17. Certificate History

Details of the supplements to this certificate are described below:

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. One Technology Way, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com
F 322 (Feb 25)



CERTIFICATE OF CONFORMITY
US Certificate of Conformity No: FM24US0019X



Date	Description
6 June 2018	Original Issue.
10 July 2023	<u>Supplement 1:</u> Report Reference: RR237377 dated 10th July 2023 Description of the Change(s): <ul style="list-style-type: none">◦ Partial Delisting: 16219 and 16549 removed from the certificate and Approval Guide listing
19 February 2024	<u>Supplement 2:</u> Report Reference: PR466137 dated 19th February 2024 Description of the Change(s): <ol style="list-style-type: none">1. Evaluation and qualification of alternate sensor components for use with Talentum Series 16000 Flame Detectors, Part Nos.16519 (IR3 Exd), 16589 (IR3), 16591 (UV/IR2)2. Certificate # FM24US0019X assigned
7 October 2025	<u>Supplement 3:</u> Report Reference: PR473904 dated 7 October 2025. Description of the Change(s): <ol style="list-style-type: none">1. Qualification of updated PCBA composed of alternate critical components2. Documentation updates in relation to the updated PCBA3. Part Nos.16519 (IR3 Exd), 16589 (IR3), 16591 (UV/IR2) reorganized/restructured on the certificate and in the Approval Guide4. Certificate history table reorganized5. Certificate supplement # adjusted/aligned to match applicable revision requests and supplemental projects over the years6. Updated FM 3600, FM 3616, and ANSI/IEC 60529 standards to their latest editions [2022, 2022, and 2020, respectively] due to non-technical changes with respect to their previous editions [2018, 2011, and 2004(R2011), respectively]7. Firmware revised to DT03F (from 16519. Iss: 20-04, 16589. Iss: 20-05, and 16591 Iss: 20-05)

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. One Technology Way, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

F 322 (Feb 25)



Page 3 of 7

ANNEX

Talentum Series 16000 Model 16519 (IR3 Exd) Flame Detector

Equipment Ratings:

Performance Compliant as a Flame-Actuated Fire Detector Initiating Device.
Explosionproof for Class I, Division 1, Groups A, B, C, and D T4; Ta = -20°C to +85°C, Flameproof for AEx db IIC T4 Gb; Ta = -20°C to +85°C, and Dust-ignitionproof for Class II/III, Division 1, Groups E, F and G T4, Ta = -20°C to +85°C.
Hazardous (Classified) Locations with an ingress protection IP66

Markings:

Performance markings are in accordance with FM 3260 standard.
Class I, Division 1, Groups A, B, C, and D T4; -20°C ≤ Ta ≤ +85°C
Class I, Zone 1, AEx db IIC T4 Gb; -20°C ≤ Ta ≤ +85°C
Class II/III, Division 1, Groups E, F, and G T4; -20°C ≤ Ta ≤ +85°C
IP66

Description of Equipment:

Model	Talentum Series 16000 Flame Detector Part No.16519 (IR3 Exd),
Firmware	DT03F
Operating Voltage	14 to 30 V dc
Power Consumption	Standby: 8 mA Alarm: 28 mA
Operating Temperature Range	-20°C to +60°C
Outputs	Fire and fault relays. Required Dip switch settings: both relays operating with RL2 as fault relay
Compatibility	Relays connect to a compatible FM Approved control providing separate power and initiating device circuits. Alarm relay setting as latching.
Sensitivity	High Class 1 setting
Response Time	Delay settings of 1 to 8 s. 30 s maximum response time specification is independent of delay setting.
Fuels tested for response	N-heptane, Methylated Spirit, JP4 (See Instructions for details)
Environmental	IP66

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

CERTIFICATE OF CONFORMITY
US Certificate of Conformity No: FM24US0019X



Accessories	Mounting brackets and weather shields
--------------------	---------------------------------------

Specific Conditions of Use:

1. Suitably rated conduit seal required at the enclosure opening.
2. Consult the manufacturer if dimensional information on the flameproof joints is necessary.
3. Risk of explosion due to electro-static charge. Static electricity charge may develop when cleaning the product with a dry cloth. It is imperative to avoid static electricity charge in the hazardous environment.

Talentum Series 16000 Flame Detector Part No.16591 (UV/IR2)

Equipment Ratings:

Performance Compliant as a Flame-Actuated Fire Detector Initiating Device.
Ingress protection IP65

Markings:

Performance markings are in accordance with FM 3260 standard.
IP65

Description of Equipment:

Model	Talentum Series 16000 Flame Detector Part No.16591 (UV/IR2)
Firmware	DT03F
Operating Voltage	14 to 30 V dc
Power Consumption	Standby: 8 mA Alarm: 28 mA
Operating Temperature Range	-20°C to +60°C
Outputs	Fire and fault relays. Required Dip switch settings: both relays operating with RL2 as fault relay
Compatibility	Relays connect to a compatible FM Approved control providing separate power and initiating device circuits. Alarm relay setting as latching.
Sensitivity	High Class 1 setting
Response Time	Delay settings of 1 to 8 s. 30 s maximum response time specification is independent of delay setting.

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. One Technology Way, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

F 322 (Feb 25)



CERTIFICATE OF CONFORMITY
US Certificate of Conformity No: FM24US0019X



Fuels tested for response	N-heptane, Methylated Spirit, JP4 (See Instructions for details)
Environmental	IP65
Accessories	Mounting brackets and weather shields

Specific Conditions of Use:

None

Talentum Series 16000 Flame Detector Part No.16589 (IR3)

Equipment Ratings:

Performance Compliant as a Flame-Actuated Fire Detector Initiating Device.
Ingress protection IP65

Markings:

Performance markings are in accordance with FM 3260 standard.
IP65

Description of Equipment:

Model	Talentum Series 16000 Flame Detectors, Part No.16589 (IR3)
Firmware	DT03F
Operating Voltage	14 to 30 V dc
Power Consumption	Standby: 8 mA Alarm: 28 mA
Operating Temperature Range	-20°C to +60°C
Outputs	Fire and fault relays. Required Dip switch settings: both relays operating with RL2 as fault relay
Compatibility	Relays connect to a compatible FM Approved control providing separate power and initiating device circuits. Alarm relay setting as latching.
Sensitivity	High Class 1 setting
Response Time	Delay settings of 1 to 8 s. 30 s maximum response time specification is independent of delay setting.

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. One Technology Way, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

F 322 (Feb 25)



CERTIFICATE OF CONFORMITY
US Certificate of Conformity No: FM24US0019X



Fuels tested for response	N-heptane, Methylated Spirit, JP4 (See Instructions for details)
Environmental	IP65

Specific Conditions of Use:

None



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. One Technology Way, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

F 322 (Feb 25)



Page 7 of 7