TYPE EXAMINATION CERTIFICATE

Intrinsically Safe System Intended for use in Potentially Explosive Atmospheres

3	Type Examination Certificate Number:	**Baseefa08Y0078 Issue 3**
4	System:	**16XXX Flame Sensor System**
5	Certificate Holder:	**FFE Ltd**
6	Address:	**9 Hunting Gate, Wilbury Way, Hitchin, Hertfordshire, SG4 0TJ**

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

8 SGS United Kingdom Ltd. certifies that this system has been found to comply with the following standards:

EN IEC 60079-25:2022

9 The examination and test results are recorded in confidential Report No's. **See Certificate History**

10 If the sign "X" is placed after the certificate number, it indicates that the system is subject to special conditions of safe use specified in the schedule to this certificate.

11 This TYPE EXAMINATION CERTIFICATE relates only to the design of the specified intrinsically safe system and not to specific items of equipment therein**.** It is the responsibility of the system certificate holder to supply the relevant documentation to the installer of the intrinsically safe electrical system referred to in this certificate.

The installer has the responsibility to ensure that the system conforms to the specification laid down in the Schedule to this certificate and has satisfied routine verifications and tests specified therein.

12 The marking of the system shall include the following :

SYST Baseefa08Y0078

Ex ia IIC T4 Ga

SGS Customer Reference No. **7221** Project File No. **25/0440**

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UKAS PRODUCT CERTIFICATION
0191

SGS Authorised Signatory

13 # Schedule

14 ## Certificate Number Baseefa08Y0078 – Issue 3

15 System Description

The 16XXX Flame Sensor System comprises one or two barriers or isolators connected to one or two 16XXX Flame Sensors certified under BAS02ATEX1001 Issue 5. All wiring configurations have the barriers or isolators situated in non-hazardous areas, with the Flamer Sensors permitted to be situated in Zone 0 areas.

The different connection options shown on the system drawings are detailed below.

15.1 Single Detector "4-20mA" Systems Using Isolators

In this configuration, connections are made from the P&F KFD-CS-Ex1.54 isolator terminals 1 & 2 to the "Supply" terminals 1 & 2 and to "Test" terminal 3 of a single detector. This isolator is currently covered by certificate BAS00ATEX7087 Issue 9 for a marking of ⟨Ex⟩ II (1) G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C)

Permitted Cable Capacitance & Inductance – Isolator Terminals 1 & 2 to Detector Terminals 1, 2 & 3

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.047	4.3		55
IIB / IIIC	0.60	17		199
IIA	2.11	35		431

Permitted Cable Lengths – Isolator Terminals 1 & 2 to Detector Terminals 1, 2 & 3

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	174m	2222m	7814m

15.2 Single Detector "Conventional" Systems Using Isolators

In this configuration:-
- Connections are made from a P&F KFD-CS-Ex1.54 isolator terminals 1 & 2 to the detector Supply terminals 1 & 2, and to "Test" terminal 3 of a single detector (see 15.2.1).
- Connections are made from a P&F KFD0-CS-Ex1.54-Y2 isolator terminals 1 & 2 to "Relay" terminals 5, 6, 7, & 8 (see 15.2.2).

15.2.1 P&F KFD-CS-Ex1.54

Permitted Capacitance & Inductance – Isolator terminals 1 & 2 to Detector Terminals 1, 2, & 3

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.047	4.3		55
IIB / IIIC	0.60	17		199
IIA	2.11	35		431

Permitted Cable Lengths – Isolator terminals 1 & 2 to Detector Terminals 1, 2, & 3

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	174m	2222m	7814m

15.2.2 P&F KFD-CS-Ex1.54-Y2

Permitted Capacitance & Inductance - Isolator terminals 1 & 2 to Detector terminals 5, 6, 7, & 8

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.101	19.6		138
IIB / IIIC	0.81	72		508
IIA	2.89	153		964

Permitted Cable Lengths - Isolator terminals 1 & 2 to Detector terminals 5, 6, 7, & 8

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	374m	3000m	10.7km

15.3 Single Detector "4-20mA" Systems Using Barriers

In this configuration, connections are:-

- P&F Z728 barrier terminals 1 & 2 to the "Supply" terminals 1 & 2 and to "Test" terminal 3 of a single detector. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.3.1)

or

- MTL 7728+ barrier terminals 3 & 4 to the "Supply" terminals 1 & 2 and to "Test" terminal 3 of a single detector. This barrier is currently covered by certificate BAS01ATEX7217 Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.3.2)

or

- P&F Z796 barrier terminals 1 & 2 to the "Supply" terminals 1 & 2 and to "Test" terminal 3 of a single detector.. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.3.3)

15.3.1 P&F Z728

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.053	4.11		54
IIB / IIIC	0.62	16.44		218
IIA	2.12	32.88		436

Permitted Cable Lengths – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	196m	2296m	7851m

15.3.2 P&F Z796

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.091	4.92		63
IIB / IIIC	0.70	19.68		252
IIA	2.39	39.36		504

Permitted Cable Lengths – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	337m	2592m	8851m

15.3.3 MTL 7728+

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.053	4.2		44
IIB / IIIC	0.62	12.6		218
IIA	2.12	33.6		435

Permitted Cable Lengths – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	196m	2296m	7851m

15.4 Conventional System, Single or Dual Detector using Barriers

In this configuration for the Supply & Test terminals:-

- Connections are made from a P&F Z728 barrier terminal 1 (=ch.1) & terminal 2 (=ground) to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.4.1).

or

- P&F Z796 barrier terminals 1 & 2 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.4.2).

or

- MTL 7728+ barrier terminals 3 & 4 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7217 Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.4.3).

and

In addition to the above connections to the Supply & Test terminals, the following “Relay” terminal connections are optional:-

- Connections are made from a P&F Z789 barrier terminals 1 & 3 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C). Barrier terminals 2 & 4 are not used (see 15.4.4).

or

- Connections are made from a MTL7789 barrier terminals 3 & 4 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7217 Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C). Barrier terminals 7 & 8 are not used (see 15.4.5).

or

- Connections are made from a P&F Z778 barrier terminals 1 & 3 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7005X Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C). Barrier terminals 2 & 4 are not used (see 15.4.6).

or

- Connections are made from a MTL7778ac barrier terminals 3 & 4 to the “Supply” terminals 1 & 2 and to “Test” terminal 3 of one or two detectors. This barrier is currently covered by certificate BAS01ATEX7217 Issue 10 for a marking of ⟨Ex⟩ II (1)G [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C) (see 15.4.7).

Where a single 4 core cable is used for the Supply & Test terminals and for the following "Relay" terminal connections, the cable must be fixed and protected from damage by installation.

15.4.1 P&F Z728

Permitted Cable Capacitance & Inductance –Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.023	4.11		54
IIB / IIIC	0.59	16.44		218
IIA	2.09	32.88		436

Permitted Cable Lengths –Barrier Terminals 1 & 2(Gnd) to Detector Terminals 1, 2, & 3 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	85m	2185m	7740m

15.4.2 P&F Z796

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.034	4.92		63
IIB / IIIC	0.67	19.68		252
IIA	2.36	39.36		504

Permitted Cable Lengths – Barrier Terminals 1 & 2 to Detector Terminals 1, 2, & 3 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	125m	2481m	8740m

15.4.3 MTL 7728+

Permitted Cable Capacitance & Inductance – Barrier Terminals 3 & 4 to Detector Terminals 1, 2, & 3 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.023	4.2		44
IIB / IIIC	0.59	12.6		218
IIA	2.09	33.6		435

Permitted Cable Lengths – Barrier Terminals 3 & 4 to Detector Terminals 1, 2, & 3 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	85m	2185m	7740m

15.4.4 P&F Z789

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 3 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.083	17.09		111
IIB / IIIC	0.65	68.39		445
IIA	2.15	136.79		890

Permitted Cable Lengths – Barrier Terminals 1 & 3 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	307m	2407m	7962

15.4.5 MTL7789

Permitted Cable Capacitance & Inductance – Barrier Terminals 3 & 4 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.083	16		108
IIB / IIIC	0.65	63		435
IIA	2.15	133		870

Permitted Cable Lengths – Barrier Terminals 3 & 4 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	307m	2407m	7962m

15.4.6 P&F Z778

Permitted Cable Capacitance & Inductance – Barrier Terminals 1 & 3 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

The cable capacitance and inductance limits shown on the isolator certificate are not affected by the equipment terminals C_i = 0 & L_i = 0 so the permitted limits for the connections to the "Relay" terminals 5, 6, 7 & 8 are:-

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.083	16.80		110
IIB / IIIC	0.65	67.21		440
IIA	2.15	134.42		880

Permitted Cable Lengths – Barrier Terminals 1 & 3 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	307m	2407m	7962m

15.4.7 MTL7778ac

Permitted Cable Capacitance & Inductance – Barrier Terminals 3 & 4 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.083	16		108
IIB / IIIC	0.65	62		435
IIA	2.15	130		870

Permitted Cable Lengths – Barrier Terminals 3 & 4 to Detector Terminals 5, 6, 7 & 8 on One or Two Detectors

Cable make	Cable Ref	Maximum Cable Length		
		IIC	IIB	IIA
Prysmian	FP200 Gold 1.5mm^2 2 or 4 core	307m	2407m	7962m

16 Report Number

See Certificate History

17 Special conditions of safe use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, any additional relevant EHSRs are dealt with in the certificates for the apparatus forming part of this system

19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
48-0002	1 to 3	01	23/10/2025	TALENTUM 16000 Ex I (INTRINSICALLY SAFE, IS) SYSTEM DRAWING

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
None.				

20 Certificate History

Certificate No.	Date	Comments
Baseefa08Y0078	9 May 2008	The release of prime certificate. The associated test and assessment against the requirements of EN 60079-25: 2004 is documented in Certification Report No. 08(C)0086.
Baseefa08Y0078/1	19 February 2015	This issue permits existing information (for example on Schedule Drawings) to be replaced by the revised certificate holders name and address. No other changes may be made to the certified design. Project File No. 15/0199.
Baseefa08Y0078 Issue 2	22 January 2019	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current design meets the requirements of EN 60079-25: 2010.

Certificate No.	Date	Comments
		The certificate also permits: - i) The correction of the System Model No. from 016XXX to 16XXX Flame Sensor System. ii) The addition of P & F Isolator Types KFD0-CS-Ex1.54 & KFD0-CS-Ex2.54, and the update of the information relating to the other barriers and isolators than can be installed in the non-hazardous area. See report 18(C)0349 for project 18/0349.
Baseefa08Y0078 Issue 3	7 November 2025	To permit the System Certificate to be updated to:- - Reference the 16XXX Flame Sensors certified under BAS02ATEX1001 Issue 5, - Include maximum cable lengths for a specific cable. - Confirm that the system meets the requirements of EN IEC 60079-25:2022. See report 25(C)0440. Project No. 25/0440.
For drawings applicable to each issue, see original of that issue.		