

WAITSIA GAS PROJECT STAGE 2

COMMISSIONING MANUAL

GAS GENERATOR

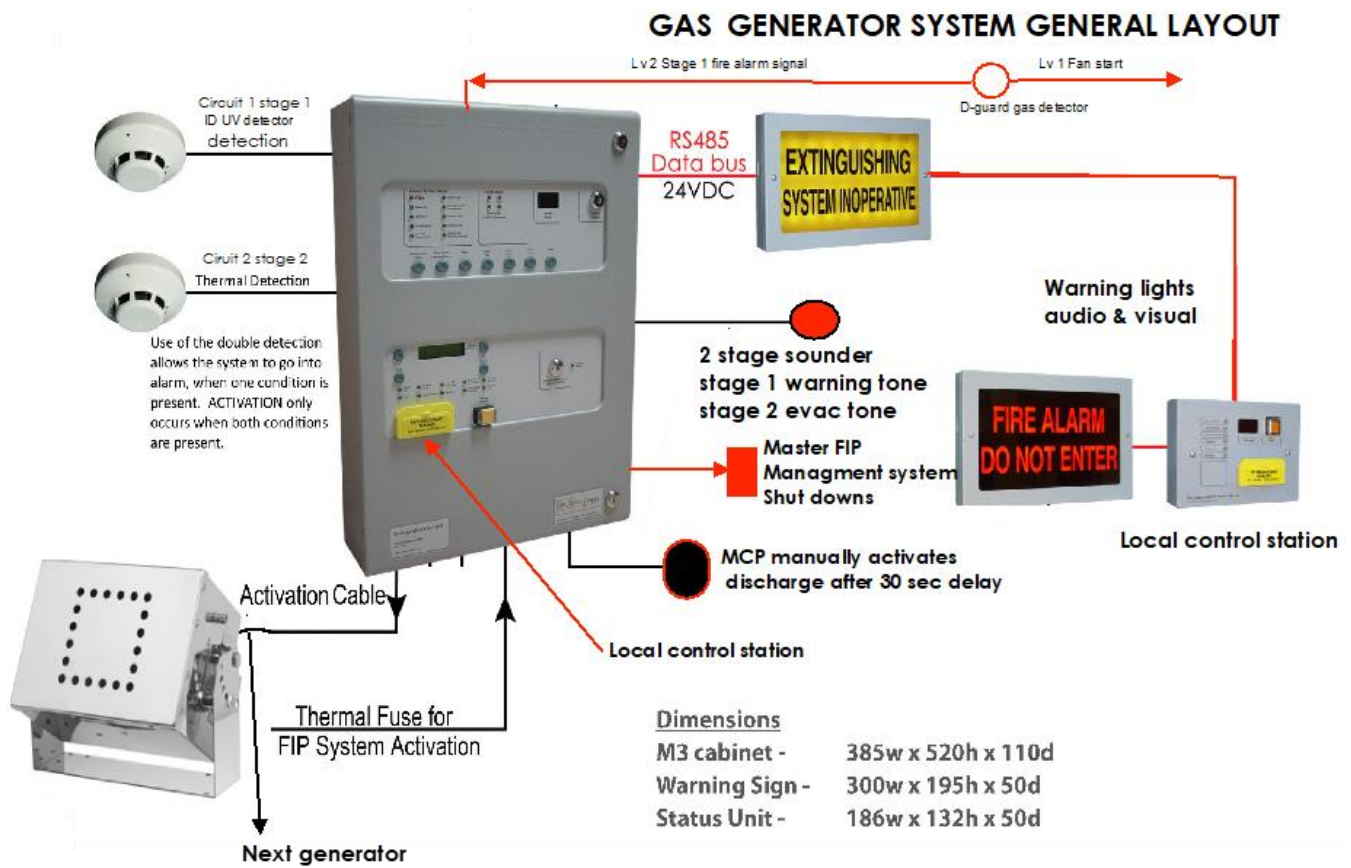
Z-9011, Z-9021, Z-9031

FIRE DETECTION & PRE-ENGINEERED FIREPRO FIRE SUPPRESSION SYSTEM

FirePro suppression	Date of Pre-Commissioning	Date of Final Commissioning
Gas Generator	13/05/22	TBA

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1. Contact Details

Installer:	Brisbane Fire Protection Pty Ltd, Newmarket Brisbane QBCC Lic # 882982	Contact: Ray Mergard Phone: 07 37155644 E-mail: ray@fsequip.com.au
Supplier: SHCIE/FIP	Incite Fire Block Y, Unit 1 Regents Park Estate, 391 Park Road REGENTS PARK NSW 2143	Contact: Phone: 1300 462 483 02 9644-7144 Technical support@incitefire.com.au
Supplier	FirePro Generators	Fire Safety Equipment Australian & NZ exclusive suppliers/manufacturers
Pre-engineered Designer:	Fire Safety Equipment Pty Ltd 2A Staple ST, 17 Mile Rocks Brisbane 4073	Contact: Ray Mergard Phone: 07 37155644 E-mail: ray@fsequip.com.au

2. Description of Works

The Penske Gas generator is enclosed in a self-contained steel construction container.

The generator occupies the primary part of the container, with.

The FirePro total flood Fire Suppression System is installed inside the container and to be connected to the site Master Panel & a MODBUS connection to the master panel so that any Fire or Fault condition will be reported.

2.1. Pre- Engineered Design Density Calculation

Design Concentration	
Certification	UL2775/AS4487-2013
Gross Volume	100 m ³
Design Concentration	10,920g
Total Agent Provided	11,400g – 104%
Tested Leakage Allowance	2.0 m ²
Generators Installed	2 x FP-5700 Dims: 300x300x300mm Stream Length: 8.0 m

Electrical & FirePro System –

- SIGMA-XT-FP Fire Indicator Panel (FIP) which conforms to AS7240, has 1 gas card, minimum 24 hour battery backup, individually monitors each generator.
- FIP will provide an alarm & fault indication to the master FIP as per AS1670.
- Two x dual knock detection circuits as per AS4487-2013 & AS1670.
- Circuit 1 – 1x Spectrex IR3 detector.
- Circuit 2 - 3 x Hochiki combined rate-of-rise and 90°C fixed temperature point detectors.
- Local control station – Located externally between the exit doors– provides status indication & manual release of the FirePro agent into the risk.
- Warning signs (IP66 external with 316SS weather shield) – audible & visual. As per AS 4487-2013.
- 2 x weatherproof 304SS with safety pin & tag external MCP for system discharge after 30 sec delay.
- External above 4 entry doors – combined 'Fire Alarm' and 'Do Not Enter Sign'
- Above the FIP 'System Inoperative' sign, when system is isolated or any fault in the system..
- 3 x Visual/audible combined sounder/beacon.
- All generators are 304 SS finish with 316 SS mounting brackets.
- Cabling is UL listed 2 hour fire rated red, screened cable.
- Cabling for IS risk Armoured cable 1mm.

System operation-

- Either detection circuit goes into alarm –
 - Notification to the Master FIP serving the site & via the MODBUS to the main controller.
 - Complete shutdown of All fans & generator.
 - Internal & external audio-visual alert alarm.
 - Fire Alarm Warning signs will operate.
- Both detection circuits –
 - Gas generator, fans shut down.
 - Warning strobe light internally & externally.
 - 30 second delay
 - Do Not Enter warning signs will flash
 - Then the 2 Aerosol Generators will discharge for approx. 20 seconds.

2.2. Battery Calculations



Battery Calculation

Date: 06/05/2022
Rev: 22.1

Quantity Installed	Load per Unit Quiesant Milliamps	Total Load Quiesant	Quantity In Alarm	Load per Unit Alarm Milliamps	Total Load Alarm Milliamps
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Sigma XT - 8 Zone

Alarm Module	1	90	90.00	1	150	150.00
Extinguishant Module	1	54	54.00	1	105	105.00
Sequential Activator	1	10	10.00	1	100	100.00
Total Panel			154.00			355.00

Externals / Other Equipment

Conv Smoke PE Hockiki	1					
Conv ROR & 60° Thermal	3					
Conv Smoke PE Hockiki	1					
Linear Heat Det 180deg	0	0		0	0	
Hohiki IR3 Flame Det	1	1	1.00	0	28	
Signs - FAEA, FADNE, SI	5	20	100.00	9	140	1,260.00
Local Control Station	1	60	60.00	3	70	210.00
Flashni Sounder/Strobe	6	0		6	40	240.00
FPC2 Control Panel		18			150	
Total Other Equipment			161.00			1,710.00

Total Quiesant Current (A)		315.00 (IQ)		2,065.00 (IA)	
Standby Time - Quiesant	Hours	24.00 (TQ)		1.25	
Standby Time - Alarm	Hours	0.50 (TA)		2.00 (FC)	

Client : Penske Waitsia Stage 2
Project : Gas generator enclosure

Notes

Alarm & Detection Module Incl EOL's
Extinguishant Module Incl EOL's
Only one is active at a time

Incl In Alarm Module
Incl In Alarm Module
Incl In Alarm Module
Incl In Alarm Module
1 Flame in Alarm

Quiescent in panel calcs. 0 used by sound

Total Current in Alarm State (A)
Compensation Factor for Battery Deterio
Battery Capacity Derating Factor

Minimum Required Battery Capacity 12 Ah (C20) Battery Part Number - FP-90912

Notes:

- Determine the quiescent load current IQ.
 - Determine the alarm current IA.
 - Determine the capacity de-rating factor FC of battery when discharged at the alarm load rate taking into account the minimum operating voltage of the connected CIE using the battery manufacturer's data. If more than one CIE is connected to the battery, use the highest minimum of any of the CIEs. A value of 2 for FC is deemed to satisfy these requirements.
 - The 20 h discharge battery capacity C20 at 15°C to 30°C shall be determined as follows:
 $C20 = 1.25 [(IQ \times TQ) + FC (IA \times TA)]$
- where: C20 = battery capacity in Ah at 20 h discharge rate
TA = alarm load standby power source time (normally 0.5 h)
TQ = quiescent standby power source time, (normally 24 h)
- IA = total current in alarm state
IQ = total quiescent current
FC = capacity de-rating factor

2.3. Cause and Effects Matrix

Fire Suppression System for Diesel Generator				
Device in Alarm	Fire Alarm Output To Master FIP	Activation of Aerosol Generators after time delay	Shutdown Diesel generator & Ventilation fans	30 sec delay before discharge
Zone 1 – IR3 detector circuit	X		X	
Zone 2 - Thermal detector circuit	X		X	
Zone 1 & Zone 2	X	X		X
Manual release at LCS's	X	X	X	X
Stop Gas at LCS's		X Manual release only		
MCP's external	X	X	X	X

2.4. Pre-Engineered Design Calculations for FirePro Aerosol Fire Suppression System

FirePro. Reimventing Fire Suppression		GENERAL APPLICATION							6/05/2022	
								Rev: 22.1		
CLIENT NAME	Penske Waitsia Stage 2									
Risk Description	Gas generator enclosure									
Constructed from	steel & SS									
	<input checked="" type="checkbox"/> Class A <input checked="" type="checkbox"/> Class B <input checked="" type="checkbox"/> Class E <input type="checkbox"/> Class D <input type="checkbox"/> Class F									
GROSS DIMENSIONS	Not Used x Not Used x Not Used = Vol Entered = 100.00 m ³									
	Actual Leakage Measurement - m ² =									
	Leakage Allowance without additional Agent = 0.20 m ²									
	GROSS Volume used for Calculation = 100.00 m ³									
	PRIMARY AGENT DISCHARGE = 10,920 g									
	Secondary Agent Discharge = Not Required									
Aust. Std Design Notes										
Pre-Engineered Design Calculation										
CALCULATION OF VOLUME : Calculation is based on Gross Volume with NO deductions for any Objects that occupy volume within the protected space. This category covers fixed condensed aerosol extinguishing system units intended for total flooding applications. AS 4487 and AS5062. Minimum Extinguishing Factor (mef) 84 X 1.3 = 109.2										
<ul style="list-style-type: none"> L2 is the thermal clearance required where the temperature of the discharge is less than 200° C L3 is the thermal clearance required where the temperature of the discharge is less than 75° C 										
Model	L2 (mm)	L3 (mm)	Stream (mm)	Agent Qty	Concentration		Primary Quantity	Secondary Quantity		
FP-0020	0	0	1000	20	Primary	Secondary				
FP-0040	0	0	1000	40	-	-				
FP-0080	0	0	1000	80	-	-				
FP-0100	0	200	1000	100	-	-				
FP-0200	0	300	2000	200	-	-				
FP-0500	100	500	2000	500	-	-				
FP-1200	0	1500	3500	1,200	-	-				
FP-2000	0	1500	3500	2,000	-	-				
FP-3000	600	2000	3500	3,000	-	-				
FP-5700	600	2000	8400	5,700	11,400	-			2	
Total Concentration					11,400					
Required Concentration					10,920					
% Required Concentration					104%					
<input checked="" type="checkbox"/> Design Calculation has been Confirmed										
<input checked="" type="checkbox"/> FirePro Units have suitable STREAM length for Risk Area Coverage										
<input checked="" type="checkbox"/> Leakage compensation made in Primary Discharge										
<input type="checkbox"/> Additional HOLD time Required for the risk										
APPROVED										
Prepared By:					Company					
RIM					FSE					

Notes to leakage allowance

- As per section 7.3 AS4487-2013 – the additional gas is used where leakage occurs from a non-tight enclosure, where doors being opened during discharge, excessive leakage from an enclosure.
- Observe the original plan, volume & openings. Should additional openings have been added, container volume increased, fans & gas generator not shut down on first alarm, fan shut off louvres not close or be missing, additional partitions or compartmentation effecting stream discharge flow doors locked open then additional gas will be required if none of these changes not be able to be repaired or modified back to the original design- Refer to the manufacturer FSE to recalculate required gas levels.

Notes to system pre-engineered design during system maintenance or works within the container-

- Elevation & temperatures below 300deg C do not affect this calculation.
- The generators have a safety factor that allows the generators to automatically discharge at an environmental temperature of 300degC. Note hot works should not be undertaken within the risk without isolating the FIP & removing the generators.
- Generators have an 8mtr stream length.
- Oxygen levels will not be affected by the discharge.
- Internal pressure at full discharge will be approx. 1kpa discharge pressure at the generator will be approx. 20kpa.

8. The safe tolerances should be confirmed for both personnel & combustibles for both generators- refer drawing.
9. LOAEL & NOAEL are not known & not calculable. The manufacturers recommendation is to evacuate the risk as per the audio & visual alarms installed prior to discharge 30 seconds later.
10. Should personnel be in the risk at time of discharge, the gas is white by nature & is non-toxic. Refer to SDS.

Notes to After discharge clean up.

The FirePro[®] aerosol-forming compound is not based on halogen compounds that react with the fire. It does not produce any corrosive halogen acid by-products in its reaction with the fire like FM-200 & Novec 1230.

Potassium carbonate creates stability in neurons to help maintain equilibrium.

Potassium nitrate when burned with the free radicals of a fire's flame, produces potassium carbonate.

The residue is non-toxic and non-corrosive (see separate NRL report), it is hygroscopic in nature on discharge as a result of the aerosol process so will attract moisture. The chemical nature of the residues (potassium salts) is slightly alkaline PH is approx. 8.

Clean-up after a fire incident will be determined by the extent of the damage by fire involved in the event.

Within the risk the generators are designed that the size of the generators and positioning creates the appropriate stream length. It is this stream length that both ensures maximum fire knock down

Any residue left by the generators is easily cleaned away.

The stream created by the externally mounted generators used as a room flooding system will not affect the internal componentry and switchgear within the electrical cabinets.

Should there be a false discharge:

Note a false discharge in a land-based risk can only occur when both detection zones thermal & Photo-optical are in alarm and activation initiated from the fire indicator panel OR if all else fails environmental temperature has reached 300 deg C.

VENTILATE the room immediately after discharge. This reduces the aerosol concentration.

CLEAN as soon as possible all exposed surfaces using cloths, special moisture removing fluid, spray or air gun.

Disposal of the generators after use is send to landfill.

3. Commissioning Reports

3.1 Certificate of Completion



Reinventing
Fire Suppression

CERTIFICATE OF COMPLETION & CONFORMITY

We hereby certify that Fire Safety Equipment have completed a FirePro aerosol fire extinguishing installation in accordance with AS4487-2013/UL2775, as designed by Ray Mergard of Fire Safety Equipment as a pre-engineered solution. Fire Safety Equipment are the Exclusive Accredited importer & manufacturer of FirePro aerosol systems in the Pacific Region.

Name of Client: **Penske**

Address of Protected Area: **Waitsia Stage 2 West Australia**

Description of Protected Area : **Gas Generator**

Protected Area	Agent Quantity	Number of Containers	Agent Application Density	Applicable Drawing(s)
Diesel generator container	11,400g	2	139g / m ³	Z-9011 Z-9021 Z-9031
Tested UL design density			109g/m ³	

Remote system monitoring will be performed by : **Master Panels via MODBUS**

Date of Remote Monitoring Connection : **By Others**

Completed by:

Name: **Ray Mergard**

Signature: 

Company: **Fire Safety Equipment Pty Ltd**

Date Completed: **08/10/21**



FirePro System Commissioning

Risk Area: Gas Generator

INSPECTION		
	Tasks	Completed
1. Location of FirePro Aerosol Generators	<ul style="list-style-type: none"> Ensure units are mounted in appropriate location(s). Note safe clearances to personnel & combustibles within the risk. Are the brackets securely mounted. 	Yes Yes
2. Cabling requirements	<ul style="list-style-type: none"> Has fire rated and shielded cable used. Has cable been installed as per AS-3000. Separated from other electrical cables via conduit or cable tray. For High Voltage Environments - each FirePro unit is required to be earthed. Inspect cable fixings to ensure no damaged insulation. 	Yes Yes N/A Yes
3. Fire Indicator Panel (FIP)	<ul style="list-style-type: none"> Is the panel located in an appropriate location in accordance with Australian Standards. Is the power connection to the panel a direct, suitable and dedicated supply to the Panel. Is a separate battery backup installed. 	Yes Yes Yes
4. Signage and Alarms	<ul style="list-style-type: none"> Are appropriate signs / sounder strobes installed. 	Yes
COMMISSIONING		
1. FIP Programming	<ul style="list-style-type: none"> Programming of FIP meets client/site requirements. Check FIP for fault(s) e.g. correct connection of FirePro units, correct connection of detection circuit. 	Yes Yes
2. Activation Testing	<ul style="list-style-type: none"> ENSURE THE FIP IS SWITCHED TO SERVICE MODE. Activation testing to be performed in accordance with the procedures specific to the FIP installed. Ensure activation simulator lamps have activated Ensure Signs and Alarms have activated. Ensure shut down relays have activated. 	Yes Yes Yes Yes Yes
3. Fault Monitoring	<ul style="list-style-type: none"> Disconnect cable from FirePro generator - fault should register on the FIP. Where multiple units are installed, this should done separately to test each unit. Remove detector head from base - fault should register on the FIP. 	Yes Yes
4. Earth Testing	<ul style="list-style-type: none"> Using a multimeter, test to ensure that all cables have insulation intact. Earth connection should indicate an open circuit 	Yes
5. Detection Testing	<ul style="list-style-type: none"> ENSURE THE FIP properly isolated from activating the Firepro system. Apply heat gun or other device to place detectors into alarm. Ensure Visual/Aural Alarms have activated. Where multiple units are installed, this should done separately to test each unit. 	Yes

Inspections all found to be compliant - Tests all completed.


Completed by :

Name: Steve Brett Accredited Installer
Lincoln Ison Supervisor 1197082

Signature: 

Company: Flame Control Industries Pty Ltd
QBCC Lic #1125817

Date Completed: 08/10/21

Form Aspect Inspection Certificate
(Appointed Competent Person)

This form is to be used for the purposes of sections 74 and 77 of the Building Regulation 2021 (appointed competent person statement that an aspect of work has been completed and complies with the building development approval).

Information about how to complete this form is in the Appendix at the end of the form.

<p>1. Indicate the aspect of the building work</p> <p>Examples of aspects of the stage of building work (and not limited to the examples provided below):</p> <p>waterproofing, tiling, glazing, energy efficiency, emergency lights, exit signs, smoke detection, air-conditioning.</p>	<p>Aspect of building work (indicate the aspect)</p> <p>Supply, install & commission a FirePro condensed aerosol fire suppression system to Aust Standard AS4487-2013.</p>				
<p>2. Property description</p> <p>The description must identify all land the subject of the application.</p> <p>The lot and plan details (e.g. SP/RP) are shown on title documents or a rates notice.</p> <p>If the plan is not registered by title, provide previous lot and plan details.</p>	<p>Street address (include number, street, suburb/locality and postcode)</p> <p>BMA Hay Point Coal Terminal 1367 Hay Point Rd Aligator Creek</p> <p>State <u>QLD</u> Postcode <u>4740</u></p> <p>Lot and plan details (attach list if necessary)</p> <p>N/A</p> <p>Local government area the land is situated in</p> <p>Hay Point Special purpose zone</p>				
<p>3. Building/structure description</p>	<table border="1"> <thead> <tr> <th data-bbox="587 1171 1161 1205">Building/structure description</th> <th data-bbox="1161 1171 1466 1205">Class of building/structure</th> </tr> </thead> <tbody> <tr> <td data-bbox="587 1205 1161 1261">Special purpose Deisel Generator enclosure supporting a Shiploader Mobile Plant & Equipmen</td> <td data-bbox="1161 1205 1466 1261">N/A</td> </tr> </tbody> </table>	Building/structure description	Class of building/structure	Special purpose Deisel Generator enclosure supporting a Shiploader Mobile Plant & Equipmen	N/A
Building/structure description	Class of building/structure				
Special purpose Deisel Generator enclosure supporting a Shiploader Mobile Plant & Equipmen	N/A				
<p>4. Description of the extent of aspect/s certified</p> <p>Clearly describe the extent of work covered by this certificate, i.e. all structural aspects of the steel roof beams and location i.e. what floors the work was on, the parts of a room.</p>	<p>Supply & install</p> <p>Fire indicator panel with gas card to be connected remotely to a master management syetm.</p> <p>Dual knock detection system consisting of thermal detection & photo-optical detection Warning system both visual & audible.</p> <p>2 x Firepro suppression 5700g gnerators</p> <p>All wiring in red shielded twin 2hour heat rated</p> <p>2 x MCP externally mounted.</p> <p>Local control station</p>				

4. IECEx Conformity

4.1. Conformity Assessment



HAZ

HAZARDOUS AREA SPECIALISTS

Fire Safety Equipment Pty Ltd

Conformity Assessment:
Condensed Aerosol Generator:
AR 18 ATEX 132

Ex s IIC T3 Ga

5/07/2022

CONFORMITY ASSESSMENT DOCUMENT

WWW.HASPECIALISTS.COM.AU

Document Information

Project Name:	FSE - CAD for AR18ATEX132			
Report Number:	CAD-22-05-01FSE - AR18 ATEX 132			
Client:	Fire Safety Equipment Pty Ltd			
Report Author(s):	Paul Spresser			
Document History:				
Revision	Date	Description	Reviewed by	Approved by
0	5/5/2022	Issue for Client	KH	KH
1	5/7/2022	Updated from Review	KH	KH

DISCLAIMER:

This Report has been prepared by **Hazardous Area Specialists Pty Ltd (HAZ)** based on information provided to HAZ by **Fire Safety Equipment Pty Ltd** (the Client). It has been prepared for the Client and is issued pursuant to an agreement between HAZ and the Client. It has been produced according to the scope of work and is only suitable for use in connection with that scope.

HAZ takes no responsibility for the accuracy of the information provided to it by the Client (including errors of omission), certifying authorities, or the equipment manufacturer or their agents, and does not accept any liability for any loss whatsoever by any party as a result of actions taken either solely or in part on the basis of the Report, where the Report has relied upon that information provided by the Client, certifying authorities or equipment manufacturer or their agents. Any document used in the compilation of this report, including Standards and Codes, will be documented in the Referenced Documents section of the report.

This Report has been prepared solely for the Client and can only be relied upon by the Client. If the Client deems it necessary to send a copy of the Report to a third party, the report shall be sent in its entirety.

Further, any installation practices which vary from those allowed for in Australian or Australian/New Zealand standards, government acts and regulations, the original certification or the manufacturer's original documents, may void the validity of this assessment.



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PREFACE

Compliance with AS/NZS 3000 is called up in all States and Territories legislation in Australia therefore making it a mandatory requirement. In Section 7.7 “Hazardous Areas” of AS/NZS 3000. Subsection 7.7.2.4 Electrical Equipment (sub-sub section 7.7.2.4.1 Selection) requires that “*Electrical equipment shall be installed in accordance with the installation requirements of AS/NZS 60079.14*”. This standard provides guidance on the compilation of Conformity Assessment Documents in Appendix ZD.



1. EXECUTIVE SUMMARY

1.1 Equipment and Site Particulars

Manufacturer:	FirePro
Description / Model:	Condensed Aerosol Generator Model: FP-5700EX
Site Owner:	Waitsia Gas Project Stage 2 WA
Site Location:	Dongarra, Western Australia
Installed Equipment Certification Label Details:	
Marked Type:	Model No.: FP-5700EX
Marked Certification Details:	II 1G Ex s II C T3 Ga II 1D III C T200 °C Da I M1 Ex s I T450 °C Ma T _{amb} : -54°C +54 °C
Equipment Details on Certificate:	
Certified Models/Types:	Condensed Aerosol Generators FirePro: FP-100 EX, FP-200 EX, FP-500 EX, FP-1200 EX, FP-2000 EX, FP-3000 EX, FP-4200 EX, FP-5700 EX FireBan: FBN-100 EX, FBN -200 EX, FBN -500 EX, FBN -1200 EX, FBN -2000 EX, FBN -3000 EX, FBN -4200 EX, FBN -5700 EX
Relevant Certified Marking	II 1G Ex s II C T3 Ga II 1D III C T200 °C Da I M1 Ex s I T450 °C Ma T _{amb} : -54°C +54 °C

1.2 Assessed Equivalent Australian Ratings

Equivalent Australian Ratings:	Ex s II C T3 Ga
Ambient Temperature Range:	Specific conditions of use: When the temperature under rated conditions exceeds 70°C at the cable or conduit entry point, or 80°C at the branching point of the conductors, the temperature specification of the selected cable shall be in compliance with the actual measured temperature.
Suitable for use in Hazardous Areas described by:	
Site Permitted Groups:	IIC
Site Temperature Classes:	T3
Site Permitted Zones:	1 and 2



2. SCOPE

2.1 Equipment Details

This **Conformity Assessment Document (CAD)** review the compliance of the **Condensed Aerosol Generator – Model FP-5700EX**, manufactured by **FirePro Systems Ltd**, and which are certified under **ATEX Directive 2014/34/EU** as **AR 18 ATEX 132 - Rev.1**. This certificate is dated 20 May 2019. The certification for Notified Body **expired on 09/02/2020**. As the certificate was issued before this date, the certificate is valid.

Albarubens Srl ('AR'), **Notified Body No. 2632**, (in accordance with Article 17 of the Directive 2014/34/EU-ATEX of the European Parliament and of the Council, dated 26 February 2014) certifies that this **Electrical Equipment** has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

- [EN 60079-0:2012 + A11:2013 – Explosive Atmospheres – Part 0: General Requirements](#)
(identical to IEC 60079-0:2011)
- [IEC 60079-33:2012 – Explosive atmospheres - Part 33: Equipment protection by special protection 's'](#)

The examination and test results are recorded in **Confidential Report No. MOD 7.4.1 - ID: 3748**.

2.2 Methodology and Conformance

The methodology to be employed is to compare the above, relevant CENELEC (EN) and IEC standards at the years published to the current IEC editions that these were sourced from, and then match these to the editions of AS/NZS standards which are identical to the established IEC standards. In this manner, traceability from these certified standards to the relevant editions of the AS/NZS standards can be achieved.

[8]	<p>Albarubens srl, Notified Body No. 2632, in accordance with Article 17 of the Directive 2014/34/EU-ATEX of the European Parliament and of the Council, dated 26 February 2014, certifies that this ELECTRICAL EQUIPMENT has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.</p> <p>The examination and test results are recorded in confidential report MOD 7.4.1 - ID: 3748</p> <p><small>Albarubens srl, Organismo Notificato n. 2632, in conformità all'art. 17 della Direttiva 2014/34/UE-ATEX del Parlamento Europeo e del Consiglio, datata 26 Febbraio 2014, certifica che questo APPARECCHIO ELETTRICO è conforme ai Requisiti Essenziali di Sicurezza e Salute per il progetto e la fabbricazione di prodotti destinati ad essere utilizzati in atmosfere potenzialmente esplosive, definiti nell'Allegato II della Direttiva. I risultati dell'esame e dei test sono descritti nel rapporto confidenziale MOD 7.4.1 - ID: 3748</small></p>
[9]	<p>Compliance with the Essential Health and Safety Requirements has been assured by compliance with the technical standards:</p> <p><small>La conformità ai Requisiti Essenziali di Sicurezza e Salute è assicurata dalla conformità alle norme tecniche:</small></p> <p>EN 1127-1:2011 - EN 60079-0:2012+A11:2013 - IEC 60079-33:2012 (partially)</p> <p>except in respect of those requirements listed at item 18 of the Schedule.</p> <p><small>tranne nel caso dei requisiti elencati al punto 18 dell'Allegato.</small></p>

3. EQUIPMENT DISPOSITION

The equipment is installed at the **Waitsia Gas Project Stage 2 at Dongarra, in Western Australia**.

4. SITE CONDITIONS

4.1 Site Hazardous Area

The client has advised that the worst case Hazardous Area Classification for the site where the equipment is to be installed is as follows:

Zone 1
Group IIB
Temperature Class T3



4.2 Environmental Considerations

The equipment is certified for **ambient temperatures of -54°C to +54°C**. Also, the instrument must be installed in accordance with the installation requirements as stated in the equipment certificate under **Section (17) Specific Conditions of Use** which states that “modifications are not allowed”.

5. BASIS OF THE CONFORMITY ASSESSMENT

5.1 Objective

The objective of this Conformity Assessment is to establish as follows:

That the equipment as described in **EU Type Examination Certificate AR 18 ATEX 132 - rev1** and as described in the **Conformity Assessment Application** (as completed by the client), demonstrates an equivalent level of safety to an identical apparatus certified to equivalent Australian, Australian/New Zealand or IEC standards, in the configurations and locations in which the equipment is to be installed on site.

It will be assessed that no further risk has been introduced by using the equipment as described in **AR 18 ATEX 132 - rev1** at this site than would be the case when employing an identical equipment, certified to one of the following schemes:

- The current ANZEx scheme (as described in MP87-1),
- The IECEx scheme, to which Australia is a signatory (note – the IECEx scheme, not to other schemes using IEC based standards).

Note the requirements of AS/NZS 60079.14:2017 clause 4.4.1:

“Electrical equipment, other than simple apparatus installed within an intrinsically safe circuit, to be installed in a hazardous area, and any associated apparatus, shall conform to the requirements of AS/NZS 60079.14:2017, clause 4.4.2.”

In particular, note the requirements of AS/NZS 60079.14:2017 clause 4.4.2.3.1:

“The selection of equipment which has a certificate issued by a third party that is not in accordance with 4.4.2.1 or 4.4.2.2, shall be restricted to circumstances where suitable equipment with a certificate in accordance with 4.4.2.1 or 4.4.2.2 is not practical. The justification for the use of such equipment shall be made by person(s) in control of the installation, or their nominee, and include the selection, installation, and operational requirements. Any assessment of the equipment to support this justification shall be carried out by a competent person. The justification shall be included as part of the verification dossier. Justification may be demonstrated in the form of a Conformity Assessment Document. Requirements for the preparation of a Conformity Assessment Document can be found in Appendix ZD.”

5.2 Justification

Justification for the compilation of this **Conformity Assessment Document** : This apparatus is an existing part of a **Process Control System** at an active site. Production, safety, or the usability of the equipment may be compromised by replacing the Original Apparatus with a similar but non-identical AS/NZS or IECEx certified type.

The equipment complies with the certified standards, as certified by **Apparecchio Elettrico**, which are identical to the base IEC standards determined from the EN standards. These IEC standards are identical to the quoted Australian/New Zealand standards.



6. AUDIT OF EQUIPMENT CERTIFICATION VS MARKING

Datum	Certificate Data	Marking Label
Manufacturer:	Firepro Systems Ltd	Firepro Systems Ltd
Certificate Holder:	Firepro Systems Ltd	Not applicable
Equipment:	Condensed Aerosol Generator	Condensed Aerosol Generator
Model/Order Number:	FBN -5700 EX	Not Marked
Relevant Marking:	II 1G Ex s IIC T3 Ga	II 1G Ex s IIC T3 Ga
Ambient Temperature Range:	T _{amb} : -54 to +54 °C	T _{amb} : -54 to +54 °C
IP Rating:	Not allocated	Not allocated
Certificate Number:	AR 18 ATEX 132 - Rev1	AR 18 ATEX 132 - Rev1
Certification Marking Example:		

Table 1 – Audit: Marking Label Details Vs Certification Details



7. ANALYSIS OF CERTIFICATION MARKING

7.1 Relevant Marking

This ATEX certified equipment is intended to be marked as follows:

II 2 G Ex s IIC T3 Ga

This marking should be interpreted as follows:

- **II:** Suitable for use in non-coal mining, surface hazardous area applications (surface industries)
- **2:** Category 2 – Suitable for installation in Zone 1 and 2 hazardous areas only.
- **G:** Suitable for use in environments where flammable gases and vapours exist.
- **Ga:** EPL level “a”
- **Ex s:** Protection by the “special protection”.
- **IIC:** This indicates that the equipment may be used in Groups IIA, IIB and IIC hazardous areas only.
- **T3:** Temperature classification which indicates that the surface temperature of the equipment is no hotter than 200°C (the T3 limit) with the maximum certified ambient temperature.

7.2 ATEX Categories and Zones

Categories	Zone Types	EPL	Zone Type Criteria – Flammable Gases and Vapours
Category 1 – Very high protection	0	Ga	Explosive atmosphere is continuously present for a long periods (>1000 hours per annum).
Category 2 – High protection	1	Gb	Explosive atmosphere is likely to occur in normal operations (>10, >1000 hours per annum).
Category 3 – Normal protection	2	Gc	Explosive atmosphere is unlikely to occur in normal operations if it does it will only occur for short periods (>10 hours per annum).



8. TRACEABILITY OF STANDARDS

8.1 Relevant Certified Standards

The equipment was originally certified to the following EN standards:

- EN 60079-0:2012 + A11:2013 – Explosive Atmospheres – Part 0: General Requirements
(identical to IEC 60079-0:2011)
- IEC 60079-33:2012 – Explosive atmospheres - Part 33: Equipment protection by special protection 's'

8.2 Root IEC Standards

It should be noted that the following EN standards are derived from the same year/version of the equivalent IEC standards (that is, they are harmonised). AS/NZS standards that equate to the same year/revision of IEC standards (as the EN standards) should be selected.

Table 2 - Corresponding Harmonised Standards

Originally Certified Standard	Root IEC Standard	AS/NZS Standard based on the Root IEC Standard
EN 60079-0:2012 + A11:2013	IEC 60079-0:2011	AS/NZS 60079.0:2012
	IEC 60079-33:2012	AS/NZS 60079.33:2012

8.3 Equivalent AS/NZS Standards to Root IEC Standards

The EN standards quoted in Table 2 above are identical to the IEC standards, also quoted in Table 2. Furthermore, the IEC standards quoted in Table 2 above, are identical to the quoted AS/NZS standards. Therefore, the certified EN standards are, in this instance, identical to the following AS/NZS standards:

- AS/NZS 60079.0:2012 - Explosive Atmospheres – Part 0: General Requirements
(identical to IEC 60079-0:2011)
- AS/NZS 60079.33:2012 – Explosive Atmospheres – Part 33: Equipment protection by special protection 'S' (IEC 60079-33, Ed.1.0 (2012))



9. ASSESSMENT SUMMARY

9.1 Original Data

As stated above the ATEX certified equipment is marked as follows:

II 2 G Ex s IIC T3 Ga

As certified by Albarubens Srl ('AR'), Notified Body No. 2632 as complying with:

- EN 60079-0:2012 + A11:2013, and
- IEC 60079-33:2012.
- And, as described in: EC-Type Examination Certificate AR 18 ATEX 132 - Rev1, and
- Confidential Report No. MOD 7.4.1 - ID: 3748.

9.2 Assessment Conclusions

The equipment is considered to conform in all relevant respects, to the requirements of:

- AS/NZS 60079.0:2012 - Explosive Atmospheres – Part 0: General Requirements
(identical to IEC 60079-0:2011)
- AS/NZS 60079.33:2012 - Explosive Atmospheres – Part 33: Equipment protection by special protection
'S' (Identical to IEC 60079-33, Ed.1.0 (2012))

The equipment may be installed in flammable gas/vapour hazardous areas which are classified as follows:

- Zones 1 and 2 only
- Groups IIA, IIB, IIC
- Assessed Temperature Classification of T4 In ambient temperatures ranging from $-54^{\circ}\text{C} \leq T_{\text{amb}} \leq +54^{\circ}\text{C}$.

9.3 Assessed Equivalent Marking

Therefore, the equipment may be treated as if it was certified and marked as follows:

Ex s IIC T3 Ga



10. CONDITIONS OF INSTALLATION AND USE

10.1 Manufacturer's Installation Instructions

The installation of the equipment shall be conducted in accordance with the manufacturer's installation instructions.

10.2 Installation and Inspection Standards

The installation or replacement of the equipment shall be conducted in accordance with:

- [AS/NZS 60079.14:2017 - Explosive atmospheres – Part 14: Design, selection, erection, and initial inspection](#) (IEC 60079-14:2014 (Ed. 5.0))

The inspection of the installed equipment shall be conducted in accordance with:

- [AS/NZS 60079.17:2017 – Part 17: Electrical installations inspection and maintenance](#) (IEC 60079-17:2013 (Ed.5.0))

10.3 Original Certificate Conditions

With regard to the original **EU-Type Examination Certificate AR 18 ATEX 132 – Rev 1**, all safety and installation requirements in all parts and supplements of this certificate shall be observed, with particular reference to Section (17) of the above certificate and its supplements, "Special Conditions of Use".

10.4 Required Competencies

Installation and maintenance staff are to possess the following competencies in accordance with AS/NZS 4761.1:2018 (formerly AS/NZS 4761.1:2008):

- UEENEEM024A - Install explosion-protected equipment and wiring systems (formerly UTE NES 107A)
- UEENEEM028A - Maintain equipment in hazardous areas – gas (formerly UTE NES 214A)

or the equivalent competencies as described in the most recent version of AS/NZS 4761.1:2018.



11. REFERENCED STANDARDS

The following standards have been referred to or referenced within this assessment:

Table 3 - Referenced Standards

Standard	Title
AS/NZS 4761.1:2018	Competencies for working with electrical equipment for hazardous areas (EEHA) - Part 1: Competency Standards
AS/NZS 60079.14:2017	Explosive atmospheres – Part 14: Design, selection, erection, and initial inspection (IEC 60079-14:2014 (Ed. 5.0) MOD)
AS/NZS 60079.17:2017	Explosive Atmospheres - Part 17: Electrical installations inspection and maintenance (IEC 60079-17:2013 (Ed.5.0) MOD)
AS/NZS 60079.10.1:2009 (+A1)	Explosive atmospheres - Classification of areas - Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0 (2008) MOD)
AS/NZS 60079.20.1:2012	Electrical apparatus for explosive gas atmospheres - Part 20.1: Material characteristics for gas and vapour classification—Test methods and data (IEC 60079-20-1, Ed. 1.0 (2010))
AS/NZS 60079.0:2012	Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0 ED. 6.0 - 2011)
AS/NZS 60079.33:2012	Explosive Atmospheres – Part 33: Equipment protection by type of protection "s" (identical to IEC 60079-33:2012)
IEC 60079-0:2011	Explosive Atmospheres – Part 0: General Requirements
IEC 60079-33:2012	Explosive Atmospheres – Part 33: Equipment protection by type of protection "s"



12. REFERENCED DOCUMENTS

Annex	Document Type	Document Number	Description
Annex B	EU-Type Examination Certificate	AR 18 ATEX 132	Rev 1
	Declaration of conformity	FirePro in potentially explosive atmospheres	Rev. 2.1
	PQAN	TÜV CY 19 ATEX 0206135 Q	Condensed Aerosol Generators
	ISO 9001:2015 Certification	Certificate No.: 276371-2018-AQ-NLD-RvA	Valid: 16 December 2021 – 15 December 2024
	Notified Body Status	Notified Body: 2632	Last approval date : 09/03/2016 Expired: 09/02/2020
Annex C	Data Sheet	FirePro in potentially explosive atmospheres	Rev. 2.1
Annex D	Assessment Competency (AS/NZS 4761.1)	UTE NES 407 TA, WA, XA, YA, ZA	Date of Issue: 12 June 2006

Table 4 - Annexures

13. AUTHORISATION

Authorised for use (end user/client):

(signature)

Compiled by:
Paul Spresser
Principal Engineer – Hazardous Areas
Hazardous Area Specialists

(signature)



ANNEX A – DEFINITIONS

These terms relate to AS/NZS 60079.14:2017 unless otherwise stated.

Term	Title./ Reference	Definition
Ambient Temperature	Electrical equipment designed for use in a normal ambient temperature range of –20°C to +40°C does not require marking of the ambient temperature range. However, electrical equipment designed for use in other than this normal ambient temperature range is considered to be special. The marking shall then include either the symbol Ta or Tamb together with both the upper and lower ambient temperatures or, if this is impracticable, the symbol “X” shall be used to indicate specific conditions of use that include the upper and lower ambient temperatures.	AS/NZS 60079.0 – 2012 cl 5.1.1
Assurance of Conformity of Equipment	To IEC Standards: Equipment with certificate according to the IEC 60079 series or the IEC 61241 series, meets the requirements for hazardous areas, when selected and installed in accordance with this standard. To Other Standards: Apart from simple apparatus used within an intrinsically safe circuit, the selection of equipment for use in a hazardous area, which either has no certificate at all or it has a certificate but not in accordance with one of the standards listed in 4.4.1, shall be restricted to circumstances where equipment with suitable certification is not obtainable. The justification for the use of such equipment, along with the installation and marking requirements, shall be made by the user, manufacturer or third party, and be recorded in the verification dossier. The following requirements of this standard, under these conditions, may not be applicable.	AS/NZS 60079.14:2017 cl 4.4
Conformity Assessment Documents	The following items should be provided in all Conformity Assessment Documents before they can be accepted by the Owner/Occupier: The assessment statement should nominate the extent of the work undertaken including a list of considerations that are including in the report and any considerations, which may reasonably have been expected, that have been excluded. All details of the equipment and application that fully define the actual equipment, its function and application, should be included. The description should define the equipment by type and model, including any special variations or additions that establish a unique identity for the item being assessed. It may include characteristics relating to appearance, materials, etc., such as by description and / or photographs.	AS/NZS 60079.14:2017 Appendix ZD
Equipment Certified to IEC Standards	General Electrical equipment, other than simple apparatus installed within an intrinsically safe circuit, to be installed in a hazardous area, and any associated apparatus, shall conform to the requirements of AS/NZS 60079.14:2017, clause 4.4.2. This also includes AS/NZS certified product. Older AUS Ex product installed, should be checked to determine if the certificate was current at the time of installation. If this is the case, the equipment may remain, but if later found to be defective, it must be replaced with an IECEx or ANZEx certified unit of the correct specification.	AS/NZS 60079.14:2017 cl. 4.4.1 (Appendix ZZ version)
Equipment without IEC Certification.	Equipment with Certificates issued under the IECEx, ANZEx and AUSEX schemes: Equipment conforming to a Standard listed in Table 2 (of AS/NZS 60079.14) is acceptable when selected and installed in accordance with this standard and meets any of the following certification criteria: [i] The equipment as a current certificate under the IECEx or the ANZEx schemes [ii] The equipment has a cancelled or suspended IECEx or ANZEx certificate and it can be demonstrated that the equipment was manufactured whilst the certificate was current. [iii] The equipment was issued with a certificate issued under the AUSEX Scheme and the equipment was manufactured within the certificate validity period.	AS/NZS 60079.14:2017 cl. 4.4.2 (Appendix ZZ version)
Ex d (Flameproof enclosure “d”)	An enclosure in which the parts which can ignite an explosive gas atmosphere are placed and which can withstand the pressure developed during an internal explosion of an explosive mixture, and which prevents the transmission of the explosion to the explosive gas atmosphere surrounding the enclosure.	AS/NZS 60079.1:2015 cl 3.1



Term	Title./ Reference	Definition														
Ex s (special protection "s")	A concept to allow design, assessment and testing of equipment that cannot be fully assessed within a recognized type of protection or combination of recognized types of protection because of functional or operational limitations, but which can be demonstrated to provide the necessary equipment protection level (EPL).	AS/NZS 60079.11:2011 cl. 3.1.1														
EPL	<table border="1" data-bbox="529 400 987 607"> <thead> <tr> <th data-bbox="529 400 639 443">Zone</th> <th data-bbox="639 400 987 443">Equipment Protection Level</th> </tr> </thead> <tbody> <tr> <td data-bbox="529 443 639 472">0</td> <td data-bbox="639 443 987 472">"Ga"</td> </tr> <tr> <td data-bbox="529 472 639 501">1</td> <td data-bbox="639 472 987 501">"Ga" or "Gb"</td> </tr> <tr> <td data-bbox="529 501 639 530">2</td> <td data-bbox="639 501 987 530">"Ga" or "Gb" or "Gc"</td> </tr> <tr> <td data-bbox="529 530 639 560">20</td> <td data-bbox="639 530 987 560">"Da"</td> </tr> <tr> <td data-bbox="529 560 639 589">21</td> <td data-bbox="639 560 987 589">"Da" or "Db"</td> </tr> <tr> <td data-bbox="529 589 639 618">22</td> <td data-bbox="639 589 987 618">"Da" or "Db" or "Dc"</td> </tr> </tbody> </table>	Zone	Equipment Protection Level	0	"Ga"	1	"Ga" or "Gb"	2	"Ga" or "Gb" or "Gc"	20	"Da"	21	"Da" or "Db"	22	"Da" or "Db" or "Dc"	AS/NZS 60079.14:2017 Table 1
Zone	Equipment Protection Level															
0	"Ga"															
1	"Ga" or "Gb"															
2	"Ga" or "Gb" or "Gc"															
20	"Da"															
21	"Da" or "Db"															
22	"Da" or "Db" or "Dc"															
Group	Classification of electrical equipment related to explosive atmospheres for which it is to be used. Surface gas/vapour hazardous areas are designated Group II hazardous areas. The following subgroups exist: IIA; IIB; IIC.	AS/NZS 60079.0:2012 cl. 4.2														
Temperature Class	<table border="1" data-bbox="480 736 1054 969"> <thead> <tr> <th data-bbox="480 736 715 813">Temperature class</th> <th data-bbox="715 736 1054 813">Maximum surface temperature</th> </tr> </thead> <tbody> <tr> <td data-bbox="480 813 715 842">T1</td> <td data-bbox="715 813 1054 842">450</td> </tr> <tr> <td data-bbox="480 842 715 871">T2</td> <td data-bbox="715 842 1054 871">300</td> </tr> <tr> <td data-bbox="480 871 715 900">T3</td> <td data-bbox="715 871 1054 900">200</td> </tr> <tr> <td data-bbox="480 900 715 929">T4</td> <td data-bbox="715 900 1054 929">135</td> </tr> <tr> <td data-bbox="480 929 715 958">T5</td> <td data-bbox="715 929 1054 958">100</td> </tr> <tr> <td data-bbox="480 958 715 972">T6</td> <td data-bbox="715 958 1054 972">85</td> </tr> </tbody> </table>	Temperature class	Maximum surface temperature	T1	450	T2	300	T3	200	T4	135	T5	100	T6	85	AS/NZS 60079.0:2012 Table 2
Temperature class	Maximum surface temperature															
T1	450															
T2	300															
T3	200															
T4	135															
T5	100															
T6	85															
Zone 0	An area in which an explosive gas atmosphere is present continuously or for long periods or frequently.	AS/NZS 60079.10.1:2009 (+A1) cl. 3.6														
Zone 1	An area in which an explosive gas atmosphere is likely to occur in normal operation occasionally.	AS/NZS 60079.10.1:2009 (+A1) cl. 3.7														
Zone 2	An area in which an explosive gas atmosphere is not likely to occur in normal operation but, if it does occur, it will exist for a short period only.	AS/NZS 60079.10.1:2009 (+A1) cl. 3.8														



ANNEX B – CERTIFICATION DOCUMENTS

- EU Type Examination Certificate



your value certified

albarubens



Notified Body n. 2632
Organismo Notificato n. 2632

1

[1] EU-TYPE EXAMINATION CERTIFICATE 2

CERTIFICATO DI ESAME UE DEL TIPO

[2] **ELECTRICAL EQUIPMENT Intended for use in Potentially Explosive Atmospheres - Directive 2014/34/EU-ATEX Annex III/Module B**
APPARECCHIO ELETTRICO Inteso per l'uso in Atmosfera Potenzialmente Esplosiva - Direttiva 2014/34/EU-ATEX Annex III/Module B

[3] **EU-TYPE EXAMINATION CERTIFICATE n.:** **AR18ATEX132rev1**
CERTIFICATO DI ESAME UE DEL TIPO n.:

[4] **ELECTRICAL EQUIPMENT:** **Condensed Aerosol Generators**
APPARECCHIO ELETTRICO: **FirePro: FP-100 EX, FP-200 EX, FP-500 EX, FP-1200 EX, FP-2000 EX, FP-3000 EX, FP-4200 EX, FP-5700 EX**
FireBan: FBN-100 EX, FBN -200 EX, FBN -500 EX, FBN -1200 EX, FBN -2000 EX, FBN -3000 EX , FBN -4200 EX, FBN -5700 EX

[5] **MANUFACTURER:** **Firepro Systems Ltd**
COSTRUTTORE:

[6] **ADDRESS:** **8 FALEAS STR., AGIOS ATHANASIOS INDUSTRIAL AREA**
INDIRIZZO: **CY-4101 Limassol - CYPRUS**

[7] **This ELECTRICAL EQUIPMENT and any variation is specified in the schedule to this certificate and the documents therein referred to.**
Questo APPARECCHIO ELETTRICO e le varianti sono descritte nell'allegato al presente certificato e nei documenti ivi richiamati.

[8] **Albarubens srl, Notified Body No. 2632, in accordance with Article 17 of the Directive 2014/34/EU-ATEX of the European Parliament and of the Council, dated 26 February 2014, certifies that this ELECTRICAL EQUIPMENT has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.**

The examination and test results are recorded in confidential report MOD 7.4.1 - ID: 3748
Albarubens srl, Organismo Notificato n. 2632, in conformità all'art. 17 della Direttiva 2014/34/UE-ATEX del Parlamento Europeo e del Consiglio, datata 26 Febbraio 2014, certifica che questo APPARECCHIO ELETTRICO è conforme ai Requisiti Essenziali di Sicurezza e Salute per il progetto e la fabbricazione di prodotti destinati ad essere utilizzati in atmosfere potenzialmente esplosive, definiti nell'Allegato II della Direttiva. I risultati dell'esame e dei test sono descritti nel rapporto confidenziale MOD 7.4.1 - ID: 3748

[9] **Compliance with the Essential Health and Safety Requirements has been assured by compliance with the technical standards:**
La conformità ai Requisiti Essenziali di Sicurezza e Salute è assicurata dalla conformità alle norme tecniche:

EN 1127-1:2011 - EN 60079-0:2012+A11:2013 - IEC 60079-33:2012 (partially)

except in respect of those requirements listed at item 18 of the Schedule.
tranne nel caso dei requisiti elencati al punto 18 dell'Allegato.

[10] **If the symbol 'X' is placed after the certificate number, it indicates that the ELECTRICAL EQUIPMENT is subject to the Specific Conditions of Use specified in the next chapter 17.**
Il simbolo 'X', se presente dopo il numero di certificato, indica che questo APPARECCHIO ELETTRICO è soggetto a Condizioni Speciali per l'Uso, specificate nel seguente punto 17.

[11] **This EU-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified ELECTRICAL EQUIPMENT. Further requirements of the Directive apply to the manufacturing process and supply of product. These are not covered by this certificate.**

Questo CERTIFICATO DI ESAME UE DEL TIPO è relativo soltanto al progetto ed alla costruzione di questo APPARECCHIO ELETTRICO. Ulteriori requisiti di questa Direttiva si applicano al processo di fabbricazione e fornitura di questo prodotto. Questi requisiti non sono oggetto del presente certificato.

[12] **The marking of the ELECTRICAL EQUIPMENT shall include the following:**
Questo APPARECCHIO ELETTRICO deve riportare i seguenti contrassegni:

II 1G Ex s IIC T3 Ga
 II 1D Ex s IIIC T200°C Da
 I M1 Ex s T450°C Ma
Tamb: -54 +54 °C

Saronno (Italy), 20 May 2019



Digital signature

Giuseppe Terzaghi
Firmato digitalmente da Giuseppe Terzaghi
Data: 2019.05.20 16:42:04 +02'00'

ALBARUBENS srl
The legal representative: ing. Giuseppe Terzaghi

Verify validity and authenticity of this certificate on the website: <https://www.albarubens.it/authentication.php> (Password: JV8XKS) 4

page 1/4

Albarubens srl - Via G. Ferrari 21/N - 21047 Saronno (VA) - Italy - Reg. VA-286283 - Tax code IT 02767050129 - Paid-up capital € 100.000,00
www.albarubens.it - info@albarubens.it - tel: +39 02 96248530 - fax: +39 02 700523656 - Document automatically generated by the Albarubens WebApp 1.86

JOB: 19/0159 - ID: 3748



[13]

SCHEDULE

ALLEGATO

5

[14] **EU-TYPE EXAMINATION CERTIFICATE n.:**

AR18ATEX132rev1

CERTIFICATO DI ESAME UE DEL TIPO n.:

[15] **DESCRIPTION:**

DESCRIZIONE:

[EN] Fire extinguishers that are activated by an electric impulse.

The FPC (patented solid compound contained in the FirePro condensed aerosol generators), immediately starts a chemical reaction that in few seconds produces condensed dry aerosol in the discharge density defined by the system designer (i.e. potassium compounds (K₂CO₃), H₂O, N₂, CO₂ and other gas particles in small quantities. The family of fire extinguishers consists of the following models:

FirePro types

- FP-100 EX
- FP-200 EX
- FP-500 EX
- FP-1200 EX
- FP-2000 EX
- FP-3000 EX
- FP-4200 EX
- FP-5700 EX

FireBan types

- FBN-100 EX
- FBN-200 EX
- FBN-500 EX
- FBN-1200 EX
- FBN-2000 EX
- FBN-3000 EX
- FBN-4200 EX
- FBN-5700 EX

This equipment is marketed under two trademarks: FirePro and FireBan.
The two series are identical, both produced by the company Fire Pro Systems Ltd, holder of the certificate.

[IT] Estintori che vengono attivati tramite un impulso elettrico

L'FPC (composto solido brevettato nei generatori di aerosol condensati FirePro), avvia immediatamente una reazione chimica che in pochi secondi produce aerosol secco condensato nella densità di scarico definita dal progettista del sistema (cioè composti di potassio (K₂CO₃), H₂O, N₂, CO₂ e altre particelle di gas in piccole quantità. La famiglia di estintori è composta dai seguenti modelli:

Modelli FirePro

- FP-100 EX
- FP-200 EX
- FP-500 EX
- FP-1200 EX
- FP-2000 EX
- FP-3000 EX
- FP-4200 EX
- FP-5700 EX

Modelli FireBan

- FBN-100 EX
- FBN-200 EX
- FBN-500 EX
- FBN-1200 EX
- FBN-2000 EX



- FBN-3000 EX
- FBN-4200 EX
- FBN-5700 EX

Questo apparecchio viene commercializzato con due marchi commerciali: FirePro e FireBan.
Le due serie sono identiche, entrambe prodotte dalla società Fire Pro Systems Ltd, intestataria del certificato.

CHARACTERISTICS: Minimum pulse voltage 1.5 V
CARATTERISTICHE: Minimum pulse current 0.6 A
Monitoring current 5 mA

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Tensione minima di impulso 1.5 V
Corrente minima di impulso 0.6 A
Corrente di monitoraggio 5 mA

ROUTINE TESTS: VISUAL INSPECTION OF CONFORMITY TO TECHNICAL FILE
PROVE DI ROUTINE: ROUTINE TEST PROVIDED BY THE MENTIONED STANDARDS
Ispezione visiva della conformità al fascicolo tecnico
Prove di routine richieste dalla norme citate

WARNING LABEL: Nothing special / Niente di particolare
AVVERTENZE DI TARGA:

REVISION HISTORY: **CERTIFICATE** **DATE** **REVISION REASON**
STORIA DELLE REVISIONI: AR18ATEX132 23-Nov-2018 First issue / Prima emissione
AR18ATEX132rev1 20-May-2019 New company address, new brand "FireBan", revised marking

[16] **This document is based on confidential Atex Assessment Report ref. MOD 7.4.1 - ID: 3748**

Questo documento è basato sul Rapporto di Ispezione confidenziale ref. MOD 7.4.1 - ID: 3748

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[17] **Special conditions for safe use depends on correct following of manufacturer's manual. Further modification are not allowed.**

L'efficacia e l'affidabilità di questi apparecchi sono garantite seguendo le istruzioni del manuale d'uso. Non sono ammesse modifiche non autorizzate rispetto al fascicolo tecnico agli atti.

[18] **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS - Compliance with the Essential Health and Safety Requirements (EHSRs) has been evaluated against the standards listed in point 9, with the additional following considerations:**

REQUISITI ESSENZIALI DI SICUREZZA E SALUTE - La conformità ai Requisiti Essenziali di Sicurezza e Salute (EHSR) è stata valutata rispetto alle norme elencate al punto 9, alle quali si aggiungono le seguenti considerazioni:

The aerosol generators were demonstrated by laboratory tests to be not capable to ignite the explosive atmosphere, also in case of accidental activation, but they are not described by any standardized protection method.
The 'Ex s' protection mode highlights the not-standardized satisfaction of the EHSRs; the "partial" is due to the non-involvement of a secondary NoBo.

Prove di laboratorio hanno dimostrato l'incapacità dei generatori di aerosol di innescare l'atmosfera esplosiva, anche in caso di attivazione accidentale, ma essi non sono descritti da alcun metodo di protezione standardizzato.
La modalità di protezione "Ex s" evidenzia la soddisfazione non standardizzata degli EHSR; il "parziale" è dovuto al mancato coinvolgimento di un NoBo secondario.

[19] **The descriptive documents quoted hereafter constitute the technical documentation of the product covered by this certificate.**

These documents are confidential and they are available only to the authorities. All the documents are stored in Albarubens archive.

I documenti descrittivi elencati di seguito costituiscono la documentazione tecnica del prodotto oggetto di questo certificato. Questi documenti sono confidenziali e sono a disposizione delle sole autorità competenti. Copia degli stessi è conservata presso l'archivio di Albarubens.

8

FILES ANNEXED TO AR18ATEX132	BYTES	HASH (MD5)	
AR18TEST011.pdf	2 712 092	567724ADCEA5823A1BAE886B207E156A	A
AR18TEST134Rev.1.pdf	3 972 954	9695E1289E6B8369083EACA87BF7300D	D
AR18TEST183.pdf	1 126 343	47DFE05CFC8282B1BF90ECD6F1F3786B	D
ATEXassessment-3275.pdf	262 112	FE4872EE66141A8C91A06B01A2671E95	S
ATEXdecision-3275.pdf	256 228	2E843DAB05F127CE4C95FE88E85FD659	S
Atex label.pdf	274 944	55835E0CB9F44CA11D6374D25C925A3E	A
FIREPRO ATEX MANUAL.pdf	1 042 719	0ED7E2A33A6C502B2CD4805C30CAB624	A
FP100EX Assembly.pdf	481 000	7AA0FB3E3E216B2A19C9C4A168E9AE8	A
FP122030 ATEX CASING ASSEMBLY.pdf	195 659	4C1ED4647D7D97F67CD591DA17B338A8	D
FP200EX Assembly.pdf	462 063	24D27BF9544BA4C287CC750717440FED	D
FP4257 ATEX CASING ASSEMBLY.pdf	198 518	11BAE89B879E47F4BF55344499B74651	D
FP500EX Assembly.pdf	496 862	FE53FC7570E275CAEE0AE660A719A00F	D
GEPMI Fire Protection Conformity Certification T.10302-2014.pdf	177 417	EEF8D16D1C2F16871E5F1ECBAA1A89E9	A
GEPMI Fire Protection Conformity Testing Report.pdf	192 799	7E3FFE9F321BF9B0DEC7D67188EF849	D
Ignitio Hazard Risk Assessment Table A for FirePro ATEX Condensed Aerosol Generators.pdf	82 435	A02CF5E3CA13792884EBE20CCAC6FC1C	A



FILES ANNEXED TO AR18ATEX132 (continue)	BYTES	HASH (MD5)	
Ignition Hazard Risk Assessment Table B for FirePro ATEX Condensed Aerosol Generators.pdf	95 307	097A0DBDE059E7CA2A048717C3961C1E	D
ULC Explosive Atmosphere Discharge Test (UL 2127).pdf	285 735	230711C14F4BEAAFEAF1D352903AEB41	A
FILES ANNEXED TO AR18ATEX132rev1	BYTES	HASH (MD5)	
ATEXassessment-3748.pdf	263 014	1BDF3AF7FF6DD55140E49C6FBDB4FFC	S
ATEXdecision-3748.pdf	194 348	660E1D2158EBB3F7934E5D0A122C8219	S
Change of Address.pdf	135 127	B1639FE24BCB9E0D88AF239D8588754B	A
Confirmation FP100S to FP100T.pdf	127 470	DCAED6708AB73E7BAC7EB4ECB823BD1E	A
Declaration FirePro - FireBan.pdf	116 803	5C5349DC00EC388D40419F503C5F1071	A
FIREBAN ATEX MANUAL - 7.5.19.pdf	925 516	FB049E8EE3E649AD3296656B0A586D29	A
FIREPRO ATEX MANUAL - 7.5.19.pdf	877 502	F476B4BAF3858A1B7FB59C2368A84D8A	A
Formal request for FireBan trade name.pdf	159 596	08DF7DBB050B24242041511C339CFC4	A

A: Documents obtained by the manufacturer and used for the assessment / Documenti ricevuti dal fabbricante ed utilizzati per la valutazione
D: Additional examined documents / Documenti aggiuntivi esaminati
S: Reserved documents generated by Albarubens during the assessment / Documenti riservati generati da Albarubens durante la valutazione

[20] **INSPECTOR IN CHARGE OF THE ASSESSMENT:** Ing. Giuseppe Terzaghi

ISPETTORE INCARICATO DELLE VERIFICHE:

FINAL REVIEWER/CERTIFICATE DECISOR: Dott.ssa Nicoletta De Luca

REVISORE FINALE/DELIBERANTE CERTIFICAZIONE:

End of document, signature on the cover

Explanations / Spiegazioni

- Albarubens issued this certificate as Notified Body for 2014/34/EU-ATEX Directive, recognized by European Commission on NANDO system with n. 2632.**
Albarubens ha emesso questo certificato in quanto Organismo Notificato per la Direttiva 2014/34/UE-ATEX, riconosciuto dalla Commissione Europea sul sistema NANDO con numero 2632.
- This certificate is mandatory for placing these devices on the European Union market; it takes separated surveillance certificate.**
Questo certificato è obbligatorio per l'immissione di questi apparecchi sul mercato dell'Unione Europea; richiede un certificato di sorveglianza.
- The verification activity at the basis of this certificate was carried out under ISO/IEC 17065 accreditation.**
L'attività di verifica alla base di questo certificato è stata svolta in regime di accreditamento ISO/IEC 17065.
- The authenticity of this certificate is verifiable online, by comparison between the copy in your possession and that downloaded from our secure website.**
L'autenticità di questo certificato è verificabile on-line, per confronto tra la copia in vostro possesso e quella scaricata dal nostro sito web protetto.
- The schedule is an integral part of the certificate, which can only be transmitted or reproduced in its entirety.**
L'allegato è parte integrante del certificato, che può essere trasmesso o riprodotto solo nella sua interezza.
- Any performance parameter, other than the ones provided by the standards listed in point [9], is descriptive only and not covered by this certificate.**
I parametri prestazionali eventualmente riportati, diversi da quelli previsti dalle norme elencate al punto [9], hanno funzione solo descrittiva e non sono coperti da questo certificato.
- The assessment report is confidential and doesn't supplement the certificate; it can only be sent to the accreditation or market surveillance authorities.**
Il rapporto di ispezione è confidenziale e non integra questo certificato; può essere consegnato solo alle autorità di accreditamento o di sorveglianza del mercato.
- The 'hash' code distinguishes original documents from the fake ones. Digital stamped documents available for those eligible.**
Il codice 'hash' distingue i documenti originali da quelli contraffatti. Copie timbrate in digitale disponibili per gli aventi diritto.



- Declaration of Conformity

Declaration of Conformity



ATEX Explosive Environments

Rev 2.1

FirePro in potentially explosive atmospheres (ATEX)

FirePro has also been specifically certified under ATEX guidelines for hazardous environments. FirePro aerosol generators can be used in:

I M1 Ex s T450°C Ma	 I M1 Ex s T450°C Ma	ATEX Logo Mining Equipment Category 1, can be used in Zones 0 and 20 Explosion Protection Special Protection – IEC 60079-33 Maximum Permitted housing Temp of 450°C Equipment Protection Level
II 1G Ex s IIC T3 Ga	 II I G IIC T3 Ga	ATEX Logo Non Mining Equipment Category 1, approved in Zones 0, 1, and 2 Gas Atmosphere Explosion Group (most dangerous Group) Max permitted housing Temp of 200°C Equipment Protection Level
II 1D Ex IIIC T200°C Da	 II I D IIIC T200°C Da	ATEX Logo Non Mining Equipment Category 1, approved in Zones 20, 21, and 22 Dust Atmosphere Conductive Dust Max permitted housing Temp of 200°C Equipment Protection Level

The local authority has the responsibility for defining a Class, Zone, and Group classification for specific areas. The classification given to a particular zone, and its size and location, depends on the likelihood of an explosive atmosphere occurring and its persistence if it does. Areas classified into zones (0, 1, 2 for gas-vapor-mist and 20, 21, 22 for dust) must be protected from effective sources of ignition.

Other than Category 3 equipment, the complete system, including panel, cabling and detection will probably require third party accreditation.

Equipment Group	Equipment Category	Protection Level	Presence or Duration of Explosive Atmosphere	Hazardous Area Zones
I Underground Mines and Associated surface installations	M1	Very High	Constant Risk or Presence	
	M2	High	Constant Risk or Presence	
II All Other Surface Installations	1	Very High	Continuous Presence	Zone 0 / Zone 20
	2	High	Likely to Occur	Zone 1 / Zone 21
	3	Normal	Unlikely to Occur	Zone 2 / Zone 22
Dusts		Category M1, M2 & 1 Equipment	Gases, Vapours and Mists	
Place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.		Zone 20:	Zone 0:	The part of a hazardous area in which a flammable atmosphere is continuously present or for long periods.
Place in which an explosive atmosphere in the form of a cloud of combustible dust in air occurs occasionally. Group III IIIA Combustible flyings Group III IIIB Non-conductive dust Group III IIIC Electrically conductive dusts		Zone 21	Zone 1	That part of a hazardous area in which a flammable atmosphere is likely to occur in normal operation Group II IIA (Propane, Methane) Group II IIB (Ethylene) Group II IIC (Hydrogen)
A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation or will persist for a short period only. Group III IIIA Combustible flyings Group III IIIB Non-conductive dust Group III IIIC Electrically conductive dusts		Zone 22	Zone 2	That part of a hazardous area in which a flammable atmosphere is not likely to occur in normal operation, and if it occurs, it will only exist for a short period Group II IIA (Propane, Methane) Group II IIB (Ethylene) Group II IIC (Hydrogen).

Mining and Surface Certification (MASC)

FPX-0100EX / 0200EX / 0500EX aerosol units have additional certification

Location	Hazard Frequency	Environment	Limiting Temperature
Zone 1 & 2 Zone 21 & 22	Mining: Underground & Surface (Gas) Surface (Dust)	Group I Group IIC Group IIIC	Methane / Coal Dust Hydrogen / Acetylene Conductive Dusts
	Intermittent could under normal operating conditions in hazardous area		150°C T3 T200 °C
			Enclosure surface limitation Enclosure surface limitation Enclosure surface limitation





- PQAN

TÜV NORD

(1) **Production Quality Assurance Notification**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, Directive 2014/34/EU



(3) Notification Number: TÜV CY 19 ATEX 0206135 Q

(4) Product category:
Electrical Equipment for use in ATEX

Protective principle:
Condensed Aerosol Generators
FP-100 EX, FP-200 EX, FP-500 EX,
FP-1200 EX, FP-2000 EX, FP-3000 EX,
FP-4200 EX, FP-5700 EX,
FP-100T, FP-200T, FP-500T

(5) Applicant: FIREPRO SYSTEMS
8 Faleas Street
Ayios Athanasios Industrial Area
4101 Limassol - Cyprus

(6) Manufacturer: Same as applicant Manufacturing location: Same as applicant

Order number: 0206135
Date of issue: 2019-06-19
First certification: 2019-04-15
Valid to: 2022-04-14

(7) TÜV CYPRUS Ltd, notified body No. 2261 in accordance with Article 17 of the Council Directive 2014/34/EU of February 26, 2014, notifies the applicant that the manufacturer has a production quality system which complies with Annex IV of the Directive.

(8) This notification is based on audit report No. 19 0206135 issued on 2019-04-05. This notification can be withdrawn if the manufacturer no longer satisfies the requirements of Annex IV. Results of periodical production quality reassessments are a part of this notification.

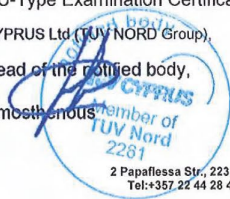
(9) In accordance with Article 16 (3) of the Directive 2014/34/EU the CE marking shall be followed by the identification number 2261 of the notified body TÜV CYPRUS Ltd.

The EU-Type Examination Certificates based on this notification are listed by the notified body.

TÜV CYPRUS Ltd (TÜV NORD Group),

The head of the notified body,

D. Demosthenous



TÜV CYPRUS (TÜV NORD) Ltd,
2 Papaflessa Str., 2235 Latsia, Nicosia - P.O.Box: 20732, 1663 Nicosia, Cyprus
Tel:+357 22 44 28 40 Fax:+357 22 44 28 50 email: info@tuvcyprus.com.cy
www.tuv-nord.com/cy

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Excerpts or changes shall be allowed by the TÜV CYPRUS Ltd.

CY-QF-(IND-ATEX-01)-12-ND_Rev01_24.05.2016

Page 1/1



- ISO 9001:2015 Certificate



MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
276371-2018-AQ-NLD-RvA

Initial certification date:
15 December 2003

Valid:
16 December 2021 – 15 December 2024

This is to certify that the management system of
FirePro Systems Ltd./Celanova Ltd.
8 FALEAS STR., AGIOS ATHANASIOS INDUSTRIAL AREA - CY-4101 Limassol - Cyprus

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Design, manufacturing, testing, selling, packaging, storing, distribution and assembly of FirePro Fire Extinguishing Aerosol Generating systems in the widest sense of the word and the manufacturing of products used in combination with all models of FirePro Fire Extinguishing Aerosol Generators.

Place and date:
Barendrecht, 02 November 2021

For the issuing office:
DNV - Business Assurance
Zwolseweg 1, 2994 LB Barendrecht,
Netherlands



J.H.C.N. van Gijlswijk
Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance B.V., Zwolseweg 1, 2994 LB, Barendrecht, Netherlands - TEL: +31(0)102922689. www.dnv.com/assurance



- **Notified Body Status**

Notification of a Body in the framework of a technical harmonization directive

From : Ministero dello Sviluppo Economico - Direzione Generale per il Mercato, la Concorrenza, il Consumatore, la Vigilanza e la Normativa Tecnica
Via Sallustiana, 53
00187 ROMA
Italy

To : **European Commission**
GROWTH Directorate-General
200 Rue de la Loi,
B-1049 Brussels.
Other Member States

Reference : Legislation : 2014/34/EU Equipment and protective systems intended for use in potentially explosive atmospheres (recast)

Body name, address, telephone, fax, email, website :

Albarubens srl
Via G. Ferrari 21/N
21047 - Saronno (VA)
Italy
Phone : +39 02 96248530
Fax : +39 02 700523656
Email : info@albarubens.it
Website : www.albarubens.it

Body :

NB 2632

The body is formally accredited against :

Accreditation standard used: EN ISO/IEC 17065 - Product certification. But also the relevant requirements of UNI CEI EN ISO/IEC 17021 - UNI CEI EN ISO/IEC 17025 have been assessed.

Name of National Accreditation Body (NAB) : ACCREDIA

The accreditation covers the product categories and conformity assessment procedures concerned by this notification : Yes

Tasks performed by the Body :

Last approval date : 14/03/2018 | Valid until : 09/02/2020(Expired)

Product family, product /Intended use/Product range	Procedure/Modules	Annexes or articles of the directives
Group I electrical:	EU-type examination (Module B)	Annex III
Group I non-electrical:	Conformity to type based on quality assurance of the production process (Module D)	Annex IV
Group II gas electrical:	Conformity to type based on internal production control plus supervised product testing (Module C1)	Annex VI
Group II dust electrical:	Conformity to type based on product quality assurance (Module E)	Annex VII
Group II gas non-electrical:	Internal Production Control (Module A) and the communication of the technical documentation as Art. 13.1(b)(ii)	Annex VIII
Group II dust non-electrical:	Conformity based on unit verification (Module G)	Annex IX



ANNEX C – REFERENCE DOCUMENTS

- Data Sheet

 <small>Reinventing Fire Suppression</small>	<h2 style="margin: 0;">Explosive Environments</h2> <h3 style="margin: 0;">STANDARD FIREPRO RANGE</h3> <small style="float: right;">Rev 2.1</small>
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FirePro in potentially explosive atmospheres

During the UL listing procedure, FirePro has been tested, as per UL 2775, for use in explosive atmospheres UL2775, Section 26 “Pyrotechnic Reaction Containment Test”. FirePro has also been specifically certified under ATEX guide lines for hazardous environments.

The FirePro **standard** aerosol generators can be used in:

- Zone 1 and 2 with presence of gases of IIA, IIB and IIC hazard groups
- Zone 21 and 22 with presence of dusts of IIIA, IIIB and IIIC hazard groups

The UL test demonstrated and proved that the FirePro Aerosol Generators actuated inside an explosive atmosphere did not initiate any explosion, the aerosol actually provided an inert atmosphere.

The local authority has the responsibility for defining a Class, Zone, and Group classification for specific areas. The classification given to a particular zone, and its size and location, depends on the likelihood of an explosive atmosphere occurring and its persistence if it does. Areas classified into zones (0, 1, 2 for gas-vapor-mist and 20, 21, 22 for dust) must be protected from effective sources of ignition.

Other than Category 3 equipment, the complete system, including panel, cabling and detection will probably require third party accreditation.

The standard product range of FirePro Aerosol generators is supplemented by the ATEX approved FirePro units which are specifically certified for Explosive Environments.

Equipment Group	Equipment Category	Protection Level	Presence or Duration of Explosive Atmosphere	Hazardous Area Zones
I Underground Mines and Associated surface installations	M1	Very High	Constant Risk or Presence	
	M2	High	Constant Risk or Presence	
II All Other Surface Installations	1	Very High	Continuous Presence	Zone 0 / Zone 20
	2	High	Likely to Occur	Zone 1 / Zone 21
	3	Normal	Unlikely to Occur	Zone 2 / Zone 22

Dusts	Category M1, M2 & 1 Equipment	Gases, Vapours and Mists
An area where an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or frequently.	Zone 20 Zone 0 ATEX FirePro Units Required	A hazardous area in which a flammable atmosphere is continuously present or present for long periods.
Category 2 Equipment		
A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally. Group III IIIA Combustible flyings Group III IIIB Non-conductive dust Group III IIIC Electrically conductive dusts	Zone 21 Zone 1 Standard FirePro Units may be used	A hazardous area in which a flammable atmosphere is likely to occur in normal operation Group II IIA (Propane, Methane) Group II IIB (Ethylene) Group II IIC (Hydrogen)
Category 3 Equipment		
A place in which an explosive atmosphere in the form of a cloud of combustible dust is not normally present or will persist for a short period only. Group III IIIA Combustible flyings Group III IIIB Non-conductive dust Group III IIIC Electrically conductive dusts	Zone 22 Zone 2 Standard FirePro Units may be used	A hazardous area in which a flammable atmosphere is not likely in normal operation, or will only exist for a short period Group II IIA (Propane, Methane) Group II IIB (Ethylene) Group II IIC (Hydrogen).





ANNEX D – AS/NZS 4761.1 ASSESSMENT COMPETENCY

moxi / SKILL + LEARNING

This is a Statement that

Paul Spresser

has been assessed as having fulfilled the following requirements

- UTE NES 407 TA Assess explosion-protected equipment for conformance with standards (Ex mixed)
- UTE NES 407 WA Assess explosion-protected equipment for conformance with standards (Ex n)
- UTE NES 407 XA Assess explosion-protected equipment for conformance with standards (Ex i)
- UTE NES 407 YA Assess explosion-protected equipment for conformance with standards (Ex e)
- UTE NES 407 ZA Assess explosion-protected equipment for conformance with standards (Ex d)

in partial completion of the following qualification
Certificate V in Electrotechnology (UTE 5 02 99)

Prepared by
Angie Askew
Administration Officer

Approved by
Michael Williams
Certified Trainer and Assessor

National Provider Code 51160

Date of Issue: 12 June 2006



This statement of attainment is recognised within the Australian Qualifications Framework

Certificate No.: 0110-1-06

Page 1 of 1

4.2. Description of Risk AND Conformity Calculations



HAZ

HAZARDOUS AREA SPECIALISTS

Fire Safety Equipment

IS Description Document

30/6/2022

AS INSTALLED

IS DESCRIPTION REPORT

WWW.HASPECIALISTS.COM.AU



Project Information

Project Name:	IS Calculations			
Report Number:	GAR-22-06-01 FSE - GEG IS Description Document			
Client :	Fire Equipment Australia			
Report Author(s)	Kayne Herriman			
Document History:				
Revision	Date	Description	Reviewed by	Approved by
A	22/6/2022	Initial Issue For Review	KH	KH
B	30/6/2022	Updated from Site	KH	KH

DISCLAIMER:

This Report has been prepared by **Hazardous Area Specialists Pty Ltd (HAZ)** based on information provided to HAZ by **Fire Safety Equipment** (the Client). It has been prepared for the Client and is issued pursuant to an agreement between HAZ and the Client. It has been produced according to the scope of work and is only suitable for use in connection with that scope.

HAZ takes no responsibility for the accuracy of the information provided to it by the Client (including errors of omission), certifying authorities, or the equipment manufacturer or their agents, and does not accept any liability for any loss whatsoever by any party as a result of actions taken either solely or in part on the basis of the Report, where the Report has relied upon that information provided by the Client, certifying authorities or equipment manufacturer or their agents. Any document used in the compilation of this report, including Standards and Codes, will be documented in the Referenced Documents section of the report.

This Report has been prepared solely for the Client and can only be relied upon by the Client. If the Client deems it necessary to send a copy of the Report to a third party, the report shall be sent in its entirety.

Further, any installation practices which vary from those allowed for in Australian or Australian/New Zealand standards, government acts and regulations, the original certification or the manufacturer's original documents, may void the validity of this assessment.



EXECUTIVE SUMMARY

Fire Safety Equipment are installing a Fire and Gas system into three gas engine generators. As part of the installation there are two intrinsically safe circuits

1. 3 x Temperature Detectors
2. 1 x Beacon

No area classification was provided for the installation although the following statement was made.

"Equipment installed inside equipment enclosures, e.g. compressor packages, which must remain energised during ventilation failure or internal gas detection must be certified for Zone 1 operation. This must include items such as fire and gas detection instrumentation, ventilation fan motors, ventilation proving instrumentation, emergency lighting, and any electrical equipment that cannot be disconnected from the external energy source."

It has been found that both IS circuits are suitable for use within Zone 1.

AS INSTALLED



IS BEACON

- IS SYSTEM DRAWING
- IS CALCULATION
- BARRIER DATA SHEETS
- CERTIFICATE OF CONFORMITY

AS INSTALLED



INTRINSICALLY SAFE BEACON

There is one beacon installed within each of the packages



Figure 1 - Beacon

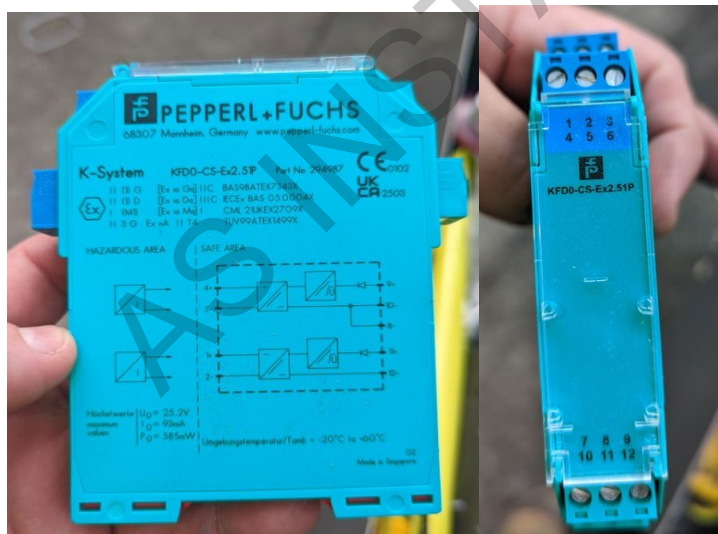


Figure 2 - Type KFD0-CS-Ex 2.51P



Hazardous Area Specialists
 PO Box 37, Kedron QLD 4031
 1300427732
 info@haspecialists.com.au

NOTES :

HOLD:

1. Check termination of where the barrier connects into the fire panel
2. Need to check the colour of the core in the cable

NO.	DATE	REVISION	BY
B	30/06/2022	Updated	KH
A	22/06/2022	Initial Issue for Review	KH

DWG TITLE
IS System Descriptive Document
Beacon

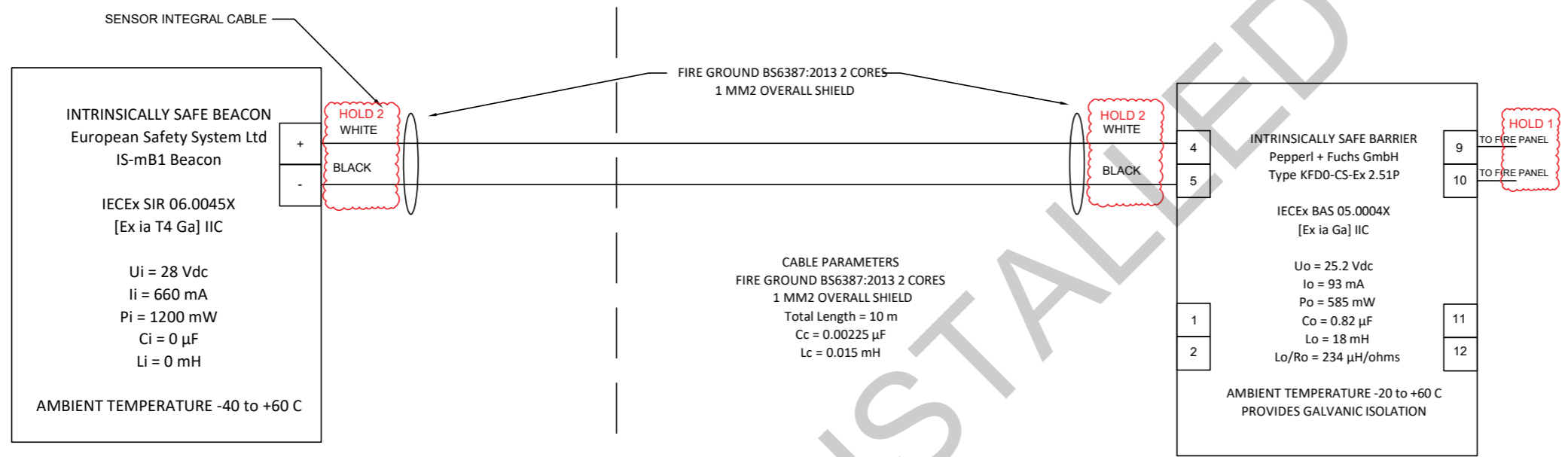
ENGINEER	KH	CHECK BY	KH
JOB NO	IS Calculations	DRAWN BY	KH
SCALE	NTS	DATE	22/6/2022

DWG NO.
DWG-22-06-01FSE

SHEET NO.	1 of 1	SHEET SIZE	A3
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HAZARDOUS AREA
 (Inside of gas generator package)

NON-HAZARDOUS AREA
 (Fire Panel)



AS INSTALLED

Customer	Fire Safety Equipment			Site	Gas Engine Generators		
Plant	Waitsia			Date	22/06/2022		
Zone Classification	Zone: 1	Group: IIB	Temp Class T3	EPL	Ga		

1. Isolator or Barrier Details:

Manufacturer:	Pepperl + Fuchs GmbH			Uo:	25.2	Volts
Model:	Type KFDO-CS-Ex 2.51P			Io:	93	mAmps
Cert. Details:	[Ex ia Ga] IIC			Po:	585	mW
Group:	IIC	Temp. Class:	N/A	Co:	0.82	uFarads
Certificate:	IECEX BAS 05.004X	T _{AMB} :	-20C to +60C	Lo:	18	mHenrys
				Lo/Ro:	243	uH/ohms

2. Device Details:

Manufacturer:	European Safety System Ltd			Ui:	28	Volts
Model:	IS-mB1 Beacon			Ii:	660	mAmps
Cert. Details:	[Ex ia Ga] IIC			Pi:	1200	mW
Group:	IIC	Temp. Class:	T4	Ci:	0	uFarads
EPL:	Ga	T _{AMB} :	-40 to +60 C	Li:	0	mHenrys
Certificate:	IECEX SIR 06.0045X			Li/Ri:	0	uH/ohms

3. Cable Parameters:

Cable A		Cable B	
From / To:	GEG FIP to Beacon	From / To:	
Type:	Fire ground 2 Core	Type:	
Length:	5 m	Length:	m
Cc:	0.15 uF/km	Cc:	uF/km
Lc:	1 mH/km	Lc:	mH/km
L/Rc:	0.0000 uH/ohm	L/Rc:	uH/ohm

Cable Calculation:		Cable Calculation:		Total Cables	
Cc per length:	0.00075 uF	Cc per length:	uF/km	= Cct:	0.0008 uF
Lc per length:	0.005 mH	Lc per length:	mH	= Lct:	0.0050 mH

4. Simple System analysis as per AS/NZS60079.25 Annex A

Step	Item	I.S. Interface	Field Device	I.S. System	Pass / Fail Criteria	Pass
A	Equipment group	IIB	IIC	IIB	lower of result	Pass
B	Level of protection	Ga	Ga	Ga	lower of result	Pass
C	Temperature classification	N/A	T4	T4	lower of result	Pass
D	Ambient temperature	60	60	60	Max Temp	Pass
E	Parameter comparison					
	Voltage (V)	Uo: 25.2	Ui: 28		Ui ≥ Uo	Pass
	Current (mA)	Io: 93	Ii: 660		Ii ≥ Io	Pass
	Power	Po: 585	Pi: 1200		Pi ≥ Po	Pass
F	Cable parameters permitted					
	If Li > 1% of Lo AND Ci > 1% of Co THEN Lo and Co are halved for the following:				Is Ci > 1 % Co	No
					Is Li > 1 % Lo	No
	Capacitance (uF)	Co: 0.82	Ci: 0.0008	Cc: 0.00075	Co > Ci + Cc	Pass
	Inductance (mH)	Lo: 18	Li: 0.0050	Lc: 0.005	Lo ≥ Li + Lc	Pass
	L / R ratio (uH /	Lo/Ro: 243		Lc/Rc: 0.00	Lc/Rc ≥ Lo/Ro	Pass
G	Insulation from Earth	isolated	isolated	isolated		

5. Assumptions
 No area classification has been done for the GEG. Within the enclosures during normal operation there are controls in place to maintain it has non-hazardous although in the event of a failure all fire and gas equipment need to continue to be energised.

6. Conclusions
 This IS circuit and equipment is suitable for use within a Zone 1 IIB T3 area.

7. Notes
 Calculation have been done to 5m to resemble the Cable Schedule document (GEG 45954-E-51010-CAB-E 0001 Cable Schedule-GEG) where the beacon is positioned with 5m of cable

Report Prepared by: Kayne Herriman Date: 30/06/2022 Rev 1



1-11-010 / Intrinsically safe signals

IS-mB1 IS-minialite



The IS-mB1 is a compact beacon with an array of six high output L.E.D's. Approvals include ATEX, IECEx and GOST-R for Zone 0 applications and FM approval for Class I Division 1 and Class I Zone 0 applications..

The IS-mB1 is suitable for all intrinsically safe signalling applications including fire, security and process control.

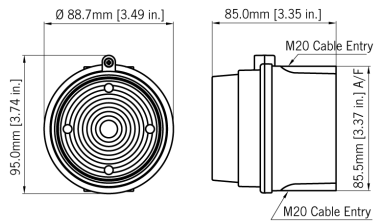
Features

- Input overload and reverse current protection
- End of line resistor certified
- Prismatic lens optimises L.E.D effectiveness

Approvals

- ATEX certificate: SIRA 05ATEX2 084X, EN 60079-0 : 2012, EN 60079-11 : 2012, IEC 60079-26 : 2014
- IECEx certificate: **IECEx SIR 06.0045X**, IEC 60079-0 : 2011, IEC 60079-11 : 2011, IEC 60079-26 : 2014
- FM approved: Class 3600 1998, Class 3610 2010, Class 3810 2005
- GOST-R certificate: POCC GB.JB05.B03365





Specification

Light source:	Array of 6 high intensity L.E.D.'s.
L.E.D. colours:	Red, Amber, Blue, Green & Clear
Flash modes:	Double flash at 2Hz and 1Hz
Effective intensity cd:	23cd* - measured ref. to I.E.S.
Voltage:	16-28vdc via Zener barrier or galvanic isolator
Current:	25mA typical when powered from 24v supply via 28v 300 Ohm Zener barrier
Ingress protection:	IP65
Rating:	Continuous
Housing material:	UL94V0 & 5VA FR ABS & PC
Housing colour:	RAL3000 Red
Fixings:	Stainless Steel
Cable entries:	2 x M20 clearance gland knockouts. Custom configurations also available.
Terminals:	0.5 to 2.5mm ²
Operating temp:	-40° to +60°C [-40 to +140°F]
Storage temp:	-40° to +70°C [-40 to +158°F]
Relative humidity:	90% at 20°C [68°F]

Part Codes

IS-mB1-R/[x]		
ATEX / IECEx / FM		
II 1G Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +60°C)		
IS Class I, Zone 0, AEx ia IIC T4		
IS Class I, Division 1, Groups A, B, C, D		
GOST-R		
0ExiaIICT4 IP65 -40° to +60°C		
[x]: Lens colour:	A: Amber R: Red B: Blue G: Green C: Clear (white LED)	
May be powered from any certified Zener barrier or galvanic isolator whose output parameters do not exceed:		
Uo : 28VDC	Io : 660mA	Po : 1.2W



INSTRUCTION MANUAL

IS-mB1 *Minialite*

Intrinsically Safe Round LED Beacon



The IS-mB1 beacon is CE marked for compliance with the European Explosive 2014/34/EU and the European EMC Directive 2014/30/EU

1. INTRODUCTION

The IS-mB1 is an ATEX and IECEx certified intrinsically safe beacon which will produce a visual warning in a hazardous area. Red, Amber, Green and Blue output models are available.

2. DESCRIPTION

The device will start to flash when power is applied to terminals + and -. The beacon has two flash rates one double flash per second and two double flashes per second. The flash rate is selected by setting an internal pin header. The unit is factory set to produce two double flashes per second.

3. SUPPLY VOLTAGE


The IS-mB1 beacon has been designed to operate in a hazardous area via 28V 300 ohm ATEX and IECEx certified Zener Barriers or Galvanic Isolators. The beacon may be tested or used in safe areas without a Zener Barrier or Galvanic Isolator, but at supply voltages above 16V the internal current limit will function and the brightness may be reduced. The beacon should not be continuously operated without a barrier or isolator with a supply voltage greater than 16V.

4. INTRINSIC SAFETY CERTIFICATION

4.1 ATEX certificate

The IS-mB1 beacon complies with the following standards:-

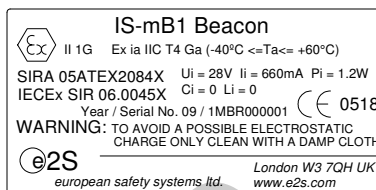
EN60079-0:2012
EN60079-11:2012
IEC60079-26:2014

 II 1G Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +60°C)

The EC-Type Examination Certificate SIRA 04ATEX2084X has been issued by the Notified Body Sira. This confirms compliance with the European ATEX Directive 94/9/EC for Group II, Category 1G equipment. The beacon carries the Community Mark and subject to local codes of practice, may be installed in any of the EEA member countries.

This instruction sheet describes installations which conform to EN60079:Part14:2008 Electrical Installation in Hazardous Areas. When designing systems for installation outside the UK, the local Code of Practice should be consulted.

1) The certification marking is as follows:



- 2) The equipment may be used in zones 0, 1 and 2 with flammable gases and vapours with apparatus groups IIA, IIB & IIC and with temperature classes T1, T2, T3 and T4.
- 3) The equipment is only certified for use in ambient temperatures in the range -40°C to +60°C and should not be used outside this range.
- 4) The certificate number has an 'X' suffix, which indicates that the certificate contains one of more special conditions for safe use. Those installing or inspecting the equipment should refer to this section of the certificate.
- 5) The equipment has not been assessed as a safety-related device (as referred to by Directive 94/9/EC Annex II, clause 1.5).
- 6) Installation of this equipment shall be carried out by suitably-trained personnel in accordance with the applicable code of practice.
- 7) Repair of this equipment shall only be carried out by the manufacturer or in accordance with the applicable code of practice.
- 8) The certification of this equipment relies on the following materials used in its construction:

Enclosure: ABS Plastic
Lens: Polycarbonate

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised.

"Aggressive substances" - e.g. acidic liquids or gases that may attack metals, or solvents that may affect polymeric materials.

"Suitable precautions" - e.g. regular checks as part of routine inspections or establishing from the material's data sheet that it is resistant to specific chemicals.



SPECIAL CONDITIONS FOR SAFE USE (as stated in the EC Type Examination Certificate SIRA 05ATEX2084X)

Conditions for IS-mBI Beacon

The equipment has an ingress protection rating of IP65. However, if it has been supplied without cable entry devices, then the user shall ensure that the devices that are fitted will provide an ingress protection that is appropriate to the environment in which it is installed i.e. IP20 or better. If only one of the two cable entries are used, then the unused entry 'knockout' shall be left intact or fitted with a blanking device that ensures ingress protection appropriate to the environment in which it is installed i.e. IP20 or better.

The enclosure is non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.

4.2 Zones, Gas Groups and T Rating

The IS-mB1 LED beacon has been certified Ex ia IIC T4 Ga. When connected to an approved system it may be installed in:

Zone 0	explosive gas air mixture continuously present.
Zone 1	explosive gas air mixture likely to occur in normal operation.
Zone 2	explosive gas air mixture not likely to occur, and if it does, it will only exist for a short time.

Be used with gases in groups:

Group	A	propane
Group	B	ethylene
Group	C	hydrogen

Having a temperature classification of:

T1	450°C
T2	300°C
T3	200°C
T4	135°C

4.3 Terminals + and - power supply

Power is supplied to the beacon via terminals + and - which have maximum input safety parameters of:

U _i	=	28V
I _i	=	660mA
P _i	=	1.2W

C_i = 0 L_i = 0

IS-mB1 beacons may be powered from ATEX certified Zener barriers or galvanic isolators certified by an EC Approved Body which have output parameters equal to or less than 28V, 660mA and 1.2W

Up to three IS-mB1 beacons can be connected in parallel and be powered from a common barrier or isolator. Parallel

connection of beacons will significantly reduce the brightness of each device.

The maximum permitted cable parameters defined by the barrier or isolator certificate must not be exceeded.

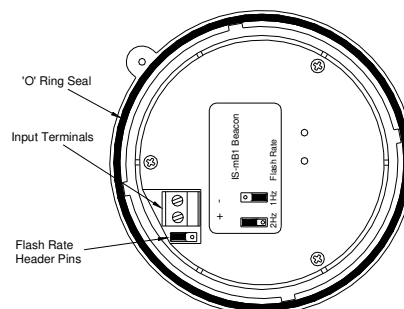


Fig 1 Location of field terminals and controls.

5. INSTALLATION

In addition to the certification requirements shown in section 4.2, the environmental conditions must be within the limits shown on the product specification. The beacon enclosure provides IP65 protection and is suitable for installation in an exterior location if an appropriate sealed cable entry is used. IS-mB1 beacons should only be installed by trained competent personnel.

5.1 Mounting

The IS-mB1 minialite beacon may be secured to any flat surface by inserting two mounting screws through the back of the round base (see figure 2). The enclosure provides IP65 protection and is suitable for installation in exterior locations provided that the area around the two mounting screws through the back of the base moulding has been sealed and that suitable cable glands with the required IP rating have been used. The lens should be aimed towards the area where maximum visibility is required.

5.2 Installation procedure

- Unscrew the beacon unit security screw and remove the beacon section from the base by turning it anti-clockwise. Ensure that the 'O' ring seal remains in place.
- Remove the required 20mm knockout section(s) depending on system wiring and mount the base to a flat surface by inserting two screws through the back of the base.
- Fit the required number of 20mm cable glands or conduit entries into the base and connect the field wiring to the appropriate beacon terminals as shown in section 6 and Fig 1 of this manual.
- Check that the 'O' ring seal is correctly located on the beacon section (see Fig. 1) and insert the beacon section into the base. Push it fully home and turn it clockwise to align the mouldings before tightening the security screw.

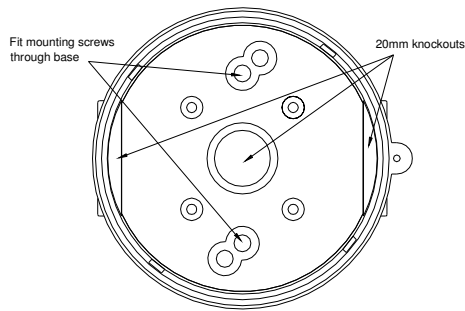


Fig 2 Mounting Beacon Base.

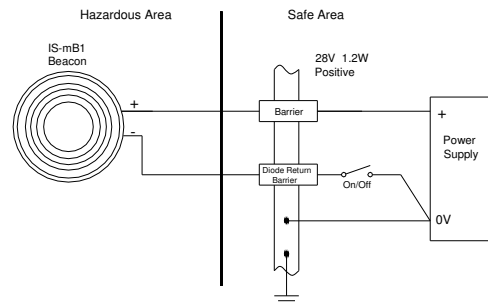


Fig 4 Single stage alarm using two channel barrier.

6. ELECTRICAL SYSTEM DESIGN FOR INSTALLATION IN HAZARDOUS AREAS USING ZENER BARRIERS

If the beacon is controlled by a switch in the positive supply, or the power supply is being turned on and off, only a single channel Zener barrier is required as shown in Fig 3. This circuit may also be used if the beacon is being controlled by a mechanically activated switch on the hazardous area side of the barrier. The power supply voltage should be between 20V and the maximum working voltage of the barrier. The circuit will continue to work at lower voltages, but the beacon light output level will be reduced.

If the beacon is being operated from a lower voltage power supply of say 12V or less, then a 15V 100 ohm barrier can be used which will improve the beacon light output levels at lower voltages.

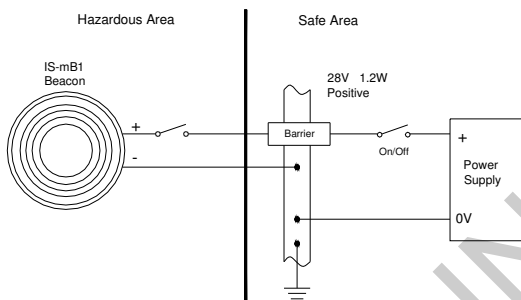


Fig 3 Using a single channel barrier.

If the beacon control switch is in the negative wire and the power supply 0V is earthed, the circuit shown in Fig 4 may be used. For simplicity the two barriers may be combined into one package. The power supply voltage should be between 21V and the maximum working voltage of the 28V barrier. The circuit will continue to work at lower voltages, but the beacon brilliance will be reduced.

7. ELECTRICAL SYSTEM DESIGN FOR INSTALLATION IN HAZARDOUS AREAS USING GALVANIC ISOLATORS.

Galvanic isolators do not require a high integrity earth connection. For small systems where a high integrity earth is not already available, the use of galvanic isolators often reduces the overall installation cost and simplifies design.

The IS-mB1 minialight beacon may be powered by any galvanic isolator having output parameters within the limits specified in section 4.3, which has been certified Ex ia by an EC Notified Body. The beacon may be controlled by turning the galvanic isolator on and off, or by a mechanically activated switch on the hazardous area side of the isolator.

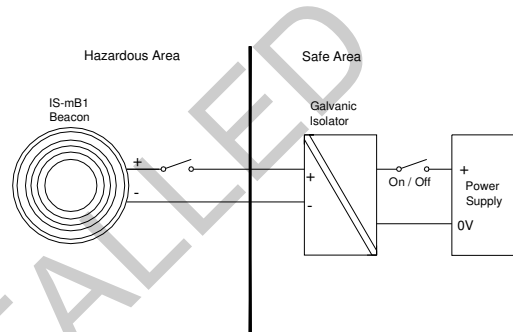


Fig 5 Basic circuit for use with a galvanic isolator.

The control arrangement will vary depending upon the isolator chosen. The galvanic isolator must be able to supply an output of 30mA at about 16V.

10. CABLE PARAMETERS

The maximum permitted cable parameters are as specified on the certificate of the Zener barrier or galvanic isolator that has been selected for the installation. Normally the limits are not restrictive, but care should be taken not to exceed a capacitive limit of 83nF for IIC installations when very long cables are used.

11. BEACON FLASH RATE

The IS-mB1 can be set to two flash rates 1 double flash per second 1Hz (slow rate) or two double flashes per second 2Hz (fast rate).

The flash rate is selected by the position of the pin header next to the input terminal block (see fig 1).

12. MAINTENANCE

The beacon should be regularly inspected to ensure that it has not been damaged. Frequency of inspection depends upon environmental conditions, but initially we recommend that this should be done annually.



No attempt should be made to repair a faulty IS-mB1 beacon. Suspect beacons must be returned to European Safety Systems Ltd. or to your local agent for repair.

13. GUARANTEE

Beacons which fail within the guarantee period should be returned to European Safety Systems Ltd. or our local agent. It is helpful if a brief description of the fault symptoms is provided.

14. CUSTOMER COMMENTS

European Safety Systems Ltd. are always pleased to receive comments from customers about our products and services. All communications are acknowledged and whenever possible, suggestions are implemented.

IECEX Approval

The IS-mB1 Beacon has also been approved to the IECEX scheme.

The installation requirements for IS-mB1 beacons approved to the IECEX scheme are the same as the installation requirements for IS-mB1 beacons approved to the ATEX directive.

Certificate No. **IECEX SIR 06.0045X**

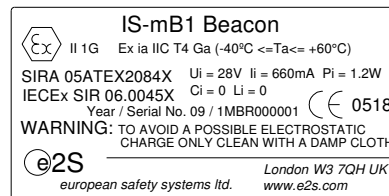
Marking: **Ex ia IIC T4 Ga (Ta = -40°C to +60°C)**

Standards: IEC 60079-0:2011
IEC 60079-11:2011
IEC 60079-26:2014-10

CONDITIONS OF CERTIFICATION (as stated on the IECEX Certificate of Conformity IECEX SIR 06.0045X)

- The equipment has an ingress protection rating of IP65. However, if it has been supplied without a cable entry device, then the user shall ensure that the devices that are fitted will provide an ingress protection that is appropriate to the environment in which it is installed i.e. IP20 or better. If only one of the two cable entries are used, then the unused entry 'knockout' shall be left intact or fitted with a blanking device that ensures ingress protection appropriate to the environment in which it is installed i.e. IP20 or better.
- The enclosure is non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces, additionally, cleaning of the equipment should be done only with a damp cloth.

The IS-mB1 beacons are marked with the certification requirements for the ATEX and IECEX and approvals.



FM Approval

The IS-mB1 Beacon has also been FM Listed.

Marking: IS Class I, Zone 0, AEx ia IIC T4

IS Class I, Division 1, Groups A, B, C, D

See the Control Drawings D 5036 Sheets 1 and 2 for installation details and entity parameters.





Manufacturer: European Safety Systems Ltd.
Impress House, Mansell Road, Acton
London, W3 7QH, United Kingdom

Equipment Type: IS-mA1, IS-mA2, IS-mA3,
IS-mB1,
IS-mC1,
IS-mA1M

Directive 2014/34/EU: Equipment and Protective Systems for use in Potentially Explosive Atmospheres (ATEX)

Notified Body for EU type Examination (Module B):	Sira Certification Service Notified Body No.: 0518 Rake Lane, Eccleston, Chester CH4 9JN, UK
EU-type Examination Certificate (Module B):	SIRA 05ATEX2084X
Notified Body for Quality Assurance Notification / Conformity to EU-type based on quality assurance of the production process (Module D):	Sira Certification Service Notified Body No.: 0518 Rake Lane, Eccleston, Chester CH4 9JN, UK
Quality Assurance Notification (Module D):	SIRA 05 ATEX M342
Provisions fulfilled by the equipment:	II 1 G Ex ia IIC T4 Ga (-40 °C ≤ Ta ≤ +60 °C) or I M1 Ex ia I Ma (-40 °C ≤ Ta ≤ +60 °C)
Standards applied:	EN 60079-0:2012 EN 60079-11:2012 IEC 60079-26:2014

Regulation EU No. 305/2011: Construction Products Regulation (CPR) – IS-mA1 (tones 2, 3, 9, 15, 16, 17) only

Notified Product Certification Body for Certificate of Constancy of Performance or EC Type Examination Certificate and continuous surveillance, assessment and evaluation of factory production control:	VdS Schadensverhütung GmbH Notified Body No.: 0786 Amsterdamer Str 172-174, 50735 Köln, Germany
Certificate of Constancy of Performance or EC Type Examination Certificate:	0786-CPD-20338
Standards applied:	EN 54-3:2001 + A1:2002 + A2:2006

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

Standards applied:	EN 61000-6-1:2007 EN 61000-6-2:2005 EN 61000-6-3:2007 / A1:2011 / AC: 2012 EN 61000-6-4:2007 / A1: 2011
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Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment.

Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.

Other Standards and Regulations

EN 60529:1992+A2:2013 - Degrees of protection provided by enclosures (IP code) – **enclosure rated IP65**

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX SIR 06.0045X** Page 1 of 3 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: 2006-11-08
Applicant: **European Safety Systems Ltd**
Impress House
Mansell Road
Acton
London
W3 7QH
United Kingdom
Equipment: **IS-mA1 Sounder, IS-mA2 Sounder, IS-mA3 Sounder, IS-mB1 Beacon & IS-mC1 Combined Sounder/Beacon**
Optional accessory:
Type of Protection: **Intrinsically Safe**
Marking: **Ex ia IIC T4 (-40 °C ≤ Ta ≤ 60 °C)**

Approved for issue on behalf of the IECEx
Certification Body:

C Ellaby

Position:

Certification Officer

Signature:
(for printed version)

Date:
(for printed version)

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 www.iecex.com or use of this QR Code.



Certificate issued by:

SIRA Certification Service
Rake Lane
Ecclestone
Chester
CH4 9JN
United Kingdom

sira
CERTIFICATION



IECEX Certificate of Conformity

Certificate No.: **IECEX SIR 06.0045X**

Page 2 of 3

Date of issue: 2006-11-08

Issue No: 0

Manufacturer: **European Safety Systems Ltd**
Impress House
Mansell Road
Acton
London
W3 7QH
United Kingdom

Manufacturing
locations:

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 equipment 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 60079-0:2000](#) Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition:3.1

[IEC 60079-11:1999](#) Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 'i'
Edition:4

This Certificate **does not** indicate compliance with 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:

[GB/SIR/ExTR06.0103/00](#)

Quality Assessment Report:

[GB/SIR/QAR06.0020/00](#)

AS INSTALLED



IECEX Certificate of Conformity

Certificate No.: **IECEX SIR 06.0045X**

Page 3 of 3

Date of issue: 2006-11-08

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The **IS-mA1 Sounder** is designed to provide an audible warning when activated.

The **IS-mA2 Sounder** is similar to the IS-mA1 Sounder, the differences being a different printed circuit board layout and a 'low profile' enclosure base.

The **IS-mA3 Sounder** is similar to the IS-mA1 Sounder, the differences being the addition of several components to the circuit, a different connection arrangement, a different printed circuit board layout and a 'low profile' enclosure base.

The **IS-mB1 Beacon** is designed to provide a flashing warning when activated.

The **IS-mC1 Combined Sounder/Beacon** is designed to provide an audible and a flashing warning when activated.

For a fuller description and associated safety parameters, see the Annexe of this certificate.

SPECIFIC CONDITIONS OF USE: YES as shown below:

For Conditions of Certification, see the Annexe of this certificate.

Annex:

[06_0045X_Issue0_Annexe.pdf](#)

AS INSTALLED



Annexe to: IECEx SIR 06.0045X Issue 0
Applicant: European Safety Systems Limited
Apparatus: IS-mA1 Sounder, IS-mA2 Sounder, IS-mA3 Sounder, IS-mB1 Beacon & IS-mC1 Combined Sounder/Beacon



DESCRIPTION OF APPARATUS

The **IS-mA1 Sounder** is designed to provide an audible warning when activated. It consists of the following mounted in an IP 65, flame retardant, ABS enclosure:

- Sounder printed circuit board assembly
- Inductive sounder transducer

External connections are made to terminals mounted on the sounder printed circuit board via cable entry devices mounted in the wall of the enclosure.

The parameters for the **IS-mA1 Sounder** are as follows:

Terminals	Parameters				
	U _i	I _i	P _i	C _i	L _i
Terminal + w.r.t. Terminal -	28 V	93mA	660mW	0	0
Terminals S2 and S3 w.r.t. Terminal -	28 V	0	-	-	-

The **IS-mA2 Sounder** is similar to the IS-mA1 Sounder, the differences being a different printed circuit board layout and a 'low profile' enclosure base. Cable entry is via a 'knockout' in the bottom of the enclosure base, this enclosure base, and thus the sounder, being designed for attachment to other equipment.

The parameters for the **IS-mA2 Sounder** are as follows:

Terminals	Parameters				
	U _i	I _i	P _i	C _i	L _i
Terminal + w.r.t. Terminal -	28V	93mA	660mW	0	0
Terminals S2 and S3 w.r.t. Terminal -	28V	0	-	-	-

The **IS-mA3 Sounder** is similar to the IS-mA1 Sounder, the differences being the addition of several components to the circuit, a different connection arrangement, a different printed circuit board layout and a 'low profile' enclosure base. Cable entry is via a 'knockout' in the bottom of the enclosure base, this enclosure base, and thus the sounder, being designed for attachment to other equipment.

The parameters for the **IS-mA3 Sounder** are as follows:

Terminals	Parameters				
	U _i	I _i	P _i	C _i	L _i
Terminal + w.r.t. Terminals S2 and S3	28V	93mA	660mW	0	0

The **IS-mB1 Beacon** is designed to provide a flashing warning when activated. It consists the following mounted inside an IP 65, flame retardant, ABS enclosure that is fitted with a transparent polycarbonate 'lens':

- Beacon main printed circuit board assembly
- Beacon LED printed circuit board assembly

External connections are made to terminals mounted on the beacon main printed circuit board via cable entry devices mounted in the walls of the enclosure.

The parameters for the **IS-mB1 Beacon** are as follows:

Terminals	Parameters				
	U _i	I _i	P _i	C _i	L _i
Terminal + w.r.t. Terminal -	28 V	660mA	1.2 W	0	0

The **IS-mC1 Combined Sounder/Beacon** is designed to provide an audible and a flashing warning when activated. It consists of the following mounted inside an IP 65, flame retardant, ABS enclosure that is fitted with a transparent polycarbonate 'lens':

- Sounder printed circuit board assembly
- Beacon main printed circuit board assembly
- Inductive sounder transducer
- Beacon LED printed circuit board assembly

Date: 7 November 2006

Page 1 of 3

Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England

Tel: +44 (0) 1244 670900
 Fax: +44 (0) 1244 681330
 Email: info@siracertification.com
 Web: www.siracertification.com

Form XXXX Issue 1



Annexe to: IECEx SIR 06.0045X Issue 0
Applicant: European Safety Systems Limited
Apparatus: IS-mA1 Sounder, IS-mA2 Sounder, IS-mA3 Sounder,
 IS-mB1 Beacon & IS-mC1 Combined Sounder/Beacon



External connections are made to terminals mounted on the sounder printed circuit board assembly and the beacon main printed circuit board assembly via cable entry devices mounted in the walls of the enclosure. The IS-mC1 Combined Sounder/Beacon may be supplied with internal wiring connections between Sounder Terminals + / - and Beacon Terminals + / -, alternatively these connections may be fitted by the user/installer.

The parameters for the **IS-mC1 Combined Sounder/Beacon** are as follows:

	Terminals	Parameters				
		U _i	I _i	P _i	C _i	L _i
Without internal connections:	Sounder Terminal + w.r.t. Sounder Terminal -	28 V	93 mA	660 mW	0	0
	Sounder Terminals S2 & S3 w.r.t. Sounder Terminal -	28 V	0	-	-	-
	Beacon Terminal + w.r.t. Beacon Terminal -	28V	660 mA	1.2 W	0	0
With internal connections	Sounder Terminal + w.r.t. Sounder Terminal -	28 V	93 mA	660 mW	0	0
	Sounder Terminals S2 & S3 w.r.t. Sounder Terminal -	28 V	0	-	-	-

CONDITIONS OF CERTIFICATION

IS-mA1 Sounder

- The equipment has an ingress protection rating of IP65. However, if it has been supplied without cable entry devices, then the user shall ensure that the devices that are fitted will provide an ingress protection that is appropriate to the environment in which it is installed i.e. IP20 or better. If only one of the two cable entries are used, then the unused entry 'knockout' shall be left intact or fitted with a blanking device that ensures ingress protection appropriate to the environment in which it is installed i.e. IP20 or better.
- The total capacitance connected to Terminal + w.r.t. Terminal - (i.e. the capacitance of the cable plus any other capacitance) shall not exceed 83nF.
- The equipment shall not be directly installed in any process where its enclosure might be electro-statically charged by the rapid flow of a non-conductive media.
- The equipment shall only be supplied via Terminal + w.r.t. Terminal - from a barrier having a maximum open circuit voltage U_o that is ≤ 28V and a maximum short-circuit current I_o that is ≤ 93mA, where I_o is resistively limited.

IS-mA2 Sounder

- The equipment has an ingress protection rating of IP65. However, as cable entry is via a 'knockout' in the bottom of the enclosure base, the user shall ensure that this enclosure base is sealed to whatever it is attached by a method that provides ingress protection appropriate to the environment in which it is installed i.e. IP20 or better. An 'O' ring fitted within the outer rim of the bottom of the enclosure base may be used for this purpose.
- The total capacitance connected to Terminal + w.r.t. Terminal - (i.e. the capacitance of the cable plus any other capacitance) shall not exceed 83nF.
- The equipment shall not be directly installed in any process where its enclosure might be electro-statically charged by the rapid flow of a non-conductive media.
- The equipment shall only be supplied via Terminal + w.r.t. Terminal - from a barrier having a maximum open circuit voltage U_o that is ≤ 28V and a maximum short-circuit current I_o that is ≤ 93mA, where I_o is resistively limited.

Date: 7 November 2006

Page 2 of 3

Sira Certification Service

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 Email: info@siracertification.com
 Web: www.siracertification.com

Form XXXX Issue 1



Annexe to: IECEx SIR 06.0045X Issue 0
Applicant: European Safety Systems Limited
Apparatus: IS-mA1 Sounder, IS-mA2 Sounder, IS-mA3 Sounder,
IS-mB1 Beacon & IS-mC1 Combined Sounder/Beacon

sira
CERTIFICATION

IS-mA3 Sounder

- The equipment has an ingress protection rating of IP65. However, as cable entry is via a 'knockout' in the bottom of the enclosure base, the user shall ensure that this enclosure base is sealed to whatever it is attached by a method that provides ingress protection appropriate to the environment in which it is installed i.e. IP20 or better. An 'O' ring fitted within the outer rim of the bottom of the enclosure base may be used for this purpose.
- The total capacitance connected to Terminal + w.r.t. Terminal S2 and S3 (i.e. the capacitance of the cable plus any other capacitance) shall not exceed 83nF.
- The equipment shall not be directly installed in any process where its enclosure might be electro-statically charged by the rapid flow of a non-conductive media.
- The equipment shall only be supplied via Terminal + w.r.t. Terminals S2 and S3 from a barrier having a maximum open circuit voltage U_o that is $\leq 28V$ and a maximum short-circuit current I_o that is $\leq 93mA$, where I_o is resistively limited.

IS-mB1 Beacon

- The equipment has an ingress protection rating of IP65. However, if it has been supplied without cable entry devices, then the user shall ensure that the devices that are fitted will provide an ingress protection that is appropriate to the environment in which it is installed i.e. IP20 or better. If only one of the two cable entries are used, then the unused entry 'knockout' shall be left intact or fitted with a blanking device that ensures ingress protection appropriate to the environment in which it is installed i.e. IP20 or better.
- The equipment shall not be directly installed in any process where its enclosure might be electro-statically charged by the rapid flow of a non-conductive media.

IS-mC1 Combined Sounder/Beacon

- The equipment has an ingress protection rating of IP65. However, if it has been supplied without cable entry devices, then the user shall ensure that the devices that are fitted will provide an ingress protection that is appropriate to the environment in which it is installed i.e. IP20 or better. If only one of the two cable entries are used, then the unused entry 'knockout' shall be left intact or fitted with a blanking device that ensures ingress protection appropriate to the environment in which it is installed i.e. IP20 or better.
- The total capacitance connected to Sounder Terminal + w.r.t. Terminal - (i.e. the capacitance of the cable plus any other capacitance) shall not exceed 83nF.
- The equipment shall not be directly installed in any process where its enclosure might be electro-statically charged by the rapid flow of a non-conductive media.
- The equipment shall only be supplied via Sounder Terminal + w.r.t. Sounder Terminal - from a barrier having a maximum open circuit voltage U_o that is $\leq 28V$ and a maximum short-circuit current I_o that is $\leq 93mA$, where I_o is resistively limited.
- If not already fitted, optional internal wiring connections between Sounder Terminals + / - and Beacon Terminals + / - may be fitted by the user. The wiring used for such connections shall have a minimum radial thickness of insulation of 0.5mm.

Date: 7 November 2006

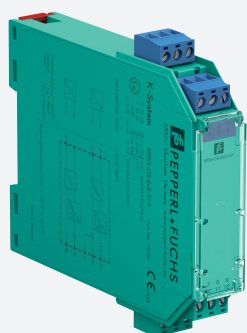
Page 3 of 3

Form XXXX Issue 1

Sira Certification Service

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Current Driver/Repeater KFD0-CS-Ex2.51P

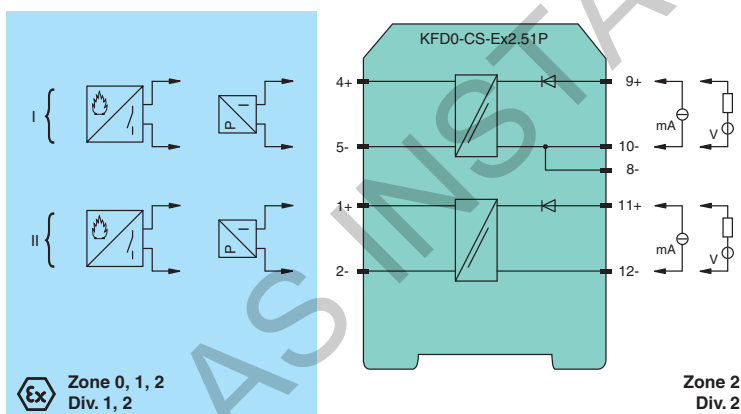
- 2-channel isolated barrier
- 24 V DC supply (loop powered)
- Current input/output 0 mA ... 40 mA
- I/P or transmitter power supply
- Accuracy 1 %
- Reverse polarity protection
- SIL 2 (SC 3) acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. The device transfers DC signals of fire alarms and smoke alarms from the hazardous area to the non-hazardous area. The device can also be used to control I/P converters, valves, indicators, and audible alarms. A reverse polarity protection prevents damage to the device caused by faulty wiring. The device is loop powered. From the control side no additional power supply has to be connected. Use the technical data to verify that proper voltage is available to the field devices.

Connection



Technical Data

General specifications

Signal type Analog input/analog output

Functional safety related parameters

Safety Integrity Level (SIL) SIL 2
Systematic capability (SC) SC 3

Supply

Rated voltage U_r loop powered

Control circuit

Connection terminals 12-, 11+; 8-, 10-, 9+
Voltage 4 ... 35 V DC

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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PF PEPPERL+FUCHS

**Technical Data**

Current	0 ... 40 mA	
Power dissipation	at 40 mA and $U_{in} < 22 V$: 700 mW per channel at 40 mA and $U_{in} > 22 V$: 1.2 W per channel	
Field circuit		
Connection	terminals 1+, 2-; 4+, 5-	
Voltage	for $4 V < U_{in} < 24 V$: $\geq U_{in} - (0.37 \times \text{current in mA}) - 1.0$ for $U_{in} > 24 V$: $\geq 21 V - (0.36 \times \text{current in mA})$	
Short-circuit current	at $U_{in} > 24 V$: $\leq 65 mA$	
Transfer current	$\leq 40 mA$	
Transfer characteristics		
Accuracy	1 %	
Deviation		
After calibration	$\leq \pm 200 \mu A$; incl. calibration, linearity, hysteresis and load fluctuations at the field side up to a load of $1 k\Omega$ and current $\leq 20 mA$ at $20^\circ C$ ($68^\circ F$)	
Influence of ambient temperature	$\leq \pm 2 \mu A/K$ at $U_{in} \leq 20 V$; $\leq \pm 5 \mu A/K$ at $U_{in} > 20 V$	
Rise time	$\leq 5 ms$ at bounce from 4 ... 20 mA and $U_{in} < 24 V$	
Galvanic isolation		
Field circuit/control circuit	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Indicators/settings		
Labeling	space for labeling at the front	
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)	
Conformity		
Electromagnetic compatibility	NE 21:2012 EN 61326-3-2:2008	
Degree of protection	IEC 60529:2001	
Protection against electrical shock	UL 61010-1:2012	
Ambient conditions		
Ambient temperature	$-20 \dots 70^\circ C$ ($-4 \dots 158^\circ F$)	
Mechanical specifications		
Degree of protection	IP20	
Connection	screw terminals	
Mass	approx. 100 g	
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 inch) (W x H x D) , housing type B1	
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001	
Data for application in connection with hazardous areas		
EU-type examination certificate	BAS 98 ATEX 7343 X	
Marking	Ⓔ II (1)G [Ex ia Ga] IIC, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I ($-20^\circ C \leq T_{amb} \leq 60^\circ C$)	
Voltage	U_o	25.2 V
Current	I_o	93 mA
Power	P_o	585 mW
Control circuit		
Maximum safe voltage	U_m	250 V _{eff} (Attention! The rated voltage can be lower.)
Field circuit		
Maximum safe voltage	U_m	250 V _{eff} (Attention! The rated voltage can be lower.)
Certificate		
Marking	Ⓔ II 3G Ex ec IIC T4 Gc [device in zone 2]	
Galvanic isolation		
Field circuit/control circuit	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V	
Directive conformity		
Directive 2014/34/EU	EN IEC 60079-0:2018 , EN 60079-11:2012 , EN IEC 60079-7:2015+A1:2018	
International approvals		
FM approval		

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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PEPPERL+FUCHS

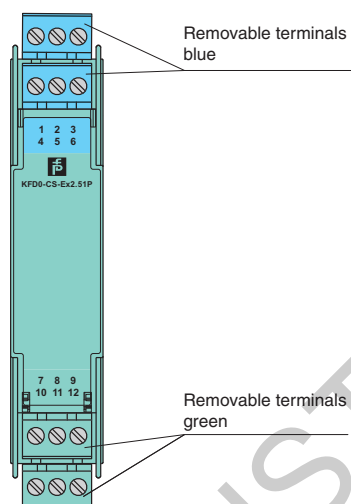


Technical Data

Control drawing	116-0437
UL approval	
Control drawing	116-0438 (cULus)
IECEX approval	
IECEX certificate	IECEX BAS 05.0004X IECEX CML 19.0040X
IECEX marking	[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly

Front view



Matching System Components

	K-DUCT-BU	Profile rail, wiring comb field side, blue
--	------------------	--

Accessories

	KF-ST-5GN	Terminal block for KF modules, 3-pin screw terminal, green
	KF-ST-5BU	Terminal block for KF modules, 3-pin screw terminal, blue
	KF-CP	Red coding pins, packaging unit: 20 x 6

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Application

The device is used for isolation of power loops for the control of positioner, I/P converters etc. A current source is connected to the safe area terminals.

The device is used for isolation of a current signal from fire detectors or similar sensors. In this case, a voltage source can be connected to the safe area terminals. A specific measurement current across a passive sensor can be measured in the safe area with a series resistor (min. 50 Ω). When a voltage supply is used, the measuring resistor can also provide current limitations.

AS INSTALLED

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 29-4987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX BAS 05.0004X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 4 Issue 3 (2016-04-19)
Date of Issue: 2017-04-24 Issue 2 (2009-03-25)
Applicant: **Pepperl + Fuchs GmbH** Issue 1 (2006-11-24)
Lilienthalstrasse 200
68307 Mannheim
Germany
Equipment: **Type KFD0-CS-Ex*.5* Transformer Isolated Loop Powered Current Separator**
Optional accessory:
Type of Protection: **Intrinsic Safety**
Marking: **[Ex ia Ga] IIC**
[Ex ia Da] IIIC
[Ex ia Ma] I
(-20°C ≤ Ta ≤ +60°C / +70°C)

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

Position:

Technical Manager

Signature:
(for printed version)

Date:
(for printed version)

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 www.iecex.com or use of this QR Code.



Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire, SK17 9RZ
United Kingdom





IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 2 of 4

Date of issue: 2017-04-24

Issue No: 4

Manufacturer: **Pepperl + Fuchs GmbH**
Lilienthalstrasse 200
68307 Mannheim
Germany

Manufacturing locations: **Pepperl + Fuchs Asia Pte. Ltd.**
18 Ayer Rajah Crescent
Singapore 139942
Singapore

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 equipment 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 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with 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:

Quality Assessment Report:

IECEX ATR:
GB/BAS/ExTR09.0057/00
GB/BAS/ExTR16.0090/00
GB/BAS/ExTR17.0061/00

File reference:
09/0252
15/0684
17/0047



IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 3 of 4

Date of issue: 2017-04-24

Issue No: 4

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Type KFD0-CS-Ex* 5* Transformer Isolated Loop Powered Current Separator is designed to provide an interface between unspecified non-hazardous area equipment and intrinsically safe circuits in the hazardous area.

The equipment comprises a maximum of 2 identical channels; each channel contains a fuse, transformer, zener diodes and other electronic components mounted on a printed circuit board and housed within a plastic enclosure fitted with colour-coded plug-in terminals for external connections.

For models covered by the certificate and their parameters, see data in the Annexe.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The safety device must be installed in a controlled environment with suitably reduced pollution.

AS INSTALLED



IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 4 of 4

Date of issue: 2017-04-24

Issue No: 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 4.1

To permit the introduction of an alternative schematic and PCB layout (with two build options, Construction 1 & Construction 2).

A specific condition of use now applies that states that the safety device must be installed in a controlled environment with suitably reduced pollution levels. Additionally, the Annex, with the electrical data, has been updated.

The upper limit on the ambient temperature range has been increased to +70°C and is stated as $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C} / +70^{\circ}\text{C}$. The equipment may be marked with any temperature range within those limits.

EXTR: **GB/BAS/ExTR17.0061/00**

File Reference: **17/0047**

Annex:

[IECEX BAS 05.0004 Annex 1.pdf](#)

AS INSTALLED



Input / Output Parameters

Terminals 8, 9, 10, 11 & 12

$$U_m = 250V \text{ dc or rms}$$

The equipment is designed to operate from a dc supply of up to 40V on terminals 9 & 10/8 and 11 & 12. The segregation of the hazardous area circuits meets the requirements for 375V_{pk}.

Terminals 1 w.r.t. 2 and 4 w.r.t. 5

$$U_o = 25.2V \quad I_o = 93mA \quad P_o = 585mW \quad C_i = 0 \quad L_i = 0$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the following values:

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	0.107	4.3		60
IIB	0.820	18		243
IIA	2.900	33		486
I	4.800	51		797

The above parameters apply when one of the two conditions below is given:

- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- the total L_i of the external circuit (excluding the cable) \geq 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) \geq 1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups I, IIA & IIB and 600nF for Group IIC.

AS INSTALLED



HEAT DETECTOR

- IS SYSTEM DRAWING
- IS CALCULATION
- BARRIER DATA SHEETS
- CERTIFICATE OF CONFORMITY

AS INSTALLED



Hazardous Area Specialists
 PO Box 37, Kedron QLD 4031
 1300427732
 info@haspecialists.com.au

NOTES :

HOLD:

1. Check termination of where the barrier connects into the fire panel
2. Need to check the colour of the core in the cable
3. Check if End of Line Resistor is installed

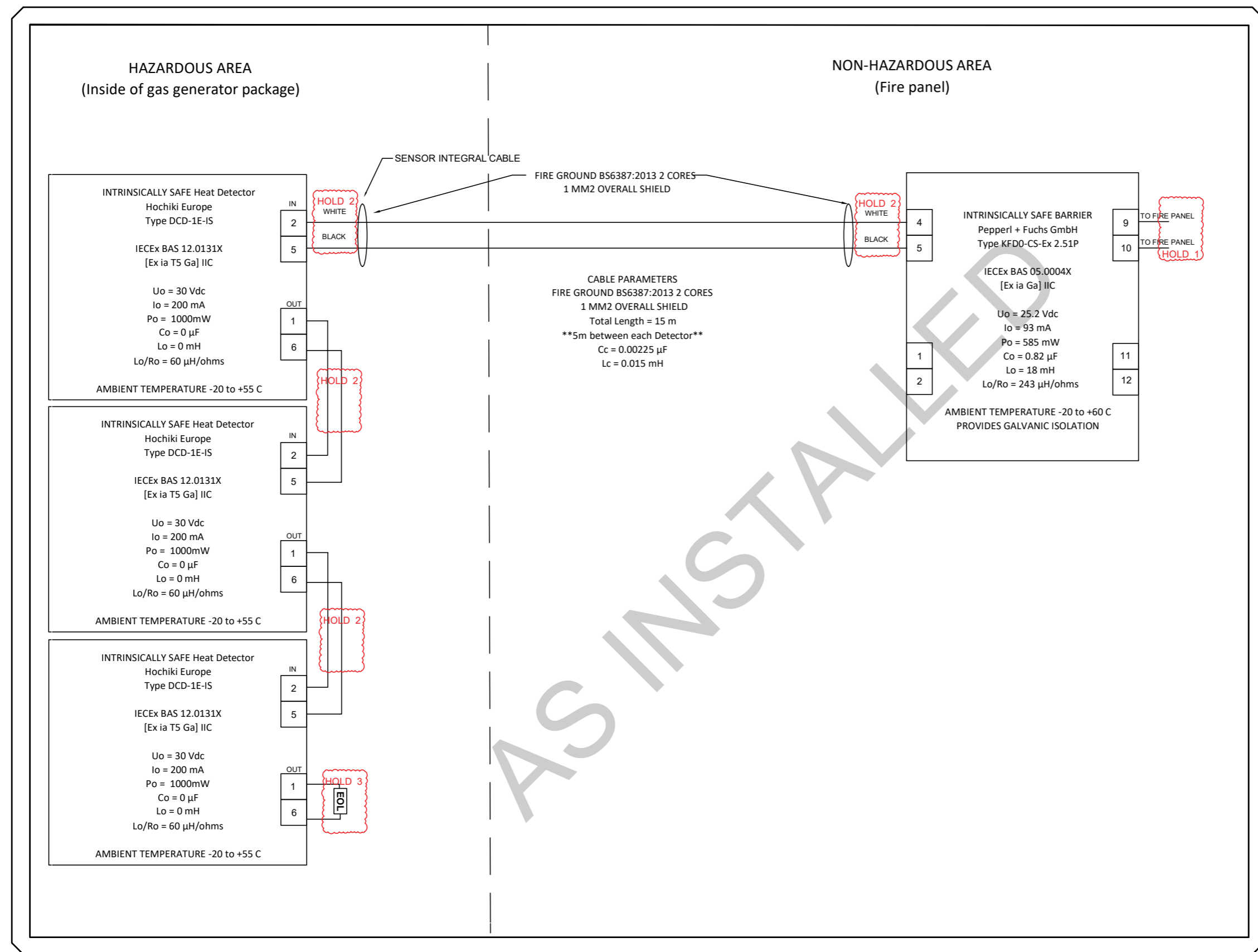
NO.	DATE	REVISION	BY
B	30/06/2022	Updated	KH
A	22/06/2022	Initial Issue for review	KH

DWG TITLE
 IS System Descriptive Document
 Temperature Sensors

ENGINEER	KH	CHECK BY	KH
JOB NO	IS Calculations	DRAWN BY	KH
SCALE	NTS	DATE	22/6/2022

DWG NO. DWG-22-06-02FSE

SHEET NO.	1 of 1	SHEET SIZE	A3
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AS INSTALLED

Customer	Fire Safety Equipment	Site	Gas Engine Generators
Plant	Waitsia	Date	22/06/2022
Zone Classification	Zone: 1	Group: IIB	Temp Class T3
		EPL	Ga

1. Isolator or Barrier Details:

Manufacturer:	Pepperl + Fuchs GmbH			Uo:	25.2	Volts
Model:	Type KFD0-CS-Ex 2.51P			Io:	93	mAmps
Cert. Details:	[Ex ia Ga] IIC			Po:	585	mW
Group:	IIC	Temp. Class:	N/A	Co:	0.82	uFarads
Certificate:	IECEX BAS 05.0004X	T _{AMB} :	-20C to +60C	Lo:	18	mHenrys
				Lo/Ro:	243	uH/ohms

2. Device Details:

Manufacturer:	Hochiki Europe			Ui:	30	Volts
Model:	Heat Detector Type DCD-1E-IS			Ii:	200	mAmps
Cert. Details:	Ex ia IIC T5 Ga			Pi:	1000	mW
Group:	IIC	Temp. Class:	T5	Ci:	0	uFarads
EPL:	Ga	T _{AMB} :	-20C to +55C	Li:	0	mHenrys
Certificate:	IECEX BAS 12.0131X			Li/Ri:	0	uH/ohms

3. Cable Parameters:

Cable A		Cable B	
From / To:	GEG FIP to Heat Detector	From / To:	
Type:	Fire ground 2 Core	Type:	
Length:	15 m	Length:	m
Cc:	0.15 uF/km	Cc:	uF/km
Lc:	1 mH/km	Lc:	mH/km
L/Rc:	0.0000 uH/ohm	L/Rc:	uH/ohm

Cable Calculation:		Cable Calculation:		Total Cables	
Cc per length:	0.00225 uF	Cc per length:	uF/km	= Cct:	0.0023 uF
Lc per length:	0.015 mH	Lc per length:	mH	= Lct:	0.0150 mH

4. Simple System analysis as per AS/NZS60079.25 Annex A

Step	Item	I.S. Interface	Field Device	I.S. System	Pass / Fail Criteria	Pass
A	Equipment group	IIB	IIC	IIB	lower of result	Pass
B	Level of protection	Ga	Ga	Ga	lower of result	Pass
C	Temperature classification	N/A	T5	T5	lower of result	Pass
D	Ambient temperature	60	55	55	Max Temp	Pass
E	Parameter comparison					
	Voltage (V)	Uo: 25.2	Ui: 30		Ui ≥ Uo	Pass
	Current (mA)	Io: 93	Ii: 200		Ii ≥ Io	Pass
	Power	Po: 585	Pi: 1000		Pi ≥ Po	Pass
F	Cable parameters permitted					
	If Li > 1% of Lo AND Ci > 1% of Co THEN Lo and Co are halved for the following:				Is Ci > 1 % Co	No
	Capacitance (uF)	Co: 0.82	Ci: 0.0023	Cc: 0.00225	Is Li > 1 % Lo	No
	Inductance (mH)	Lo: 18	Li: 0.0150	Lc: 0.015	Co>Ci+Cc	Pass
	L / R ratio (uH /	Lo/Ro: 243		Lc/Rc: 0.00	Lo ≥ Li+Lc	Pass
					Lc/Rc ≥ Lo/Ro	Pass
G	Insulation from Earth	isolated	isolated	isolated		

5. Assumptions

No area classification has been done for the GEG. Within the enclosures during normal operation there are controls in place to maintain it has non-hazardous although in the event of a failure all fire and gas equipment need to continue to be energised.

6. Conclusions

This IS circuit and equipment is suitable for use within a Zone 1 IIB T3 area.

7. Notes

Calculation have been done to 5m to resemble the Cable Schedule document (GEG 45954-E-51010-CAB-E 0001 Cable Schedule-GEG) where the beacon is positioned with 5m of cable

Report Prepared by: Kayne Herriman

Date: 30/06/2022

Rev 1



Intrinsically Safe

DCD-1E-IS

Intrinsically Safe Conventional Rate of Rise Heat Detector

Features

- ▶ Twin fire LEDs allow 360° viewing
- ▶ Electronics free mounting base
- ▶ Remote indicator output
- ▶ ATEX Classification to II 1G EEx ia IIC T5 Tamb=55 °C
- ▶ Suitable for installation in areas at Category 1 (inc all lower categories)
- ▶ Approved by LPCB and GL



Description

The DCD-1E-IS is an Intrinsically Safe Conventional Rate of Rise Heat Detector with a 60° fixed temperature element designed for use in hazardous areas. The unit also features a remote indicator output. The DCD-1E-IS is an Intrinsically Safe Conventional Rate of Rise Heat Detector with a 60° fixed temperature element designed for use in hazardous areas. The unit also features a remote indicator output.

Specification

Operating Voltage	15 – 30 V dc
Quiescent Current (typ)	50 µA
Maximum Current in Alarm	50 mA
Operating Temperature Range	-10 °C to + 55 °C
Storage Temperature Range	-30 °C to + 70 °C
Maximum Humidity	95% RH - Non Condensing (at 40 °C)
Ingress Protection Rating	IP63
Colour / Case Material	Ivory or White / ABS
Weight (g) / Diameter (mm) / Height (mm)	97 / 100 / 40
Compatible Base / Height (mm)	YBN-R/4(IS) / 8
Fixing Centres (mm)	48 ~ 74

Ordering Codes

Product

- Intrinsically Safe Conventional Rate of Rise Heat Detector Ivory Case
- Intrinsically Safe Conventional Rate of Rise Heat Detector White Case

Part Number

- DCD-1E-IS
- DCD-1E-IS(WHT)

Approvals



For further information visit www.hochikieurope.com/cdx

Hochiki Europe (UK) Ltd. reserves the right to alter the specification of its products from time to time without notice. Although every effort has been made to ensure the accuracy of the information contained in this document it is not warranted or represented by Hochiki Europe (UK) Ltd. to be a complete and up-to-date description.



Certain actions can cause permanent damage to the detector. If the detector is subjected to any of the following it should not be used:

- Dis-assembly and re-assembly, apart from chamber replacement in the case of photoelectric smoke detectors (the detectors cannot be repaired and must be replaced in their entirety).
- Impact or shock.
- Suspected damage following a fire.
- In the case of heat detectors, touching the thermistor element.

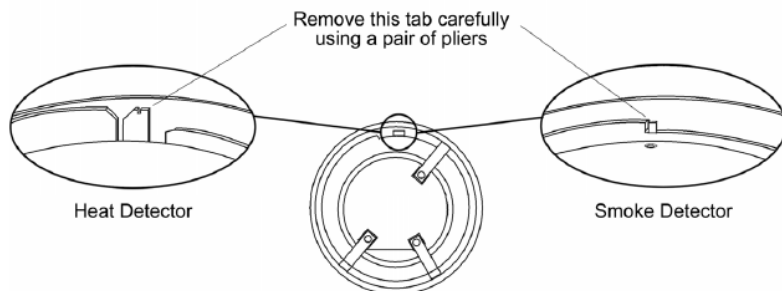
These detectors must be subject to periodic maintenance during regular service visits. This period should be outlined in the appropriate standards or recommendations. If there are no such standards existing, Hochiki recommend that the minimum period of maintenance should be 1 year and that the following should be taken into account:

- A regular operation test should be performed using suitable test equipment (certain types of test equipment should not be used in flammable/combustible atmospheres).
- A visual check for staining and mechanical damage should be made.

A magnetic test facility is incorporated into both detectors which can be operated using a suitable magnet.

A dust cover is included with these detectors to prevent contamination during installation and prior to commissioning. The dust cover must be removed for the detectors to operate.

The detectors can be locked on to the base by removing a plastic lug on the underside, please refer to the diagram below. The locked detector can then only be removed by using a special removal tool which is available from Hochiki Europe (UK) Ltd (part number TSC-A100/ALG).



CE	DCD-1E-IS	0832-CPD-0121	05	EN54-5 Point type heat detectors
	SLR-E-IS	0832-CPD-0113	05	EN54-5 Point type heat detectors



Hochiki Europe (UK) Ltd
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Gillingham, Kent, ME3 6SA, England
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Web: www.hochikieurope.com

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Hochiki Europe (UK) Limited

2-3-0-345/ISS7/OCT10

HOCHIKI INTRINSICALLY SAFE SMOKE AND HEAT DETECTORS (AND MOUNTING BASE) INSTRUCTIONS

Products Covered: SLR-E-IS Photoelectric Smoke Detector, DCD-1E-IS Combined Rate of Rise Heat Detector, YBN-R/4(IS) Electronics-Free Mounting Base

Introduction

These Detectors are certified by BASEEFA as suitable for use in hazardous atmospheres as detailed below. It is essential that the detectors and base are installed and operated in conformance with the certification in order to remain safe. It is the responsibility of the installer to ensure that the detectors and base are installed according to the certification requirements, and it is recommended that the installation only be carried out by qualified personnel.

The YBN-R/4(IS) Base may only be used with Hochiki Intrinsically Safe specified detector heads. The use of other detector heads is expressly forbidden and may cause fire or explosion.

Classification - SLR-E-IS

This Detector has BASEEFA certification classification according to EN 60079-11:2007 and an ATEX Classification of II 1 G Ex ia IIC T5 -20°C<Ta<55°C. Areas suitable for installation: Category 1, 2 or 3 hazardous atmospheres, with a maximum ambient temperature of up to 55°C.

Classification - DCD-1E-IS

This Detector has BASEEFA certification classification according to EN 60079-11:2007 and an ATEX Classification of II 1 G Ex ia IIC T5 -20°C<Ta<55°C. Areas suitable for installation: Category 1, 2 or 3 hazardous atmospheres, with a maximum ambient temperature of up to 55°C.

Refer to the system drawing overleaf for important information concerning installation/wiring requirements which must be strictly observed in order to comply with BASEEFA certification. These detectors and base **MUST** be used with either a Zener Diode Barrier or a Galvanic Isolator, using suitable models as detailed in the system drawing overleaf. The Zener Diode Barrier or Galvanic Isolator should be installed according to the manufacturer's instructions.

Note

These products have been designed to

- Avoid physical injury or harm by direct or indirect contact
- Not produce surface temperatures of accessible parts or radiation which could cause danger
- Eliminate any non-electrical dangers
- Not give rise to dangerous conditions in the event of overload

Precautions

Hochiki smoke and heat detectors cannot be used to prevent a fire itself, they are intended only to detect certain characteristics of fire. When installing the detectors, check that the location of each one has been planned according to appropriate fire regulations and recommendations.

Hochiki detectors are suitable for indoor use only. A detector should not be installed in the following environmental conditions:

- Excessive ambient temperature.
- Where excessive condensation or moisture is present.
- Where corrosive gas or any other harmful agent is present.
- Where flammable dust or steam is present.
- Where obstructions are present which could impede the flow of air to the detector.
- Where mechanical stresses could affect the detector when fitted in accordance to these instructions.

Hochiki Europe (UK) Limited

2-3-0-345/ISS7/OCT10



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX BAS 12.0131X** Page 1 of 3 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: 2013-03-22
Applicant: **Hochiki Europe**
Grosvenor Road
Gillingham Business Park
Gillingham
Kent
ME8 0SA.
United Kingdom
Equipment: **Heat Detector Type DCD-1E-IS**
Optional accessory:
Type of Protection: **Intrinsic Safety**
Marking: **Ex ia IIC T5 Ga (-20°C ≤ Ta ≤ +55°C)**

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

Position:

General Manager

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
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3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

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Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom





IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 12.0131X**

Page 2 of 3

Date of issue: 2013-03-22

Issue No: 0

Manufacturer: **Hochiki Europe**
Grosvenor Road
Gillingham Business Park
Gillingham
Kent
ME8 0SA.
United Kingdom

Manufacturing
locations:

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 equipment 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 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
Edition:6.0

This Certificate **does not** indicate compliance with 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:

[GB/BAS/ExTR12.0318/00](#)

Quality Assessment Report:

[GB/BAS/QAR13.0003/00](#)

AS INSTALLED



IECEx Certificate of Conformity

Certificate No.: **IECEx BAS 12.0131X**

Page 3 of 3

Date of issue: 2013-03-22

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Heat Detectors Type DCD-1E-IS and Type DCD-1E-IS(WHT) are designed to detect temperature and the rate of rise of the temperature within a hazardous area and to provide an alarm indication on a locally mounted LED and also to provide an alarm indication to safe area mounted apparatus via a suitable interface.

The Heat Detector is mounted on Base Unit Types YBN-R/4IS or YBN-R/4IS(WHT) for installation within the hazardous area and comprises a printed circuit board encapsulated within a non-metallic housing, is populated with surface mounted components. When fitted to a Base Unit the enclosure provides a degree of protection of at least IP20 to the electronic circuit. The field wiring connections from the safe area apparatus, and to external simple apparatus such as switches and resistors, are made within the base unit.

The design is assessed against the requirements for Intrinsically Safe Apparatus as defined in IEC60079-0:2011 and IEC60079-11:2011 to Category ia with respect to Group IIC gases and a Temperature Class of T5 for an equipment protection level of Ga in ambient temperatures from -20°C to +55°C.

Supply Input Terminals 2 and 6 or Loop Output Terminals 1 and 5 and Remote Indicator Alarm Terminals 1 and 4

$U_i = 30V$

$I_i = 200mA$

$P_i = 1W$

$C_i = 0$

$L_i = 0$

$U_o = U_i$

$I_o = I_i$

$P_o = P_i$

$C_i = 0$

$L_i = 0$

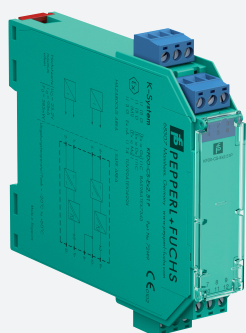
Note :- Terminals 1 & 2 are directly interconnected only when the smoke detector is fitted to the Base Unit and Terminals 6 & 5 are directly interconnected within the Base Unit. All inputs / outputs are derived from a common source.

Terminal 3 may be used for terminating cable screens and has no electrical connection to the circuit.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1) The Heat Detectors Type DCD-1E-IS and Type DCD-1E-IS(WHT) have a plastic enclosure which may present an electrostatic risk if rubbed or placed in a fast moving air flow.

AS INSTALLED



Current Driver/Repeater

KFD0-CS-Ex2.51P

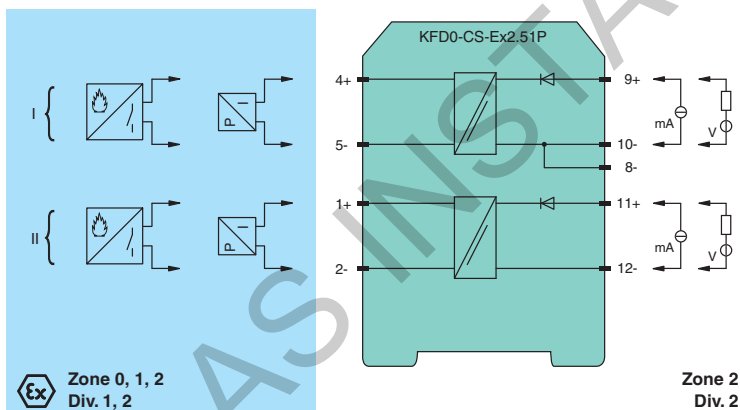
- 2-channel isolated barrier
- 24 V DC supply (loop powered)
- Current input/output 0 mA ... 40 mA
- I/P or transmitter power supply
- Accuracy 1 %
- Reverse polarity protection
- SIL 2 (SC 3) acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. The device transfers DC signals of fire alarms and smoke alarms from the hazardous area to the non-hazardous area. The device can also be used to control I/P converters, valves, indicators, and audible alarms. A reverse polarity protection prevents damage to the device caused by faulty wiring. The device is loop powered. From the control side no additional power supply has to be connected. Use the technical data to verify that proper voltage is available to the field devices.

Connection



Technical Data

General specifications	
Signal type	Analog input/analog output
Functional safety related parameters	
Safety Integrity Level (SIL)	SIL 2
Systematic capability (SC)	SC 3
Supply	
Rated voltage	U _r loop powered
Control circuit	
Connection	terminals 12-, 11+; 8-, 10-, 9+
Voltage	4 ... 35 V DC

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Singapore: +65 6779 9091
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PEPPERL+FUCHS

1



Technical Data

Current	0 ... 40 mA
Power dissipation	at 40 mA and $U_{in} < 22 V$: 700 mW per channel at 40 mA and $U_{in} > 22 V$: 1.2 W per channel
Field circuit	
Connection	terminals 1+, 2-; 4+, 5-
Voltage	for $4 V < U_{in} < 24 V$: $\geq U_{in} - (0.37 \times \text{current in mA}) - 1.0$ for $U_{in} > 24 V$: $\geq 21 V - (0.36 \times \text{current in mA})$
Short-circuit current	at $U_{in} > 24 V$: $\leq 65 mA$
Transfer current	$\leq 40 mA$
Transfer characteristics	
Accuracy	1 %
Deviation	
After calibration	$\leq \pm 200 \mu A$; incl. calibration, linearity, hysteresis and load fluctuations at the field side up to a load of 1 k Ω and current $\leq 20 mA$ at 20 °C (68 °F)
Influence of ambient temperature	$\leq \pm 2 \mu A/K$ at $U_{in} \leq 20 V$; $\leq \pm 5 \mu A/K$ at $U_{in} > 20 V$
Rise time	$\leq 5 ms$ at bounce from 4 ... 20 mA and $U_{in} < 24 V$
Galvanic isolation	
Field circuit/control circuit	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Indicators/settings	
Labeling	space for labeling at the front
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Conformity	
Electromagnetic compatibility	NE 21:2012 EN 61326-3-2:2008
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2012
Ambient conditions	
Ambient temperature	-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications	
Degree of protection	IP20
Connection	screw terminals
Mass	approx. 100 g
Dimensions	20 x 107 x 115 mm (0.8 x 4.2 x 4.5 inch) (W x H x D) , housing type B1
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas	
EU-type examination certificate	BAS 98 ATEX 7343 X
Marking	Ⓜ II (1)G [Ex ia Ga] IIC, II (1)D [Ex ia Da] IIIC, I (M1) [Ex ia Ma] I (-20 °C $\leq T_{amb} \leq 60$ °C)
Voltage	U_o 25.2 V
Current	I_o 93 mA
Power	P_o 585 mW
Control circuit	
Maximum safe voltage	U_m 250 V _{eff} (Attention! The rated voltage can be lower.)
Field circuit	
Maximum safe voltage	U_m 250 V _{eff} (Attention! The rated voltage can be lower.)
Certificate	
Marking	FIDI 22 ATEX 0001X
Marking	Ⓜ II 3G Ex ec IIC T4 Gc [device in zone 2]
Galvanic isolation	
Field circuit/control circuit	safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity	
Directive 2014/34/EU	EN IEC 60079-0:2018 , EN 60079-11:2012 , EN IEC 60079-7:2015+A1:2018
International approvals	
FM approval	

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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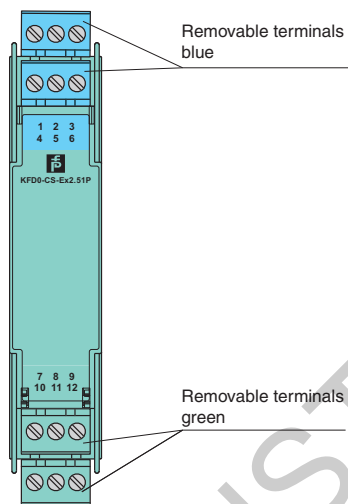


Technical Data


Control drawing	116-0437
UL approval	
Control drawing	116-0438 (cULus)
IECEX approval	
IECEX certificate	IECEX BAS 05.0004X IECEX CML 19.0040X
IECEX marking	[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I Ex ec IIC T4 Gc
General information	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly




Front view



Matching System Components

	K-DUCT-BU	Profile rail, wiring comb field side, blue
---	------------------	--

Accessories

	KF-ST-5GN	Terminal block for KF modules, 3-pin screw terminal, green
	KF-ST-5BU	Terminal block for KF modules, 3-pin screw terminal, blue
	KF-CP	Red coding pins, packaging unit: 20 x 6

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

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www.pepperl-fuchs.com pa-info@us.pepperl-fuchs.com pa-info@de.pepperl-fuchs.com pa-info@sg.pepperl-fuchs.com





Application

The device is used for isolation of power loops for the control of positioner, I/P converters etc. A current source is connected to the safe area terminals.

The device is used for isolation of a current signal from fire detectors or similar sensors. In this case, a voltage source can be connected to the safe area terminals. A specific measurement current across a passive sensor can be measured in the safe area with a series resistor (min. 50 Ω). When a voltage supply is used, the measuring resistor can also provide current limitations.

AS INSTALLED

Release date: 2022-04-01 Date of issue: 2022-04-01 Filename: 294987_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEX BAS 05.0004X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 4 Issue 3 (2016-04-19)
Date of Issue: 2017-04-24 Issue 2 (2009-03-25)
Applicant: **Pepperl + Fuchs GmbH** Issue 1 (2006-11-24)
Lilienthalstrasse 200
68307 Mannheim
Germany
Equipment: **Type KFD0-CS-Ex*.5* Transformer Isolated Loop Powered Current Separator**
Optional accessory:
Type of Protection: **Intrinsic Safety**
Marking: **[Ex ia Ga] IIC**
[Ex ia Da] IIIC
[Ex ia Ma] I
(-20°C ≤ Ta ≤ +60°C / +70°C)

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

Position:

Technical Manager

Signature:
(for printed version)

Date:
(for printed version)

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2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire, SK17 9RZ
United Kingdom





IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 2 of 4

Date of issue: 2017-04-24

Issue No: 4

Manufacturer: **Pepperl + Fuchs GmbH**
Lilienthalstrasse 200
68307 Mannheim
Germany

Manufacturing locations: **Pepperl + Fuchs Asia Pte. Ltd.**
18 Ayer Rajah Crescent
Singapore 139942
Singapore

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 equipment 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 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with 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:

Quality Assessment Report:

IECEX ATR:
GB/BAS/ExTR09.0057/00
GB/BAS/ExTR16.0090/00
GB/BAS/ExTR17.0061/00

File reference:
09/0252
15/0684
17/0047

AS INSTALLED



IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 3 of 4

Date of issue: 2017-04-24

Issue No: 4

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Type KFD0-CS-Ex* 5* Transformer Isolated Loop Powered Current Separator is designed to provide an interface between unspecified non-hazardous area equipment and intrinsically safe circuits in the hazardous area.

The equipment comprises a maximum of 2 identical channels; each channel contains a fuse, transformer, zener diodes and other electronic components mounted on a printed circuit board and housed within a plastic enclosure fitted with colour-coded plug-in terminals for external connections.

For models covered by the certificate and their parameters, see data in the Annexe.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The safety device must be installed in a controlled environment with suitably reduced pollution.

AS INSTALLED



IECEX Certificate of Conformity

Certificate No.: **IECEX BAS 05.0004X**

Page 4 of 4

Date of issue: 2017-04-24

Issue No: 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 4.1

To permit the introduction of an alternative schematic and PCB layout (with two build options, Construction 1 & Construction 2).

A specific condition of use now applies that states that the safety device must be installed in a controlled environment with suitably reduced pollution levels. Additionally, the Annex, with the electrical data, has been updated.

The upper limit on the ambient temperature range has been increased to +70°C and is stated as $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C} / +70^{\circ}\text{C}$. The equipment may be marked with any temperature range within those limits.

EXTR: **GB/BAS/ExTR17.0061/00**

File Reference: **17/0047**

Annex:

[IECEX BAS 05.0004 Annex 1.pdf](#)

AS INSTALLED



Input / Output Parameters

Terminals 8, 9, 10, 11 & 12

$$U_m = 250V \text{ dc or rms}$$

The equipment is designed to operate from a dc supply of up to 40V on terminals 9 & 10/8 and 11 & 12. The segregation of the hazardous area circuits meets the requirements for 375V_{pk}.

Terminals 1 w.r.t. 2 and 4 w.r.t. 5

$$U_o = 25.2V \quad I_o = 93mA \quad P_o = 585mW \quad C_i = 0 \quad L_i = 0$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the following values:

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	0.107	4.3		60
IIB	0.820	18		243
IIA	2.900	33		486
I	4.800	51		797

The above parameters apply when one of the two conditions below is given:

- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- the total L_i of the external circuit (excluding the cable) \geq 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) \geq 1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups I, IIA & IIB and 600nF for Group IIC.

AS INSTALLED



CABLE SPECIFICATIONS

- DATA SHEET
- CERTIFICATION

AS INSTALLED



FIRE GROUND

LPCB 568e/01

BS 6387:2013 Cat. C-W-Z

Multi-Core, Multistrand CU, Silicon Rubber-Insulation, Steel Wire Armour, LSZH-Sheath

RAMFIRECRO-F3 - FIRE GROUND - BS 6387:2013

CONSTRUCTION

Formation:

Plain annealed copper wire, Multistrand

Insulation:

Special mix silicon rubber

Wrapping:

at least 1 layer of plastic tape 0,023 mm

Inner Sheath:

Thermoplastic Low Smoke, Halogen Free

Armour:

Galvanized steel wire

Outer Sheath:

Thermoplastic Low Smoke, Halogen Free

Colour Outer Sheath:

Red

STANDARD REFERENCES

- BS 6387:2013 Cat. C-W-Z
- EN 60754-1:2014
- EN 61034-2:2005+A1:2013
- EN 60754-2:2014
- EN 60332-3-24:2009
- EN 60332-1-2:2004

IDENTIFICATION OF CORES

- 2 cores: ⌘ ⌘
- 3 cores: ⌘ ⌘ ⌘
- 4 cores: ⌘ ⌘ ⌘ ⌘
- 5 cores: ⌘ ⌘ ⌘ ⌘ ⌘

TEMPERATURE RANGE

- During Operation:**
-30° C up to +180°C
- During Installation:**
-5° C up to +50°C



CABLE PRINTING

RAMFIRECRO -F3 - FIRE RESISTANT - LSZH - LPCB 568e/01 - BS 6387 CWZ - IEC 60332-3-24 - IEC 60332-1-2 - IEC 60502 - BS 7846 - 0,6/1 kV - 5x1,5 mmq - CU/Sil/LSZH/SWA/LSZH - ARMoured - MADE IN ITALY + BATCH N.

ELECTRICAL DATA

Insulation Resistance @ 20°C:

> 200 MOhm*Km

Test Voltage Core-Core:

5000 V

Mutual Capacitance:

< 150 nF/km

Inductance:

< 1 mH/km

Operating Voltage:

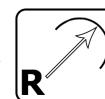
600/1000 V

CHARACTERISTICS

Fire Resistant



Min. Bending Radius
8 x cable diameter



Power Cable





FIRE GROUND

LPCB 568e/01

BS 6387:2013 Cat. C-W-Z

Multi-Core, Multistrand CU, Silicon Rubber-Insulation, Steel Wire Armour, LSZH-Sheath

RAMCRO CODE	FORMATION [n° x mm ²]	OUTER DIAMETER [mm]	WEIGHT [kg/km]	MAX RESISTANCE AT 20°C [Ohm/km]
SSS0215AFESH-F3(FG)	2x1.50	14.2*	373	13.8
SSS0315AFESP-F3(FG)	3x1.50	14.3*	395	13.8
SSS0415AFESQ-F3(FG)	4x1.50	15.1*	440	13.8
SSS0515AFESD-F3(FG)	5x1.50	16.6*	563	13.8
SSS0225AFESH-F3(FG)	2x2.50	16.2*	530	8.3
SSS0375AFESP-F3(FG)	3x2.50	16.4*	566	8.3
SSS0475AFESQ-F3(FG)	4x2.50	17.3*	635	8.3
SSS0575AFESD-F3(FG)	5x2.50	18.3*	709	8.3
SSS0240AFESL-F3(FG)	2x4.00	17.1*	592	5.1
SSS0340AFESP-F3(FG)	3x4.00	17.3*	640	5.1
SSS0440AFESQ-F3(FG)	4x4.00	18.3*	725	5.1
SSS0540AFESD-F3(FG)	5x4.00	19.4*	815	5.1
SSS0260AFESL-F3(FG)	2x6.00	18.6*	716	3.4
SSS0360AFESP-F3(FG)	3x6.00	18.8*	786	3.4
SSS0460AFESQ-F3(FG)	4x6.00	20.0**	902	3.4
SSS0560AFESD-F3(FG)	5x6.00	22.0**	1132	3.4
SSS0211AFESL-F3(FG)	2x10.00	20.6**	910	2.0
SSS0311AFESP-F3(FG)	3x10.00	20.9**	1021	2.0
SSS0411AFESQ-F3(FG)	4x10.00	23.1**	1303	2.0
SSS0511AFESD-F3(FG)	5x10.00	24.6**	1492	2.0
SSS0216AFESL-F3(FG)	2x16.00	24.1**	1306	1.3
SSS0316AFESP-F3(FG)	3x16.00	24.4**	1479	1.3
SSS0416AFESQ-F3(FG)	4x16.00	26.2**	1737	1.3
SSS0516AFESD-F3(FG)	5x16.00	28.3**	2022	1.3
SSS0227AFESL-F3(FG)	2x25.00	26.1**	1627	0.8
SSS0327AFESP-F3(FG)	3x25.00	26.5**	1888	0.8
SSS0427AFESQ-F3(FG)	4x25.00	28.8**	2266	0.8
SSS0527AFESD-F3(FG)	5x25.00	31.2**	2663	0.8

* Cables certified by LPCB BRE GLOBAL

** The Ramfirecro-F3 FIRE GROUND range with diameters greater than 20mm were tested in accordance with clause 17.4.2 annex L BS 7846:2015

*** If the cable SSS___ACESL-F3(FG)



Via Marzorati, 15 - 20014 Nerviano - Milan - Italy / www.ramcro.it

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LPCB®

www.redbooklive.com

Certificate of Product Approval

Certificate Number: 568e

Issue: 06



RAMCRO S.p.A.

Via Marzorati
15 - 20014 Nerviano
Nerviano
Milan
20014
Italy

is authorised to use the LPCB mark in association with the product(s) listed in this certificate and appendix having complied with the requirements of the standard(s) detailed below:

Product(s)

Cable Types as listed below:
Ramfirecro-F3 FIRE GROUND

Standard(s) (see Appendix for details)

BS 6387:2013 (CWZ)
EN 60754-1:2014
EN 61034-2:2005+A1:2013
EN 60754-2:2014
EN 60332-3-24:2009
EN 60332-1-2:2004

This Certificate is maintained and held in force through regular surveillance activities and subject to the corresponding ISO 9001 Certificate being maintained.

Signed for BRE Global Ltd.

Karen Coull
Certification Scheme Manager

11 September 2018
Date of issue

27 May 2016
Date of First issue



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LPCB® is a registered trademark of the Building Research Establishment Ltd.





Appendix to Certificate No: 568e RAMCRO S.p.A.

Issue: 06

Product name							LPCB Ref. No.
Ramfirecro-F3 FIRE GROUND							568e/01
Nominal csa of conductor (mm ²)	Core Construction (excluding drain wire and earth)	BS 6387 (see note 2)	EN 60754-1	EN 61034-2	EN 60754-2	EN 60332-3-24	EN 60332-1-2
1.5 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
2.5 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
4 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
6 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
10 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
16 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies
25 ⁽¹⁾	2,3,4 & 5	CWZ	<0.5% HCI	>60%	Complies ⁽²⁾	Complies	Complies

Uo/U 600/1000 V

Notes:

1. Class 5 stranded conductor only.
2. The Ramfirecro-F3 FIRE GROUND range with diameters greater than 20mm were tested in accordance with clause 17.6.2 and annex 1 of BS 7846:2015.
3. Tested to general method given in EN 60754-2:2014.

This Certificate is maintained and held in force through regular surveillance activities and subject to the corresponding ISO 9001 Certificate being maintained.

Signed for BRE Global Ltd.

Karen Coull
Certification Scheme Manager

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4.3. Qualification of IS Assessor



Kayne Herriman
Queensland Drivers Licence



Registered Professional Engineer Queensland (RPEQ)



Electrical Safety Office - Accredited Auditors



ARCTIC – Refrigeration & Air Conditioning Licence



Resource Safety Health Queensland (DNMRE) – Type B and B2 Approval Authority

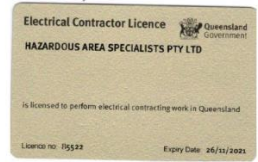


Resource Safety Health Queensland (DNMRE) – Type B Gas Work Authorisation



Resource Safety Health Queensland (DNMRE) - Approved Person - Unodourised Gas Risk Assessor Section 628

Queensland Electrical Safety Office – Electrical Contractor Licence

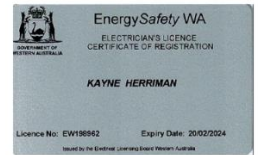


Queensland Electrical Safety Office – Electrical Fitter Mechanic License



Western Australia Energy Safe – Electrical Contractor Licence – EC013840

Western Australia Energy Safe – Electrical Fitter Mechanic



Statement of Attainment
This is to certify that
Kayne Herriman
Has attained the following units of competency:

- UEENEEM036A Conduct a conformity assessment of explosion-protected equipment - gas atmospheres
- UEENEEM037A Conduct a conformity assessment of explosion-protected equipment - dust atmospheres

Total Units of Competency: 2

Certificate Number: 9907796-6284086
RTO Number: 41014
Owen Strath CEO

CERTIFICATE OF REGISTRATION
01/07/2021 to 30/08/2022
Kayne Matthew Herriman
RPEQ 17932
is a Practising Registered Professional Engineer of Queensland registered in the area/s of
Electrical
Registration valid from
01/07/2021 to 30/06/2022

Certificate of Registration (Form 1) – Version 1 (March 2021), approved 24 March 2021 and given in accordance with s 34 of the Professional Engineers Act 2002

Protecting the public and setting the standard of engineering
www.rpeq.qld.gov.au
071 3216 2100
admin@rpeq.qld.gov.au

This is to certify that
Kayne Herriman
Has fulfilled the requirements for the following qualification
UEE42620
Certificate IV in Hazardous areas - Electrical

Date of Issue: 3-Mar-22
Certificate Number: 13520718-8856409

COMPETENCY TRAINING
Australian Qualifications Framework
RTO Number: 31299