



2810-2822

UNITS FOR HAZARDOUS (EX) AREAS

Fire alarm solutions
technical description

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1. INTRODUCTION

This document describes the units for Hazardous Ex areas.

The document contains information about the products and instructions on how to mount and connect them.

Product / designation	Type number	PFSEU article number	Certification owner
Intrinsically safe photoelectric smoke detector	SOC-E-IS	2810	Hochiki
Intrinsically safe heat detector	DCD-1E-IS	2811	Hochiki
Intrinsically safe base	YBN-R/4IS	2812	Hochiki
Intrinsically safe manual call point	CCP-E-IS (MCP1A)	2814	KAC
Galvanic isolator	MTL5561	2820	MTL
Isolated zone interface	2822	2822	PFSEU

2. ABBREVIATIONS

IS	Intrinsically safe
I/O	Input/Output
LED	Light Emitting Diode

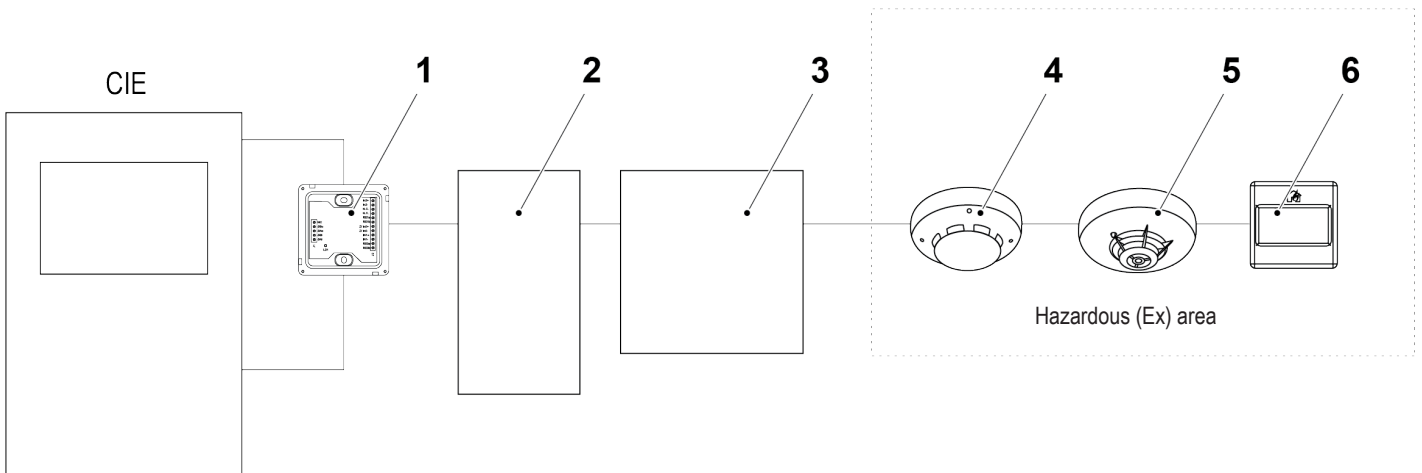
3. GENERAL DESCRIPTION

In Hazardous (Ex) areas, Intrinsically Safe (IS) and approved products are required. The IS alarm points are connected to an interface outside the Ex area.

The IS detectors and manual call points are connected to a galvanic isolator, which has to be mounted outside of the Hazardous (Ex) area.

The galvanic isolator is connected to an isolated zone interface or to an 8 zones expansion board.

The isolated zone interface is connected to a COM loop via an addressable multipurpose I/O unit that can be mounted inside the isolated zone interface box.



1. Addressable multipurpose I/O unit with isolator
2. Isolated zone interface
3. Galvanic isolator
4. IS smoke detector
5. IS heat detector
6. IS manual call point

3.1. IS PHOTOELECTRIC SMOKE DETECTOR 2810

A conventional IS photoelectric (optical) smoke detector shall be plugged in an IS mounting base 2812. The detector has one fire LED - 360° viewing, to indicate that the detector has generated fire alarm.

3.2. IS HEAT DETECTOR 2811

A conventional IS rate of rise heat detector, fixed temperature (60°C class A1), shall be plugged in an IS mounting base 2812. The detector has two built-in LEDs to indicate that the detector has generated fire alarm.

3.3. IS MOUNTING BASE 2812

In the base a conventional IS smoke or heat detector can be plugged. The base has terminals for zone line (in/out).

3.3.1. EXTERNAL LED OUTPUT

One External Indicator (LED) can be connected to the screw terminals E+ and E- in the base. Contact Hochiki for more information on IS External Indicators.

3.4. IS MANUAL CALL POINT 2814

The call point is a conventional manual call point with a 470 Ω alarm resistor. It has terminals for the zone line (in/out). To operate the manual call point the glass element is pressed until it is broken. This will generate a fire alarm in the CIE.

Routine testing is done with a test key (supplied), without breaking the glass element.

3.4.1. PROTECTIVE COVER

To protect the manual call point against accidental operation, a transparent polycarbonate flap 2814HC has to be lifted for access to the glass element.

3.4.2. ROUTINE TESTING

- a) Insert the test key into the hole in the front cover. The glass position will change, indicating that the manual call point is operated.
- b) Check that the fire alarm is indicated in the CIE.
- c) Pull out the test key and the glass position will return to normal.
- d) Reset the fire alarm in the CIE.

3.4.3. REPLACE THE GLASS ELEMENT

- a) Make sure the manual call point is disabled.
- b) Remove the front cover by using the test key. Press the two pins on the key into the corresponding holes in the bottom of the front cover to separate the front cover from the back part.
- c) Lift and remove the front cover.
- d) Remove the broken glass element.
- e) Place the top edge of the replacement glass element against the micro switch plunger. Push the glass element upwards until it is in correct position.
- f) Replace the front cover.
- g) Re-enable the manual call point.
- h) Perform a routine test, see [3.4.2. ROUTINE TESTING](#) on page 6.

3.5. GALVANIC ISOLATOR 2820

The galvanic isolator is mounted in a waterproof box (IP66/67). Up to five IS detectors and manual call points can be connected to the galvanic isolator. An end-of-line resistor has to be connected in the last IS unit. The isolator has two zone line inputs and outputs (Channel 1 & 2). Four compression glands for the cable entries and two 10K end-of-line resistors are supplied.

3.5.1. CONNECTIONS TO 2820

When the galvanic isolator 2820 is connected to a 8 zones expansion board, the 10K end-of-line resistor shall be used, connected in the last IS unit. The 10K end-of-line resistor is supplied with the 2820. The 8 zones expansion board shall be programmed in "EX Zone line input" mode

When the galvanic isolator 2820 is connected to an Isolated zone interface 2822, the A 8K2 end-of-line resistor shall be used, connected in the last IS unit. The 8K2 end-of-line resistor is supplied with the 2822.

3.6. ISOLATED ZONE INTERFACE 2822

An isolated zone interface board is mounted on a DIN rail in a waterproof box (IP66/67). The unit is supplied with four compression glands for the cable entries, a DIN rail interface intended for the I/O unit 3361 and one 8K2 end-of-line resistor.

When an I/O unit is used an 8K2 end-of-line resistor has to be connected in the last IS unit.

4. MOUNTING

PHOTOELECTRIC SMOKE DETECTOR

Mount the detector in the base. Maximum 20 units in total per zone.

HEAT DETECTOR

Mount the detector in the base. Maximum 20 units in total per zone.

MOUNTING BASE

Mount the base in the ceiling.

MANUAL CALL POINT

The call point is surface mounted with a Back-box 2814BB. Or surface mounted with a junction box.

GALVANIC ISOLATOR

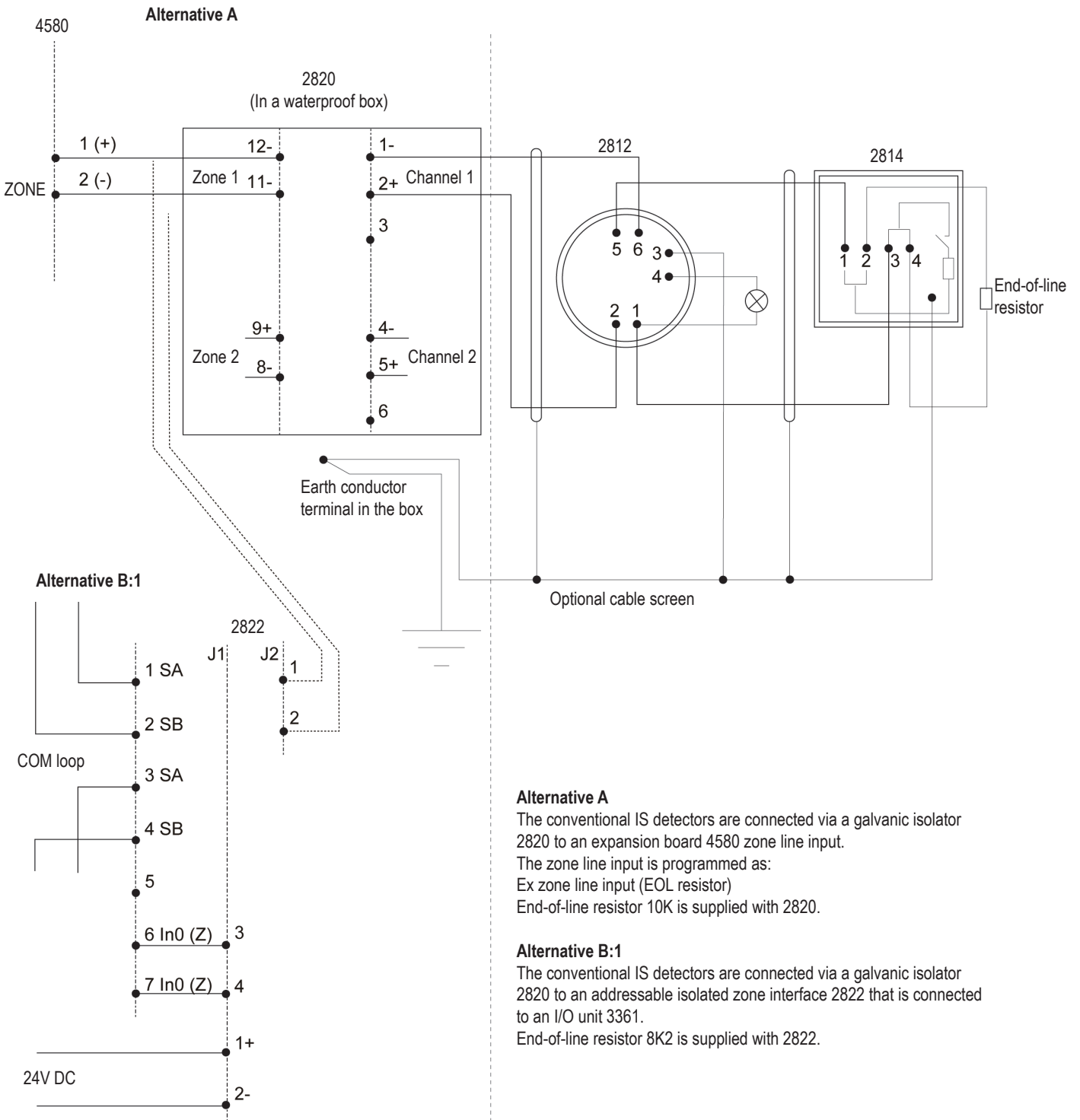
Mount the galvanic isolator on the wall.

ISOLATED ZONE INTERFACE

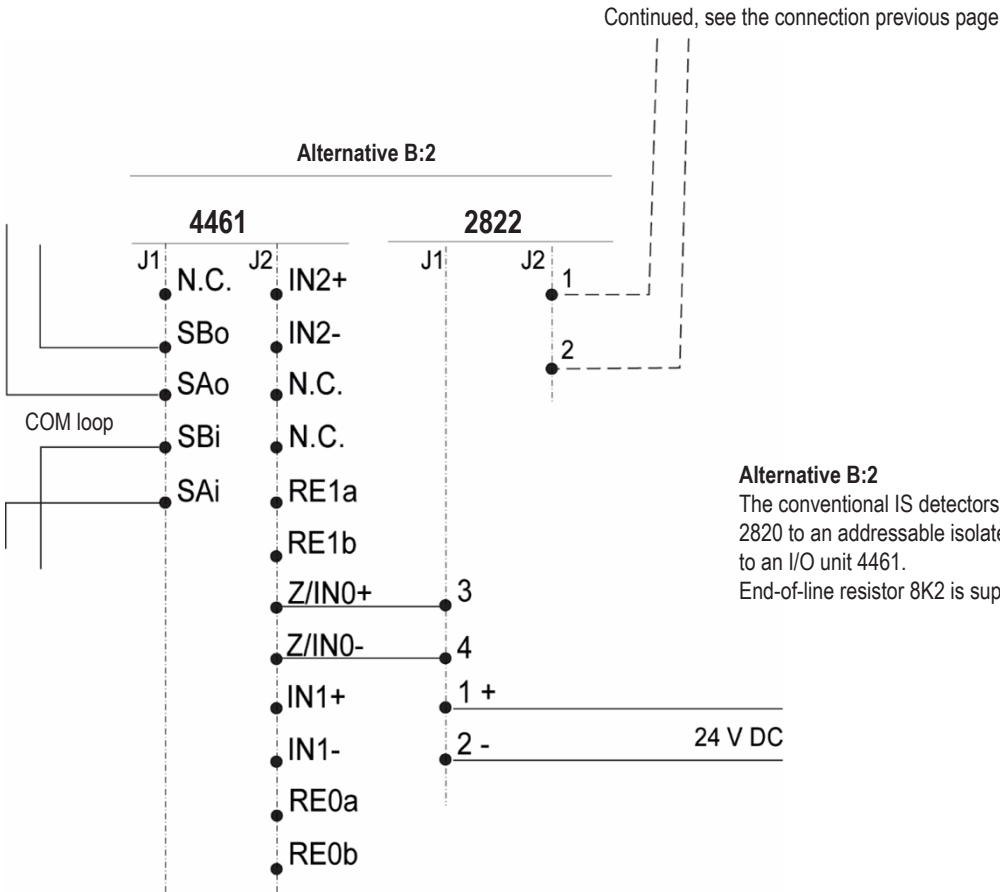
Mount the isolated zone interface on the wall.

5. INSTALLATION AND WIRING

Screen wire termination is not provided.



If cable screen is used, it should be connected to the closest earth point (protective earth) outside the hazardous (Ex) area and should be capable of withstanding a test voltage (500 V AC) for one minute.



Alternative B:2

The conventional IS detectors are connected via a galvanic isolator 2820 to an addressable isolated zone interface 2822 that is connected to an I/O unit 4461. End-of-line resistor 8K2 is supplied with 2822.

Channel 1,2:

Cable FKAR-PG 2x0.5 mm², blue
(with aluminum polyester foil shield + tinned copper drain wire 1 mm² is normally not used/connected)

Zone 1,2: EKKR / ELQRB 2x0.6 mm (0.3 mm²) Connection of alarm points is not allowed on this line

The interconnection cable should have the following maximum parameters:

Group	Capacitance	Inductance	Inductance to resistance ratio
	μF	mH or	μH / ohm
IIC	0,13	4,2	55
IIB	0,39	12,6	165
IIA	1,04	33,6	440

The external LEDs connection cable is considered as a part of the interconnection cable.

Maximum total cable resistance is 40 ohm. The zone line cable in the Ex area + the zone line cable in the safe area should be ≤ 40 ohm.

6. TECHNICAL DATA 2810

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	12 – 30V DC 24V DC
Current: Quiescent Active:	35 µA Maximum 40 mA
Short circuit isolator	No
Internal battery	No
Material	FR ABS
Ambient temperature: Operating Storage	-10 to +50 °C -30 to +60 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
BASEEFA humidity	II 1G Ex ia IIC T5 Ga (-20°C ≤ Ta ≤ +55°C)
Zone classification	Category 1, 2, or 3
Ingress protection rating	IP42
Size: Ø x H	100 x 48 mm
Weight:	106 g
Colour	Ivory white

7. TECHNICAL DATA 2811

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	15 – 30V DC 24V DC
Current: Quiescent Active:	35 μ A Maximum 40 mA
Short circuit isolator	No
Internal battery	No
Material	Polycarbonate
Ambient temperature: Operating Storage	-10 to +55 °C -30 to +70 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
BASEEFA humidity	II 1G EEx ia IIC T5 Tamb = 55 °C
Zone classification	Category 1, 2, or 3
Ingress protection rating	IP22
Size: \varnothing x H	100 x 46 mm
Weight:	95 g
Colour	Ivory white

8. TECHNICAL DATA 2812

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	15 – 30V DC 24V DC
Current: Quiescent Active:	- -
Short circuit isolator	No
Internal battery	No
Material	FR ABS
Ambient temperature: Operating Storage	-10 to +55 °C -20 to +70 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
Ingress protection rating	IP22
Size: Ø x H	100 x 16 mm
Weight:	50 g
Colour	Ivory white

9. TECHNICAL DATA 2814

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	≤ 30V DC 24V DC
Current: Quiescent Active:	- Maximum 500 mA
Short circuit isolator	No
Internal battery	No
Material	FR ABS and polycarbonate
Ambient temperature: Operating Storage	-30 to +70 °C -30 to +70 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
Ingress protection rating	IP24D
Size: H x W x D	90 x 90 x 61 mm
Weight:	170 g
Colour	Red (RAL 3001)

10. TECHNICAL DATA 2820

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	6 – 35V DC 24V DC
Current: Quiescent Active:	<400 µA 1-40 mA
Short circuit isolator	No
Internal battery	No
Material	Polycarbonate
Ambient temperature: Operating Storage	-20 to +60 °C -30 to +70 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
BASEEFA humidity	EEx ia IIC Tamb = 60°C
Ingress protection rating	IP66/67
Size: H x W x D	175 x 125 x 150 mm
Weight:	650 g
Colour	Grey (RAL 7035)

11. TECHNICAL DATA 2822

All current consumptions are valid by nominal voltage and by 25 °C.

Voltage: Allowed Normal	12 – 30V DC 24V DC
Current: Quiescent Active:	3 μ A 6 mA (from the COM loop)
Short circuit isolator	No
Internal battery	No
Material	Polycarbonate
Ambient temperature: Operating Storage	-20 to +40 °C -40 to +70 °C
Ambient humidity	Maximum 95 % RH (Non condensing)
Ingress protection rating	IP66/67
Size: H x W x D	175 x 175 x 75 mm
Weight:	710 g
Colour	Grey (RAL 7035)

12. APPROVALS

2810

Applicable directive/ Approval	Applicable standards	Notified body
CPR	EN 54-7	BRE Global Limited No. 2831-CPR-F4344
VdS	EN 54-7 VdS 2344 VdS 2503	VdS No. G220019
ATEX	EN60079-0 EN60079-11 EN80079-34	SGS Fimko Oy No. Baseefa19ATEX0143X EC

2811

Applicable directive/ Approval	Applicable standards	Notified body
CPR	EN54-5	BRE Global Limited 2831-CPR-F2310
VdS	EN54-5 VdS 2344 VdS 2503	VdS No. G212171
ATEX	EN60079-0 EN60079-11 EN80079-34	SGS Fimko Oy No. BAS01ATEX1021X

2814

Applicable directive/ Approval	Applicable standards	Notified body
CPR	EN54-11	BRE Global Limited No. 2831-CPR-F1701
ATEX	EN 60079-0 EN 60079-11	Sira Certification No. Sira 04ATEX2350X

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Applicable directive/ Approval	Applicable standards	Notified body
ATEX	EN 60079-0 EN 60079-11	SGS Baseefa Limited No. Baseefa09ATEX0027

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Applicable directive/ Approval	Applicable standards	Notified body
EMC	EN61000-6-3 (Emission) EN50130-4 (Immunity)	Self declaration
RoHS	EN IEC 63000	Self declaration



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