



Analogue Addressable Intrinsically Safe Products 2840, 2841, 2842 & 2843

Introduction

IS equipment is defined as "equipment and wiring which is incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a specific hazardous atmospheric mixture in its most easily ignited concentration". This is achieved by **limiting the amount of power** available to the electrical equipment in the hazardous area to a level below that cannot ignite the gases.

The Intrinsically Safe (IS) products must be used for Hazardous areas, which according to regulations require IS equipment.

The following approved Panasonic IS products, in compliance with the ATEX directive 94/9/EC, are available:

- Intrinsically Safe analogue photoelectric smoke detector **2840**
- Intrinsically Safe analogue heat detector **2841**
- Intrinsically Safe barrier unit **2842**
- Intrinsically Safe back-box **2843**

Intrinsically Safe barrier unit 2842

The IS barrier unit **2842** must be mounted outside the risk area and is connected to the c.i.e. via a COM loop, other types of COM loop units for the Firetracker systems can be connected to the same COM loop. The IS barrier unit takes no COM loop address i.e. no programming via Win software but 24 V DC (50 mA) supply is required.

The IS barrier unit has a single **IS COM line** input for the **Intrinsically Safe analogue detectors** 2840 and 2841.

IS barrier working principle:


- The COM loop is separated from the IS COM line via an optocoupler.
- The COM loop communication signals are transmitted to the IS COM line, via the IS barrier unit with limited power.
- The IS COM line communication signals are put back to normal levels, via the IS barrier unit, and then transmitted to the c.i.e. via the COM loop.
- The 24V DC supply to the IS barrier unit is separated from the IS COM line with a DC / DC converter inside the barrier. The amount of power is limited. The normal IS COM line voltage is 16 V DC (15 – 17.3 V) while the normal COM loop voltage is 24 V DC (12 – 30 V).

Intrinsically Safe analogue detectors

The **IS analogue photoelectric smoke detector 2840** and the **IS analogue heat detector 2841**, with (or without) the **IS back-box 2843**, are mounted inside the risk area and they are connected to the IS barrier unit 2842 in the safe area via the **IS COM line**.

Up to 20 of the IS detectors and only IS detectors 2840 and 2841 can be connected on the IS COM line, which has no return cable to the IS barrier unit (i.e. class B), no end-of-line device required.

The maximum cable length of the IS COM line is 500 metre.

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1. IS analogue photoelectric smoke detector 2840

The IS analogue photoelectric smoke detector **2840** is connected to the c.i.e. via an IS barrier unit 2842 (IS COM line) and programmed via Win128 / Win512 / WinG3 or EBLWin as an Analogue photoelectric smoke detector **4301**, i.e. it takes one COM loop address. In principle, the 2840 is a 4301 smoke detector but with a different housing, IP rating etc.

The COM loop address is set in 2840 with the address setting tool 3314/4414 in NORMAL mode. The sensitivity level is dependent on the selected alarm algorithm, i.e. the same algorithms as for the 4301 detector. The detector has one built-in LED to indicate that the detector has generated a fire alarm. The detector can be mounted with or without the water-proof IS back-box 2843, which has two cable glands (½").




2. IS analogue heat detector 2841

The IS analogue heat detector **2841** is connected to the c.i.e. via an IS barrier unit 2842 (IS COM line) and programmed via Win128 / Win512 / WinG3 or EBLWin same as an Analogue heat detector **3308** i.e. it takes one COM loop address. The 2841 is a 3308 heat detector but with a different housing, IP rating etc.

The COM loop address is set in the detector with the address setting tool 3314/4414 in NORMAL mode. The alarm temperature is dependent on the selected alarm algorithm, i.e. same algorithms as for the 3308 detector.

The detector has one built-in LED to indicate that the detector has generated a fire alarm. The detector can be mounted with or without the water-proof IS back-box 2843, which have two cable glands (½").

Specifications

Function		Type 2840 IS smoke detector	Type 2841 IS heat detector	Type 2842 IS barrier unit
Operating voltage		15 – 17.3 V dc (15V Nom.)	15 – 17.3 V dc (15V Nom.)	12 – 30 V dc (24V Nom.)
Current consumption Quiescent Alarm		(from the IS COM line) 300 µA max 1.5 mA max	(from the IS COM line) 300 µA max 1.5 mA max	(from COM loop) 10 mA max 50 mA (from ext. supply)
Ambient temperature		-10°C to +55°C	-10°C to +55°C	-10°C to +55°C
Ambient humidity		Max. 95%, non-condensed	Max. 95%, non-condensed	Max. 95%, non-condensed
Ingress Protection rating*		IP20 (detector only) IP40 (with IS back-box)	IP20 (detector only) IP40 (with IS back-box)	IP66/67
Size	Diameter	102 mm (detector) 110 mm (with IS back-box)	102 mm (detector) 110 mm (with IS back-box)	300 x 300 mm (square)
	Height	62 mm (detector) 58 mm (IS back-box)	65 mm (detector) 58 mm (IS back-box)	132 mm
Zone classification		Zone 0/1/2	Zone 0/1/2	Non-Hazardous Area
Certification		CE 10 EC Certificate no. 0832-CPD-1526; EN54-7  II 1 G Ex ia IIC T5 Ga	CE 10 EC Certificate no. 0832-CPD-1527; EN54-5  II 1 G Ex ia IIC T5 Ga	CE 10 EC Certificate no. 0832-CPD-1528; EN54-18  II (1) G [Ex ia Ga] IIC
Weight (gram)		300 (detector) 260 (IS back-box)	325 (detector) 260 (IS back-box)	3100


* The IP ratings are outside of the scope of the LPCB certification. IP is verified in Panasonic test laboratory only.

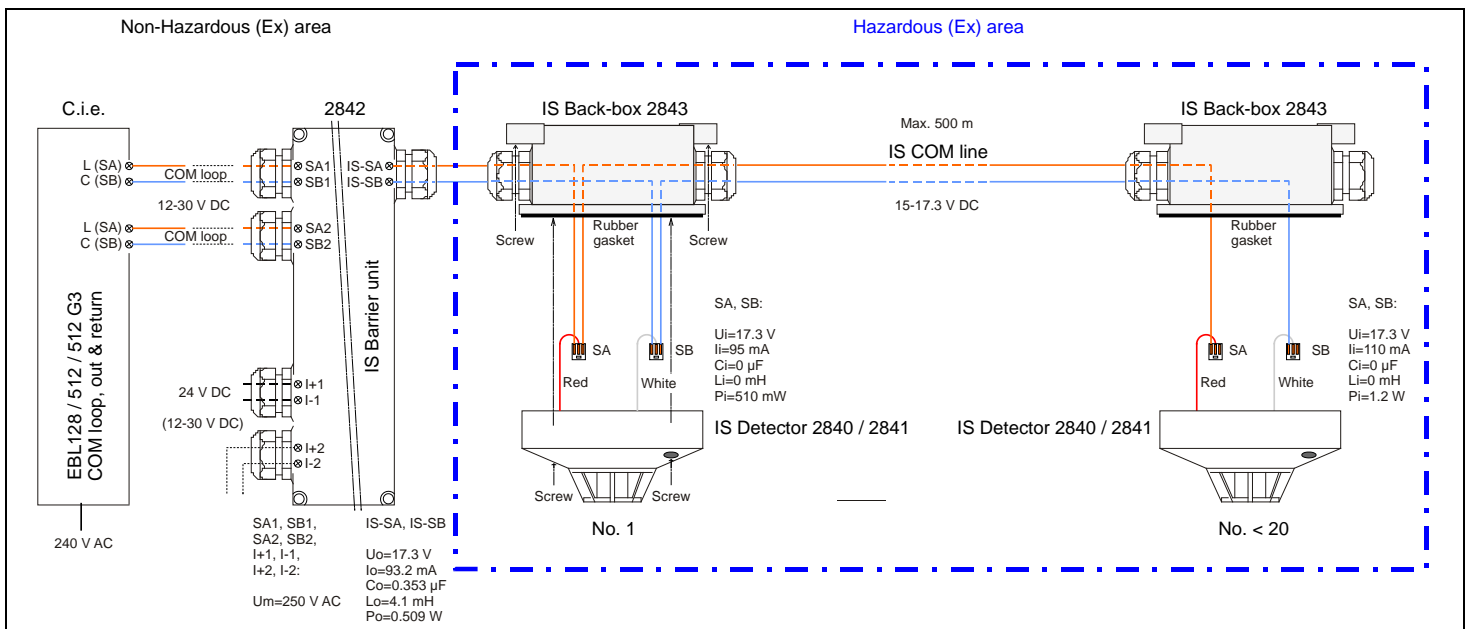
Connections

The IS detectors 2840 / 2841, with or without the IS back-box 2843 should be connected to an IS barrier unit 2842 which is connected to the c.i.e. via a COM loop.

One or more IS barrier units as well as any other type of COM loop units in the system can be connected to the same COM loop. On the IS COM line, only IS detectors 2840 and 2841 can be connected.

24 V DC (50 mA) supply can be provided via the c.i.e. or any external power supply unit.

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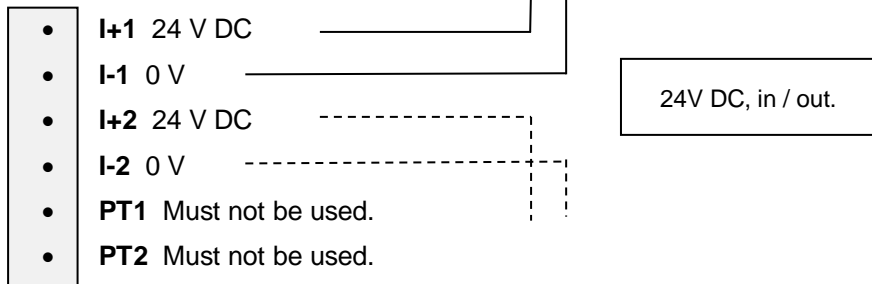
Connecting IS barrier unit 2842

The IS barrier unit has screw terminal connectors to terminate the COM loop in/out and the 24V dc supply in/out. The wires can be in the range of 0.08 – 2.5 mm² (AWG 28 – 12). Separate 2-way screw terminal is also provided for the IS COM line as shown below.

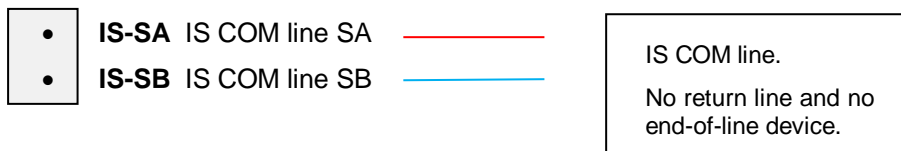
COM loop connector ("left"):



Power supply connector ("right"):



IS connector:



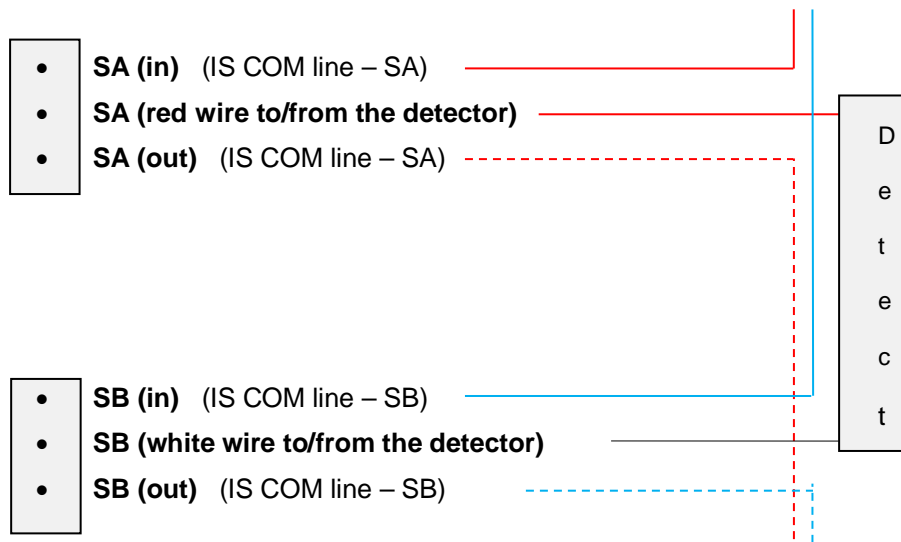
NOTE:

The cable gland close to the IS connector has to be used for the (blue) IS COM line cable, cable screen is not used.

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IS smoke detector 2840 or heat detector 2841

Each detector is supplied with 2 x 3-way fast connectors for the IS COM line termination, wires can be in the range of 0.08 to 2.5 mm² wires (AWG 28-12). One connector is used to terminate the “SA” wiring and the second connector to terminate the “SB” wiring.



Note: the cable screen is not used.

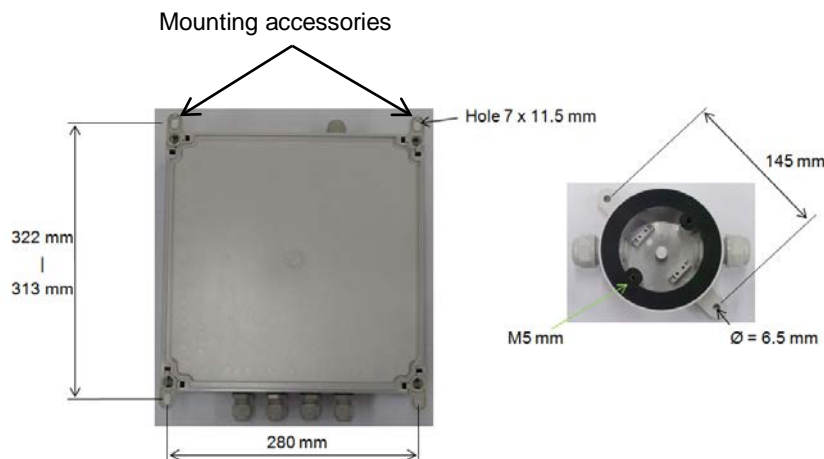
Mounting Information

1. IS barrier unit 2842

The IS barrier unit **2842** must be mounted outside the Hazardous area i.e. in the safe area.


The IS barrier unit is supplied with four mounting accessories that should be plugged in each corner of the box, see below.

Type and length of mounting screws to be used is dependent on the type of wall, etc.



2. IS analog photoelectric smoke detector 2840

The IS analog photoelectric smoke detector **2840** is to be mounted inside the Hazardous area i.e. risk area.

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The detector can be mounted with or without the water-proof IS back-box 2843. The IP rating will be different depending on whether the IP back-box 2843 is used or not.

When the detector is mounted without the IS back-box 2843, i.e. with another back-box or directly in the ceiling, it has two mounting holes, c/c 70 mm, Ø=6 mm. Type of screws is dependent on type of ceiling or the back-box used.



When the detector is mounted with the IS back-box 2843, the two supplied 25 mm M5 screws should be used and the black rubber gasket must be in the correct position.

3. IS analog heat detector 2841

The IS analog heat detector **2841** shall be mounted inside the Hazardous area i.e. risk area.

The detector can be mounted with or without the water-proof IS back-box 2843. The IP rating will be different depending whether the IP back-box 2843 is used or not.

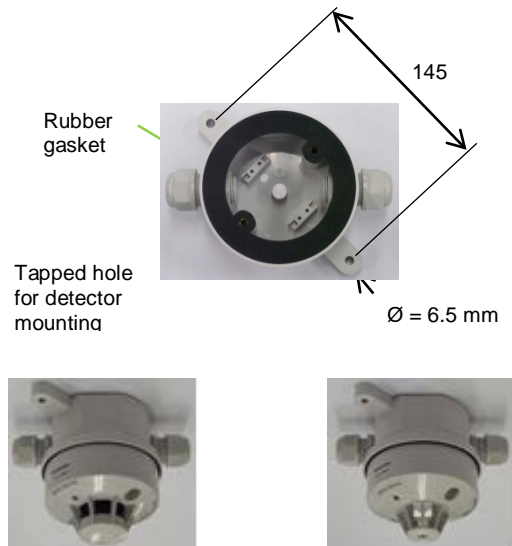
When the detector is mounted without the IS back-box 2843, i.e. with another back-box or directly in the ceiling, it has two mounting holes, c/c 70 mm, Ø=6 mm. Type of screws is dependent on type of ceiling or the back-box used.




When the detector is mounted with the IS back-box 2843, the two supplied 25 mm M5 screws should be used and the black rubber gasket must be in the correct position.

IS back-box 2843

The water-proof IS back-box 2843 has two mounting holes, c/c 145 mm, h=14 mm and Ø=6.5 mm. Type of screws is dependent on the type of ceiling. The black rubber gasket must be in the correct position before the detector is mounted on the back-box.



(Due to the continual development Brooks Australia reserves the rights to change the product specifications)

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