

IS2000 - Intrinsically Safe PIR Detector

Installation Instructions

INTRODUCTION

The IS2000 is a unique product designed specifically for use in hazardous areas such as the petrochemical industry, gas plants, explosive manufacturing / storage, pharmaceutical industry, sewage treatment plants,indeed, anywhere there is a potentially explosive atmosphere.

The detector is a movement sensor that works by looking for moving body heat (infra-red energy). The detector will connect to your alarm system or other control equipment to warn of a human presence.

The IS2000 must be used with an approved barrier which will limit the voltage and current to approved levels for the IS2000.

A suitable zener barrier can be found in the ZE Interface Unit, which also incorporates signal processing electronics to provide a perfect interface between the IS2000 and your control equipment. The ZE Interface would be installed in a non-hazardous area and connected with a four core cable to the IS2000 within the hazardous area.

Please Note : the operating temperature range for this device is -20°C to +40°C, which may be different to that specified in the IS2000 brochure

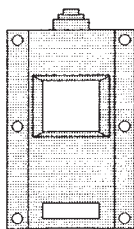
PRODUCT FEATURES

- 18m nominal detection range.
- 90° viewing angle.
- Simple 4 wire connection.
- Maintenance free.
- Very high immunity against RFI, EMI and reflected sunlight.
- High gain fresnel optics provide true volumetric coverage of the detection area.
- BASEEFA approved.
- BS EN 50014 approved.
- EN 50020 / BS 5501 part 7 approved.
- EEx ia IIC T5 approved.
- Approved for European zone 0, 1, 2, 10, 11 and North American division 1 & 2 hazardous areas.
- Approved for European IIA, IIB, IIC and North American Class 1, 2, 3, Groups A, B, C, D, E, F & G gas grouping.
- IP 67 dust & water tight enclosure.

TYPICAL APPLICATIONS

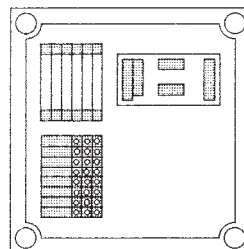
- Connection to your alarm system to warn of an intruder in a hazardous area.
- Warns your control room that factory personnel are in a prohibited area.
- Connects to your hazardous area lighting controller to switch them on only when people are in the area, hence this will reduce your electricity consumption.
- Increases the life of your battery powered emergency lighting by switching them on only when a presence is detected.

IS2000 Intrinsically Safe
PIR Detector



*Hazardous Area with
Potentially Explosive
Atmosphere*

ZE Interface Unit



Non-Hazardous Area

12V Power Supply &
Control Equipment

PRODUCT APPROVALS

The approvals on the IS2000 are your guarantee that a recognised certifying authority has approved the design to an international standard. Thereby giving you additional assurance that what you are buying is a quality product which is going to serve the intended purpose.

The IS2000 has been approved by **BASEEFA** (British Approvals Service for Electrical Equipment in Flammable Atmospheres), which is a division of the Health & Safety Executive, as meeting the requirements of the following standards.

BS EN 50 014 (Electrical apparatus for potentially explosive atmospheres - General requirements).

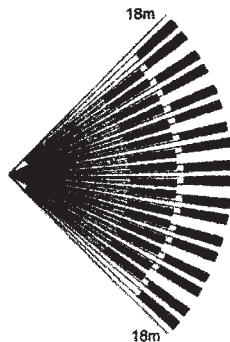
EN 50 020 / BS 5501 part 7 (Electrical apparatus for potentially explosive atmospheres - intrinsic safety).

Hazardous area marking : **Ex ia IIC T5**.

Voftek are specialists in PIR detectors and our products are designed and manufactured under the **BS EN ISO 9001** quality assurance approval.

A copy of the approval certificates are available upon request.

Plan view :



SITING THE IS2000 PIR DETECTOR

◆ For best results locate the sensor so that movement is across the detection pattern rather than towards the detector. You will notice from the detection pattern above, that a person would cross more beams this way and the sensor would therefore be more sensitive.

◆ The detector should be mounted at a height of 2.5 to 3 metres for best results.

◆ The unit should be fixed to a rigid, vibration free vertical surface for reliable operation.

◆ To minimise the possibility of false alarms, avoid aiming the IS2000 at windows which may have sunlight shining on it. Also, do not locate the detector close to heater flues, heat exchangers, or air conditioning equipment which may emit warm moving air.

◆ locating the detector close to branches of trees or bushes may also cause a false alarm as these do emit infra-red energy.

WHO CAN INSTALL THE IS2000 ?

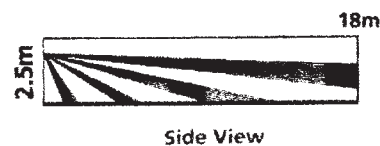
The installation of this equipment **must** be performed by engineers with the necessary experience to work in hazardous areas.

We recommend that you are familiar with **BS 5345 part 1** (Selection, installation and maintenance of electrical apparatus for use in potentially explosive atmospheres - General recommendations) & **BS 5345 part 4** (Installation and maintenance requirements for intrinsically safe electrical apparatus and systems)

HOW DOES A PIR DETECTOR WORK ?

A PIR (Passive Infra Red) sensor will detect a persons infra red energy (body heat) when it moves into it's field of view. The sensor works by splitting the area up into detection zones, as shown in the coverage diagrams below. Whenever a person is seen moving from one zone to the next, the sensor will output a signal. The high quality components, sophisticated filters and noise-free amplifiers ensure that valid alarms will be recognised.

Side view :



WHAT ELSE DO I NEED ?

The IS2000 package contains a Intrinsically Safe PIR Detector, a mounting bracket and these installation instructions. You will require the following to complete the installation ;

- 3 x size 12 by 30mm self tapping screws and appropriate rawl plugs for affixing the mounting bracket to the wall.
- M20 screw cable gland suitable for IP67 weatherproofing, for the IS2000 cable entry.
- 4 core cable suitable for the hazardous area, including cable clips, cable trunking etc. if required. (The cable must comply with your building regulations and 'interconnecting cables' section of BS 5345 part 4.)
- A suitably approved zener barrier or a ZE Interface Unit.

INSTALLATION PROCEDURE

- ① When the mounting position is chosen, fix the bracket to the wall utilising the three mounting holes. Ensure the bracket is in a vertical position with the PIR support arm at the top.
- ② Hang the IS2000 rear enclosure from the bracket using the bolt provided.
- ③ Run a suitable 4 core cable from the zener barrier or ZE interface unit to the PIR detector and feed the cable through the cable entry hole in the rear enclosure and seal using a M20 cable gland (not supplied).
- ④ Connect the Intrinsically Safe Earth wire core of the cable to the Earth post in the rear of the enclosure and connect the Earth wire from the front enclosure at the same time.
- ⑤ Connect the remaining three wires from your cable to the three way connector using the following colour code.

+	Red
-	Black
S	Blue

If you use different colours, make a note here of the colours used.

- ⑥ Push the front enclosure into place ensuring that no cables are trapped and that the gasket is sitting in place properly.
- ⑦ Fasten the six bolts on the front of the enclosure, using a 10mm socket, to secure the front into place and provide a dust tight seal.

CONNECTING TO A ZE INTERFACE

By connecting to a ZE Interface unit, this already has a zener barrier installed and pre-wired to a signal processing board. The output is an alarm standard, voltage free relay, for each IS2000 connected. Follow the instructions supplied with the ZE Interface unit for installation and connections details.

CONNECTING TO A BARRIER

If you choose not to use the ZE Interface unit, you will require a barrier for the IS2000 to be connected to. A suitable zener barrier for use with the IS2000 are available from Voltek. Ordering details ;

Part No : ZB1
Description : IS2000 Zener Barrier

WARRANTY

The IS2000 has a 1 Year parts and labour warranty. The warranty does not cover any damage caused by incorrect installation, unauthorised additions or modifications to the product, faults resulting from other manufacturers

equipment malfunctioning, natural disasters (including lightning damage).

There are no user serviceable parts within the IS2000, however, in the unlikely event that you encounter a problem with this product, it should be returned direct to Voltek or the Voltek distributor from where the product was purchased. Products covered by the warranty will be repaired free of charge. A small charge may be made for units not within the warranty.

If you have had the equipment installed by a professional installer, you may wish to take out a service/maintenance contract with the installer for extra peace of mind.

TECHNICAL SUPPORT

If you have any questions about any Voltek products, please phone Voltek on **(01785) 244035** and ask to speak to 'Technical Support'. You will invariably be put through to one of the product designers who will literally know the products inside out.

IS2000 SPECIFICATION

Safety Description

V max (+ connection)	15V DC
V max (S connection)	15V DC
I max (+ connection)	150mA
I max (S connection)	150mA
W max (total)	1.125W

General

Operating voltage	7V to 15V dc
Current consumption	6mA (max)
Output	-ve trigger
Optics	Dual element, thermally stabilised sensor with U/V protected fresnel, high density optics.
Size	150 x 100 x 100mm excluding bracket.
Weight	2.5Kg
Enclosure Material	Aluminium



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