Any alarm will cause the backlight to be switched on automatically.

Latching Alarms (default)
In the latched condition, once an alarm occurs, both audible and visual alarms continue to operate even after atmospheric hazard has cleared. Pressing any of the instrument buttons will clear an alarm. Any subsequent alarm will reactivate the audible and visual alarms.

Non-latching Alarms
In this mode, should a gas alarm occur, the instrument would enter an alarm condition. When the reading returns to normal levels, the audible and visual alarms will stop.

Vibrating Alarm
Any alarm condition that activates the audible and visual alarms will also activate the built-in vibrating alarm.

Resetting an Alarm
If an alarm condition occurs, it is possible to cancel the alarm by pressing any of the buttons, once the gas measurements have returned to a safe level. Otherwise, the instrument will remain in the alarm condition, but the audible alarm will be muted. Any subsequent alarms that occur 1 second after the previous alarm has been reset will reactivate the audible alarm.

Fault & Warning Conditions
In addition to the gas alarms, the gas detector includes a number of auxiliary alarms to safeguard proper use of the instrument. At switch on, the gas detector performs an electronic self-test that assures the user of proper performance. When the gas detector detects that an electric fault or failure condition has occurred, the audible and visual alarms are activated and an explanatory message will be displayed.

CAUTION

As the gas detector is designed to protect from potentially life-threatening atmospheric conditions, any alarm conditions must be taken seriously.

WARNING
Code - 0
See manual

The instrument displays a warning message for situations where a fault or error has occurred but may be resolved by the user.
See the **Warning Codes** in the table

Warning Codes

Number	Message	Action or Reason
8	Replace batteries	Battery unchargeable. Replace the battery pack..
9	Cartridge expired	Contact HSS Hire.
10	Cartridge expires in nn days	Contact HSS Hire.
11	Calibration due	Calibration is due soon. Recalibrate or fit new cartridge.
14	Battery low	Recharge the battery or fit new battery pack.
19	Passed install by date	Cartridge has exceeded its storage life. Fitting cartridge will reduce lifetime of cartridge.
20	See manual	Cartridge not being activated. Contact HSS Hire.
24	Please recharge or replace batteries	Insufficient battery voltage to operate the Enforcer. Recharge battery or replace the battery pack.
25	Calibration required	Recalibrate or fit new cartridge.
26	See manual	Operating temperature specification exceeded. Operate instrument within its specification.
31	Event log nearly full. Clear log to reset	20% or less remaining. When full the instrument will start overwriting the old data. Contact HSS Hire if the downloaded log is required.
32	Gas log nearly full. Clear log to reset	20% or less remaining. When full the instrument will start overwriting the old data.

Fault Codes

Number	Message	Action or Reason
12	Check batteries	Mixed battery types, i.e. one dry cell, one rechargeable. Fit two of the same type.
13	Battery empty. Check batteries	Battery too low to operate instrument. Recharge battery or fit new battery.
23	Switch on/off to reset	Caused by an unexpected switch off, e.g. poor or intermittent battery contacts. Switch off instrument and switch on again.
51	Calibration required	Cell is producing an excessive negative reading. Recalibrate
53	Calibration required	Flammable sensor has been exposed to more than 100ppm H_2S. Recalibrate
54	Low O_2 - flam inaccurate	Insufficient for Flammable sensor to operate accurately. Recalibrate or fit new cartridge.
104	Switch on/off to reset	Oxygen cell fault. Recalibrate or fit new cartridge.
105	Switch on/off to reset	Flammable cell fault. Possible Flammable fuse broken. Recalibrate or fit new cartridge.
106	Switch on/off to reset	Toxic 1 cell fault.. Recalibrate or fit new cartridge.
107	Switch on/off to reset	Toxic 1 cell fault.. Recalibrate or fit new cartridge.

TECHNICAL SPECIFICATIONS

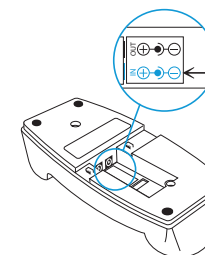| Sensors:	Range	Repeatability	Response time T_{90}
Methane	0 to 100% LEL	± 3% LEL	<15s
Oxygen	0 to 25%v/v	± 0.3%v/v	15s
Carbon monoxide	0 to 500 ppm	± 12.5 ppm	25s
Hydrogen sulphide	0 to 50 ppm	± 2.5 ppm	25s
Visual alarm	4 Hi-intensity red LEDs. 2 Hi-intensity green LEDs for confidence signal.		
Audible alarm	85dBA at 1m (90dBA at 1ft)		
Display	Large backlit graphical liquid crystal display		
IP Rating	Instrument IP67 (NEMA 4X), cartridge IP54 (NEMA 4)		
Operating Temperature	-20ºC to 55ºC		
EMC approvals	EN50270		
Battery	NiMH rechargeable, operating life > 10 hours Charge Time = 7 Hours Dry cell disposable, operating life > 17 hours		

MAINTAINING POWER SOURCES

Portable Four Gas Detector is supplied with rechargeable battery. To charge the battery, ensure that the basestation is connected to a suitable power source. Place the instrument in the basestation. The basestation employs a locking system to ensure that the gas detector is retained under most operating conditions. To ensure this operates correctly, ensure that the gas detector is orientated such that the instrument lip will be inserted under the locking lip and rear locking catch.

Locking Lip   Rear Locking Catch
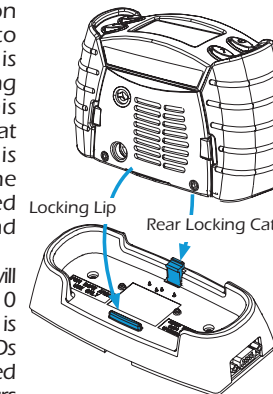
Whilst charging, the instrument will flash two red LEDs every 10 seconds. When charging is complete it will light the green LEDs constantly. A fully discharged battery will typically require 7 hours to recharge.

To remove the Gas Detector press down on the rear locking catch.

Ensure the DC power supply adaptor is connected to the 'IN' socket on the underside of the basestation.

WARNING

Do not charge the battery pack in a hazardous area

HSS Hire

EQUIPMENT CARE

Never push the equipment beyond its design limits.
If it is unsuitable for the task you are performing DO NOT USE OR RELY ON IT. Contact your local HSS Hire for advice.
Handle the equipment with care. Avoid dropping, knocking or otherwise exposing it to damage.
If the unit is exposed to potential contaminants such as silicone, leaded petrol, halogens, antimony or oxygen levels above 21%, return it to your local branch of HSS Hire for re-calibration.
Keep the equipment clean. You will find this less of a chore if you clean up regularly, rather than wait until the end of the hire period. Only use a cloth dampened with water to clean the instrument.
When not in use, store the equipment in its carrycase, somewhere clean, dry and safe from thieves.

FINISHING OFF

To turn the instrument off, press and hold the (red) ⓘ button for three seconds, until it switches off.
Make sure all components are present. **Give the unit a thorough clean before replacing it with the charger and line in its carry-case,** ready for return to your local branch of HSS Hire.

... have you been trained
The law requires that personnel entering Confined Spaces using gas detectors must be competent and qualified to do so.
Gas Detector and Confined Space training available at HSS Training Solutions.
0845 766 7799

...any problems
Contact your local
HSS Hire
0845 728 2828
we are here to help!

...any comments?
If you have any suggestions to enable us to improve the information within this guide please e-mail your comments or write to the Safety Guide Manager at the address below
e-mail: safety@hss.com

Personal Gas Detector

Continuously monitoring the atmosphere for dangerous levels of Oxygen, Methane, Hydrogen Sulphide and Carbon Monoxide, this gas detector features both audible and visual alarms.

RCD

Code 34078

INTRODUCTION

The Four Gas Detector is a compact, portable gas monitor designed to be carried or worn without hindering the user. Its purpose is to monitor the atmosphere continuously for hazardous levels of four gases: Carbon Monoxide, Hydrogen Sulphide, Methane and Oxygen enrichment / deficiency.

GENERAL SAFETY

For advice on the safety and suitability of this equipment contact your local HSS Hire.

There is a serious risk of personal injury if you do not follow all instructions laid down in this guide.

The hirer has a responsibility to ensure that all necessary risk assessments have been completed prior to the use of this equipment.
This equipment should only be used by an operator who has been deemed competent to do so by his/her employer.

This equipment may be used in a workplace subject to a permit to work, it is the hirer's responsibility to ensure that the equipment's technical specification meets the requirements of any such permit to work prior to starting work. For further technical information contact your local HSS Hire.

This equipment should be used by an able bodied, competent adult who has read and understood these instructions. Anyone with either a temporary or permanent disability, should seek expert advice before using it.

This equipment has been designed to alert the user to potentially hazardous atmospheres whilst carrying out his/her normal duties. Therefore, the instrument must be kept switched on and worn as close to the breathing area as possible.

Keep children, animals and bystanders away from the work area. Cordon off a NO GO area using cones and either barriers or tape, available for hire from your local HSS Hire.

Never use this equipment if you are ill, feeling tired, or under the influence of alcohol or drugs.
Wear sensible, suitably protective clothing and footwear plus any safety wear appropriate to the work in progress.

Make sure you know how to operate this equipment safely and are aware of its limitations before you use it.

Remember that this equipment does not guarantee life protection but if used correctly it will help provide a safer environment to work in.

Make sure that anyone in the immediate work area is warned of what you are doing.

Check the condition of the equipment before use. If it shows signs of damage or excessive wear, return it to your local HSS Hire.

Portable Four Gas Detector has been designed for detection of oxygen and 3 other gases .
An alarm indicating the presence of one or more of these potentially life-threatening hazards should be taken seriously

In the event of an alarm condition, it is important to follow procedures, directed by local or national established procedures or regulations.

IDENTIFIER

1. Buttons	6. Certification Label
2. Aperture	7. Battery Covers
3. Cartridge and Filter Cover	8. Data Connector
4. Audible Aperture	9. Tool
5. Grille Cover Screw	

▲ (yellow) Moves up through menu screens, and used to increase values

✔ (green) Used as 'OK' in menus. Accepts alarms, and resets peek values

▼ (yellow) Moves down through menu screens, and used to decrease values

⏻ (red) On/Off button. Also used as 'change' in menus

1. Oxygen
2. Methane
3. Carbon Monoxide
4. Hydrogen Sulphide

BASESTATION

Rear Locking Catch
Charger Socket
Locking Lip

ELECTRICAL SAFETY

This equipment is powered by a special battery, which may be recharged using the charger provided. The charger is designed to plug into a standard 230V 13A power socket.
To recharge the unit please see "MAINTAINING POWER SOURCES"

Never use the charger or charge the battery in a potentially explosive atmosphere.
Keep the equipment dry - using electrical equipment in very damp or wet conditions can be dangerous.

To reduce the risk of electric shock, use a suitable RCD (Residual Current Device) available from your local branch of HSS Hire.
Keep the charger and its power supply cable out of harm's way. Never carry or pull the charger by its power supply cable.
If the charger fails, or if its power supply cable or plug gets damaged, return it. Never attempt to repair it yourself.

GETTING STARTED

To turn the instrument ON, press the ⏻ button until the instrument activates its audible and visual alarms. It will follow the start-up sequence. Once switched ON, the personal gas detector will run through a series of automatic self-tests.
Once the self-tests have been successfully completed, the display will switch to normal operation to give a constant read-out of the four gas concentrations.

To turn the instrument off, press and hold the ⏻ button for three seconds, until it switches off.

OPERATING INSTRUCTIONS

Selecting Location / Operator
To change the location and/or operator press the ⏻ button and the display will show the current location. Press the ▲ and ▼ buttons to cycle through the list. Once the correct location has been found then press ✔ , and follow the same procedure to select the operator.

Fresh Air Auto Zeroing Sensor
Zero sensors?
✔ - OK
⏻ - No
If enabled the instrument will prompt if you wish to zero the sensor in fresh air, to adjust for any natural drift that may have occurred. If the ✔ button is pressed the instrument will then ask the user to ensure that it is being zeroed in fresh, uncontaminated air.

Zero sensors?
✔ - OK
⏻ - No
If the ✔ button is pressed the instrument will zero the sensors automatically, and display wether the procedure was successful. The Oxygen reading will be adjust to 20.9%v/v - the other sensor readings will be adjust to 0ppm and 0%lel appropriately. If the ⏻ button is pressed instead the instrument will use current zero values instead and proceed to the monitoring screen.

Note: This is a "soft" zero. Any adjustments only remain in force whilst the instrument is switched on.

Display Screen
With no alarm conditions, the display will typically show as on the image.
The gas sensor and their respective units are displayed, complete with a battery gauge monitor at the bottom. For an instrument fitted with less than four sensors, each unused sensor position will show '—'.

Several data screens are available and these can be viewed by pressing the ▲ and ▼ buttons to cycle through. The symbol in the centre of the screen will identify which screen is active.

Peak Screen (⏶)
This symbol is displayed when the instrument is displaying the peak readings for the sensors, i.e. the highest readings seen since the instrument was switched on or since they were reset. This is useful for pre-entry checks for confined space entry. These readings can be reset by pressing the ✔ button whilst this display is shown.

This screen will alternate with a screen showing the minimum value of oxygen. In this case the ⏶ is replaced by ⏷ .

STEL Screen (◔)
This symbol is displayed when the instrument is displaying the STEL readings for the toxic sensors. The STEL is a time weighted average, measure over a 15 minute reference period. It is used to monitor exposure to toxic gases in line with current regulations and/or legislation. Until 15 minutes has elapsed these are projected values.

LTEL Screen (◑)
This symbol is displayed when the instrument is displaying the LTEL (TWA) reading for toxic sensors. The LTEL is a time weighted average, measured over an 8 hour reference period. It is used to monitor exposure to toxic gases in line with current regulations and/or legislation. Until the gas detector has been monitoring continuously for 8 hours these are projected values.

Confidence Signal
To ensure correct operation, the instrument monitors itself and will confirm correct operation by giving an audible and green visual confidence signal once every 30 seconds. There is a configurable option to silence the audible confidence signal, but the visual confidence signal will continue to operate. If the instrument is in a low battery condition, the confidence signal will occur twice every 30 seconds.

Menu
Pressing the ✔ button will provide access to menu.

User Menu

Flammable
Calibration
Operator
Instrument
Safelink
Language

Note: Calibration is not permitted until the sensor/s have warmed up and been self-tested. If you access the user menu before this period has elapsed the Calibration option will not be available.

Flammable
The instrument is limited only to Methane. If you require any other gases than Methane please contact HSS Hire.

Operator
This allows a new operator and/or location to be selected without restarting the instrument.

Instrument Details
These are the alarm level setting for oxygen and flammable sensors. There are no associated STEL or LTEL alarms for this sensors. ↑ indicates a rising alarm ↓ indicates a falling alarm.

This shows the alarm level for the toxic sensors.

Alarm Condition
There are two modes of alarm: latching and non-latching. However, the display will give the same alarm indication:

An alarm symbol will appear in the relevant section of the display. The alarm symbol contains a number, indicating the increasing severity of the alarm, with increasing frequency of the audible and visual alarms. If there is a STEL / LTEL alarm the relevant icon will appear and flash.

Any alarm will cause the backlight to be switched on automatically.