

User Manual

FireAngel[®]

**DIGITAL 7 YEAR LIFE
CARBON MONOXIDE ALARM**

CO-9D



EN 50291-1:2010
EN 50291-2:2010
KM551504

CO-9D
GN0637R8

 A Sprue Safety Brand

Sprue Safety Products Ltd.

Vanguard Centre, Sir William Lyons Road, Coventry CV4 7EZ UK

Technical Support: **0800 141 2561**

Email: **technicalsupport@sprue.com** / Web: **www.fireangel.co.uk**



CONTENTS

Introduction	4	Sensor test	11
Features	4	Understanding the product's indicators.	12
Carbon monoxide and how it can affect you and your family	4	Alarm test	15
Where to install your detector .	6	What to do in the event of an alarm	15
How to install your detector . .	8	Maintenance.	16
Power pack activation.	9	Technical information.	16
Power pack deactivation . . .	10	Disposal	17
Operating features	10	Warranty.	17
		Disabling tab storage page. . .	18

Note: This user manual is also available in large text and other formats. Please call **0800 141 2561** for further information.

INTRODUCTION

The CO-9D digital carbon monoxide alarm is one of a new generation of domestic life safety products from Sprue Safety Products Limited, which combines the latest technology and innovative design to provide an aesthetically pleasing and effective contribution to your home safety.

FEATURES

- An advanced electrochemical sensor designed to accurately measure low levels of carbon monoxide (CO) providing an early warning of toxic CO levels in your home.
- Detects carbon monoxide continuously.
- Resistant to false alarms caused by normal household contaminants.
- Sounds a loud 85dB(A) alarm (at 1metre (3 feet)) to alert you in case of an emergency.
- Test/Silence button to regularly self-check to ensure detector is operating correctly.
- Can be free-standing or easily mounted on a wall.
- Portable, ideal for travelling.
- Certified to the European Carbon Monoxide Alarm Standard EN 50291-1: 2010, EN 50291-2: 2010.
- 7 year warranty.
- Multi-function LCD screen.
- Built-in room temperature indicator.

CARBON MONOXIDE AND HOW IT CAN AFFECT YOU AND YOUR FAMILY

Carbon monoxide is a dangerous, poisonous gas that kills hundreds of people each year and injures many more. It is often referred to as the silent killer because it has no odour or taste and cannot be seen. Like oxygen, CO enters the body through the lungs during the normal breathing process. It competes with oxygen by replacing it in the red blood cells, thereby reducing the flow of oxygen to the heart, brain and other vital organs. In high concentrations, CO can kill in minutes.

Many cases of reported carbon monoxide poisoning indicate that while victims are aware they are not feeling well, they become disorientated and unable to save themselves by either exiting the building or calling for assistance. Exposure during sleep is particularly dangerous because the victim usually does not wake up.

Symptoms of CO poisoning

The following symptoms may be related to CO poisoning which all household members should be made aware of:

- **Mild Exposure:** Slight headache, nausea, vomiting, fatigue (often described as 'flu-like' symptoms).

- **Medium Exposure:** Severe throbbing headache, drowsiness, confusion, fast heart rate.
- **Extreme Exposure:** Unconsciousness, convulsions, cardiorespiratory failure, death.

Your CO detector monitors the level of CO as parts per million (ppm) in the atmosphere surrounding the detector.

35ppm The maximum allowable concentration for continuous exposure for healthy adults in any 8 hour period, as recommended by the Occupational Safety and Health Administration (OSHA).

200ppm Slight headache, fatigue, dizziness, nausea after 2 - 3 hours.

400ppm Frontal headaches within 1 - 2 hours, life threatening after 3 hours.

800ppm Dizziness, nausea and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2 - 3 hours.

Should you suspect CO may be affecting you or your family, open the doors and windows of your property to ventilate, turn off your appliances and evacuate the premises. At this time the authorities should be contacted to locate the source of the carbon monoxide before re-entering the building. Medical attention should be

sought for anyone suffering the effects of CO poisoning (headache, nausea).

Common sources of CO

- Oil and gas boilers
- Portable generators
- Oil or solid fuel cookers
- Gas or paraffin heaters
- Barbecues
- Clogged chimneys
- Wood or gas fireplaces
- Cigarette smoke
- Gas appliances
- Any fossil fuel-burning appliance

WARNING: This carbon monoxide detector is not a combustible gas detector, nor a smoke detector. Please install the proper detectors to detect combustible gases, or smoke.

This CO detector should not be seen as a substitute for the proper installation, use, and maintenance of fuel-burning appliances (including appropriate ventilation and exhaust systems), nor the sweeping of chimneys.

WARNING: Variables relating to your fuel-burning appliances can change at any point eg. the flue or chimney could suddenly become blocked or damaged, appliances may stop running correctly or circumstances in neighbouring properties may change resulting in the presence of carbon monoxide. For this and other

reasons do not use this carbon monoxide detector on an intermittent basis, or as a portable detector for trying to trace one source of the spillage of combustion products from fuel-burning appliances or from chimneys.

Do not:

- IGNORE ANY WARNING FROM YOUR CO DETECTOR!
- Burn charcoal inside your home, caravan, tent or cabin.
- Install, convert or service fuel-burning appliances without proper knowledge, skill and expertise.
- Use a gas cooker for heating a room.
- Operate unvented gas burning appliances using paraffin or natural gas in closed rooms.
- Operate petrol-powered engines indoors or in confined areas.
- Ignore a safety device when it shuts an appliance off.
- Barbecue indoors, or in an attached garage.

Always:

- Buy appliances accepted by a recognised testing laboratory.
- Install appliances according to the manufacturer's instructions.
- Have appliance installations carried out by professionals (for gas appliances engineers should be registered).

- Have your appliances checked regularly by a qualified service engineer.
- Have your chimneys and flues cleaned professionally every year.
- Make regular visual inspections of all fuel-burning appliances.
- Open windows when a fireplace or oil/solid fuel cooker is in use.
- Only install CO detectors that meet the requirements of EN 50291-1: 2010 in your home.
- Be aware of CO poisoning symptoms.

Educate yourself and your family on the sources and symptoms of CO poisoning and how to use your carbon monoxide detector!

WHERE TO INSTALL YOUR DETECTOR

This CO alarm is suitable for use in domestic premises, caravan holiday homes, caravans and motor caravans.



The following advice is applicable to all intended applications, there are special instructions at the end of this section relating to positioning in caravan holiday homes, caravans and motor caravans.

WARNING: This detector will only indicate the presence of carbon monoxide gas at the sensor. Carbon monoxide gas may be present in other areas.

In which room should the detector be installed?

Ideally, an apparatus should be installed in every room containing a fuel-burning appliance. Additional apparatus may be installed to ensure that adequate warning is given for occupants in other rooms, by locating apparatus in:

- Remote rooms in which the occupant(s) spend considerable time whilst awake and from which they may not be able hear an alarm from apparatus in another part of the premises, and
- Every sleeping room.

However, if there is a fuel-burning appliance in more than one room and the number of apparatus is limited, the following points should be considered when deciding where best to put the apparatus:

- Locate the apparatus in a room containing a flueless or open-flued appliance, and
- Locate apparatus in a room where the occupant(s) spend most time.
- If the domestic premises is a bedsit (a single room serving as both sitting and bedroom) then the apparatus should be put as far from the cooking appliances as possible but near to where the person sleeps.

- If the appliance is in a room not normally used (for example a boiler room), the apparatus should be put just outside the room so that the alarm may be heard more easily. Alternatively, a remote alarm siren may be connected to a type A apparatus located in a room(s) containing a fuel-burning appliance.

Where in the room should I place the detector?

Apparatus located in the same room as a fuel-burning appliance, for both wall and ceiling mounted apparatus the following applies:

- a** The apparatus should be at a horizontal distance of between 1m and 3m from the potential source.
- b** If there is a partition in a room, the apparatus should be located on the same side of the partition as the potential source.
- c** Carbon monoxide detectors in rooms with sloped ceilings should be located at the high side of the room.

In addition to the above the following must be observed if the apparatus is located on a wall:

- a** it should be located close to the ceiling;
- b** it should be located at a height greater than the height of any door or window;
- c** it should be at least 150mm from the ceiling.

If the apparatus is located on the ceiling:

- a it should be at least 300mm from any wall and any ceiling obstruction e.g. light fittings.

Apparatus located in sleeping rooms and in rooms remote from a fuel-burning appliance should be located relatively close to the breathing zone of the occupants.

Caravans

Caravans may have additional risks of carbon monoxide ingress through air vents due to the nearby presence of other vehicles, engines, generators or barbecues, however this does not change the basic guidance on location of the alarm. Caravans should be fitted with an alarm in the same room as any combustion appliance(s), located in accordance with previous advice in this section. If the caravan has a single living space which incorporates the sleeping accommodation, it can be considered to be equivalent to a bedsit, and a single alarm is sufficient. However, any sleeping accommodation which is in a separate room from the combustion appliance(s) should also contain an alarm, located in accordance with previous advice in this section.

It is not always possible to find an optimum location for an apparatus, for example, a small caravan may not have suitable vertical surfaces available. Nevertheless, when fitting an apparatus in such situations, the two most important considerations when selecting an appropriate location are:

- Not mounting the apparatus directly above a source of heat or steam; and
- Mounting the apparatus at a distance of 1 – 3 m from the nearest edge of the potential source.

HOW TO INSTALL YOUR DETECTOR

NOTE: This apparatus should be installed by a competent person who feels able to install it according to the instructions.

Firstly write the installation date on your detector in the area provided. We recommend that your detector is installed on the wall.

To mount on a wall or ceiling:

Please ensure that you use the screws provided, as they were chosen specifically for use with this product. Use the template



here for guidance on marking hole positions. Drill holes into the wall. Insert the plastic wall plugs. Screw in the screws. Ensure screws are protruding from the wall by 3mm to allow detector to slot onto screws.

To place on a shelf:

The base of the detector has been designed to allow it to stand freely on a shelf.

WARNING: When placing on a shelf, please adhere to the same positional recommendations as described in 'Where to install your detector'.

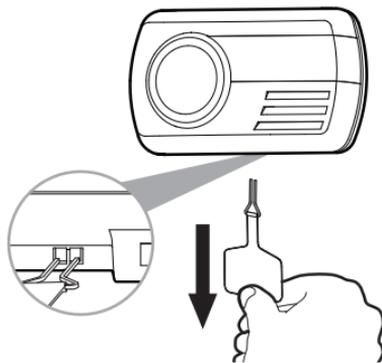
POWER PACK ACTIVATION

a Your detector comes complete with an integrated power pack that will provide power for its entire operational life. To activate the power pack you need to pull the disabling tab. This will in turn pull out the metal disabling clip, which is attached to the end of the tab, from the disabling socket which is situated on the underside of the detector. Retain the disabling tab for future use by taping it to page 18 of this manual.

b When the detector is activated the screen will display all of the icons, then after a few seconds will show the current CO level. The power indicator LED below the  symbol will also flash green once every minute to indicate that the detector is receiving

power from the power pack and is fully operational. A  symbol will also flash briefly on the LCD screen approximately once every minute.

- c** Test the sounder, power pack and circuitry by pushing the centre of the Test/Silence button briefly to confirm that the detector is operating properly. The sounder will sound as soon as the button is pressed, and the alarm LED will illuminate red indicating that the sounder is working and the power pack is providing power to the unit. You'll notice that the display will switch to temperature mode, this is explained later in the manual, press the button again to return to the CO display. This test for the sounder, power pack and circuitry should be performed on a weekly basis and should be continued for the lifetime of the product.



WARNING: Prolonged exposure to the sounder in close proximity to your ears may damage your hearing.

Under normal operating conditions, the power pack will last for the lifetime of the product i.e. 7 years.

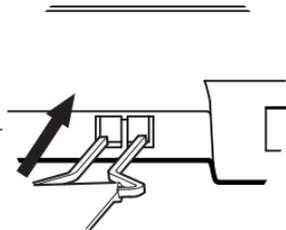
The detector will not protect against the risk of carbon monoxide poisoning when the power pack has drained.

WARNING: Prolonged exposure to extreme high or low temperatures may reduce the life of the power pack.

POWER PACK DEACTIVATION

Your CO-9D is portable, making it ideal for taking with you on holiday. You will need to deactivate your detector when travelling or even when storing e.g. when decorating. Fitting is the reverse of removal. To deactivate the detector the two ends of the metal clip must be inserted into the corresponding holes in the disabling socket located on the underside of the detector. You can ensure that the product is disabled by pressing the test button - if there is no sound from the sounder then the clip has been fitted correctly.

The clip must remain in the disabling socket to keep the power pack deactivated.



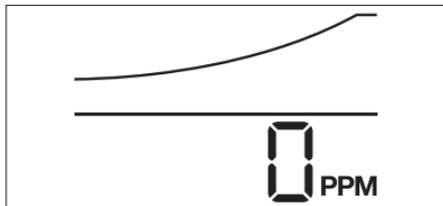
NOTE: If the disabling tab is no longer available then the clip can be replicated by opening out a thin metal paper clip into a U-shape.

OPERATING FEATURES

Your detector offers many features which set it apart from other CO detectors on the market today.

Standby mode

The alarm can display two views when in normal standby mode, the current level of CO or provide an indication of the current room temperature in degrees centigrade (°C). When the alarm is showing the current CO level you will see something similar to the following:



FireAngel's unique digital read out displays the amount of CO that the sensor is detecting shown in parts per million (PPM). It is designed to indicate levels from 10PPM to 999PPM.

NOTE: Ambient background levels between 0PPM and 10PPM will show as 0PPM.

When the alarm is showing the indicated room temperature you will see something similar to the following:



In both modes you will notice a  symbol appear briefly in the top left hand corner of the screen once every minute. This is an additional indication to show you that the alarm is operating as well as the flashing green LED.

To switch between CO and temperature view, simply press the Test/Silence button briefly. The unit will also sound when pressing the button to switch between the two display modes.

You will also notice that when switching between modes the display will change slightly, this is because the alarm is

displaying the Peak Level CO reading that it has recorded in the last 4 weeks, please see the following peak level reading feature section for further description.

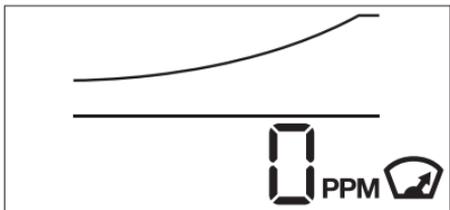
NOTE: If the alarm is in temperature view and detects CO it will automatically switch back to CO display mode.

Power pack, sounder and circuitry test

Pressing the Test/Silence button will also test the power pack, sounder and circuitry of the alarm. The unit will sound and the alarm LED below  will illuminate red. You should perform this test once per week.

Peak level reading feature

The alarm will record the highest reading of CO that it has detected in the last 4 weeks. This information is useful if your alarm has sounded so you can see the highest level of CO detected during that time. It is also useful to check periodically to see if a readable level of CO has been detected for a short time, but not long enough to trigger a full alarm. The peak level reading is shown briefly every time you press the Test/Silence button and will look something like the image below.



NOTE: It is possible and quite normal for the peak level to remain at 0ppm, i.e. this simply means that the alarm has not detected any CO in the last 4 weeks.

The peak level reading will be reset to 0ppm whenever a Sensor Test is carried out (see section 'Sensor Test').

SENSOR TEST

CAUTION: Sensor testing should only be performed by a responsible adult. This test should only be performed annually. Excessive testing will shorten the life of the power pack.

NOTE: Aerosol CO test kits may be used in order to avoid having to burn incense sticks.

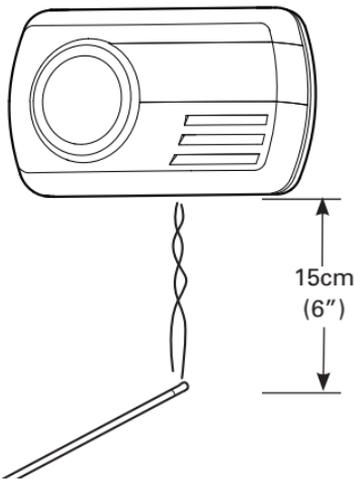
Step 1: If the alarm is wall mounted unhook it from the fixing screws.

Step 2: Hold the Test/Silence button down until the spanner icon appears in the bottom left hand corner of the screen and the bar graph 'scans' from left to right. This indicates the alarm is in sensor test mode where the sampling rate of the

sensor has increased and the alarm can be tested using a known source of CO.

Step 3: Light an incense stick using a match or lighter. Extinguish the lighter, or put out the match and place it into a dish of water.

Step 4: Hold the incense stick 15cm (6 inches) below the detector, so that the smoke goes into the holes at the bottom of the detector.



As the smoke gets into the alarm the display will show the amount of CO being detected. When the level of CO in the sensor reaches 50ppm the alarm will sound a single alarm cycle, this confirms that the sensor is working correctly and is

the end of the sensor test. The alarm will return to normal standby mode.

Step 5: Put out the incense stick by placing it into a dish of water. Ensure that all flames have been extinguished.

NOTE: If the level of CO in the sensor doesn't reach 50ppm then the Sensor Test mode will time out and finish automatically after 3 minutes. Even if the level doesn't reach 50ppm, as long as the display shows a reading of CO then you can be confident that the alarm is working correctly. If you have any questions about testing the sensor please contact the Technical Support team.

UNDERSTANDING THE PRODUCT'S INDICATORS

Digital display

The LCD screen has many icons with one or more being shown at any one time.



Bar graph to show early build up of CO

To understand the role of the product indicators please refer to section 'Carbon monoxide and how it can affect your family'. The alarm has a bar graph which mimics the way CO levels build up in the blood stream. The response times of the alarm are determined by the European Standard EN 50291-1: 2010 so the alarm will only sound when it has detected CO for a prescribed length of time, the higher the level of CO the quicker the alarm must sound. However with FireAngel's CO-9D there is an early visual warning that CO is present. When CO is first detected the alarm indicates it's presence by displaying the level on the screen in parts per million (ppm). If CO continues to be present additional bars will appear on the graph. When the graph is full i.e. the 6th segment is shown the unit will sound a loud audible alarm (85 dB at 1m (3 feet)) and the alarm LED below the  symbol on the front of the detector will flash red once every second.

The alarm will sound:

- Between 60 and 90 minutes when exposed to a minimum of 50ppm of CO.
- Between 10 and 40 minutes when exposed to a minimum of 100ppm of CO.
- Within 3 minutes when exposed to a minimum of 300ppm of CO.

WARNING: A loud alarm is a warning that unusually high and potentially lethal levels of carbon monoxide are present. Never ignore this alarm, further exposure can be fatal. Immediately check residents for symptoms of carbon monoxide poisoning, and contact the proper authorities to resolve all CO problems. **NEVER IGNORE ANY ALARM.**

Alarm silence:



It is possible to temporarily silence the alarm up to two times if the level of CO that triggered the alarm is less than 200ppm. After ventilating the property you can temporarily silence the alarm by pressing the Test/Silence button, the alarm will stop and the silence mode symbol will appear on the screen. The silence mode will last for up to 3 minutes. If the CO level remains too high the alarm will trigger again or if the level of CO rises above 200ppm then the detector will automatically re-enter alarm mode. If the level of CO has fallen to a satisfactory level the silence mode icon will disappear, the unit will exit alarm mode and the segments of the bar graph will slowly disappear as the CO in the sensor clears.

Alarm in absence:



If the peak level reading symbol is showing on the screen but there is no full alarm sound and you are not pressing the test button, then your detector is warning that it has

detected carbon monoxide in your absence. Immediately vacate the premises and seek medical attention for anyone suffering the effects of CO poisoning. Treat this as a serious warning. Call a qualified technician and have the problem investigated and rectified immediately.

Error signal:



The unit continuously checks the settings of its sensor and circuitry. If any of these settings are found to be incorrect, the detector will emit a single chirp once per minute and the display will show "Err" for error and an error code, cycling between "Err" and the particular error code.

Low power pack signal:



If the power pack becomes low then the detector will emit a **single chirp** once per minute and the low power pack icon will flash on the screen.

IMPORTANT: A single chirp once per minute together with an error signal or low power pack warning does NOT mean that the detector has detected carbon monoxide.

If you experience an error condition or low power pack warning and the product is still within warranty then contact technical support. If the product is no longer in warranty **replace immediately!**

IMPORTANT: The selected power pack was chosen to provide power beyond the lifetime of the product, in particular

the sensor (under normal operating conditions). The operational life of the sensor is 7 years, for this reason, the detector should be replaced after 7 years from the date of installation.

ALARM TEST

Test the sounder, power pack and circuitry by pressing and releasing the Test/Silence button to confirm that the alarm is operating properly. The alarm should sound as soon as the Test button is pressed, and the Alarm LED will illuminate red indicating that the sounder is working and the power pack is providing power to the unit. This test should be performed on a weekly basis. Perform the Sensor Test annually.

WHAT TO DO IN THE EVENT OF AN ALARM

WARNING: A loud alarm is a warning that potentially lethal levels of carbon monoxide are present. Never ignore this alarm, further exposure can be fatal. Immediately check residents for symptoms of carbon monoxide poisoning, and contact the proper authorities to resolve all CO problems. NEVER IGNORE ANY ALARM.

Please carefully review this guide to ensure that you know what actions to take in the event of an alarm.

What to do during an alarm:

- Keep calm and open the doors and windows to ventilate the property.
- Stop using all fuel-burning appliances and ensure, if possible, that they are turned off.
- Evacuate the property leaving the doors and windows open.
- Ring your gas or other fuel supplier on their emergency number; keep the number in a prominent place.
- Do not re-enter the property until the alarm has stopped. When exposed to fresh air it can take up to 10 minutes for the sensor to clear and the alarm to stop depending on the level of carbon monoxide detected.
- Get medical help immediately for anyone suffering the effects of carbon monoxide poisoning (headache, nausea), and advise that carbon monoxide poisoning is suspected.
- Do not use the appliances again until they have been checked by an expert. In the case of gas appliances the engineer must be registered on the Gas Safe register.

WARNING: Alarms conforming to this standard may not protect people who are at special risk from carbon monoxide exposure by reason of age, pregnancy or medical condition. If in doubt, consult your doctor.

MAINTENANCE

Your detector will alert you to potentially hazardous CO concentrations in your home when maintained properly. To keep your alarm in proper working order, and to ensure that the sensor will last for the lifetime of the product, it is recommended that you keep it free of dust by gently vacuuming the case with a soft brush attachment every 3 months.

To prevent the possibility of contaminating the sensor in your detector and thus affecting its reliability:

- Never use cleaning solutions on your detector. Simply wipe with a slightly damp cloth.
- Do not paint the detector.
- Do not spray aerosols on or near the detector.
- Do not use any solvent based products near the detector.
- Do not attempt to repair your CO detector. Do not remove any screws or open the main casing of your detector. Any attempt to do so may cause malfunction and will invalidate the warranty.

TECHNICAL INFORMATION

Detector Specifications: Model CO-9D

Sensor Type: Electrochemical

Sensor Life: 7 Years

Alarm Sound Level: 85dB at 1m (3 feet)

Power Pack Life: 7 years (life of product)

Temperature Range: -10°C (14°F) to 40°C (104°F)

Operating Humidity Range: 30 - 90% RH

Weight: 120 grams (4.23oz)

Certified to: EN 50291-1: 2010

EN 50291-2: 2010

This carbon monoxide detector is designed to continuously monitor for CO. Its response times meet the requirements of European standard EN 50291-1: 2010 and EN 50291-2: 2010.

WARNING: Apparatus conforming to this standard may not protect people who are at special risk from carbon monoxide exposure by reason of age, pregnancy or medical condition. If in doubt, consult your doctor.

A carbon monoxide detector is not a substitute for a smoke alarm or a combustible gas detector.

Replace unit after 7 years of operation.

DISPOSAL

Waste electrical products should not be disposed of with regular household waste. Please recycle where facilities exist. Check with your local authority, retailer or manufacturer for recycling/disposal advice as regional variations apply.

The power pack should be deactivated before disposal. To do this, insert the two ends of the metal clip on the end of the disabling tab back in to the socket located on the underside of the detector. If the disabling tab is no longer available then the clip can be replicated by opening out a thin metal paper clip into a U-shape.

WARNING: DO NOT ATTEMPT TO OPEN - DO NOT BURN.

WARRANTY

Sprue Safety Products Ltd warrants to the original purchaser that its enclosed carbon monoxide alarm be free from defects in materials and workmanship under normal residential use and service for a period of 7 (seven) years from the date of purchase. Provided product is sent back to Sprue Safety products with proof and date of purchase, Sprue Safety Products Ltd hereby warrants that during the 7 (seven) year period commencing from the date of purchase Sprue Safety Products Ltd, at its discretion, agrees to replace the unit free of charge. The warranty on any

replacement CO-9D alarm, will last for the remainder of the period of the original warranty in respect of the alarm originally purchased – that is from the date of original purchase and not from the date of receipt of the replacement product. Sprue Safety Products Ltd reserves the right to offer an alternative product similar to that being replaced if the original model is no longer available or in stock. This warranty applies to the original retail purchaser from the date of original retail purchase and is not transferable. **Proof of purchase is required.**

This warranty does not cover damage resulting from accident, misuse, disassembly, abuse or lack of reasonable care of the product, or applications not in accordance with the user manual. It does not cover events and conditions outside of Sprue Safety Products Ltd's control, such as Acts of God (fire, severe weather etc.). It does not apply to retail stores, service centres or any distributors or agents. Sprue Safety Products Ltd will not recognise any changes to this warranty by third parties.

Sprue Safety Products Ltd shall not be liable for any incidental or consequential damages caused by the breach of any expressed or implied warranty. Except to the extent prohibited by applicable law, any implied warranty of merchantability or fitness for a particular purpose is limited in duration for 7 (seven) years.

This warranty does not affect your statutory rights. Except for death or personal injury, Sprue Safety Products Ltd shall not be liable for any loss of use, damage, cost or expense relating to this product or for any indirect, or consequential loss, damages or costs incurred by you or any other user of this product.

STORE DISABLING TAB HERE

Tape disabling tab here for future use

