How to Plan and install an Intruder Alarm

Honeywell

PART 1   August 2009

What is an intruder alarm?

An intruder alarm system monitors and detects unauthorised entry to properties – homes and businesses alike - and alert the property owner or authorised third parties to an intrusion. For electrical installers, the ability to offer customers the opportunity to have a protection system installed in their properties at the same time that other electrical work is carried out, can generate a lucrative additional revenue stream.

Why bother with intruder alarms?

Although statistics* show that burglary rates have been dropping, there are still a high percentage of properties that do not have adequate security measures in place. The best deterrent for burglars is an intruder alarm and it needn't cost the earth to install an effective intruder alarm. Ultimately, an alarm system gives property owners the peace of mind they desire to protect their homes, families, businesses and assets.

Only around 10% of residential properties in the UK are protected by an intruder alarm system, so by introducing intruder alarm installation to your services, you could significantly grow your business and profits.

What are the components of a burglar alarm?

Did you know?

- Homes and businesses which do not employ any form of security measures are 10 times more likely to be burgled than those with simple security measures

- Homes and businesses with no burglar alarm are three times more likely to be broken into than those with alarms

- Around 20% of all house burglaries are carried out without forced entry. A burglar may see an open window or other easy point of entry and take their chance

- Visible burglar alarms make intruders think twice. They not only act as a deterrent, but will also provide a warning that an intrusion is taking place

DETECTORS

The intruder system comprises detectors, control panels and communications devices.

Detectors identify and react to specific occurrences including movement, shock, vibration, smoke, heat, and flood. Different types of detectors are available, each protecting different aspects of the property. These include:
- Passive infrared sensors (PIRs) detect people moving using infrared heat sensing,

- Dual Technology sensors use combined infrared and microwave sensing technologies to help reduce false alarms,
- Magnetic door contacts detect the opening and closing of doors and windows,
- Glass break sensors listen for the specific noise of breaking glass,
- Shock sensors detect attacks on doors and windows,
- Smoke sensors can be connected to the intruder alarm system to detect fire

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ANALYSIS

8SP399A   **8EP396A**

The control panel is the brains of the system to which detectors are connected. It analyses and actions signals from detectors and is operated by a keypad. Keypads are sometimes integrated into the control panel e.g. Optima Compact, or these can be remote with LED or LCD displays. LED keypads communicate alarm system status using LED indicators. LCD keypads use text displays to give a fuller picture of the alarm status including event logs, entry and exit times of users, and ultimately enable speedy identification of alarm sources. Control panels come in different shapes, sizes and complexities depending on the type and size of property to protect.

- Number of zones (areas) to protect
- Ability to set all or part of the system
- The number of Remote keypads it can accommodate
- Event memory log PA & Tamper inputs

ACTIVATION

8EP417A   **8EP416**

In the event of alarm activation, the **keypads** identify the problem & inform the occupants of the cause and location of the alert.

DETERRENTS

AG8/WB

Sounders and **sirens** use different tones and rhythms to communicate the type of alarm internally and/or externally. Externally mounted sounders and sirens are a good visual deterrent for potential intruders and quickly alert property owners and neighbours to an intrusion. The strobe helps to identify the house when an alarm has gone off.

ALERTS

8EP276A

Communications devices such as the Informa speech dialler send pre-recorded voice messages by telephone when an alarm is triggered. These messages can be sent to the homeowner or nominated contacts either via land line or mobile phone . This is particularly useful for isolated properties and allows action to be taken when property owners are away from home.

The ADE Gen4 Optima and Accenta range of intruder alarms from Honeywell Security is ideally suited to residential and small commercial installations and are quick and easy to install, commission and operate.

Planning and laying out an intruder alarm

Step 1: Conduct a site survey with your customer

To ensure that you get the correct intruder alarm system for your customer, you need to carefully plan and design the system. This is achieved by conducting a short site survey in consultation with your customer. The following questions will help you identify exactly what your customer wants to protect, and will enable you to map out the system plan and identify the most suitable components.

The site survey

- Is the property isolated or in a built up area?
- What parts of the property have to be protected? Does the entire property or just   part require to be protected? What areas does the customer want to protect to identify the number of zones required?
- How many entry doors exist at the property and that require protection?
- In addition to intruder protection, does the customer require fire protection?
- How many zones will be required?
- What type of keypad does the customer require (integral, LED or LCD)?

- Does the customer require additional keypads?
- Where will the control panel be located?
- Does the customer require the windows to be protected?
- How many rooms are to be protected with movement detectors?
- Does the customer have pets that will remain in the house when the system is set?
- What type of alert is required? (sounding/visual/remote phone communication)?
- Where will the external siren be located?
- Is a dummy siren also required?
- Is keyfob operation more suited to the household?

Step 2: Map out the property and select products

Using the information you have obtained during the site survey, map out property layout and select the most appropriate products for the installation

Step 3: Decide where to position the Intruder alarm system components

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MASTER BEDROOM

BEDROOM 3

BEDROOM 4

BEDROOM 2

DINING ROOM

LIVING ROOM

GARDEN AREA
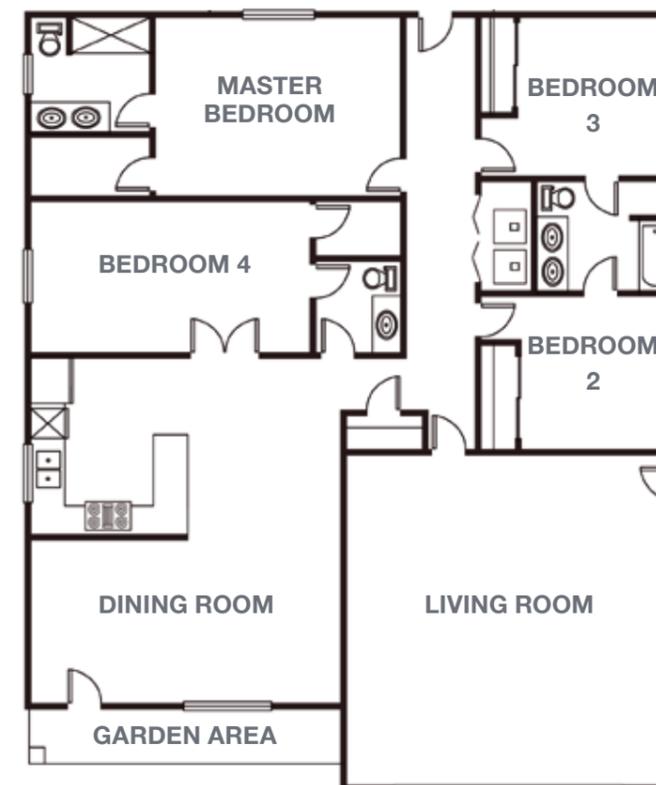
YOU ARE NOW IN A POSITION WHERE YOU CAN START THE INSTALLATION OF THE INTRUDER ALARM SYSTEM.

Honeywell has a dedicated technical support team who are readily available to support you should you have any technical queries. We also offer product training and can support you with literature and promotional materials to help you increase your business in security products.
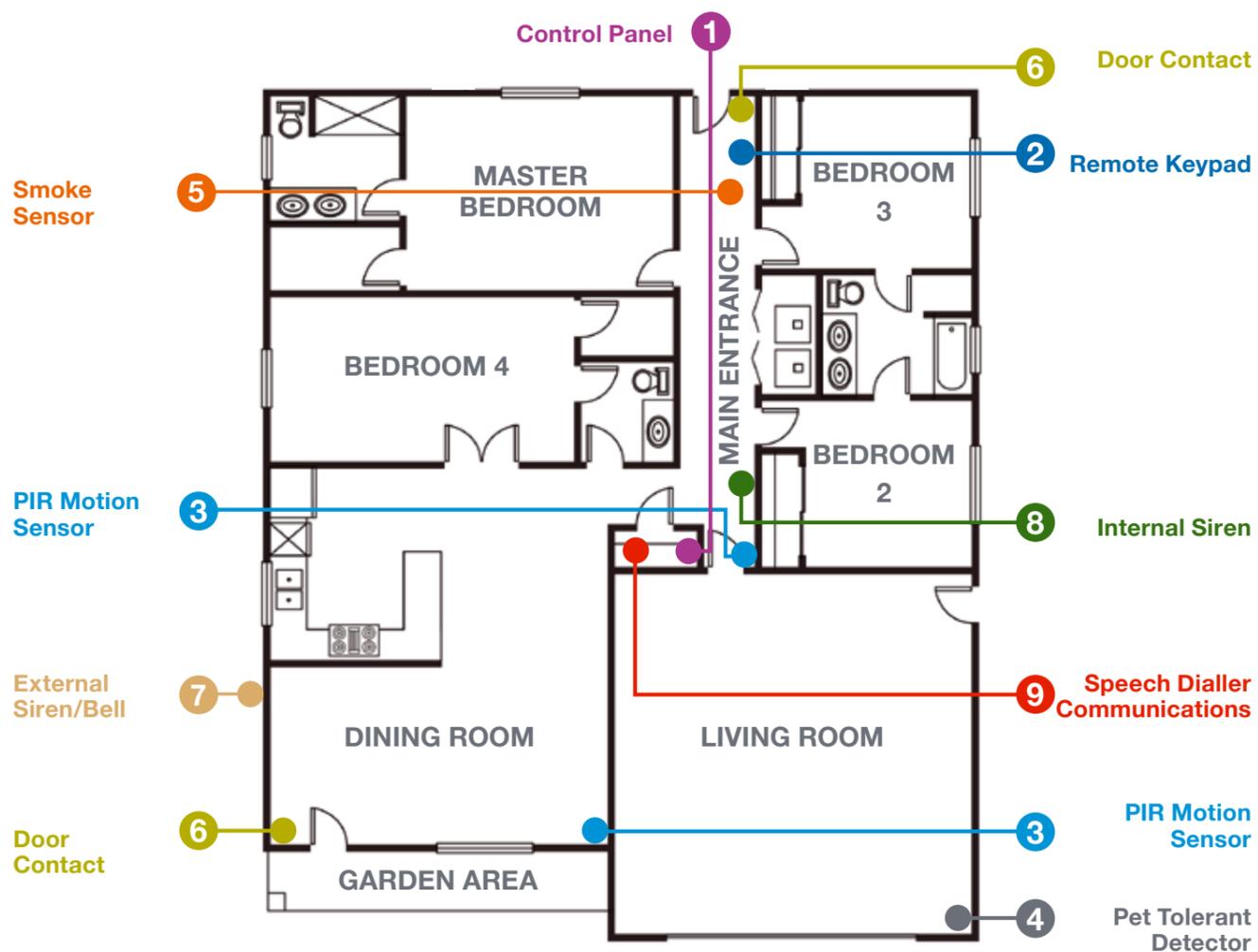
PART 2

The first part of this guide gave you intruder alarm basics, including the benefits of intruder alarms, main intruder alarm system components and how to plan and lay out an intruder alarm system.

Part two will help you to correctly position, install and commission the components of an intruder alarm system as well as giving you some visual hints and tips on best practice and how to avoid common pitfalls and mistakes.

Positioning and Installing the Intruder Alarm System Components

As a guide, follow the tips and recommendations below.

1. Control Panels
2. Smoke Sensors
3. Pet Immune Detector
4. PIR Motion Sensors
5. PIR Motion Sensors
6. Door Contacts
7. LCD or LED Keypads
8. Internal Siren
9. Speech Dialler Communications

Control Panel 1

6 Door Contact

MASTER BEDROOM

BEDROOM 3

2 Remote Keypad

Smoke Sensor 5

MAIN ENTRANCE

BEDROOM 4

BEDROOM 2

8 Internal Siren

PIR Motion Sensor 3

9 Speech Dialler Communications

External Siren/Bell 7

DINING ROOM

LIVING ROOM

Door Contact 6

GARDEN AREA

3 PIR Motion Sensor

4 Pet Tolerant Detector

1. Control Panels

Positioning

- For control panels with onboard keyboards such as Honeywell's Optima Compact, these should be installed near the main access point in a convenient location for mains electricity supply and for user operation
- For control panels which are operated using remote keypads, such as Honeywell's Accenta Mini, the panel can be concealed inside a cupboard or loft space in a convenient location for mains electricity supply and it makes the cabling to the sounder much easier

Best Practice

- It is best to install the control panel first

Hints and Tips

- Check the panel voltage to ensure that the control panel has power. **REMEMBER** to disconnect power before proceeding with the installation of peripherals

- Remember to link out any zones that you are not using, you need to use a wire link across the unused zones

- The stand by battery can take several hours to charge up so it is a good idea to charge batteries before commencing the installation
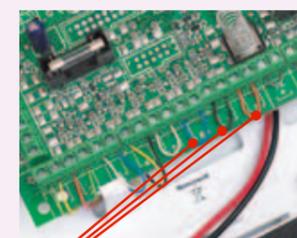
Zones 5 – 8 are linked out

2. Remote LCD or LED Keypads

Positioning

- Mount in a convenient location which allows easy operation for the system users, typically close to the main door, back door and master bedroom

Hints and Tips

- Remember to check that the tamper spring on the keypads is **closed**
- It is recommended to use the tamper spring whenever the keypad is mounted against a wall so that it is triggered if an attempt is made to remove it

Step 1:

Identify tamper spring

Step 2:

Remove perforated "knockout" from the keypad's back plate

Step 3:

Mount the keypad on the wall, ensuring that the spring is depressed against the wall thus closing the tamper circuit

- In the case where the tamper circuit is not closed using the knockout (i.e. it remains intact on the keypad), ensure that the tamper spring sits in the cup situated on the knockout as indicated below

3. PIR Motion Sensors

Positioning

- Install the sensor at a height of 2.3m-2.7m
- Avoid direct or reflected sunlight remembering that the sun moves around during the year!
- Position the sensor away from windows and heating/cooling devices such as radiators and fans
- The sensor must have a clear line of sight to the protection area

How to avoid the common mistakes with installing PIRs

- Where the PIR has a look down or "sneak" zone, ensure that this is not obstructed
- Pay attention to avoid blind spots when positioning sensors
- Always adjust the sensitivity of each sensor once it is mounted, taking into consideration the lighting, the proximity to radiators, windows, mirrors and other xternal influences
- Tamper switches often cause problems. If you are using the tamper switch ensure that the tamper switch is closed. If you are not installing the tamper circuit (not advised) you need to ensure that the tamper circuit is linked out at the control panel
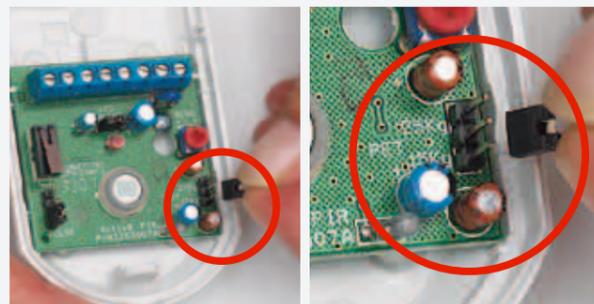
Hints and Tips

- If wall is not square you may need to alter the state of the plastic to make sure when mounting that you hear the tamper spring "click", closing the circuit
- Using the black jumper, you can easily set the red LED light to ON or OFF as indicated below. This is particularly useful in living rooms where the LED flashing on and off could be distracting
- Allow up to one minute for the PIR to calibrate itself

4. Pet Tolerant Detectors

Positioning

- Follow the instructions for positioning PIR motion sensors
- Select correct pet tolerant setting using the black jumper as indicated below

5. Smoke Sensors

Positioning

- Place in or just outside bedrooms or in the hallway close to any sleeping area. The top of the stairs is also a good place
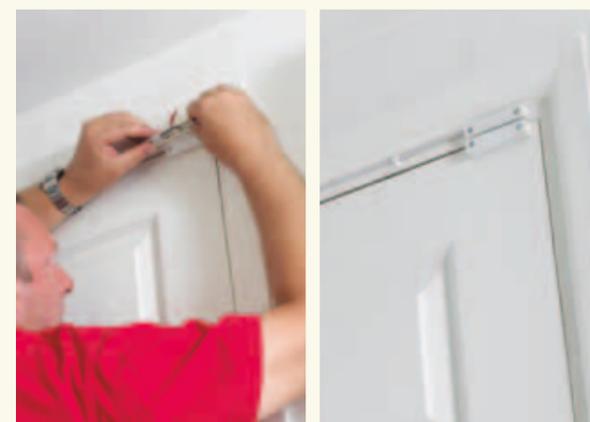
Hints and Tips

- Do **NOT** place smoke sensors in kitchens or bathrooms


6. Door Contacts

Positioning

- Mount the main part (part with connectors) on the fixed part of the door or window frame. Do not mount them further than 3" from the opening side of the door
- Mount the magnet on the mobile part of the door or window so that it is adjacent to the main part
- Ensure that the two parts are opposite each other and a small gap has been left

Hints and Tips

- Ensure that wires are hidden so that they cannot be damaged
- Ensure that wires are hidden so that they cannot be Please note that some Honeywell door contacts have two rather than five terminals
- If there are only two screws, a tamper loop will need to be created by twisting the cables then insulating them with electrical tape
- Wrap the wire around the screw in a clockwise direction and tighten the screw for the best connection
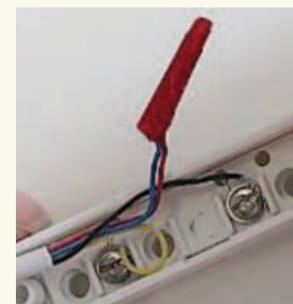
7. External Sirens & Bells

Positioning

- Install in a high location from which the strobe can be seen and the siren heard

Hints and Tips

- Ensure that the tamper is closed

8. Internal Siren

Positioning

- Place in the centre of the home out of reach

9. Speech Dialler Communications

Positioning

- Locate where it can be easily operated by system users and in a convenient location for connection to the phone line
- If possible, do not connect other telephone apparatus to the same line

Best Practice

- Connect the speech dialler directly into the control panel
- Once wired in, test that the dialler dials through before programming the pre-recorded alert messages according to trigger cause (e.g. intruder, fire, flood)

How to avoid the common mistakes with

installing a speech dialler

- Ensure that the speech dialler is the first item on the telephone line i.e. the first "slave socket" to be connected to the master socket (where more than one apparatus is unavoidable). This allows the speech dialler to "snatch the line" or disconnect any other call should it be triggered

Installation Advice and Best Practice

When installing an intruder alarm it is imperative that you follow the necessary Health and Safety requirements according to The Electricians Guide to the 17th Edition of the IEE Wiring Regulations. Installation of the intruder alarm is straight forward provided that the installer is a qualified and experienced electrician.

General hints and tips

- Use multiple core alarm cable and decide at the outset which colours you will use – Convention suggests red is live (+12V) and black is negative (0 Volts)
- Remember to "tin" the wire
- Do not over tighten the screw on the connector block as this can shear the wire
- When using the global tamper circuit, this is a continuous loop through all zones (contacts, PIRs PA devices etc) so all tampers need to be wired

1) Do not work using live circuits
2) Run the wires to all the locations of the peripherals
3) Mount the control panel in the desired location
4) Mount the keypad on the wall in the location agreed with the customer
5) Wire up the peripherals (detectors, bell boxes, communication devices…etc)
6) Activate the power
7) Carry out a walk test and check the system is working

Once you have installed the Intruder alarm system and verified that all components of the system have power you need to commission the alarm.

THE MOST IMPORTANT RECOMMENDATION IS

ALWAYS READ THE INSTRUCTIONS!!

Programming and Commissioning the Intruder Alarm

Programming and commissioning the intruder alarm system really means establishing your customers requirements, programming the system to meet these requirements and then commissioning the system to ensure it works.
1) Test the control panel, keypad and all peripheral devices to ensure they are working. **2)** Programme the control panel according to the requirements that you agreed with your customer' There are different programmes for different types of programme setting.

Overview of button functions during programming & commissioning

Function ▲ :
Use to scroll through menu and submenu options

Function √ :
accesses sub menu options

Function X :
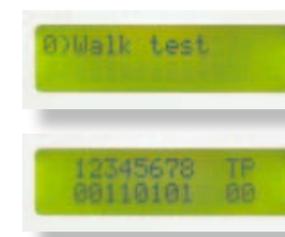exit menu functions during programming

Test the System

Carry out a walk test and an alarm test to confirm that the system is working correctly and that the control panel, keypads and zones are also working.

Walk Test

The walk test checks each detector to verify that they are functioning correctly.

Use [▲] to select walk test

Press [√] to display zones 1 – 8. When a zone is successfully tested number 1 replaces the 0.
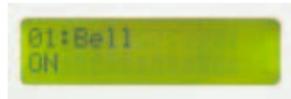
[X] leaves the menu and [√] restarts the walk test.

To walk test a zone it has to be activated. For example, open the magnetic contact or walk about in a detectors field of coverage.

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Alarm Test

Use **to select alarm test**

`1)Alarm Test`

Press to access the function **ON** or **OFF**.

`01:Bell`
`ON`

Use the button to access the other functions.

`02:Strobe`
`ON`

`03:Sounder`
`ON`

Press to leave the menu

`1)Alarm Test`

Set up Codes

There are four codes in the system, two user codes, a duress code and an engineer code. These can be any four digit number. You must ensure that you change each of the codes so that they are no longer set as the default, including the engineer code (9999).

1) To set or change the codes scroll to

`8)Set Up`
`Codes`

using to scroll through codes:

`81)Set Up`
`User 1`

`84)Set Up`
`Engineer`

Set up Codes

2) Press to enter and then to edit the code. The new four digit number will save automatically when the last digit is keyed in.

3) Use the to move through the codes and follow the same sequence of steps.

Programme the Control Panel

Programme the control panel according to the requirements that you agreed with your customer.

Set up Zone Names

Scroll through the menu to find:

`6)Set Up`
`Zone Names`

Press to go to zone 1 descriptor and then again to scroll through the library to the desired descriptor:

`1:Front Door`

Press to go to the next zone and repeat the above process.

Press to save programming and leave the function.

Set up time and Date

`4)Set Up`
`Time and Date`

Press to set time and date.

Set the time using the number keys 0 – 9 on the keypad.
The cursor will automatically move on to the next digit after each is set.

`Time and Date`
`Time?   12:50:02`

Press to confirm the time is correct or to cancel and start again.

`Time and Date`
`Date?   15-09-08`

Repeat the same steps for the date.

Set up Programmes

There are different programmes for different types of programme setting. With Honeywell's Accenta and Optima intruder alarm, there are three programmes.

1) Programme one is a full set programme

2) Programmes two and three are part set programmes which can be used for a night-time set where only the downstairs of a property may be set or they can be used to protect a garage for example...

P)Set Up
   Programs

P)Select Program
   1 2 or 3
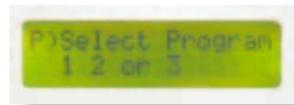
Then proceed to set up each zone (01 – 08) to as one of the following:
1 = Used zones
2 = Timed zones
3 = Inhibit zones
4 = Entry time
5 = Exit time
6 = Exit mode

For example

P)Program Edit
   Inhib Zones

Exit Mode

• The default for programmes two and three have the exit mode disabled, this means that before these will work, you must set up the "exit mode" in each programme. These can be set using the keypad numbers as follows:

P)Program Edit
   Exit Mode

and then press [✓] to select one of the following exit modes:

"0" = Disabled
"1" = Timed
"2" = Final door (preferable)
"3" = Silent timed

Press [✗] three times to save programming and leave the function.

• When using the pre-set timed exit, this is connected to a door contact and you may need to consider walk through zone when setting the system which allows you to walk past a zone without triggering the alarm.

P)Program Edit
   Exit Mode

P)Exit Mode
   FINAL DOOR

P)Exit Mode
   TIMED

Zone Activation

• You must always set zones to used or unused: e.g.

P)Program Edit
   Used Zones

1:Front Door
Used?   YES

5:Bedroom 1
Used?   NO

Alarm Operation

Review the programming with the customer and give instructions on how to operate the system. System operation includes: setting and unsetting the system and making any adjustments that the customer may wish.

Setting & Unsetting the alarm system

Panic Alarm

Explain to the customer about the panic alarm. By pressing the two buttons indicated will initiate the internal and external sounders.

Post Installation

Finally, it is good practice to contact your customer a few days after completing the installation to check that they are happy with the system and to offer them an Annual Service and Maintenance (ASM) contract.
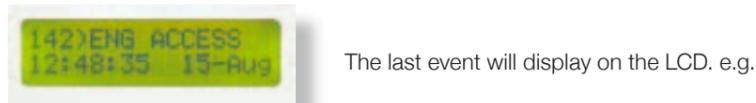
THE MOST IMPORTANT RECOMMENDATION IS ALWAYS READ THE INSTRUCTIONS!!

Honeywell offers product training and can support you with literature and promotional materials to help you increase your business in security products.

Viewing the Event Log

The event log allows the home owner to see a list of up to 250 alarm system events which have taken place in date and time format.

To view the event log, scroll through the menu using the ▲ button until you find the screen:

Press ✓ and Event Log 1 LCD, 2 LED? then 1 for the LCD keypad.

The last event will display on the LCD. e.g.

To go forward through the log use the button, and to go back through the log use ▲

*Acknowledgements/Sources

"The information contained within this document is for guidelines only. Always refer to the manual or user guide for installation and operation"

Find out more:

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