

SYSTEM OPERATION

Setting Methods

The system may be set in a variety of ways. Each method will depend upon the design and layout of the overall system, and the status of each zone etc. at the time of setting. Obviously some facilities may not be required on all installations, whilst others will prove extremely useful and beneficial to the customer.

Setting the System

To Set the system check that the Day indicator is showing, enter the 4 digit customer code and check that no zone faults are displayed. The sounder will now produce a bleep tone and the building may be exited by the correct route. If the system is not clear, then the sounder will produce a broken bleep tone, one bleep for zone 1 open, two bleeps for zone 2 open etc. The relevant zone indicator(s) will also be displayed. At this point the customer code may be re-entered or the zone may be omitted from the system.

Omitting a Zone

During the exit period (after entering the customer code) any zone in a fault or clear condition may be omitted from the system. Pressing the OMIT ZONE button will change the exit tone to an omit tone, pressing 0 resets any false selections, pressing 2 selects zone 2 etc. The zones about to be omitted are now displayed. When selection is complete press SET to continue and start the exit tone again.

Zones which are considered to be high security may be programmed to be omit prevented. Any attempts to omit these zones during setting the system will cause a reject bleep, but leave the system in the omit routine, awaiting another selection.

Part Set

When Part Set is used, the system undergoes two changes. Firstly zones are automatically omitted without the need to go through the omit routine. Secondly the timed function may be added to, or removed from any zone. The result of these two changes is quite significant. For example in a domestic installation when Part Set is used at night, the upstairs zone would be automatically omitted. Also the main entry/exit door (usually timed) could be programmed to be not timed (in effect immediate).

Part Set is used as follows; Check that the Day indicator is on, enter the customer code and press the PART button. A short tone burst will be produced and the exit zone will continue. The system will now become Part Set at the end of the exit time. Any zone faults displayed after selecting Part Set are obviously not being omitted and the customer code should be re-entered. The system will now return to Day allowing open zones to be investigated.

Part Set Plus Zone Omit

In the unlikely event of requiring Part Set and a separate zone omitting, the system must be set in the following sequence; check that the Day indicator is showing and enter the customer code. The exit tone will begin. Press the OMIT ZONE button followed by the zone(s) to be omitted followed by SET. Now press the PART button. The exit tone will continue and the system will Set as the tone stops.

Quick Setting Routines

Once the basic setting procedure has been carried out an exit tone will be produced and the system will begin to Set. Setting will become complete as the tone stops. The following methods may be used to reduce the exit time to approximately 5 seconds and so perform a Quick Set.

Control Panel Quick Set

When not leaving the premises pressing the SET button will cause the system to Quick Set (enter the customer code (omit or Part Set the system as required) then press SET. The system will Quick Set after approximately 5 seconds.

External Push Button Set

When setting the system and leaving the building a push button mounted outside of the building (usually on the door frame) will mimic the control panel SET button and cause a 5 second Quick Set. A physical description and connection details are given later.

Final Door Set

The main entry/exit door is usually timed. Where this is the case the zone may be programmed to be Final Door Set. On closing this door the system will automatically Set within 3 seconds. Timed entry would begin in the usual way by opening the door. Care should however be taken not to include intermediate doors on the final door zone, otherwise premature setting may take place.

Unsetting the System

The system is Unset by entering the customer code either in the Set mode or during entry. The entry timer is started by activating any timed zone. An entry tone is then produced by the sounder warning the customer to disarm the system. With 10 seconds to go before an alarm condition the entry tone will double to a higher tone warning of the urgency to disarm. This facility is known as two ply entry.

Day Mode

During the Day mode all zones are turned off. Only tamper, PA and fire inputs will cause an alarm condition. It is from the Day mode that the customer or engineer can gain access to the programming mode. The Day mode is indicated by showing the green Day indicator on the control panel and remote keypads

Alarm Conditions

Generally there are two types of alarm condition. They can be placed into simple categories of local and full alarms. Local alarms are generated in the Day mode and cause inside sounders and strobe only; they are caused by tamper faults. Full alarm conditions are created in Set by activating zones, and cause inside sounders, outside sounders, strobe and communicator output.

There are exceptions to the above conditions for example PA activators which cause full alarms at all times and fire alarms which cause local or full conditions depending on their programming.

When any alarm condition (except fire) is activated the appropriate sounders are operated. Entering the customer code will stop the sounders and the alarm cause will be displayed. Pressing RESET will remove the indication and stop the strobe. When pressing RESET does not clear the indication the original fault (usually tamper) is still present and the system goes into a fault lockout condition awaiting rectification of the fault. When clear pressing RESET will return the system to Day.

Cleaner Access

For industrial or commercial installations the Cleaner Access routine allows part of the system to be fully protected, whilst giving restricted access to other areas for cleaning, service and maintenance. The cleaner code and access zones are fully selectable.

Operation is as follows: From the Set or entry mode enter the cleaner code. The Day indicator will flash to show that the system is still Set but with restricted access. Any alarm

condition which is created during Cleaner Access will operate the appropriate condition. The cleaner code will not however switch off or reset the condition, and the customer code must be used. On exit from the system entering the cleaner code will re-start the exit timer and allow setting in the usual way.

Entering the cleaner code from Day will allow the system to Set. Any faults present can be investigated after re-entry of the code which will return the system to Day again.

If all zones are programmable to be Cleaner Access then all zones are accessible but reset can only be carried out via the customer code.

When no zones are programmed as Cleaner Access, the cleaner code will become a second customer code allowing full system operating capabilities.

When no Cleaner Access or second customer code is required, it is strongly recommended that the cleaner code is omitted from the system.

Fire

The fire zone is active at all times despite the status of the system. When activated, fire alarms create a visual indication, distinctive inside sounder tones and pulsed outside bells. A fire alarm may be turned off and reset by pressing the RESET button on the keypad. Fire alarms are then stored in the memory for future reference.

A system description of the fire zone is given later.

Chime

In low security situations any zone(s) may be chimed. From the Day mode press the CHIME button and enter the zone number(s) required. The zone indicators will show and after a few seconds the system will return to Day. The inside sounder will now produce a series of high and low tones each time a chime zone is opened or closed. The feature could be used for example on a shop door to warn of a customer's presence. Alternatively on perimeter doors in a domestic installation the chime will continue to operate after setting and unsetting of the system. To stop a chime selection enter CHIME then 0, after a few seconds the system will return to Day.

Duress

There are occasions when the operator of the system may be under attack or pressure to Unset the alarm. A code has been provided which will return the system to Day from the

exit, entry or Set conditions with apparently no adverse effects. In fact a silent PA alarm is generated producing PA digicom output only.

Where duress is used it may be advisable to choose a code which is closely related to the customer code

Where duress is not required it is advisable to omit the code from the system.

Operation of Codes

There are four codes used in the Optima 2 Plus security system. The full operation of each code is referred to on numerous occasions throughout the manual. A basic description of each is given below.

Customer Code

Selected by the customer or engineer and allows full operation and system testing.

Cleaner Code/Second User

Code

Customer and engineer selectable, primarily this code is to allow Cleaner Access on part of the system. Alternatively where no zones are programmed to be Cleaner Access this code will become a second user code. Where not required this code should be omitted from the system by the engineer.

Duress Code

Selectable by the engineer only, this code will cause a return to Day from entry, exit or set, but operate silent PA. To prevent accidental operation this code should be omitted if not required by the engineer.

Engineer Code

Selectable by the engineer only, this code allows the engineer access to the engineer programme for full programming and tests. The engineer code will NOT switch off alarm conditions.

INSTALLATION

Installation Design

Before any installation work begins, read through this manual carefully. The Optima 2 Plus has been designed and constructed to simplify installation techniques, whilst providing extensive facilities.

Plan out the various areas and degrees of protection required, with regard to zone functions. Work out each of the cable runs with regard to providing a neat but secure installation.

The printed circuit board (PCB) is clearly marked with each input and output and the relevant polarities. Each zone and its associated tamper are of opposing polarities to allow for double pole protection (zones are positive and tampers are negative).

The vast majority of detection devices in the Security Industry are normally closed. These are connected together in series across the required zone input. These are however a minority of open circuit detectors (pressure mats) which should be connected in parallel together and finally connected between the required zone and its tamper.

Service links have been fitted across all zone inputs to simulate closed zones. These are removed during installation but their positions are marked on the PCB for future reference by a U symbol.

Where remote keypads are used, the control panel may be positioned in any part of the protected premises convenient for a mains supply, but with consideration given to access for service and maintenance.

When operating the completed system, the entry and exit tones should be audible throughout the entry/exit route and outside the main entry/exit door. Where the control panel or remote keypad miniature sounder is not sufficient, extension speakers should be used.

Finally note that all control systems have power supply limitations and the current consumption of all standby devices (detectors and keypads) plus sounders, bells and strobes should not exceed the total current output of the control panel during a full alarm condition. Current consumption ratings and outputs are provided in the specifications.

Fixing 4 zone polycarbonate

Remove the front cover from the control panel and unscrew the low voltage wires from the AC terminals and the speaker wires from terminals 46 & 47. Now carefully withdraw the PCB by pushing the holding clips to one side and lifting the board clear of the base. Keep the cover and PCB clear of any brick dust. Hold the base to the wall (hinges to the top) and mark the position of the screw holes on the wall.

The base has been prepared with cable entry points in the top, bottom and side walls. These may be cut away with a hacksaw if required. Cables may also be run behind the base and enter through the holes in the back.

Drill and plug the wall and mount the base using at least four screws of suitable length. Note that uneven walls may distort the base, if this occurs use packing or a different mounting position. Finally replace the PCB assembly, transformer and speaker wires. (These wires are not polarised and may be connected any way around).

Fixing 4 zone steel

Remove the four screws, one from each corner of the cover and withdraw. Unscrew the low voltage wires from the AC terminals and the speaker wires from terminals 46 & 47. Support the PCB assembly and remove the countersunk screw from either end of the PCB carrier. Slide the carrier approximately 40mm to the left and allow it to leave the base through the notched cut-away. Keep the front cover and PCB assembly clear of brick dust throughout the installation. Hold the base to the wall in the required position (key hole to the top) and mark the position of the screw holes on the wall.

The base has been prepared with cable entry points in the top, bottom and side walls and 5mm stand offs to allow cables to run behind the base and enter through the holes in the back.

Drill and plug the wall and mount the base using at least four screws of suitable length. Replace the PCB assembly, slide into position and refit the two countersunk screws. Finally replace the transformer and speaker wires. (These are not polarised and may be connected anyway around).

Wiring - Initial Commissioning

Wire the system including any remote keypads and bring the appropriate cables to the control panel. Neatly form the cables inside the control panel base ready to connect, leaving adequate space for the battery etc. It is not essential to follow the power up procedure detailed below, but to avoid confusion it is recommended.

- 1) Check that the factory fitted links are in position across each input including the remote keypad tamper K1-K2. The link positions are marked with the symbol U.
- 2) Connect the battery wires to the BATT terminals at the bottom of the PCB. Connect Black to - and Red to +. Connect to the battery, again Black to - and Red to +. The system will now go into alarm condition.
- 3) Enter the customer code, 0123. The alarm condition will cease and the Engineer and Day indicators will show. The system will also beep approximately every 3 seconds.
- 4) Manually depress the tamper spring and then press RESET. The system will now go to Day but beep every 5 seconds to indicate mains failure.
- 5) Press PROG and enter the engineer code 9999. The Day and Engineer indicators will now show and the tamper spring may be released.
- 6) The system is now in the engineer programming mode with all inputs disabled and prevented from causing alarms. The system may now be wired, preferably starting from the top of the PCB connecting each zone and tamper. Finally wiring voltage supplies, sounders etc.

NOTE

The power up procedure above is intended for new systems on new installations. Control panels which have been pre-programmed will obviously retain their customer and engineer codes and also reset warning and mains fail bleeps may have been turned off.

Mains Connection

The mains supply should be carefully wired using a 3 core cable of not less than 0.75mm² between the mains connector block in the rear of the base and a secure fused spur outlet mounted external to the control panel case. Use a 2 Amp fuse in the spur.

WARNING

The mains installation should be carried out in

accordance with current IEE regulations by a technically competent person.

Final Commissioning

When all wiring is complete and the mains power has been connected a red Power indicator should be showing on the control panel and any remote keypads. Replace all covers on keypads, detectors and the control panel. Press RESET and if all circuits are clear the system should go to Day. If any tampers or PA circuits are in fault, the system will go lock out and show the relevant indication. Once the system has gone to Day it should be fully programmed and tested.

Fill in the installation log at the back of this manual and note any measurements or checks taken.

Finally explain the operation of the system to the customer, filling in the customer instruction card as and where required.

On future service or maintenance visits the system may be entered and inputs disabled by accessing the engineer program (press PROG followed by engineer code).

Power Up to Clear NVM

In the event of losing the engineer code or when a system is recovered by another installation company it may be necessary to clear the NVM and reset to factory set conditions. The procedure is as follows:

- 1) Remove the control panel front cover and disconnect all power (mains and battery). Disconnect all wires from terminals 40 and 41.
- 2) Fit a wire link from terminal 40 to 41 and apply power.
- 3) The system will produce a two tone burst and then go to full alarm condition. Enter the customer code 0123, the alarm condition will cease and the Engineer and Day indicators will show. The sounder will beep every 3 seconds.
- 4) Manually depress the tamper spring and press RESET. The system will now go to Day. Press PROG 9999. The Engineer and Day indicators will show and the tamper spring may be released.
- 5) Remove the wire link and replace the original wires in terminals 40 and 41. As the system is now in engineer programming any wiring changes or checks may be carried out.
- 6) When complete refit the cover and press RESET to return to Day. The system may now be programmed and tested.

SYSTEM DESCRIPTION

Zone inputs

Terminals (1 & 2) (5 & 6) (9 & 10) (13 & 14)

Each of the zones is programmable across the range of functions listed below. Some functions may be programmed in conjunction with others. For example an immediate zone may also be programmed to be omit prevent and have extra delay. Other functions automatically effect each other, for example 24 hour zones will automatically become omit prevent. A full reference is given in the programming section.

Immediate

When activated immediate zones will cause a full alarm condition. This may be from Set or during the entry time.

Timed

This function would usually be used to protect the main entry/exit door. Activating a timed zone during system Set will start the entry timer and allow time to Unset the system. The entry and exit timers are separately adjustable.

Final Door Set

This function is similar to timed except that on closing the zone the exit timer is reduced to 3 seconds. The usual application is where the main entry/exit door is closed, the system will become almost instantly set and minimising the need to wait for the exit tone to stop. Care should be taken however to ensure that devices on final door set zones are kept to a minimum, thus reducing premature system Setting.

Time Inhibit

Time inhibit zones should be used to protect the route between the control panel and the main entry/exit door. As the system is Set the exit timer begins and allows access through the zone (usually a PIR). On entry an entry zone is activated and the entry timer begins again inhibiting the zone.

However the time inhibit zone is fully active during the Set period and activation would cause a full alarm condition.

Omit Prevent

Zones which are considered to be of a high security nature may be programmed to be omit prevent. Any attempts to omit these during Setting the system will be disallowed and cause a reject bleep.

24 Hour

When programmed 24 hour zones are active at all times, causing a local alarm in Day and a full alarm in Set. 24 hour zones are particularly useful for protecting emergency exit doors or secure stockrooms etc. As they cannot be turned off, key operated shunt switches should be used to shunt the zone and gain access as and when required.

Extra Delay

All zone inputs are fitted with standard input delay of 250 mS ($\frac{1}{4}$ second). This means that any detector must be in a fault condition for more than 250mS in order for an alarm condition to result. This standard feature is intended to reduce the risk of environmental based false activations, due to R.F. and EMI. Where these problems are particularly suspect the extra delay may be added. This will increase the delay time to 800mS (8/10 second).

Any fault condition would then have to be present for at least 800mS in order to cause an alarm condition.

Part Set Timed

During Part Set operation any zone(s) may be programmed to be timed. For example in a domestic installation, downstairs zones which are time inhibited could be reprogrammed to be timed in Part Set. This would automatically cause the entry timer to start as the system is entered from upstairs and reduce to the requirement to start the exit timer via a stair pressure mat or push button.

Where a zone is chosen to be used in Part Set but not programmed as Part Set timed it will adopt its standard zone function.

Part Set Active

These are zones which are chosen to be active when Part Set is selected. Where a zone is programmed to be Part Set timed it will automatically become Part Set active.

If no zones are programmed to be part set active then on selecting Part Set a reject will be given and Part Set will be disallowed.

Cleaner Access

Any zones programmed to be Cleaner Access will automatically become omitted as the cleaner code is entered. Re-entering the code will re-instate the zones and provide a fully Set system again.

Tamper Networks

All tamper within the control system have separate inputs and are separately indicated. Tamper activations will cause local alarm conditions in the Day mode (inside sounder and strobe only). Tamper activations when Set will cause full alarm conditions (inside sounders, outside bells, strobe and intruder digicom output).

Zone Tamper

Terminals (3 & 4) (7 & 8) (11 & 12) (15 & 16)

Each of the zone tamper is grouped onto the same connector block as the zone, to provide simple four core wiring inputs. Zone tamper indicate by showing the tamper indicator and the relevant zone indicator.

PA Tamper

Terminal (33 & 34)

intended to protect PA devices and associated wiring this tamper circuit is positive with respect to other tamper. Where required double pole foil protection may be used by connecting to the PA, tamper and any of the zone tamper.

Case Tamper

The control panel and any remote keypads are protected against cover removal by a tamper switch. The control panel tamper switch is located to the centre left of the PCB and the remote keypad tamper switch is located at the top left of the PCB. When activated control panel or remote keypad case tamper will show the same indication.

After service or maintenance it is important to check for the 'click' of each switch as the cover is refitted.

Bell Box Tamper

Terminals (A & T)

Situated along side the outside bell terminals, the bell box tamper is marked A and T. For ease of installation these letters correspond to the same connections on A.D.E. SCB modules. If an SCB is not used then terminals A and T should be connected to the bell box tamper switch directly.

Keypad Tamper

During Set and entry times any attempts to incorrectly enter the customer code will operate the keypad tamper. Nineteen incorrect key pushes will result in a full alarm condition including intruder digicom output.

PA

Terminals (35 & 36)

Any number normally closed type personal attack buttons may be connected in series to the PA input. This input is active at all times and if activated will cause a full alarm condition including PA digicom output.

If required a silent option may be programmed to the PA. This will cause a silent alarm with PA digicom output only.

Fire Zone

Terminals (37 & 38)

The fire zone is intended as an extra feature to the security system, and should not be regarded as a total fire protection system as required in public buildings etc.

Any number of smoke detectors, heat detectors or manual call points may be connected to the fire zone. When operated a distinctive inside sounder tone will be produced as well as fire indication. Pulsed outside bells and fire digicom output will also be activated. Fire alarms do not carry any form of timer or cut-off. Pressing RESET will cause any fire alarms to stop.

Care should be taken with the siting of heat and smoke detectors to discourage false alarms. Especially where the fire digicom output has been used to trip remote signalling equipment.

Push Set

Terminals (39 & 40)

These terminals may be connected to a normally open push button mounted external to the system, usually on the front door frame. Alternatively a micro switch operated mortice lock may be used on the final door.

After setting the system and leaving the building, operating the button or switch will cause the system to Quick Set.

Where external Quick Set is not required terminals 39 and 40 should be left blank.

Set +Ve

Terminal (41)

This output is used in conjunction with latching type detectors. The output becomes +Ve on correct set of the system and is removed at the commencement of entry time.

The Set +Ve will remain active during Cleaner Access, but is removed and re-instated as the code is entered during cleaner exit. This allows any detectors which may have latched during Cleaner Access to reset.

Technical Details of the current and voltage outputs are listed in the specifications.

Internal Sounder

Terminals (46 & 47)

Mounted in the rear of the cabinet the internal sounder takes on the form of a loud speaker (LS). The loud speaker is driven by an audio signal from the control panel and will produce high volume alarm tones and low volume entry/exit and fault tones. A volume control is provided in the centre of the PCB for adjustment of low volume tones to suit environmental conditions.

Extension Speakers

Up to two 16 Ω extension speakers may also be wired in parallel across terminals 46 & 47. Mounted in convenient positions within the installation extension speakers will reproduce all alarm tones generated by the control panel.

Bell Output

Terminals (B & D)

This output is for connection to the external bell or sounder. Any 12V bell or sounder may be used, but care should be taken with motorised sirens as their start current can exceed the fuse rating.

The bell output and SCB terminals have been grouped together and are summarised as follows.

T - -Ve tamper return
A - -Ve supply (OV)
D - +Ve supply (12V)
B - -Ve bell trigger

SCB Connections

To assist with wiring, the terminals T-A-D-B correspond directly to ADE SCB modules and connections are made from A-A, B-B etc.

Where two SCB's are used on one installation it is recommended that each bell box and SCB is wired in a separate run to the control panel. A's and T's are series wired with the remaining A connected to control panel A and remaining T to control panel T. B's and D's are wired in parallel to B and D respectively.

Bell Reset and Re-arm

The Optima 2 Plus uses an intelligent re-arm system. In an alarm condition (local or full) the sounders and strobe will operate. At the end of the programmed bell time the sounders will stop but the strobe will remain latched. Each circuit is then scrutinised and if clear will be re-armed. Any circuits in fault condition will be omitted.

The control will then wait for another alarm condition or entry of the customer code.

When three consecutive alarm conditions are generated by the same circuit over the same Set or Unset/re-armed period the circuit will automatically be omitted.

Bell Delay

When used in conjunction with remote signalling equipment the control panel may be programmed to have sounders and strobe output delayed for a time of 1-98 minutes. In the event of an intruder type alarm condition the intruder digicom output will operate but bells would be delayed until the end of the bell delay time.

Bell delay is not carried by local arm conditions.

Strobe Output

Terminals (48 & 49)

The strobe output is operated in every type of alarm condition and will continue to operate after bell reset and re-arm.

The strobe output will also remain active after entering the customer code and will not stop until RESET is pressed.

This feature can be used for PIR's requiring a negative latch whilst in alarm condition (use strobe -Ve terminal 49). During an alarm condition the strobe will activate and cause the responsible PIR to hold its indicator. The customer would then enter the customer code and stop the alarm condition. At this point the zone would be displayed and the strobe would remain active, with PIR indicator still showing. A visual inspection will show the responsible PIR and finally pressing RESET will stop the strobe and return the system to Day.

Where there are continual customer based false alarms and the strobe remains on, a reset reminder may be programmed to remind that the RESET should be pressed.

13V Output

Terminals (50 & 51)

The 13V output is provided to power detectors which require a low voltage supply, PIR's, Break Glass Detectors, Inertia Detectors etc. This supply is protected against short circuits by the same fuse as the bell output and is present at all times despite the status of the system. Up to 350mA may be drawn from the supply.

Battery Back Up

It is essential that this control system is used with a rechargeable 12V battery. The battery is kept fully charged by the control panel power supply and will power the system in the event of mains failure. The capacity of the battery should be calculated accordingly for each installation, but it is recommended that at least a 2.6 or 6Ah is used.

The terminals at the bottom of the PCB marked BATT are for connection to the control panel battery and must NOT be used for any other means of power supply or distribution.

Fuses

There are two fuses at the bottom left of the PCB.

The top fuse supplies 13V output, strobe and bell. This fuse is in the positive supply line.

The bottom fuse is to prevent excessive current being drawn from the battery and is in the negative battery line.

The values of these fuses are 1.6A 20mm in the 4 zone polycarbonate panel and 2A 20mm in the 4 zone steel panel.

A fused connector block is provided in the control panel base. The fuse fitted in this block is 2A 1" ceramic (plug top type).

WARNING

Where any fuse is suspected of failure all power must be isolated before removing fuses for checking or substitution. It is extremely unlikely that any fuse failure is caused by faulty circuit equipment.

When fault finding disconnect all warning devices and check separately. Also isolate and thoroughly check all cable runs for short circuits. These are by far the commonest cause of fuse blowing.

Remote Keypad Connections

Terminals (K1 to K6)

The Optima 2 Plus control panel may be used with up to 4 remote keypads. It is recommended that each keypad is wired to the panel on a separate run of 6 core cable. Each cable run should not exceed 150 metres.

Connections to remote keypads are made to the 6 way terminal block on the top right of the PCB. Connections are as follows.

- K1 } (tamper) connect in a series loop
- K2 } from each keypad.
- K3 } (voltage supply) connect in parallel
- K4 } to each keypad, observing polarity.
- K5 } (communications data) connect in
- K6 } parallel to each keypad,
- observing polarity.

K3 and K4 are the voltage supply to the keypads and will supply a total current of up to 500mA. Where the current load exceeds 600 mA the supply will be reduced significantly by a thermal fuse built into the control panel circuitry. When this has occurred the supply to the keypads should be isolated. After locating the fault and waiting at least 30 seconds for the fuse to reset the power may be reconnected.

High Security Options

Each of the high security options detailed below may be programmed to be on or off.

Engineer Reset

If engineer reset is selected then in any alarm condition, entering the customer code would stop the alarm, but show the engineer indicator and prevent a reset to Day. Entering the engineer code when attending the customers call would show the alarm condition and after pressing RESET the system will return to Day.

Where Engineer reset is 'off' the customer would have full control to Set, reset and return to Day.

Silent PA

Where programmed, any PA alarm activation will cause PA digicom output only and no audible alarm.

Keypad Tamper in Day

Nineteen incorrect key pushes in Day will result in a local alarm condition. This facility can be used in high security installations where there is a risk of unauthorised personnel attempting to find the customer or engineer codes.

Abort Intruder Digicom

Where programmed 'on' the feature will allow full alarm conditions to arise but hold off the intruder digicom output for 90 seconds. If the customer code is entered within 90 seconds the alarm condition will be stopped and no digicom output will be generated.

Sounder Options

Each of the sounder options detailed below may be programmed to be on or off.

Reset Bleep

Entering the customer code during or after an alarm condition will stop the sounders and display the cause of the alarm. Pressing RESET will remove the indication and return the system to Day. The reset bleep will cause the sounder to bleep every 3 seconds, reminding the customer to press RESET.

Mains Fail Bleep

During mains fail or disconnection the system will be maintained by the battery back up system. Depending on the stand by consumption and its capacity, the battery will eventually become discharged.

The mains fail bleep will warn of the urgency to restore power by bleeping every 5 seconds

Fire, Outside Bells

During fire alarm activations the outside bells will pulse, 3 seconds on, 3 seconds off. As fire alarms do not carry any bell timer, it may be advisable to turn off the outside bells totally and rely on inside sounders only, particularly in built up areas or where false alarms are likely.

Chime High Volume

During chime, the tones produced by the inside sounder may be selected to be high or low volume. Where low volume is selected (chime high volume 'off') the volume control in the control panel and each remote keypad may be adjusted to suit the local conditions.

Soak Test Zones

When a zone has given repeated false alarms and the engineer has carried out remedial work, the zone may be soak tested. Any faults which arise on a soak test zone will cause no apparent alarm condition. The zone fault will however be shown on Unsetting the system and each activation will be stored in the memory for future recall.

For security reasons zones should not be left on soak any longer than is absolutely necessary to establish a rectified fault.

Walk Test

The engineer may choose to walk test any zone, tamper or PA. This feature is available from the engineer programme and is particularly useful during servicing or commissioning. For convenience zones, tampers and PAs being walk tested will activate inside sounders at different tones and display the appropriate indicators on the control panel and remote keypads.

Non Volatile Memory (NVM)

The non volatile memory is a circuit within the control panel designed to retain all keypad programmed information, in the event of mains fail, power down or system faults. Thus providing a high degree of security. The alarm memory and zones selected to be on chime will not be held in the NVM.

It may be necessary to defeat the NVM where codes have been forgotten or lost. A detailed procedure is given in the installation section.

Alarm Memory Recall

The alarm memory recall is accessible by the customer who can read the last 8 events and the engineer who can read the last 16 events. On reading the memory the alarm events will scroll through in reverse order, the last alarm being shown first. Where a blank display is shown the memory is empty.

Where alarm conditions are displayed and no Day indicator is shown the condition was activated while the system was Set. If a Day indicator is shown, the alarm condition was activated in the Day mode.

Although the memory is continually updated and cannot in theory become 'full' of events, it may be cleared as and when required by the engineer.

REMOTE SIGNALLING EQUIPMENT

Terminals 42,43,44,45 have been provided for use with remote signalling equipment (digital communicators or auto diallers). These terminals have been grouped together in the centre of the PCB terminal blocks and are labeled DIGICOM.

PA Output

Terminal (43)

This output becomes active in all PA activations caused while the system is Set or Unset. It will also activate in duress, whilst allowing the system to Unset.

Fire Output

Terminal (44)

This output will become active in all fire alarm activations, and should only be used after correctly siting smoke or heat detectors.

Intruder Output

Terminal (45)

This output will become active in all full alarm conditions caused by zone or tamper activations. Where there is a risk of false activations particularly in domestic installations this output may be programmed to have an abort facility.

Each of the outputs is switched independently by the relevant alarm condition, from 12V to 0V in alarm.

Each output should be connected to the relevant start input of the communicator, with the input programmed or configured for remove +Ve start.

When a single channel auto dialler is used each of the control panel digicom outputs may be linked to provide a multiple trigger. This should then be connected to the voltage start terminal of the dialler.

Where voltage starting methods are not acceptable a low current relay may be connected between the control panel +Ve supply terminal 50 and the digicom output. Each output switches from 12V (sourcing 1mA) to 0V in alarm (sinking 30mA).

Line Fault Monitor

Terminal (42)

Remote signalling equipment usually provides a line monitoring facility via a set of dry relay contacts or digital output. The relay will change its state should the telephone line fail or become 'off hook'.

Terminal 42 should be connected to the control panel negative rail, terminal 51 via the relay. In a line fault condition, the relay would close and ground terminal 42.

The effect is that any bell delay which has been programmed will be cancelled. An alarm condition with a failed telephone line would then cause bells and sounders to operate. Line faults in the Day mode will have no effect but will show an indication on the control panel and remote keypads.

Voltage supply

The voltage supply to the signalling device should be as per the manufacturers recommendations and B.T. approval. Where the supply is taken from the control panel it should be from terminals 50 & 51 and NOT from the battery output.

Where voltage start has been used and the supply is not from the control panel, the control panel negative rail and digicom/dialler negative rail should be common.

Testing

On completion of the installation and during routine maintenance visits it is vitally important to carry out test calls in accordance with central station or local police authority procedures.

PROGRAMMING

The Optima 2 Plus uses two separate programmes. The customer programme allows code change and restricted tests. The engineer programme allows full tests and programming. Either programme is entered directly from Day mode via the respective code. Programming may be carried out from the control panel or any remote keypad. For clarity only engineer programming is documented below.

Engineer Programming

Before programming, ensure that the cover is correctly fitted to the control panel and any remote keypads, and that the system is in Day mode. Once programming has been accessed, each section may be changed in any order. When each section is complete the system will return to the programming mode. If an error is made or you become totally lost during programming press SET twice to return to Day and reinstate all factory set conditions, then start again.

	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
TO BEGIN System is in day mode	Shows DAY led	Shows DAY led
Press PROG	Shows ALL leds	Shows P
Enter the engineer code. The system is now in the engineer program.	Shows ENGINEER, DAY leds	Shows E
ALARM TESTS		
Press 0	Shows DAY, TAMPER, ATTACK	Shows E
The system is now in the test routine.		
SET +VE TEST		
Press 1 (0 to stop)		Shows 1
STROBE TEST		
Press 2 (0 to stop)		Shows 2
BELL TEST		
Press 3 (0 to stop)		Shows 3
LOW VOLUME SOUNDER TEST		
Press 4 (0 to stop)		Shows 4
HIGH VOLUME SOUNDER TEST		
Press 2 4 (0 to stop)		Shows 4
WALK TEST		
Press 5 (0 to stop)	Shows indication of zones or tampers being tested.	Shows indication of zones or tampers being tested.
As each circuit is opened the sounder will beep. High frequency beeps for zones open low frequency for tampers open.		

INTRUDER DIGICOM TEST	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
Press 6 (0 to stop)		Shows 6
Press 7 (0 to stop)		Shows 7
Press 8	Shows zones currently on soak	Shows zones currently on soak
Press 0 to clear all zones on soak	Shows blank	Shows blank
Press 1 to soak test zone 1.		
Press 2 to soak test zone 2 etc.	Shows zone selected	Shows zone selected
When selection is complete press RESET.	Show DAY, TAMPER, ATTACK	Shows E
CLEAR ALARM MEMORY		
Press 9		Flashes E then Shows E
When all tests are complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
EXIT TIME		
Press 1	Shows zone 1 and zone 2 leds	Shows 1
Enter the time required in 10 second increments divided by 10. Eg. 10 seconds = 10 = 1 so enter 01 20 seconds = 02 30 seconds = 03 etc When the 2 keys are entered system returns to programming.	Shows ENGINEER, DAY	Shows E
ENTRY TIME		
Press 2	Shows zone 1 and zone 2 leds	Shows 2
Enter the required entry time as with exit time. When entered system returns to programming.	Shows ENGINEER, DAY	Shows E

BELL TIME	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
Press 3	Shows zone 1 and zone 2 leds	Shows 3
Enter the required bell time in minutes 01 = 1 minute 20 = 20 minutes etc 99 = maximum 99 minutes 00 = no bell stop		
When the 2 keys are entered system returns to programming.	Shows ENGINEER, DAY	Shows E
BELL DELAY		
Press 4	Shows zone 1 and zone 2 Leds	Shows 4
Enter the required bell delay in minutes as with bell time 01 = 1 minute 20 = 20 minutes 98 = maximum 98 minutes 99 = endless delay 00 = no delay When entered system returns to programming.	Shows ENGINEER, DAY	Shows E
ZONE FUNCTIONS		
Each of the zones may be programmed to have one or more of the functions below. Where a function is disallowed a reject key will be given and the system will return to programming. Check the functions on other zones to investigate why. Also see the 'Programming Guide' for details which may not be immediately obvious when programming zone functions.		
TIMED		
Press 5 1	Shows zones currently programmed as timed	Shows zones currently programmed as timed
Press 0 to remove timed function from all zones. Press zone number(s) required to be timed.	Shows zones selected to be timed	Shows zones selected to be timed
When selection is complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
TIME INHIBIT		
Press 5 2	Shows zones currently programmed as time inhibit	Shows zones currently programmed as time inhibit
Press 0 to remove all time inhibit. Press zone number(s) required to be time inhibit.	Shows zones selected.	Shows zones selected.
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E

	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
OMIT PREVENT		
Press 5 3	Shows zones currently programmed as omit prevent	Shows zones currently programmed as omit prevent
Press 0 to remove all omit prevent. Press zone number(s) required to be omit prevent.	Shows zones selected	Shows zones selected
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
24 HOUR		
Press 5 4	Shows zones currently programmed as 24 hour	Shows zones currently programmed as 24 hour
Press 0 to remove all 24 hour. Press zone number(s) required to be 24 hour.	Shows zones selected	Shows zones selected
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
EXTRA DELAY		
Press 5 5	Shows zones currently programmed as extra delay	Shows zones currently programmed as extra delay
Press 0 to remove all extra delay.	Shows zones selected	Shows zones selected
Press zone number(s) required as extra delay.	Shows zones selected	Shows zones selected
When completed press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
PART SET TIMED		
Press 5 7	Shows zones currently programmed as part set timed	Shows zones currently programmed as part set timed
Press 0 to remove all part set timed.	Shows zones selected	Shows zones selected
Press zone number(s) required as part set timed.	Shows zones selected	Shows zones selected
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
PART SET ACTIVE		
Press 5 8	Shows zones currently programmed as part set active	Shows zones currently programmed as part set active
Press 0 to remove all part set active. Press zone number(s) required as part set active.	Shows zones selected	Shows zones selected
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E

	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
CLEANER ACCESS		
Press 5 9	Shows zones currently programmed as cleaner access	Shows zones currently programmed as cleaner access
Press 0 to remove all cleaner access. Press zone number(s) required as cleaner access.	Shows zones selected	Shows zones selected
When complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
HIGH SECURITY OPTIONS		
Each of the options below may be programmed on or off. Zone displayed = option on. Zone not displayed = option off.		
Press 6	Shows options on	Shows options on
Now toggle the relevant key to select the option on or off.		
(1) ENGINEER RESET		
Press 1 to switch on	Zone 1 led on	Shows 1
Press 1 again to switch off	Zone 1 led off	doesn't show 1
(2) SILENT PA		
Press 2 to switch on	Zone 2 led on	Shows 2
Press 2 again to switch off	Zone 2 led off	doesn't show 2
(3) KEYPAD TAMPER IN DAY		
Press 3 to switch on	Zone 3 led on	Shows 3
Press 3 again to switch off	Zone 3 led off	doesn't show 3
(4) ABORT INTRUDER DIGICOM		
Press 4 to switch on	Zone 4 led on	Shows 4
Press 4 again to switch off	Zone 4 led off	doesn't show 4
When all selections are complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
SOUNDER OPTIONS		
Each of the following options may be programmed on or off. Zone displayed = option on. Zone not displayed = option off.		
Press 7	Shows options on	Shows options on
Now toggle the relevant key to select the option on or off.		

	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
(1) RESET BLEEP		
Press 1 to switch on	Zone 1 led on	Shows 1
Press 1 again to switch off	Zone 1 led off	doesn't show 1
(2) MAINS FAIL BLEEP		
Press 2 to switch on	Zone 2 led on	Shows 2
Press 2 again to switch off	Zone 2 led off	doesn't show 2
(3) FIRE, OUTSIDE BELLS		
Press 3 to switch on	Zone 3 led on	Shows 3
Press 3 again to switch off	Zone 3 led off	doesn't show 3
(4) CHIME HIGH VOLUME		
Press 4 to switch on	Zone 4 led on	Shows 4
Press 4 again to switch off	Zone 4 led off	doesn't show 4
When all selections are complete press RESET to return to programming.	Shows ENGINEER, DAY	Shows E
CUSTOMER CODE CHANGE		
Press 8 1	Shows 4 zone leds	Shows 4
Enter required code (4 digits) or press OMIT to omit the code. System returns to programming.	Shows ENGINEER, DAY	Shows 4 3 2 1 then E
CLEANER CODE CHANGE		
Press 8 2	Shows 4 zone leds	Shows 4
Enter required code (4 digits) or press OMIT to omit the code. System returns to programming.	Shows ENGINEER, DAY	Shows 4 3 2 1 then E
DURRESS CODE CHANGE		
Press 8 3	Shows 4 zone leds	Shows 4
Enter required code (4 digits) or press OMIT to omit the code. System returns to programming.	Shows ENGINEER, DAY	Shows 4 3 2 1 then E
ENGINEER CODE CHANGE		
Press 8 9	Shows 4 zone leds	Shows 4
Enter required code (4 digits) System returns to programming.	Shows ENGINEER, DAY	Shows 4 3 2 1 then E

	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
ALARM MEMORY RECALL		
Press MEM. The last 16 events will now be shown. (last alarm first).	Scrolls last 16 events.	Scrolls last 16 events.
To stop the memory press RESET or when memory recall is complete system automatically returns to programming	Shows ENGINEER, DAY	Shows E
EXIT FROM PROGRAMMING		
Press RESET or RESET, RESET If in the alarm tests routine.	Shows DAY led	Shows DAY led
RESET ALL INFORMATION TO FACTORY SET CONDITIONS		
From programming.	Shows ENGINEER, DAY	Shows E
Press SET, SET. System returns to Day mode with all factory set conditions re-instated.	Shows DAY led	Shows DAY led

Below is a list of details which may not be obvious whilst programming the control panel. They apply particularly to programming the zone functions.

- 1) Immediate does not have a direct 51-52 type allocation but will result if a zone is not programmed to be timed, time inhibited or 24 hour.
- 2) Zones programmed to be timed will automatically pick up a time inhibit function.
- 3) Final door set does not have a direct allocation but will result if a zone is programmed to be timed (with time inhibit removed).
- 4) Zones programmed to be 24 hour will automatically become omit prevent.
- 5) 24 hour function can not be programmed to a zone which already has a timed, time inhibit or cleaner access function.
- 6) 24 hour zones by their nature will automatically be active during Part Set and will show as active zones when part set active is entered.
- 7) Part Set timed zones will automatically become part set active.

- 8) If no zones are programmed as cleaner access, the cleaner code will become a second user code. Where all zones are programmed as cleaner access the cleaner will have full access but will not be able to Unset or reset alarm conditions.
- 9) After programming each of the zone functions to each of the zones, or after making any changes, it is advisable to check down the zone functions routine. Eg press 51 (to check timed zones) inspect the zones and then press RESET. Now press 52 then RESET etc.
- 10) The chart below shows the reaction of each function against another function.

Security Advice

- 1) Where Part Set is not required, part set active should be programmed to none of the zones. Operating Part Set will then cause a reject.
- 2) Where Cleaner Access or a second user code is not required, the cleaner code should be turned off (omitted).
- 3) Where duress is not required the duress code should be turned off (omitted).

51 Timed	A	✓	X	✓	✓	✓	✓
52 Time Inhibit		✓	X	✓	✓	✓	✓
53 Omit Prevent	A		✓	✓	✓	✓	
54 24 Hour			✓	X	A		X
55 Extra delay				✓	✓	✓	
57 Part Set timed					A		✓
58 Part Set active							✓
59 Cleaner Access							

✓ Functions can be programmed together with simultaneous or combined results.

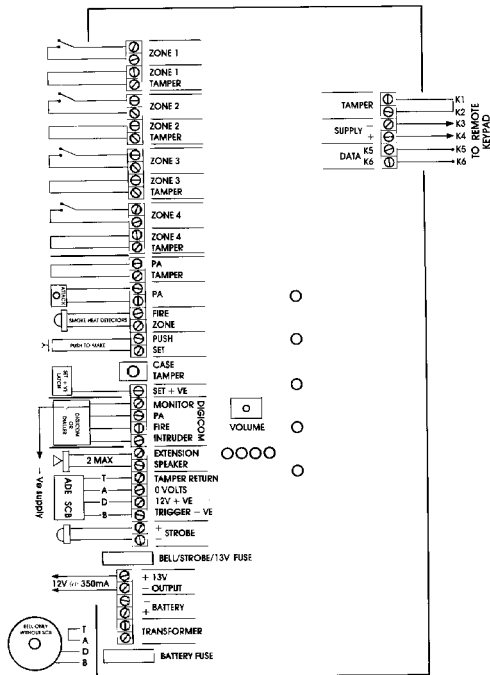
X Functions disallowed together and cause a reject.

A Functions automatically change.

Factory Set Conditions

Customer Code	0123
Cleaner Code	Off
Duress Code	8888
Engineer Code	9999
Exit Time	30 Seconds
Entry Time	30 Seconds
Bell Time	20 Minutes
Bell Delay	No Delay
Immediate Zones	Zone 3, 4
Timed Zones	Zone 1
Final Door Set Zones	None
Time Inhibit Zones	Zone 1, 2
Omit Prevent Zones	Zone 1
24 Hour Zones	None
Extra Delay Zones	None
Part Set Timed Zones	Zone 1
Part Set Active Zones	All Zones
Cleaner Access Zones	None
Soak Test Zones	None
Engineer Reset On/Off	Off
Silent PA On/Off	Off
Keypad Tamper in Day On/Off	Off
Abort Intruder Digicom On/Off	Off
Reset Bleep On/Off	On
Mains Fault Bleep On/Off	On
Fire, Outside Bells On/Off	On
Chime, High Volume On/Off	On

Connection Diagram



Visual Displays

The chart below shows the display on the control panel and remote keypads in fault conditions, alarm memory recall and general operational modes.

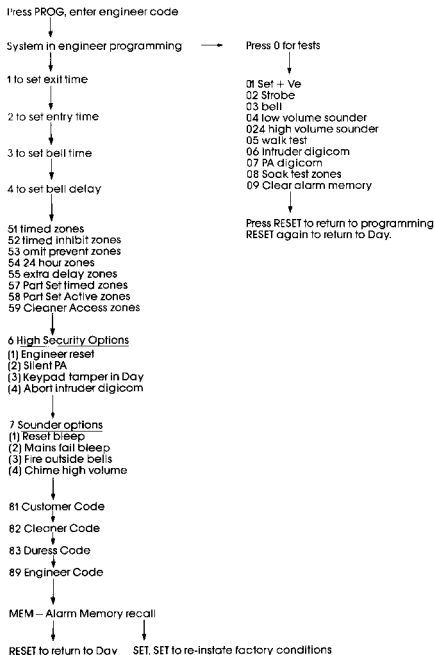
FAULT/MODE	CONTROL PANEL DISPLAY (Discrete leds)	REMOTE KEYPAD DISPLAY (7 segment led)
Zone fault	Single ZONE led	1 2 3 4 etc
Fire Zone fault	All leds	F
PA fault	ATTACK led	A
PA tamper fault	ATTACK, TAMPER leds	A and TAMPER led
Zone tamper fault	Single ZONE led and TAMPER led	1 2 3 4 etc and TAMPER led
Bell box tamper fault	ENGINEER, TAMPER leds	b and TAMPER led
Control panel or remote keypad case tamper	TAMPER led	C and TAMPER led
Keypad tamper (19 incorrect keys)	TAMPER led	o
Programme entry, PROG key pressed, awaiting code.	All leds	P
Customer programme mode	DAY, TAMPER leds	C
Engineer programme mode	ENGINEER, DAY leds	E
Alarm tests mode	DAY, TAMPER, ATTACK leds	t
Initial power up. (shows in alarm memory recall)	ENGINEER, DAY	u
Alarm memory empty	No leds	Blank
Line fault (line failed or off hook)	ENGINEER led	L
Awaiting engineer reset	ENGINEER led	E

Specifications

Front Panel Indicators	Discrete LEDs; zone 1,2,3,4, engineer, day, lampet, attack, power.	
4 Zones	Positive loop, functions individually programmable.	
Tampers	Negative loop, individual zone, case and bell box. Local alarm in Day, full alarm in Set.	
PA	Negative loop, active at all times.	
PA Tamper	Positive loop.	
Fire Zone	Positive loop, audible/visual indication, digicom output and pulsed outside bells.	
Bell Output	12V adjustable timer (1-99 mins) or continuous.	
Strobe Output	12V latching, continuous after bell cut off.	
Bell Delay	Adjustable 0-98 minutes or continuous.	
Internal Sounder	Loud speaker produces low volume, entry/exit warning and high volume alarm tones.	
Extension Speaker	16 Ω (2 max) current consumption 130mA each.	
Entry/Exit Timers	Separately adjustable 10-990 seconds.	
Maximum Zone Loop Resistance	50,000 Ω	
Standard Zone Input Delay	250mS	
Extra Delay (programmable)	800mS	
Digicom Outputs	PA, fire and intruder. Switching from 12V to 0V in alarm.	
Set + Ve Output	0V in Day (sinking 30mA) switching to 12V in Set (sourcing 1mA).	
Current Consumption	Standby 55mA Alarm 240 mA	
Low Voltage Output	13V dc stabilised (max 350mA).	
Keypad Output Voltage	13V dc stabilised.	
R/C Battery Capability	2.6 - 6Ah	
Battery Charge Voltage	13.8V stabilised.	
Mains Supply Voltage	220 - 245 Vac.	
Keypad Wiring	6 core, max 150m per keypad per cable run.	
Keypad Dimensions	h = 147mm w = 81mm d = 30mm	
	<u>4 zone polycarbonate</u>	<u>4 zone steel</u>
Total Current Output	1 Amp	1.5 Amps
Cabinet Construction	3 polycarbonate	18 swg steel
Cabinet Dimensions	h = 290mm w = 230mm d = 80mm	h = 305mm w = 265mm d = 80mm
Bell, 13V/Battery Fuses	1.6A 20mm	2A 20mm

Quick Reference Programming

The flow chart below is intended as a quick reference for installation engineers who are totally conversant with the Optima 2 Plus programming, if not consult the main programming section.



This page may be filled in (including the tick box's), detached from the manual and retained as a record of the installation.

Site Address

Contact Name

Tel. Date of installation

Zone	Resistance	Protection	Immediate lined (S1)	Final laser (S2)	24 hour (S3)	extra delay (S4)	port lines (S5)	port active (S6)	Cleaner access (S9)
1									
2									
3									
4									
5									
6									
7									
8									
PA									
FIRE									

Engineer reset	<input type="checkbox"/> on <input type="checkbox"/> off	Cleaner code	<input type="checkbox"/> on <input type="checkbox"/> off
Silent PA	<input type="checkbox"/> <input type="checkbox"/>	Duress code	<input type="checkbox"/> <input type="checkbox"/>
Keypad tamper in Day	<input type="checkbox"/> <input type="checkbox"/>	Digicom outputs used	
Abort Intruder digicom	<input type="checkbox"/> <input type="checkbox"/>	Intruder	<input type="checkbox"/>
Reset Bleep	<input type="checkbox"/> <input type="checkbox"/>	P.A.	<input type="checkbox"/>
Mains fail bleep	<input type="checkbox"/> <input type="checkbox"/>	Fire	<input type="checkbox"/>
Fire, Outside bells	<input type="checkbox"/> <input type="checkbox"/>		
Chime high volume	<input type="checkbox"/> <input type="checkbox"/>		