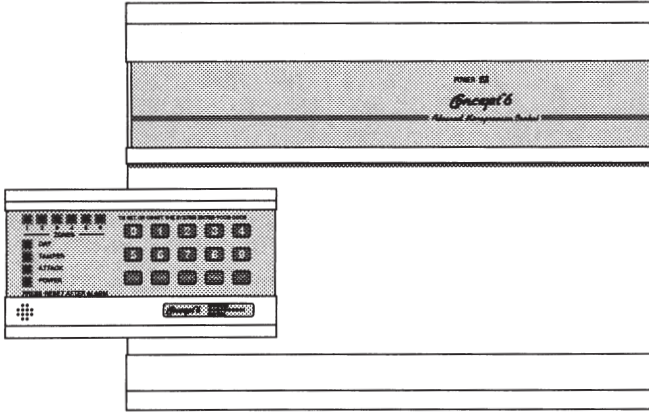


Concept 6™

Intruder Alarm Control System - Engineering Information



Complete security control system operated from a single remote keypad

6_z

6 zones plus PA and tamper

OMIT

User may omit any zone, automatically allowing zone 2 to become timed when part setting



8 event memory recall facility



Programmable timers including bell cut off

NVM

NVM for protection of engineer programme



Quick set feature



Intelligent auto reset and re-arm

Engineering Information

Specifications

Indicators	ZONES 1-6, DAY, TAMPÉR, ATTACK, POWER
6 Zones	Positive loop, dedicated functions
Tamper	Negative loop, internal sounders in Day Full alarm in Set
PA	Positive loop, always active
Bell Output	12V, adjustable timer (1-99 mins) or continuous
Strobe Output	12V latching
Extension Speaker	16Ω (3 max) 130mA each
Exit/entry Timers	Programmable 10 - 990 seconds
Zone Input Delay	250mS
Set +Ve Output	0V in Day (Sinking 30mA) 12V in Set (Sourcing 1mA)
Current Consumption	Standby 80mA Alarm 80mA
Low Voltage Output	13V dc stabilised (max 350mA)
Rechargeable Battery	1.2 - 6Ah
Charge Voltage	13.8V dc
Fuses	1.6A 20mm quick blow
Total Current Output	1 Amp
Mains Supply Voltage	240V ac
RKP Cable	4 core - max distance 50 metres
Dimensions	CPU H 230mm W 290mm D 80mm RKP H 81mm W 147mm D 30mm

Installation Log

Site Address

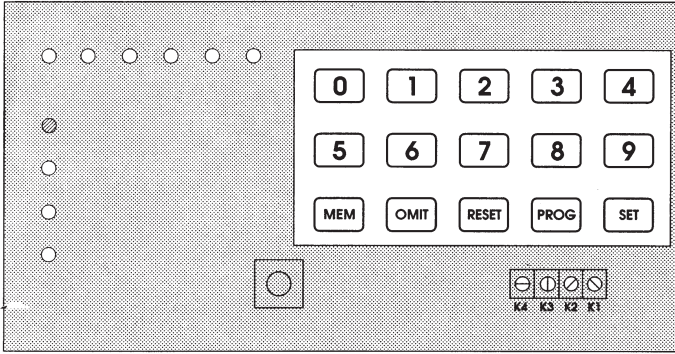
.....

Contact Name

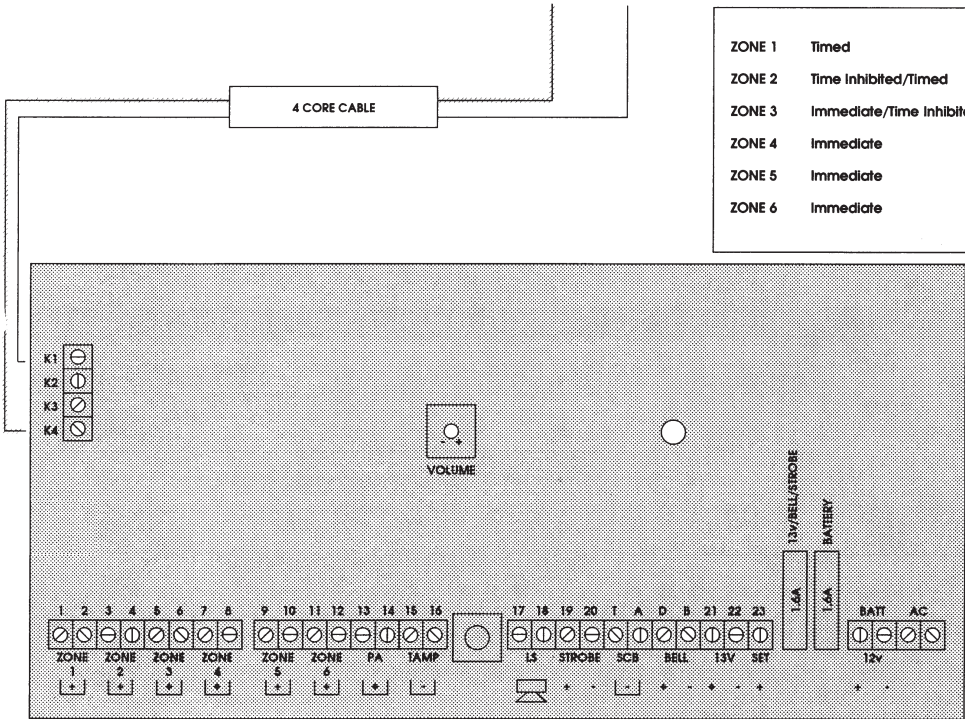
Telephone..... Date of Installation

	RESISTANCE	PROTECTION AND EQUIPMENT USED
ZONE 1		
ZONE 2		
ZONE 3		
ZONE 4		
ZONE 5		
ZONE 6		
PA		
TAMP		

Connection Diagram



- ZONE 1 Timed
- ZONE 2 Time Inhibited/Timed
- ZONE 3 Immediate/Time Inhibited
- ZONE 4 Immediate
- ZONE 5 Immediate
- ZONE 6 Immediate



1.6A
240v

1. INTRODUCTION

The Concept 6 is a microprocessor based, intruder alarm control system designed to comply with the installation requirements of BS 4737 1986/87.

The system is split into two component parts ;

The Central Processing Unit (CPU) houses the transformer, battery, power supply and sounder/strobe circuitry, and is designed to be concealed at any position within the protected premises.

In direct contrast the Remote Keypad (RKP) which features a 15 button keypad array and 10 miniature LED status indicators is a neat and attractive control centre from where the system is programmed and operated.

Please read through this manual and the Operating Instructions carefully before beginning any planning or installation work, checking that you fully understand every function of the system and its operation.

2. INSTALLATION

2.1 Installation Design

Carefully plan the position of each part of the alarm system and the cable runs. Detectors should be carefully sited with particular regard to the degree of coverage required and the function of each of the zones.

All of the system wiring is connected directly to the CPU which may be fitted inside a cupboard or loft space, but must be within the protected premises and convenient for a mains supply.

The RKP which is connected to the CPU by a 4 core cable, should be mounted in a position which allows ease of operation for the system user, usually in a position which is part of the entry/exit route close to the final door.

A miniature sounder in the RKP provides keypad response tones only. It is therefore essential that internal sounders in the form of extension speakers are fitted to the system (see section 3.8). These will produce high volume alarm tones and low volume entry/exit tones and should be positioned to provide good sound distribution within the building, and to aid the Setting procedure, the exit tone should remain audible outside the main entry/exit door.

Finally note that the total current output of this control system (in alarm condition) is 1 Amp. Carefully calculate the total current consumption of every part of the system including the bell, sounders, strobes, and detectors to ensure that this rating is not exceeded.

2.2 Fixing

CPU

Remove the Printed Circuit Board (PCB) and fix the base to the wall in a horizontal position using the appropriate screws and wall plugs.

Note that the thin wall sections around the edges of the base may be cut away to allow cable entry, and large cable holes are also provided in the rear of the base.

When re-assembling the unit note that the AC wires are not polarity conscious and may be connected either way round.

RKP

Remove the RKP front cover by carefully pushing the side walls of the cover to release the holding clips.

Remove the PCB by carefully sliding the metal keypad bracket downwards and then withdraw the complete assembly from the base.

TAKE EXTREME CARE NOT TO DISLodge THE KEYPAD RIBBON FROM THE SOCKET.

Using a sharp knife, cut away the required cable entry point at the side edge of the base and then fix it to the wall in a horizontal position, using either the screws provided or appropriate cavity fixings.

Bring the cable into the base and then re-fit the PCB, sliding the keypad bracket upwards and checking that the assembly is correctly seated.

2.3 Wiring-Power Up

- 1) Check that the 9 factory fitted links are fitted into the terminals in the CPU at the positions marked.
- 2) Wire the 4 core keypad cable, connecting K1 in the CPU to K1 in the RKP. K2 to K2 etc.
- 3) Connect at least one extension speaker to the LS terminals 17 & 18.
- 4) Carefully fit the battery wires to the BATT terminals and connect the battery. The system will now go in to alarm condition.
- 5) Enter the customer code (factory set at 0123). The alarm condition will cease and the TAMPER indicator will show.
- 6) Fit the CPU front cover checking that the tamper spring is depressed.
- 7) Manually depress the RKP tamper spring and the system will go to Day mode. Press PROG and immediately enter the customer code (0123). The DAY and TAMPER indicators will now show and the tamper spring may be released.
- 8) The system is now in customer programming mode and it may now be carefully and systematically wired. Connect each of the zones, the PA, and then the tamper circuits into the TAMP terminals 15 & 16. Finish by wiring any other internal sounders, external bell/sounder, strobe and the 13V supply.
- 9) Connect the mains supply following the recommendations listed and then refer to the commissioning section.

2.4 Mains Connection

The mains power should be connected using a 3 core cable of not less than 0.75mm² between the mains connector block at the right hand side of the base and a spur outlet mounted external to the CPU
???

Use a 2 Amp fuse in the spur or at the distribution board.

WARNING

The mains supply should only be connected by a technically competent person and according to the current IEE wiring regulations.

2.5 Final Commissioning

When all wiring is complete and the mains supply has been connected, a red POWER indicator should be showing on the RKP and on the CPU. Replace the CPU and RKP front covers and press the RESET key. The system should go to Day mode, showing the green DAY indicator.

If any faults are present, refer to section 5 of this manual.

On completion of the installation the system should be thoroughly tested to ensure correct operation. Fill in the Installation Log at the front of this manual and retain it for future reference.

Finally explain the operation of the system to the end user, completing the Engineer Details section of the Operating Instructions.

2.6 Power Up Reset - Clear NVM

If the customer code has been lost or forgotten or in extreme circumstances, where a software crash has occurred, it is necessary to clear the Non Volatile Memory (NVM) and return to factory set conditions.

- 1) Remove the mains supply and cause an alarm condition by removing the CPU cover.
- 2) Disconnect the battery. If self contained, the external sounders will now operate.
- 3) Remove all wires from terminals 13 and 23.
- 4) Fit a wire link between terminals 13 and 23 and apply power.
- 5) The system will now power up with no alarm condition. Remove the wire link and replace the original wiring.
- 6) The RKP indicators will now show in response to each of the zones and circuits as they operate. Refit the CPU cover checking that the TAMPER indicator goes off.

When ALL of the zones and circuits become clear the system will go to Day mode and at that moment the NVM will be cleared and factory set conditions will apply.

- 7) The system may now be programmed, tested and re-commissioned.

3. PCB LAYOUT

The Connection Diagram at the front of this manual may be opened out for reference to the PCB information below.

3.1 Zones

As supplied, wire service links are fitted across each of the zones to represent a closed circuit. These are removed during installation as the zone wiring is connected, but their positions are marked for future reference with a symbol.

The majority of detection devices use normally closed contacts. These are connected together in a series loop across the required zone input. There are also a small minority of sensors that use normally open contacts (typically pressure mats). These should be connected in parallel together and finally wired between the required zone and the tamper circuit.

3.2 Zone 1

(Terminals 1 & 2)

This zone is *timed* and used to protect the main entry/exit door. Activating zone 1 whilst the system is Set will cause the entry timer to start and allow time to Unset the system.

The entry and exit timers are both separately programmable.

3.3 Zone 2

(Terminals 3 & 4)

Zone 2 is for protection of the route between the main entry/exit door and the RKP and from 'Full Set' the zone has a *time inhibit* function.

This means the zone will not operate during entry to the building after the entry timer has been started, and will allow access through detectors in order to reach the RKP.

However the zone changes its function to *timed* if any zone is omitted during Setting of the system. This is particularly useful for domestic installations where a PIR is used in a hallway or through lounge. The action of omitting for example an upstairs zone at night automatically allows timed entry to Unset the system the next morning. (Basically removing the requirement for a pressure mat on the stairs operating zone 1).

Note that where zone 2 is not to be used as part of a prescribed entry route and the *time inhibit* and *timed* functions are not required, it should either be left linked or used for low security areas e.g. perimeter protection.

3.4 Zone 3

(Terminals 5 & 6)

This zone is factory set as an *immediate* zone and will cause a full alarm condition if activated whilst Set.

Where required it may be selected as a *time inhibit* zone from Engineer Programming.

3.5 Zones 4, 5 & 6

(Terminals 7 - 12)

These are all *immediate* zones and will cause a full alarm condition if activated whilst they are Set.

3.6 PA

(Terminals 13 & 14)

Any quantity of normally closed type personal attack sensors may be wired in series and then connected to the PA circuit.

Operational in Day and Set, the PA circuit will cause a full alarm condition when activated. PA is indicated on the RKP as ATTACK.

3.7 Tamper Network

(Terminals 15 & 16, T & A)

The tamper circuit is used to protect all cables and detectors on the system from unauthorised access including the CPU and the RKP covers.

The zone and PA tampers should be series wired and connected to the TAMP terminals 15 & 16. Terminals T & A are for the external bell/sounder tamper.

Tamper alarms which occur in the Day mode operate internal sounders only. Tamper alarms in Set cause a full alarm condition.

Tamper is indicated on the RKP by the TAMPER indicator.

3.8 Internal Sounder

(Terminals 17 & 18)

Marked LS, this output delivers an audio signal to drive up to 3 x 16Ω extension speakers which should be wired in parallel. Fitted at various points throughout the installation each speaker provides high volume alarm tones and low volume entry/exit warning tones.

A control marked VOLUME in the centre of the PCB may be used to adjust the low volume entry/exit tones to suit environmental conditions.

3.9 Strobe Output

(Terminals 19 & 20)

Activated by all types of alarm condition, the STROBE output will continue to operate after reset of the external sounders.

The output will also remain active after entry of the customer code and will not stop until the RESET key is pressed.

The strobe output is a 12V supply, Terminal 19 is permanently +Ve and terminal 20 is switched -Ve in alarm.

3.10 Bell Output

Terminals T A D B are for connection to the external bell or sounder. These terminals provide a power/hold-off supply, sounder trigger and tamper circuit to protect the external sounder housing.

The terminals are summarised as follows:

T - -Ve tamper return

A - -Ve supply (0V)

D - +Ve supply (12V)

B - -Ve sounder trigger

Where self contained/powered sounders are used, carefully follow the manufacturers instructions, matching each of the terminals to those above. For ease of installation, ADE sounders and modules use the same T A D B terminals.

Where a discrete bell or sounder is used, it should be connected to terminals D & B. Terminals T & A are then used for tamper protection for the sounder housing.

3.11 13v Supply

(Terminals 21 & 22)

The 13V output is to power detectors which require a voltage supply (PIR detectors etc). The supply is present at all times and may be used to supply a total load of up to 350 mA.

3.12 Set +

(Terminal 23)

This output, marked SET + is used in conjunction with latching type detectors. The output becomes positive on correct Set of the system and is removed at the commencement of entry time or entry of the customer code.

3.13 Remote Keypad Connections

(Terminal K1-K4)

Located at the top left hand side of the PCB, terminals K1-K4 are for connection of a 4 core cable which wires into the same terminals in the RKP (connect K1 to K1, K2 to K2 etc).

K1 and K2 supply 12V to the RKP and are protected by a thermal fuse which will close down the supply if a short circuit occurs.

K3 and K4 provide communications data to the RKP.

It should be noted that the maximum cable length is 50m and that the system has been designed to work with one RKP only .

3.14 Fuses

There are two fuses mounted on the CPU circuit board, both are 1.6A 20mm quick blow.

The fuse to the left protects the STROBE +Ve terminal 19, the BELL +Ve terminal D and the 13V +Ve terminal 21.

The fuse to the right is in the +Ve battery line and prevents excessive current being drawn from the battery. The fuse will also blow if the battery is inadvertently reverse polarity connected during installation.

3.15 Battery Back Up

It is essential that this control system is used with a rechargeable 12V battery. Any rechargeable battery in the region of 1.2 to 6Ah may be used, but the capacity should be chosen to suit the installation.

The BATT terminals should be connected to the system battery only, and must not be connected to any other battery or used for any other form of power supply or distribution.

4. SYSTEM DESCRIPTION

4.1 Operating The System

Day Mode. This is generally considered as the period when the system is turned off, with only tamper and PA circuits being active. Day mode is indicated on the RKP by the green DAY indicator.

To Set the System. From the Day mode, enter the four digit customer code. The sounder will produce a beep tone and the building can be exited. The system will Set as the tone stops.

Faults During Setting. Faults are shown by the zone indicators, accompanied by a broken beep tone, one beep for zone 1, two beeps for zone 2 etc.

To Omit Zones. Any of the zones may be omitted when Setting the system. After entering the customer code press the OMIT button, followed by the zone number(s) to be omitted. Selected zones will show their indicators. When selection is complete press SET and the exit tone will continue. A maximum of 5 zones may be omitted in this way.

To Quick Set. Pressing SET during the exit period will cause the exit tone to stop and the system to Set within about 5 seconds.

To Unset the System. Enter the customer code and the system will return to Day mode. If the alarm has been activated then entering the code will stop the alarm and the cause of the alarm will be displayed.

Press RESET to clear the indication and return to Day mode.

4.2 Keypad Tamper

During the Set and entry periods, attempts to incorrectly enter the customer code will operate the keypad tamper. Nineteen incorrect keypushes will result in a full alarm activation.

4.3 Factory Set Conditions

Customer Code	0123
Exit Time	30 seconds
Entry Time	30 seconds
Bell Duration	20 minutes
Zone 3 Status	Immediate

4.4 Auto Reset and Re-arm

In alarm condition the sounders will operate for the programmed bell duration. The sounders will then shut down but the strobe will continue to operate.

Each circuit is then scrutinised and if clear will be re-armed. Any circuit in fault condition is automatically omitted.

4.5 Non Volatile Memory (NVM)

The Concept 6 uses an NVM circuit to retain all programmed information in the event of power fail, disconnection or system faults. And thereby provides the system with a high degree of security.

Where the customer code has been lost or forgotten it will be necessary to clear the NVM. This procedure is given in section 2.6.

Note that the 8 event alarm memory is not held in NVM.

Fault conditions are often the result of minor installation errors or misinterpretation of the equipment being installed. The following points outline the most common installation and commissioning faults.

- 1) As supplied and after an NVM clear, the customer code is 0123 and must be used during initial access to the system, programming etc.

The engineer code is fixed at 9999 and can not be changed.

- 2) The Engineer Programme cannot be accessed directly from Day mode. It can only be accessed through the Customer Programme.
- 3) If a tamper or PA fault is present on the system, it will go to a lock out condition (showing the appropriate indication). The keypad will continue to produce audible response tones but the system will not operate until the fault has been found and rectified.
- 4) The most common cause of a zone not responding to detectors is incorrect wiring. Normally closed detectors must be wired together in a series loop before connecting in to the appropriate ZONE terminals. Tamper are series wired in the same manner.
- 5) Where a permanent zone fault is showing and the loop resistance is found to be in order, the most probable cause is a short circuit between the zone wiring and the tamper wiring.

When measured with a meter the resistance between the zone and tamper wiring should be infinitely high.

- 6) If totally lost as to the cause of a fault, remove ALL wiring from the CPU (except K1-K4). Re-fit the 9 service links and test the system. Never fit links to any positions other than those marked on the PCB.
- 7) Before testing or replacing any fuses, ALL power must be removed. Fuses which fail continually are almost certainly the result of a short circuit or low resistance across the 13V supply (terminal 21), strobe output (terminal 19) or the external bell supply (terminal D).

Remove all wiring and check for low resistances with a multimeter. Blown fuses are very seldom the result of faulty equipment.

- 8) Finally, whenever working close to the mains supply or connector, you should exercise extreme caution. Whenever possible isolate the mains supply before removing the CPU cover.

The control system uses two distinct programmes. The Customer Programme is entered from the Day mode. The Engineer Programme is then progressively entered from the Customer Programme. The chart below shows the tests and changes available in each programme. As each section is completed the system will return to programming.

Customer Programming

TO BEGIN

From Day mode	DAY indicator showing.
Press PROG	All indicators show.
Enter the customer code	DAY and TAMPER indicators show.

The system is now in customer programming mode.

CODE CHANGE

Press 8	Four ZONE indicators show.
Enter new code (4 digits)	System bleeps twice and the DAY and TAMPER indicators show.

ALARM MEMORY RECALL

Press MEM	The indicators will now scroll to show the last 8 alarm conditions. The sounder will bleep as each new condition is shown. When complete the DAY and TAMPER indicators show again.
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ALARM TESTS

Press 0	DAY, TAMPER and ATTACK indicators show.
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The system is now in the test routine

STROBE TEST

Press 2	0 to stop
----------------	------------------

EXTERNAL BELL/SOUNDER TEST

Press 3	0 to stop
----------------	------------------

LOW VOLUME INTERNAL SOUNDER TEST

Press 4	0 to stop
----------------	------------------

HIGH VOLUME INTERNAL SOUNDER TEST

Press 2 4	0 to stop
-------------------------	------------------

WALK TEST

Press 5	0 to stop
----------------	------------------

The internal sounder will now beep as each circuit is opened.

Press RESET to return to programming.
Press RESET again to return to Day mode.

Engineer Programming

TO BEGIN

From Day mode	DAY indicator showing.
Press PROG	All indicators show.
Enter the customer code	DAY and TAMPER indicators show.
Press PROG and enter 9999	DAY and ATTACK indicators show.

The system is now in engineer programming mode.

EXIT TIME

Press 1	ZONE 1 and ZONE 2 indicators show.
----------------	------------------------------------

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

after entering the two digits the DAY and ATTACK indicators show.

ENTRY TIME

Press 2	ZONE 1 and ZONE 2 indicators show.
----------------	------------------------------------

Enter the time required as with EXIT.

After entering the two digits the DAY and ATTACK indicators show.

EXTERNAL BELL/SOUNDER TIMER

Press 3	ZONE 1 and ZONE 2 indicators show.
----------------	------------------------------------

Enter the time required in minutes

01 = 1 minute 20 = 20 minutes

99 = maximum 99 minutes

00 = continuous sounder operation

After entering the two digits the DAY and ATTACK indicators show.

ZONE 3 STATUS

Press 5	The ZONE indicators show which ZONES are time inhibited
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Press 5 again to select or de-select zone 3 as time inhibited.

Indicator ON - Zone 3 time inhibited.

Indicator OFF - Zone 3 immediate.

When complete, press RESET and the DAY and ATTACK indicators show.

Press RESET twice to return to Day

RESET TO FACTORY CONDITIONS

From engineer programming, pressing the SET button returns the system to Day mode and re-instates all factory set conditions.

Due to continuous product development, ADE reserve the right to change specifications as and when required without prior notice.



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