Concept Installers Manual

THE MANUFACTURER OR ITS AGENTS TAKE NO RESPONSIBILITY FOR ANY DAMAGE, FINANCIAL LOSS OR INJURY CAUSED TO ANY EQUIPMENT, PROPERTY OR PERSONS RESULTING FROM THE CORRECT OR INCORRECT USE OF THE CONCEPT 1000, 2000 OR 2000+ SYSTEMS OR THEIR PERIPHERALS. THE PURCHASER ASSUMES ALL RESPONSIBILITY AND LIABILITY IN THE USE OF CONCEPT SYSTEMS AND PERIPHERALS.

1 INTRODUCTION

Congratulations on your purchase of a **Concept Security Management System.**

Concept Systems are intelligent, versatile security management systems that are fully compatible with industry standard detection devices and communication protocols. They have been designed to cater for almost all security applications with performance and programming limited only by your imagination.

Concept Systems offer multiple User Areas, a System Area, a Tamper/24Hr Area, Alarm and Tamper Zones, Siren Drivers and Auxiliaries in **standard configurations**.

Concept Systems include limited Access Control functions as part of the standard packages and are complete with their own power supply and standby battery, often extras with other products.

Expandability is a breeze with add on **Zone Expansion Modules** optionally enlarging the number of individual detection Zones. User Terminals may be increased to eight (8) for ease of customer operation or as Access Control points for doors.

In short, **Concept Systems** provide the excellent price/performance you've come to expect from Inner Range.

And **Concept Systems** are easy to use. All User Interface Information is displayed in "plain English" with step by step procedures clearly defined. There's even a HELP key for people that get really stuck and need a little prompting.

Designed for the customer, **Concept Systems** are the ultimate "user friendly" systems with slimline Terminals, hidden control equipment and powerful customer features available at the touch of a button.

Designed for the installer, **Concept Systems** are easy to install using a four-wire LAN, easy to programme in "plain English" or with the Upload/Download package, and quick to service with de-mountable cable connections and removable chassis components.

Thank you for buying an **Inner Range** product, proudly designed and manufactured in Australia, by Australians.

OTHER READING

This manual assumes the reader is familiar with the *Concept 2000 Programmers Manual* and the *Concept 2000 Users Manual*. If you have not read these manuals you may have trouble understanding some basic concepts used in this manual.

This manual is designed to be used as a reference guide. Although reading the manual completely is desirable, many installers will only read relevant sections when the need arises. The following section on QUICK PROGRAMMING TUTORIAL should always be read as it will provide the programmer with a good overview of all programming requirements.

GENERAL INFORMATION

Installation and commissioning comprises the following steps :

- Installing the Concept system
- Testing of the installation
- Programming the Concept system
- Testing the programming and Dialler operation.

Concept systems can be programmed in one of two ways :

- Using the keypad at any Concept Terminal.
- Over the phone using terminal emulation (with modem).
- Over the phone using the Upload/Download program (with modem)

All programming and testing may be carried out at any terminal, however only the installer code (User 001) may do programming and testing. To begin any operations as an installer, press **0, 1, OK**. (Note: 01 is the factory default Installer (User 001) code.)

The programming of user codes (not the number of user codes !) may only be performed by the master user code. At manufacture the master user code (User 000) is set to 0,0. To begin any operations as a master user, press **0, 0, OK.**

QUICK PROGRAMMING TUTORIAL

After the Concept system has been installed, it needs to be tested and programmed according to the specific installation. It is assumed a phone line is connected (Mode 3) even if the system is not being monitored. This enables service and programming via the phone and prepares even a Local Alarm installation for future "part time" monitoring.

The installer code (default = 0, 1) only needs to be entered once during programming. As you finish programming each section push the **MENU** key to allow you to select another **MENU** option.

All programming on the Concept system can be carried out at any operational terminal by first entering the installer code then pressing the **OK** key. The Concept system assumes you wish to turn off or on areas but by now pressing the **MENU** key you tell the Concept you wish to perform another function.

When the **MENU** key is pushed you can select one of 9 options from the USER MENU (Refer to *Concept 2000 Users Manual*) :

0 Go back to area on/off options.
1 Inspect review memory.
2 Program user codes.
3 Isolate zones or inputs.
4 Walk-test an area.
5 Set the time and date.
6 Turn on/off the deadman feature.
7 System programming.
8 Ring the call-back number.

User codes can be programmed by pushing the **2** key and following the instructions, note however that the master user code must have been entered to program Users 002 and upwards.

All other programming is accessed by first pressing the **7** key. Only the installer code can use the **7** key.

When the **7** key is pushed, a special programmers menu is displayed. The programmer can select one of 8 options from the PROGRAMMING MENU (Refer to *Concept 2000 Programmers Manual*):

0 Program Zone information (zone names, options ...)
1 Program Areas (siren times, zones in areas ...)
2 Program Terminals (display options, access control ...)
3 Communications (client code, phone numbers ...)
4 Day timers (Time zones, time operated auxiliaries ...)
5 Miscellaneous (Zone self test time, link auxiliaries..)
6 Pulse timers (Timers to turn off auxiliaries ...)
V Access more menu options.

To program any of the selected items above, simply press the desired digit key.

More programming options are available if the **v** key is pushed. When the **v** key is pushed the following INSTALLATION MENU options are available (Refer to **CONFIGURING A CONTROL MODULE** on page 3–1):

0 Configure modules (used to add terminals/expanders)
1 Configure codes (used to allocate space for more codes)
2 Installer tests (test sirens, auxiliaries, zones ...)
3 Production testing - MUST NOT BE SELECTED
4 Trigger dialler test - MUST NOT BE SELECTED
5 Change battery install date.
6 Loop line test (test dialler can dial, detect tones ..)
^ Go back to original programming menu.

To select any of the selected items above, simply press the desired digit key.

Pressing the **MENU** key at any time takes you back to the USER MENU as if you had just pushed the **MENU** key after entering your code. Pressing the **END** key takes you back to the default display and you will have to re-enter your code.

In summary, to program user codes first enter the master user code and press **MENU**, **2**. To perform any other programming enter the installer code and press **MENU**, **7**. The PROGRAMMING MENU will be displayed. Either select an item or go to the INSTALLATION MENU by pushing the **v** key. If desired go back to the PROGRAMMING MENU by pushing the **^** key. Push the **MENU** key at any time to go back to the USER MENU.

When programming selected items from the menus above, the keys below operate in a very similar manner :

The **OK** key takes you to the next programming question to be answered in the section you are programming.

These keys move the cursor left/right or take you to the last/next question.

These keys take you to the same question for different Zones/Areas/Terminals, or are used to allow you to select different values for the option being shown

Displays a help screen or more information about the item being programmed.

Takes you back to the original USER MENU so that you may choose another section to program.

Takes you back to the default display. You will have to enter your code again.

Now program up the Concept system by following the steps below.

CONFIGURING THE SYSTEM

The standard systems support 16 User codes (including the Master user (User 000) and the Installer (User 001), 16 Zone alarm/tamper inputs and one Terminal.

For the Concept 2000 and 2000+, if the installation requires more User codes (up to 96) or more Zones via Zone Expansion modules or has more than one Terminal, then the system MUST BE RE-CONFIGURED.

Go straight to TESTING THE SYSTEM on page 1–8 if there are less than 16 User codes and only one Terminal.

ALLOWING FOR MORE USER CODES

Access sequence: **MENU** **7** **v** **1** **OK**

This option applies to the Concept 2000 and 2000+ ONLY. Memory space for more user codes may be reserved by entering the Configure number of users sub-menu by pressing the **MENU**, **7**, **v** and **1** keys. The installer may now choose the number of User codes for the system. Either 16,32,48,64,80,96 or 512 codes may be chosen. Note that 512 users requires the Expanded memory option. The more User codes that are configured, the less memory is left over for Review. See **CHANGING THE NUMBER OF USERS** on page 3–6 for more details.

ADDING MORE ZONES OR TERMINALS

Access sequence: **MENU** **7** **v** **0** **OK**

If the system requires more than 16 Zones by the use of Zone Expansion modules or more than one Terminal (all systems), then the system needs to be told that these extra modules exist. This is done by first installing the modules (with the power off of course !) then turning on the system and Configuring the number of modules by pressing the **MENU**, **7**, **v** and **0** keys. DANGER - Review memory will be reset when using this option!

The display will show the current modules in the system. Pressing **OK** allows the LAN KEY to be set. The LAN KEY must match the setting of the DIP switch on Zone Expansion modules. Pressing **OK** twice more will start the LAN configure which take some seconds. (The LAN KEY helps prevent illegal Zone expander substitution.)

After Module (LAN) configuration, all modules in the system should be recognized and operating if wired correctly. See **LAN WIRING** on page 8–11.

All Terminals and Zone Expansion modules connected to the control module have a unique address which must be set by the installer prior to installation.

For Concept 1000: The standard unit allows up to 3 Terminals and one expander module. If two 8 zone expanders are required then the unit must be fitted with the Expanded memory option.

For Concept 2000: The standard unit allows up to 4 Terminals and one expander module, providing 32 Zones in all. If more Terminals or more expander modules are required then the unit must be fitted with the Expanded memory option.

TESTING THE SYSTEM

The system installation can be further checked by using the **Installer Testing** feature accessed by pressing **MENU, 7, v, 2** keys and the **Loop the Line** test accessed by pressing the **MENU, 7, v, 6** keys.

These features enable the installer to :

- Identify Zone cabling.
- Test specific Zones.
- Test Auxiliaries.
- Test Sirens.
- Test the telecom connection.

All these tests can be done prior to programming as they do not rely on the Concept system being programmed. See **TESTING THE INSTALLATION** (page 3–8), **INSTALLING A NEW BATTERY** (page 3–12) and **TELECOM TESTING** (page 3–13).

QUICKLY PROGRAMMING THE SYSTEM

Refer to *Zones, Area Defaults* and *Areas* in the *Concept 2000 Programmers Manual* for details on programming Zones and Areas.

ENTER SECRET CODE

Access sequence: [0] [1] [OK]

Before you can program the Concept system you must enter the Installer code (default = 0, 1) or whatever it has been changed to.

PROGRAMMING THE ZONES

Access sequence: [MENU] [7] [0]

The first programming to be done is Zone programming. The main purpose of Zone programming is to give all the Zones their own name. Up to 24 characters may be used for the Zone name. If a Zone is not being used, then leave it at its default setting. Check that the Zone options are at the settings desired for each Zone.

PROGRAMMING AREA 0

Access sequence: [MENU] [7] [1] [0]

Area 0 is normally turned on by the installer after programming and is always left on (24 hour Area). Area 0 is normally used to monitor the Tamper circuits for all Zones in the system.

Fill out Area 0 programming as desired. Area 0 can be initially set to certain defaults to save programming effort.

The default name for Area 0 is "TAMPER AREA". This need only be altered if you wish another name.

PROGRAMMING USER AREAS

Access sequence: [MENU] [7] [1]

The programming of the User Areas can only be done after consultation with the customer as to how the system is to be used. Many systems will only use one or two Areas out of the eight (three in Concept 1000) possible Areas. Program the Areas required as per customer requirements.

Check that all Areas not used have a blank Area description. A blank area description tells the Concept system that the area does not exist and should be ignored.

PROGRAMMING AREA 9

Access sequence: MENU 7 1 9

Area 9 is normally turned on by the installer after programming and is always left on (24 hour Area). Area 9 is used to monitor all inputs into the Concept system that are not zones such as A.C. fail, low battery etc.

If Area 9 is off (as it is now, right ?) then the Concept system will not recognize any of these system inputs. The only time Area 9 is turned off is during programming and/or installation and perhaps during service.

Area 9 contains 160 inputs. Because all of these inputs can be set up automatically by using the Area default option, the programming of Area 9 is quick and easy. You only need to alter the options for specific system inputs as the customer requires.

For example if the internal and/or external sirens are not connected then you will not require the Concept system to monitor the siren circuits. The "input" in Area 9 which monitors these circuits should be disabled.

Area Open/Close reporting is enabled by programming the area 9 inputs between 150 and 160

PROGRAMMING COMMUNICATIONS

Access sequence: MENU 7 3

The communications for the Concept system now need to be programmed.

Only set the communications type to LOCAL if no phone line is connected. If a phone is connected then the type should be set to DIALLER. This enables the Concept system to answer the phone. It is preferable that all LOCAL systems are connected to the phone line and the type set to DIALLER.

Program up the rest of the communications options taking care to set up correctly for the client code, telephone number and dialler format required. Decadic or tone dial also needs to be programmed.

Before leaving the premises check that the unit can dial up and communicate without error and can also answer the phone to allow remote service.

See *Communications* in the *Concept 2000 Programmers Manual* for more details.

The next section requires the Master user to gain access so press END key to exit and return to the default display.

PROGRAMMING USER CODES

Access sequence: [0] [0] [OK] [MENU] [2]

The Installer code cannot alter any User codes except their own. At this stage the Installer should change the Installer code to his/her own secret code.

The programming of User codes is performed by entering the Master user code first. Enter the Master code (default = 0,0) and program up all the Users who are going to use the system. Pay particular attention to which Areas they are allowed to control, and what other panel functions each user is allowed to perform.

When all codes are programmed (often with the Master user by your side) the Master User may now change the master code to his/her own secret code.

NOTE: If the Master code is forgotten the Installer may reset the Master code to the default (0,0) by logging on to a terminal with the Installer code and selecting "Change Codes" (**MENU, 2**). The display will prompt "User number to alter ?", key in "000", then press the left arrow key < four times (or **OK** then < once). The display will change to "Push ON key to set master to 00". Press the **ON** key to reset the Master code. If the Installer code is forgotten then the code cannot be reset or recovered on-site. The control module board assembly must be returned to Inner Range for the codes to be reset.

See *Change Codes* in the *Concept 2000 Users Manual* for more details.

CHECKING PROGRAMMING

At this stage the system has been programmed and User codes set up. First Area 0 and Area 9 should be turned on checking that all relevant Zones and Inputs are sealed.

The system should be operated by turning On/Off defined User Areas to check that the system functions as required. Check operation with the central station if required.

The Installer should check that the system can be rung up by causing the phone to ring and checking that the Concept system picks up the phone after the required number of rings.

NOTE: That inspecting review memory will aid greatly in checking system operation and sorting out any problems.

ALWAYS LOOK AT REVIEW MEMORY WHEN SORTING OUT A PROBLEM

2 CONCEPT CONTROL MODULES

There are three control modules in the Concept range of security management systems.

The Concept 1000 (IRC1000 circuit board) is a low cost module with only limited expansion capability.

The Concept 2000 (IRC2000 circuit board) has full expansion capability.

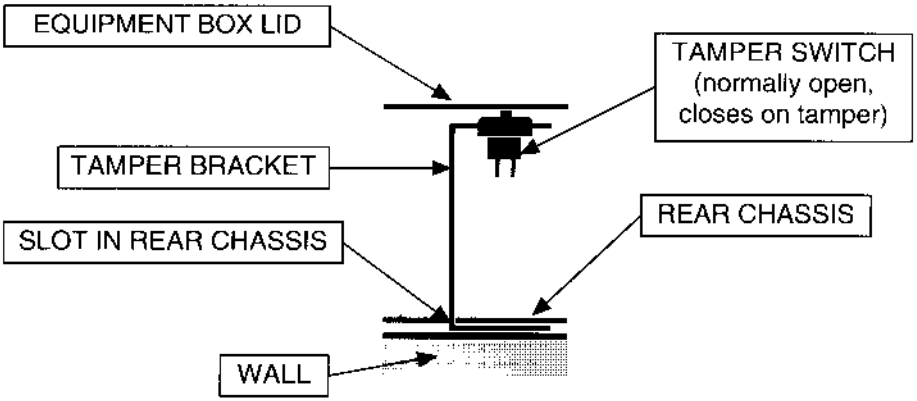
The Concept 2000+ (IRC2000 circuit board with an enhanced Program Chip) is for installations requiring a large number of zones or auxiliaries.

	CONCEPT 1000	***CONCEPT 2000***	***CONCEPT 2000+***
AREAS User	3	8	8
System	2	2	2
ZONES Std	8+8 tampers	16+16 tampers	16+16 tampers
Max	24+24 tampers	96+96 tampers	208+208 tampers
TERMINALS Std	1	1	1
Max	3	8	8 (at 96 zones) 1 (at 208 zones)
AUX OUT Std	4	4	4
Max	32	66	120
Max LAN Modules	6	14	14
SIRENS Std	1	2 (1 Int+1 Ext)	2 (1 Int +1 Ext)
Max	3	12 (6 Int+6 Ext)	24 (12 Int+12 Ext)
USER CODES Std	16	16	16
Max	16	480	480

CONTROL MODULE MOUNTING

CONTROL MODULE TAMPER

The Control Module (and Zone Expander cards) should be mounted in an Equipment Box with Tamper. This tamper is dual acting and is a normally open switch which closes on tamper.



The dual acting tamper switch should be mounted as shown above. Ensure that the tamper bracket passes through the slot in the rear chassis and that it can move freely.

When mounted correctly the dual acting switch will close if either :

- the Equipment Box lid is raised,
- the Rear Chassis is removed from the wall.

CONCEPT 1000

The Concept 1000 security management system consists of the IRC1000 control module together with any terminals and additional zone expanders as required.

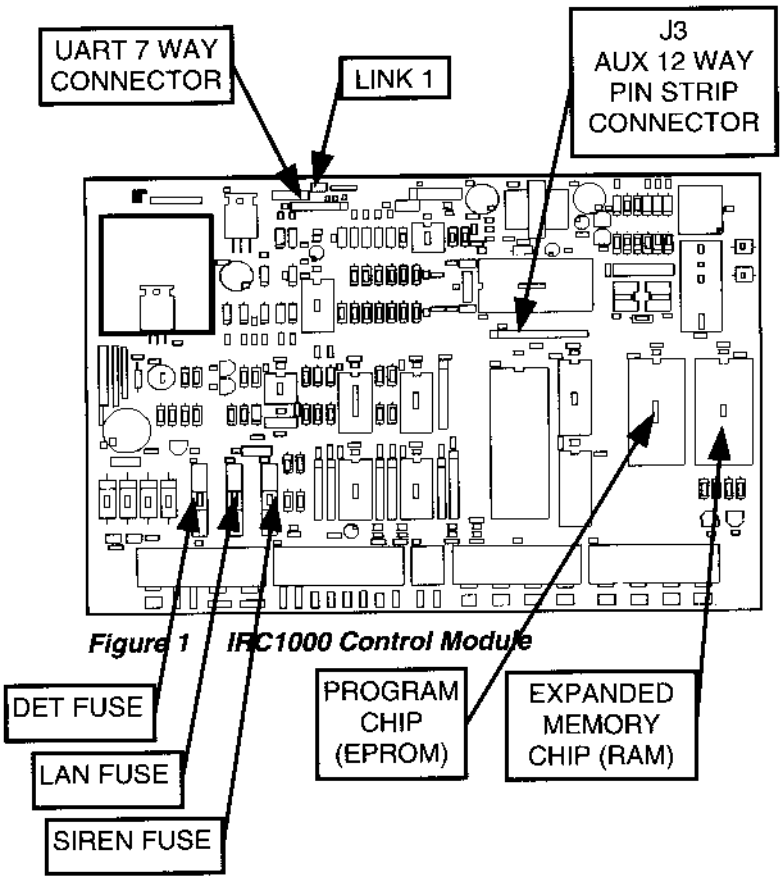


Figure 1 IRC1000 Control Module

MOUNTING IRC1000

Refer to CONCEPT 1000 MOUNTING on page 8–7 for details on mounting the Concept 1000 in a Concept Equipment Box. Ensure that the battery is always mounted in the lowest end of the box.

EXPANDED MEMORY AND ZONE EXPANDERS

In the Concept 1000 the Expanded Memory option allows more Review events to be saved, and is essential when there are two (2) Zone Epander cards installed.

The Concept 1000 standard configuration may be expanded from 8 to 24 Zones using the IRZ1000 and IRZ2000 Zone Expander cards.

The table below shows the valid configurations with various options:

IRZ2000 (16 zone)	IRZ1000 (8 zone)	EXPANDED MEMORY	Total Zones	Review events saved
0	0	No	8	610
0	0	Yes	8	4663
0	1	No	16	530
0	1	Yes	16	4626
0	2	***ESSENTIAL***	24	4546
1	0	No	24	530
1	0	Yes	24	4626

CONCEPT 2000

The Concept 2000 security management system consists of the IRC2000 control module together with any terminals and additional zone expanders as required.

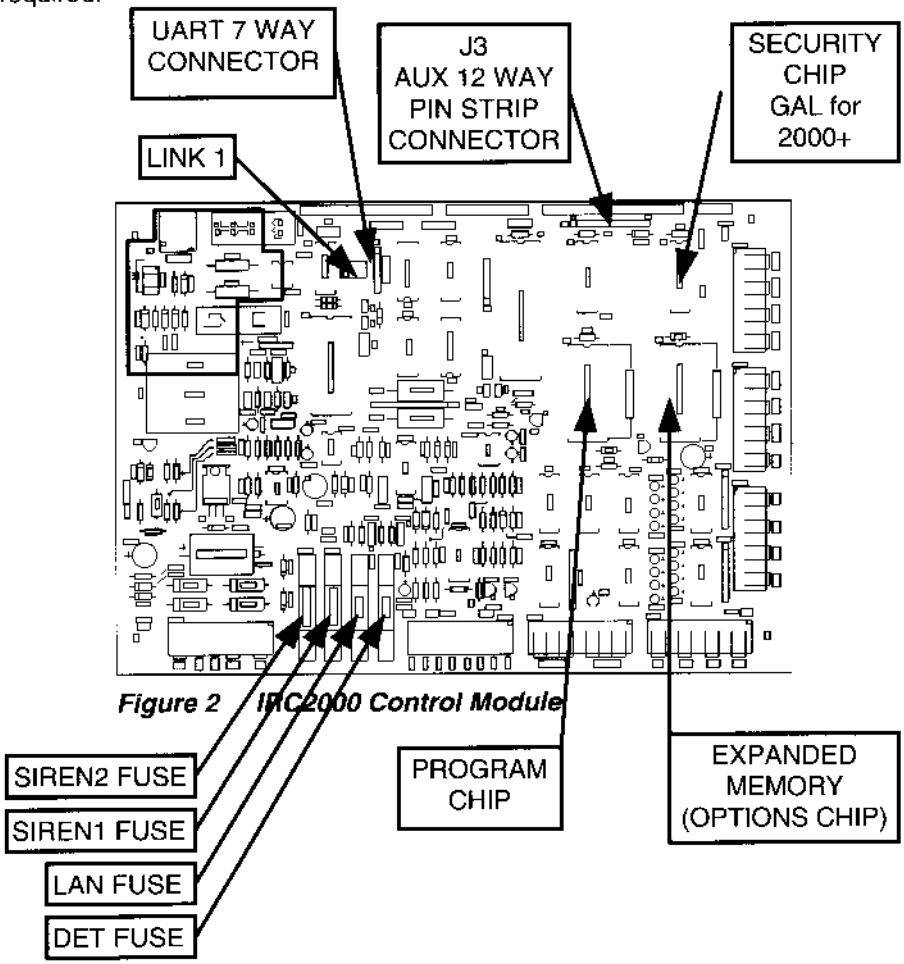


Figure 2 IRC2000 Control Module

MOUNTING IRC2000

Refer to **CONCEPT 2000 MOUNTING** on page 8–8 for details on mounting the Concept 2000 in a Concept Equipment Box. Ensure that the battery is always mounted in the lowest end of the box.

EXPANDED MEMORY OPTION

The standard Concept 2000 can accept up to 96 User codes, 32 Zones by use of a Zone expansion module and up to 4 Inner range Terminals. If more Terminals, Codes or more Zones are desired then the Concept 2000 must be fitted with the Expanded Memory option.

The Expanded Memory option also allows more Review events to be saved.

The table below shows the number of review events that can be saved in different configurations :

Users	Zones	Terminals	STANDARD MEMORY	EXPANDED MEMORY
16	16	1	610	4706
16	16	2	567	4663
16	16	4	481	4577
16	16	8	INVALID	4406
16	32	1	530	4626
16	32	4	402	4498
16	96	8	INVALID	4007
96	16	1	290	4386
96	32	4	82	4178
96	96	8	INVALID	3687
512	16	1	INVALID	2551
512	96	8	INVALID	1852

CONCEPT 2000+

The Concept 2000+ security management system consists of the IRC2000 control module (with an enhanced version of the Concept software) together with any terminals, zone expanders and enhanced zone expanders as required. Refer to CONCEPT 2000 on page 2–6 for a diagram of the IRC2000 control module printed circuit board. Sections below refer to the differences in between the Concept 2000 and the enhanced 2000+ software.

The Concept 2000+ is an enhanced version of the standard Concept 2000 offering more zones, auxiliaries and sirens.

The following enhancements are offered:

- Maximum of 208 zones.
- Maximum of 24 siren drivers (12 internal, 12 external).
- Maximum of 120 auxiliaries.
- Programmable messages for Contact ID.
- Optional 480 users.

The Concept 2000+ is the IRC2000 printed circuit board with an enhanced version of the Concept software. The letter suffix indicates what type of dialler formats are supported. For example, for Software version 497 :

Chip Designation	Description
497xs	208 Zones, same as "s" chip but no securitel
497xi	208 Zones, same as "i" chip.
497xe	208 Zones, same as "e" chip.

EXPANDED MEMORY OPTION

An expanded memory chip is required in the Concept 2000+ control module.

An expanded memory chip programmed with standard software is not compatible with an expanded memory chip used with the enhanced "x" software. Similarly an expanded memory chip programmed with the enhanced "x" software is not compatible with the an expanded memory chip to be used with the standard software.

The number of review events that can be saved in different configurations is the same as for Concept 2000 with expanded memory.

ZONE EXPANDERS

Extra zones are added to the Concept 2000+ control module by means of standard 16 zone expanders. The first 5 expanders are added in exactly the same manner as before and are used to cover zone 17 through to zone 96 inclusive. The next 7 zone expanders are standard 16 zone expanders with Version 2 software or later. These expanders are used to cover zone 97 through to zone 208 inclusive. As each zone expander is added, the maximum number of terminals allowed is reduced by one. With 12 zone expanders in total only one terminal is allowed. All additional siren drivers and auxiliary outputs are available for programming.

Because the control module needs a special security chip installed to run the expanded software, a latest release control module must be used with a "pluggable" security chip. This allows the standard security chip to be replaced with the enhanced security chip.

This table shows how additional zones, auxiliaries and siren drivers are mapped to the additional expanders.

NOTE: Expanders 6 to 12 must have version 2 software or later.

Expander Number	Zones	Aux	Siren Driver	Max Terms
1	17-32	25-32	2	8
2	33-48	33-40	3	8
3	49-64	41-48	4	8
4	65-80	49-56	5	8
5	81-96	57-64	6	8
6	97-112	65-72	7	7
7	113-128	73-80	8	6
8	129-144	81-88	9	5
9	145-160	89-96	10	4
10	161-176	97-104	11	3
11	177-192	105-112	12	2
12	193-208	113-120	13	1

Each zone expander must have the correct DIP SWITCH settings in order to operate correctly. The LAN KEY must be set as per the LAN KEY setup in LAN configuration. See **LAN KEY DIP SWITCHES (IRZ1000** & IRZ2000) on page 6–8 for details of dip switch settings.

Zone expanders 1 to 5 use the standard SYSTEM INPUTS (such as "Low Battery" and "AC Fail") in the range 73 to 112. See *Tables - Zone Control Flag Defaults* in the *Concept 2000 Programmers Manual* for details of System Area Inputs.

Zone Expanders 6 to 12 use the SYSTEM INPUTS normally reserved for Terminals. See **IRZ2000 SYSTEM INPUT REASSIGNMENT** on page 6–14 for details of reassigned System Inputs.

PROGRAMMING DIFFERENCES

Zone Programming

Function auxiliary is now 3 digits to allow programming up to 120. A new programming option allowing a Contact ID message to be programmed individually for each zone has been added. The Contact ID message is programmable between 001 and 999 and will result in a particular message being displayed at the Central Station when that zone is alarmed or restored. Contact your central station for a list of available Contact ID messages (The default is Message 140 = "General Alarm")

Area Programming

All auxiliaries are 3 digits. An additional "Siren modules" screen has been added for all areas to allow siren drivers 7 to 13 to be specified for any area. The number of primary zones allowed per area has been reduced from 5 zones to 4 zones. Zones within an area can now range from Zone 1 to Zone 208 in the largest system.

Other Programming

Terminal, Day timer, Deadman, link auxiliaries and Pulse timers programming all use 3 digits auxiliaries.

Communications Programming

All auxiliaries are 3 digits. Securitel does not appear in the standard "xs" version.

Lan Configuration

Review memory is not reset when the lan is configured. Expanders 6, 7, 8, 9, 10, 11, 12 are found if present.

Number of Codes

No change.

REVIEW DIFFERENCES

All alarms, restores, tampers and isolates of zones range to zone 208

All auxiliary review events display up to auxiliary number 120.

Review for siren drivers 1 to 6 work as previously. Siren drivers 7 to 13 do not distinguish internal or external nor area.

COMMUNICATION FORMAT DIFFERENCES

IEI Fast A new version (Version 6) has been released allowing 65,536 logical inputs to be reported. Version 6 uses input numbers 0 - 255 for zones, 0 to 55 for terminal expanders and 96 to 255 for system inputs. (Refer to FE100 Digital Receiver documentation for more information)

Contact ID Works as before except zone reports range to zone 208 and each zone may have a pre-programmed Contact ID message.

Ademco Fast Zone mapping extends to zone 208.

EarthNet Version 7 handles different mapping used for enhanced version.

Securitel Not implemented at this time due to limitations of reporting format.

E68000 Not implemented at this time due to limitations of reporting format.

I R Fast Not available.

3 CONFIGURING A CONTROL MODULE

CONFIGURING A CONTROL MODULE

This section describes configuring a control module using the INSTALLATION MENU.

To access the INSTALLATION MENU first enter the Installer code (default = 0, 1) :

Then select the INSTALLATION MENU :

The display will show the scrolling message :

Enter selection
0=No. of Modules 1=No. of Codes 2=Installer Test 3=Product Test
4=Trigger dialler 5=Battery date 6=Loop line test

This message is actually larger than the display, instead of 3 lines as shown it will be 2 lines with the second line scrolling.

The following table indicates which sections refer to which menu option.

0 = No. of Modules	Refer to ADDING TERMINALS AND ZONE EXPANDERS (page 3–3)
1 = No. of Codes	Refer to CHANGING THE NUMBER OF USERS (page 3–6)
2 = Installer Test	Refer to TESTING THE INSTALLATION (page 3–8)
3 = Product Test	Inner Range Internal Diagnostics **DO NOT USE**
4 = Trigger dialler	Inner Range Internal Diagnostics **DO NOT USE**
5 = Battery date	Refer to INSTALLING A NEW BATTERY (page 3–12)
6 = Loop line test	Refer to TELECOM TESTING (page 3–13)

ADDING TERMINALS AND ZONE EXPANDERS

The Concept systems are connected to Terminals and Zone Expansion modules by means of a 4 wire Local Area Network (LAN). Refer to **TECHNICAL NOTES - LAN WIRING** (page 8–3) and **WIRING DIAGRAMS - LAN WIRING** (page 8–11).

In order for the Concept control module to "talk" to Terminals and Zone expanders using the LAN, it must first know what Terminals and Zone expanders are present.

To change the number of Terminals or Zone Expansion modules in the system you must :

1. Power down the system.
2. Add or delete new Terminals or Zone Expanders as required. NOTE: Terminal 1 must always be present.
3. Ensure that each terminal in the system has its own unique address. See "Setting terminal address" below.
4. Power up the system.

When the system is powered up again any new Terminals or Zone Expansion modules that have been added will NOT YET be recognised by the Concept system. In addition any old Terminals or Zone Expansion modules which have been removed will cause LAN errors.

The Concept system will automatically stop talking to any Terminals or Zone Expansion modules if they have been removed (after a number of retries). This may cause the system to take some seconds to work out what Terminals/Zone Expansion modules have been removed. (Terminal units may reset a number of times during this process.)

Under all circumstances, Terminal 1 should eventually become operational. If Terminal 1 does not become operational then check all LAN wiring. Check that Terminal 1 address links are correct (all linked). Check that all modules are powered up. If Terminal 1 still does not reset this may indicate that there is another Terminal 1 already connected (i.e. no links cut). If you still have problems then remove other modules one by one till Terminal 1 operates.

In order to tell the Concept control module that modules have been added/deleted, the "No. of modules." option must be performed.

Access sequence : MENU 7 v 0

Display :

```
Modules present
Terminals : 1, 2,
```

Line 2 of the display is scrolling (wider than the display) and shows what Terminals and Zone expanders were present in the system last time the "No. of modules" option was performed.

Example 1 :

```
Modules present
Terminals : 1, 2, *3, 4, Expanders :
```

Example 1 shows that last time the "No. of modules" option was performed. Terminals 1, 2, 3 and 4 were the only modules present. The "*" next to Terminal 3 means that currently Terminal 3 is not being "talked to" probably because it has been removed.

Example 2 :

```
Modules present
Terminals : 1, 2,  Expanders : *1 <004>,
```

Example 2 shows that last time the "No. of modules" option was performed. Terminals 1 and 2 and 1 Zone Expander were present. The "*" next to expander 1 means that currently expander 1 is not being "talked to". The <004> is the LAN error count, this means that 4 errors have occurred in communications to and from that module.

Now push the **OK** key.

The display will show :

```
LAN  12345678
key: Y   YY  YY
```

The LAN KEY must be set to the same setting as the DIP switch setting on Zone Expansion cards. All Zone Expansion cards must have their LAN KEY DIP switches set the same. Any Zone expander with a different LAN KEY will not be recognised by the system.

If there are no Zone Expansion modules in the system then ignore this option. Refer to **LAN KEY DIP SWITCHES (IRZ1000** & IRZ2000) on page 6–8 for details on setting the LAN KEY.

When the LAN KEY is correct push the **OK** key.

The display will show the message :

> **Dangerous option.**
> **Review events will be erased. Press OK to proceed, any other key to abort.**

Pressing **OK** will now cause the Concept control module to search for all new Terminals/Zone expanders and remove any old modules that are now not present. This may take some seconds. When finished check that all Terminals and Zone expanders are operational.

SETTING TERMINAL ADDRESSES

Terminals in the system are numbered from 1 to 8. The number of each Terminal is set at each Terminal by cutting special links on the back of each Terminal unit. (See the back of the Terminal PCB as to which links to cut).

The standard Terminal supplied by Inner range is Terminal number 1 (no links cut). As each Terminal is added its Terminal number must be incremented.

No. of Terminals in System	Terminal Address to use
1	1
2	1, 2
3	1, 2, 3
4	1, 2, 3, 4
5	1, 2, 3, 4, 5
6	1, 2, 3, 4, 5, 6
7	1, 2, 3, 4, 5, 6, 7
8	1, 2, 3, 4, 5, 6, 7, 8

NOTE : If more than 4 Terminals are required or more than 1 Zone Expansion module is present, then the control module must be fitted with the expanded memory option.

CHANGING THE NUMBER OF USERS

The number of users cannot be changed on the Concept 1000.

The Concept 2000 or 2000+ can store up to 96 User codes (or 512 user codes with the expanded memory option). The first User code is User 000 whilst the last User code is User 511. User 000 is also known as the MASTER USER whilst User 001 is also known as the INSTALLER.

The Concept 2000 and 2000+ need to be told the maximum number of users that are required (including the Master and the Installer). At manufacture the all Concept control modules are configured for 16 Users.

The installer can optionally configure the system for 32, 48, 64, 80, 96 or 512 Users. When the number of Users in the system is altered the review memory is initialised.

Use the access sequence below to access the "No. of codes" option. The display will show the current number of Users allowed in the system.

Access sequence : MENU 7 v 1

Display :

Number of Users : 016

Now enter the desired number of Users. Note that you must enter 16, 32, 48, 64, 80, 96 or 512.

When the number of Users has been entered push the **OK** key. The Terminal will beep and the display will show :

Dangerous option.
Press OK to erase Review and Configure the number of Users. Any other key to abort.

This gives the installer the opportunity to cancel the new configuration if desired. Pushing **OK** again will reconfigure the Concept control module to the desired number of codes.

When the number of Users is increased, the new Users are initialised as follows :

- User name is set to "USER XXX"
- Entry code is set to the User number. eg. USER 034 = 34 or for users above 96, the entry code is cleared.
- No Areas allowed to be controlled.
- All code options set to No.

All User codes already defined are not altered.

User codes between 96 and 127 are reserved for internal use. This means with 512 user codes defined there are actually 480 user codes.

The more Users that use the system, the less memory is left to save review events. Refer to the tables in sections for each control module to see the number of review events that can be saved in different configurations.

TESTING THE INSTALLATION

The Concept panel wiring and peripherals can be tested without having to actually turn On and Off Areas or wait for entry or exit delays etc.

Access sequence : MENU 7 v 2

Display :

```
Zone to
Test ?  01
```

This test allows the installer to continuously display the state of a specified Zone. To perform this test use the digit keys to select the desired Zone to test then push **OK**.

As the Zone input state changes the Terminal will beep and the display will alter accordingly. The 3 possible displays are :

```
Zone XX is
sealed
```

```
Zone XX is
in alarm
```

```
Zone XX is
in tamper
```

To finish the test push any key.

The display will change to :

```
Zone to
Test ?  01
```

Another Zone can now be selected or a similar test on System Inputs may be selected.

Skip to System Inputs test by pressing : [V]

Display :

```
Input to
Test ?  001
```

This test is identical to the previous test, except that System Inputs can be tested. See *Tables - Zone Control Flag Defaults* in the *Concept 2000 Programmers Manual* for details of System Area Inputs. To perform this test select the input to test and push **OK**. Another Input can be selected.

Skip to next test by pressing : [V]

Display :

```
Siren to
Test ? 1
```

This test allows selected Siren cards to be tested. The control module is siren card number 1, expansion card 1 is siren card number 2 and so on up to expansion card 12 which is siren card number 13 (Concept 2000+ ONLY).

Enter the desired Siren card number .

Press : [OK]

Display :

```
Siren X is Off
Press ON or OFF
```

The first line shows whether the Siren is currently on or off. Pressing the **ON** key turns on both the internal and external sirens on that siren card. Pressing the **OFF** key turns both the internal and external sirens for that card off. The Concept control module will not allow sirens to operate if the battery is low, and will turn them off if the battery becomes low.

To finish the test press any key.

Select the next test by pressing : [v]

Display :

```
Auxiliary to
Test ? 01
```

This test is identical to the previous test, except that Auxiliaries can be turned on or off. Refer to *Tables - Auxiliary Assignments* in the *Concept 2000 Programmers Manual* to relate auxiliary numbers to outputs. To perform this test select the Auxiliary to test and push OK.

Select the next test by pressing key : [v]

Display :

(Default display is 001)

```
Zone array to
Test ? 001
```

This test is similar to the Zone and Input testing except that 16 Zones may be checked simultaneously. The number shown is the first Zone to be displayed. To display 16 Zone states beginning at Zone 01 press :

[0] [0] [1] [OK]

The display will change to :

Zone STATUS Display

```
1234567890123456
A A T TTTTTTTTT
```

Line 2 is continuously showing the status of 16 Zones, beginning at Zone 01. A Seal is shown as a space. "T" represents Tamper and "A" represents an Alarm.

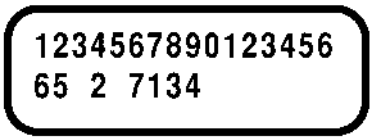
To select the first Expander card press: [0] [1] [7] [OK]

Zone 17 is on first expander card.

```
Zone array to
Test ? 017
```

Any non-digit key terminates the test. If a digit key is entered the display will show the order that the zones were alarmed since the Zone array test was last entered. For example :

Zone ORDER Display



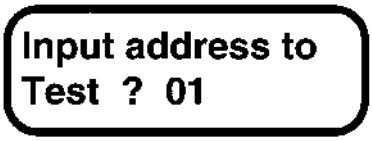
This feature allows a one man zone identification test to be performed. Pushing any key will cause the display to revert to the current zone status display shown above.

The order of zone alarms form the first zone to the last zone is represented by the characters 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G. Whilst displaying the order, the zones are not sensed. To continue sensing zones return to the zone status display by pushing any key. You may then return to the order display by pushing a digit key. To clear out the order display, you must exit and then re-enter the zone array test.

Zone array testing may also be carried out on system inputs. To display 16 system inputs starting at system input XXX select zone array XXX+96 to be displayed.

To exit this test push a non-digit key when the zone status display is being displayed.

Display :



This test is used for bench testing and need not be selected in the field.

INSTALLING A NEW BATTERY

NOTE: The real-time clock should be set correctly prior to changing the battery date.

When the control module is first installed, or if the battery is replaced, the date when the battery was changed is stored. The Installer can check/change this date from the main menu.

Access sequence : MENU 7 v 5

Display :

Battery changed on DD/MM/YYYY

where DD is the day, MM is the month and YYYY is the year the battery was changed. If you have just changed the battery or Installed the control module for the first time, you can set the battery date.

Access sequence : <

Display :

Push OK to alter battery date

Push **OK** to set the battery date to today's date or press any other key to leave the battery date the same.

In 2 years time from the battery date to the nearest month, the control module will trigger the "General battery update" input (Input 149). If Area 9 is on at this time and the "General battery update" input is enabled for processing, then an alarm can be raised to warn that the battery should be replaced.

TELECOM TESTING

Telecom testing should always be performed by actual communication with the central station. A special test however is available to aid in installation. This test is called the "Loop line test".

This test can be used to verify that Concept control module can/cannot decode dial-tone reliably and to check dialling operation. If the Concept control module cannot reliably detect dial-tone then the Dialler can be programmed accordingly. See *Communications - Modem Setup* in the *Concept 2000 Programmers Manual* for details of dial-tone detection and tone dialling.

Access sequence : MENU 7 v 6

Display :

```
Please wait for
5 seconds
```

Now wait for 5 seconds without pressing any keys. After 5 seconds the display will show :

Display :

```
Line un-looped
Rings : 00
```

This display means the control module is currently un-looped and listening for a ringing line. If the line rings then the ring count will increment as each ring is decoded. When the ring reaches the programmed "No. of rings" to answer the phone (Dialler programming) the control module will loop the line and the display will show :

Display :

```
Line looped
NN
```

The control module has now looped the line and the <msg> will show the last tone the control module has decoded. When the control module decodes a tone the Terminal will beep.

The possible tones decoded are :

Display	Description
Dial-tone	Telecom dial tone
Busy-tone	Telecom engaged or congestion tone
Ring-tone	Telecom ring-progress tone
1400 tone	1400 Hz Slow format tone.
2300 tone	2300 Hz Slow format tone.
AD fast	Ademco fast format initial handshake.
Modem tone	Modem carrier or answer tone.

The number NN will be continuously changing when a tone is being decoded. The XXXX number shows the frequency of the tone being decoded. When XXXX = 0000 this means that the control module is decoding silence.

The line can be un-looped at any time by pushing the **OFF** key. This will cause the display to revert to the "un-looped display" and begin decoding ring if present.

When the line is un-looped, the control module can be forced to loop the line by pushing the **ON** key. This will cause the display to revert to the "looped display" and begin decoding tones if present.

Whilst the line is looped the Installer can actually dial a number from the keypad by pressing any digit from **0** to **9**. If the > key is pushed first then tone dialling is selected. If the < key is pushed first then decadic dialling is selected. When a digit key is pushed the display will show that the digit being dialled.

For example :

Do not push the next digit to dial until the current digit has finished or else digits will be missed and the number not dialled correctly.

When finished with this test push the **MENU** or **END** key.

Key	Effect
0	Dial a "0" when the line is looped
1	Dial a "1" when the line is looped
2	Dial a "2" when the line is looped
3	Dial a "3" when the line is looped
4	Dial a "4" when the line is looped
5	Dial a "5" when the line is looped
6	Dial a "6" when the line is looped
7	Dial a "7" when the line is looped
8	Dial a "8" when the line is looped
9	Dial a "9" when the line is looped
>	Select tone (DTMF) dialling
<	Select decadic dialling
OFF	Un-loop the line (hang-up)
ON	Loop the line (off-hook)
END	Finish test.
MENU	Finish test.

4 CONTROL MODULE FEATURES

The following features of the Concept range are common to all models. Features specific to each model are described in earlier sections.

EXTRA POWER SUPPLIES

Concept control modules are designed to provide approximately 700 ma at 13 volts to LAN modules such as Terminals and active detectors. This leaves sufficient reserve to charge the internal sealed battery.

If the load is increased past 700 ma the power supply will not be damaged, but the internal battery will take longer to charge should it become discharged.

If the load is increased past 0.8 amp, there is danger that the power supply will lose regulation and therefore not be able to provide the correct voltage to the control module thereby compromising system security.

If Zone expansion modules are used then an extra 700 ma capacity is added for each zone expansion card added.

Occasionally extra power supply capacity may be required for example when a large number of detectors and/or Terminals are present. Extra power supply capacity can be added by means of an external power supply/battery combination by keeping the following rules in mind :

1 Turn off all power supplies and the Control module.

2 Separate out the loads that are to be connected to the separate power supply. Separate both the positive and negative sides.

3 Connect up the loads to be driven by the separate power supply.

4 Connect a single wire from the separate power supply negative Terminal (at the supply itself) to the detector negative Terminal on the Control module.

NEVER CONNECT BOTH THE POSITIVE AND NEGATIVES OF A SEPARATE POWER SUPPLY TO THE CONTROL UNIT POWER SUPPLY EITHER DIRECTLY, OR INDIRECTLY. I.E. DON'T PARALLEL POWER SUPPLIES. IF POWER SUPPLIES ARE PARALLELED THEN BATTERIES CAN BE DAMAGED, COMPONENTS CAN OVER-HEAT AND LAN COMMUNICATIONS CAN BE COMPROMISED.

DEADMAN FEATURE (Not Concept 1000)

The Concept 2000 and 2000+ systems can be used to ensure that Users in the vicinity of a Terminal unit are able to enter their code and push **OK** on a regular basis.

This feature is known as the Deadman feature and may be turned on or off by Users as required.

When the deadman feature is turned on, a valid User code must be entered at a Terminal every xxx minutes or sooner. If more than xxx minutes elapses between valid code entries, a deadman alarm can be raised.

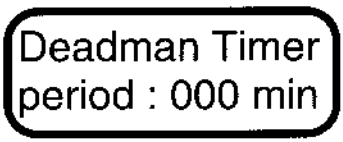
The deadman feature may be enabled (turned on) when a person is working in a potentially dangerous Area by themselves. By having the person enter their code regularly the Concept system knows the person is "alive and well". If the person does not enter their code regularly, the Concept system will assume that the person is in trouble and raise an alarm.

SETUP DEADMAN FEATURE

The installer can set up the way the deadman feature will work using some options found in miscellaneous programming (**MENU, 7, 5**). After selecting miscellaneous programming press **OK** several times to get to the "Deadman Timer period" display. The relevant options are :

Access sequence : MENU 7 5

Display :



This option determines the time period between entries of valid codes when the deadman feature is enabled. It is programmable from 1 to 255 minutes. The time period between valid code entries must be less than this figure to prevent a Deadman alarm.

If a time of 0 is programmed then the deadman feature cannot be enabled. If the Deadman feature is not used then program 000 minutes.

After entering the Deadman Timer Period press **OK** to get to the following display.

Access sequence : **OK**

Display :

```
Deadman
auxiliary :  00
```

When the time period between valid code entries exceeds the time set above, a Deadman alarm is not raised immediately. The Terminals allowed to show the deadman message will beep for 60 seconds and display :

```
Enter your code
to prevent alarm
```

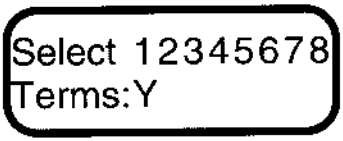
When the Deadman timer expires and a code is required to be entered, the Auxiliary defined by this option will also operate. The Deadman Auxiliary is designed to connect to a warning device to warn persons that they must enter their code to prevent a Deadman alarm. This Auxiliary may be connected to a warning bell. After 60 seconds if a valid code is not entered then a Deadman alarm will be raised.

This message will appear on all Terminals enabled for Deadman operation and must be acknowledged at each Terminal.

TURN ON/OFF DEADMAN FEATURE

Access sequence : MENU 6

Display :



To enable the Deadman feature, select **Y** for Terminals in the system you wish the Deadman feature to operate. If you select more than one Terminal (not normal), be aware that the message will appear on all Terminals enabled for Deadman operation and must be acknowledged at each Terminal

To disable the Deadman feature completely, ensure that no Terminals have a **Y** under them.

The appropriate Area 9 input(s) "Terminal X Deadman Timer" and/or "General Deadman Timer" need to be programmed as to what alarm action will be taken if a Deadman alarm occurs.

REMOTE KEY SWITCHES

Each Terminal in the Concept systems can allow one Area to be turned on and off by a switch. This switch may be a key-switch or maybe relay contacts connected to a remote control receiver.

The Area controlled by the switch is the Associated Area for that Terminal. The switch is connected to a Zone input. The Zone input to use is the key-switch Zone for that Terminal. This Zone input is not used for detectors. The associated Area and key-switch Zone are programmed in *TERMINALS* in the *Concept 2000 Programmers Manual.*

The key-switch zone can be programmed for one of two modes of operation.

LEVEL MODE

This is selected by programming the keyswitch zone from 001 to 096. Note that the leading digit is set to zero.

When the zone defined is sealed , the associated area for that terminal will turn off if the area is on, defined and not currently in use.

When the zone defined is in tamper or alarm, the associated area for that terminal will turn on if the area is off, defined and not currently in use.

If an attempt is made to turn on or off the area by another means such as by a terminal or day timer, as soon as the panel recognises that the keyswitch setting is in-consistent with the areas new on/off status, the keyswitch will take priority and the area will be turned on or off again as appropriate.

EDGE MODE

This is selected by programming the keyswitch zone from 101 to 196. Note that the leading digit is set to one, but is ignored as part of the zone number. To set zone 9 as a keyswitch zone in edge mode, program 109 as the keyswitch zone.

When the zone defined has a transition from alarm/tamper to seal, the current status of the associated area for that terminal will be toggled. If the area is on it will be turned off, if the area is off it will be turned on. The area must be defined and not currently in use. The transition to alarm/tamper is ignored.

The area may be turned on or off by another means such as at a terminal. The area will remain in the new state until the next alarm/tamper to seal transition on the keyswitch zone, or until operated by another means such as a terminal or day timer.

A momentary spring return keyswitch is desirable in edge mode. It is also a good idea to wire a close/open auxiliary for the controlled area back to a lamp next to the keyswitch zone, so the operator of the keyswitch can tell whether the area is on or off.

Edge mode can also be used to implement toggle action panic buttons and for connection to remote control devices to turn areas on and off.

RESTRICTIONS

In both modes of keyswitch operation sub-area arming is not supported. In addition the switch is not recognised during scrolling of messages such as advertising or alarm messages. After 3 scrolls (maximum) of the message the switch will then be recognised. This means that if a switch is to be used to turn On/Off an Area, then that Terminal should not be programmed to display a scrolling advertising message or alarm message if you wish the switch to operate immediately.

DYNAMIC BATTERY TESTING

All batteries in Concept systems are dynamically tested once a month. The testing schedule is set out below :

Battery Test Number	Expander Number	Date of battery test
1	Control Module	1st of the month
2	1	2nd of the month
3	2	3rd of the month
4	3	4th of the month
5	4	5th of the month
6	5	6th of the month
7	6	7th of the month
8	7	8th of the month
9	8	9th of the month
10	9	10th of the month
11	10	11th of the month
12	11	12th of the month
13	12	13th of the month

NOTE: Battery tests 7 to 13 are only available on the Concept 2000+.

Each battery is tested as follows :

- AC charger is turned off at 8 AM.
- Battery voltage is monitored till 12 PM.
- If don't get low battery level, then test passes.
- If get low battery level before 12 PM, test fails.

If low battery is sensed before 12 PM (test fail) then the AC charger is immediately turned back on again.

Both the start of the battery test and the result of the battery test are logged to review. If the battery test fails then the battery test fail (input 147) in area 9 is triggered.

If any sirens in the Concept system are triggered during battery test, the battery test is aborted and the AC charger is turned on again.

A new battery may not have enough charge to pass a battery test.

DOOR LOCKS AND ACCESS CONTROL

The Concept systems are ideal for small Access Control Systems with up to 8 doors and 512 Users (3 doors and 16 Users for Concept 1000). Of course the Concept can also be used as the security system as well !

The main rule to remember when you to install a Concept panel as an access control system is :

Each door to be controlled must have a unique Terminal associated with that door and no other door. Each door is used to access an associated Area.

The best way to think of the Access system is to think of up to 8 Areas (3 Areas for Concept 1000), with access to those Areas controlled by one or more doors. Each door has a Terminal next to it. Users of the system can unlock the door if they are allowed to access the Area the door protects, and the Area is currently off.

To program an Access Control System, the following procedure is recommended :

- For each door in the system, decide what Area it protects. Locate a Terminal next to the door and set the "Associated Area for Terminal" (**MENU, 7, 2**) to be the Area that the door protects. Refer to *Terminals* section in *Concept 2000 Programmers Manual.*
- Program the Lock Auxiliary for that Terminal to be the Auxiliary output that will control the lock next to that Terminal.
- Decide on the options (**MENU 2**) for each User that will be allowed to use the door. Refer to *Change Codes* section in *Concept 2000 Users Manual.* A User may be :
  - ALL Users allowed to use this door MUST have a 'Y' in the "Areas for User" option for the Associated area,
  - Access can NOT be gained to a door if the Associated Area is ON.
  - A "Lock Only User" cannot turn areas OFF. "Lock Only User" is necessary for swipe readers where there is no access to the key pad.

DO NOT draw current for lock from LAN. Use auxilliary to operate a low current relay to switch power.

NOTE for Concept 2000 Software ID before 473 and Concept 1000 Software ID before 080 : If a Terminal auxiliary is used as a lock output a small delay of up to 1 second can occur before the lock operates. A possible security problem is introduced if the LAN wiring can be interfered with, this may cause the lock to momentarily open as the Control module attempts to re-gain communications with LAN modules.

5 TERMINAL OPTIONS

IRT2000 TERMINAL

The IRT2000 is a 20 key membrane keypad with backlit LCD display.

The IRT2000 is used to control the Concept system, turn ON and OFF Areas, program areas and may also be used as a door Access Control terminal.

If a magnetic card reader or MIL key reader is to be used in conjunction with a terminal then an IRS2000 must be used instead of a IRT2000.

Terminals in the system are numbered 1 to 8. The number of each Terminal is set by cutting some of the three special links on the back of each Terminal printed circuit board (PCB). The special links on the PCB are numbered 1, 2 and 3. The following table shows which links to cut :

TERMINAL No.	Special Links to cut
1	None
2	3
3	2
4	2 & 3
5	1
6	1 & 3
7	1 & 2
8	1 & 2 & 3

IRS2000 SERIAL TERMINAL

The IRS2000 serial terminal is an enhanced version of the standard IRT2000 terminal. It may be installed in Concept 1000, 2000 and 2000+ systems. The IRS2000 allows the connection of an IRW2000 magnetic card reader which cannot be connected to a standard IRT2000 terminal.

OPERATION

The operation of the IRS2000 is almost identical to a standard IRT2000. The only operational difference concerns the way the terminal address is set (see below). For details on the operation of the swipe card reader see IRW2000 MAGNETIC "SWIPE" CARD READER on page 5–7.

INSTALLATION

An IRS2000 is installed in a similar manner to the standard IRT2000 terminal. A surface mount kit is included with every IRS2000 terminal. The IRS2000 has a short connector lead emerging from the back of the unit. This lead is used to connect to the IRW2000 magnetic card reader or the IRG2000 Wiegand Interface Unit. Take care not to pinch the cable on installation.

DO NOT install the IRS2000 where it may be exposed to long periods of direct sunlight.

DO NOT mount the IRS2000 where it may be exposed to direct moisture or where the ambient temperature is outside the range -10 to +45 degrees.

Up to eight IRS2000 terminals may be present in a Concept system (three in a Concept 1000 system). The "address" of each IRS2000 needs to be set to a number between 1 and 8 (between 1 to 3 in Concept 1000) prior to installation. Every IRS2000 in the system must have a different "address".

Unlike the IRT2000 whose "address" is set by cutting "links" on the back of the circuit board, with an IRS2000 the address is set by powering up the IRS2000 prior to installation and setting the desired address using the keypad.

To set the address of an IRS2000, follow the procedure below:

Step 1 Connect the IRS2000 serial terminal onto the LAN POS and LAN NEG connectors on the control module.

Step 2 Whilst pressing the HELP key on the IRS2000, power up the control module which should also power up the IRS2000.

Access sequence : **HELP + POWER UP**

Step 3 The display on the IRS2000 should read:

Display :

Current terminal address is X

Where X is a digit between 1 and 8 (1 and 3 in Concept 1000) inclusive. If the display does not read as above then power down the control module and repeat step 2.

Step 4 Use one of the digit keys 1 to 8 (1 to 3 in Concept 1000) to set the address to the desired value.

Step 5 The address has now been programmed!

With the system completely powered down, connect the IRS2000 terminal into the system observing the correct colour code for the LAN wiring. See **LAN WIRING** on page 8–3. Connect the IRW2000 card reader to the flying lead from the IRS2000. Now power up the system.

WARNING The wires between the card reader and the serial terminal should not be located in close proximity to any other wiring, especially mains wiring.

Terminal 1 in the system should now be working. If terminal 1 is not working disconnect the power and check the LAN wiring.

Using Terminal 1 now configure the system. (**MENU, 7 v, 0**). See section **ADDING TERMINALS AND ZONE EXPANDERS** on page 3–3. Check that all standard terminals, serial terminals and zone expanders are working correctly.

The address of the terminal can be verified if desired by entering terminal programming at that terminal.

Access sequence : 

Display :

where X will be the address of that terminal.

MIL KEY READER OPTION

A special version of the IRS2000 serial terminal has the ability to interface to the MIL KEY RS232 reader. A MIL key can now be used in place of a user code, to access a Concept system.

The IRS2000, when used with the MIL KEY RS232 reader, must be fitted with special firmware. All operations of the IRS2000 with MIL key access are identical to the standard IRS2000 with two exceptions :

1 The lead emerging from the back of the unit has a different connector,

2 When addressing the terminal a number of options are available.

See your distributor for more details.

SWIPE CARDS AND WEIGAND FORMAT OPTIONS

The IRS2000 serial terminal gives the user three options when reading magnetic swipe cards and Weigang format. See **WIRING DIAGRAMS** on page 8–9.

Option 0. Compatible with existing systems, this option will produce an eight digit code by reading 100% of a magnetic swipe card.

Option 1. An eight digit code is produced by reading only the first 60% of a magnetic swipe card. This option allows an insertion reader to be connected to the Concept 2000 system. It can also be used to ignore the expiry date on Bank cards, Visa cards, ATM cards, etc. therefore eliminating the need to re-enter a user code when new cards are issued.

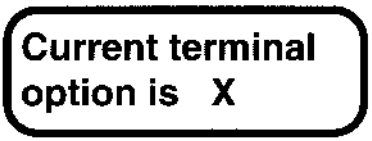
Option 2. (MIMICV6 or later) An eight digit code is produced when any successful Weigand format code is received from the Weigand Interface IRG2000

To set these options on an IRS2000 follow the steps 1 to 5 as outlined in the IRS2000 instructions for addressing a terminal, then proceed with the following.

When the display reads :

Press the right arrow key :

The display should read :



where X is the option number you require. The default setting is option 0.

IRW2000 MAGNETIC "SWIPE" CARD READER

The IRW 2000 "swipe" magnetic card reader may be installed to allow magnetic cards to be used with the Concept systems. An IRS2000 serial terminal is also required as the IRW2000 can only connect to a Concept system via a serial terminal.

Any magnetic card may be used which has prerecorded information on track 2. Most, if not all, common credit cards are suitable.

OPERATION

A magnetic card may be used in place of a user code. Instead of entering a secret code then pressing the **OK** key, a user may "swipe" their credit card. "Swiping" a credit card is the same as if a secret 8 digit code had been entered and the **OK** key pushed. When using a card , the **OK** key does not have to be pushed.

When swiping a card take care to :

- NOT swipe to fast or too slow. If you swipe to fast or too slow, the terminal (IRS2000) will output a long beep to indicate the card was not read. Simply try again.
- Ensure that whilst you swipe the card that the bottom edge of the card remains in contact with the base of the card reader during the whole time the card is in the reader.

A magnetic card user may also have a pin number associated with that card if desired. The pin number is always entered first, then the magnetic card is "swiped". The **OK** key does NOT have to be pushed.

If the magnetic card (and optional pin) is recognised, the terminal will greet the user as if a secret code had been entered and the **OK** key pushed. Operation proceeds as normal.

PROGRAMMING A MAGNETIC CARD

Programming magnetic cards is very easy. A card is programmed using the "Change codes" (**MENU, 2**) option, selecting the User Number you wish to alter then press **OK,** press **OK** again to skip the Name of user.

The actual digits are only displayed if you are altering your own code. This allows individual Users to keep their code private from User 000.

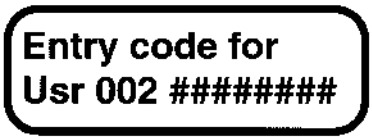
The display will show :

Entry code for
Usr 002 ##

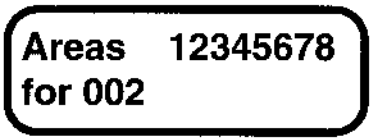
TO PROGRAM A CARD ONLY USER

Simply swipe the magnetic card to be used.

The display will change to :



and then to :

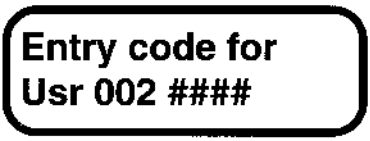


The card is now programmed in! Simply proceed answering the questions for this user as per normal.

TO PROGRAM A PIN NUMBER WITH A CARD

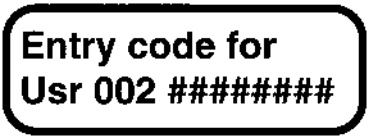
If a pin number is desired in conjunction with a card simply press the **OFF** key (to clear the current secret code) at the display where secret codes are normally entered, and enter the desired pin number. The length of the pin number may be between 1 and 4 digits long. Do NOT press the **OK** key.

The display for a 4 digit code will show :

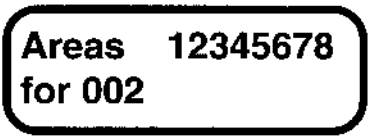


Now swipe the magnetic card to be used.

The display will change to :



and then to :



The pin number and card are now programmed in.

CARD READER TAMPER DETECTION

The IRS2000 serial terminal has one extra wire in the card reader connection loom which is unconnected. This white wire may be used as part of a card reader tamper circuit if desired.

If this wire is wired to +13 Volts then the card reader tamper circuit is sealed. If the wire is unconnected or is connected to negative, the card reader tamper circuit is in the alarm state.

A loop can be formed using this wire connected to +13 Volts so that the card reader tamper circuit remains sealed and is broken if the card reader is physically removed from the wall.

Alarms on the card reader tamper circuit are processed by different Concept control modules in one of two ways :

1 For Concept 2000's (with software ID's less than 371) the card reader tamper is processed in conjunction with the terminal tamper, that is Input 9 for Terminal 1 (in Area 9). Both the terminal tamper switch and the card reader tamper circuit must be sealed for Input 9 to be sealed.

2 For Concept 2000's (with software ID's of 371 and above) or Concept 1000 or Concept 2000+, the card reader tamper is processed by its own separate input (in Area 9). The name of this input is reader tamper. Listed below are the relevant Area 9 inputs :

INPUT	INPUT DESCRIPTION
13	Terminal 1 reader tamper
21	Terminal 2 reader tamper
29	Terminal 3 reader tamper
37	Terminal 4 reader tamper
45	Terminal 5 reader tamper
53	Terminal 6 reader tamper
61	Terminal 7 reader tamper
69	Terminal 8 reader tamper

Simply program any of these inputs for the relevant alarm action.

6 EXPANSION OPTIONS

EXPANDED MEMORY OPTION

The Expanded Memory option is necessary :

- for 512 User Codes
- more than 4 Terminals
- more than 1 Zone Expansion module on the LAN
- for increased review memory
- for the Concept 2000+

The Expanded Memory option may be specified when the Concept system is ordered or can be retro-fitted in the field, however all programming information will have to be re-entered after the Expanded Memory option has been fitted. Alternatively the programming information can be copied into the Expanded Memory module by Inner Range. The best techniques are to either decide prior to programming whether Expanded Memory will be required, or upload, install Expanded Memory, and download using the Upload/Download program.

Before the Expanded Memory option can be installed, the standard memory option must be removed.

For the IRC2000 control module the standard memory option is a 28 pin integrated circuit located alongside the ZONE 9 to ZONE 12 terminal block on the Control Module printed circuit board and labelled "OPTIONS". Refer to diagram on IRC2000 on page 2–6

For the IRC1000 control module the standard memory option is a 28 pin integrated circuit located up from the ZONE 8 terminal block on the edge of the control module printed circuit board. Underneath the 28 pin integrated circuit is the label "RAM". Refer to diagram on IRC1000 on page 2–4.

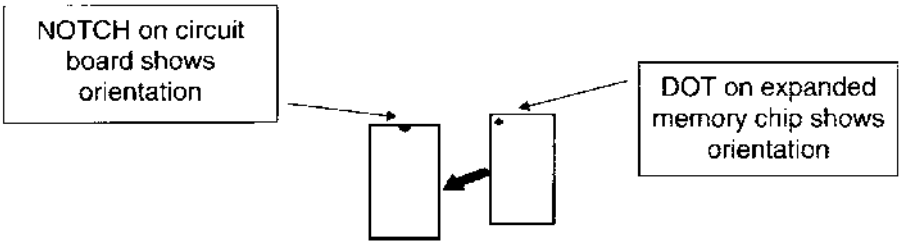
DANGER *If the memory chip is removed or replaced with the power still on (battery or AC) then the memory contents will be corrupted or the memory chip will be damaged requiring replacement. If the Control module is powered up with the memory chip in backwards the memory chip will be destroyed*

1 First turn off all Areas (including Area 0 and Area 9) then disconnect all power including the battery.

2 Carefully remove the chip using an IC removal tool or by the use of a small screwdriver and levering both ends of the chip. Take care not to bend the pins on removal.

3 Now insert the Expanded Memory module chip (also a 28 pin integrated circuit) into the 28 pin socket vacated by the standard memory module. Take care that all pins are seated correctly and the IC is not in backwards. Preferably use an IC insertion tool.

4 Recheck that the Expanded Memory option is plugged in the correct way round (See diagram below). Now power up the unit and check operation.



NOTE: If the siren speaker is outputting a continuous clicking sound, then the Expanded Memory option has not been installed correctly. Power down and re-check.

UPDATING THE PROGRAM CHIP

From time to time the Program chip may be updated to add new features to the Concept control module. As a general rule most of these "upgrades" will be made available free of charge to older installations on a change-over basis.

To identify the ID number of your current Program chip press the **HELP** key at the default display, the very last part of the message displays the current ID number. This enables any person at a Terminal to identify the ID number of the program chip without having to remove the cabinet lid.

Before the Program chip can be installed, the old Program chip must be removed.

For the IRC2000 control module the program chip is a 28 pin integrated circuit located in a 28 pin socket marked "PROGRAM" and alongside the "OPTIONS" socket. Refer to diagram on IRC2000 on page 2–6

For the IRC1000 control module the program chip is a 28 pin integrated circuit located up from the ZONE 6 and 7 terminal blocks, and to the left of the "RAM" socket on the IRC1000 Control Module printed circuit board. Underneath the 28 pin integrated circuit is the label "EPROM". Refer to diagram on IRC1000 on page 2–4.

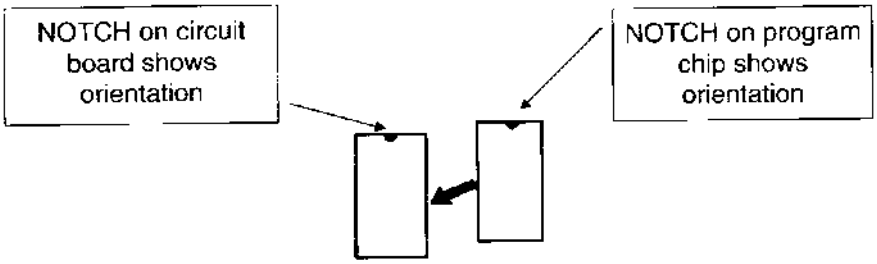
DANGER *If the Program chip is removed or replaced with the power still on (battery or AC) then it is likely that some of the programming information stored in the memory module will be corrupted. It is even possible that the unit is damaged requiring return to Inner Range. If the Control module is powered up with the Program chip in backwards the Program chip will possibly be destroyed.*

1 First turn off all Areas (including Area 0 and Area 9) then disconnect all power including the battery.

2 Carefully remove the old Program chip using an IC removal tool or by the use of a small screwdriver and levering both ends of the chip. The Program chip is identified with a number on top of the chip called the ID number. Take care not to bend the pins on removal.

3 Now insert the new Program chip (also a 28 pin integrated circuit) into the 28 pin socket vacated by the old Program chip. Take care that all pins are seated correctly and the IC is not in backwards. Preferably use an IC insertion tool.

4 Recheck that the Program chip is plugged in the correct way round. Now power up the unit and check operation.



IRA2000 AUXILIARY EXPANDER

The IRA2000 Auxiliary Expander is a low cost device providing an additional eight (8) auxiliaries when connected to the IRC2000 Control Module.

OPERATION

The IRA2000 Auxiliary Expander provides eight auxiliaries numbered from AX3 to AX10. For programming purposes the auxiliary number assigned to these outputs are as follows:

AUX	AUX EXPANDER
19	AX3 output
20	AX4 output
21	AX5 output
22	AX6 output
23	AX7 output
24	AX8 output
65	AX9 output
66	AX10 output

Refer to *Tables - Auxiliary Assignments* in the *Concept 2000 Programmers Manual* for a complete list of outputs and their assigned auxiliary numbers.

INSTALLATION

Installation of the IRA2000 is extremely easy. Simply plug the 12 way connector on the IRA2000 onto the 12 way pin strip (labelled J3) on either the IRC1000 or IRC2000 control modules.

For the IRC1000 control module the J3 pin strip is in the centre right of the printed circuit board. The main IRA2000 body faces towards the bottom of the control module printed circuit board. Refer to diagram on IRC1000 on page 2–4.

For the IRC2000 control module the J3 pin strip is at the top of the control module printed circuit board under the "INNER RANGE P\L" printing. The main IRA2000 body mounts towards the centre of the printed circuit board (making sure the nylon standoff provided fits into the blank hole on the IRC2000). Refer to diagram on IRC2000 on page 2–6

NOTE: The IRA2000 Auxiliary Expander cannot be used on earlier IRC2000 Control Modules which do not have the 12 way pin strip fitted. In order for the eight additional Auxiliaries to be operational the version of the "Program" chip must be labelled "452" or greater.

ZONE EXPANDER CARDS

Two zone expander cards are available. The 16 zone IRZ2000 and the 8 zone IRZ1000. The IRZ1000 may be installed in Concept 1000 and 2000 systems. The IRZ2000 may be installed in Concept 1000, 2000 and 2000+ systems.

A Concept 1000 may have up to 24 zones in total. This may be made up by the Concept 1000 Control Module (8 zones) plus either, an IRZ2000 card (16 zones), or, two IRZ1000 cards (8 zones each), giving 24 zones (alarms plus tampers). When two IRZ1000 cards are used the expanded memory chip is required.

A Concept 2000 may have up to 5 zone expander cards installed providing a maximum of 96 zones (alarms plus tampers). This may be made up by any combination of IRZ1000 and IRZ2000 cards as long as the total number does not exceed 5 cards.

A Concept 2000+ may have up to twelve (12) IRZ2000 zone expander cards installed providing a maximum of 208 zones (alarms plus tampers). Zone Expanders 1 to 5 are the same as for the Concept 2000, however the Zone Expanders 6 to 12 must have Version 2 (or later) software.

A zone expander card connects to the Control module via the same LAN wires that terminal modules use. This means that zone expanders may be "daisy chained" with other terminals and zone expander cards, all using the LAN (Zone expanders do not use the LAN power).

This system may be used to greatly reduce zone wiring in a large system. A zone expander card may be located central to a cluster of zones. All these zones then wire to the zone expander card. The zone expander card may then wire back to the Control module via the LAN.

Zones on zone expander cards area treated exactly the same as the zones on the control module. They may be programmed and operated as if they connected to the Control module directly.

	IRZ2000	IRZ1000
Additional Zones	16	8
Auxiliary Outputs	8	8
Siren Drivers	2	1
Backup Battery and charger	Yes	Yes

LAN KEY DIP SWITCHES (IRZ1000 & IRZ2000)

Both zone expander cards have 16 dip switches which are used to configure the system. Switches 1 to 8 are the same for both cards they define the LAN KEY .

Switches 1 to 8

These switches are used to provide some security against persons substituting zone expander cards with their own in order to "break in" to the system. The 8 switches must be set to the same as the LAN KEY option set in the control module during LAN configuration. If the setting of the 8 switches is not the same as that of the LAN KEY in the control module, then the control module will not recognise that zone expander card.

Choose a secret combination of the 8 switches that you will use for this installation. When you configure the system make sure the LAN KEY option matches the setting of the 8 switches.

For example :

Switch settings :

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
↑	↓	↓	↑	↑	↓	↑	↑
On	Off	Off	**On**	**On**	Off	**On**	**On**

would have the corresponding LAN KEY :

```
LAN 12345678
key:Y  YY YY
```

INSTALLATION (IRZ1000 & IRZ2000)

1 Turn off all system power on all modules. Disconnect all backup batteries.

2 Wire up the zone expander card zones, auxiliaries etc. with no power applied.

3 Turn on power to all zone expanders in the system.

4 Turn on power to the control module.

5 Perform a LAN reconfigure to the system ensuring that the LAN KEY chosen is the same as that selected on the zone expander cards via dip switches 1 to 8.

6 Verify that all modules on the system are being scanned by checking

- the POLL lamp on the IRZ2000,
- the LED1 lamp is flashing for 1/20th of a second on the IRZ1000,

and/or rechecking the current LAN configuration.

EXTRA NOTES (IRZ1000 & IRZ2000)

1 Zone expander cards are powered by their own internal battery rather than by power delivered by the POS wire from the control module.

2 All zone expander cards in the system must be powered for LAN communications to work.

3 If any zone expander card in the system is powered down, then no communication with any modules is possible.

4 The POS terminal may be used to provide power to terminals in the vicinity of the zone expander card if desired, but note that there should be no connection from the POS terminal of the zone expander card to any other POS terminal on another zone expander card or the POS terminal on the control module.

5 If more than one zone expander card is to be added to a system the Expanded Memory Option must be fitted to the control module. If the zone expander card number is set to 2 or above (with switches 9, 10 and 11) the expander will never be recognised with the standard memory option.

IRZ2000 ZONE EXPANDER

IRZ2000 CONNECTIONS

The connections to the Zone expander cards are almost identical to the connections to the Control unit. Refer to **GENERAL WIRING** on page 8–9.

A.C. (2 terminals) are used to connect to an A.C. plug pack providing 16 volts R.M.S. at up to 1.5 amps.

B+ and B- (2 terminals) connect to the internal back-up battery. Connecting the battery backwards will damage the internal electronics.

EXT <siren> (2 terminals) connect to up to 2, 8 ohm horn speakers which will sound when the external siren for this expansion card is turned on.

INT <siren> (2 terminals) connect to up to 2, 8 ohm horn speakers which will sound when the internal siren for this expansion card is turned on.

A relay card may also be connected for Internal and External sirens. Refer to **SIREN WIRING** on page 8–12.

The siren tamper input for this card should be disabled if horn speakers are not being used.

POS, NEG, DAT and CLK (4 terminals) connect to the 4 wire LAN (local area network) wires from the Control module. They are the same wires used for connection to terminal modules. Zone expander cards connect in the same way as terminal modules except the POS wire is not connected for zone expander cards. The POS wire should be run with the correct colour code (white) but is left disconnected at the zone expander unit. Make sure the wire is insulated and cannot touch any other wires or the metal chassis. If the POS wire is accidentally connected on zone expander cards, the system may not function correctly and may appear unreliable. Refer to **LAN WIRING** on page 8–11.

SPR (2 terminals) are spare and may be used to "park" other connections. A good candidate for one of the spare terminals is the POS wire (white) from the control module.

TAM (2 terminals) are used to connect to the cabinet tamper switch for the zone expander card. The cabinet tamper switch is a normally open switch which closes on tamper.

DET+ (4 terminals) and DET- (4 terminals) are used to provide power to all the active detectors in the system and any other power requirements such as power for auxiliaries. The maximum sustained current should be kept below 700 ma to allow sufficient reserve to charge the battery.

Z1 to Z16 (16 pairs) wire to the individual alarm contacts for the 16 zones. There are 2 monitoring resistors required for each zone (same as Control module). For a typical detector, a 2200 ohm resistor is wired in series with the tamper contacts (normally closed) and the alarm contacts (normally closed). An additional 6800 ohm resistor is then put across (in parallel) the alarm contacts.

If no tamper contacts are available then simply wire the 2200 ohm resistor in series with the alarm contacts (normally closed). An additional 6800 ohm resistor is then put across (in parallel) the alarm contacts. See **EXAMPLES OF ZONE WIRING** on page 8–13.

AUX1 to AUX8 (8 terminals) provide 8 independent auxiliary outputs. Each auxiliary output is an open collector output which switches to DET- when energised. The load is connected between the desired auxiliary output and DET+. It is recommended that a relay be used to interface to auxiliary loads. Don't exceed 200 ma per auxiliary. Only wire to DET+ for that zone expander card. Any load drawn by the auxiliaries subtracts from the 700 ma available for detectors. For example if 200 ma were used for auxiliaries then only 500 ma would be available for detector power.

IRZ2000 DIP SWITCHES

Switches 1 to 8 are the LAN KEY switches (described above).

Switches 9 to 14 are used to set the zone expander number and allocate zone numbers and auxiliary numbers:

Expander Number	9	10	11	12	13	14	Zones	Aux	Siren Driver	Max Terms
1	↓	↓	↓	↓	↓	↓	17-32	25-32	2	8
2	↑	↓	↓	↓	↓	↓	33-48	33-40	3	8
3	↓	↑	↓	↓	↓	↓	49-64	41-48	4	8
4	↑	↑	↓	↓	↓	↓	65-80	49-56	5	8
5	↓	↓	↑	↓	↓	↓	81-96	57-64	6	8
for 2000+										
6	↓	↓	↓	↓	↓	↑	97-112	65-72	7	7
7	↑	↓	↓	↓	↓	↑	113-128	73-80	8	6
8	↓	↑	↓	↓	↓	↑	129-144	81-88	9	5
9	↑	↑	↓	↓	↓	↑	145-160	89-96	10	4
10	↓	↓	↑	↓	↓	↑	161-176	97-104	11	3
11	↑	↓	↑	↓	↓	↑	177-192	105-112	12	2
12	↓	↑	↑	↓	↓	↑	193-208	113-120	13	1

(↑ **ON** ↓ OFF)

For zone expanders 1 to 5 the switches 12, 13 and 14 are used for internal testing and must be off. If these switches are not off, the operation of the zone expansion module may be compromised.

Switches 15 and 16 are used to control the polarity of the 8 auxiliary outputs. If these switches are off then the auxiliary outputs will switch to ground when the auxiliary energises.

If switch 15 is on then the operation of the first 4 auxiliaries (AUX1 to AUX 4) is reversed. This means that the auxiliary output will be switched to ground when the auxiliary is off, and will "float high" when the auxiliary is de-energised.

If switch 16 is on then the operation of the last 4 auxiliaries (AUX5 to AUX 8) is reversed. This means that the auxiliary output will be switched to ground when the auxiliary is off, and will "float high" when the auxiliary is de-energised. This may be used to increase security when the auxiliary is used as a Lock Auxiliary.

IRZ2000 INDICATOR LAMPS

There are two indicator lamps on the IRZ2000 zone expander card which may be used to help verify system operation.

CLK OK lamp

This lamp will flash momentarily once a second when the zone expander card recognises communications from the control module to other modules on the system such as terminals.

This lamp should always be flashing during normal operation. If the lamp is not flashing it indicates that the zone expander card is not "seeing" control module communications. Check the wiring of the DAT, NEG DAT and CLK lines back to the control module. Check that all other modules in the system are operational.

POLL lamp

The CLK OK lamp flashing indicates that the zone expander card can recognise communications from the control unit. It does not indicate however that the zone expander card is transferring the zone information to the control unit.

Every time the POLL lamp flashes, zone information is transferred to the control module.

If the POLL lamp is not flashing, information is not being transferred to the control module. Check the following :

- Is the CLK OK lamp flashing ? If not the POLL lamp will never flash
- Has the system been configured ? (MENU, 7, V, 0)
- Is the LAN KEY setting in the control module and on the zone expander card the same. ?
- Have the address switches (9, 10 and 11) been set to the correct zone expander card ?

Concept 2000+ Technical Note

When Adding or Removing Lan Modules, LAN Address Must be maintained in sequential numerical order.

IRZ2000 SYSTEM INPUT REASSIGNMENT

For zone expanders 1 to 5, the system inputs such as low battery and AC fail are defined using system inputs 73 to 112 inclusive. For the additional zone expanders numbered 6 to 12 (which must have Version 2 software or later), the system inputs for unused terminals are reassigned as follows:

Expander Number	System Inputs	Terminal Number
6	65 to 72	8
7	57 to 64	7
8	49 to 56	6
9	41 to 48	5
10	33 to 40	4
11	25 to 32	3
12	17 to 24	2

When the name of a system input for a zone expander between 6 and 12 is referenced in review, programming or alarm displays, it will automatically refer to the expander wording rather than the terminal wording to reflect the true use of that system input. For reference, the 8 alternative expander input descriptions are shown below:

Default Terminal Description	Alternative Expander Description for Zone Expanders 6 to 12.
Cabinet Tamper	Cabinet Tamper
Duress	Internal Siren Tamper
Code Attempts	External Siren Tamper
Deadman Timer	A/C Fail
Spare	Low Battery
Spare	LAN Fuse
Spare	Detector Fuse
LAN Fail	LAN Fail

IRZ1000 ZONE EXPANDER

If the IRZ1000 is used with the Concept 2000, the software must be version 2s461 or later.

IRZ1000 CONNECTIONS

The connections to the Zone expander cards are almost identical to the connections to the Control unit. Refer to **GENERAL WIRING** on page 8–9.

A.C. (2 terminals) are used to connect to an A.C. plug pack providing 16 volts R.M.S. at up to 1.5 amps.

B+ and B- (2 terminals) connect to the internal back-up battery. Connecting the battery backwards may damage the internal electronics.

SIR <siren> (2 terminals) connect to up to 2, 8 ohm horn speakers which will sound when the internal siren for this expansion card is turned on. The siren tamper input for this card should be disabled if horn speakers are not being used.

POS, NEG, DAT and CLK (4 terminals) connect to the 4 wire LAN (local area network) wires from the Control module. Refer to connections on the IRZ2000 for more details.

TAM (2 terminals) are used to connect to the cabinet tamper switch for the zone expander card. The cabinet tamper switch is a normally open switch which closes on tamper.

DET+ (2 terminals) and DET- (2 terminals) are used to provide power to all the active detectors in the system. Refer to connections on the IRZ2000 for more details.

Z1 to Z8 (8 pairs) wire to the individual alarm contacts for the 8 zones. Refer to Zone connections on the IRZ2000 for more details.

AUX1 to AUX8 (8 terminals) provide 8 independent auxiliary outputs. Refer to Aux connections on the IRZ2000 for more details.

IRZ1000 DIP SWITCHES

Switches 1 to 8 are the LAN KEY switches (described above).

Switches 9 to 11 are used to set the zone expander number and auxiliary numbers:

Expander Number	9	10	11	Aux	Siren Module
1	↓	↓	↓	25-32	2
2	↑	↓	↓	33-40	3
3	↓	↑	↓	41-48	4
4	↑	↑	↓	49-56	5
5	↓	↓	↑	57-64	6

(↑ ON ↓OFF)

Switches 12 to 15 are used to allocate zone numbers to the zones. The zone expander number does not determine the zone numbering on the IRZ1000 (as it does on the IRZ2000).

These switches are used to set the zone number :

12	13	14	15	Zone Numbers
↓	↓	↓	↓	9-16
↑	↓	↓	↓	17-24
↓	↑	↓	↓	25-32
↑	↑	↓	↓	33-40
↓	↓	↑	↓	41-48
↑	↓	↑	↓	49-56
↓	↑	↑	↓	57-64
↑	↑	↑	↓	65-72
↓	↓	↓	↑	73-80
↑	↓	↓	↑	81-88
↓	↑	↓	↑	89-96

Switch 16 is used to control the polarity of the 8 auxiliary outputs. If this switch is off then the auxiliary outputs will switch to ground when the auxiliary energises.

If switch 16 is on then the operation of the auxiliaries (AUX1 to AUX 8) is reversed. This means that the auxiliary output will be switched to ground when the auxiliary is off, and will "float high" when the auxiliary is de-energised. This may be used to increase security when the auxiliary is used as a Lock Auxiliary.

IRZ1000 INDICATOR LAMPS

There is one indicator lamps on the IRZ1000 zone expander card which may be used to help verify system operation.

LED1 lamp

This lamp will flash on for 1/20th of a second, when the zone expander card recognises communications from the control module to other modules on the system such as terminals.

This lamp should always be flashing during normal operation. If the lamp is not flashing it indicates that the zone expander card is not "seeing" control module communications. Check the wiring of the DAT, NEG DAT and CLK lines back to the control module. Check that all other modules in the system are operational.

When the lamp flashes on for ½ of a second, then the zone expander card can recognise communications from the control unit. Every time the lamp flashes on for ½ a second, zone information is transferred to the control module. The flash rate of the lamp will change depending on the amount of data to be transferred, and the size of the system.

If the lamp is not flashing for ½ a second, check the following :

- Is the lamp flashing for 1/20th of a second? This will happen when the expander is on line, but not communicating.
- Has the system been configured ? (**MENU, 7, V, 0**)
- Is the LAN KEY setting in the control module and on the zone expander card the same. ?
- Have the address switches (9, 10 and 11) been set to the correct zone expander card ?

IRZ1000 & IRZ2000 SPECIFICATIONS

	IRZ1000	IRZ2000
DIMENSIONS		
Length (cm)	37	41.5
Width (cm)	18	21
Height (cm)	7.3	7.3
Maximum operating ambient temp	50 C	50 C
Lid tamper protection	Yes	Yes.
Chassis tamper protection	Yes	Yes.
Chassis orientation	Any	Any.
ZONES		
Number of Zones	8+8 tamper	16+16 tampers
Seal, Alarm & Tamper levels per Zone	Yes	Yes
Debounce time	0.5 sec max	0.5 sec max.
Max/Min impulse voltage	to AS 2201.1	to AS 2201.1
Max/Min sustained voltage	+50/-20 volts	+50/-20 volts
Zone name length (chars)	24	24
Pulse count Zones	Yes	Yes
No. of pulses	2, 3, or 4	2, 3 or 4
Pulse timer (secs)	10 - 255	10 - 255
SIRENS		
Peak current for internal sirens (amp)	4	4
Peak current for external sirens (amp)	No Separate Output	4
Recommend max. speakers per driver	2 by 8 ohm	2 by 8 ohm
Siren fuse and tamper detection ?	Yes	Yes
AUXILIARY OUTPUTS		
No. of auxiliaries per expansion module	8	8
Max sustained current per auxiliary	0.2 amp	0.2 amp
Maximum sustained voltage (volts)	13.7	13.7
Protection	Detector fuse	Detector fuse

	IRZ1000	IRZ2000
OTHER INPUTS		
Low battery detection	Yes	Yes
AC fail detection	Yes	Yes
LAN fuse detection	Yes	Yes
Detector fuse detection	Yes	Yes
Siren fuse/tamper detection	Yes	Yes
Expansion cabinet tamper	Yes	Yes
POWER SUPPLY		
A.C. Input voltage	16V to 19V rms	16V to 19V rms
Battery float charge voltage	13.75 volts	13.75 volts
Maximum detector load per card	0.7 amp	0.7 amp
Battery capacity	6.5 amp hour	6.5 amp hour
LAN COMMUNICATIONS		
Poll rate smallest system	80 ms	80 ms
Poll rate largest system	1.4 sec	1.4 sec.
Maximum expanders per system	5	5
Encryption (via LAN KEY)	8 bits	8 bits

7 COMMUNICATION OPTIONS

IRU2000 COMPUTER INTERFACE CARD

The IRU2000 Computer interface card is designed to allow a personal computer or "dumb" terminal be directly connected to IRC1000 or IRC2000 control modules.

Refer to the diagrams of the IRC1000 (page 2–4) and IRC2000 (page 2–6) control modules for the location of "LINK 1" and the UART.

INSTALLATION

1 Turn off all power to the Concept system including battery power.

2 Remove the 2 way jumper from "LINK 1" located near the 7 way UART connector.

3 Carefully plug the Computer Interface card onto the UART pins.

4 Check that the Computer Interface card is plugged in correctly, pin 1 to pin 1, pin 2 to pin 2 etc.

DANGER If the card is not plugged in correctly (pins misaligned or plugged in backwards) then the Control module and the Computer Interface card can both be damaged. !!!

5 Configure the serial port on the computer to be :

Baud : 9600, Parity : None, Data bits : 8, Stop bits :1, XON/XOFF : Off

6 Connect the lead from the Computer Interface Card into the serial port of the computer or terminal.

7 Turn on power to the Concept system and check that it is functional.

8 Configure the Concept system to communicate with the computer by setting the "Communications Type" to Direct Line and the "Direct Line Format" to Debug Terminal. See *Programming Communications* in the *Concept 2000 Programmers Manual.*

9 After setting up the Concept system correctly, exiting from communications will cause the Computer Interface card to be reset and establish communications with the computer. The computer display will read "Command:".

From this point on all functions are similar to those detailed in the *Concept 2000 Programmers Manual* under the section *Programming and diagnostics over the phone* (disregard any references to phone hang up, redial, etc).

IRP2000 PRINTER INTERFACE CARD

The Concept system printer interface card is designed to allow a standard serial printer to be connected to the IRC1000 or IRC2000 control modules so that all review events can be logged to the printer.

Refer to the diagrams of the IRC1000 (page 2–4) and IRC2000 (page 2–6) control modules for the location of "LINK 1" and the UART.

INSTALLATION OF A REVIEW PRINTER

1 Turn off all power to the Concept system including battery power.

2 Remove the two way jumper from "LINK 1" located near the 7 way UART connector .

3 Carefully plug the Printer Interface card onto the UART pins. The Printer Interface card should sit to the right of the socket

4 Check that the Printer Interface card is plugged in correctly, pin 1 to pin 1, pin 2 to pin 2 etc.

DANGER If the card is not plugged in correctly (pins misaligned or plugged in backwards) then the Control module and the Printer Interface card can both be damaged. !!!

5 Set up the settings on the serial printer to be

Baud : 9600, Parity : None, Data bits : 8, Stop bits :1, XON/XOFF : Off

6 Connect the lead from the Printer Interface Card to the printer. Turn on the printer.

7 Turn on power to the Concept system and check that it is functional.

8 In order for the printer to operate, the Communications type for the Concept system needs to be set to dialler. In addition the dialler option "Review Printer" needs to be set to **Y**. See *Programming Communications* in the *Concept 2000 Programmers Manual.*

9 If your printer has an internal beeper, the option "Beep on alarms" can be set to **Y** to cause the printer to output a beep when ever an alarm/restore or open/close is logged to review. See *Programming Communications.*

10 If the printer cannot print because it is "off-line" or has run out of paper, the Concept system will trigger an area 9 input "General Uart problems" (Input 143). Programming this input for terminal messages only will create an "alarm" in area 9 if the printer runs out of paper or cannot print. The Concept system will resume logging review events when the printer is again operational. No review events will be lost (if the number of review

events whilst the printer was not working did not exceed the review memory size, normally 610 review events).

NOTES:

- The Review printer will not actually print whilst the Concept system is using the phone line, but will resume printing when the Concept system hangs up. No review events will be lost.
- The review printer will not work whilst the installer is in "Comms programming". Every time the installer enters "Comms programming" the review printer is "reset" and will start printing review events 3 seconds after the de-fault display is resumed.
- The Printer Baud Rate can be altered to a figure other than 9600 Baud by entering Comms programming and temporarily setting the Comms type to DIRECT. Now set the direct line option "Uart Baud rate" to the desired figure then set the Comms type back to DIALLER. See *Programming Communications*

INSTALLATION OF AN ALARMS PRINTER

The Concept system can be connected using a printer interface card to a serial printer and used to log alarm events as would be sent to a central station. In this mode the printer acts as a direct line central station with auto acknowledge.

A review printer plays a similar role although with a review printer all events are logged that go into review.

To use an alarm printer you must :

1. Connect the serial printer via a printer interface card.
2. Set the dialler format to "IR fast".
3. Set the Comms type to DIRECT.
4. Set the Direct line format to "Alarms Printer".
5. Set the Baud rate to the desired rate.
6. Select events to be printed by enabling Communications and Restores if desired or inputs/zones of your choice.

NOTES:

- Printer out of paper IS NOT detected with an alarms printer.
- Because the alarms printer is a type of direct line format, the dialler may NOT operate in conjunction with an alarms printer.

IRF2000 SECURITEL INTERFACE

OVERVIEW

The Concept security system can now report alarm information using the Securitel network. The system can be programmed to only report information in the simplest manner understood by all central stations, or in an enhanced manner to allow more detailed information to be reported.

In the simplest system, all alarm information is condensed and reported using the 15 securitel "pins". The operation of the pins is pre-defined, therefore panel programming requires no input mapping. The system can be increasingly enhanced by programming certain items of information to be sent using the "serial channel". In the fully enhanced system, all information can be sent using the serial channel, therefore allowing all the alarm information that can be produced by the Concept system to be reported.

It should be noted that most central stations cannot receive all securitel information in the fully enhanced modes. This means that initially systems will be programmed to report in simplified modes, but as the capability of central stations grows, only small programming changes are required to the Concept system to take advantage of the new modes.

To support the securitel format the Concept control module requires an external securitel interface unit (SIU). The SIU required is an RS232STU with the serial interface option manufactured by MCM. The SIU connects to the Concept control module UART pins via a simple 4 wire interface card. No programming is required on the MCM SIU - all programming is performed at any Concept terminal. No other connections, apart from the telephone line, are required to the MCM SIU, all information is transferred by the 4 wire serial interface.

The Concept system can still be rung up for remote servicing/operation by the installer or master users (if it has a Mode socket connected to a separate line), however, whilst on-line the Concept system cannot report alarm information via the Securitel network. (The central station will get a "pin 15" or Control panel fail alarm whilst the installer/master user is on-line.)

If Securitel is for line integrity only, be aware that Securitel data may corrupt Contact ID.

The installer call-back option will NOT work if Securitel is selected.

A printer interface CANNOT be used in conjunction with the Securitel interface.

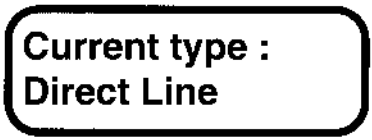
COMMUNICATION PROGRAMMING OPTIONS

From the communications menu (**MENU, 7, 3**) select the Comms type to be Direct Line using the ^ and **v** keys :

Access sequence : 

Use up/down keys to select Direct Line : 

Display :



Now press the **OK** key to proceed to setting the client code. The client code is the same as the Securitel Hard ID and may be set in hex from 0001 to FEFF. Note that 0000 and codes beginning with FF are not allowed. Use the < and > arrow keys and the digit/letter keys to select the desired hard ID.

Display :

The cursor will be positioned at the first digit of the client code. Use the <, > and digit keys to set the client code to the desired number. The client code is selected by the monitoring company to identify the Concept system to the central station. When the client code is correct, push the **OK** key.

Now select the desired direct line format to be Securitel using the ^ and **v** arrow keys then press the **OK** key.

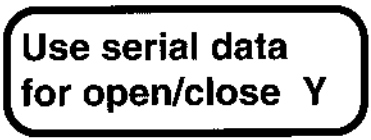
Display :

This completes the major part of securitel programming apart from programming which zones and inputs are going to be reported.

There are three options which determine how extensive securitel reporting will be.

Press the **OK** key as you finish with each option.

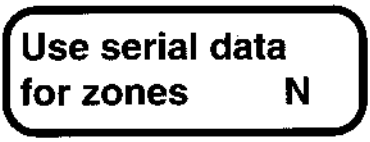
Display :



Setting **Y** to this option will cause all open/close inputs (Input 150 to 160) to be reported using the serial data channel. This allows user IDs up to user 253 to be reported. Most central stations can accept this report. Individual area reporting has not been allowed for.

If this option is set to **N**, then open/close inputs will be sent using pin 9 with no associated user ID. All securitel central stations can accept open/closes in this way.

Display :



Setting **Y** to this option will cause all zone tampers, alarms and restores to be sent as serial data via the serial channel. This allows the individual zone that caused the event to be identified. Not many central stations can accept zone information in this way.

Setting **N** to this option will cause all alarms and restores to be sent using pins 1 to 8. All zone tampers will be sent using pin 12. All securitel central stations can accept zone data this way.

Zone isolates are always sent via the serial channel. (See "Send isolates" option below)

Display :

Setting **Y** to this option will cause the siu to always send the state of the 15 pins regardless of how many alarms need to be reported. This option should be left at **N** which allows the siu to decide on the selection of long and short reports.

Display :

This attribute is for Pin Data when the Open/Close reports are required on Pin 8, instead of Pin 9.

Display :

This attribute is set for MCM STU's only (only in Software version after 461).

There are a few miscellaneous dialler options which are relevant to securitel operation.

When the screen is showing :

press the < key to access the following options : 

Skip through undesired options by pressing the **OK** key : 

Display :

If set to **Y** this allows zone alarms, tampers and isolates to send repeated reports when enabled.

If set to **N**, each zone may only send one alarm, tamper or restore per any one armed period. The zone must be disabled by turning the appropriate area off before any more reports may be sent for that zone.

Note that send restores ("R" option) must not be programmed for any zones in any area.

Display :

This option determines if isolate reports will be sent due to isolation of inputs caused by :

- Auto-isolate,
- Siren Lockout,
- Isolate via menu,
- Isolate on exit.

Isolate reports are always sent via the serial channel. Most central stations can accept this type of report.

Display :

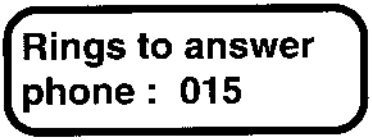
This option determines if the Concept system will report alarms during entry delay or will wait until entry delay expires before reporting alarms.

Display :

If set to **Y** this will cause the Concept system to ring the call-back telephone number whenever it answers the phone and receives the correct pass-code.

If set to **N** this allows access to the remote control functions without requiring a call-back.

Display :



This figure sets the number of rings that must occur before the Concept control module will answer the phone. It is programmable from 1 to 35 rings. The maximum programmed should not normally exceed 20 or else the phone ringing signal may be terminated by the exchange before the unit has received the correct number of rings.

If "Rings to answer phone" is set to 31 or greater then FAX BYPASS mode is selected.

In FAX BYPASS mode the Concept control module will answer the phone on the first ring if in the last 90 seconds the phone rang once or twice (regardless of whether it was answered) and then a period of 45 seconds has elapsed with no ringing.

Display :

Comms backup
auxiliary : 00

This auxiliary is energised if communications fails between the securitel scanner and the siu. In addition the general comms backup input (Input 142) will also be triggered. The Input will restore and the auxiliary de-energise when scanner-siu communications is restored.

WIRING INSTRUCTIONS

Wiring for MCM STU	
+12V	Red
Rx	White
Tx	Blue
0V	Black
Not Connected	Green

Wiring for NESS STU	
Pin 1	Red
Pin 2	White
Pin 3	Black
Pin 4	Not Connected
Pin 5	Not Connected
Pin 6	Blue
Pin 7	Black

AREA PROGRAMMING OPTIONS

Listed below are some of the various ways to default areas for securitel.

Most basic reporting (Pins used for all information)

Use serial data for open/close set to	No
Use serial data for zones set to	No
Trigger dialler on isolates set to	No
Zone re-triggers set to	Yes or No

Areas 0 to 8 defaulted to Ademco Fast if they are reportable areas.

No restores in any area if Zone re-triggers is set to No.

Area 9 de-faulted to Ademco Fast and the following changes made :

Input 142	Remove "C" option
Input 143	Remove "C" option
Input 144	Remove "C" option
Input 145	Remove "C" option
Input 146	Remove "C" option

If an area open/close is required then set one input (150 to 160) to "ACR". This programming gives no user ID and no area reporting.

Send user ID (Pins used for all other information)

Use serial data for open/close set to	Yes
Use serial data for zones set to	No
Trigger dialler on isolates set to	No
Zone re-triggers set to	Yes or No

All the rest of the programming is the same as "Most basic reporting". This programming allows user ID up to 253 to be reported. The user codes reported are incremented by 1, that is user 000 reports as user 001 etc.

Send user ID and Isolates

Use serial data for open/close set to	Yes
Use serial data for zones set to	No
Trigger dialler on isolates set to	Yes
Zone re-triggers set to	Yes or No

All the rest of the programming is the same as "Most basic reporting". This programming allows user ID up to 253 to be reported and allows the reporting of isolates.

Send all data on the serial channel

Use serial data for open/close set to	Yes
Use serial data for zones set to	Yes
Trigger dialler on isolates set to	Yes
Zone re-triggers set to	Yes or No

Areas 0 to 8 defaulted to IR Fast if they are reportable areas. No restores in any area if Zone re-triggers is set to No.

Area 9 de-faulted to IR fast but only one user area is programmed for "ACR". This programming does not allow individual area reporting.

INSTALLING THE SECURITEL INTERFACE

To use Securitel with the Concept system an SIU is required along with a Securitel interface card. The interface card connects to the UART pins located on the main control board

Refer to the diagrams of the IRC1000 (page 2–4) and IRC2000 (page 2–6) control modules for the location of "LINK 1" and the UART.

The installation steps are described below :

1 Turn off all power to the Concept system including battery power.

2 Remove the two way jumper from "LINK 1" located near the 7 way UART connector.

3 Carefully plug the Securitel Interface card onto the UART pins. The Securitel Interface card should sit

- to the Program chip side of the socket (Concept 2000)
- to the fuses side of the socket (Concept 1000)

4 Check that the Securitel Interface card is plugged in correctly, pin 1 to pin 1, pin 2 to pin 2 etc.

5 Plug the "flying" terminal block onto the detector power pins, red is positive and black is negative.

6 On the NESS SIU card plug the 7 way socket onto the 7 pin header. Ensure that the red wire connects to the pin marked "+12" and the green wire connects to the pin marked "RS~".

7 Re-check that all connections are correct before applying power.

DANGER If the card is not plugged in correctly (pins mis-aligned or plugged in backwards) then the Control module and the Securitel Interface card can both be damaged !

8 Turn on power to the Concept system and check that it is functional.

9 In order for the Securitel Interface to operate the communications type must be set to "Direct Line" and the format set to "Securitel".

10 Once programming is completed (all areas are off aren't they ?), contact the central station so that they can "UP STU". Once the SIU is communicating, check the operation and programming by sending some test messages including open and closes and alarms.

8 APPENDICES

TECHNICAL NOTES

TELEVISION INTERFERENCE

The Concept system contains a sophisticated computer system for monitoring and processing alarms. Like most computers, the Concept control module can in some circumstances interfere with television reception, particularly low frequency channels such as Channel 2.

Potential interference can be avoided by correct installation practices.

1 Do not locate the Control Unit near a television receiver or near the T.V. receiving aerial.

2 Do not locate any system wiring (especially LAN wiring) near the aerial system or near the T.V. receiver.

3 Preferably use an aerial system wired with co-axial cable and an external aerial.

4 Do not locate any system wiring or the Control unit between the T.V. aerial and the transmitting aerial for the T.V. stations.

HANG-UP ERROR, "LINE ENGAGED"

When decadic dialling to an old exchange, it is possible for the Concept system to in-correctly decode a busy tone at the end of decadic dialling causing the unit to hang-up and try again, even though the telephone call got through.

This error will be seen as a sequence of hang-up errors in review ie. "Hang-up error - line engaged".

To solve this problem simply program the Concept control module not to "Hangup if line is busy". ie. Set the dialler option as shown below :

Display :

LAN WIRING

For reliable operation of terminals and zone expander cards, the correct wire must be used for the "LAN wiring".

The recommended wire is telecom 2 pair, with each pair twisted. The common colour code is :

Pair 1	RED twisted with BLACK
Pair 2	BLUE twisted with WHITE

It is important that the correct colours be used for the LAN wiring. Specifically the wire used for CLOCK must be in a different pair to the wire used for DATA. The recommended colour code is :

POSITIVE	Use WHITE
NEGATIVE	Use BLACK
DATA	Use BLUE
CLOCK	Use RED

If the wrong colours are used or the pairs are not sufficiently twisted, terminal and zone expander operation will be unreliable. The following symptoms may occur :

1. Occasionally the terminal may read "Terminal Reset, Please wait" for no apparent reason.
2. Occasional LAN communications alarms in area 9.
3. Terminal operation may appear "jerky" or slow. The display will not immediately respond to key presses, or scrolling displays may stop momentarily.
4. A faint "buzz" may be heard from some or all terminals.

SECURITEL

CONCEPT INPUT REPORTING

ZONE INPUT MAPPING

Zone alarms and restores may be reported on pins 1 to 8, or may be reported using the serial data channel if the "Use serial data for zones option" is set to **Y**.

Zone tampers are reported on pin 12, or may be reported using the serial data channel if the "Use serial data for zones option" is set to **Y**.

Zone isolates are only reported using the serial data channel

INPUTS 001 TO 128

Inputs 001 to 128 may only be reported using the serial channel. If any of these inputs is set for "C"omms reporting in area 9, then the serial channel will be used to report them.

INPUTS 129 TO 160

These inputs are reported as follows :

129 General Duress	Pin 10 only.
130 General code attempts	Pin 11 only.
131 General Deadman timer	Not reported.
132 General cabinet tamper	Pin 12 only.
133 General Siren tamper	Pin 12 only.
134 General Fuse	Not reported.
135 General not defined.	Not reported.
136 General Isolate	Not reported.
137 General AC fail	Pin 13 only.
138 General low battery	Pin 14 only.
139 General options change	Serial channel only.
140 General reset	Not reported.
141 General LAN fail	Pin 12 only.
142 General Comms backup	Serial channel only.
143 General uart problems	Serial channel only.
144 General zone self test fail	Serial channel only.
145 General report timer	Serial channel only.
146 General manual comms test	Serial channel only.
147 General battery test.	Serial channel only.
148 General comms attempts	Serial channel only.
149 General battery update	Serial channel only.
150 General open/close	Pin 12 or serial channel.

151 Area 0 open/close	Pin 12 or serial channel.
152 Area 1 open/close	Pin 12 or serial channel.
153 Area 2 open/close	Pin 12 or serial channel.
154 Area 3 open/close	Pin 12 or serial channel.
155 Area 4 open/close	Pin 12 or serial channel.
156 Area 5 open/close	Pin 12 or serial channel.
157 Area 6 open/close	Pin 12 or serial channel.
158 Area 7 open/close	Pin 12 or serial channel.
159 Area 8 open/close	Pin 12 or serial channel.
160 Area 9 open/close	Pin 12 or serial channel.

FIXED PIN ALLOCATIONS

Pin 1	Zones 1, 9,17,25,33,41,49,57,65,73,81,89 alarms
Pin 2	Zones 2,10,18,26,34,42,50,58,66,74,82,90 alarms
Pin 3	Zones 3,11,19,27,35,43,51,59,67,75,83,91 alarms
Pin 4	Zones 4,12,20,28,36,44,52,60,68,76,84,92 alarms
Pin 5	Zones 5,13,21,29,37,45,53,61,69,77,85,93 alarms
Pin 6	Zones 6,14,22,30,38,46,54,62,70,78,86,94 alarms
Pin 7	Zones 7,15,23,31,39,47,55,63,71,79,87,95 alarms
Pin 8	Zones 8,16,24,32,40,48,56,64,72,80,88,96 alarms

Pin 9	Area opening/closing	(Input 150 to 160)
Pin 10	General Duress	(Input 129)
Pin 11	General code attempts	(Input 130)
Pin 12	Tamper	(all "tampers")
Pin 13	General AC Fail	(Input 137)
Pin 14	Low battery	(Input 138)
Pin 15	Control panel fail	(siu generated)

Note that pin 12 reports all zones tampers and in addition reports some specific Concept 2000 inputs. No isolates are reported using the pins.

ASIAL STANDARD REPORT CODES

All serial reporting is as per the ASIAL committee recommendations "Securitel Protocol Agreement, 29/1/90). The Concept system uses the protocol identifier byte of 80h (standard protocol). Listed below are the implementations of the event/message bytes :

At this stage individual area open/close has been disabled and may be enabled when more Central stations can accept this type of data.

Event types used

Alarm priority 2	$06
Restore priority 2	$08
Isolate	$16
Restore isolate	$18
Tamper	$0E
Restore tamper	$10

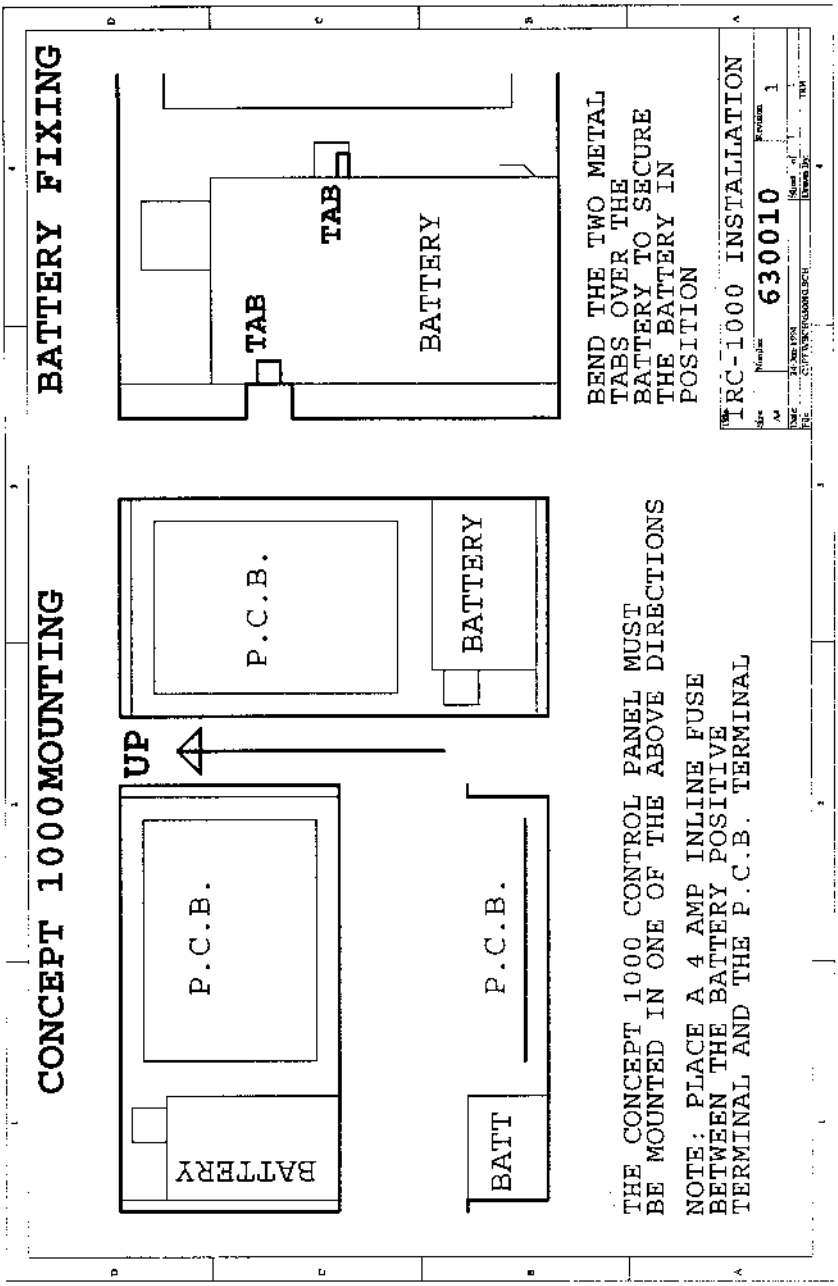
General Opening	$31	General Closing	$51
Opening - area 0	$32	Closing - area 0	$52
Opening - area 1	$33	Closing - area 1	$53
Opening - area 2	$34	Closing - area 2	$54
Opening - area 3	$35	Closing - area 3	$55
Opening - area 4	$36	Closing - area 4	$56
Opening - area 5	$37	Closing - area 5	$57
Opening - area 6	$38	Closing - area 6	$58
Opening - area 7	$39	Closing - area 7	$59
Opening - area 8	$3A	Closing - area 8	$5A
Opening - area 9	$3B	Closing - area 9	$5B

Output on	$71
Output off	$72

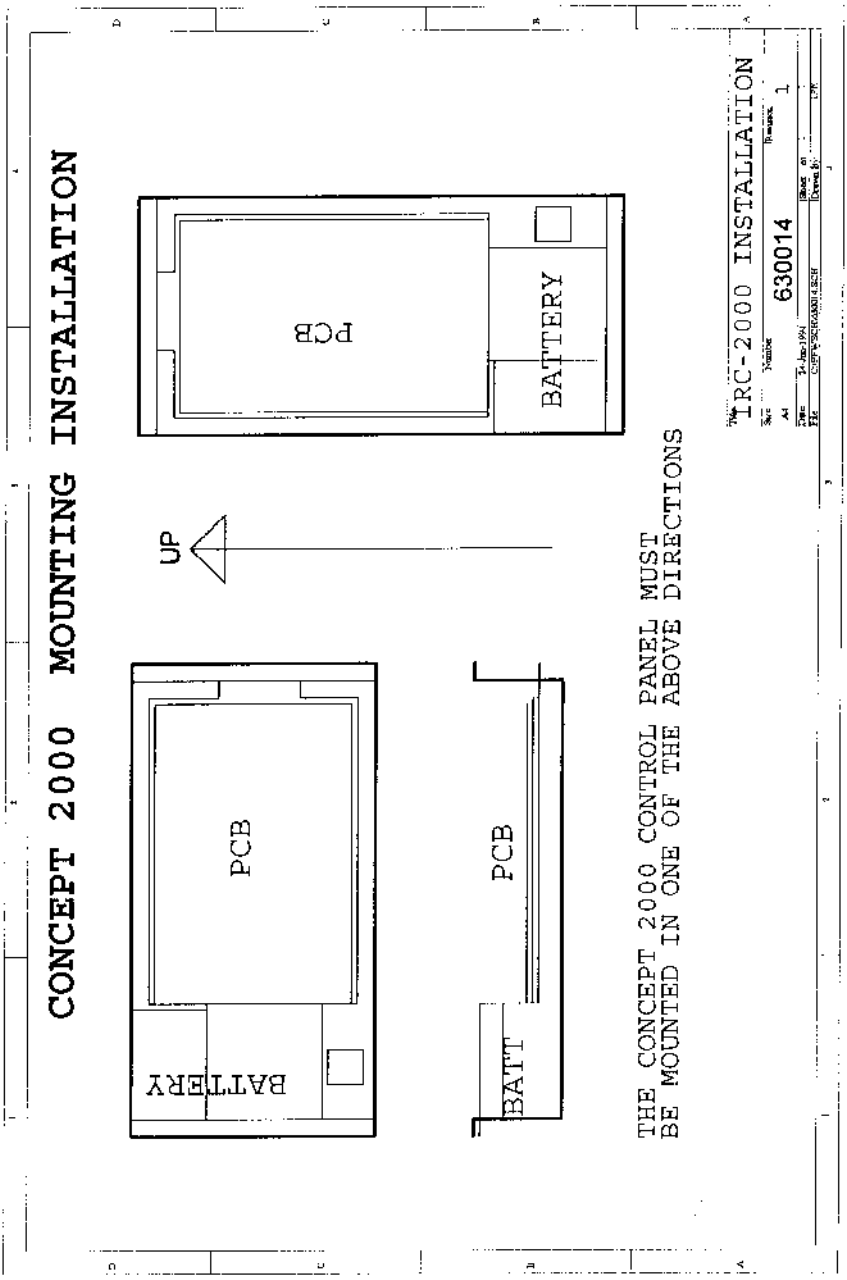
Message types used

Zone 01 to Zone 96	Point number = 01 to 96
Input 01 to 149	Point number = 97 to 245
User 000 to User 253	User ID = 001 to 254
User 254 to 511	User ID = 255

CONCEPT 1000 MOUNTING

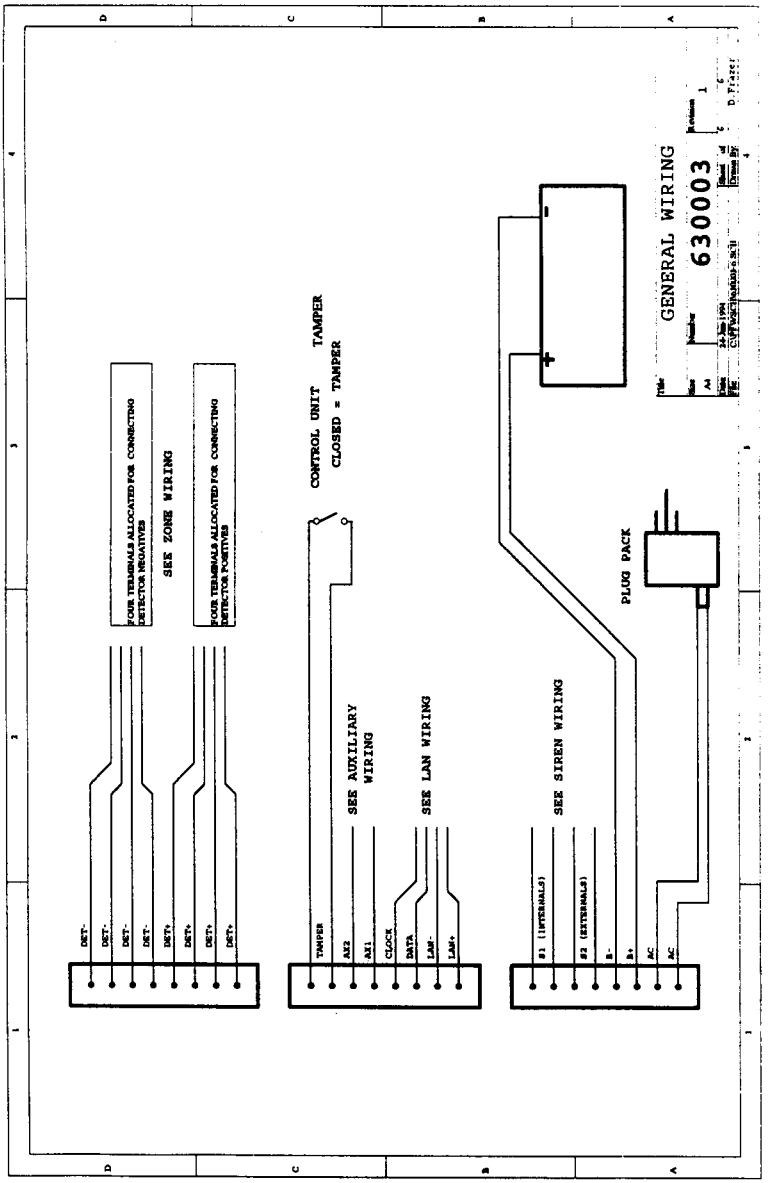


CONCEPT 2000 MOUNTING

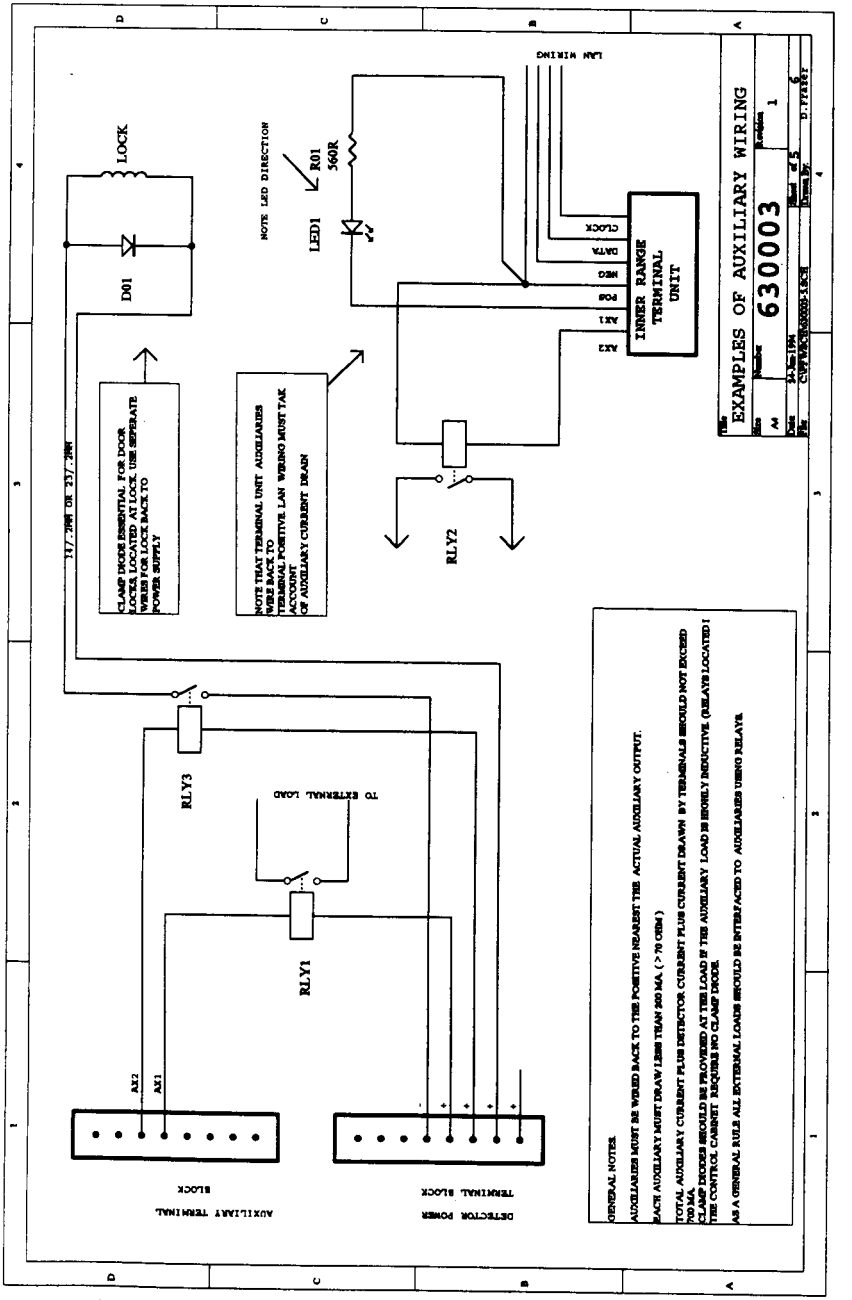


WIRING DIAGRAMS

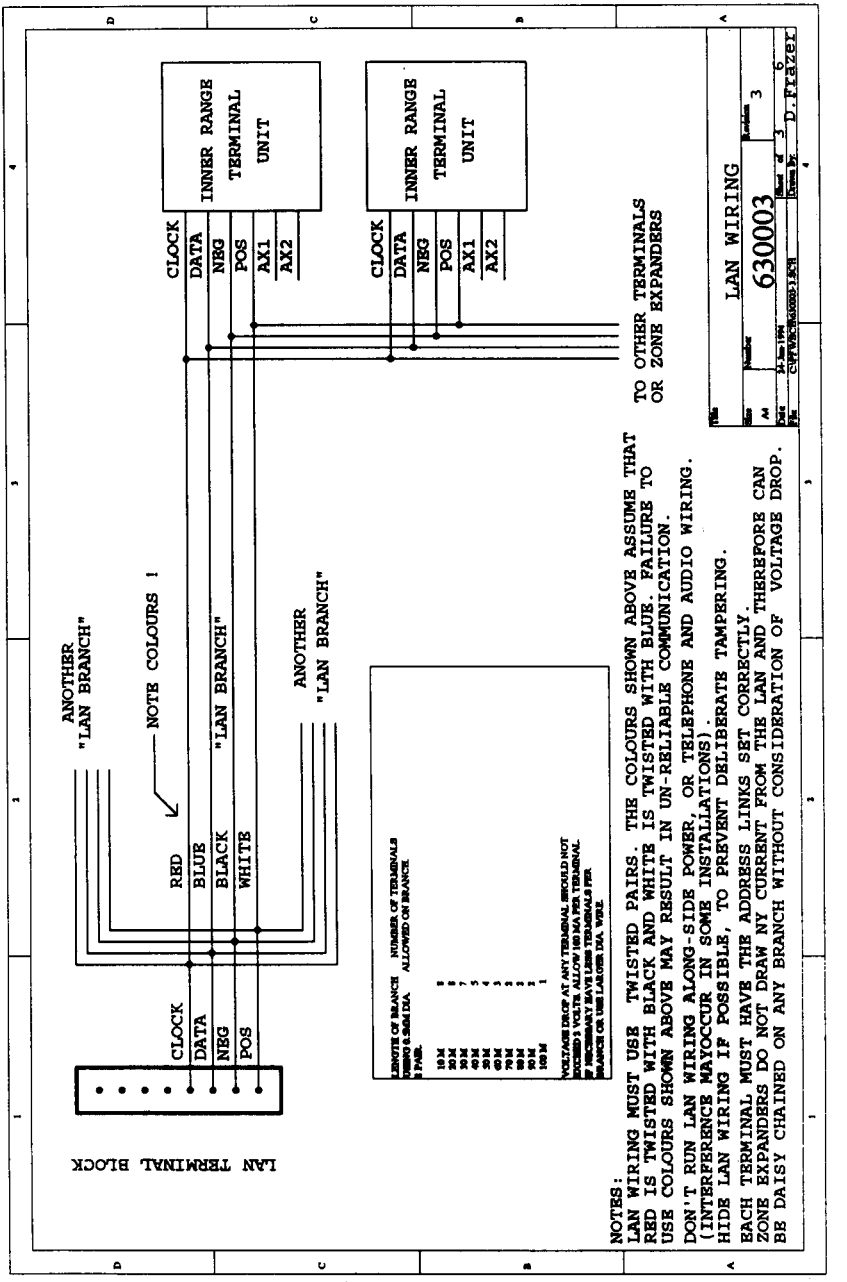
GENERAL WIRING



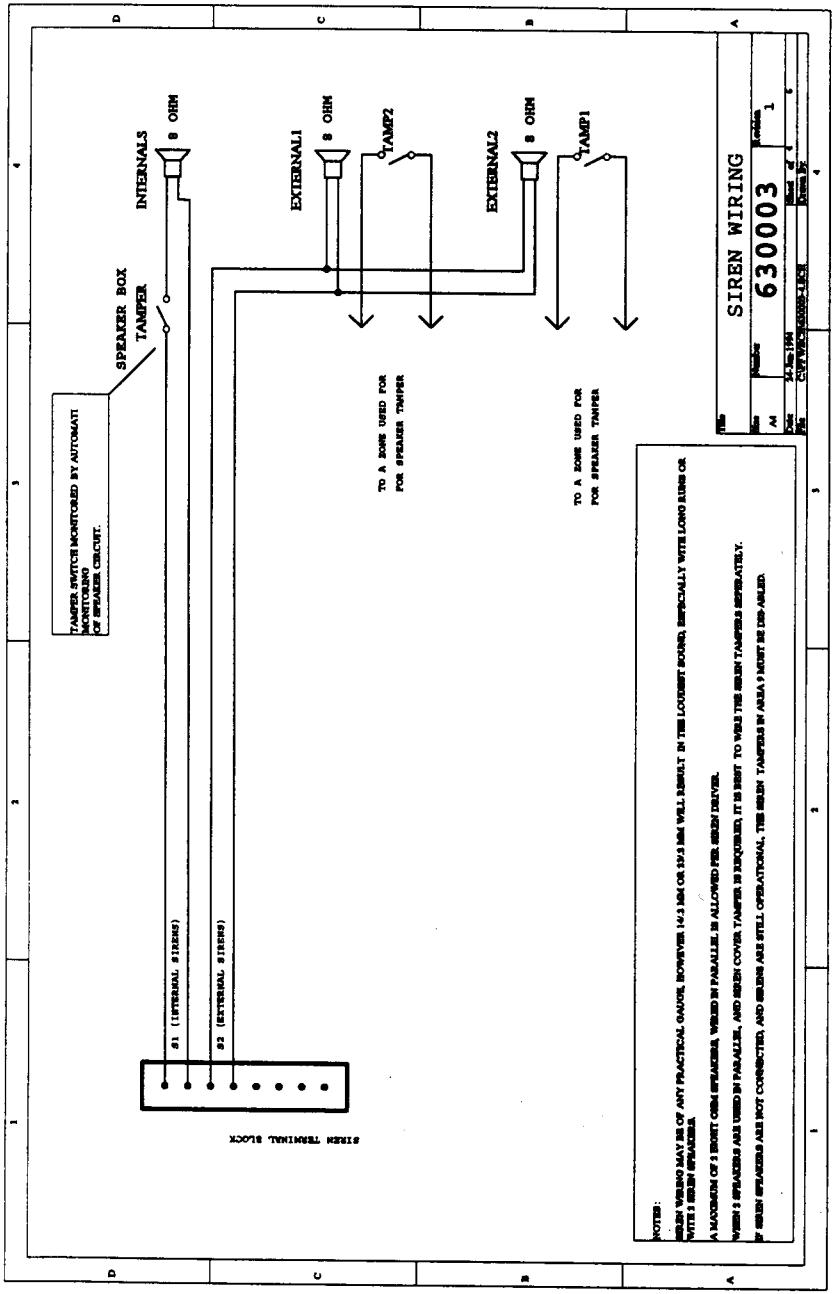
EXAMPLES OF AUXILIARY WIRING



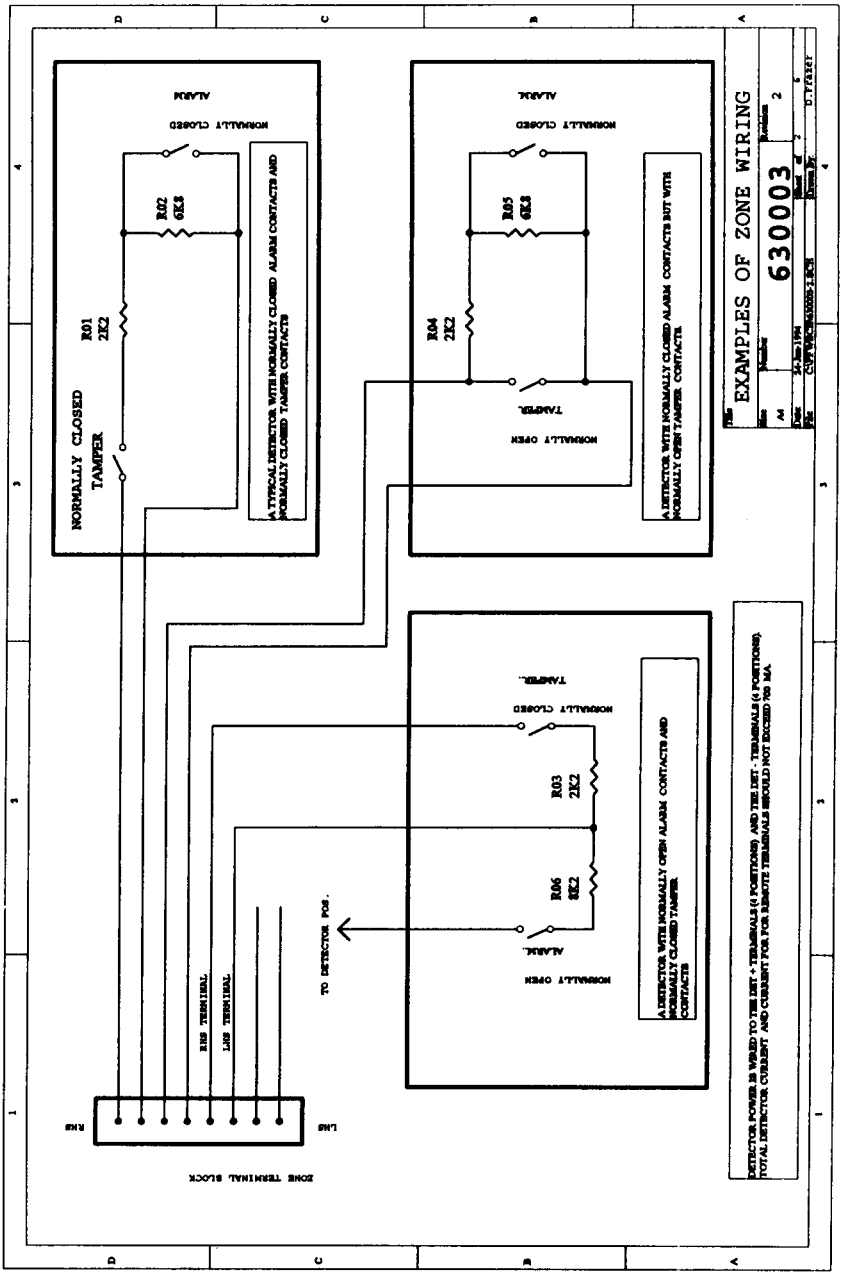
LAN WIRING


LAN TERMINAL BLOCK
CLOCK
DATA
NEG
POS
RED
BLUE
BLACK
WHITE
ANOTHER "LAN BRANCH"
NOTE COLOURS !
ANOTHER "LAN BRANCH"
CLOCK
DATA
NEG
POS
AX1
AX2
INNER RANGE TERMINAL UNIT
CLOCK
DATA
NEG
POS
AX1
AX2
INNER RANGE TERMINAL UNIT
TO OTHER TERMINALS OR ZONE EXPANDERS
LENGTH OF BRANCH
NUMBER OF TERMINALS ALLOWED ON BRANCH
VOLTAGE DROP AT ANY TERMINAL SHOULD NOT EXCEED 1 VOLTS, ALLOW 100 MA PER TERMINAL
IF NECESSARY HAVE LESS TERMINALS PER BRANCH OR USE LARGER DIA. WIRE
NOTES:
LAN WIRING MUST USE TWISTED PAIRS. THE COLOURS SHOWN ABOVE ASSUME THAT RED IS TWISTED WITH BLACK AND WHITE IS TWISTED WITH BLUE. FAILURE TO USE COLOURS SHOWN ABOVE MAY RESULT IN UN-RELIABLE COMMUNICATION.
DON'T RUN LAN WIRING ALONG-SIDE POWER, OR TELEPHONE AND AUDIO WIRING. (INTERFERENCE MAYOCCUR IN SOME INSTALLATIONS).
HIDE LAN WIRING IF POSSIBLE, TO PREVENT DELIBERATE TAMPERING.
EACH TERMINAL MUST HAVE THE ADDRESS LINKS SET CORRECTLY.
ZONE EXPANDERS DO NOT DRAW NY CURRENT FROM THE LAN AND THEREFORE CAN BE DAISY CHAINED ON ANY BRANCH WITHOUT CONSIDERATION OF VOLTAGE DROP.
LAN WIRING
630003
D.Frazer

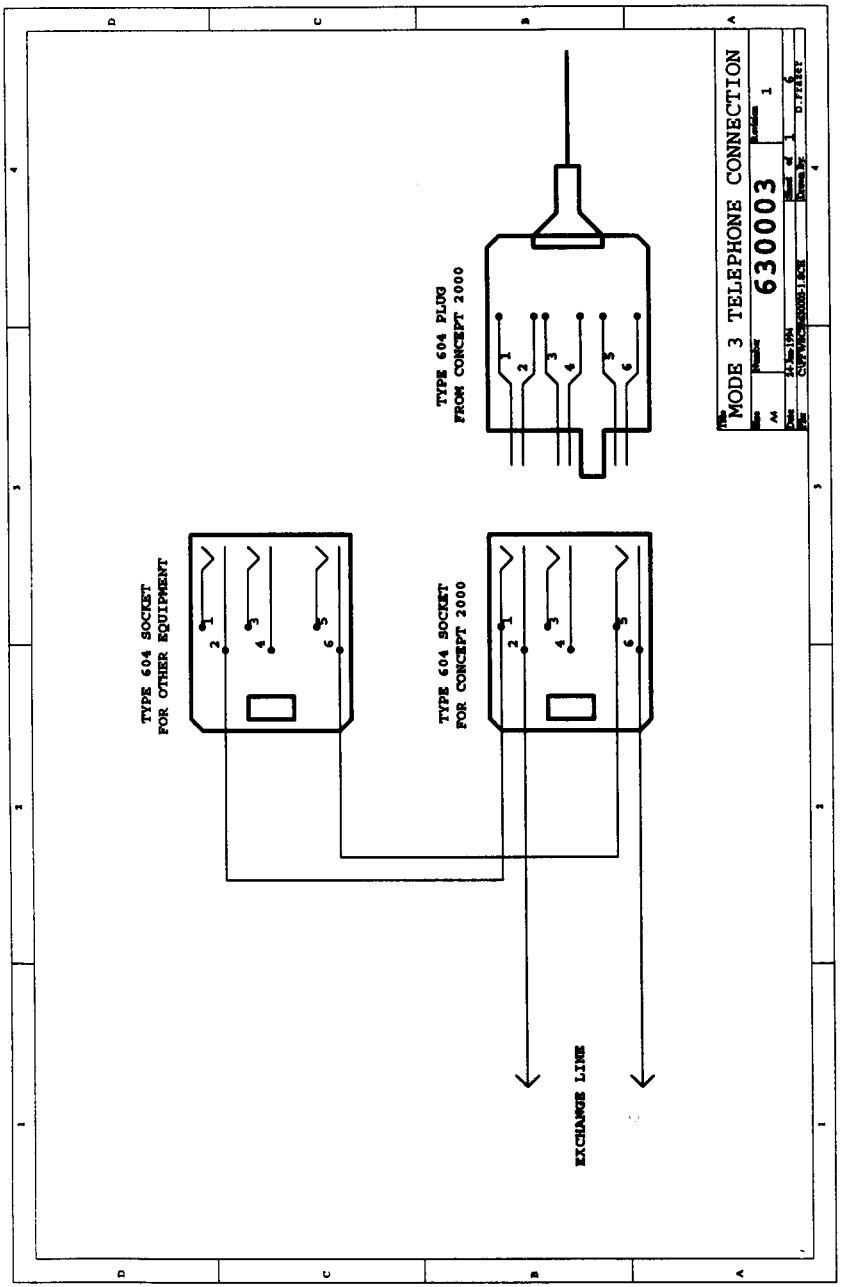
SIREN WIRING



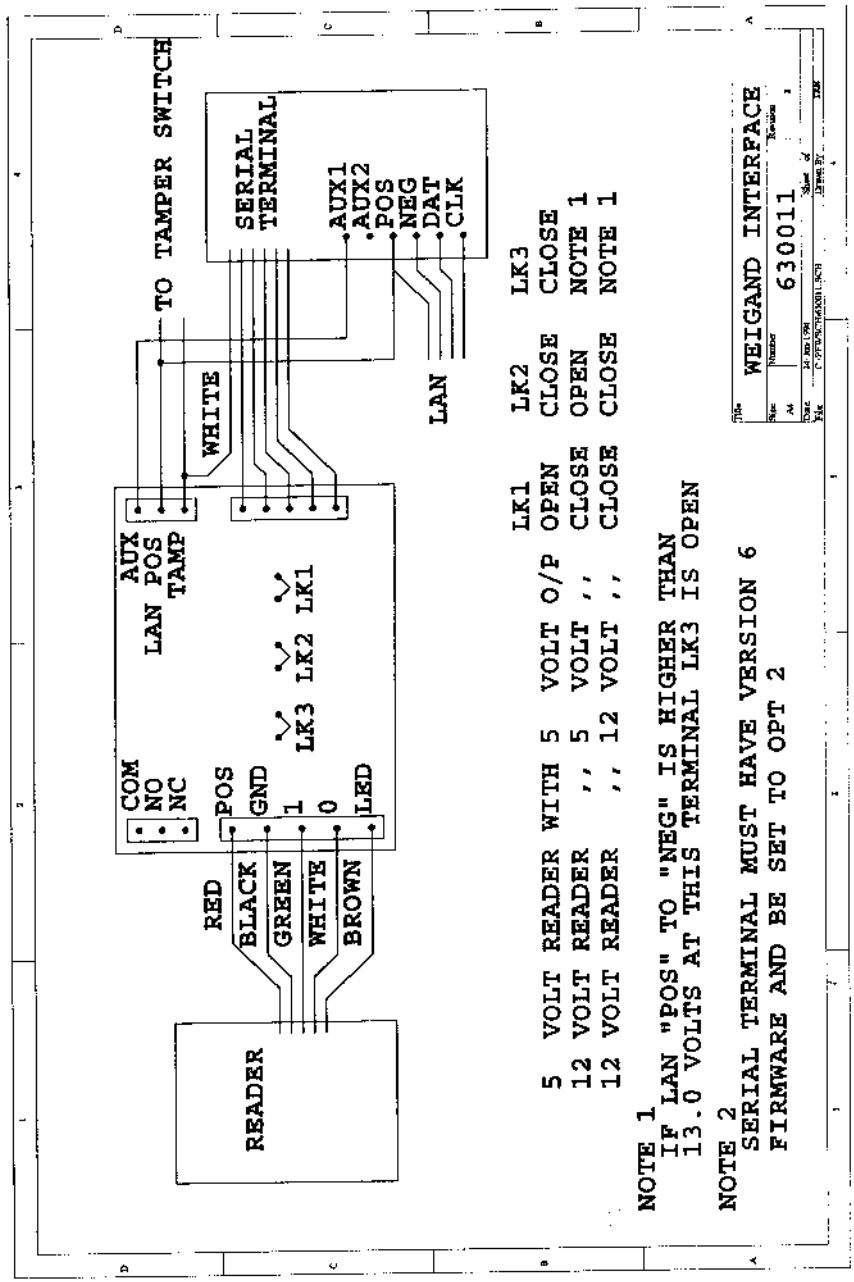
EXAMPLES OF ZONE WIRING



MODE 3 TELEPHONE CONNECTION



WEIGAND INTERFACE



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