



## NESS 5000, 8 ZONE INSTALLATION MANUAL

### NESS SECURITY PRODUCTS

SYDNEY Phone: (02) 8825-9222 (Head office)  
BRISBANE Phone: (07) 3343-7744  
MELBOURNE Phone: (03) 9878-1022  
PERTH Phone: (08) 9328-2511

Copyright \* by NESS SECURITY PRODUCTS December 1988

To the best of our knowledge, the information contained in this manual is correct at the time of going to print. NESS Security Products reserve the right to make changes to the features and specifications at any time and without notice in the course of product development.

### CONTENTS:

<b>INTRODUCTION</b>	2
Terminology	2
Features	4
5000 SERIES Optional Equipment	5
<b>INSTALLATION</b>	6
Unpacking	6
Installation Procedure	6
Inputs	6
Outputs	7
Power	7
Earthing	8
Power Up Check	8
Wiring Diagram	8
<b>CONTROLS AND INDICATIONS</b>	8
Keypad	8
Audible Indications	8
Visual Indications	9
Zone Indications	9
<b>INSTALLATION AND PROGRAMMING</b>	10
Access to the Installation Program Mode	10
How to Program	10
<b>ZONE OPTIONS</b>	10
Setting Zones to Instant	11
Setting Zones to Delay	11
Setting zones to Handover	11
Setting Zones to Secondary Entry Delay	11
Setting Zones to 24 Hour Audible	12
Setting Zones to 24 Hour Silent	12
Zone Sensitivities	12
Setting Zones to One Trigger	13
Setting Zones to Two Trigger	13
Setting Zones to Vibration Sensitivities	13
Test Procedure	14
<b>MISCELLANEOUS OPTIONS</b>	14
Lockout and Conditional Lockout	14
keyswitch Operation	15
Keypad Arming	15
Auto Exclusion of Zones	15
Entry Warning Beeps	16
Panic Alarms	16
Zone, Tamper and Code Alarms	16
Monitor Alarms to Dialler	17
Siren Reset Time	17
Checks Before Entering Client Mode	17
<b>TESTING</b>	18
Testing	18
Troubleshooting	19
Specifications	20
Programming Sheet	21

## INTRODUCTION

Thank you for purchasing the NESS 5000 SERIES 8 zone Control Panel. The system was designed to provide you, the installer, with features and versatility never before offered in a Control Panel.

The high-impact polycarbonate housing not only offers strength but is aesthetically pleasing and therefore easily marketable. Both the main circuit board and the lid are removable which allows you to easily install the system. Plug in terminal blocks eliminate the need to unscrew all connections before removing the board to provide ease of installation and service.

NESS Security Products over the years have always provided technically innovative quality products which have led to the 5000 SERIES being one of the most reliable on the market today. NESS' unparalleled technical support and service reinforces our commitment to the industry.

This manual will tell you all you need to know about installing and programming the system options. For client programmable features and operating instructions, refer to the INSTRUCTION MANUAL.

## TERMINOLOGY \*\*\*\*\*

In order to fully understand the 5000 SERIES 8 Zone Panel, you should become familiar with the terminology used throughout this manual. The following is a brief system description.

### GENERAL

The 8 Zone Panel is constructed of Polycarbonate which is a material used in many high security applications such as bullet proof glass'. The panel is designed to meet or exceed Australian Standard AS.2201

Many features are provided to ensure :

Ease of installation and service; eg. removable lid, clip in PC boards and plug-in terminal blocks

Flexibility; eg. full Programmability via the inbuilt Keypad.

System Integrity; eg. Dynamic Battery Test.

High Security; eg. inbuilt Vibration Tamper.

### MODES OF OPERATION

The Panel may be operated in 3 modes.

(1)Installation Program Mode; enables system parameters such as Zone types (Delay, Instant, Handover etc), to be programmed or reprogrammed by the installer.

(2)Client Program Mode; allows a client with a Master Code the capability of programming User Codes, Monitor Zones, Entry and Exit times etc.

(3)Normal Operating Mode; allows day to day operation by one or more clients.

### POWER

A.C. power is supplied from the mains to the panel via a Plug-pack transformer which also provides an Earth connection to improve the Lightning Protection. A Stand by Battery is fitted to ensure that the system continues to operate if mains power is interrupted. The A.C. power is checked continuously while the battery is checked every hour and whenever the system is Armed. Battery testing is performed under load for extra security. This is called a Dynamic Battery Test.

## INPUTS

A total of ten End-of-line Monitored Inputs are provided for connection to various devices.

One or more Defection Devices may be connected to any of the eight End-of-Line monitored zone inputs. The inputs can be programmed to suit various applications. A Movement Detector may require Two Trigger operation, whereas a Reed Switch will require Normal One Trigger operation. A Vibration Sensor would be programmed to one of eight Vibration Sensitivities. Smoke Detectors and Holdup Switches are required to operate always and would therefore be programmed to 24 Hour operation.

The Control Panel housing, external siren covers and many types of detectors are protected by Tamper switches designed to detect attempts to disable those devices. The tamper switches are connected to the Tamper Input. Activation of any tamper switch or its wiring will cause an immediate alarm at any time in all modes except Installation Program Mode. The system may be controlled by a Remote Keyswitch connected to the Panic/Keyswitch Input. Panic Buttons may also be connected to the same input.

## OUTPUTS

Separately fused Siren outputs allow the connection of Internal and External Horn Speakers. A Latched output is provided for Strobe lights and a Resetting output for miscellaneous alarm devices such as Piezo sirens.

Other outputs are provided for connection to optional 5000 SERIES equipment. Remote Keyswitches, Standard Keypads and Intelligent Keypads can be located at remote points such as front or back doors to control the system and provide additional convenience and security. Satellite Sirens ensure maximum security against attacks to the Control Panel, Sirens or interconnecting cables. It contains its own battery and electronics to operate independently of the Control Panel.

## OPERATION

In Normal Operating Mode, the Panel may be Armed ready to detect intruders. It may be Disarmed when the premises are occupied or switched to Monitor Mode to allow only selected zones to be Armed simply. Thus the

Perimeter may be protected whilst the internal zones are ignored.

Before Arming, all zones should be Secured. Activation of a detection device will cause the appropriate zone to become unsecured and may cause an alarm.

After Arming, the Panel will ignore most detection devices for the duration of the Exit Time to allow departure from the premises. During that time, certain Audible Warnings may be sounded by the beeper eg. a Low Battery, Mains Fail or a Zone Unsecured warning.

At the end of Exit Time, any zone that is still Unsecured may be Automatically Excluded. If a detector becomes faulty, the client may Manually Exclude the associated zone so that it is ignored and cannot generate an alarm. Manually Including the zone will allow it to generate an alarm again.

After the expiry of the Exit Time, the system will become fully Armed. An Instant Zone becoming unsecured will cause an immediate alarm. The alarm may be Silent if the system is monitored by a Central Station via a 5000 SERIES Dialler or a NESS Securitel' Interface Unit or it can be Audible in which case the Sirens sound for the programmed Reset Time while the Strobe Lights will continue running until the Panel is Disarmed.

When the alarm Resets, any zone that is still unsecured will be automatically Locked Out to prevent that zone from causing further alarms. If the zone is programmed for Conditional Lockout, the zone will become active again when the zone is secured so that it may cause further alarms whenever the zone becomes unsecured again.

All alarms are stored in Memory so that they can be recalled after the Panel is Disarmed. The zone that caused the alarm is stored as a Primary Alarm and any zones that are Unsecured within the Reset Time are Secondary Alarms.

When the client enters the premises, the Panel will ignore those zones that are programmed for Delay, Secondary Delay or Handover for the duration of the relevant Entry Time. Failure to Disarm the Panel within this time will cause an alarm.

### FEATURES

Ultra-modern and impact resistant housing.

8 fully programmable zones plus tamper and panic inputs.

Fully programmable via Control Panel Keypad - eliminates the need for expensive programmers or PROMs.

All Programming data is permanently stored in a non-volatile EEPROM - more secure than battery backed-up memory.

Separate Installation and Client Programming modes.

The Control Panel housing has 4 separate tamper systems - Keypad, Wall, Lid and Panel impact. Tamperers are monitored 24 hours a day.

Additional security is provided by the various programming options:

- Arm via a code
- Exclude zones via a code
- Partial Arming (Monitor mode)
- Extra Delay zone to cater for long and short entry paths
- Handover zones

#### **TRUE DYNAMIC BATTERY TEST**

every hour and upon Arming thus guaranteeing the system's integrity.

Comes complete with an a.c. plug-pack and a 6.5 AH battery to maintain system security under all power supply conditions.

Outputs are separately fused.

Zone inputs can be split with two end-of line resistors so that two pieces of equipment (eg. reed switches) can both be monitored to provide maximum security.

ALL inputs and outputs are heavily protected against lightning and high voltage power supply transients. An earth terminal is provided for extra protection.

Fail-safe input system detects any component failure in the zone input circuitry and generates an alarm.

Detectors can be programmed to alarm on 1 or 2 triggers - cheaper and more secure than using pulse count detectors.

Vibration sensors can be connected to any or all zones without additional hardware and can be programmed to alarm on 1 of 8 sensitivities.

Separate Monitor alarm, 24 Hour alarm and Auxiliary outputs.

Easy connection of the 5000 SERIES satellite siren to greatly increase the security of your system.

Special inputs to allow the connection of NESS Remote Keypads. These keypads offer full programmability and operation of the Panel from a remote location.

Indication of unsecured zones while Arming.

## 5000 SERIES OPTIONAL EQUIPMENT

The following optional 5000 SERIES equipment is available for use with the 8 Zone Control Panel.

### REMOTE KEYPAD

This Keypad is connected via 4 wires and can increase convenience of operation and security' of the system. It allows full programmability and operation with Audible feedback only.

### INTELLIGENT REMOTE KEYPAD

This Keypad is connected via 4 wires and allows full programmability and operation of the system with complete Visual and Audible feedback.

### SATELLITE SIREN

This Siren allows you to offer higher security for the installation. If the system is attacked. Connected via 4 wires, It is fitted with It's own battery and electronics and operates independently of the Control Panel.

### TELEPHONE AUTO DIALLER

This is a plug-in device and is fully programmable from the Control Panel's keypad. It is capable of automatically communicating information to most common digital receivers and/or to the client's home over a normal telephone line.

### DIALLER REMOTE CONTROL

This is a small hand-held device which allows remote communication with the Auto-Dialler via the telephone line. It can be used to Arm the Control Panel, operate an output or receive status reports.

### SECURITEL INTERFACE UNIT

This is a plug-in programmable device which offers similar features to the Auto-Dialler but provides a higher level of security in that the telephone line is monitored at all times.

### RADIO CONTROL EQUIPMENT

A 4-channel Radio Control Receiver can be connected to the Panel to receive signals from the NESS hand-held Emergency/Panic buttons.

### PRINTER/REAL TIME EVENT RECORDER

Records and or prints all activities of the Control Panel with a Time and Date Stamp.

### OUTPUT EXPANDER

A plug-in device used for interfacing to Direct Line or other equipment. Requiring no programming, It provides 20 outputs such as individual alarms, zone Excluded etc.

### ZONE EXPANDER

A plug-in device that provides an extra 16 zones and is fully programmable from the Control Panel's keypad.



## INSTALLATION

Included in the 8 Zone Control Panel packaging is the following equipment.

- 1 x 5000 SERIES 8 Zone Control Panel
- 1 x 12 Volt 6.5 A-h Rechargeable Battery
- 1 x 17 Volt Plug pack
- 3 x Ten Way Terminal Blocks
- 12 x 2K2 Resistors
- 1 x Spare Fuse 1.5 Amp
- 1 x Allen Key
- 1 x Installation Manual
- 1 x Instruction Manual

### INSTALLATION PROCEDURE \*\*\*\*\*

For ease of installation it is recommended that the following procedure be followed:

- 1) Remove the cardboard terminal designation card.
- 2) CAREFULLY remove the keypad ribbon from the circuit board and unclip the lid .
- 3) Remove the rear tamper and battery terminal blocks from the circuit board. Unclip and remove the circuit board by pushing the retainer clips up. (located just below the battery)
- 4) Remove the battery.
- 5) Mount the polycarbonate rear housing. Wire the terminal blocks as per wiring instructions shown on the terminal designation card and as explained in this section.
- 6) Replace Battery. Clip in circuit board. Plug in the terminal blocks except those for the Satellite and Battery.
- 7) Replace lid and plug in keypad ribbon cable to the connector.
- 8) Replace the Terminal Designation Card.
- 9) Perform the Power up check.
- 10) Program Installation Options.
- 11) Carry out Test Procedure.
- 12) Perform "Check Before Entering Client Program Mode".

### INPUTS \*\*\*\*\*

The Control Panel contains 10 separate monitored inputs.

- 8 x fully programmable zones
  - 1 x Tamper
  - 1 x Panic/Keyswitch inputs
- Each zone must be terminated with a 2200 ohm (2K2) End-of-Line resistor. The Tamper input is wired in an identical manner to the zones. Thus it must be fitted with a 2K2 end-of-line resistor.
- If a Satellite siren is being used then the 2K2 resistor MUST BE substituted with the 820 ohm resistor supplied with the satellite.

For wiring details for the Remote Keypads, Keypatches, Panic Buttons and Satellite sirens, see the terminal designation card. Additional keypads may be connected in parallel.



OUTPUTS \*\*\*\*\*

The 8 Zone Control Panel contains the following outputs.

SIREN- A

Oscillating output fused via F3 (1.5A) for connection of TWO 8 ohm horn speakers MAXIMUM.

SIREN- B

Oscillating output fused via F4 (1.5A) for connection of TWO 8 ohm horn speakers MAXIMUM.

NOTE: An absolute maximum of three horn speakers only, can be connected to SIREN A and SIREN B outputs (ie. 2 speakers on siren A and 1 on siren B or vice-versa).

STROBE

Latched 12 Volt alarm output fused via F2 (1.5 A).

RESET OUTPUT

Resetting 12 Volt alarm output fused via F2 (1.5A).

NOTE: A TOTAL current of 1.5 Amps only, is available from the STROBE and RESET OUTPUTS.

SATELLITE SIREN

Four wire connection to NESS 5000 SERIES SATELLITE ONLY.

The satellite's battery charging circuit is fused via F2 (1.5A). The other terminals are current limited.

POWER \*\*\*\*\*

The Control Panel power terminals consist of:-

AC INPUT TERMINALS

For connection of the NESS plug-pack, or an AC source with the following characteristics

@ 100mA load. 17 to 23 VAC at 50~60 Hz

@ 1.4A load. 17 to 13 VAC at 50~60 Hz

24 HOUR LATCHED ALARM OUTPUT PINS

Open collector (switched negative) sinks 100mA. This output is switched on when a 24 hour alarm occurs (ie. 24 Hr zones, Tamper and Panic).

MONITOR LATCHED ALARM OUTPUT PINS

Open collector (switched negative) sinks 100mA. This output is switched on when a Monitor zone alarms (refer to Instruction manual for programming).

AUXILIARY OUTPUT TERMINAL

Emitter follower (switches positive) 5 volts at 50 mA. This output switches on whenever any programmed Auxiliary zone becomes unsecured. It switches off when ALL Auxiliary zones are secured (refer to Instruction manual for programming).

This output can also be toggled on or off via the Auxiliary Key (9) on the keypad.

The number of outputs can be expanded by 20 with the addition of 5000 SERIES Output Expander.

12 VOLT OUTPUT TERMINALS

D.C. regulated output, for powering of detectors etc.

13.8 Volts nominal, fused via F1 (1.5 Amp).

BATTERY TERMINALS

For connection of a rechargeable, 12 volt sealed lead acid standby battery with a minimum capacity of 2.4Ah. The charge current is limited to 450 mA maximum.

EARTHING \*\*\*\*\*

EARTH TERMINALS

For connection of the plug-pack earth wire.

Thus the connection of an earth is strongly recommended.

Extensive testing in the field and rigorous testing in the laboratory has proven that a good earth dramatically improves the ability of the Control Panel's electronics to continue operating when its long cable runs (aerials) are subjected to induced high voltages (ie. lightning strikes).

POWER UP CHECK \*\*\*\*\*

This test is carried out purely to ensure the panel isn't subjected to short circuits which may cause damage when the battery is connected. The AC supply is used in this test because it is overload protected. On failure of this test, refer to the Trouble Shooting section (page 33).

1) Check for erroneous open or short circuits (using a multimeter).

2) With the Control Panel lid open, apply AC power. If there are any sirens or piezo alarms connected, these should sound. The Control Panel's beeper will also sound.

On completion of wiring :-

3) Disconnect AC power.

4) Test complete. You are now ready to commence programming.

CONTROLS AND INDICATIONS \*\*\*\*\*

KEYPAD

The keypad consists of 12 buttons, 16 status lights and an internal beeper. Each button is used for four purposes,

The PROG (or P) button is used to begin any programming sequence.

a) to enter a number (eg. 1,2,3),

b) to select an installation programming option (eg. POE),

c) to select a client programming option marked in blue (eg. CODE 1),

The END (or E) button is used in all cases to signify the end of the button sequence just pressed.

d) to select a command marked in white (eg. ARM).

**AUDIBLE INDICATIONS**

Every time a button is pressed the Panel responds with a very brief beep in acknowledgment.

At other times, the beeper will indicate various warnings such as 10 beeps for a low battery.

The beeper is also used to indicate whether the entry was valid or invalid. For example, whenever E is pressed, all the buttons pressed before it are checked to see whether they are valid. If they are valid, the response will be 3 short beeps.

When Arming the Panel, 1-3 beeps will indicate that a zone is unsecured, eg. Zone 3 will be indicated by 3 long beeps.

If they are invalid (or incorrect) the response will be 1 long beep and they will be ignored.

A continuous tone on Arming indicates a Tamper or 24-Hour zone is unsecured. During Entry time, it indicates that an alarm has occurred.



## VISUAL INDICATIONS

The panel has 16 indicator lights surrounding the keypad. Each light has three basic states to indicate function.

These are: ON, OFF, FLASHING

ARMED	<b>ON</b> The panel is Armed	<b>OFF</b> The panel is Disarmed
MONITOR	<b>FLASHING</b> The panel is in Monitor Mode	
ALARM	<b>ON</b> Memory mode is selected	<b>OFF</b> No alarms
MEMORY	<b>FLASHING FAST</b> An alarm has occurred	<b>FLASHING SLOW</b> An alarm is stored in memory
ZONE	<b>ON</b> The panel is in EXCLUDE mode	<b>OFF</b> No zones are EXCLUDED
EXCLUDED	<b>FLASHING</b> Zone(s) have been EXCLUDED	
PROGRAM	<b>OFF</b> The panel is in normal operation mode. <b>FLASHING SLOW</b> The panel is in installer program mode.	<b>ON</b> The panel is in client program mode. <b>FLASHING FAST</b> The program memory is faulty.
BATTERY	<b>ON</b> The panel battery is healthy.	<b>FLASHING</b> The panel battery is low. (If flashing in unison with the satellite light, the satellite battery is low.)
MAINS	<b>ON</b> The mains power is connected and turned on.	<b>FLASHING</b> The mains power is disconnected or turned off.
TAMPER	<b>OFF</b> The control panel and satellite siren tamper are secure and satellite siren battery is healthy.	<b>FLASHING</b> The panel or satellite siren tamper are unsecured. If flashing in unison with the battery light, the satellite battery is low.
SATELLITE		
LINE	<b>OFF</b> The dialler is inactive.	<b>ON</b> The dialler has seized the phone line, a dialler or zone expander option is selected.
EXPAND	<b>FLASHING SLOW</b> The dialler senses a phone line fault or a failure to communicate with the base station. <b>FLASHING at the incoming call rate.</b> The dialler is detecting an incoming call.	<b>FLASHING FAST</b> The dialler or zone expander has a System fault, or the dialler cannot store the information just programmed into it.

## ZONE INDICATIONS

There are 8 Zone indicator lights above the keypad. In normal operating mode they show the following states:

**OFF** Zone secured

**ON** Zone unsecured

**FLASHING FAST** Primary alarm ie. indicates the first zone to become unsecured and cause the alarm.

**FLASHING SLOW** Secondary alarm - ie. indicates those zones that have become unsecured during the Alarm Reset time.

As explained elsewhere in this manual, these zone lights are used to indicate other information in the Memory, Exclude, Monitor, Installation and Client Program modes.

## INSTALLATION PROGRAMMING

THE POWER UP CHECK ON PAGE 13 SHOULD BE CARRIED OUT PRIOR TO PROGRAMMING

### ACCESS TO THE INSTALLATION PROGRAM MODE

The Installation Program Mode is entered whenever programming options are to be changed by the installer. It can be accessed in three ways:-

a) by depressing the P button on power-up the Panel will be automatically programmed with the factory set default values (as shown in the summary at the end of this manual).

b) by depressing the E button on power up, the Panel will retain all previously programmed values. If no previous values were programmed, then the default values will be automatically selected.

c) by entering P000000E if the Panel is currently in the Client Program mode. This will silence any alarm

### HOW TO PROGRAM \*\*\*\*\*

Programming the NESS 5000 SERIES 8 zone Control Panel is achieved via the keypad. Every time a button is pressed the panel responds with a very brief beep in acknowledgment.

The END or E button is used in all cases to signify the end of the button sequence last pressed.

END

The PROG or P button is used to begin any programming sequence.

Visual feedback of the value programmed is achieved by illuminating the zone, mains or battery lights. The particular type of indications are described for each option in the following pages.

The Numeric keys are used to enter:

a) Programming options,

b) Programmed Values.

**Installation Programming options can be carried out in any sequence.**

All programming operations follow the pattern shown below:

Select your option and view the current value (**PROG**) (**Option**) (**END**) enter the new value (**Value**) (**END**) (**Value**) (**END**)

One long beep indicates an invalid entry.

### ZONE OPTIONS \*\*\*\*\*

Each zone can be independently programmed to any ONE of the six following options.

- ⇒ Instant
- ⇒ Delay
- ⇒ Handover
- ⇒ Secondary Delay
- ⇒ 24 Hour Audible
- ⇒ 24 Hour Silent

Options cannot be deleted, only changed by the selection of another option.

If more than one zone is required to be programmed for a particular option, say zone 2, zone 3 and zone 4, then enter

P(option)E 2E 3E 4E

As each zone is programmed, the corresponding zone light is illuminated.



SETTING A ZONE TO INSTANT **P 0 E**

\*\*\*\*\*

An Instant Zone triggers an alarm the moment the zone is unsecured. This can only occur when the Panel is Armed and the Exit Time has expired.

To set, say, zone 1 and zone 3 to be instant enter:

POE 1E 3E

DEFAULT = ZONES 2 to 8 INSTANT (zone lights 2-8 on)

To VIEW Instant option ENTER

To ADD Instant zone(s) ENTER

**(PROG) (0) (END)**

**(ZONE NUMBER) (END)**

SETTING ZONES TO DELAY **P 1 E**

\*\*\*\*\*

After expiry of the Exit Time, a delay zone becoming unsecured, will cause an alarm at the end of Entry Time if the Panel has not been Disarmed.

To set, say, zone 2 to be delayed, enter:

P1E 2E

The only zones that should be programmed for delay are point of entry zones.

DEFAULT = ZONE 1 DELAY (zone light 1 on)

To VIEW Delay option ENTER

To ADD Delay zone(s) ENTER

**(PROG) (1) (END)**

**(ZONE NUMBER) (END)**

SETTING ZONES TO HANDOVER **P 2 E**

\*\*\*\*\*

A Handover zone is a combination of a Delay zone and an Instant zone. After Arming, the Handover zone is delayed to enable time to exit without triggering the alarm. It then automatically reverts to instant operation to provide greater security for detectors on the delay path.

Handover should be selected for all zones on the entry/exit path that require an entry/exit time. Handover should not be selected for actual "point of entry" zones (eg. front or back door).

To set, say, zone 3 and zone 8 to be handover, enter:

P2E 3E 8E

If a normal entry is first made through a Delay zone, then all Handover zones will revert to delayed operation again to enable time to enter and Disarm the Panel without triggering an alarm.

DEFAULT = NO HANDOVER ZONES (no zone lights on)

To VIEW Handover option ENTER

To ADD Handover zone(s) ENTER

**(PROG) (2) (END)**

**(ZONE NUMBER) (END)**

SETTING ZONES TO SECONDARY ENTRY DELAY **P 3 E**

\*\*\*\*\*

A Secondary delay zone is essentially the same as a normal delay zone except that its Entry Time is equal to the programmed Exit Time. It can be used to provide additional entry time for a second entry path (eg. garage door).

The garage door may be programmed for a Secondary Delay where both the entry and exit times equal the programmed exit time (say 60 seconds).

To set, say, zone 4 to be a secondary delay

P3E 4E

Thus a front door may be programmed for an Exit Time of say 60 seconds and an Entry Time of 20 seconds for high security.

DEFAULT = NO SECONDARY DELAY ZONES



SETTING ZONES TO 24 HOUR AUDIBLE P 4 E

\*\*\*\*\*

A 24 Hour Audible zone is a zone which triggers instantly after it is unsecured whether the panel is Armed or Disarmed.

To set, say, zone 7 and zone 8 to be 24 Hour Audible, enter:

P4E 7E 8E

The alarm is audible and therefore the sirens and internal noise makers are activated.

DEFAULT = NO 24 HOUR AUDIBLE ZONES (no zone lights on)

To VIEW 24 hour Audible option ENTER

To Add 24 hour Audible zone(s) ENTER

(PROG) (4) (END)

(ZONE NUMBER) (END)

SETTING ZONES TO 24 HOUR SILENT P 5 E

\*\*\*\*\*

A 24 Hour Silent zone is a zone which triggers instantly after it is unsecured. This happens whether the panel is Armed or Disarmed.

To set, say, zone 4 to be 24 Hour Silent, enter:

P5E 4E

The alarm is silent, that is, no sirens or noise of any description. This is used for remote signalling of silent hold-up alarms etc.

DEFAULT = NO 24 HOUR SILENT ZONES (no zone lights on)

To VIEW 24Hour Silent option ENTER

To Add 24 hour Silent zone(s) ENTER

(PROG) (5) (END)

(ZONE NUMBER) (END)

ZONE SENSITIVITIES \*\*\*\*\*

In addition to the selected ZONE OPTIONS (instant, delay, 24 Hr etc) each zone can be independently programmed to any ONE of the following ten sensitivities.

ONE trigger

TWO trigger

EIGHT Vibration Sensitivities

Sensitivities cannot be deleted only changed by the selection of another sensitivity.

Example of a Zone Assignment

ZONE	DESCRIPTION	ZONE OPTIONS	SENSITIVITIES
1	Garage door	Secondary delay	One trigger (long entry)
2	Front door Delay	One trigger	(short entry)
3	Hallway detector	Hand over	Two trigger
4	Perimeter reeds	Instant	One trigger
5	PIR lounge room	Instant	Two trigger
6	Smoke detector	24HR Audible	One trigger
7	Back door	Delay	One trigger (short entry)
8	Perimeter vibration sensors	Instant	Vibration medium sensitivity



SETTING ZONES TO ONE TRIGGER P 10 E

\*\*\*\*\*

This option causes a zone to trigger whenever it is unsecured for greater than 200 milliseconds.

To set, say, zone 5, zone 6 and zone 7 to alarm on one trigger, enter

P10E 5E 6E 7E

THIS IS THE NORMAL SELECTION FOR MOST DEVICES.

DEFAULT - ALL ZONES ONE TRIGGER (all zone lights on)

To VIEW one trigger option ENTER

To ADD one Trigger zone(s) ENTER

(PROG) (10) (END)

(ZONE NUMBER) (END)

SETTING ZONES TO TWO TRIGGER P 11 E

\*\*\*\*\*

This option causes a zone to trigger whenever it is unsecured for greater than 200 milliseconds Twice within a 5 minute period or unsecured once for greater than 10 seconds.

To set, say, zone 3 to alarm on two triggers, enter:

P11 E 3E

An alarm will also occur if more than one two trigger zones are unsecured ONCE EACH during this 5 minute period (ie. each trigger adds).

DEFAULT NO ZONES TWO TRIGGER (no zone lights on)

VIEW Two Trigger Option ENTER

To ADD Two Trigger zone(s) ENTER..

(PROG) (11) (END)

(ZONE NUMBER) (END)

SETTING ZONES TO VIBRATION SENSITIVITIES P 12 E to P 19 E

\*\*\*\*\*

When using vibration sensors, such as the Nessensor, any of the 8 zones can be programmed with individual sensitivities-

To set, say, zone 5 to Medium sensitivity, enter:

P15E 5E

There are 8 sensitivities.

Refer to the following test procedure for testing the sensitivities.

P 12 = maximum sensitivity through to P 19 - minimum sensitivity

DEFAULT = NO ZONES VIBRATION SENSITIVITY (no zone lights on)

To VIEW Vibration Sensitivities ENTER

To ADD zones ENTER..

(PROG) (12) to (19) (END)

(ZONE NUMBER) (END)

### TEST PROCEDURE

A special test facility exists to test the operation of any zone without leaving the Installation Program mode. This is especially useful for setting up and testing the sensitivity of the vibration sensors.

- 1) Assign the zone which the vibration sensors are connected to, to be a 24 Hour Audible zone (P4E zone E).
- 2) Set the vibration sensitivity (as shown above) to Medium sensitivity eg. P 14 E or P 15 E for that zone.
- 3) Locate the sensor and cause some high frequency vibration within its vicinity This is best achieved by using a solid object such as a screwdriver end.

NOTE - Nensors are very sensitive to high frequencies and insensitive to low frequencies. Therefore it is not necessary to apply much force to the protected structure, rather a very rapid succession of blows instead.

If sufficient vibration has been created to cause an alarm, then the sirens will be activated for 2 seconds. The sensitivity has been correctly adjusted when a single blow applied with a soft object (eg. by hand) does not cause an alarm. whereas a rapid series of blows will do so.

4) If the sensitivity needs to be changed. re-enter the desired level of Sensitivity and repeat step 3. Repeat for other zones.

5) When adjustment is complete, do not forget to set the zones back to their previous setting (ie. Delay, Instant etc).

NOTE: To avoid confusion, you should only set one vibration sensor at a time to be 24 Hour.

### MISCELLANEOUS OPTIONS \*\*\*\*\*

Options P20E (conditional I full lockout) and P21E (seven special options) are programmed as per the following rule:

An option is selected by entering its value and is de-selected by entering its value again (ie. it toggles).

### LOCKOUT AND CONDITIONAL LOCKOUT P 20 E \*\*\*\*\*

In order to ensure that alarm sirens reset at the end of Reset Time. the zone that caused the alarm must be locked out. Two options are provided for versatility; Lockout and Conditional Lockout. It is important to understand the difference.

If a zone is set to Lockout, it will generate an alarm once and once only, irrespective of whether a zone re-secures and subsequently unsecures. The zone will be locked out until the Panel is Disarmed.

Alternatively if a zone is set to Conditional Lockout (the default selection), it will alarm

To VIEW Lockout option ENTER. -

(PROG) (20) (END)

once when the zone becomes unsecured, but will not re-alarm if the zone remains unsecured. However, if the zone re-secures, then at a later time unsecures, the Panel will alarm again.

To set, say, zone 3 and 6 to lockout, enter

P20E 3E 6E (zone light 3 & 6 on)

To return zone 6 to Conditional lockout, enter 6E again, (zone light 6 off).

DEFAULT ALL ZONES ARE CONDITIONAL LOCKOUT (all zone lights off).

To CHANGE Lockout option ENTER

(ZONE NUMBER) (END)



**KEYSWITCH OPERATION P 21 E 1 E**

This selection is indicated by the zone 1 light.

To VIEW the option enter P 21 E.

The keyswitch input can operate in two ways:

Then to CHANGE the option enter 1 E

a) Restricted operation for higher security.  
A Delay one must be activated prior to operating the Keyswitch otherwise an alarm will occur (zone 1 light off).

DEFAULT - RESTRICTED OPERATION  
(zone 1 light off)

b) At all times (zone 1 light on).

To VIEW keyswitch option ENTER

To CHANGE keyswitch option ENTER...

**(PROG) (21) (END)**

**(1) (END)**

**KEYPAD ARMING P 21 E 2 E \*\*\*\*\***

This selection is indicated by the zone 2 light.

To VIEW the option enter P 21 E

There are two methods of Arming via a key pad.

Then to CHANGE the option enter 2 E.

a) Single Digit Arming (OE)  
zone 2 light off.

B) Arming via ACCESS CODE (0 code E)  
zone 2 light on.

DEFAULT = SINGLE DIGIT ARMING  
(zone 2 light off)

To VIEW Keypad Arming option ENTER

To CHANGE Keypad option ENTER

**(PROG) (21) (END)**

**(2) (END)**

**AUTO - EXCLUSION OF ZONES P2IE 3E \*\*\*\*\***

This selection is indicated by the zone 3 light.

To view the option enter P 21

On Arming, all unsecured zones can be treated in the following ways:

Then to change the option enter 3

a) Automatically be Excluded at the end of exit time (zone 3 light off).

NOTE: any Auto Excluded zone will be Included when the zone becomes secured and will generate an alarm if it becomes unsecured.

b) Cause the panel to ALARM at the end of EXIT TIME (zone 3 light on).

DEFAULT = AUTOMATIC EXCLUSION  
(zone 3 light off).

To VIEW Auto-exclusion option ENTER

To CHANGE Auto-exclusion ENTER

**(PROG) (21) (END)**

**(3) (END)**

**ENTRY WARNING BEEPS P21E 4 E \*\*\*\*\***

This selection is indicated by the -zone 4 light  
Whenever a delay zone is unsecured and Entry Time begins, the system's beeper may:

To VIEW the option enter P 21 E.  
Then to CHANGE the option enter 4 E

- a) Beep at one second intervals for entry time (zone 4 light off).
- b) Remain silent for the duration of entry time (zone 4 light On).

DEFAULT = BEEPS AT ONE SECOND INTERVALS (zone 4 light off).

To VIEW Entry Warning Option ENTER...  
**(PROG) (21) (END)**

To CHANGE Entry Warning option ENTER.  
**(4) (END)**

**PANIC ALARMS P21E 5E \*\*\*\*\***

This selection is indicated by the zone 5 light.  
Keyswitch or keypad panics that are activated can be selected to be either:

To VIEW the option enter P 21 E.  
Then to CHANGE the option enter 5 E

- a) Audible:- Full siren and beeper (zone 5 light off)
- b) Silent:- No siren and beeper for remote signalling (zone 5 light on).

DEFAULT - AUDIBLE PANIC (zone 5 light off)

To VIEW Panic alarm option ENTER.  
**(PROG) (21) (END)**

To CHANGE Panic Alarm option ENTER...  
**(5) (END)**

**ZONE, TAMPER AND CODE ALARMS P21E 6E \*\*\*\*\***

This section is indicated by the zone 6 light.  
Alarms that are caused by Zone, Tamper or Code Alarm (3 incorrect attempts), can be selected to be either:

To VIEW the option enter P 21 E.  
Then to CHANGE the option enter 0 E

- a) Audible:- Full siren and beeper (zone 6 light off)
- b) Silent:- No siren and beeper (tor remote signalling; zone 6 light on).

DEFAULT = AUDIBLE ALARM (zone 6 light off).

To VIEW this option ENTER..  
**(PROG) (21) (END)**

To CHANGE this option ENTER..  
**(6) (END)**





MONITOR ALARMS TO DIALLER **P21E 7E** \*\*\*\*\*

This selection is indicated by the zone 7 light.

To VIEW the option enter P 21 E.

During Monitor modes 1 and 3 (audible alarms), zones that cause an alarm can be programmed to:

Then to CHANGE the option enter 7 E.

a) Not output zone alarms to Dialler (zone 7 light off).

DEFAULT = NO MONITOR ALARMS TRIGGER

b) Output zone alarms to Dialler (zone 7 light on).

THE DIALLER (zone 7 light off)

To VIEW this option ENTER

To CHANGE this option ENTER...

**(PROG) (21) (END)**

**(7) (END)**

SIREN RESET TIME **P 22 E** \*\*\*\*\*

This option sets the Audible Alarm's operating time.

To VIEW the programmed time enter P 22 E.

The time is indicated by Its value being flashed via the zone 1 mains/battery lights. (eg. 10 minutes zone 1 light followed by mains [0] light).

Then to CHANGE the time to, say, 11 minutes enter: 11 E.

NOTE: Whilst a time is being displayed the keypad is inoperable.

The timer is programmable from 1 to 99 minutes in one minute increments.

DEFAULT = 10 MINUTES

To VIEW Siren Reset Time ENTER..

To CHANGE Siren Here Time ENTER.

**(PROG) (22) (END)**

**(TIME) (END)**  
(In minutes)

CHECKS BEFORE ENTERING Client Program Mode \*\*\*\*\*

For security, all 24Hr. inputs are active during Client Program Mode. Therefore, after installation programming has been completed, there are some basic checks that should be performed in order to save frustration and possible embarrassment.

Upon entering the Client program mode, the PROGRAM light will stop flashing and will be constantly illuminated.

1) Check that the Tamper input is properly terminated with a 2K2 resistor.

NOTE: It is important that you enter the master code at this point. Client Program mode will automatically be exited if a button is not pressed within 2 minutes.

2) Check that the Keyswitch/Panic input is also terminated with a 2K2 Resistor. (820 ohm if a Satellite is used).

ie:P1 E code E code E

3) Ensure rear panel tamper is secured.

Entering the master code will allow you to re-enter the Client program mode if the panel has entered the normal operating mode.

4) Close the lid of the Control Panel  
FAILURE TO COMPLETE THESE TASKS WILL RESULT IN THE CONTROL PANEL GOING INTO ALARM AS SOON AS INSTALLATION PROGRAM MODE IS EXITED.

SEE THE INSTRUCTION MANUAL FOR FURTHER INFORMATION.

You are now ready to exit the Installation Program Mode and enter the Client Program Mode.

NOTE: All the programmed information is not stored to memory until the panel has exited Client Program mode into normal operating mode. Therefore It power is disconnected during Installation or Client Program modes, all NEW programmed information will be lost.

This is done by entering **P E**



## TESTING AND TROUBLESHOOTING

To ensure reliable operation of any system, correct testing procedures should be carried out prior to handing the completed installation over to the customer.

Using a digital multimeter, the following procedures are recommended for testing a 5000 SERIES 8 Zone system.

### FUSES

With the power removed from the Panel, set your meter to the lowest ohms range and check that the 4 fuses measure less than 0.5 ohms.

### VOLTAGES

All zone inputs, the Tamper input and the Keyswitch/panic inputs should be terminated with a 2K2 ohm end of line resistor. When correctly secured, the voltage reading across

each zone input should be 2.5 volts + or - 0.2 volts.

If the voltage reading is above or below this reading, check your detector wiring and cabling.

Check that the DC. output to the detectors is 13.4 to 13.8 volts.

If a Satellite siren is installed, the correct voltages across pos. and neg. should be 13.4 to 13.8 volts. The voltage reading between the control and neg terminals must be in the range of 2.4 to 2.7 volts for reliable operation. Ensure that an 820 ohm resistor has been substituted for the 2K2 ohm resistor in the External Tamper input of the 8 Zone.

When checking Tamper in put voltages or Satellite voltages, ensure that all Tamper switches are secured, including the lid tamper, as all of these points are WIRED IN SERIES.

### WALK TESTING \*\*\*\*\*

There are two simple methods of walk testing all zones. Method "B" is the most convenient way of walk testing a system unless monitor mode options have been reprogrammed from the default values ie. Monitor type 2 (P7E 2E) selected and all zones programmed to be monitor zones (P8E, all zone lights on).

#### METHOD A

- 1) Select Installation Program Mode.
- 2) Program all zones to 24hr. Audible (P4E 1E to 8E).
- 3) Un-secure each zone in turn the buzzer and all sirens will sound for two seconds each time a zone is triggered.
- 4) Reprogram each zone to their correct type after completion of the walk test.

#### METHOD B

- 1) Select normal operating mode.
- 2) Select Monitor Mode( 8E).
- 3) Un-secure each zone in turn - the buzzer and all the sirens will sound for two seconds each time a zone is triggered.
- 4) Return to the Panel and ensure all zone lights are flashing to indicate that they have been triggered.



TROUBLE SHOOTING \*\*\*\*\*

SYMPTOM	CAUSE	REMEDY
Control Panel not Starting up when AC. voltage is applied.	Excessive load connected to the Power supply. Current limit protection operating.	Check for short circuits and excessive load on the power supply outputs.
Starts up Armed (and in alarm) with finger on the P or E button.	Keypad tail connected incorrectly or the keypad is faulty.	Check Keypad connection or replace.
The Control Panel alarms on exit from Installation Program mode.	24Hr zone, Tamper or Keyswitch /Panic inputs unsecured.	For security, all 24Hr, Tamper and Panic circuits operate in Client program mode. Ensure they are secured before entering Client program mode.
Cannot exit from Client Program mode using PE.	Client Code 1 (Master Code) not programmed.	Program Access Code 1 prior to exiting Client Program mode.
Panel automatically exits Client Program mode.	For security, Client Program mode automatically exits when no keys are pressed within a two minute period.	Avoid leaving the Panel in program mode without pressing buttons for long periods of time.
Program light flashes rapidly after exiting Client Program mode.	Access Code 1 (Master Code) not programmed and panel has automatically exited Client Program mode.	Program Master Code as soon as possible after entering Client Program mode.
	<u>OR</u>	
	Program memory faulty hence Panel cannot save data in the EEPROM.	Power down and Power up using the End Key and exit both Installer and Client program modes again. If the light still flashes, return Panel for service.
Programmed values are not retained in memory when power is removed from the control Panel and then re-applied.	Power removed prior to exiting Client program modes. All programming is stored to memory on he exiting of Client Program mode.	Exit user program mode to operation mode. Do not remove power during any programming.
	<u>OR</u>	
	The system has been powered up into Installation program mode using the P button thus re-loading all default values.	Enter Installer Program mode by powering up with E button to retain previously programmed data.
The Panel goes into alarm when Disarming the Panel with a 5000 SERIES keyswitch.	Entry zone has not been activated prior to using the Keyswitch if the Entry restriction on the Keyswitch has not been disabled (21E 1E).	Enable option P21E 1E or ensure delay zone is being activated prior to operation of the Key-switch.
The Heat Sink is warm to touch.	Normal operation.	This is normal operation.



SYMPTOM	CAUSE	REMEDY
Instant zones will not trigger after Arming the Panel.	All zones, except 24Hr zones, Are ignored during Exit Time after arming.	Trigger the zones after Exit Time.
Sirens, Strobes or Detectors not working.	Blown Fuses.	Check for short circuits on outputs and replace blown fuses.
After Arming, the beeper in the Control Panel, Keypads and Keyswitches gives a constant beep until the end of Exit Time.	A 24Hr, Tamper or Panic input is unsecured.	Ensure a 2K2 ohm is fitted to the keyswitch/Panic input and that all tamper and 24Hr zones are secured.
The internal and external sirens sound for two seconds at the end of exit time.	The Panel has been Armed with a zone unsecured.	Disarm, secure the unsecured zone and re-arm.
The Tamper light flashes always.	Tamper circuits are unsecured.	Check the rear Panel Tamper, front Panel Tamper and External Tamper switches are all secured with the relevant values of resistors. All Tampers are wired in series as far as the Panel is concerned.
The Battery light is flashing.	The Panel has been powered up initially on AC, and has not yet been Armed, the battery is not connected or the battery is flat.	Arm and Disarm the Panel which will cause a dynamic battery test to be carried out. Connect the battery, or replace the battery.

**SPECIFICATIONS**

Construction	3mm Polycarbonate.
Dimensions (mm)	233 wide x 300 high x 85 deep.
Weight (with 6.5 AH battery)	3.3 kg.
Plugpack	Input -240V a.c      Output-17V a.c at 1.4A.
Power supply	13.8 V d.c. at 1.25 Amps, current limited.
Quiescent Current	Less than 80 mA.
Operating Voltage	10 V to 15V d.c.
Rechargeable Battery	12 V, 6.5AH.
Battery Charge Current	450 mA maximum, current limited.
Dynamic Battery Test	Every hour and when the Panel is Armed. (whether mains power is on or off)
Dynamic Battery Test Low Voltage	10.7 V with a 5A load.
Fuses (5x20 mm)	4x1.5A, fast bow.
Zone Inputs	End-of-line resistor = 2200 plus/minus 900 ohms
Remote Tamper Input	Same as zone input.
Remote Keyswitch / Panic Button Input	Same as zone input.
Remote Keypads' Inputs	Proprietary.
Intelligent Keypad Outputs	Proprietary.
Internal Siren Output	Open collector, fused.
External Siren Output	Open collector, fused.
Satellite Siren Output	Proprietary.
Maximum number of Sirens	3 x 8 ohm ohm speakers (not including Satellite sirens since they have a separate siren driver circuit)
Latched Alarm (Strobe) Output	1.5 A at 12 V, open collector, fused.
Power Output for Optional Equipment	With battery, 12 V, 1.5 A, fused.
Resetting Alarm Output	1.5 A at 12 V, open collector, fused.
24 hour Alarm Output	100 mA at 12 V, open collector, current limited.
Monitor Alarm Output	100 mA at 12 V, open collector, current limited.
Auxiliary Output	50 mA at 5 V emitter follower, current limited.



# 5000 Series Dialler

## 5000 SERIES INSTALLATION PROGRAMMING SHEET (X represents factory setting)

\*\*\*\*\*

		1	2	3	4	5	6	7	8
P 0 E	INSTANT	.	X	X	X	X	X	X	X
P 1 E	DELAY	X	.	.	.	.	.	.	.
P 2 E	HANDOVER	.	.	.	.	.	.	.	.
P 3 E	SECOND DELAY	.	.	.	.	.	.	.	.
P 4 E	24 HR. AUDIBLE	.	.	.	.	.	.	.	.
P 5 E	24 HR. SILENT	.	.	.	.	.	.	.	.

		1	2	3	4	5	6	7	8
P 10 E	1 TRIGGER	X	X	X	X	X	X	X	X
P 11 E	2 TRIGGER	.	.	.	.	.	.	.	.
P 12-19 E	VIBRATION	.	.	.	.	.	.	.	.

		1	2	3	4	5	6	7	8
P 20 E	LOCKOUT	.	.	.	.	.	.	.	.

		1	2	3	4	5	6	7	8
P 21 E	MISCELLANEOUS (See page 15 to 17)	.	.	.	.	.	.	.	.

P 22 E ALARM RESET TIME 10 Min. (Default)  
(In minutes)

X = DEFAULT SETTING

## CLIENT PROGRAM SUMMARY (See 5000 series user book for details)

\*\*\*\*\*

P 1 E	MASTER CODE	
P 2 E	USER CODE 2	
P 3 E	USER CODE 3	
P 4 E	USER CODE 4	
P 5 E	ENTRY DELAY TIME	20 Sec. (Default)
P 6 E	EXIT DELAY TIME	60 Sec. (Default)
P 7 E	MONITOR MODE TYPE (1 to 4)	
P 8 E	MONITOR ZONES	
P 9 E	AUX. OUTPUT ZONES	

# 5000 Series Panel 8 Zone Version 3

## INSTALLATION PROGRAMMING (Program light flashing)

<b>P0E zone E</b>	Instant
<b>P1E zone E</b>	Delay
<b>P2E zone E</b>	Handover
<b>P3E zone E</b>	Long Delay. Entry time same as Exit time
<b>P4E zone E</b>	24hr audible
<b>P5E zone E</b>	24hr silent
<b>P10E zone E</b>	Single trigger zones (1-8 default)
<b>P11E zone E</b>	Double trigger zones
<b>P12E zone E</b>	Vibration sensor. Highest sensitivity
to	
<b>P19E zone E</b>	Vibration sensor. Lowest sensitivity
<b>P20E zone E</b>	Conditional lockout (leds off) Lockout (leds on)
<b>P21E option E</b>	<ol style="list-style-type: none"><li>1. Disable Keyswitch entry/exit restriction</li><li>2. Enable Arm via Code</li><li>3. Disable Auto exclude (full alarm at end of exit time)</li><li>4. Disable entry warning beeps (silent entry time)</li><li>5. Enable silent Panic alarms</li><li>6. Enable silent other alarms (except 24hr &amp; Fire)</li><li>7. Enable Monitor modes 1 &amp; 3 to trigger dialler</li></ol>
<b>P22E time E</b>	Siren run time in minutes (1-99)
<b><u>Exit Installation mode</u></b>	<b>P E</b>

## CLIENT PROGRAMMING (Program light on steady)

<b>P1E code E code E</b>	Code 1 (Master Code)
<b>P2E code E code E</b>	Code 2
<b>P3E code E code E</b>	Code 3
<b>P4E code E code E</b>	Code 4
Codes can be 3-6 digits in length, but cannot start with a 0	
<b>P5E time E</b>	Entry time in seconds (1-99)
<b>P6E time E</b>	Exit time in seconds (1-99)
<b>P7E option E</b>	<ol style="list-style-type: none"><li>1. Entry delay the full alarm</li><li>2. 2 seconds siren and sonalert</li><li>3. Immediate full alarm</li><li>4. Zone number pulsed via sonalert</li></ol>
<b>P8E zone E</b>	Monitor zones
<b>P9E zone E</b>	Auxiliary zones
<b><u>Exit Client mode</u></b>	<b>P E</b>

**To re-enter Client program mode**                      **P Master Code E**

**To re-enter Installation mode**                      **P 000000 E**

Note: Entry to Installer mode can only be made while in Client mode

Normal operating mode.                      Battery and Mains light ON