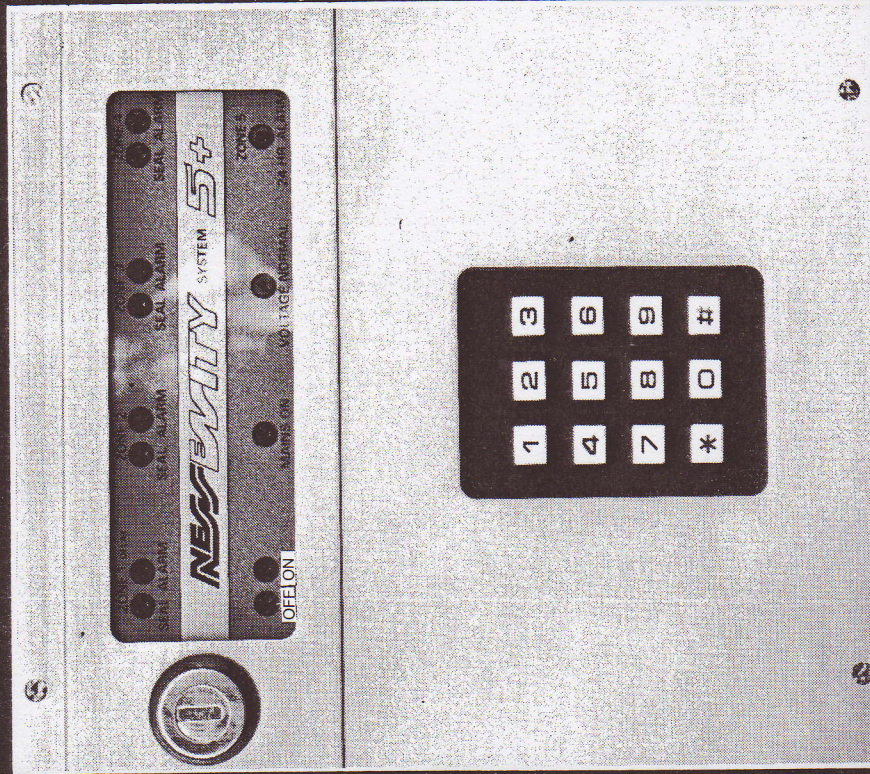


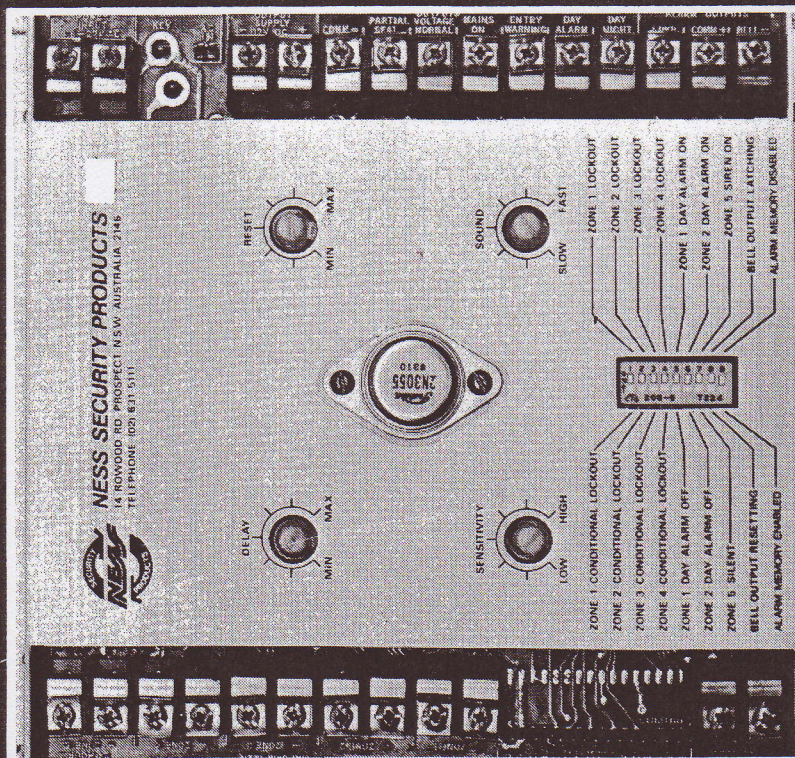
# NESS SECURITY PRODUCTS

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# NESS SECURITY SYSTEM 5+ 5 SECTOR CONTROL UNIT

(ILLUSTRATED ABOVE WITH OPTIONAL KEYPAD.)



## INTRODUCTION

The Ness System 5+ is a fully integrated, programmable five Zone control system combining 2 day/night Zones, 2 night only Zones and 1 24 Hour Zone for distress, holdup or fire protection, and an alarm memory.

An onboard regulated power supply powers internal circuitry and outputs are provided to power external equipment and to recharge a lead acid standby battery.

Conditions such as low voltage, mains failure, input status and many others are continually monitored.

Individual zone alarm outputs and others such as day alarm, entry warning, partial seal and day/night changeover are provided for interfacing to automatic diallers or driving local signaling devices and relays.

Two common alarm outputs are also provided to drive bells, strobe lights and reflex horn speakers.

A total of 18 functions can be programmed by means of a 9 way miniature D.I.P. switch; e.g. Bell output latching or resetting, 24 Hour Zone silent or audible, day alarm on or off, lockout or conditional lockout for each zone and alarm memory enabled or disabled.

Four variable controls set delay entry and reset times, sensitivity and sound.

An inbuilt processor enables the direct connection of vibration sensors such as Nessensors into any of the Zones 1 to 4. An adjustable Sensitivity control sets the total amount of vibration accepted before triggering of the alarm, on Zones 2, 3 & 4. The Seal indicator L.E.D.s can be used to monitor the received vibrations by pulsing off in unison to open circuit pulses.

A connector is provided for an optional plug in, flush mounting codelock with hold-up and optional auto or manual isolate facilities.

Zones 1 & 2 have a built in delay exit with Zone 2 reverting to instant unless an entry is first made through Zone 1.

Special circuitry ensures that an intruder cannot disable (lockout) the entire system by triggering all Zones on one entry and then return after the bells/sirens have reset.

Conforms to Australian standards & noise pollution laws.

## DESCRIPTION & SPECIFICATIONS

### (1) INTEGRATED POWER SUPPLY

- Foldback current limited to 1 Amp.
- Short circuit protected. Short circuit current limited to 360Ma.
- Load regulation better than 0.2% up to rated output.
- Line regulation better than 0.1% over the input range of 18-25 volts A.C. corresponding to a mains variation of 200-275V approx.

- Ripple better than 2mV P-P up to rated output.
- Maximum charging current to standby battery limited to 250mA.
- Maximum current available to drive external equipment: 750mA.

#### POWER SUPPLY TERMINATIONS

INPUT 18-22V A.C. - A.C. Input from transformer. (Parallel with A.C. IN pins.)

OUTPUT SUPPLY - 13.8V DC for external equipment.

RECHARGABLE BATTERY - Connection for rechargeable lead acid or gel battery.

#### (2) OUTPUTS - GROUP 2

COMM - Common negative for group 2 outputs.

#### PARTIAL SEAL

- (Partial Seal or zone isolated.) The voltage on this terminal is normally low (approx. 0.5V with respect to COMM negative) and goes high (i.e. almost full supply) if

(a) Either Zone 3 or 4 (instant) is unsealed on switching to nightmode (Automatic isolation has taken place.)

(b) Either Zone 1 or 2 (delay) is unsealed on expiry of exit time (Automatic isolation has taken place.)

(c) Any Zone has either been automatically locked out (unsealed when switching from day to night) or has remained unsealed after having caused an alarm condition and the alarm has automatically reset.

- The voltage will restore to a low if all Zones are resealed unless any Zone has alarmed & locked out (by setting of dip switches 1-4).

- The voltage will reset to a low if the system is switched back to day mode.

- max source current (positive drive) = 200mA.

- max sink current (negative drive) = 10mA.

#### VOLTAGE NORMAL

- This output corresponds with the voltage normal L.E.D. indicator. The voltage on this terminal is normally high (i.e. almost full supply) and goes low (approx. 0.5V with respect to COMM negative) if the output voltage falls below 11.8 Volts.

- max source current (positive drive) = 200mA.

- max sink current (negative drive) = 10mA.

#### MAINS ON

- The voltage on this terminal is normally high and falls to a low whenever the A.C. input voltage falls or is interrupted.

- max source current (positive drive) = 1A.

#### ENTRY WARNING

- The voltage on this terminal is normally zero Volts (open emitter) and goes high when Zone 1 (the delay entry zone) is triggered and the system is in entry time. NOTE - The exit time must have previously expired.

#### DAY ALARM

- This terminal is normally zero Volts (open emitter) and goes high when Zones 1 and or 2 are programmed to day alarm on and the input to either Zone is unsealed. Can be used for customer warning, etc.

- max source current (positive drive) = 200mA.

#### DAY/NIGHT

- The voltage on this terminal is low when the system is in day mode and high when the system is in night. Used for opening and closing reports when connected to a dialler.

- max source current (positive drive) = 200mA.

- max sink current (negative drive) = 10mA.

#### (3) ALARM OUTPUTS - GROUP 3

#### SPKR

- Siren output capable of driving up to 4 x 8 ohm horn speakers (with standby battery connected).

- average current per speaker is approx. 250mA.

#### COMM+

- Common Positive for SPKR & BELL outputs.

#### BELL-

- This terminal is normally high and goes low when the system is triggered into alarm.

- max sink current (negative drive) = 1A.

- max source current (positive drive) = 10mA.

#### ZONE ALARM & STATUS OUTPUTS - 16 PIN MOLEX CONNECTOR

This group of outputs has been provided to allow simple interfacing to return to base equipment etc., and for factory computerised testing. Therefore, many outputs are in parallel with other terminals.

#### +

+ 12V output. Parallel with + 12V output terminal.

#### -

- 12V output. Parallel with - 12V output terminal.

Zone 5 output. The voltage on this pin is normally low and latches high when Zone 5 is triggered into alarm (Day or Night modes).

- max source current (positive drive) = 200mA.

- max sink current (negative drive) = 10mA.

#### BL

Bell or 12V alarm output. Parallel with BELL- output terminal.

#### Z1

Zone 1 output. The voltage on this pin is normally low and latches high when Zone 1 is triggered into alarm. (Night mode only.)

- If D.I.P. switch 9 is on then the output is reset on switching to Day mode.

- If D.I.P. switch 9 is off then the output will remain on

through switching to day mode and reset on switching back to night.

- Z2 Zone 2 output. Same as for Z1.
- Z3 Zone 3 output. Same as for Z1.
- Z4 Zone 4 output. Same as for Z1.
- PS Partial Seal output. Parallel with Partial Seal output terminal.
- VN Voltage Normal. Parallel with Voltage Normal output terminal.
- MO Mains On. Parallel with Mains On output terminal.
- DN Day/Night. Parallel with Day/Night output terminal.
- S1 Zone 1 momentary alarm output. The voltage on this pin is normally low & goes high for approx. 2 seconds whenever Zone 1 is triggered into alarm. It can be used for multi-break reporting. This output has been provided to interface directly to diallers and not to drive relays etc. (unlike Z1 output pin).

- max source (positive drive) and sink (negative drive) approx. 20mA.

- S2 Zone 2 input tracking alarm output. The voltage on this pin is normally low and goes high for the duration of any Zone 2 unsealed condition when the system is in Night mode. The only exception is when Zone 1 is in entry time thus isolating Zone 2 for entry.

- Output drive current same as for S1.

- S3 Zone 3 input tracking alarm output. The voltage on this pin is normally low and goes high for the duration of any Zone 3 unsealed condition when the system is in night mode.

- Output drive current same as for S1.

- S4 Zone 4 input tracking alarm output. Same as for S3.
- NOTE 1 — When using the S1 — S4 output pins for multi-break reporting, dip switches 1 — 4 must be off or the zones will lockout after the first alarm and not provide any further signals.

- NOTE 2 — Vibration sensors should not be connected to any Zone (2-4) when that zone's S(2-4) output pin is used, for multi-break reporting.

#### 16 WAY RIGHT ANGLE MOLEX CONNECTOR

This connector is located on the underside of P.C. board in the vicinity of 16 pin molex. It is used for the optional plug in code lock boards (2 types; 1 standard day/night & holdup & the other with Zone isolate facilities). It is also used for factory computerised testing.

#### ZONE INPUTS

- Zone 1 — 22K ohm end of line resistor to seal the zone input.
- An open or short circuit will unseal the input.
- Zone 2 — Same as for Zone 1.
- Zone 3 — Same as for Zone 1.
- Zone 4 — Same as for Zone 1.
- 24 Hour Zone 5 — Same as for Zone 1.

#### VARIABLE CONTROLS

- DELAY — This potentiometer adjusts the delay entry time on Zone 1.
- RESET — Time range 0-60 seconds approx.
- Adjusts the reset time (i.e. the Bell/Siren running time).
- SENSITIVITY — Time range 5 seconds — 10 minutes approx.
- Adjusts the sensitivity of the system to high frequency vibration sensors such as the Nessensor. If none are used this control is disregarded (i.e. it can be set to any position).
- SOUND — Adjusts the speed and pitch of the siren oscillator.

#### 9 WAY PROGRAMMING D.I.P. SWITCH

- SWITCH 1 OFF — Zone 1 CONDITIONAL LOCKOUT.
- With the system in night mode an unsealed condition on Zone 1 will alarm the system and lock out that Zone for the duration of the unsealed condition. This allows the Bell/Siren outputs to reset at the end of the reset time.
- The Zone is re-armed if the input is resealed. The Zone may be re-triggered.

- SWITCH 1 ON — Zone 1 LOCKOUT.

- With the system in night mode an unsealed condition on Zone 1 will alarm the system and lock out that Zone rendering it inoperative (i.e. not capable of causing any further alarms) until the system is switched to day mode and back to night. This allows the bells/sirens to reset at the end of the reset time.

- SWITCH 2 OFF — Zone 2 CONDITIONAL LOCKOUT.

- The same as for Switch 1 Off.

- SWITCH 2 ON — Zone 2 LOCKOUT.

- The same as for Switch 1 On.

- SWITCH 3 OFF — Zone 3 CONDITIONAL LOCKOUT.

- The same as for Switch 1 Off.

- SWITCH 3 ON — Zone 3 LOCKOUT.

- The same as for Switch 1 On.

- SWITCH 4 OFF — Zone 4 CONDITIONAL LOCKOUT.

- The same as for Switch 1 Off.

- SWITCH 4 ON — Zone 4 LOCKOUT.

- The same as for Switch 1 On.

- SWITCH 5 OFF — ZONE 1 DAY ALARM OFF.

- Any unsealed condition on Zone 1 will not cause a change in voltage on the DAY ALARM output terminal.

- SWITCH 5 ON — ZONE 1 DAY ALARM ON.

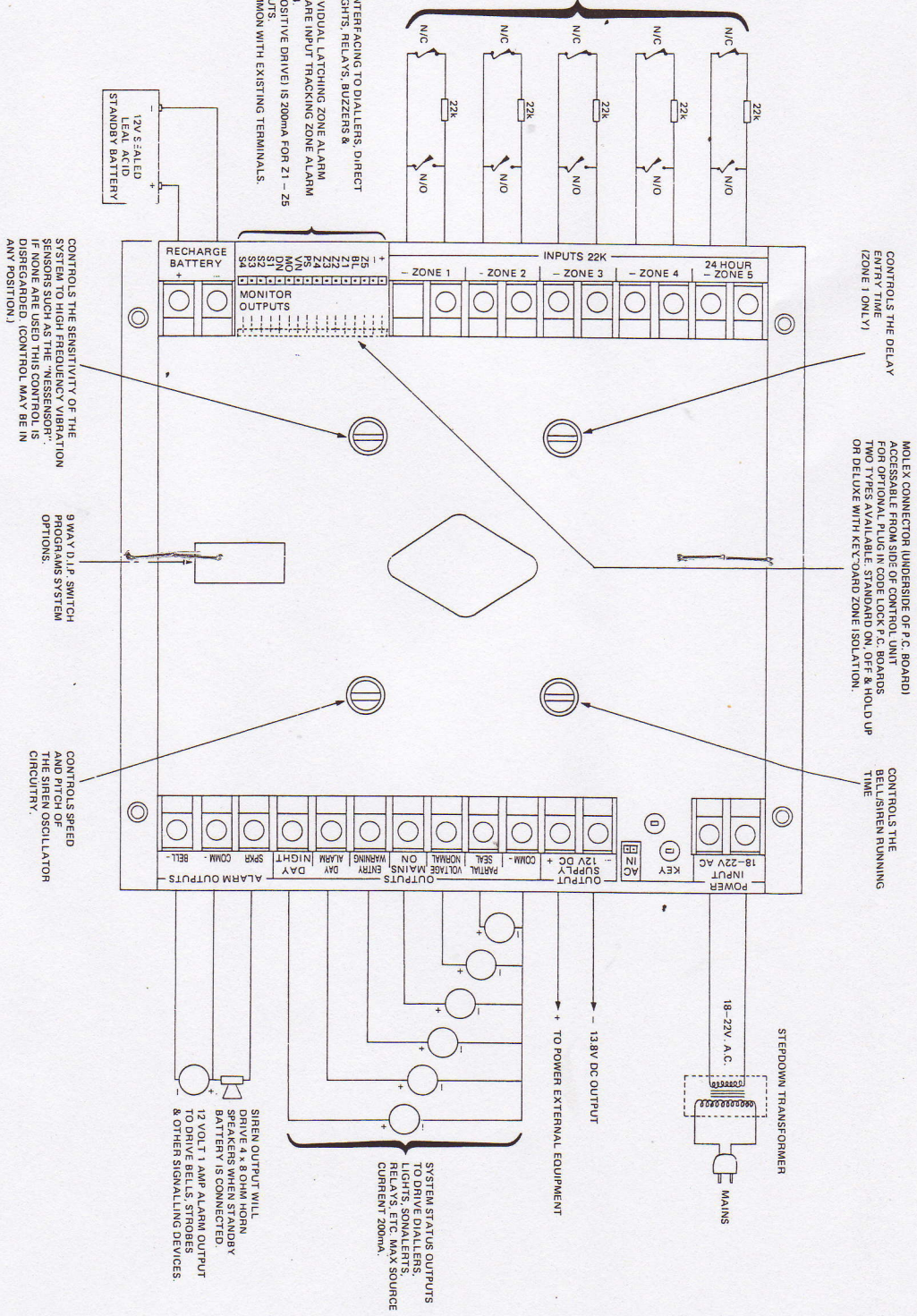
- Any unsealed condition on Zone 1 will cause a +12V voltage to be output on the DAY ALARM output terminal for the duration of each condition.



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ZONE INPUTS WILL ACCEPT BOTH NORMALLY OPEN & NORMALLY CLOSED CONTACTS INCLUDING VIBRATION SENSORS SUCH AS THE "MESSENSOR". INPUTS MUST BE SCALED BY 200MA MAX END OF LINE RESISTOR.

MONITOR OUTPUTS FOR INTERFACING TO DIALLERS, DIRECT LINE ETC. OR DRIVING LIGHTS, RELAYS, BUZZERS & REMOTE PANELS. Z1, Z2, Z3, Z4, Z5 ARE INDIVIDUAL LATCHING ZONE ALARM OUTPUTS & S1, S2, S3 & S4 ARE INPUT TRACKING ZONE ALARM MONITOR OUTPUTS. MAX SOURCE CURRENT IS 200MA FOR Z1 - Z5 OTHER OUTPUTS ARE COMMON WITH EXISTING TERMINALS.



CONTROLS THE DELAY ENTRY TIME (ZONE 1 ONLY)

MOLEX CONNECTOR (UNDERSIDE OF P.C. BOARD) ACCESSABLE FROM SIDE OF CONTROL UNIT. 18-22V A.C. SUPPLY. TWO TYPES AVAILABLE: STANDARD OR DELUXE WITH KEYBOARD ZONE ISOLATION.

CONTROLS THE BELL/SIREN RUNNING TIME

CONTROLS THE SENSITIVITY OF THE SYSTEM TO HIGH FREQUENCY VIBRATION SENSORS SUCH AS THE "MESSENSOR". IF NONE ARE USED THIS CONTROL IS DISREGARDED. (CONTROL MAY BE IN ANY POSITION.)

9WAY 1P SWITCH CONTROLS SYSTEM OPTIONS.

CONTROLS SPEED AND PITCH OF THE SIREN OSCILLATOR CIRCUITRY.

SIREN OUTPUT WILL DRIVE 4V 8 OHM HORN SPEAKERS WHEN STANDBY BATTERY IS CONNECTED. 12 VOLT 1 AMP ALARM OUTPUT TO DRIVE BELLS, STROBES & OTHER SIGNALLING DEVICES.

SYSTEM STATUS OUTPUTS TO DRIVE DIALLERS, LIGHTS, SONALERTS, RELAYS, ETC. MAX SOURCE CURRENT 200MA.

- SWITCH 6 OFF — ZONE 2 DAY ALARM OFF.
- Same as for ZONE 1 DAY ALARM OFF.
- SWITCH 6 ON — ZONE 2 DAY ALARM ON.
- Same as for ZONE 1 DAY ALARM ON.
- SWITCH 7 OFF — 24 HOUR ZONE SILENT.
- Whenever Zone 5 is triggered (Day or Night modes) the SIREN & BELL outputs will NOT be activated.
- A +12 Volt latching voltage will be output on the Z5 output pin.
- SWITCH 7 ON — 24 HOUR ZONE AUDIBLE.
- Whenever Zone 5 is triggered (Day or Night modes) the SIREN & BELL outputs will be activated and will run until the reset time expires.
- A +12 Volt latching voltage will be output on the Z5 output pin.
- SWITCH 8 OFF — BELL OUTPUT RESETTING.
- After activation, the BELL output is automatically reset when the reset time has expired.
- SWITCH 8 ON — BELL OUTPUT LATCHING.
- Whenever the BELL output is activated by Zones 1-4 (night mode only) it will latch on until the system is switched to day mode.
- i.e. the bell output will not be allowed to automatically reset after the reset time expires. Useful for driving strobe lights that are to stay latched after the sirens have reset.
- SWITCH 9 OFF — ALARM MEMORY ENABLED.
- With the system in night mode, an alarm on any zone will cause that zone's red Alarm L.E.D. to be illuminated and a latching voltage to be output on the appropriate zone output pin.
- The L.E.D. and output voltage will NOT be reset on switching to day.
- The L.E.D. and output will reset when the system is switched back to night.
- With this feature enabled, a serviceman need not rely on the customer for information as to which zone has caused an alarm.
- Also helpful when remote switching is used.
- SWITCH 9 ON — ALARM MEMORY DISABLED.
- Any red Alarm L.E.D. and latching zone output that is on in night mode will be reset on switching to day mode.

#### L.E.D. INDICATORS

- ZONE 1 SEAL (GREEN) — This L.E.D. is illuminated whenever Zone 1 input is sealed and extinguished when the input is unsealed.
- The L.E.D. works in both day & night modes.

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- In the day mode it is used as a circuit test.
- In night mode it can be used as a Zone isolated indicator.
- ZONE 1 ALARM (RED) — This L.E.D. can only be illuminated when the system is in night mode.
- If the seal on Zone 1 is broken (after the system has been switched to night and the exit time has expired) the Zone will be triggered.
- The alarm L.E.D. will latch on after the entry time expires and the system goes into alarm.
- If D.I.P. switch 9 is on then the L.E.D. is extinguished on switching to day mode.
- If D.I.P. switch 9 is off then the L.E.D. will remain on through switching to day mode and be extinguished on switching back to night.
- ZONE 2 SEAL (GREEN) — Same as for Zone 1 SEAL L.E.D.
- ZONE 2 ALARM (RED) — This L.E.D. can only be illuminated when the system is in night mode.
- If the seal is broken on Zone 2 after the exit time has expired the Zone will be triggered instantly unless entry has first been made through Zone 1, the delay entry Zone. In this case Zone 2 is temporarily isolated or disabled for the duration of the entry time allowing entry through Zone 2.
- The alarm L.E.D. will latch on whenever Zone 2 has been triggered and the system goes into alarm.
- If D.I.P. switch 9 is on then the L.E.D. is extinguished on switching to day mode.
- If D.I.P. switch 9 is off the L.E.D. will remain on through switching to day mode and reset on switching back to night mode.
- ZONE 3 SEAL (GREEN) — Same as for Zone 1 SEAL L.E.D.
- ZONE 3 ALARM (RED) — This L.E.D. can only be illuminated when the system is in night mode.
- If the seal on Zone 3 is broken, the zone will be triggered. The system will go into alarm and the alarm L.E.D. will be latched on instantly.
- If D.I.P. switch 9 is on then the L.E.D. will be extinguished on switching to day mode.
- If D.I.P. switch 9 is off the L.E.D. will remain on through switching to day mode and be extinguished on switching back to night mode.
- ZONE 4 SEAL (GREEN) — Same as for Zone 1 SEAL L.E.D.
- ZONE 4 ALARM (RED) — Same as for Zone 3 ALARM L.E.D.
- 24 HOUR ZONE 5 ALARM (RED) — This L.E.D. is latched on when Zone 5 is triggered into alarm.
- The L.E.D. will function in both day and night modes.
- The L.E.D. is reset (extinguished) on switching from day to night or night to day.

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- DAY (GREEN) — This L.E.D. is illuminated when the system is in day mode and extinguished when in night.
- NIGHT (RED) — This L.E.D. is illuminated when the system is in night mode and extinguished when in day.
- VOLTAGE NORMAL (GREEN) — This L.E.D. is illuminated whilst the supply voltage from either the internal supply or a connected standby battery remains above 11.8 Volts.
- The L.E.D. is extinguished when the voltage falls below 11.8V (e.g. a loss of mains voltage and a flat battery).
- MAINS ON (GREEN) — This L.E.D. is illuminated whilst the AC input voltage to the system is present.
- It is extinguished for the duration of any mains interruption.

#### KEYSWITCH

- FUNCTION — To switch system from day to night & night to day modes as indicated by the day/night L.E.D.'s (i.e. off to on, and on to off).

### SUMMARY OF OPERATION

#### SWITCHING FROM DAY TO NIGHT

- On switching from day to night modes, i.e. off to on (via the keyswitch or optional code lock) the green day L.E.D. will be extinguished and the red night L.E.D. will be illuminated.
- Zones 1 & 2 are delayed for a period of 1 minute for exit.
- Any Zone (except 24 Hour Zone) that is not sealed will be automatically isolated or locked out of circuit. If the input to the isolated Zone is resealed at any time after the unit has been switched to night then the seal indicator for that Zone will be illuminated and the Zone will be armed ready for alarm when the seal is broken.
- NOTE — This makes exit through either Zone 3 or 4 (instant zones) possible simply by leaving that Zone unsealed and then resealing after exit (to arm the Zone).
- Any previous alarm on Zone 5 (24 Hour Zone) will be reset (both L.E.D. & output) ready for alarm when the seal is broken again.
- If D.I.P. switch 9 is off then any alarm L.E.D. and zone output that is on (from a previous alarm) will be reset.

#### NIGHT MODE

- (1) — After the exit time has expired (approx. 60 secs. after switching to night) a break in the seal of the Zone 1 will initiate an entry time (0-60 Secs. adjustable) and isolate Zone 2 for the duration of the entry time.

- A voltage will be output on the entry warning terminal.
- Unless the system is switched back to day it will alarm after the entry time has expired.
- The voltage on the entry warning terminal will be reset.
- A voltage will be output for approx. 2 seconds on the S1 output pin.
- The Zone 1 alarm L.E.D. will latch on and a latching voltage will be output on the Z1 output pin.
- (2) — A break in the seal of Zones 2-4 will cause the system to alarm instantly (bells/sirens on) unless Zone 1 has been triggered and the system is in entry time in which case Zone 2 is temporarily isolated for entry.
- The appropriate seal indicator will be extinguished and a voltage will be output on the corresponding S2-S4 output pin for the duration of the unsealed condition.
- The alarm L.E.D. will latch on and a latching voltage will be output on the output pin of the Zone in alarm.
- The SPKR output will reset at the end of the reset time. The BELL output will also reset unless D.I.P. switch 8 is on.
- (3) — If the Zone causing the alarm has been programmed to conditional lockout, then that Zone will cause further alarms whenever the Zone is triggered, each alarm lasting only for the duration of the reset time.
- (4) — A break in the seal of Zone 5 (24 Hour) will latch the Zone 5 alarm L.E.D. on and cause a latching voltage to be output on the Z5 output pin. If D.I.P. switch 7 is on the BELL & SPKR output will also be turned on for the duration of the alarm time (set by reset control).
- (5) NOTE — A special feature of this panel is that ANY ZONE OTHER THAN THE ZONE OR ZONES THAT HAVE CAUSED AN ALARM CANNOT BE TRIGGERED UNTIL THE ALARM HAS FIRST RESET. This ensures that each Zone can cause individual alarms. Unlike other systems, an intruder cannot disable all Zones by triggering all Zones on one entry and then return after the alarm has reset and locked out all of the triggered Zones. (Where Zones have been programmed for lock-out to conform with noise pollution laws.)

#### SWITCHING FROM NIGHT TO DAY

- On switching from night to day modes the night L.E.D. is extinguished and the day L.E.D. is illuminated.
- If D.I.P. switch 9 is on and any of the zones have been triggered in the night mode then the alarm outputs (bell/siren and zone outputs) and alarm indicator L.E.D.'s will be reset.
- If D.I.P. switch 9 is off then the alarm L.E.D.'s and zone outputs remain in their present condition on switching to day mode and are reset on switching back to night mode.

- Only Zone 5 is rearmed ready for alarm in the day mode if the seal is broken.
- Bell and siren outputs are reset.

#### USER OPERATING INSTRUCTIONS

- (1) CHECK THAT GREEN MAINS ON AND VOLTAGE NORMAL INDICATORS ARE ON.
- (2) CHECK THAT ZONES REQUIRED FOR ALARM ARE SEALED (GREEN SEAL INDICATORS ON). ANY ZONE NOT REQUIRED FOR ALARM WILL BE AUTOMATICALLY ISOLATED BY LEAVING THAT ZONE UNSEALED BEFORE SWITCHING TO NIGHT. THE ISOLATED ZONE WILL BE AUTOMATICALLY ARMED WHEN THE ZONE IS SEALED.
- (3) SWITCH TO NIGHT MODE (RED NIGHT INDICATOR ON). EXIT VIA DELAY ZONES 1 OR 2 WITHIN 1 MIN., OR BY ZONES 3 OR 4 PROVIDED THEY ARE UNSEALED. SEAL THE EXIT PATH TO ARM THOSE ZONES.
- (4) ENTER VIA ZONE 1 ONLY, THEN THROUGH ZONE 2, IF NECESSARY.
- (5) NOTE ANY ZONE ALARM INDICATORS (RED) THAT ARE ON (ALARM IN THAT ZONE).
- (6) SWITCH TO DAY MODE (GREEN DAY INDICATOR ON).
- (7) TO RESET ZONE 5 (24 HR) SWITCH TO OPPOSITE MODE (e.g. DAY TO NIGHT) AND THEN BACK AGAIN IF REQUIRED.