Universal Expander Module - CE
995004
INSTALLATION MANUAL

Overview

The Universal Expander Module connects to a Model 3000/Access 4000 system <u>OR</u> a Model 2000 system, providing an additional 16 Zone inputs, 8 Auxiliary outputs and 2 Siren drivers.   Up to 5 Universal Expander modules can be installed in a Model 2000, and up to 64 in a 3000/4000 system.   (Note: Depends on Memory option fitted to Control module)

In a 3000 / Access 4000 system, the number of Zones or Auxiliaries can be further expanded:
-The 16 Zone expansion board increases the number of available Zones to 32.
  OR
-The 24 Auxiliary expansion board increases the number of Auxiliaries to 32.
  OR
-The 8 Relay expansion boards can add 8, 16 or 24 Relays to the Expander.
  OR
-The Lift Interface boards provide low-level interface to Lift control systems including Lift button feedback for 8, 16, 24 or 32 floors per Lift Car. Up to 64 floors may be controlled by using two consecutively numbered Expanders per Lift Car.
Expansion boards can be installed on standoffs in the existing enclosure (or externally when required) and connect to the Universal Expander Module via the supplied ribbon cable.

See page 8 for further details of the expansion options.

NOTE: Only one of these expansion options can be fitted at a time.

All devices can be connected with ease due to the provision of additional power connections for detector and/or siren power.

Important Notes:
1) The Model 2000 is only available in Australia and New Zealand.
2) The Universal Expander CANNOT be used in Model 2000+ systems. Use 2000 Expander Modules.
   (2000+ was discontinued in 1997)

Electrical Specifications

Power Supply Input:	Transformer Input Voltage:	240V AC -10% / +10%. 50 Hertz.
	Transformer Output Voltage:	16.5V AC. 50 Hertz.
	Current Consumption:	Maximum 500 milliAmps from 240V AC Source.
	Fuse Protection:	Separate AC mains input fuse. 500 milliAmps. M205 (20mm).
		(Units made prior to September 2000 have an 8AG -25mm fuse)
	PCB AC Input Voltage:	16 to 18V AC. 50 Hertz.
	Battery Capacity:	12V 6.5 AH. Sealed Lead Acid Battery.
	Battery Input Fuse:	5 Amperes.
Power Supply Output:	Current:	Total combined current required by devices connected to LAN "POS" and "DET+" must not exceed 1.2 Amperes.
	Fuse Protection:	Separate 2 Ampere fuses provided for: Siren1, Siren2, LAN Power & Detector Power.

<div align="center">ALWAYS REPLACE FUSES WITH THE SAME FUSE TYPE AND VALUE!</div>

NOTE: *See data supplied with detectors and output devices for actual current consumption of items connected to the module.*

Mechanical Specifications

Dimensions:	Length: 435 mm.	Width: 320 mm.	Depth: 112 mm.
Weight:	9.5 kg. (Includes mains transformer, battery and cover)		

Part No: 635004

Installation and Safety Instructions.

Expander Module Parts List

- Expander Module PCB mounted in metal box.
- Tamper switch bracket.
- Battery bracket.
- Installation Kit containing:
    - 8 x 8 Way plug-on screw terminals.
    - 2 x 6.3mm Tamper switch connectors.
    - 2 x 4.8mm Battery terminal connectors.
    - 10 x plastic "D" bungs. Must be fitted to all unused cable entry cutouts in the cover.
    - 1 x Special AC Power cord entry "D" bung.
    - 20 x 2k2 End-of-line resistors. (red-red-black-brown-brown). For 16 Zone Inputs plus 4 x spare.
    - 20 x 6k8 End-of-line resistors. (blue-grey-black-brown-brown) For 16 Zone Inputs plus 4 x spare.
    - Tamper switch.
    - 1 x 2 Amp Fuse. (Spare)
    - 1 x 500 milliAmp mains fuse. (Spare)
- Installation Manual. (This document)

In countries where the Mains input cable is not pre-fitted, the following parts are also supplied:
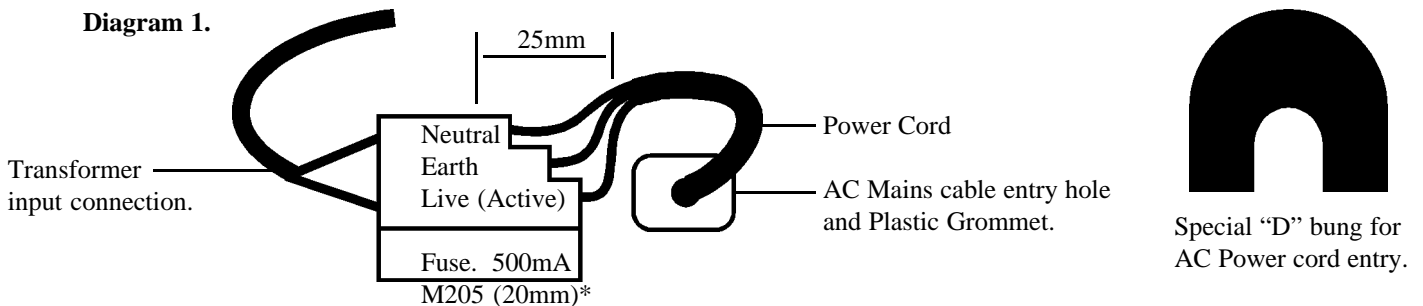   - 1 x Plastic Cable grommet.
    - Sufficient mounting screws to assemble all parts to the housing.

Electrical AC Mains Power connection.

In countries where the module is supplied without a mains power cord, a suitable mains power cord for connection to the 240V AC Mains supply must be installed by a suitably qualified electrician or technician.

1. Strip 30mm of the sheath from the end of the power cord. Trim 5mm from the ends of the Active and Neutral conductors so that the Earth conductor remains slightly longer.

2. Strip 5mm of insulation from each of the conductors. (Units manufactured prior to September 2000 used a terminal block with no wire protection leaf and must have conductive sleeves fitted to the exposed ends of the conductors)

3. Feed at least 150mm of the power cord through the AC mains cable entry hole from the rear (underside) of the chassis.

4. Terminate the power cord in the terminal and fuse block as illustrated in Diagram 1 below. (Note that the Active wire is always connected into the termination nearest to the fuse)

5. Determine the appropriate length of power cord between the terminal block and the cable entry hole. (Approx. 100mm) Working from the rear of the chassis, fit the plastic grommet (supplied) around the power cord and apply pressure to both sides of the grommet to clamp the cable. The grommet can now be inserted into the AC mains cable entry hole.

6. When fitting the cover, ensure that the special AC Powercord "D" bung is fitted to the cable entry cutout in the cover where the AC Powercord enters the enclosure. Standard "D" bungs must be fitted to all other unused cable entry cutouts.

IMPORTANT NOTE: An AC Mains socket-outlet shall be installed near the equipment and shall be easily accessible for connection of the mains power cord.

Diagram 1.

25mm

Neutral
Earth
Live (Active)

Fuse. 500mA
M205 (20mm)*

Transformer input connection.

Power Cord

AC Mains cable entry hole and Plastic Grommet.

Special "D" bung for AC Power cord entry.

*Note: Units manufactured prior to September 2000 have terminal blocks that utilise an 8AG (25mm) fuse.

Mounting the Unit.   See Diagram 2.

1. Installation environment should be maintained at a temperature of 0° to 40° Celsius and 15% to 85% Relative humidity (non-condensing)
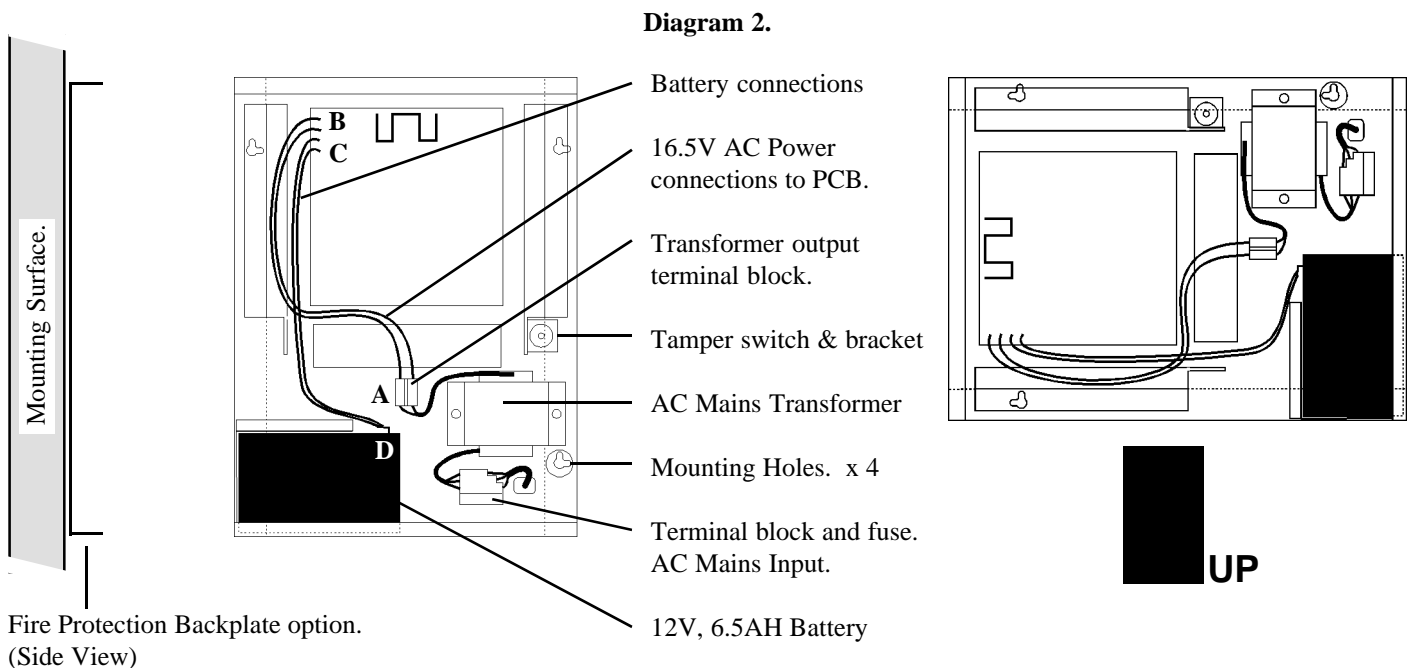
2. CE Universal Expander Modules are supplied in metal boxes which must be secured to a flat, vertical surface using fasteners through the four "keyhole" mounting holes in the chassis.

3. When mounting this product onto flammable surfaces, a fire protection backplate MUST BE INSTALLED. The mounting holes in the backplate align with the mounting holes in the chassis so no additional mounting hardware is required. Standard "D" bungs must be fitted to all unused cable entry cutouts.
   This backplate is available from your distributor. Please quote part number 925010.

4. The tamper switch bracket must be positioned through one of the slots in either side of the chassis and under the base of the chassis, before the chassis is secured to the wall.

5. Orientation of the enclosure MUST be as per either of the illustrations in Diagram 2.

Connecting Power to the PCB.   See Diagram 2 below.

1. Measure and cut two appropriate lengths of insulated cable to connect between the AC mains transformer output terminal block (A) and the "AC" Input connections on the PCB (B).

2. Strip 5mm of insulation from both ends of the cables and terminate into the transformer output terminal block and then into the "AC" Input connections on the PCB. The cables may be routed underneath the chassis to avoid interference with other cables.

Connecting the Battery to the PCB.   See Diagram 2 below.

1. Measure and cut two appropriate lengths of insulated cable to connect between the "+B" and "-B" connections on the PCB (C) and the Battery terminals (D).

2. Strip 5mm of insulation from both ends of the cables and terminate into the "+B" and "-B" connections on the PCB & then into the 4.8mm Battery Terminal connectors supplied in the installation kit. The cables may be routed underneath the chassis to avoid interference with other cables.

Diagram 2.

Battery connections

16.5V AC Power connections to PCB.

Transformer output terminal block.

Tamper switch & bracket

AC Mains Transformer

Mounting Holes. x 4

Terminal block and fuse. AC Mains Input.

12V, 6.5AH Battery

Mounting Surface.

Fire Protection Backplate option. (Side View)

UP

Fitting the Cover.

In order to comply with regulations, all twelve (12) of the screws provided to fix the cover to the chassis must be tightly secured. Three screws are located on each of the long sides, and at each end of the top of the cover as illustrated in Diagram 3 opposite.
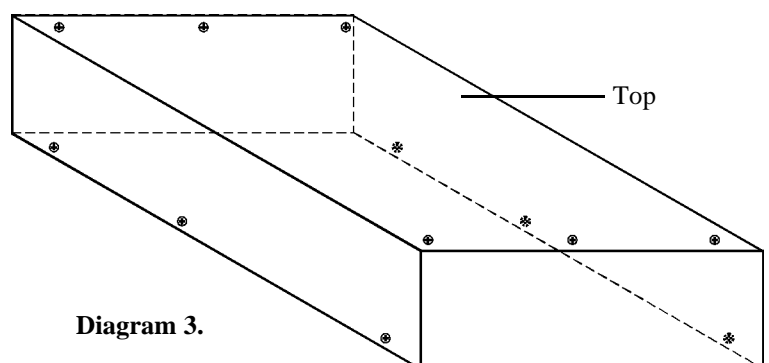
Diagram 3.

Top

UNIVERSAL EXPANDER PCB

DIPswitches:

SW2. 3/4000:   Module number
                (See page 5)
         2000:   Module number
                  and options.
                  (See pages 5 & 9)

SW1.   3/4000:   Options.
         (See pages 8 or 9)
         2000:   LAN Key.

REC (LED1). LAN Data Receive / Poll.
                  & FAULT DIAGNOSIS
XMIT (LED2). LAN Data Transmit / Clock
                  & FAULT DIAGNOSIS
                  See page 7 for details.

T4 - T7.
**Zone Input
connections.**

JP2. Zones 9-16 External.
(3000/4000 Only) Removed if
zones 9-16 are monitored
externally via Lift Interface board.
(DIPSwitch SW1, Switch 6 is On.)

JP5. Zones 1-8 External.
(3000/4000 Only) Removed if
zones 1-8 are monitored externally
via Lift Interface board.
(DIPSwitch SW1, Switch 5 is On.)

JP3. LAN Termination.
Fitted if unit is one of the two
furthest modules from the Control
Module or a LAN Isolator.

J1. Expansion Header.
(3000/4000 Only) Expansion
option or Lift Interface board/s
connected via ribbon cable
supplied with the unit.
See page 8 for details.

JP4. Auxiliaries 1-8 External.
(3/4000 Only)
Normally in "EXP" position.
Moved to "LFT" position if
Auxiliaries 1-8 are provided
externally via Lift Interface board.

T8. Auxiliary outputs.
Auxiliaries 1 to 8.
"Open Collector" outputs.

T103. Detector Power.
Fuse protected Power Supply
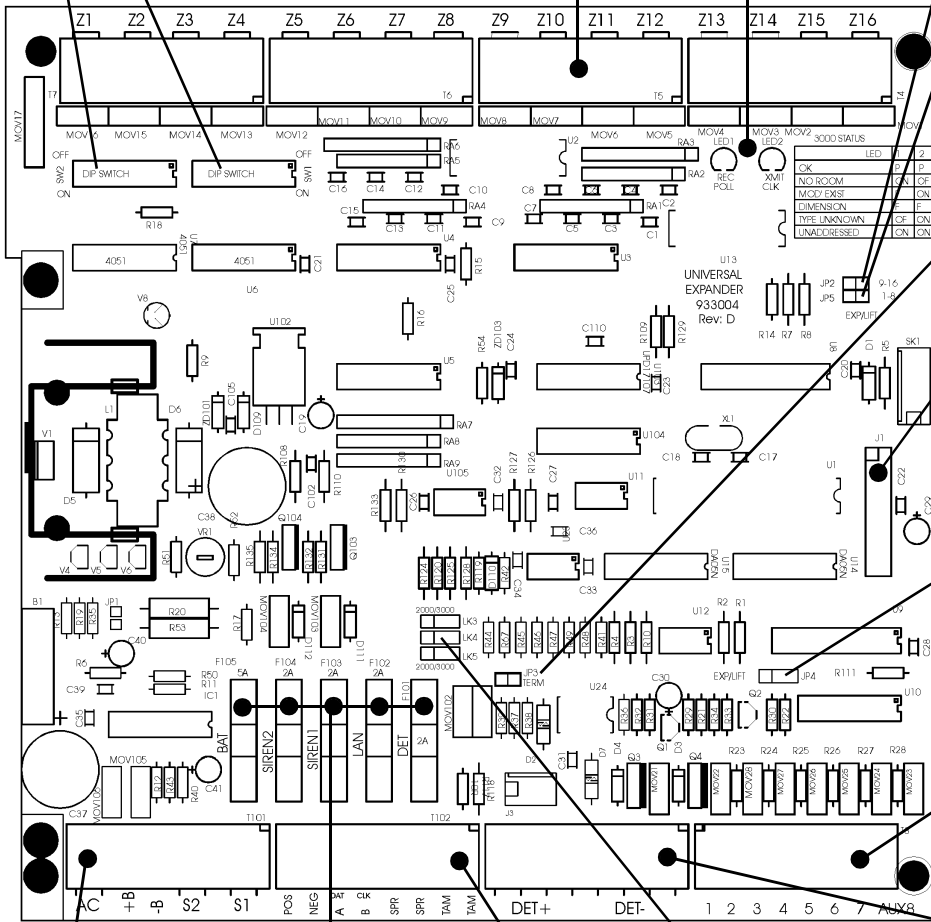output for +12V Detector Power.

LK3 - LK5. LAN System select.
All on "3000" for 3000/Access 4000.
All on "2000" for 2000 systems. (Aust & NZ only)

F101 to F105. FUSES M205.
REPLACE WITH FAST BLOW
FUSES OF THE SPECIFIED
VALUE ONLY.

T102. LAN & Tamper Switch Connections.
POS: Connect <u>outgoing</u> LAN +ve to power subsequent
modules if required.
NEG: Connect LAN Common (-VE)
LAN A/DATA: LAN Data A OR DATA connection.
LAN B/CLOCK: LAN Data B OR CLOCK connection.
SPR: "Spare". Connect incoming LAN +ve.
TAM: Connections for Tamper Switch (Supplied).
                  No End-of-Line resistors required. Normally Open switch.

T101. Plug pack, Battery & Siren Connections.
AC   16 to 18 V AC input from transformer.
+B   To +ve terminal of 12V 6.5AH Battery.
-B   To -ve terminal of 12V 6.5AH Battery.
S2   To external 8 Ohm Siren speaker.
S1   To internal 8 Ohm Siren speaker.

Module Numbering

The Expander Module number is set using DIPswitches on SW2.
The Module number equals $n + 1$, where n is the binary number set on the DIPswitches.
DIPSwitches 1 to 7 are used for Model 3000/Access 4000.
DIPSwitches 1 to 3 only are used for Model 2000. (Australia & New Zealand only)

Module No:	DIPswitch: 1	2	3	4	5	6	7
	Binary value: 1	2	4	8	16	32	64
1	off	off	off	off	off	off	off
2	ON	off	off	off	off	off	off
3	off	ON	off	off	off	off	off
4	ON	ON	off	off	off	off	off
5	off	off	ON	off	off	off	off
Limit of 2000 Expander Module Numbers.							
6	ON	off	ON	off	off	off	off
7	off	ON	ON	off	off	off	off
8	ON	ON	ON	off	off	off	off
9	off	off	off	ON	off	off	off
10	ON	off	off	ON	off	off	off
11	off	ON	off	ON	off	off	off
12	ON	ON	off	ON	off	off	off
13	off	off	ON	ON	off	off	off
14	ON	off	ON	ON	off	off	off
15	off	ON	ON	ON	off	off	off
16	ON	ON	ON	ON	off	off	off
through to							
64	ON	ON	ON	ON	ON	ON	off
...99	off	ON	off	off	off	ON	ON

IMPORTANT NOTE:
Although memory structure will allow for 99 of any Module type, current memory size and configuration options limit Model 3000/Access4000 Expander Module numbers to 64 or less depending on Memory size fitted and Memory configuration selected.

Zone Input Wiring

ZONE INPUT WIRING. NORMALLY CLOSED ALARM CONTACTS.

NORMALLY OPEN ALARM CONTACTS.
Model 3000/Access 4000. Wired in exactly the same manner as above. When programming the Zone Input, however, the option to "**S**wap Seal and Alarm conditions" must be set to [Y]es. [MENU], 7, 0.
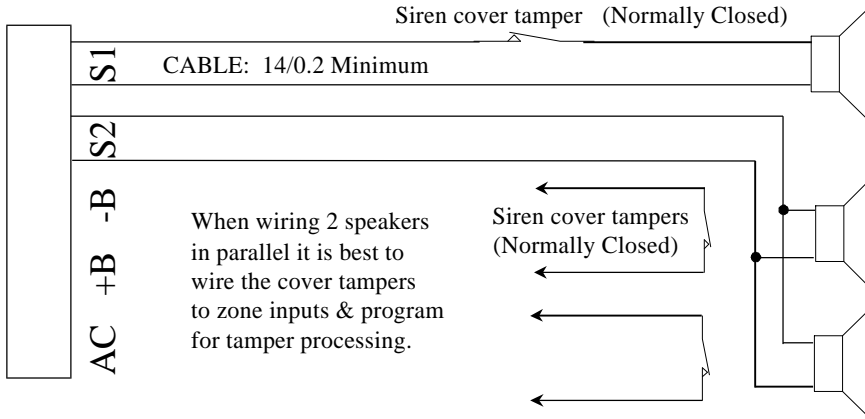e.g.

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E01:Z01      S  I  X  S  R  A  N  T
Options ->   n  n  n  Y  n  n  n  n
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Model 2000. (Australia and New Zealand only) See page 8-13 of the Model 2000 Installers Manual for wiring method.
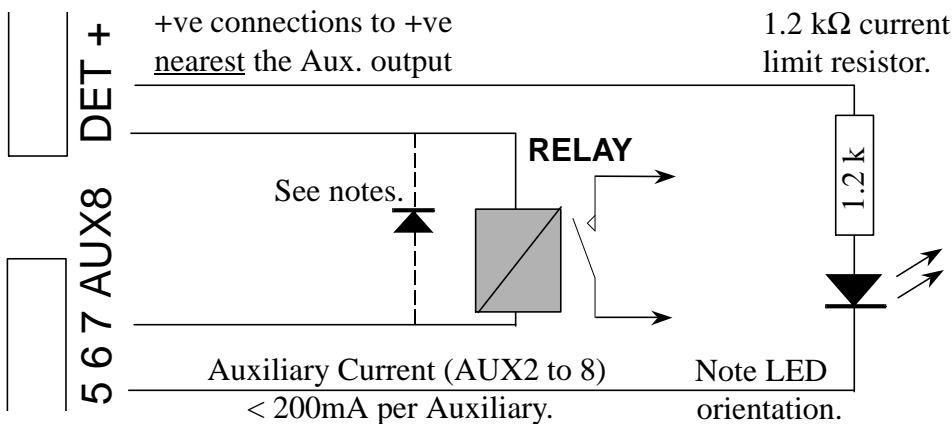
Siren Wiring

Maximum of two 8 Ohm Siren speakers may be connected to each siren driver, wired in parallel. Normally Closed Siren cover Tampers may be wired in series with the speaker cable. This method utilizes the siren speaker circuit monitoring. Siren tamper input/s should be disabled if siren/s not connected.

Siren cover tamper   (Normally Closed)

S1 CABLE: 14/0.2 Minimum

S2

-B

+B   When wiring 2 speakers   Siren cover tampers
          in parallel it is best to   (Normally Closed)
          wire the cover tampers
AC   to zone inputs & program
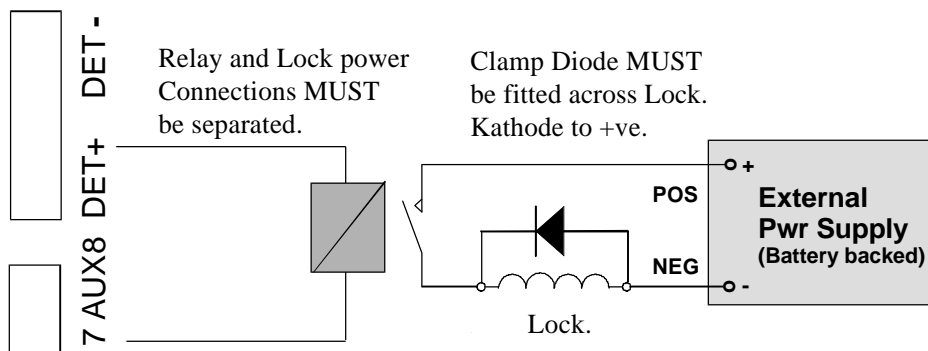   for tamper processing.

Auxiliary Output Wiring

- Auxiliaries 1 & 2 can switch up to 500mA continuous, and are suitable for inductive loads provided that a clamp diode is fitted across the load as shown below. (Cathode (bar) to +ve)
- Max current on any other individual Auxiliary must be less than 200mA.
- Total current drawn by Auxiliaries + LAN + Detectors must be less than 1.2 Amps.
- When an external power supply is used to power auxiliary devices, a good common Negative connection MUST exist between the power supply and the module.
- Clamp diode should be fitted across inductive loads. Cathode (bar) to +ve.

DET +   +ve connections to +ve   1.2 kΩ current
            nearest the Aux. output   limit resistor.

                                RELAY   **1.2 k**

AUX8   See notes.

5 6 7   Auxiliary Current (AUX2 to 8)   Note LED
            < 200mA per Auxiliary.   orientation.

Locks are activated via a relay. External power supply is used for lock power to prevent voltage spikes reaching the equipment, provide longer battery backup & minimise the possibility of earth loops.

DET -   Relay and Lock power   Clamp Diode MUST
            Connections MUST   be fitted across Lock.
            be separated.   Kathode to +ve.

DET+   **+**
                                    POS   **External**
AUX8   **Pwr Supply**
                                    NEG   **(Battery backed)**
7   **-**
                        Lock.

Model 3000 / ACCESS 4000

See "Model 2000 Supplement" for LAN wiring, DIPswitch settings & Fault LED details when used on a Model 2000 system. (Australia and New Zealand only)
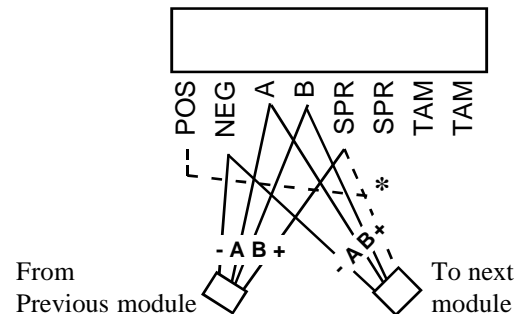
LAN Wiring - 3000 / Access 4000

- The POS terminal may be used to provide power to LCD Terminals, etc. in the vicinity of the Expander module, but note that this terminal must not be connected to the POS terminal on other Expanders, Control module or Power Supplies.
- If required, the LAN to subsequent Modules may derive +12V from the incoming LAN cable via the "SPARE" terminal.
  * See diagram below.
- Current drawn from LAN POS and DET+ must not exceed 1.2 Amps.

The LAN is connected using twisted pair cable. One pair is used for Data A & B, and the other pair is used for POS & NEG.

Links: LK3, LK4 & LK5 MUST be set to "3000"

JP3 (LAN Termination) is fitted if unit is one of the two furthest modules from the Control Module or a LAN Isolator. (See "Model 3000/4000 Installation manual" or "LAN Installation & Troubleshooting" for more details.)

From Previous module

To next module

POS NEG A B SPR SPR TAM TAM

- A B +

A B +

Expander Module Fault LEDs - 3000 / Access 4000

During normal operation, the REC & XMIT LEDs indicate LAN activity. At power-up, they also aid with the diagnosis of possible faults. The table below describes fault LED conditions and the suggested course of action to remedy any fault which may occur.

REC	XMIT	EXPLANATION / REMEDY
ON	ON	Module is un-addressed.
OFF	ON	Module type unknown. Control Module Firmware upgrade required.
Flash	ON	Duplicate Module. This module number already in use by a module of the same type.
Flash	Flash	Module number selected is too big for Control Module RAM size. Select a lower Module number.
ON	OFF	Too many modules on Network for Control Module RAM size. (32k = 16 Modules, 128k = 128 & 512k = 250.)

EXPANDER TYPE SELECTION - 3000 / Access 4000

In Model 3000 and Access 4000 systems V2 or later, the Universal Expander module must be configured as an "E" type or "B" type Expander to allow for more efficient use of Memory. The "type" is selected with DIPSwitch 1 on SW1 as follows:
Off = "**B**" type Expander. (16 to 32 Zones)   On = "**E**" type Expander. (16 Zones only)

A Zone Expander that can have from 16 to 32 Zones, and from 8 to 32 Auxiliaries is designated a "**B**" type module. (**B**ig Expander). The "**E**" type Module refers to the same physical Zone Expander product, but limited to the basic 16 Zones and up to 16 Auxiliaries. I.e. The 16 Zone Expansion board cannot be used, and only 8 additional Auxiliaries can be used.

If an Expander installation requiring only up to 16 zones initially may be expanded to more than 16 zones at a later date, it is recommended to make the Module a "B" type to allow for future expansion. (NOTE: This is not applicable to V1 systems, where all Expanders are "E" type and can be used with 16 or 32 Zones fitted. S1 on DIPswitch 1 must be left OFF in 3000 V1 systems.)

IMPORTANT NOTE:

When a 16 Zone Expander board is NOT fitted to a Universal Expander that is configured as a "B" type, Zones 17 to 32 may appear as being in the Alarm or Tamper state when viewed via the Test menu. (MENU, 4, 1)
THIS WILL NOT AFFECT SYSTEM OPERATION. These zones will not physically exist on the module, and would therefore not be assigned to any Areas, or programmed to perform any function. The Zones are processed in this way to provide protection against unauthorized removal of a 16 Zone Expander, in addition to the protection provided by the cabinet tamper switch.

Siren Operation

Expander Siren numbers will control sirens on both the "B" and "E" type Expanders. i.e. S00 = Control Module Siren; S01 = Sirens on E01 and B01; S02 = Sirens on E02 and B02; S03 = Sirens on E03 and B03, etc.

DIPSwitch settings - 3000 / Access 4000

SW1 1   Expander type. See details on page 7.

      2   Input Debounce time.   Off = 400mS (normal)   On = 40mS (fast)

      3   AC Mains fail delay time.   Off = 20 seconds   On = 255 seconds

      4   On = Lift Mode. Set to On when Lift Interface board/s connected.

      5   Zones 1 to 8 External. (In Lift mode) Link JP5 must also be removed.

      6   Zones 9 to 16 External. (In Lift mode) Link JP2 must also be removed.

      7   Not used.

      8   Not used.

SW2   Module number. See details on page 5.

Expansion Options   (see note in Overview page 1)

16 Zone Expander board. 995006. Provides an additional 16 Zone Inputs when the Universal Expander is configured as a "B" type (Big) Expander. The board is installed on the two mounting posts provided using the ribbon cable supplied.

<div align="center">**OR**</div>

24 Auxiliary Expander board. 995007. Provides an additional 24 Auxiliary Outputs. Universal Expander must be configured as a "B" type (Big) Expander if Auxiliaries 17 to 32 are to be used. The board is installed on the two mounting posts provided using the ribbon cable supplied.

<div align="center">**OR**</div>

8 Relay Expander board. 995082E. Provides 8, 16 or 24 Relay Outputs. Universal Expander must be configured as a "B" type (Big) Expander if 2 or 3 Relay Expander boards are connected. One board can be installed on the two mounting posts provided using the ribbon cable supplied. The 44cm Relay extension cable (P/N: 605019) is used to connect one or two additional Relay boards mounted in another enclosure.

<div align="center">**OR**</div>

Lift Interface board. 994020 & 994020HV. (Access 4000 systems ONLY) Provides 8 to 32 Relay outputs and Opto-isolated Zone Inputs to provide an interface for control and monitoring of User access to Lift floors. Each board controls up to 8 floors and up to 4 boards can be connected to a Universal Expander via the Lift Interface Extension Cable (P/N: 605020). The Lift Interface board/s are typically mounted in a separate enclosure adjacent to the Universal Expander Module. 994020 16-48VDC Button Voltage, 994020HV 60-120VDC Button Voltage.

Reporting - 3000 / Access 4000

Reporting with most Contact ID maps will treat the Mini Expander, Exp32 and Exp16 as the same. (With the exception of the SIMSII map, which identifies <u>all</u> Module types) This means that care needs to be taken in a reporting system that the same module number is not used if you want unique reporting.

E.g. B01, B02, E03, B04, M05, E06, etc. ensures that all zones are reported individually.

Installing modules B01, E01 and M01, will mean that only zones 17 to 32 on Expander B01 will be reported uniquely. Expander 1, Zones 1 to 8 will represent Zones 1 to 8 on all three of the modules and Zones 9 to 16 will represent those Zones on both B01 and E01.

In SIMSII mapping, the following type numbers will apply:

      Type 3=   "B" type Expanders.

      Type 6=   "M" type Expanders. (8 Zone Mini Expanders)

      Type 7=   "E" type Expanders.