Integriti 8 - 32 Zone LAN Expander Module Kit

P/N: 996005PCB&K   For Rev. B PCB.

INSTALLATION MANUAL

Overview

The Integriti 8 Zone Expander Module provides an additional 8 Zone inputs, 2 Auxiliary outputs and 2 Siren drivers.
The Module is supplied as a PCB and Installation Kit for installation in a suitable Integriti enclosure.
The number of Zones or Auxiliaries can be further expanded using UniBus expander boards.
See page 8 for details of the expansion options.

The 8-Zone Expander is one type of "Wired Zone Expander" Module in the Integriti hardware platform.
Up to 99 Wired Zone Expander Modules can be installed on an Integriti Controller. The number of 8-Zone Expander Module
Zone Inputs that can be utilized in a single system will depend on the licensing options.

IMPORTANT NOTES:

1) **This Revision 2 Installation Manual is for Revision B PCBs only.**
    For Revision A PCBs please refer to Revision 1 of this manual available from the Inner Range Support Web page.
    The PCB Part Number and Revision is printed at the top centre and bottom right of the PCB. e.g. "936005_B".
    See PCB layout item 16 on page 3.

2) **Integriti 8-Zone Expander firmware in Revision B PCBs must be V1.30 or later. The firmware is installed in the**
    factory, but if the firmware is changed in the field, do NOT use any version prior to V1.30.
    Downgrading the firmware to an earlier version may cause damage to Siren speakers.

3) **The Integriti 8 Zone LAN Expander Module is identified on the Integriti Controller LAN as a "Wired Expander"**
    Module (E).

4) **Integriti Software and Controller Compatability. Latest Integriti Software and Controller Firmware is recommended.**
   **Firmware prior to V2.5.2 is not advised.**

Parts List

-   Integriti 8 Zone Expander Module PCB.
-   Installation Manual. (This document)
-   Installation Kit containing:

- 6 x Metal M3 PCB Mounting Clips.	- 1 x Cable; Chassis Earth to PCB.
- 6 x M3x10mm screws.	- 1 x 6.3mm QC connector (Spare)
- 3 x 8 Way plug-on screw terminals.	- 2 x 4 Way plug-on screw terminals.
- 1 x 6 Way plug-on screw terminals.	- 1 x 2 Way plug-on screw terminals.

-   10 x 2k2 End-of-line resistors. (red-red-black-brown-brown). For 8 Zone Inputs plus 2 x spare.
-   10 x 6k8 End-of-line resistors. (blue-grey-black-brown-brown) For 8 Zone Inputs plus 2 x spare.

Installing the Module

Installation environment should be maintained at a temperature of 0º to 50º Celsius and 15% to 85% Relative humidity (non-condensing)

1   The Module can be mounted in a suitable metal enclosure using the PCB standoffs provided, or other suitable PCB standoffs.
The enclosure should be installed in a suitable and convenient location according to the instructions supplied with the enclosure.

2.   If installed in an Inner Range metal enclosure, the "Normally Closed" Tamper Switch is inserted into the hole provided in the Tamper switch bracket. The Tamper Switch bracket must then be positioned in either of the two slots provided in the chassis <u>before</u> the chassis is mounted on the wall.
The Tamper switch is wired between the "TAMP" and "0V" terminals on T1.
(Switch is Open circuit when plunger depressed)

3.   The Module Number is set using DIPswitches 1 to 7. *See table below.*
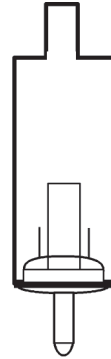
Assembled Tamper switch
in the Tamper bracket

LINKS.

No Link Options are currently available on this Module.

Module Numbering

SW1. DIPswitches 1 to 7:   Set the Expander Module number. *See table below.*
SW1. DIPswitch 8:   Not currently used. Must be set to OFF.

The Module number equals $n + 1$, where n is the binary number set on the DIPswitches.

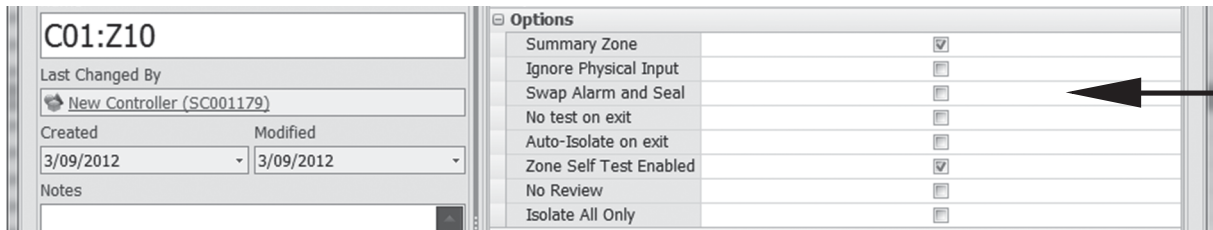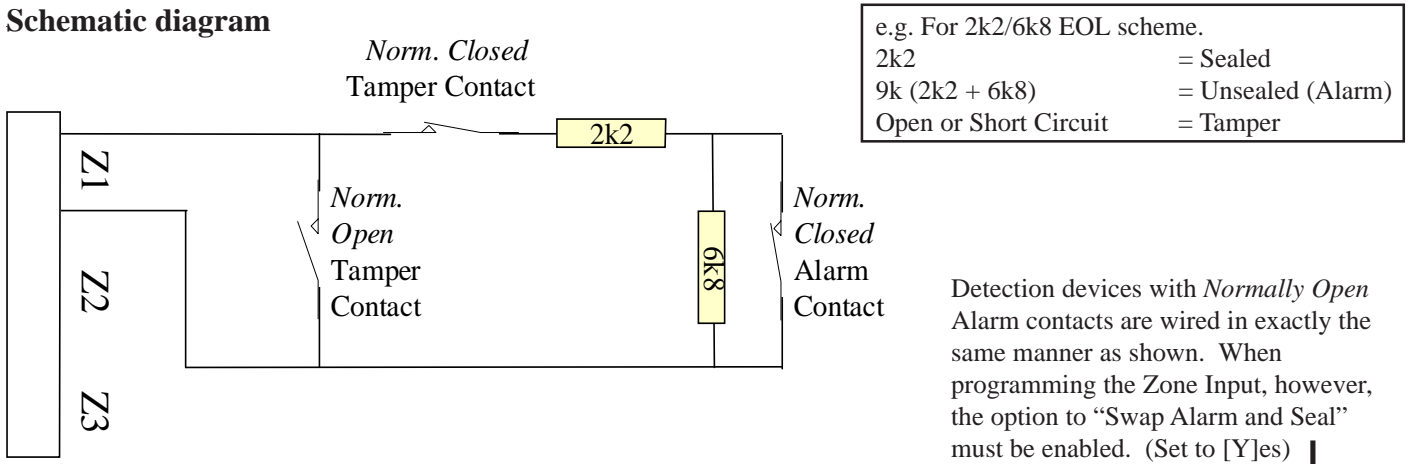| Module No:	DIPswitch: 1	2	3	4	5	6	7	8
	Binary value: 1	2	4	8	16	32	64	n/a
1	off	off	off	off	off	off	off	Always Off.
2	ON	off	off	off	off	off	off	
3	off	ON	off	off	off	off	off	
4	ON	ON	off	off	off	off	off	
5	off	off	ON	off	off	off	off	
6	ON	off	ON	off	off	off	off	
7	off	ON	ON	off	off	off	off	
8	ON	ON	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	

INTEGRITI 8-ZONE LAN EXPANDER PCB
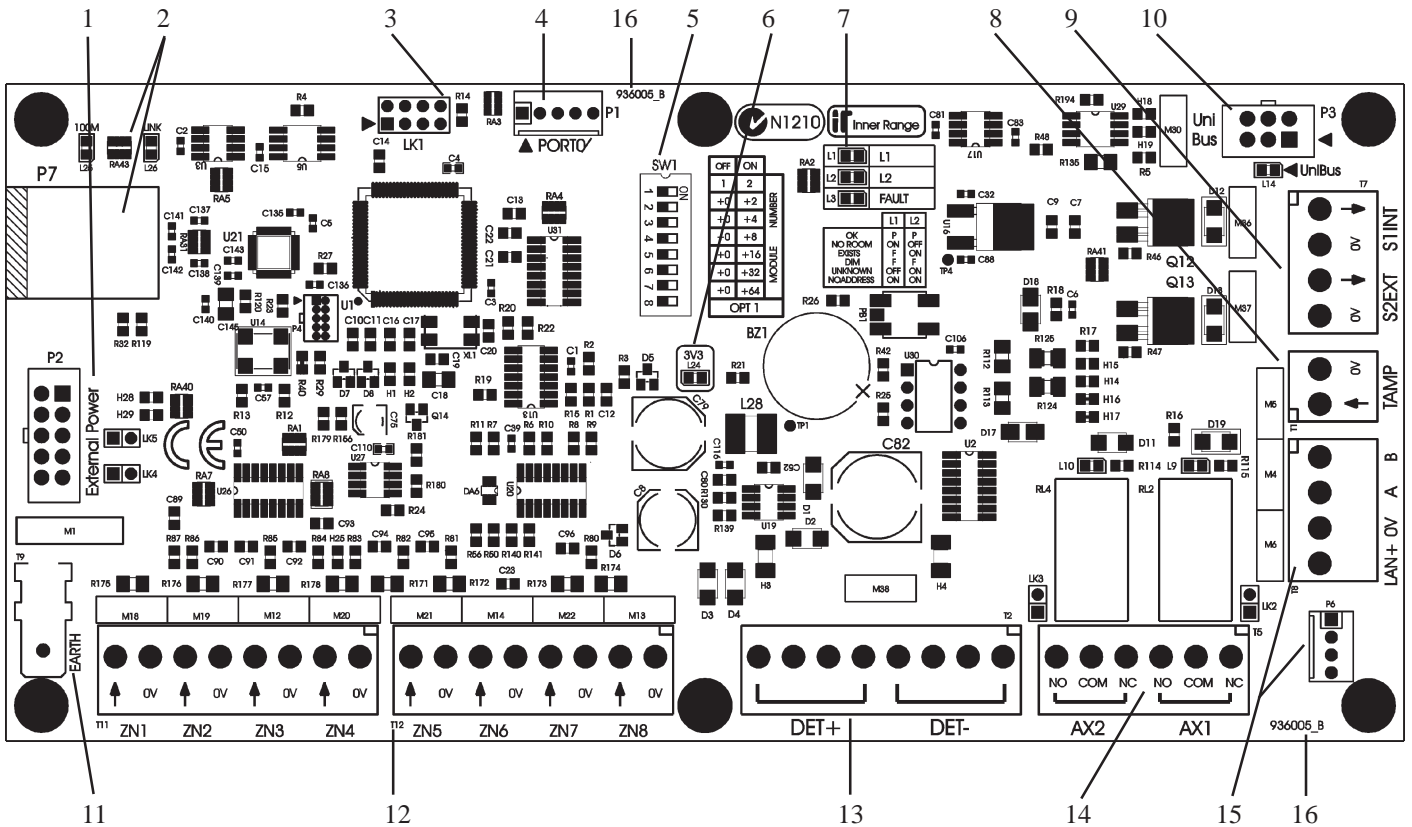
1.   **P2** External Power Supply connection. Connect to P2 on an appropriate Integriti Power Supply using the cable provided with the Power Supply.

2.   **P7 / L25 / L26**   Ethernet Connector & status LEDs. Not Fitted.

3/4   **LK1 / Port 0.** Not Fitted (Factory Only).

5.   **DIPswitch SW1.** Module number. *See page 2.*

6.   **L24.**   3.3V Microprocessor supply is present.

7.   **L1 / L2 / L3**   **L1** LAN Data Receive / Fault indication.   **L2** LAN Data Transmit / Fault indication.
     L3 Fault.   *See details and table on page 7.*

8.   **T1. Tamper Switch Connection.** Connections for Normally Open Tamper Switch. No End-of-Line resistors required.
     See "Installing the Module" on Page 2.

9.   **T7. Siren Connections.** *See page 5.*   S1INT: To internal 8 Ohm Siren speaker.
                                                     S2EXT: To external 8 Ohm Siren speaker.

10.   **P3 / L14. UniBus.** Connector & Status LED for local UniBus boards.
      e.g. UniBus 8 Zone Expander or 8 Auxiliary Expander. *See pages 7 and 8.*

11.   **T9.   Earth Terminal.** Connect to chassis using earth wire supplied in the installation kit.

12   **T11 / T12. Zone Input connections.** *See Page 4.*

13.   **T18. Detector Power.** Power Supply output for +12V Detector Power. *See pages 4 and 5.*

14.   **T5 / L9 / L10.**   **Auxiliary outputs.**   T5   Aux1 and Aux 2 Relay output connections.
      (See page 5)   L9 / L10   Auxiliary On indication.

15.   **T8 / P6. RS485 LAN Connections.** *See page 6.*
      POS: Connect LAN +ve to power the Module or to power subsequent modules if required.
      NEG: Connect LAN Common 0V (-VE).
      A: LAN Data A connection.
      B: LAN Data B connection.
      Note: P6 provides a temporary LCD Terminal connection via the LAN Ancillary Cable (P/N: 993028) for commisioning, fault finding, etc.

16.   PCB Part Number and Revision. *See Important Note 1 on Page 1.*   936005_A = Rev. A.   936005_B = Rev. B.
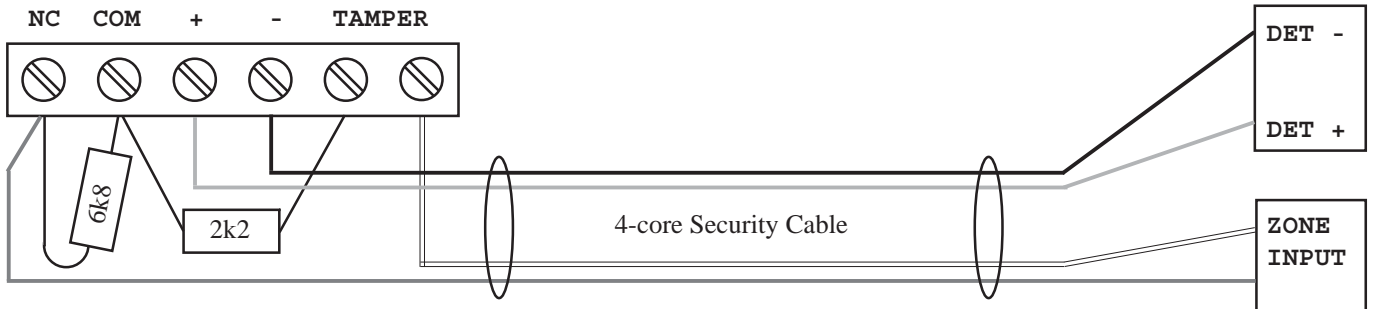
ZONE INPUT WIRING

The End-of-line Resistors must be installed on the detection device. Typical Detection devices with *Normally Closed* Alarm contacts and *Normally Closed* **OR** *Normally Open* Tamper Contacts are wired as follows:

Schematic diagram

e.g. For 2k2/6k8 EOL scheme.

2k2	= Sealed
9k (2k2 + 6k8)	= Unsealed (Alarm)
Open or Short Circuit	= Tamper

Detection devices with *Normally Open* Alarm contacts are wired in exactly the same manner as shown. When programming the Zone Input, however, the option to "Swap Alarm and Seal" must be enabled. (Set to [Y]es)

Example. PIR Movement Detector

Note that the connector terminals may be arranged and labelled differently to the example shown above.
Please check the manufacturers documentation.
The table opposite provides details of some of the more common Detector terminal labelling.
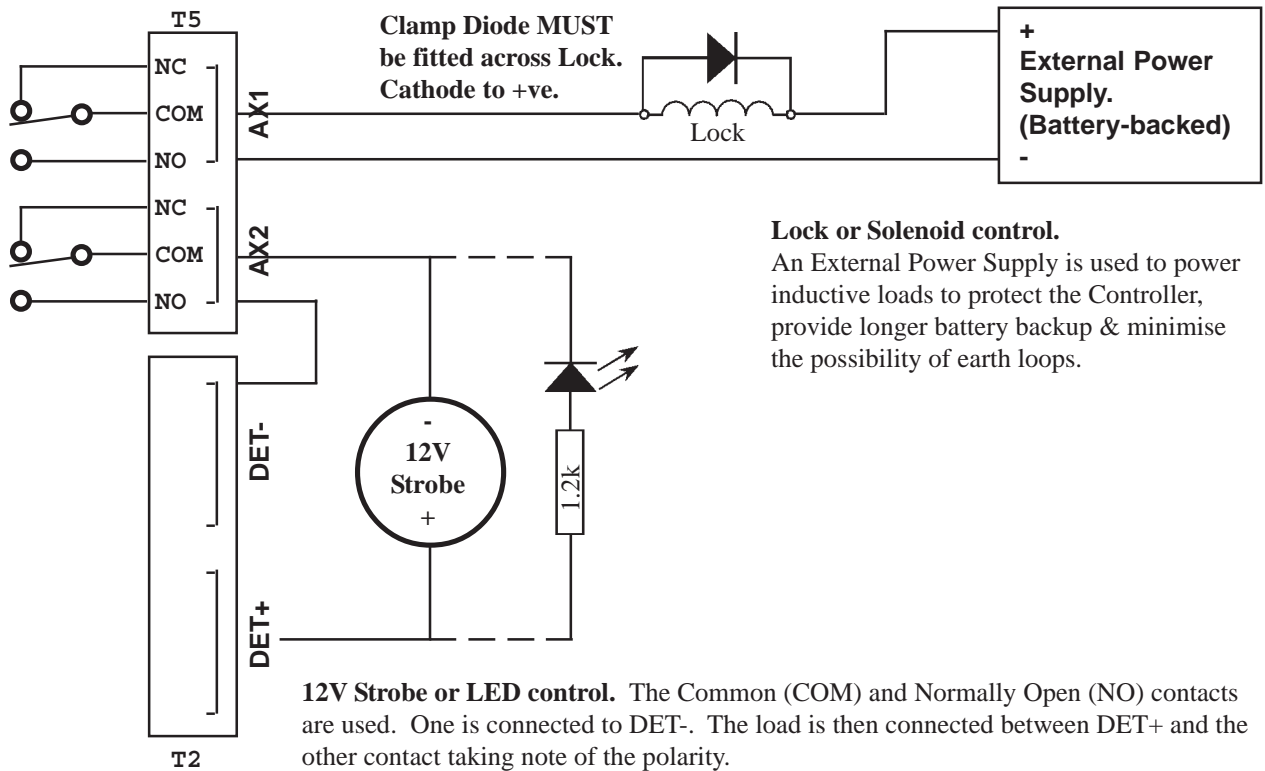
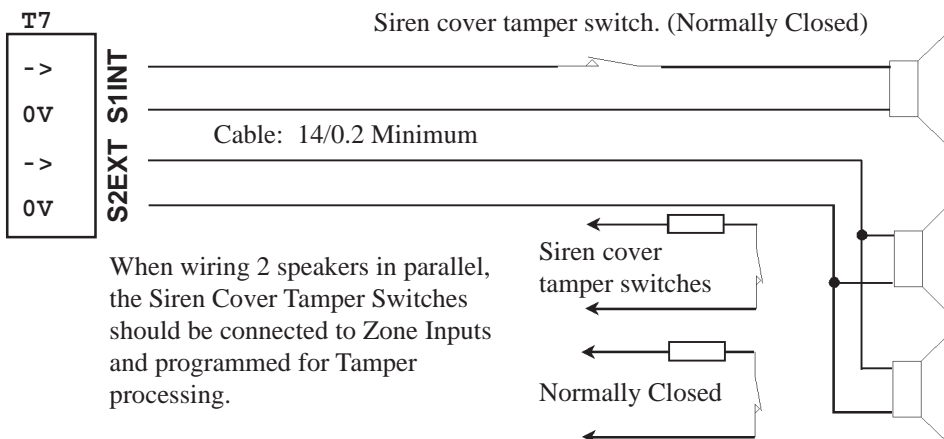| Label in example	Alternative labels	Description
NC COM	N/C ALARM NC RELAY NC	Normally Closed Alarm output contacts
+ -	+ 12V DC -	Power Supply Input
TAMPER	TAMPER NC 24 HR	Normally Closed Tamper Contacts

Example. Reed Switch
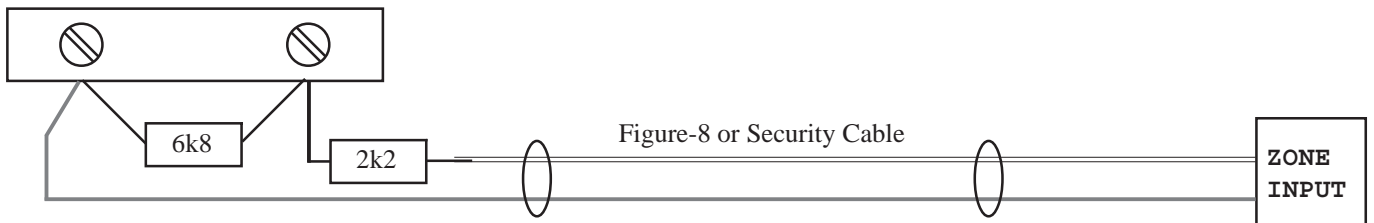
AUXILIARY WIRING

- Auxiliary Relay Outputs AX1 and AX2 can switch up to 2A at 30Volts DC. It is NOT recomended to switch AC loads.

- A separate external power supply must be used for the auxiliary devices if the combined current draw by the Auxiliary devices + LAN current + Detectors + Other peripheral expansion boards exceeds the current available from the normal Power Supply source. e.g. The connected Integriti Smart Power Supply or the LAN.
  See Power Supply specifications for details.

- If an Inductive load (eg door lock) is connected then a Clamp diode should be fitted across the load. Cathode (bar) to +ve. (see diagram below)

Clamp Diode MUST be fitted across Lock. Cathode to +ve.

Lock or Solenoid control.
An External Power Supply is used to power inductive loads to protect the Controller, provide longer battery backup & minimise the possibility of earth loops.

12V Strobe or LED control. The Common (COM) and Normally Open (NO) contacts are used. One is connected to DET-. The load is then connected between DET+ and the other contact taking note of the polarity.

SIREN WIRING

A maximum of two 8 Ohm Siren speakers may be connected to each siren output, wired in parallel. Normally Closed Siren cover Tamper switches may be wired in series with the speaker cable. This method utilizes the siren speaker circuit monitoring.

Siren cover tamper switch. (Normally Closed)

Cable: 14/0.2 Minimum

When wiring 2 speakers in parallel, the Siren Cover Tamper Switches should be connected to Zone Inputs and programmed for Tamper processing.

Siren cover tamper switches

Normally Closed

NOTE:
If high-impedance devices such as Piezo Siren speakers are used, a 6k8 Resistor should be fitted across the Piezo Siren device terminals to Seal the "Siren Tamper" System Input.

LAN Wiring

MODULE POWERED FROM INTEGRITI EXTERNAL POWER SUPPLY (Recommended)

The LAN is connected using twisted pair cable.
e.g. RS485 / RS422 data cable or Category 5 cable.
One pair is used for <u>Data A & B</u>, and the other pair is used for <u>POS & NEG</u>.

- If the Module has a local Power Supply connected, the LAN+ terminal may be used to provide power to LCD Terminals, etc. in the vicinity of the Expander module. However, if used in this way, note that this terminal must not be connected to the POS terminal on other Expanders, Control module, Power Supplies or any other Module where LAN+ is a power source.

- If required, the LAN to subsequent Modules may derive +12V from the incoming LAN cable.
  * See diagram.

- Current drawn from LAN POS and DET+ must not exceed the limit of the Power Supply source.

LAN+ 0V A   B   TAMP

From Previous   To next
LAN module   LAN module
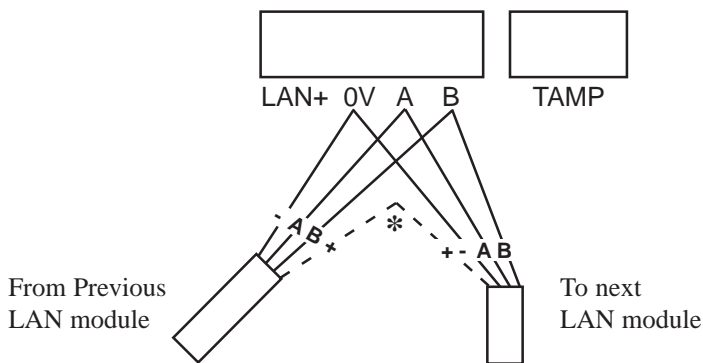
MODULE POWERED FROM THE LAN

NOTES:
1.   * If both "LAN +" wires provide a Power supply source, the one that is not required to power the Module must not be connected.

2.   If UniBus boards are to be connected to this Module, an external Power Supply must be used.

3.   Ensure that adequate power supply current and backup battery capacity are available from the power supply source when powering the Module from LAN+.

LAN+ 0V A   B   TAMP 0V

See Note 1. *

From Previous   To next
LAN module   LAN module
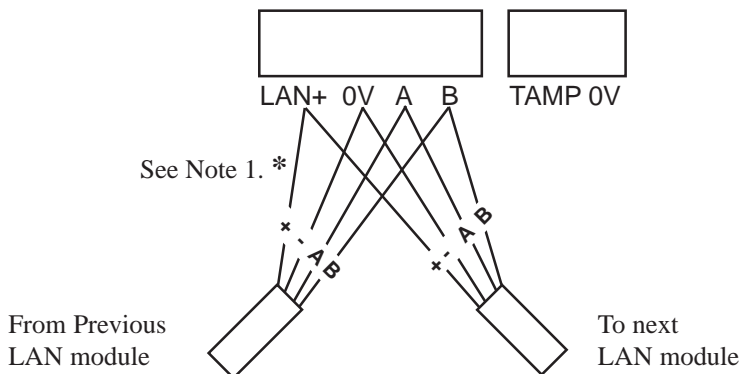
Status and Fault LEDs

L1   **L1 (RX)**   Valid LAN packet received or LAN Fault indication. *See table below.*

L2   **L2 (TX)**   LAN packet sent or LAN Fault indication. *See table below.*

L3   **FAULT.**   ON = LAN Fault. Refer to "LAN Problems" table below for fault details.

L9   ON = Auxiliary 1 On

L10   ON = Auxiliary 2 On

L14   **UniBus**   Flashing   Idle. No UniBus cards connected.
                            OFF   OK. UniBus Card/s communicating correctly.
                            ON   Fault. Problem with one or more UniBus Cards. e.g. Address conflict.

L24   **3V3**   3.3V Microprocessor supply OK.

LAN Problems

L1	**L2**	**EXPLANATION / REMEDY**	
ON	OFF	"NO ROOM".	Too many Modules on the Network. Check limits and licencing.
Flash	ON	"EXISTS".	Duplicate Module. Module number already in use by a module of the same type.
Flash	Flash	"DIM".	Dimensions. Module number selected is too big.
			Select a lower Module number that is not already in use or check limits and licencing.
OFF	ON	"UNKNOWN".	Module type unknown. Controller firmware upgrade required.
ON	ON	"NO ADDRESS".	Module is un-addressed. (Not communicating with the Controller)
ON	Flash		Module disabled.

Expansion Options

P3 is the Integriti UniBus Port. UniBus is a connection bus for local expansion boards which are typically installed in the same enclosure using the cable supplied with the board.

The "UniBus" port on an 8 Zone Expander Module can be used to provide additional Zones and Auxiliary outputs.

The following UniBus options are compatible with this Module:

Inner Range Part Number.	Description.
996500	UniBus 8 Zone Expander board.
996510	UniBus 4 Relay Expander board.
996515	UniBus 8 Relay Expander board.
996540	UniBus 16-Floor Lift Interface board.

Up to 6 UniBus boards in total may be connected to a host Module. The limit on the number of any particular type of UniBus board that can be connected is determined by the total number of entities supported by the Module and the UniBus board.
e.g. Integriti Wired Expander Modules such as the 8 Zone Expander, support up to 32 Zones in total. Therefore up to 3 UniBus 8-Zone Exander boards may be connected.

When a new UniBus board is added to a Module, the "Unsecured" System Input will be triggered to indicate that a new UniBus board is present.

IMPORTANT NOTES:

1.   A suitable Integriti Smart Power Supply <u>must</u> be connected to the Module when UniBus boards are used.
      - Integriti 2A Smart Power Supply.   P/N: 996090PCB&K
      - Integriti 3A Smart Power Supply.   P/N: 996091PCB&K
      - Integriti 8A Smart Power Supply.   P/N: 996092

2.   Ensure that adequate power supply current is available for any UniBus boards connected to the 8-Zone LAN Expander Module.

Specifications

Mechanical

PCB dimensions:	L: 200mm. W: 94mm H: Allow 45mm.
Installation environment:	0° to 50ºC. 15-85% relative humidity (non-condensing)

Electrical

Power Supply Input: 11V to 14V DC

Current Consumption.   70mA idle (with 2k2 EOL on all 8 Zones)
                          110mA with both Auxilairy relays On. (i.e. 20mA per Relay)
NOTE. These figures do NOT include the current required by:
 - Any peripherals such as UniBus boards, Lamps or Warning devices, etc. being powered from the UniBus Port, DET+ or LAN+
 - Siren speakers.

Relay Contact rating: 2 Amps @ 30VDC.
Overcurrent Protection.   Provided via self-resetting electronic fuses on the Integriti Power Supply connected to the P2 "External Power" connector. If activated, removing the additional load or short circuit from the relevant output will restore the output to normal operation.