Intelligent 4 Door Access Module
P/No: 994012 / 995014

INSTALLATION MANUAL

IFDAM FIRMWARE COMPATIBILITY
IFDAM Up to V4:   Concept 4000 only.
IFDAM V5 or later: Concept 4000 or Integriti Security Controller.

OVERVIEW

The Intelligent 4 Door Access Module (IFDAM) provides an interface for up to 4 Doors using 4 Card Readers, or, if the Reader Expander board is fitted (994013/995013), up to 4 Doors with Card In / Card Out operation using up to 8 Card Readers.

This module incorporates an Off-line operation feature. Relevant data from the Control Module is downloaded in order to maintain door access control in the event of LAN communication failure or damage to the Control Module, etc.

- When used in Concept 4000 systems, the Module also maintains Card+PIN, Dual Card and Anti-Passback features when offline. Card+PIN is maintained in off-line mode by supporting a local network of up to 8 LCD Terminals. While physically isolated from the rest of the LAN, these LCD Terminals can still be utilized as normal Terminals when the IFDAM is online.
- When used with an Integriti Security Controller, the Module supports a 2000 Card Cache for offline operations. *See Intelligent 4 Door Access Module Installation Manual V2.0 and Integriti Programming Manual V2 or later for details.*

IMPORTANT NOTES.
1)   **For use in an Integriti system:**
       - The Integriti Security Controller must be running V2.0 Firmware or later.
       - The IFDAM Firmware must be upgraded to V5. An IFDAM V5 Upgrade Chip is now available for this purpose.
        Inner Range Part Number: 994112C/I.

2)   **AC power transformer.** (PCB only version) In order to maintain the output current values specified in the Product Catalogue and Installation Manual, the Intelligent 4-Door Access Module PCB must be powered by a transformer with the following minimum specifications: Transformer Input.   Voltage: As per local AC Mains supply voltage.
                                                  Transformer Output. Voltage: 16 to 18V AC.   Current: 4 Amps.
Use of a transformer with a lower current rating may result in damage to the transformer &/or Intelligent 4-Door Access Module. If a Transformer with a lower current rating must be used, contact Inner Range Technical Support for advice.

3)   **Plug Packs.** Common 16VAC 1A or 1.5A Plug packs must never be used with this product. The current output from these plug-packs is totally inadequate for the Intelligent 4-Door Access Module.

4)   **Concept LAN Over Ethernet interfaces.**
       NOTE: CLOE firmware can be upgraded in the field with the CLOE Firmware Downloader application.
       When connecting an Intelligent 4-Door Access Module (IFDAM) to a Concept LAN Over Ethernet (CLOE) interface:
a.   If the IFDAM Firmware (U3) is V3.60 or later, the CLOE Firmware must be V1.2 or later, and DIPswitch 1 (SET1) must be set to OFF.
b.   If the IFDAM Firmware (U3) is prior to V3.60, and the CLOE Firmware is V1.2 or later, DIPswitch 1 (SET1) must be set to ON.   (If CLOE firmware is prior to V1.2, the DIPswitch has no function and is set to OFF)
c.   If multiple IFDAMs are connected to a CLOE Slave, all the IFDAMs must be either V3.60 or later, or pre V3.60. You cannot mix V3.60 or later and pre V3.60 IFDAMs on the same CLOE Slave.
d.   It is permissable to have V3.60 or later IFDAMs on one CLOE Slave, and pre V3.60 IFDAMs on another CLOE Slave in the same system.
e.   It is also permissable to have V3.60 or later, and pre V3.60 IFDAMs connected directly to the Control Module LAN.

Contents

Parts List

- Intelligent 4 Door Access Module PCB mounted the Xtra Large mounting plate in the Xtra Large Low Profile Enclosure.
- Battery bracket.
- Installation Kit containing:
    - 4 x M3 x 10 Pan head screw
    - 4 x M3 Flat washer.
    - 3 x 16mm Hex metal mounting post. (2 for installation + 1 spare)
    - 8 x 8 Way plug-on screw terminals.
    - 5 x 6 Way plug-on screw terminals.
    - 4 x 3 Way plug-on screw terminals.
    - 18 x 2 Way plug-on screw terminals.
    - 1 x 1 Amp Slow Blow AC mains input Fuse. M205 (Spare)
    - 2 x 0.5 Amp Fast Blow Reader Power Fuse. M205 (Spare)
    - 2 x 1 Amp Fast Blow Lock Power Fuse. M205 (Spare)
    - 2 x 2 Amp Fast Blow LAN/DET+ Fuse. M205 (Spare)
    - 4 x 1N4004 Diode. (Connect in reverse polarity across lock coils)
    - 20 x 2k2 End-of-line resistors. (red-red-black-brown-brown)
    - 20 x 6k8 End-of-line resistors. (blue-grey-black-brown-brown)
    - 4 x Jumper Links. (Spare)
    - 1 x Battery Cable 70 cm
    - Tamper switch.
    - 2 x 6.3mm Tamper switch connectors.
    - Tamper switch bracket.

- 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.

PRELIMINARY INSTALLATION PROCEDURE

Fitting the Mounting Plate & PCB assembly.

1. Remove the large cable ties securing the mounting plate & PCB assembly to the chassis.

2. Fit two 16mm Hex metal mounting posts to the nutserts provided in the chassis. Screw in finger tight, then tighten another 1/4 turn only with a small spanner or nut driver.
   CAUTION: Further tightening may snap the spacer.

3. Secure the mounting plate & PCB assembly to the chassis using the 4 M3 x 10mm screws and flat washers provided.
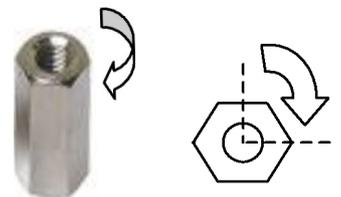
INSTALLATION AND SAFETY INSTRUCTIONS

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 80mm of the sheath from the end of the power cord. Trim 20mm 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.

3. Feed at least 150mm of the power cord through the AC mains cable entry hole.

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. 120mm) 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.

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.

Chassis

Transformer input connection.

Neutral
Earth
Active (Live)

EARTH Connection to PCB

Power Cord

Fuse. 1 Amp Slow blow M205 (20mm)

AC Mains cable entry hole & Plastic Grommet.

20mm
5mm
80mm
120mm

Assembled Tamper switch in the Tamper bracket
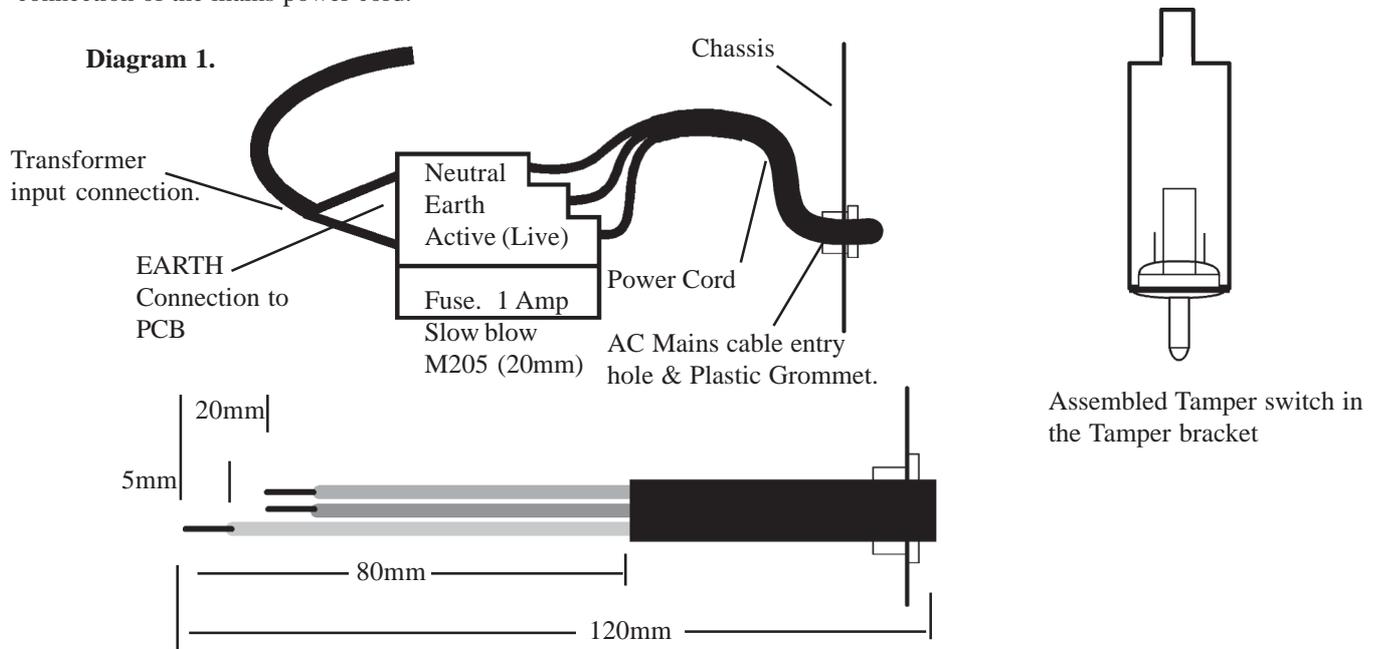
Mounting the Unit.   See Diagram 2.

1. Installation environment should be maintained at 0º to 40º Celsius and 15% to 85% Relative humidity (non-condensing).

2. The enclosure must be secured to a flat, vertical surface using fasteners through the six "keyhole" mounting holes in the chassis. We recommend mounting the enclosure with the Mains Cable entry and Transformer at the bottom as shown in Diagram 3.

3. When mounting this product onto flammable surfaces, a fire protection backplate MUST BE INSTALLED. *(See Diagram 3)* Any Conduit entry points that have had the knockout removed but are not used, must also be resealed using 25mm Conduit Plugs.

4. Fit the tamper switch into the tamper switch bracket. Install this assembly by placing the tamper switch plunger in the hole provided in the base, and the tongue on the bracket through the slot provided in the lip in the top of the chassis.

5. The Battery is normally installed in the bottom of the enclosure. *(See Diagram 2)* An optional Battery retaining bracket (Part Number: 926005) can be used if the enclosure is not mounted as recommended in Step 2.

6. The metal chassis is electrically earthed and the Circuit Board Assembly is electrically isolated from the chassis. When mounting and wiring the Module, the Installer must ensure that this isolation is maintained.

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

1. The Mains Transformer cable (A) is connected to the AC Input on the PCB (B).

2. Connect the Red Battery cable provided between the "+B" connection on the PCB (D) and the Positive (+) Battery terminal (C).

3. Connect the Black Battery cable provided between the "-B" connection on the PCB (D) and the Negative (-) Battery terminal (C).

Diagram 2.

Tapped hole for Cover fastening screw.

Mounting Holes. x 4

Tamper switch & bracket

PCB mounting plate

IFDAM Module PCB

Alternative Battery
Battery bracket position

Battery connections

16.5V AC Power connections to PCB.

12V, 6.5AH Battery and optional Battery bracket.

AC Mains Transformer

Terminal block and fuse.
AC Mains Input.

Diagram 3.

Module Enclosure

Fire Protection Backplate. (Side View)

IMPORTANT NOTE: This diagram shows the recommended orientation for installing the enclosure with the Battery located on the bottom lip.
If the enclosure is mounted with the Battery on the left-hand side or right-hand side of the enclosure, the optional Battery bracket <u>must</u> be used.

Wiring Diagrams

ZONE INPUT WIRING.

Typical Detection devices with *Normally Closed* Alarm contacts and *Normally Closed* Tamper Contacts are wired using End-of-line resistors. e.g. Door Reeds, Tongue Sense contacts, PIRs etc.
NOTE: Detection devices with *Normally Open* Alarm contacts are wired in exactly the same manner as shown below. When programming the Zone Input, however, the option to "**S**wap Seal and Alarm conditions" must be set to [Y]es.
e.g.

```
I01:Z01    XSRANT..
Options -> nYnnnnnn
```

REX (Request to Exit), REN (Request to Enter) and
ARM inputs are wired as normally Open contacts with
no End-of-line resistors.

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

Door Reeds, Tongue Sense and General purpose Zone Inputs.

REX, REN and ARM Inputs.
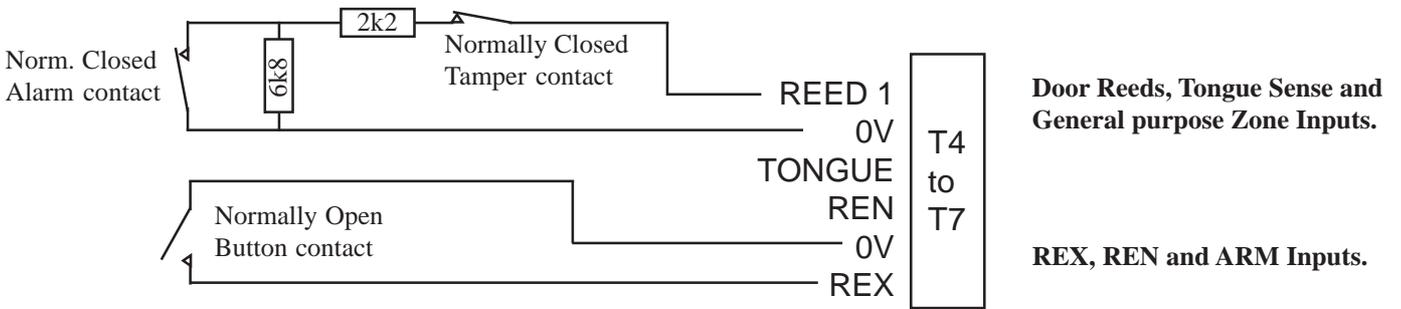
AUXILIARY WIRING

Rules for Auxiliary wiring on an Intelligent 4 Door Access Module.
-   Max current on any individual Auxiliary must be less than 100mA.
-   Locks + Readers + Auxiliaries + LAN current + Detectors must be less than 2A, or an external power supply must be used.
-   The Positive connection of the device being controlled by the Auxiliary must be wired back to the Positive connection nearest the Auxiliary. i.e. On the same module.
-   If an external power supply is used to power the device, 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.

Auxiliary current <100mA per Auxiliary.
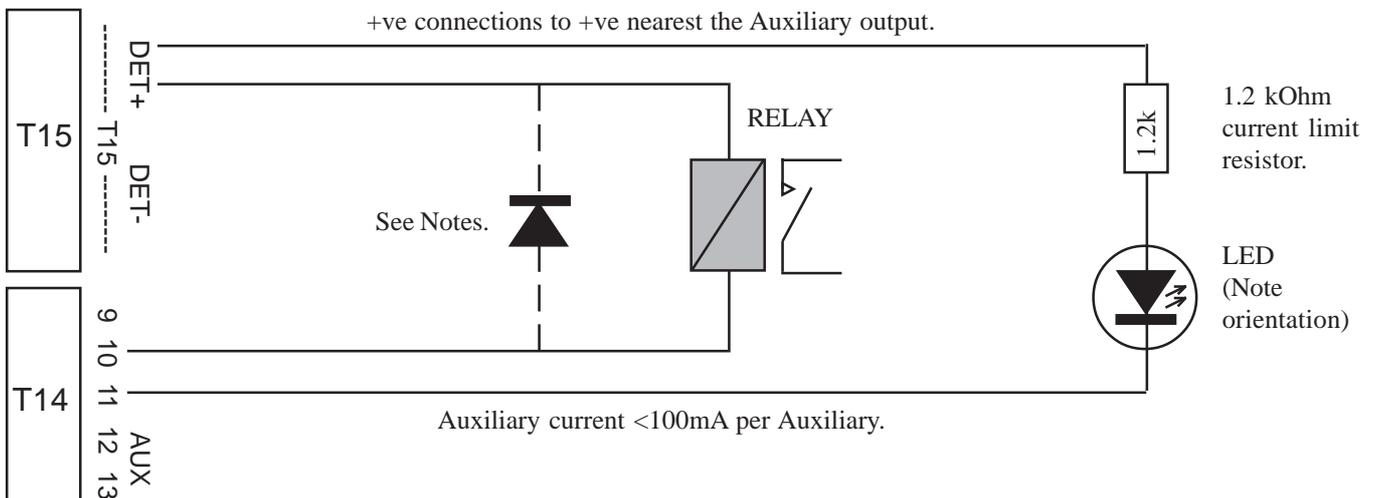
LOCK WIRING

Using On-board Power Supply.

CAUTION: Lock power can only be provided by the lock "POS" connection if the total current required by all Locks, Readers, Detectors, Auxiliaries and the LAN does not exceed 2.0 Amps. Check lock current before using this lock wiring method.

Locks are activated via an on-board relay.   Each lock "POS" terminal is separately protected by a 1A fuse. This fuse should only be replaced with a fuse of the same value.

Heavy duty Fig. 8 cable (24/0.20 or 14/0.20) recommended for all Power & Lock wiring.

T13, 16, 17 & 18

NO COMM NC NEG POS

Power to Un-Lock or Power to Lock

+VE wired directly to Lock +ve.

IMPORTANT
1N4004 Protection Diode (supplied) fitted as close as possible to the strike. Cathode (bar) to +VE.

Lock Strike
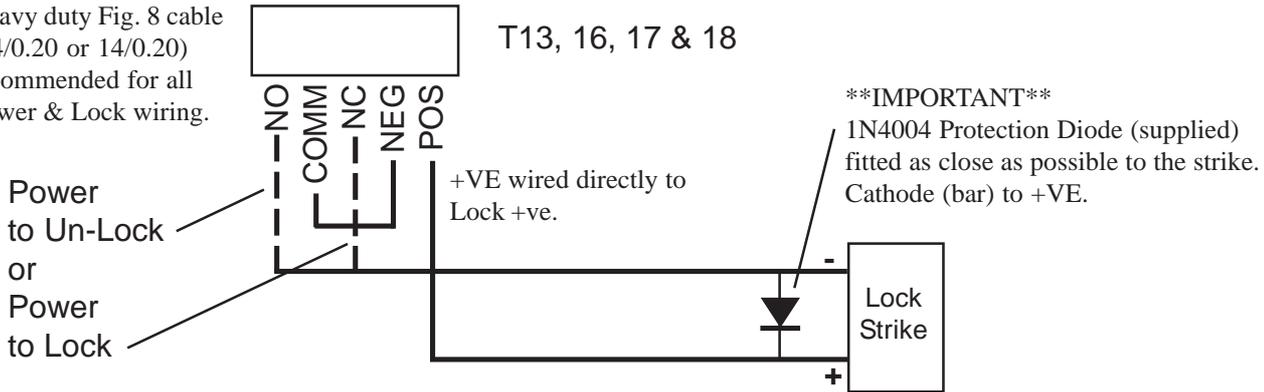
Using a separate external Power Supply.

If the lock current requirement will cause the total combined anciliary current limit (2.0A) to be exceeded, and/or longer battery backup times are required, a separate battery-backed power supply should be used for lock power and wired as shown below.

Heavy duty Fig. 8 cable (24/0.20 or 14/0.20) recommended for all Power & Lock wiring.

T13, 16, 17 & 18

NO COMM NC NEG POS

1N4004 Protection Diode (supplied) fitted as close as possible to the strike. Cathode (bar) to +VE.

EXTERNAL PWR SUPPLY (BATTERY BACKED)

+VE wired directly to Lock +ve.

Lock Strike
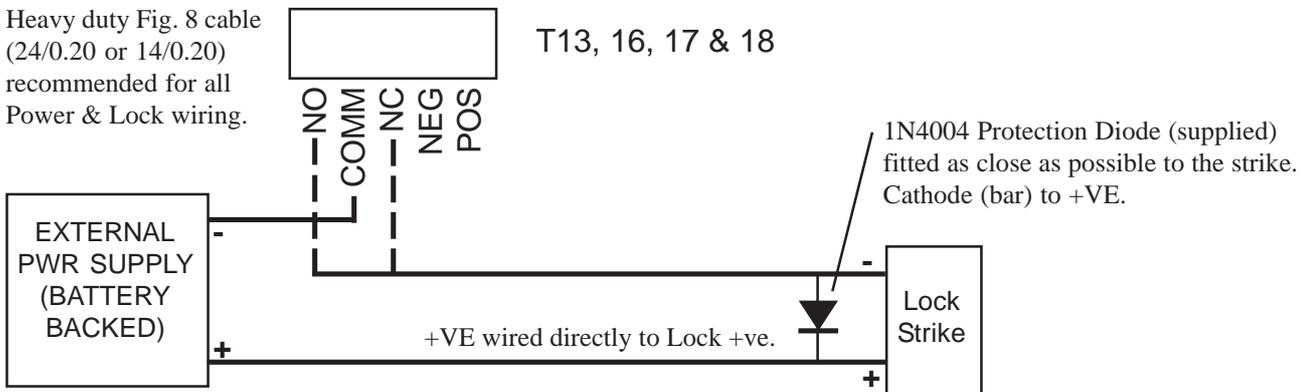
If **Lock fault monitoring** is required when using an external supply, connect the lock as shown below.

Connect -VE of external supply to "0V" or "DET-" NEAREST the Lock connector.

0V

T13, 16, 17 & 18

NO COMM NC NEG POS

EXTERNAL PWR SUPPLY (BATTERY BACKED)

+VE wired directly to Lock +ve.

Lock Strike
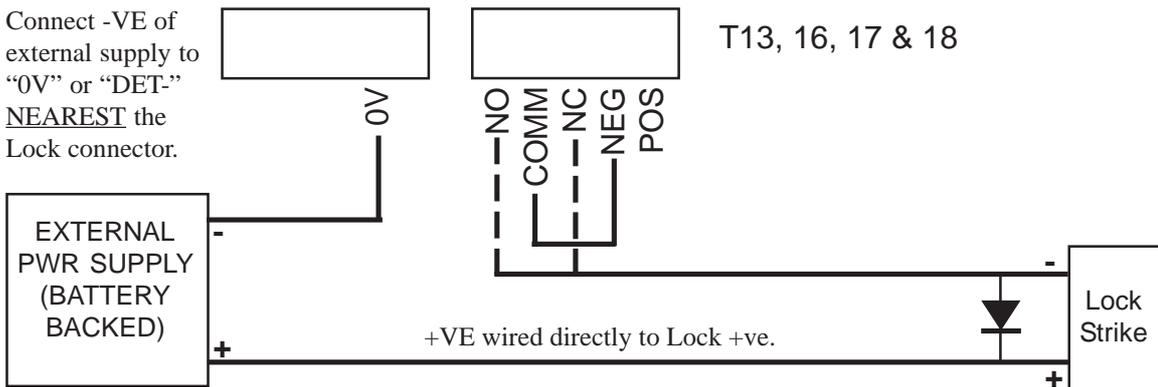
READER WIRING

READER	0V	+VE	D1 CLK	D0 DATA	Earth (If available)
Omron Swipe	green	yellow	red	brown	
Inner Range Secure 40 Proximity	black	red	white	green	shield*
HID Proximity / Motorola Indala Proximity HID Sensorkey	black	red	white	green	shield*
HID Classic Swipe/Insertion/ Epic Wiegand Card Reader (Units may have flying leads OR screw terminals)	black GND	red +VE	white Data 1	green Data 0	shield*

* Note: Connect shield to 0V if no earth connection available.
The Reader Beeper and LEDs may be connected to the "Valid", "Invalid", "DOTL" or Auxiliary outputs as required.
These outputs are Open Collector. Consult the Reader installation instructions for connection details.

READER OPTION LINK SETTINGS

READER	JP18-21 Format: 1-2 Swipe 2-3 Wieg.	JP22-25 Format: OFF Swipe ON Wieg.	JP13-16 Supply: 1-2 +5V 2-3 +12V	JP6-9 Data 1-2 +5V 2-3 +12V	JP10,11,12 & 17 Mode: Cardx 1-2 Default 2-3
Omron Swipe	1-2	OFF	1-2	1-2	2-3
Inner Range Secure 40 Proximity	2-3	ON	2-3	2-3	2-3
Cardlock Swipe	1-2	OFF	1-2	1-2	2-3
Hughes MiniProx / ThinLine	2-3	ON	1-2	1-2	2-3
Hughes ProxPro	2-3	ON	2-3	2-3	2-3
HID Sensorkey	2-3	ON	1-2	1-2	2-3
HID Swipe/Insertion/Turnstile Wiegand Card Readers	2-3	ON	1-2	1-2	2-3
Motorola Indala. SlimLine/ WallSwitch/PinProx/ValueProx/SecureProx/ MasterProx	2-3	ON	1-2	1-2	2-3
Motorola Indala. Standard/ Medium Range/MasterProx (for 30cm read range)	2-3	ON	2-3	2-3	2-3

Module Numbering

The Module number is set using DIPswitches 1 to 7. The Module number equals $n + 1$, where n is the binary number set on DIPswitches 1 to 7.

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	
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	
through to								
64	ON	ON	ON	ON	ON	ON	off	Maximum IFDAMs on Concept 4000 LAN.
or 99	off	ON	off	off	off	ON	ON	Maximum IFDAMs on Integriti Security Cont LAN.

STATUS LEDs.
LED 1. Database.
LED 2 / 3. Fault LEDs.
See Status LED table for details.
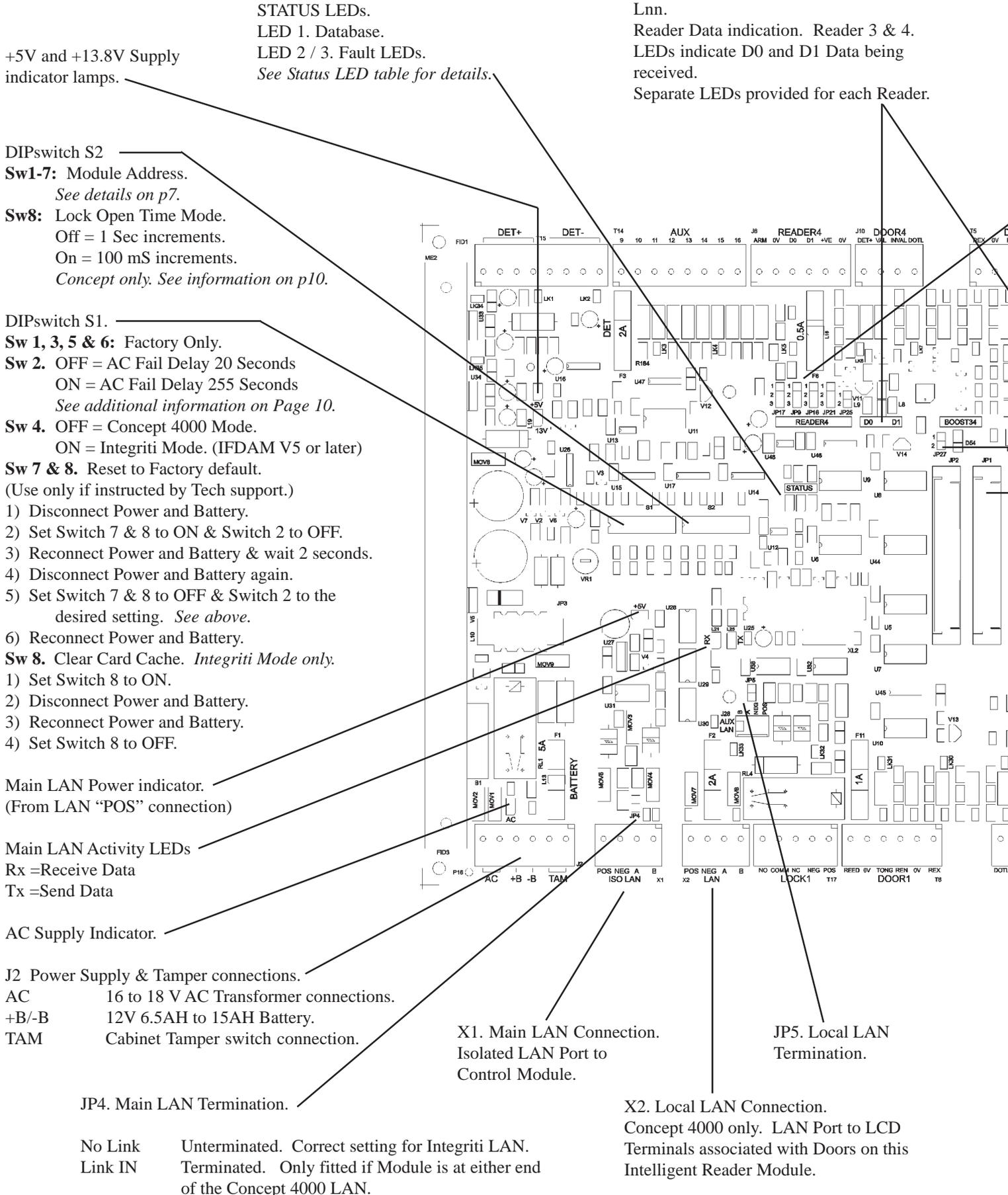
+5V and +13.8V Supply
indicator lamps.

Lnn.
Reader Data indication. Reader 3 & 4.
LEDs indicate D0 and D1 Data being
received.
Separate LEDs provided for each Reader.

DIPswitch S2
Sw1-7: Module Address.
    See details on p7.
Sw8: Lock Open Time Mode.
    Off = 1 Sec increments.
    On = 100 mS increments.
    Concept only. See information on p10.

DIPswitch S1.
Sw 1, 3, 5 & 6: Factory Only.
Sw 2. OFF = AC Fail Delay 20 Seconds
    ON = AC Fail Delay 255 Seconds
    See additional information on Page 10.
Sw 4. OFF = Concept 4000 Mode.
    ON = Integriti Mode. (IFDAM V5 or later)
Sw 7 & 8. Reset to Factory default.
(Use only if instructed by Tech support.)
1) Disconnect Power and Battery.
2) Set Switch 7 & 8 to ON & Switch 2 to OFF.
3) Reconnect Power and Battery & wait 2 seconds.
4) Disconnect Power and Battery again.
5) Set Switch 7 & 8 to OFF & Switch 2 to the
    desired setting. *See above.*
6) Reconnect Power and Battery.
Sw 8. Clear Card Cache. *Integriti Mode only.*
1) Set Switch 8 to ON.
2) Disconnect Power and Battery.
3) Reconnect Power and Battery.
4) Set Switch 8 to OFF.

Main LAN Power indicator.
(From LAN "POS" connection)

Main LAN Activity LEDs
Rx =Receive Data
Tx =Send Data

AC Supply Indicator.

J2 Power Supply & Tamper connections.
AC   16 to 18 V AC Transformer connections.
+B/-B   12V 6.5AH to 15AH Battery.
TAM   Cabinet Tamper switch connection.

X1. Main LAN Connection.
Isolated LAN Port to
Control Module.

JP5. Local LAN
Termination.

JP4. Main LAN Termination.

X2. Local LAN Connection.
Concept 4000 only. LAN Port to LCD
Terminals associated with Doors on this
Intelligent Reader Module.

No Link   Unterminated. Correct setting for Integriti LAN.
Link IN   Terminated. Only fitted if Module is at either end
             of the Concept 4000 LAN.

ACCESS MODULE PCB

JPnn.
Reader Settings. Reader 3 & 4.
Format, Supply, Data Voltage and Mode.
Set separately for each Reader.
See separate table.

JP27. BOOST 3-4
For 12V Readers.
Fit if DC Volts at Reader Head
3 or 4 is <11.5V

JP30. Factory Only.
Pins 2-3 must be linked.

JP1 Reader Expander Board
connection.
When fitted provides 4
additional Reader Ports.

T2 & T3. Zone Inputs.
*See "ZONE INPUT WIRING"
for details.*

JP28. Factory Only.
Must be fitted.

JP29. Factory Only.
Pins 1-2 must be linked.

JP26. BOOST 1-2
For 12V Readers.
Fit if DC Volts at Reader Head
3 or 4 is <11.5V

J11
Detector Power
connections.

DO NOT remove Links
from unused Reader Ports.

	SWIPE	WEIGAND
READER1	JP18-1,2 / JP22-OFF	JP18-2,3 / JP22-ON
READER2	JP19-1,2 / JP23-OFF	JP19-2,3 / JP23-ON
READER3	JP20-1,2 / JP24-OFF	JP20-2,3 / JP24-ON
READER4	JP21-1,2 / JP25-OFF	JP21-2,3 / JP25-ON

	+5V / +13V	CARDAX / DEF
READER1	JP13-1,2 / JP13-2,3 JP6-1,2 / JP6-2,3	JP10-1,2 / JP10-2,3
READER2	JP14-1,2 / JP14-2,3 JP7-1,2 / JP7-2,3	JP11-1,2 / JP11-2,3
READER3	JP15-1,2 / JP15-2,3 JP8-1,2 / JP8-2,3	JP12-1,2 / JP12-2,3
READER4	JP16-1,2 / JP16-2,3 JP9-1,2 / JP9-2,3	JP17-1,2 / JP17-2,3

INTELLIGENT READER
934012   REV. C

Lnn.
Reader Data indication. Reader 1 & 2.
LEDs indicate D0 and D1 Data being
received.
Separate LEDs provided for each Reader.

JPnn.
Reader Settings. Reader 1 & 2.
Format, Supply, Data Voltage
and Mode.
Set separately for each Reader.
See separate table.

**JUMPER LINK
ORIENTATION**

1	•
2	•
3	•

1	2	3
•	•	•
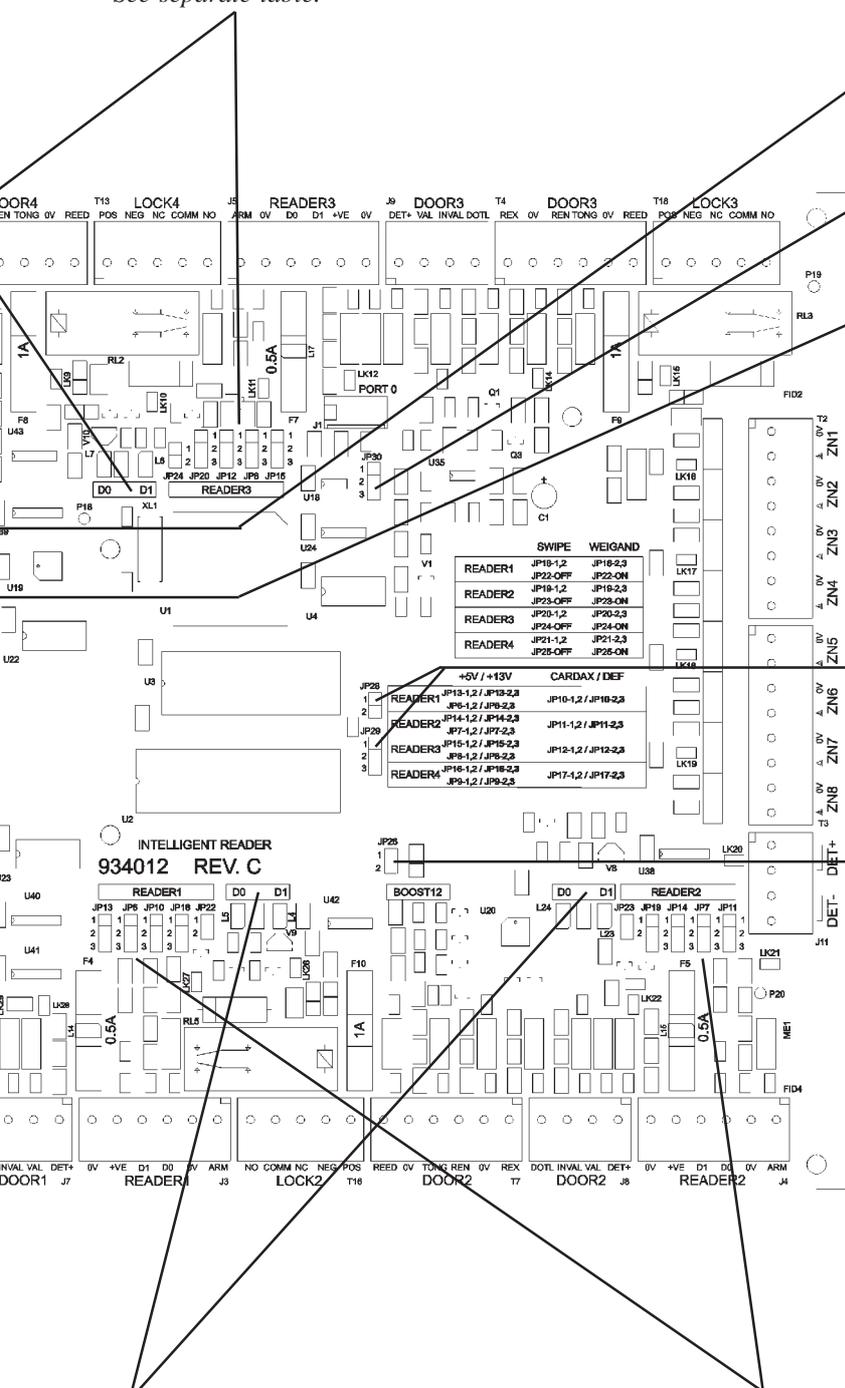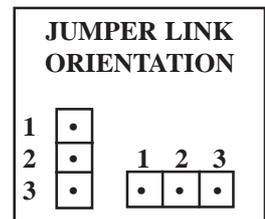
INTELLIGENT READER MODULE STATUS LEDs

DATABASE LED

LED 1	EXPLANATION / REMEDY
Flash	Directory problem.
	May flash for around 1 minute when first connected or if Control Module memory is defaulted.
	If LED 1 continues to flash for longer than 90 seconds:
	-Check the FAULT LEDs for LAN Comms problems.
	-Check that Control Module Memory configuration chosen for this installation has Intelligent Reader Modules available.
	See "Memory Configurations" in the Programming Applications & Reference Manual.
	If flashing continues, default the Intelligent Reader Module *(see "DIPswitch S1" details on page 8)* and allow database to update again. (Note that this may take up to 14 minutes for a 512k Memory configuration.)
ON	Updating Database. Access disabled. Only relevant when Module or Door programming changes made. (Not relevant for other database changes such as Users, TimeZones, Lists, etc.)

FAULT LEDS

LED 2	LED 3	EXPLANATION / REMEDY
ON	ON	Module is Offline.
OFF	ON	Module type unknown. Firmware upgrade required to Control Module or DIPswitch S1 Switch 4 setting is incorrect for Control Module Type. i.e. Concept 4000 or Integriti.
Flash	ON	Duplicate Module. This module number is 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.

LOCK OPEN TIME MODE SETTINGS

Note: Only available in Concept 4000 systems and Intelligent 4 Door Access Module firmware V1.08 or later.

The "Lock Open Time" defined in Door programming is normally specified in Seconds.
e.g. A Lock Open Time of "5", will activate the Lock Auxiliary for 5 Seconds.
In some installations, the Lock Open Time needs to be shorter than 1 second.
e.g. When providing a short pulse output to trigger a special access device such as a turnstile system.

An option is available to allow an Intelligent 4 Door Access Module to process the "Lock Open Time" as 100 milli-Second increments instead of 1 Second increments.
e.g. -A Lock Open Time of "5", will then activate the Lock Auxiliary for 500 milli-Seconds. (5 x 100mS)
     -A Lock Open Time of "50", will then activate the Lock Auxiliary for 5 Seconds. (50 x 100mS)

This is done by setting Switch 8 on DIPswitch 2 to the ON position.
When set, the Lock Open Time will then be processed as 100 milli-Second increments for all 4 Doors on that particular Module.
(See page 8 for location of the DIPswitch)
Only Modules with the DIPswitch set to ON will process the Lock Open Time in this way. Any other Modules with the DIPswitch left in the OFF position, will process the Lock Open Time in the normal manner as 1 second increments.

AC FAIL DELAY TIME SETTINGS

Note: Only available in Intelligent 4 Door Access Module firmware V2.10 or later.
Requires Power-Up Reset after changing the DIP switch settings
DIP Switch 1; Sw 2. OFF = AC Fail Delay 20 Seconds.
                          ON = AC Fail Delay 255 Seconds.

Intelligent Reader Inputs

Concept 4000		Integriti	
Input	**ID (nn = Module no.)**	**Input**	**ID (nn = Module no.)**
General Purpose Zone 1	Inn : Z01	Door #1 Reed Zone Input	Inn : Z01
General Purpose Zone 2	Inn : Z02	Door #2 Reed Zone Input	Inn : Z02
General Purpose Zone 3	Inn : Z03	Door #1 Tongue Sense Zone Input	Inn : Z03
General Purpose Zone 4	Inn : Z04	Door #2 Tongue Sense Zone Input	Inn : Z04
General Purpose Zone 5	Inn : Z05	General Purpose Zone 1	Inn : Z05
General Purpose Zone 6	Inn : Z06	General Purpose Zone 2	Inn : Z06
General Purpose Zone 7	Inn : Z07	General Purpose Zone 3	Inn : Z07
General Purpose Zone 8	Inn : Z08	General Purpose Zone 4	Inn : Z08
Door #1 Reed Zone Input	Inn : Z09	Door #3 Reed Zone Input	Inn : Z09
Door #2 Reed Zone Input	Inn : Z10	Door #4 Reed Zone Input	Inn : Z10
Door #3 Reed Zone Input	Inn : Z11	Door #3 Tongue Sense Zone Input	Inn : Z11
Door #4 Reed Zone Input	Inn : Z12	Door #4 Tongue Sense Zone Input	Inn : Z12
Door #1 Tongue Sense Zone Input	Inn : Z13	General Purpose Zone 5	Inn : Z13
Door #2 Tongue Sense Zone Input	Inn : Z14	General Purpose Zone 6	Inn : Z14
Door #3 Tongue Sense Zone Input	Inn : Z15	General Purpose Zone 7	Inn : Z15
Door #4 Tongue Sense Zone Input	Inn : Z16	General Purpose Zone 8	Inn : Z16
Door #1 Lock Tamper	Inn : S01	Cabinet tamper	Inn : S01
Door #2 Lock Tamper	Inn : S02	AC Fail	Inn : S02
Door #3 Lock Tamper	Inn : S03	Low battery	Inn : S03
Door #4 Lock Tamper	Inn : S04	LAN Fuse	Inn : S04
Door #1 Forced	Inn : S05	Detector Fuse	Inn : S05
Door #2 Forced	Inn : S06	NOT USED	Inn : S06
Door #3 Forced	Inn : S07	NOT USED	Inn : S07
Door #4 Forced	Inn : S08	Battery Test Fail	Inn : S08
Door #1 Door Open Too Long (DOTL)	Inn : S09	NOT USED	Inn : S09
Door #2 Door Open Too Long (DOTL)	Inn : S10	NOT USED	Inn : S10
Door #3 Door Open Too Long (DOTL)	Inn : S11	NOT USED	Inn : S11
Door #4 Door Open Too Long (DOTL)	Inn : S12	LAN Comms Status	Inn : S12
Door #1 Invalid Card (In or Out)	Inn : S13	Door #1 Fault (Lock Tamper)	Inn : S13
Door #2 Invalid Card (In or Out)	Inn : S14	Door #2 Fault (Lock Tamper)	Inn : S14
Door #3 Invalid Card (In or Out)	Inn : S15	Door #3 Fault (Lock Tamper)	Inn : S15
Door #4 Invalid Card (In or Out)	Inn : S16	Door #4 Fault (Lock Tamper)	Inn : S16
Cabinet tamper	Inn : S17	Door #1 Forced	Inn : S21
General Lock Fault	Inn : S18	Door #2 Forced	Inn : S22
Battery Test Fail	Inn : S19	Door #3 Forced	Inn : S23
AC Fail	Inn : S20	Door #4 Forced	Inn : S24
Low battery	Inn : S21	Door #1 Door Open Too Long (DOTL)	Inn : S29
LAN Fuse	Inn : S22	Door #2 Door Open Too Long (DOTL)	Inn : S30
Detector Fuse	Inn : S23	Door #3 Door Open Too Long (DOTL)	Inn : S31
LAN Comms Status	Inn : S24	Door #4 Door Open Too Long (DOTL)	Inn : S32
		Reader #1 Invalid Card	Inn : S37
		Reader #2 Invalid Card	Inn : S38
		Reader #3 Invalid Card	Inn : S39
		Reader #4 Invalid Card	Inn : S40
		Reader #5 Invalid Card	Inn : S41
		Reader #6 Invalid Card	Inn : S42
		Reader #7 Invalid Card	Inn : S43
		Reader #8 Invalid Card	Inn : S44

Intelligent Reader Outputs

Concept 4000		Integriti	
Auxiliary	**ID (nn = Module no.)**	**Auxiliary**	**ID (nn = Module no.)**
Door #1 Lock Relay	Inn : X01	Door #1 Lock Relay	Inn : X01
Door #2 Lock Relay	Inn : X02	Door #2 Lock Relay	Inn : X02
Door #3 Lock Relay	Inn : X03	Door #3 Lock Relay	Inn : X03
Door #4 Lock Relay	Inn : X04	Door #4 Lock Relay	Inn : X04
Spare. No physical output.	Inn : X05	General Purpose Auxiliary 9	Inn : X05
Spare. No physical output.	Inn : X06	General Purpose Auxiliary 10	Inn : X06
Spare. No physical output.	Inn : X07	General Purpose Auxiliary 11	Inn : X07
Spare. No physical output.	Inn : X08	General Purpose Auxiliary 12	Inn : X08
General Purpose Auxiliary 9	Inn : X09	Door #1 DOTL	Inn : X09
General Purpose Auxiliary 10	Inn : X10	Door #2 DOTL	Inn : X10
General Purpose Auxiliary 11	Inn : X11	Door #3 DOTL	Inn : X11
General Purpose Auxiliary 12	Inn : X12	Door #4 DOTL	Inn : X12
General Purpose Auxiliary 13	Inn : X13	General Purpose Auxiliary 13	Inn : X13
General Purpose Auxiliary 14	Inn : X14	General Purpose Auxiliary 14	Inn : X14
General Purpose Auxiliary 15	Inn : X15	General Purpose Auxiliary 15	Inn : X15
General Purpose Auxiliary 16	Inn : X16	General Purpose Auxiliary 16	Inn : X16

LAN CONNECTIONS. *Refer to diagram on the following page.*

- "A" & "B" signal connections are wired in parallel across the system using <u>twisted pair cable</u>. ❶
  See "Cable Types" details. The "NEG" connection (0V reference) must also be wired to every module. ❷

- An optional + 12 V connection (LAN +ve) may be used to provide power to modules that do not have their own on-board power supply. e.g. LCD Terminals or the "Isolated LAN" connection on the Intelligent Reader Module. ❸

- The Intelligent 4 Door Access Module connects into the LAN System via the "Isolated LAN" connection, X1. This is to ensure that any LAN faults will not effect any LCD Terminals that have been connected to the Local LAN connection for the purposes of Card+PIN operation. ❹ The Power for the Isolated LAN (POS & NEG) should be derived from the Control Module, an Expander Module connected to this section of the LAN, or an external power supply. ❺

- Any LCD Terminals to be used for Card+PIN / Card or PIN operation in conjunction with Readers on an Intelligent 4 Door Access Module must be Univeral Elite LCD Terminals, must be connected to the Local LAN connection, X2, and must have special firmware fitted to allow Off-line operation. ❻ No other Modules should be connected to this LAN Port.

- Avoid installing the LAN cable with mains power cables & any other cables likely to cause interference wherever possible.

- No module is to be more than 1.5km (1500 metres) cable length from the Control Module OR Intelligent 4 Door Access Module Local LAN Port OR from a LAN Isolator "LAN 2" or "LAN 3" Port. (LAN Isolator/s can be used to extend the maximum cabling distance)

- <u>TOTAL LAN CABLING</u> in any one section of the LAN should not exceed 2000 metres, and/or 64 Modules.

- <u>LAN TERMINATION.</u> **(CONCEPT 4000 ONLY)** The LAN MUST be Terminated for optimum performance, by ensuring that the Termination Resistor is "IN" on the first and last modules in the LAN network. (Termination is put "IN" with a jumper link or a DIPswitch, depending on the module type)

- <u>MULTIPLE CABLE RUNS.</u> **(CONCEPT 4000 ONLY)** In systems where there are multiple cabling runs from the Control Module or a LAN Isolator (i.e. "star" configuration), Termination is fitted on the modules at the end of the two longest runs.

CABLE TYPES

- <u>TWISTED PAIR Cable MUST be used</u> to connect the LAN.
  Two pair Telephone or LAN cable is suitable as it provides all 4 conductors required. One twisted pair for "A" & "B", and the other for "POS" & "NEG". Unshielded cable is quite acceptable, however, in situations where electrical storms or high levels of electrical interference are a problem, shielded 2 pair cable may be used. Examples of suitable 2 pair cables:

| Unshielded.	Shielded (All Multistrand)		
Olex TJC590AA002	Olex JEIP87AA002	Belden 8723 *	† 3 Pair.
Tycab TIC6105 †	Tycab DPF4702	Tycab DQQ47025 *	‡ Multistrand (7/0.2).
MM MegaTwistpatch ‡	MM B2002CS	Garland MCP-2S	* Indivually screened pairs.
Category 5.	Electra EAS7202P / 7302P	Electra EAS16202P	

- If <u>SHIELDED CABLE</u> is used, <u>DO NOT use the shield as a negative connection</u> & do not allow the shield to make contact with Negative, Ground, or any other wiring or metalwork within the system. Shields should only be terminated to a Protective Earth at ONE END of the cable.

- <u>LAN POWER CABLING.</u> Separate heavy duty Figure 8 cable (24 / 0.20 recommended) should also be run for "POS" & "NEG" over longer distances if used for powering modules. e.g. LCD Terminals.

LAN "POS" current required:	Max. Cabling Length for LAN +ve (POS) & GND (NEG)		
	Twisted pair	Fig 8. 14 / 0.20	Fig 8. 24 / 0.20
60mA (e.g. 1 LCD Terminal)	200 metres	400m	640m
120mA (e.g. 2 LCD Terminals)	100 metres	200m	320m
250mA (e.g. 4 LCD Terminals)	50 metres	100m	160m
500mA (e.g. 8 LCD Terminals)	25 metres	50m	76m

CONTROL
MODULE

POS
NEG
A
B

❶
❷
❸

**INTELLIGENT
4 DOOR
ACCESS
MODULE**

❺

X1
POS
NEG
A
B

❹ ISOLATED
SYSTEM LAN
CONNECTION

DO NOT make connections between X1 and any other connector on the IFDAM.
X1 MUST remain isolated from the rest of the Module.

❸

X2
POS
NEG
A
B

❻ LOCAL LAN
CONNECTION

UNIVERSAL ELITE LCD TERMINALS
(UP TO 8)

FOR LOCAL LCD
TERMINALS IN CONCEPT
4000 SYSTEMS ONLY.

THIS FEATURE NOT
SUPPORTED WHEN USED
IN INTEGRITI SYSTEMS.

X04/Z02
X03/Z01
X02
X01
+VE
GND
LAN A
LAN B

LAN B
LAN A
GND
+VE
X01
X02
X03/Z01
X04/Z02

Important Notes:
1) LCD Terminals connected to the Local LAN must be T3/4K "Enhanced"
V1.00 or later (obsolete), or "Multi Language" (ML) Terminal V8.1 or later
(P/N: 995000ML / 995000MLWH). These Terminals have the special
firmware to enable off-line operation of the Card+PIN/Card or PIN functions.

2) Only LCD Terminals directly associated with the Intelligent 4 Door Access
Module should be connected to the Local LAN.
Other Module types must not be connected.

3) Never connect any wiring between the Isolated LAN and Local LAN.

SYSTEM EARTHING

- The System Ground is connected to Mains Earth via the Power cord at the Control Module.

- The Intelligent 4 Door Access Module also has local Ground connected to Mains Earth via it's Power cord, however, the System LAN connection (X1 "ISO LAN") is isolated to eliminate Earth loops. **Ensure that there are no other 0V or Ground connections between the Control Module and Intelligent 4 Door Access Modules.**

LAN VOLTAGE TESTING

LAN problems can often be quickly diagnosed by using a Multimeter on the DC Volts range as detailed in the table below.

1. These Voltage checks should be done with no (or minimal) communications traffic on the LAN. To ensure this:
   a) Check that poll times for all addressed modules in the system are set to the default 60 / 120 seconds or greater.
   b) Disconnect LAN A and LAN B from any unaddressed modules on the LAN, as these modules will be constantly attempting to send messages to the Control Module.
   c) Ensure that Terminals, Readers, etc. are not being used while performing tests.
   Before proceeding with Voltage tests, check the Control Module "RX" LED to confirm that there is minimal LAN activity.

2. To determine if a problem exists on the module under test, or elsewhere on the LAN, these voltage tests can be performed:
   a) With the module connected to the LAN.
   b) On the cable connections with the module disconnected from the LAN.

Test Point + PROBE	Test Point - PROBE	EXPECTED RESULT	PROBLEM/ REMEDY
LAN +ve	LAN -ve or GND	11V to 14V DC	**0V.** Open circuit LAN +ve connection, or short cct between LAN +ve and LAN -ve. **<11V.** Too many modules powered from the LAN power supply source. Length (or guage) of LAN cabling causing excessive Voltage drop on the cable.
LAN B	LAN A	CONCEPT 4000 200 to 600mV DC INTEGRITI 500mV to 4.5V DC	**<0V (Negative reading)**. LAN A & B connections reversed. **<200mV.** Possible short cct between LAN A & B. More than 2 modules terminated in this section of LAN. CONCEPT ONLY **>600mV.** LAN A &/or LAN B Open circuit. Less than 2 modules terminated in this section of LAN. INTEGRITI ONLY **<500mV.** One or more legacy Concept 3/4000 Modules may be terminated in this section of the LAN. Remove termination. **>4.5V.** LAN A &/or LAN B Open circuit.
LAN A	LAN -ve or GND	CONCEPT 4000 200mV to 3.2V DC INTEGRITI 500mV to 4.5V DC	**<200mV / >3.2V DC.** (CONCEPT) **<500mV / >4.5V DC.** (INTEGRITI) System may have more than one module connected to an earth point, causing earth loop/s. Ensure that no more than one module in the system is connected to earth. Remember that a module may be connected to earth via a peripheral device or it's cabling. e.g. PC, Printer, External power supply, Detector, Output device, etc. If installation methods &/or system configuration makes multiple earth points unavoidable, install LAN Isolator/s at suitable points in the LAN system to isolate the earthed section/s.
LAN B	LAN -ve or GND	As above.	As above.

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. 1 Amp Slow blow. M205 (20mm).
	PCB AC Input Voltage:	16 to 18V AC. 50 Hertz.
	Battery Voltage & Type:	12V. Sealed Lead Acid Battery.
	Minimum Battery Capacity:	6.5 AH.
	Battery Input Fuse:	5 Amperes.

Power Supply Ouput: 13.8 V DC. **3 Amps total** (Includes allowance for battery charging)

Detector Supply Output: 13.8 V DC. 1 Amp maximum. *See Note below.*

Reader Head Supply O/P: 5V DC.   300mA maximum per Reader. *See Note below.*
                                              1A maximum for all Readers, including those connected to the Reader Expansion board.
                         13.8V DC.   300mA maximum per Reader. *See Note below.*

Current Consumption: 250mA standby.
                         450mA max. with lock relays & LED outputs all active.
                         (NOT including current drawn by peripheral devices. e.g. Readers, Locks, Detectors, etc.)

Typical Reader Current: Allow 50 to 120mA for small Prox Reader (~10cm range)
                         Allow 120 to 180mA for standard Prox Reader (~15cm range)
                         These values are general approximations.
                         See information supplied with Reader for actual current consumption.

Battery.
Maximum capacity:	17 Amp/Hour.
Deep discharge cutoff:	10 Volts.
Low Battery indication:	11 Volts.

> **NOTE:**
> **Total combined ancillary current required by all devices connected to the Intelligent Reader Module must not exceed 2 A.**

Lock Relay.
Contact rating: 30 V DC. 1 Amp maximum.

Fuse Protection.
Battery Input:	5A.	M205 (20mm)
Lock Power:	1A.	M205 (20mm)
Reader Power:	0.5A.	M205 (20mm)
LAN Power:	2A.	M205 (20mm)
Detector Power	2A.	M205 (20mm)

> ALWAYS REPLACE FUSES
> WITH A FUSE OF THE SAME SIZE,
> TYPE AND CURRENT RATING!

Physical Specifications

Cabinet size:	700mm High x 358mm Wide x 83mm Deep
Cabinet Weight:	12 Kg (Includes battery and lid)
Operating Environment:	0º to 50º Celsius and 15% to 80% Relative humidity (non-condensing)