



A UTC Fire & Security Company

**PX Version 5.0
QX/RX Version 4.51
Installation Manual**

Issue F

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Introduction

The installation manual provides the information essential for wiring and operating the system. Copies of the engineer manual, and all other Guardall manuals, can be downloaded from the Guardall web site, at

www.guardall.com

The documentation section of the Guardall web site is password protected, and you may have to apply for access using the on-line form provided on the site.

This manual and the PX/QX/RX systems described in it are copyrighted, with all rights reserved. This manual may not be copied except as expressly permitted in writing by Guardall. Export of this technology may be controlled by the U.S. Government. Diversion contrary to U.S. Law prohibited.

R&TTE Directive Declaration



Hereby, Guardall declares that the RX16i, QX32i, PX48i, PX80i and the PX250i are in compliance with the essential requirements and other relevant provisions of the RTTE Directive 1999/5/EC.

If you have any doubts concerning the suitability, connection or uses of this apparatus then consult a suitably qualified person before continuing.

SUITABILITY FOR USE

The apparatus has been designed to work on all European analogue networks It provides the following facilities:

1. Alarm transmission and transmission/reception of configuration data.
2. Automatic Call Initiation.
3. Series connection.
4. Dial tone Detection
5. Automatic dialling using DTMF tones.
6. Automatic Call Answering.
7. Stored number dialling.

It is not suitable for connection to PABX systems or for use as an extension to a payphone.

The full Declaration of Conformity for is available each product from Guardall by contacting the Customer Support Department.

EMC & LV Directives Declaration



Apart from those products required to comply with the RTTE Directive, the remaining products described in this manual comply with the essential requirements and provisions of the EMC Directive 2004/108/EC and the LV Directive 2006/95/EC, based on application of the EU harmonised standards listed below. To comply with the directives it is essential to adhere to the installation recommendations contained in this document.

The full Declaration of Conformity for is available each product from Guardall by contacting the Customer Support Department.

Proximity R&TTE Declaration



The Proximity Reader and the Keypad (with integral proximity token reader) are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. Whilst it operates on a non-harmonised frequency of 125KHz, it meets all relevant harmonised standards. It has been notified in the following EU countries: Belgium, Italy, France, The Netherlands, Denmark, Finland, UK, Ireland, Germany, Spain, Portugal, Norway, Greece and Sweden.

EN50131 & PD6662 Grades

PX control panels are suitable for use in systems designed to comply with EN50131 and PD6662:2010. The grade and environmental class of each variant is shown in the table.

Variant	Grade	Class
RX16i, QX32i	2	II
PX48i, PX80i, PX250i, PX500, PX250HS	2 or 3 (Programmable)	II

Refer to the reset options in the engineer programming manual for details on programming the EN grade.

Mains

As the system uses hazardous voltages it is recommended that the mains supply connection follow national wiring rules and is carried out by a suitably qualified person. This equipment must be permanently connected to a mains fused spur (3A or 5A) using double insulated 3-core cable with each core being no less than 0.75mm² (18AWG). The mains cable should be clamped securely with the cable clamps provided within the equipment/installation kit and the insulation around the inner cores shall not touch the case when they are inserted into the mains terminal block. Knockouts are provided on the top, bottom and sides of this equipment and these are intended for conduit or cable glands. As a mains switch is not provided on the equipment, a readily accessible disconnect device shall be incorporated in the building installation wiring. Where there is doubt as to the phase of this wiring, the device, when operated, will disconnect both poles simultaneously.

Item	RX16i/ QX32i	PX48i/ PX80i/ PX250i	PX500/ PX250HS	3A Smart Concentrator	Smart Access Module
External power source	230VAC +/- 10%, 50Hz				
Input current rating (AC)	140mA	220mA	320mA	330mA	160mA
Mains Fuse	F315mA 250V	F400mA 250V	T630mA 250V	T630mA 250V	F400mA 250V

Battery Disposal

It is the responsibility of the installer to dispose of batteries according to the local laws and regulations of their region. Contact your local waste management office for information on battery recycling or disposal.

If you are not able to identify the applicable rules in your area, please check the instructions which will be available from the battery manufacturer.

AUX DC Supply

AUX DC Supply Technical Information

The DC supply output is a Safety Extra-Low Voltage (SELV) circuit. This DC supply rating is for all the DC current requirements, including recharging the battery. The supply has the following rating:

Item	RX16i/ QX32i	PX48i/ PX80i/ PX250i	PX500/ PX250HS	3A Smart Concentrator	Smart Access Module
Output voltage (DC)	13.7V ± 5%	14V ± 5%	14V ± 5%	14V ± 5%	14V ± 5%
Standby Battery	7Ah	7Ah, 18 Ah	7Ah or 18Ah	2 off 18Ah	7Ah,
Maximum recharge time	24 hours	24 hours	24 hours	24 hours	24 hours
Power supply rating	1.0A	1.5A	2.5A	3.0A	1.5A
Battery Charge Limit	0.5A	0.75A	0.78A	0.9A per battery	0.75A
Aux1 DC supply Fuse	F800mA 250V	F800mA 250V	F800mA 250V	F1.6A 250V	F800mA 250V
Aux2 DC supply Fuse		F800mA 250V	F800mA 250V	F1.6A 250V	F800mA 250V
XiB Bus DC supply	F800mA 250V (Fuse 4)	F800mA 250V (Fuse 6)	F800mA 250V (Fuses 5,6,7,8)	F800mA 250V (Fuse 5)	
Battery	F2.5A 250V (Fuse 2)	F2.5A 250V (Fuse 4)	F2.5A 250V (Fuse 9)	F2.5A 250V (Fuses 3 & 4)	F2.5A 250V (Fuse 4)
Sounder/Audio/Aux. DC	F800mA 250V (Fuse 4)	F800mA 250V (Fuse 3)	F800mA 250V (Fuses 3 & 4)		

All wiring in this enclosure is required to be V-2, IEC approved or PVC type. All installation wiring within this equipment should utilise plastic cable ties to bundle cables so as to provide strain relief for the cable.

AUX DC Supply EN 50131-6 Compliance

EN 50131-6 Technical Data

Item	RX16i/ QX32i	PX48i/ PX80i/ PX250i	PX500/ PX250HS	3A Smart Concentrator
Power Supply	Type A			
Battery Type	Maintenance Free 12V Lead Acid			
Rated Output voltage	13.7Vdc ± 5%	14Vdc ± 5%	14Vdc ± 5%	14Vdc ± 5%
Quiescent Current	80mA	110mA	110mA	130mA
Maximum Rated Output*	0.42A	0.49A	0.49A	1.07A
Max Peak to Peak Ripple Voltage	0.7V	0.7V	0.7V	0.1V
Over-voltage protection trigger voltage		<+18.4V		<+18.4V
Maximum Power Output	+14.4Vdc	+14.7Vdc	+14.7Vdc	+14.7Vdc
Minimum Power Output	+11.4Vdc	+11.4Vdc	+11.4Vdc	+11.4Vdc
Battery Low Voltage Point	+11.4Vdc	+11.4Vdc	+11.4Vdc	+11.4Vdc
Low Output Voltage (Power Fail Point)		+10.7Vdc	+10.7Vdc	+10.7Vdc
Deep Discharge Threshold		<10.6Vdc	<10.6Vdc	<10.6Vdc

*Ratings to meet EN 50131-1 – see Battery Standby Section for further details

Getting Started

In this manual you will learn how to;

- *Identify the components of the PX system*
- *Connect components together*
- *Make simple configuration changes*

If you are new to the system it is recommended that you connect a basic system “on the bench” and familiarise yourself with programming the panel. Before getting started ensure you have the following components;

- *A control panel*
- *A LCD keypad*
- *A few meters of 4 core cable*
- *A concentrator (optional)*

Now follow these simple steps:

- *Connect +, -, A and B terminals of the keypad (CN6-XiB) to the panel XiB (refer to the appropriate diagram in the panel section of this manual for details) using a length of 4 core cable. For simplicity of wiring adhere to the following colour coding;*

+ Red
- Black
A Yellow
B Blue

- *Set the address of the concentrator to address 1 (DIL switches 1-6 all off (0))*
- *Connect +, -, A and B terminals of the concentrator (CN2-XiB) to the panel XiB connector using a length of 4 core cable using the same colour coding as used for the keypad connections.*
- *Connect the mains cable to the fused terminal block and apply power.*

The keypad address must be set before it can be used on the system. To set the keypad address, open the case so that the case tamper switch is activated. Press and hold the ? button until the address prompt is displayed (approximately 4 seconds):

Address = ?? ✓ or X	<i>If the keypad has not been addressed then the prompt will be ?? or 99. Press X to exit address mode without change.</i>
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Address = 01 ✓ or X	<i>Press 01 to set the keypad address to 1, then press ✓ to confirm</i>
-------------------------------	---

00:00 Sat 02 Jan Guardall	<i>The keypad will then display the time/date and company name.</i>
--	---

PX KP Type-n Version 2.00	<i>If the displayed message is as shown, or no bleep is heard, then the keypad is not responding so check the bus connections.</i>
--	--

The keypad types are:

Description	Type
Standard or with proximity reader	1
With 2 EOL circuit inputs	2

Once the keypad is replying then enter the default engineer PIN code, 9999, remembering to validate the PIN code by pressing ✓.

00:00 Sat 02 Jan
Enter-*****

The PIN code digits are displayed as “” characters.*

Order Codes

Order Code	Description
W76469	RX16i Control panel (English)
W76468	RX16i Control panel (Chubb)
W76471	RX16i Control panel (Chubb) and Visonic Rx
W76698	RX16i Control Panel (Chubb) Kit, with Standard LCD Keypad
W76673	RX16i Control Panel (Chubb) Kit, with Prox LCD Keypad
W76674	RX16i Control Panel (Chubb) Kit, with Prox LCD Keypad and Visonic Rx
W76481	QX32i Control panel Metal (English)
W76476	QX32i Control panel Plastic (English)
W76651	QX32i Control panel (Chubb)
W76675	QX32i Control Panel (Chubb) Kit, with Prox LCD Keypad
W76740	PX48i V5 Control panel (English)
W76759	PX48i V5 Control panel (Chubb) Kit with Prox LCD Keypad
W76742	PX80i V5 Control panel (English)
W76743	PX500 V5 Control panel (English)
W76760	PX500 V5 Control panel (Chubb) Kit with PSTN Module and Prox LCD Keypad
W76744	PX250HS V5 High Security Control panel (English)
W76756	PX250HS V5 High Security Control panel (Chubb)
W76247	LCD Keypad 2 Line, 2 EOL circuits
W76250	LCD Keypad 2 Line, Proximity & 2 EOL circuits
W76251	LCD Keypad 2 Line, 2 EOL circuits (Chubb)
W76254	LCD Keypad 2 Line, Proximity & 2 EOL circuits (Chubb)
W73821	Proximity Reader
W73820	Proximity Fob Pack (2 off)
W73837	Proximity Card Pack (10 off)
W76512	Output Module (8 Relay/8 Transistor)
W76068	Serial Module (RS232)
W74424	RS232 Direct Connection Cable
W73534	EU GuardStation™ Modem
W76546	Programming Kit
W73822	Access Module
W73847	Smart Access Module
W74368	Data Comms Module (External)
W74369	Data Comms Module (Internal)
W76727	GSR Security
W76278	GSR Access
W76279	GSR Security + Access
W76010	GSR Direct
W76667	GSR Basic

Order Code	Description
W76287	Diagnostic Concentrator 4 Input/2 Output (Plastic)
W74480	Diagnostic Concentrator 8 Input/4 Output (Plastic)
W74481	Universal 4 relay output board
W76757	3A Smart Concentrator V5 (8 input/4 output)
W76758	Chubb 3A Smart Concentrator V5 (8 input/4 output)
W76110	Radio Module (Visonic)
W76067	Radio Module (Inovonics)
W76069	Dual Comm Module
W76070	PSTN Module
W76071	GSM Module
W76050	Speech module

Order Codes	Inovonics
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Order code	Inovonics Part No.	Description
W76067		Radio module Inovonics(serial module + EE4000)
W76245	EE5000	Inovonics repeater
W76099	EE1215	Universal (Generic) Transmitter with case tamper (SAME AS EE1210 BUT WITH OTW TAMPER)
W76094	EE1216	Universal (Generic) Transmitter w/Wall Tamper (SAME AS EE1215 BUT WITH DUAL INPUT)
W76101	EE1233S	Pendant Sgl. Button
W76095	EE1233D	Pendant Dbl. Button
W76241	EE1223S	1 button water resistant pendant TX
W76242	EE1223D	2 button water resistant pendant TX
W76102	EE1235S	Beltclip Trans. Sgl Button
W76096	EE1235D	Beltclip Trans. Dbl Button
W76292	EE1238D	Dual condition 2 button belt clip TX
W76669	EE1261	Inovonics PIR (EN Grade 2 18m PIR) Replacement for W76103)
W76594	EE1265	Inovonics 360 deg PIR
W76097	EE1247	ShatterPro/Transmitter
W76098	EE1242	Smoke detector

Order Codes	Visonic
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The following Visonic transmitter types have been tested with the system but are not available to purchase from Guardall.

Part Number	Type/Description
MCT-234	4-Button Keyfob
MCT-101	1-Button Control Fob
MCT-102	2-Button Control Fob
MCT-104	4-Button Control Fob
Next+ PIR MCW	Motion Detector (PIR)
MCT-302	Door/Window Contact
MCT-501	Glassbreak Detector
MCT-100	Universal Transmitter
MCPIR-3000	Motion Detector (PIR)
MCT-241	Pendant
MCT-220	Emergency Button
MCT-124	Twin Button Control Fob
MCT-425	Smoke Detector
MCT-550	Flood Detector
MCT-442	Carbon Monoxide Detector
MCX-600	Repeater Module

System Components

A system comprises of the following components:

1. A control unit, which processes all the alarm information from the detection points. Outputs are provided to operate sounders, strobe and communication devices. Configuration information is stored in EEPROM. The manual details the features of the control panels. Most features in the PX panel range are common. The differences are shown in the table.

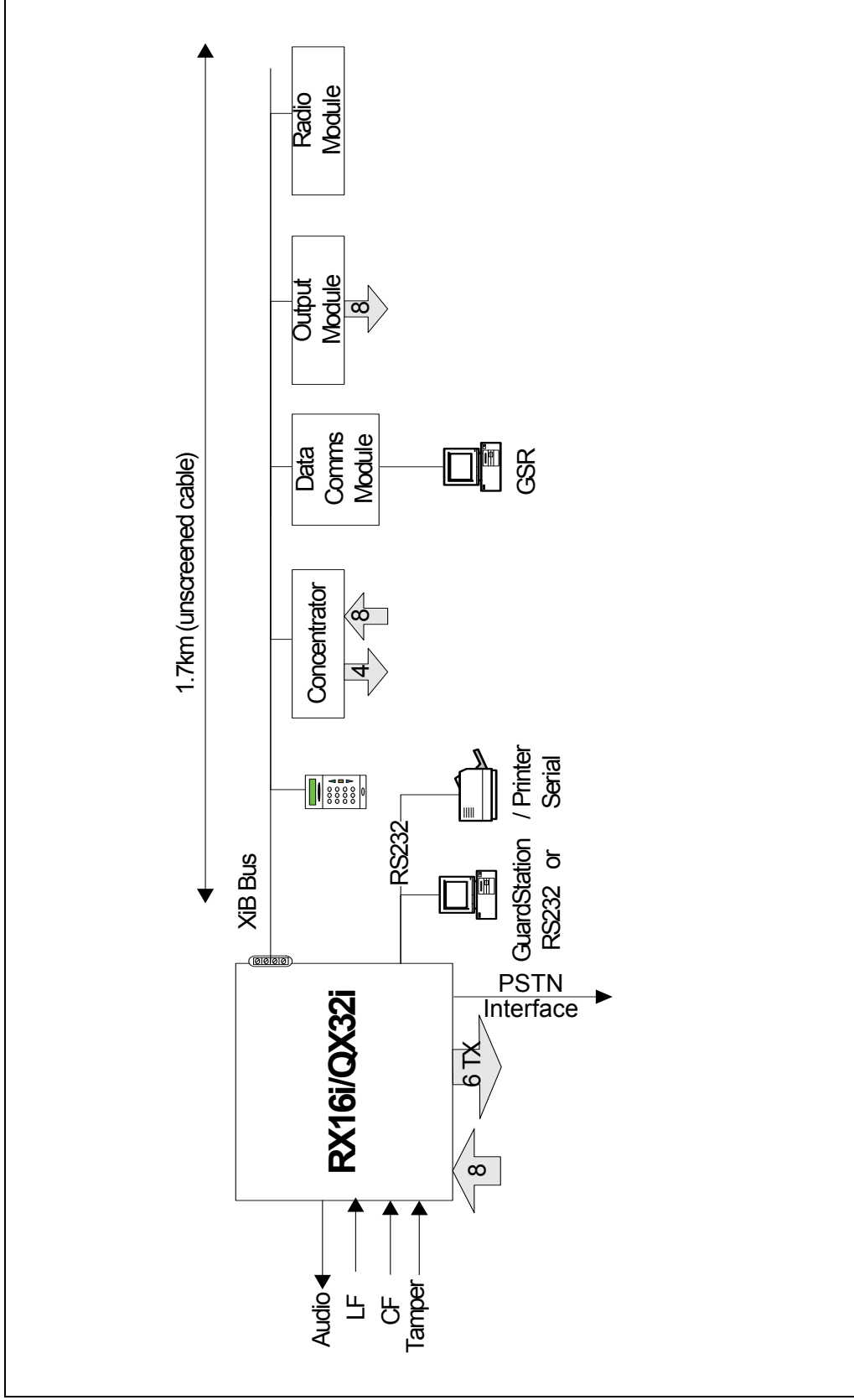
Feature	RX16i	QX32i	PX48i	PX80i	PX250i	PX500	PX250HS
Circuits	16	32	48	80	250	512	256
Concentrators	2	6	10	18	32	64	32
Radio Modules	2	2	4	8	8	16	8
Radio Transmitters	16	16	24	40	24	128	128
Radio Keyfobs	4	8	12	16	16	20	20
DVRs	1	2	8	8	8	8	8
XiB Detectors	8	16	24	40	40	64	64
Security Users	16	32	50	100	250	200	200
Areas	4	8	8	16	24	32	16
Set Groups	4	8	8	16	32	32	16
Sub Systems		4	4	8	8	16	8
Keypads	4	8	8	16	24	32	16
Event Log Size	250	500	1000	1000	1000	1000	2000
Output Modules	1	2	8	16	16	32	32
Output functions	16	16	20	64	128	128	128
Custom Responses	2	5	5	10	10	20	20
Tel Numbers	8	8	8	8	8	8	8
Schedules	2	4	32	32	32	32	16
HS Schedules							16
Custom users							20
Holidays		14	14	14	14	14	20
Max. Access Users			1000	1000	1000	1000	1000
Access Modules			32	32	32	32	32
Access Log Size			1000	1000	1000	1000	1000
GSR	1	2	4	4	4	4	4

The diagram on the following page shows the bus peripheral connections.

2. User interaction with the system is via LCD keypad. There must be at least 1 keypad on a system. There are several types of LCD keypad available, which are detailed later.
3. On the RX16i, QX32i, PX48i, PX80i and PX250i, up to 8 detectors may be connected directly to the panel. Further detectors, up to the control panel limit, may be connected to the system through concentrators on a 4-wire bus. Each concentrator provides 8 additional circuits.
4. Optional equipment includes;
 1. A dialler/modem/Dual comm module
 2. Output modules each with 8 programmable outputs
 3. A serial module for connection of a printer or PC
 4. Bus isolator
 5. Access module
 6. Data comms module for an Ethernet connection to a PC
 7. Radio module
 8. Audio module

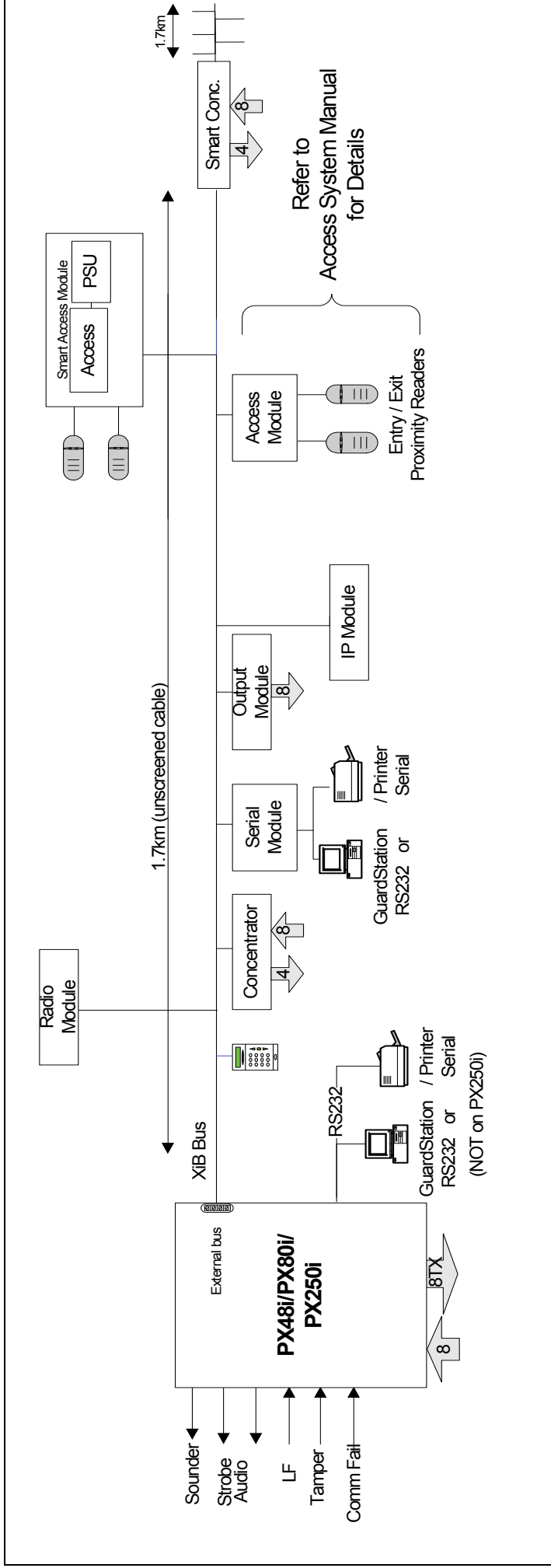
Technical Specification

RX16i/QX32i Bus Connections



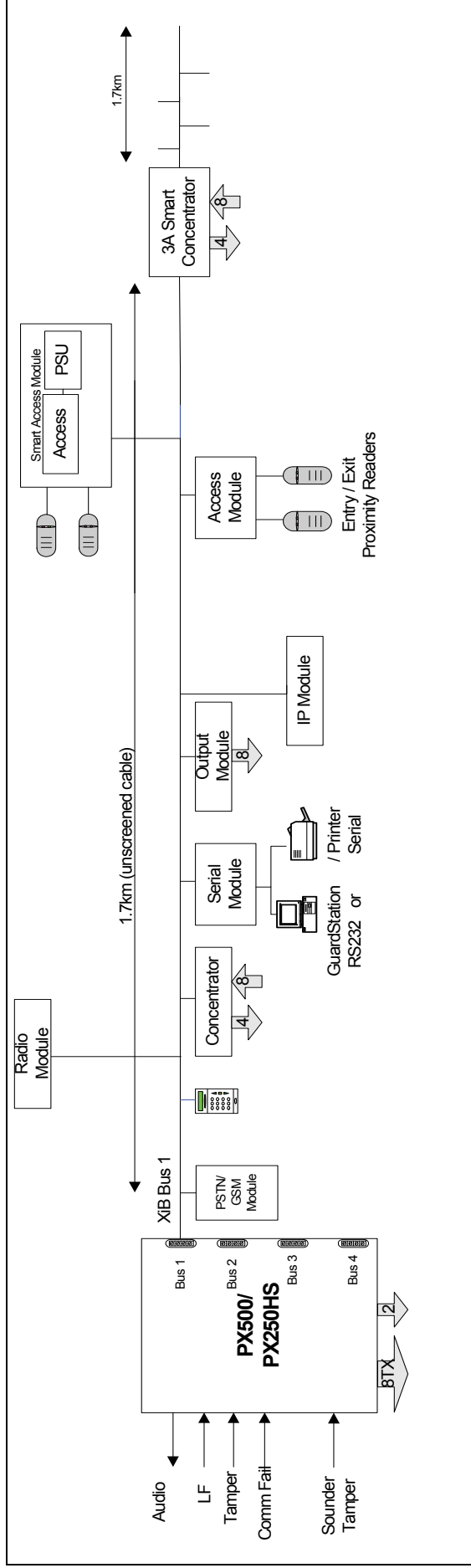
Technical Specification

PX48i/PX80i/PX250i Bus Connections



Technical Specification

PX500/PX250HS Bus Connections



Technical Specification

Technical Specification Environmental

Parameter	Range
Temperature range	-10 to 50 °C
Humidity	10% to 90% relative humidity

Technical Specification Cable Type

The system has a 4-wire bus for all peripherals. The recommended cable type is 7-strand/0.2mm² diameter un-screened cable, which has a resistance of 90 ohms/km and a core to core capacitance of 85nF/km. The screened cable referred to in this manual has a capacitance of 68nF/km and a resistance of 39R/km. **If screened cable is used it should be terminated in the control panel and connected to earth.** Refer to the section on user interfaces and concentrators for details of the maximum length of cable on each bus.

Technical Specification Cable Length

The maximum length, with a single standard keypad connected at the end of the cable and no other peripherals connected on the data bus, is shown in the table.

Maximum Data Bus Cable Length (m)		
Power Source	Un-screened Cable	Screened Cable
Control Panel	600m	1900m
Local Aux. PSU, with single 0v core	1700m	2500m
Local Aux. PSU, with 2 0v cores	1900m	2500m

If auxiliary PSUs are used then all 0v connections must be connected to the control panel 0-volt terminal. It is not recommended practice to share a sensor connection and the data bus connections in the same cable.

Technical Specification Operation Voltage

The operating voltage range of all XiB components is shown in the table.

Parameter	Minimum	Typical	Maximum
Voltage (volts)	10.5 v	13.5 v	14.7 v

Voltage (Volts)	Condition
> 11.7	Battery OK
11.4	Low Volts
10.7	Power Fail
< 10.6	Deep discharge

Technical Specification	Current Consumption
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Product	Current (mA)
RX16i/QX32i	80
PX48i/PX80i/PX250i	110
PX500/PX250HS	110
Keypad (standard)	28
Keypad with proximity	85
Mini keypad	80
Concentrator (8-input)	42
Concentrator (4-input)	25
3A Smart Concentrator	130
Output module	22 (all relays off)
Serial module	30
Access module	33
Proximity Reader	14
Data comms Module	60
GSM/Dual Comm module	60 (standby) 125 (transmitting, strong signal present) 180 (transmitting, weak signal present)
PSTN module	50
Speech module	Standby-11 Playback-23 Record-32
Radio Module (Inovonics)	75
Radio Module (Visonic)	52

Technical Specification	Battery Standby
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The following example shows the average system current (excluding sensors) for a typical system at a supply voltage of 14 volts.

Product	RX16i/ QX32i	PX48i/ PX80i/ PX250i	PX500/ PX250HS
Panel	80	110	110
1 Keypad	28	28	28
1 Concentrator	42	42	42
Total (mA)	150	180	180

The table below shows the available auxiliary current for various battery sizes using the above typical system current.

The power supply standby capacity specified in EN 50131-1 is shown in the table. PD6662:2010 allows Grade 3 Installations to have a standby time of 24 hours, which can be reduced to 12 hours providing that Mains Failure is being signalled to the ARC as a separate message or channel.

Grade	1	2	3	4
Standby time (hours)	12	12	30	30

The following tables show the maximum available system current with a minimum of 12 hours standby for each combination of power supply and battery size.

RX16i/QX32i					
24 hour battery re-charge time with a minimum 12 hours standby					
Battery Size	Maximum recharge current	System current maximum	Available backup period	RX16i/QX32i current (example system)	Available Current (For sensors etc.)
7 Ah	500mA	500mA	14 hours	150mA	350mA

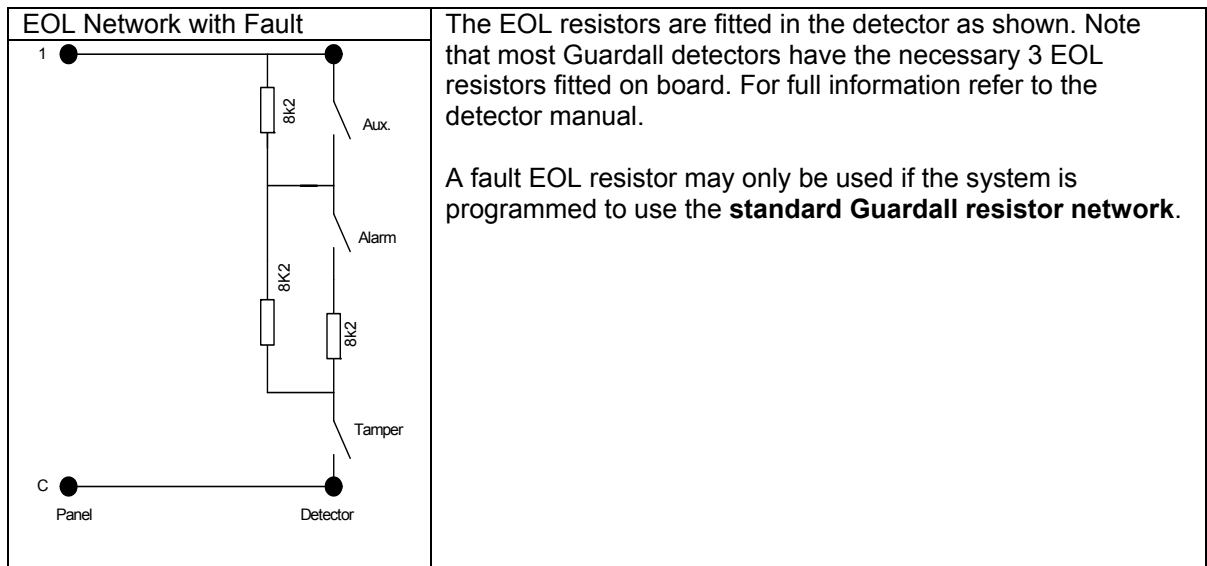
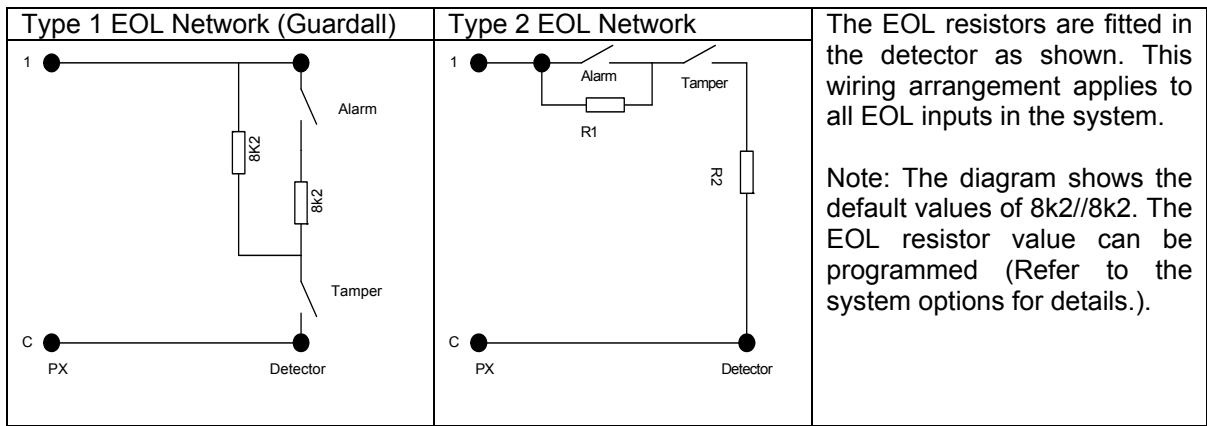
PX48i/PX80i/PX250i					
24 hour battery re-charge time with a minimum 12 hours standby					
Battery Size	Maximum recharge current	System current maximum	Available backup period	PX48i/PX80i/PX250i current (example system)	Available Current (For sensors etc.)
7 Ah	750mA	580mA	12 hours	180mA	400mA
12 Ah	750mA	750mA	16 hours	180mA	570mA
17 Ah	750mA	750mA	22 hours	180mA	570mA
18 Ah	750mA	750mA	24 hours	180mA	570mA
18 Ah	750mA	600mA Error! Bookmark not defined.	30 hours	180mA	420mA

PX500/PX250HS					
24 hour battery re-charge time with a minimum 12 hours standby					
Battery Size	Maximum recharge current	System current maximum	Available backup period	PX 500 current (example system)	Available Current (For sensors etc.)
7 Ah	780mA	580mA	12 hours	180mA	400mA
12Ah	780mA	750mA	16 hours	180mA	570mA
17 Ah	780mA	1.41A	12 hours	180mA	1.23A
18 Ah	780mA	750mA	24 hours	180mA	570mA
18Ah	780mA	600mA Error! Bookmark not defined.	30 hours	180mA	420mA

Smart Concentrator will provide a minimum of 30 hours standby time.

3A Smart Concentrator					
24 hour battery re-charge time with a minimum 30 hours standby					
Battery Size	Maximum recharge current per battery	System current maximum	Available backup period	3A Smart Conc. current	Available Current (For sensors etc.)
2 x18 Ah	0.9A	1.2A	30 hours	130mA	1.07A

Technical Specification EOL Resistor Connections



The resistance for each possible state is shown in the table and can be displayed using the circuit check mode function.

Circuit State	Nominal Resistance
Tamper	0k
Clear	4k1
Alarm	8k2
Aux (Fault)	12k3
Aux+Alarm (Mask)	16k4
Tamper	>20k

Diagnostics

Diagnostics

Accuracy

The accuracy of the diagnostic system is typically less than 1%, with a maximum error 2.5%. This accuracy can only be achieved by programming the correct value of the 5V-reference voltage (option 69 on the main menu).

Diagnostics

Supply Measurements

Parameter	Range	Resolution
Panel voltage	0-20v	78mV
Panel battery voltage	0-20v	78mV
System current	0-2A	7.8mA
Battery Current	0-1.1A	4.4mA
Battery standby capacity	See Note	1 hour
Concentrator current	0-250mA	1mA
Concentrator voltage	0-15V	58mV
Keypad voltage	0-15V	58mV
Circuit resistance (for 8k2 EOL)	0-20K	70R

Note: The displayed standby capacity will depend on the programmed battery size and the actual system current.

Diagnostics

XiB Comms LED

All XiB peripherals, except the keypad, have a green LED fitted, which is used to indicate the state of the XiB communications.

State	Meaning
OFF	No power
ON	Communication error
Slow FLASH	Operating normally
Quick FLASH	Resetting, or frequency of polling in a dialler, serial module or IP module

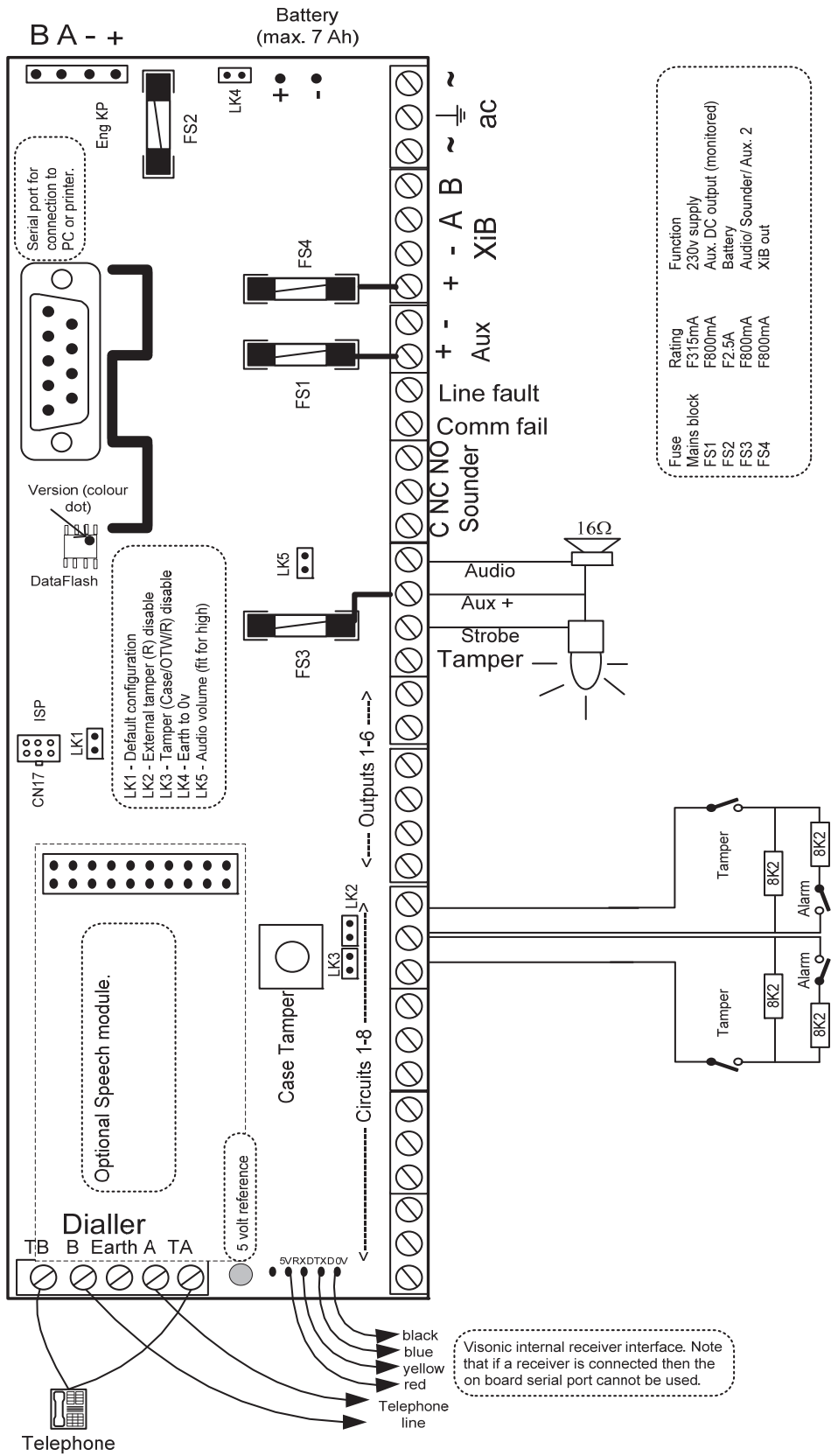
Diagnostics

Circuit Limits

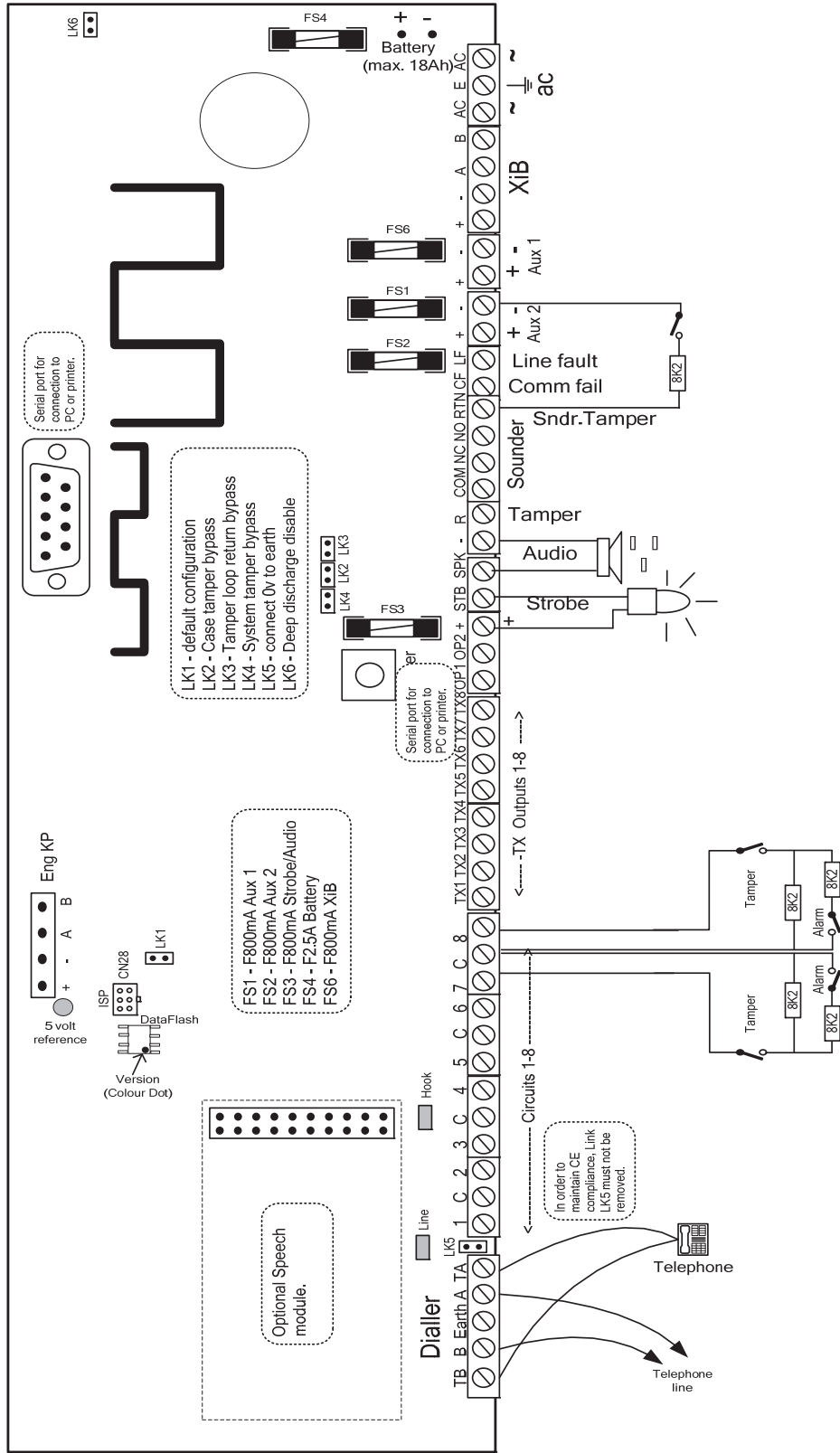
Option	Default	RX16i/QX32i/ PX48i/PX80i/ PX250i	Concentrator	Keypad	Access Module
Debounce time	200ms	2.2-500ms (inputs 1-3) 14-500ms (inputs 4-8)	2-500ms (inputs 1-4) 10-500ms (inputs 5-8)	200ms	200ms
Pulse count	0 (Off)	0-255	0-255	Not Applicable	Not Applicable
Pulse count period	2 secs	2-255 seconds	2-255 seconds	Not Applicable	Not Applicable
Tamper resistor	8k2	Programmable	Programmable	Programmable	8k2
Alarm resistor	8k2	Programmable	Programmable	Programmable	8k2
Alarm/Tamper threshold	30%	30-100	30-100	20%	20%

All percentages are with reference to the nominal programmed EOL value. The alarm and tamper EOL resistors are programmable. Refer to system options in the engineer manual for details.

RX16i/QX32i Control Unit



PX48i/PX80i/PX250i Control Unit



PX500/PX250HS Control Unit

PX500/PX250HS Control Unit

Installation

The PX 500 control panel is supplied with a spares bag containing the following items:

- Battery lead
- Cable clamp
- 2.5A fuse
- 800mA fuse x 8 (PX500/HS)
- Screw No 6 x 19mm
- 2 Screws No 6 x 9.5mm
- 2 ty-wraps
- 4 PCB stand-offs for fitting a XiB peripheral inside the case
- Various 2, 3, 4 and 5 way plug-on connectors
- 8k2 resistor x 2
- Thermistor cable assembly. (battery temperature compensation)

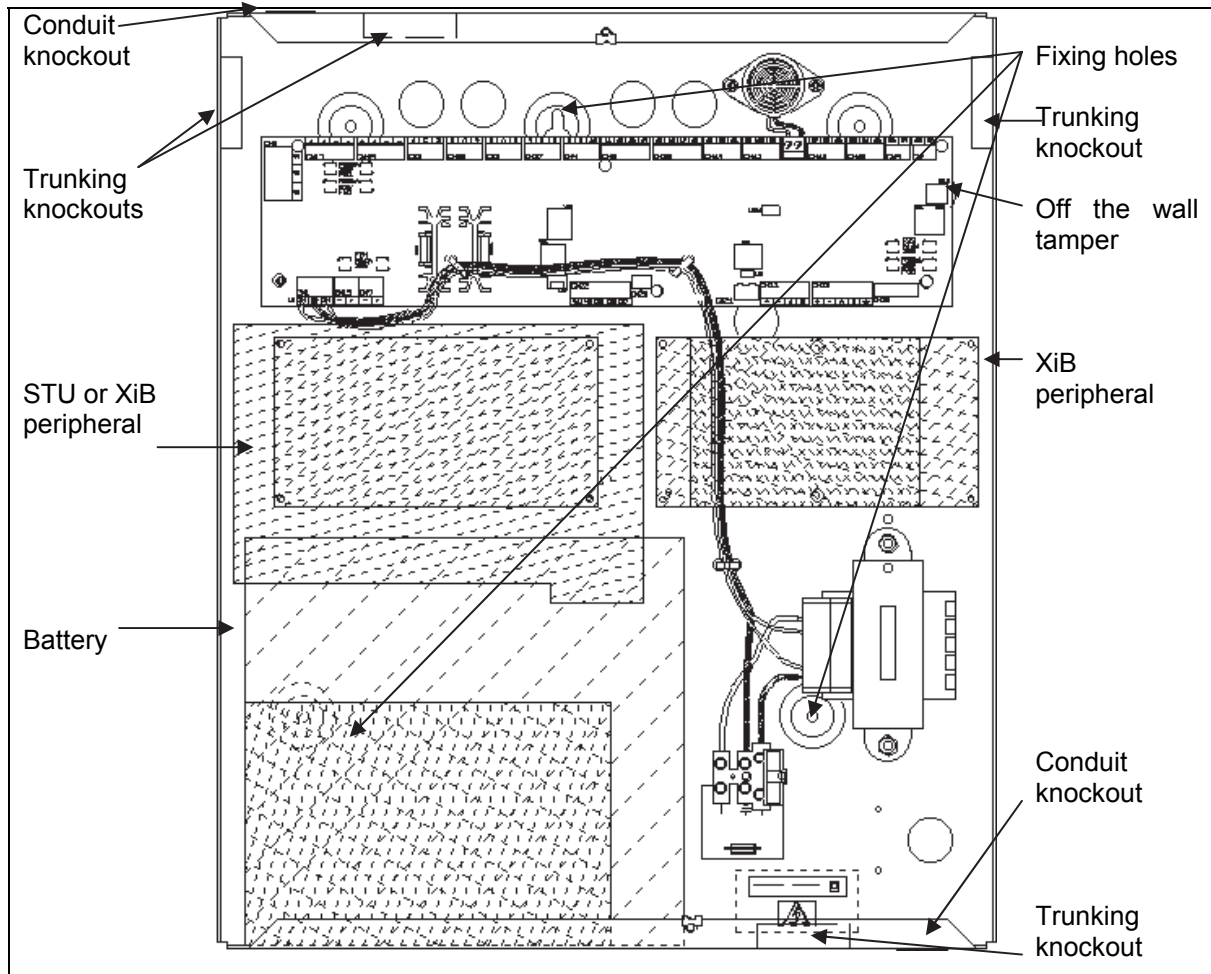
PX500/PX250HS Control Unit

Case Layout

Mark the fixing positions shown and secure the rear case to the wall using 3 suitable screws.

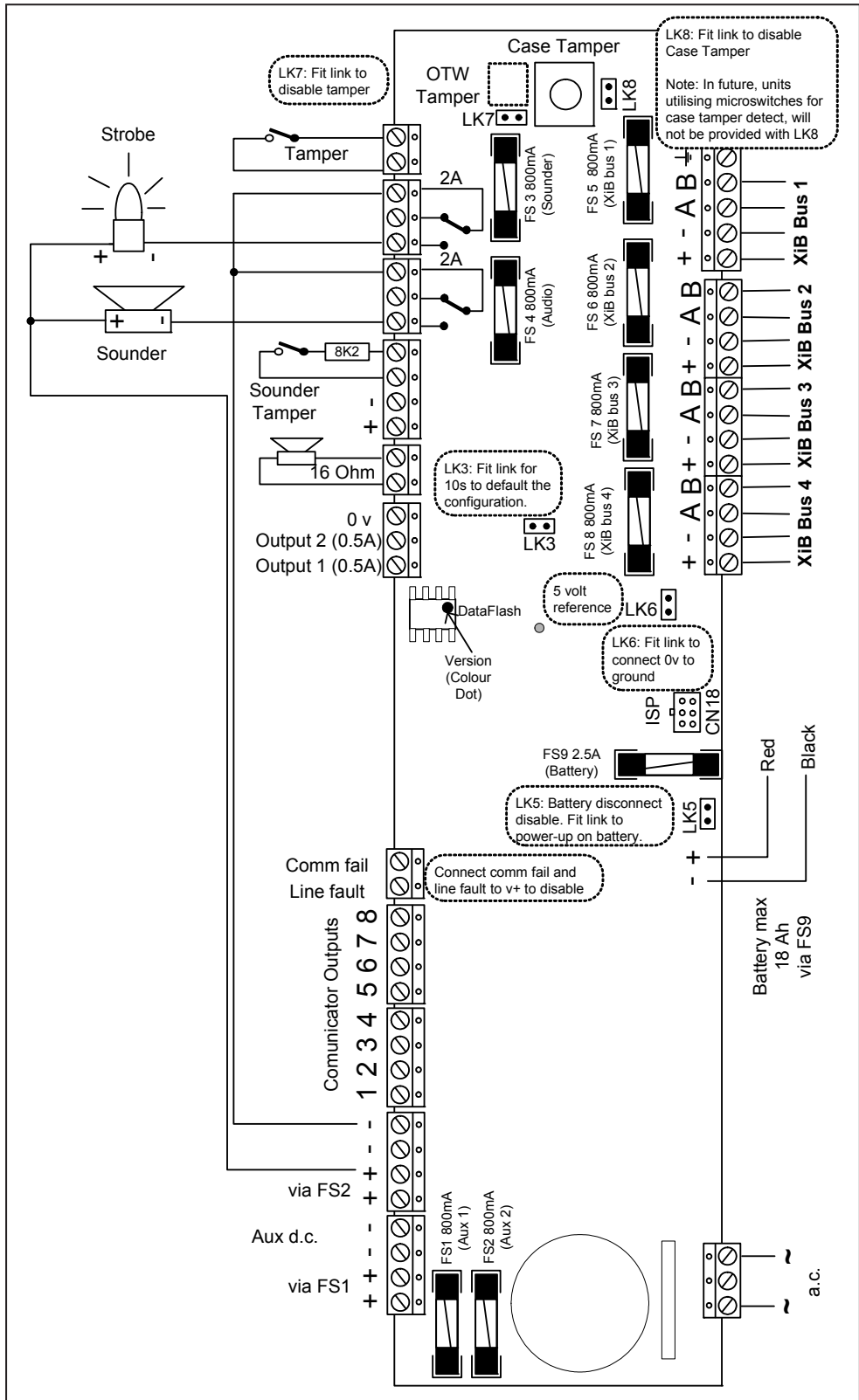
There are 2 x 20mm conduit knockout positions as indicated. The required cable entry point(s) should be knocked out from the **inside** prior to mounting the case.

There are 4 trunking knockouts. These can be knocked out from either side.



PX500/PX250HS PCB Connections (PX500/PX250HS)

All PCB connections are plug-on screw down terminal blocks. The function and position of each terminal is described in the following page.

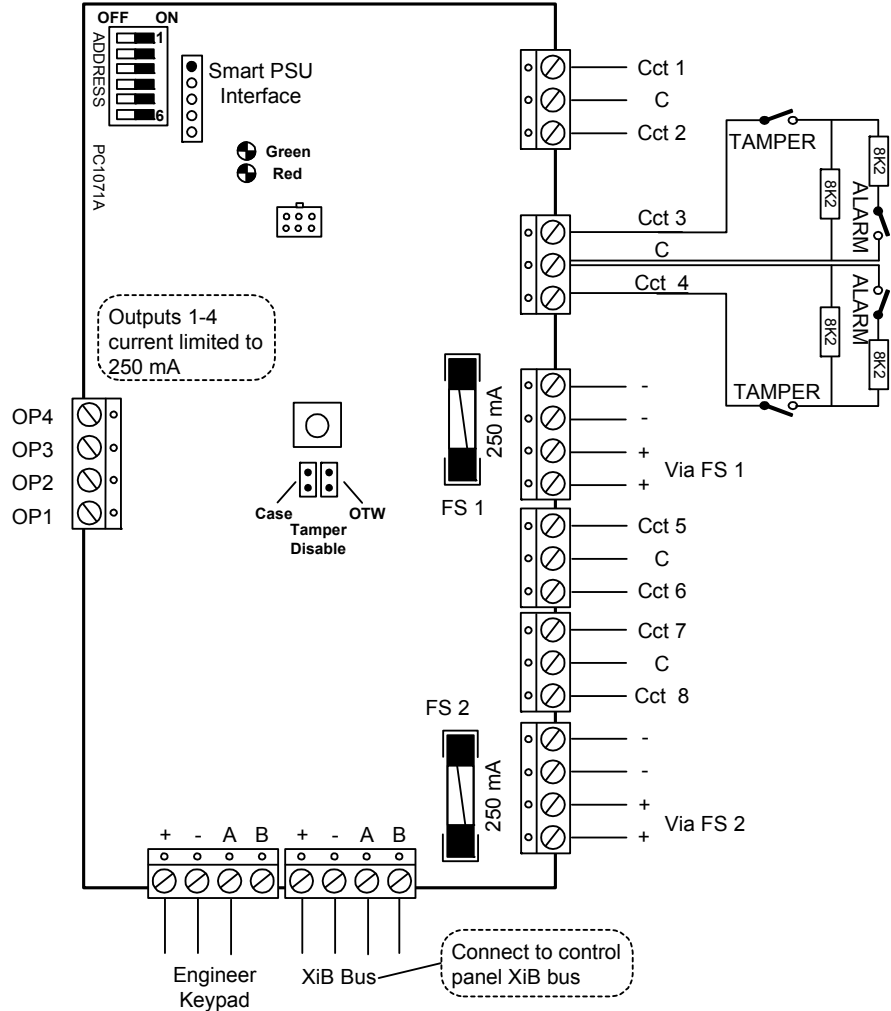


In order to ensure CE compliance, a varistor shall be connected between + pin and the earth pin of XIB bus 1 connector. A second varistor is also required between the - pin and the earth pin of the same connector.

8 Input Concentrator

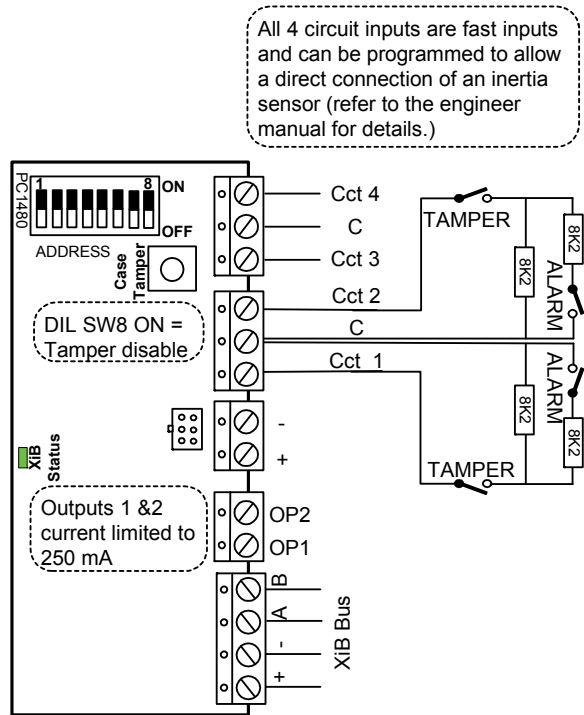
Address	DIL Switch
1	6 5 4 3 2 1
2	0 0 0 0 0 0
3	0 0 0 0 0 1
4	0 0 0 0 1 0
5	0 0 0 0 1 1
6	0 0 0 1 0 0
7	0 0 0 1 0 1
8	0 0 0 1 1 0
9	0 0 0 1 1 1
10	0 0 1 0 0 0
11	0 0 1 0 0 1
12	0 0 1 0 1 0
13	0 0 1 0 1 1
14	0 0 1 1 0 0
15	0 0 1 1 0 1
16	0 0 1 1 1 0
17	0 0 1 1 1 1
18	0 1 0 0 0 0
19	0 1 0 0 0 1
20	0 1 0 0 1 0
21	0 1 0 0 1 1
22	0 1 0 1 0 0
23	0 1 0 1 0 1
24	0 1 0 1 1 0
25	0 1 0 1 1 1
26	0 1 1 0 0 0
27	0 1 1 0 0 1
28	0 1 1 0 1 0
29	0 1 1 0 1 1
30	0 1 1 1 0 0
31	0 1 1 1 0 1
32	0 1 1 1 1 0
33	0 1 1 1 1 1
34	1 0 0 0 0 0
35	1 0 0 0 0 1
36	1 0 0 0 1 0
37	1 0 0 0 1 1
38	1 0 0 1 0 0
39	1 0 0 1 0 1
40	1 0 0 1 1 0
41	1 0 0 1 1 1
42	1 0 1 0 0 0
43	1 0 1 0 0 1
44	1 0 1 0 1 0
45	1 0 1 0 1 1
46	1 0 1 1 0 0
47	1 0 1 1 0 1
48	1 0 1 1 1 0
49	1 0 1 1 1 1
50	1 1 0 0 0 0
51	1 1 0 0 0 1
52	1 1 0 0 1 0
53	1 1 0 0 1 1
54	1 1 0 1 0 0
55	1 1 0 1 0 1
56	1 1 0 1 1 0
57	1 1 0 1 1 1
58	1 1 1 0 0 0
59	1 1 1 0 0 1
60	1 1 1 0 1 0
61	1 1 1 0 1 1
62	1 1 1 1 0 0
63	1 1 1 1 0 1
64	1 1 1 1 1 0
65	1 1 1 1 1 1

Outputs 3&4 of 4-output concentrator may only be programmed on a control panel fitted with version 3.10 or later.



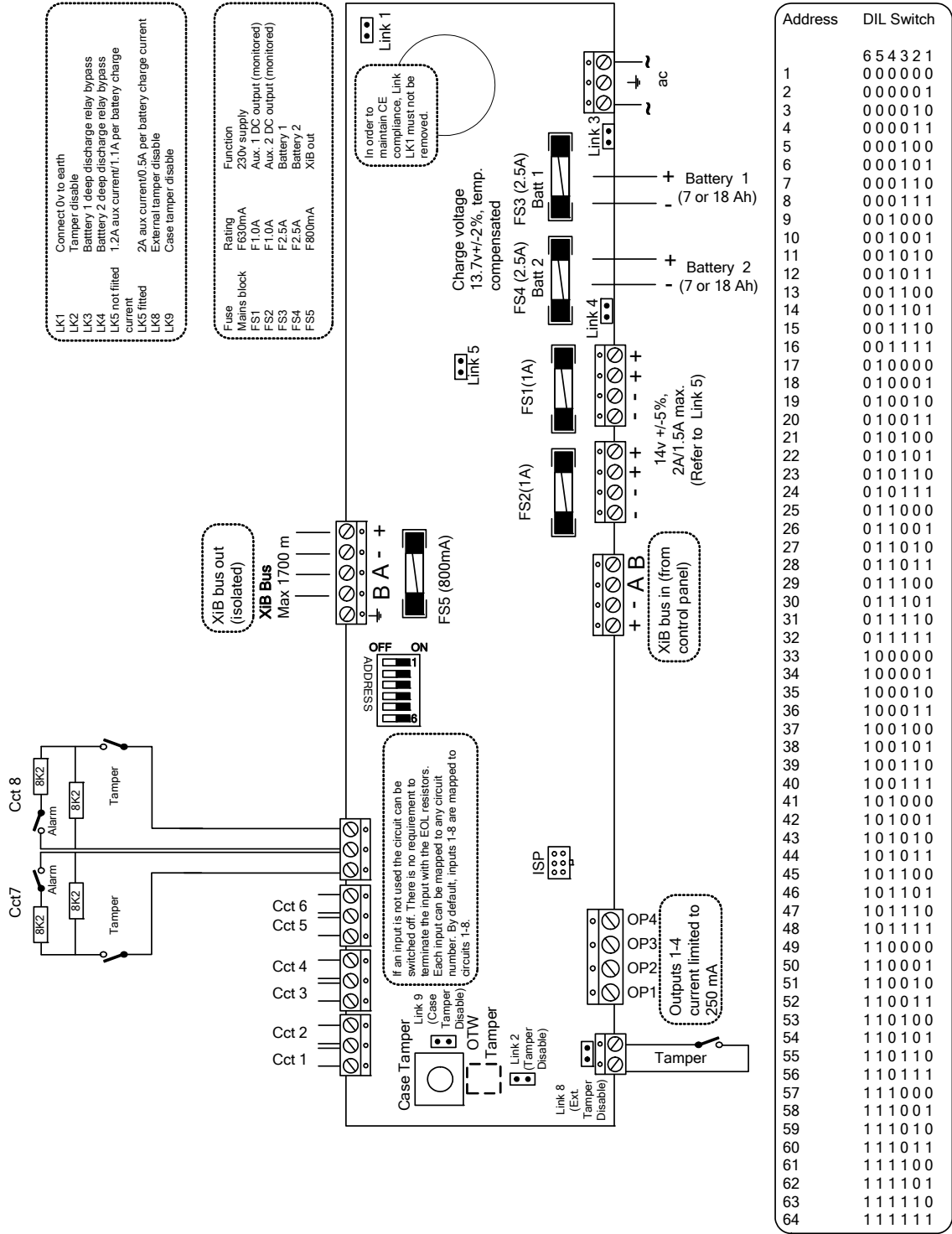
4 Input Concentrator

Address	DIL Switch	Address	DIL Switch
1	7 6 5 4 3 2 1	65	7 6 5 4 3 2 1
2	0 0 0 0 0 0 0	66	1 0 0 0 0 0 0
3	0 0 0 0 0 0 1	67	1 0 0 0 0 0 1
4	0 0 0 0 0 1 0	68	1 0 0 0 0 1 0
5	0 0 0 0 0 1 1	69	1 0 0 0 0 1 1
6	0 0 0 0 1 0 0	70	1 0 0 0 1 0 0
7	0 0 0 0 1 0 1	71	1 0 0 0 1 0 1
8	0 0 0 0 1 1 0	72	1 0 0 0 1 1 0
9	0 0 0 0 1 1 1	73	1 0 0 0 1 1 1
10	0 0 0 1 0 0 0	74	1 0 0 1 0 0 0
11	0 0 0 1 0 0 1	75	1 0 0 1 0 0 1
12	0 0 0 1 0 1 0	76	1 0 0 1 0 1 0
13	0 0 0 1 0 1 1	77	1 0 0 1 0 1 1
14	0 0 0 1 1 0 0	78	1 0 0 1 1 0 0
15	0 0 0 1 1 0 1	79	1 0 0 1 1 0 1
16	0 0 0 1 1 1 0	80	1 0 0 1 1 1 0
17	0 0 0 1 1 1 1	81	1 0 0 1 1 1 1
18	0 0 1 0 0 0 0	82	1 0 1 0 0 0 0
19	0 0 1 0 0 0 1	83	1 0 1 0 0 0 1
20	0 0 1 0 0 1 0	84	1 0 1 0 0 1 0
21	0 0 1 0 0 1 1	85	1 0 1 0 0 1 1
22	0 0 1 0 1 0 0	86	1 0 1 0 1 0 0
23	0 0 1 0 1 0 1	87	1 0 1 0 1 0 1
24	0 0 1 0 1 1 0	88	1 0 1 0 1 1 0
25	0 0 1 0 1 1 1	89	1 0 1 0 1 1 1
26	0 0 1 1 0 0 0	90	1 0 1 1 0 0 0
27	0 0 1 1 0 0 1	91	1 0 1 1 0 0 1
28	0 0 1 1 0 1 0	92	1 0 1 1 0 1 0
29	0 0 1 1 0 1 1	93	1 0 1 1 0 1 1
30	0 0 1 1 1 0 0	94	1 0 1 1 1 0 0
31	0 0 1 1 1 0 1	95	1 0 1 1 1 0 1
32	0 0 1 1 1 1 0	96	1 0 1 1 1 1 0
33	0 0 1 1 1 1 1	97	1 0 1 1 1 1 1
34	0 1 0 0 0 0 0	98	1 1 0 0 0 0 0
35	0 1 0 0 0 0 1	99	1 1 0 0 0 0 1
36	0 1 0 0 0 1 0	100	1 1 0 0 0 1 0
37	0 1 0 0 0 1 1	101	1 1 0 0 0 1 1
38	0 1 0 0 1 0 0	102	1 1 0 0 1 0 0
39	0 1 0 0 1 0 1	103	1 1 0 0 1 0 1
40	0 1 0 0 1 1 0	104	1 1 0 0 1 1 0
41	0 1 0 0 1 1 1	105	1 1 0 0 1 1 1
42	0 1 0 1 0 0 0	106	1 1 0 1 0 0 0
43	0 1 0 1 0 0 1	107	1 1 0 1 0 0 1
44	0 1 0 1 0 1 0	108	1 1 0 1 0 1 0
45	0 1 0 1 0 1 1	109	1 1 0 1 0 1 1
46	0 1 0 1 1 0 0	110	1 1 0 1 1 0 0
47	0 1 0 1 1 0 1	111	1 1 0 1 1 0 1
48	0 1 0 1 1 1 0	112	1 1 0 1 1 1 0
49	0 1 0 1 1 1 1	113	1 1 0 1 1 1 1
50	0 1 1 0 0 0 0	114	1 1 1 0 0 0 0
51	0 1 1 0 0 0 1	115	1 1 1 0 0 0 1
52	0 1 1 0 0 1 0	116	1 1 1 0 0 1 0
53	0 1 1 0 0 1 1	117	1 1 1 0 0 1 1
54	0 1 1 0 1 0 0	118	1 1 1 0 1 0 0
55	0 1 1 0 1 0 1	119	1 1 1 0 1 0 1
56	0 1 1 0 1 1 0	120	1 1 1 0 1 1 0
57	0 1 1 0 1 1 1	121	1 1 1 0 1 1 1
58	0 1 1 1 0 0 0	122	1 1 1 1 0 0 0
59	0 1 1 1 0 0 1	123	1 1 1 1 0 0 1
60	0 1 1 1 0 1 0	124	1 1 1 1 0 1 0
61	0 1 1 1 0 1 1	125	1 1 1 1 0 1 1
62	0 1 1 1 1 0 0	126	1 1 1 1 1 0 0
63	0 1 1 1 1 0 1	127	1 1 1 1 1 0 1
64	0 1 1 1 1 1 0	128	1 1 1 1 1 1 0
	0 1 1 1 1 1 1		1 1 1 1 1 1 1



3A Smart Concentrator

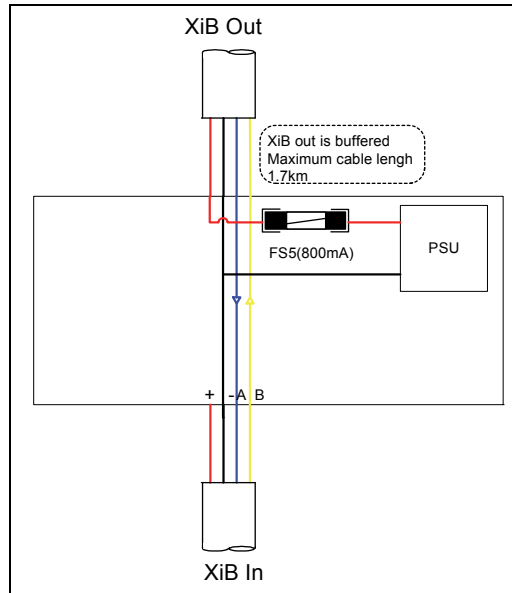
The 3A Smart concentrator can be used with a single battery or 2 batteries. If 2 batteries are used they should be of the same type and capacity. If a single battery is used it should be connected to the Batt 1 terminals. The case can accommodate 7Ah or 18Ah batteries. Deep discharge protection is provided for each battery.



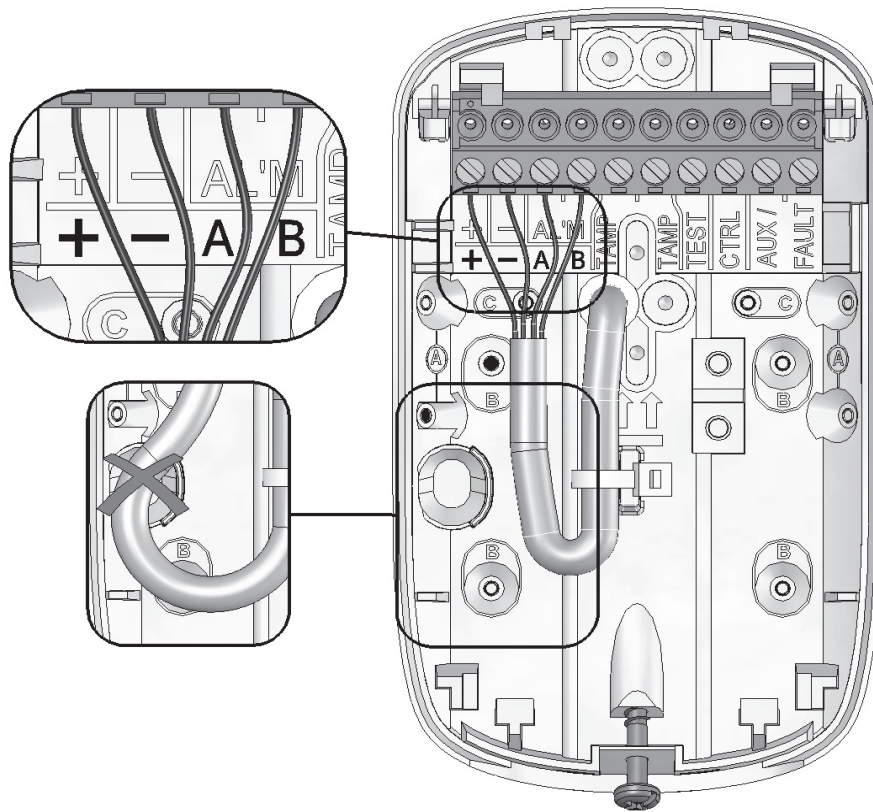
3A Smart Concentrator

XiB Bus

The 3A Smart Concentrator has 2 XiB connectors, XiB in and XiB out. The XiB in connector must be used to connect the XiB bus from the panel. All 4 wires may be connected but the XiB in + terminal is not connected to the XiB out + terminal. The XiB out connector is used to connect all XiB peripherals that are to be powered from the 3A Smart Concentrator. The XiB out bus is electrically isolated from the XiB in bus and peripherals can be connected on the XiB out bus up to 1.7km from the 3A Smart concentrator (at 9k6 baud).



XiB Detectors



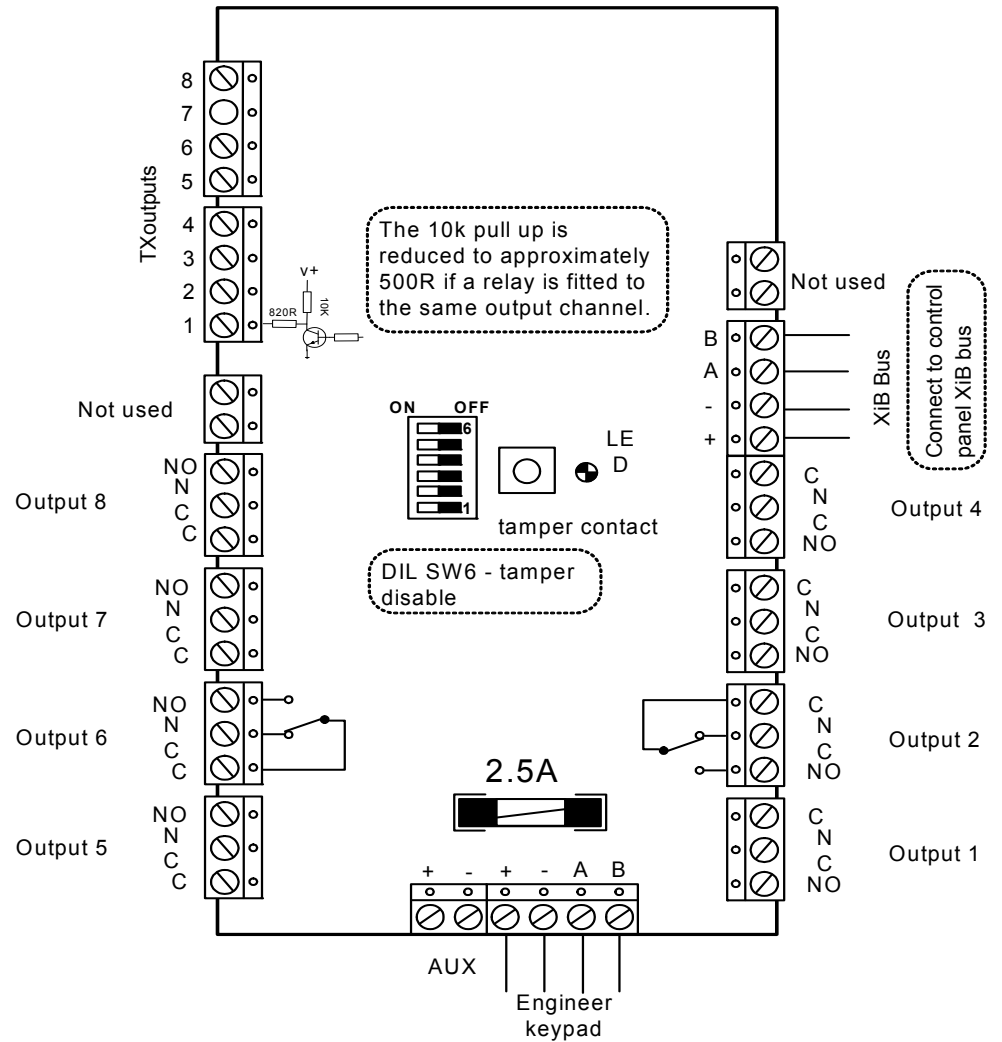
Refer to the relevant XiB Detector installation manual for the connection details

PQ15 XiB Manual	Part No: 321094
PQ15-AM XiB Manual	Part No: 321097
DT15+ XiB Manual	Part No: 321106
DT15-AM XiB Manual	Part No: 321113

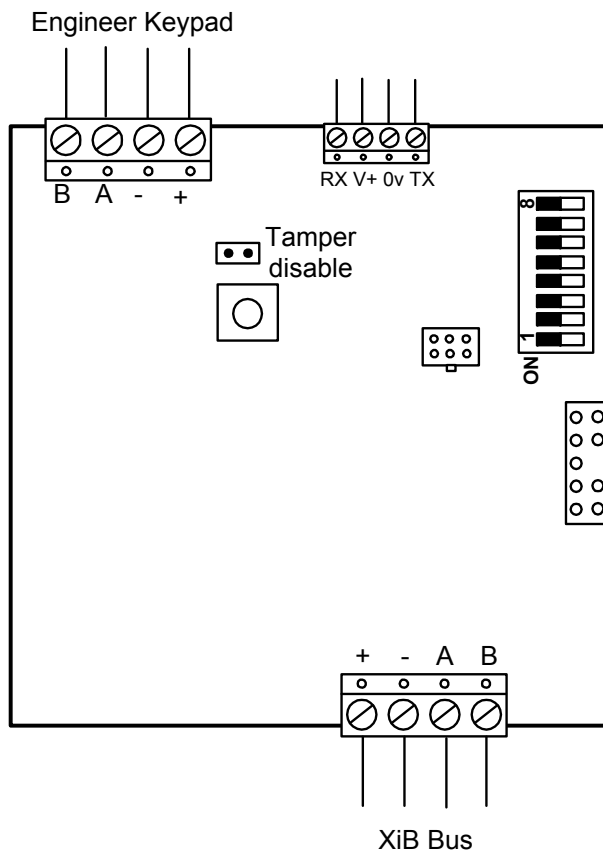
Output Module

Address	DIL Switch
	5 4 3 2 1
1	0 0 0 0 0
2	0 0 0 0 1
3	0 0 0 1 0
4	0 0 0 1 1
5	0 0 1 0 0
6	0 0 1 0 1
7	0 0 1 1 0
8	0 0 1 1 1
9	0 1 0 0 0
10	0 1 0 0 1
11	0 1 0 1 0
12	0 1 0 1 1
13	0 1 1 0 0
14	0 1 1 0 1
15	0 1 1 1 0
16	0 1 1 1 1
17	1 0 0 0 0
18	1 0 0 0 1
19	1 0 0 1 0
20	1 0 0 1 1
21	1 0 1 0 0
22	1 0 1 0 1
23	1 0 1 1 0
24	1 0 1 1 1
25	1 1 0 0 0
26	1 1 0 0 1
27	1 1 0 1 0
28	1 1 0 1 1
29	1 1 1 0 0
30	1 1 1 0 1
31	1 1 1 1 0
32	1 1 1 1 1

Note: From firmware version 2.00B the address range is reduced to 32 and DIL SW6 is tamper disable.



Serial Module



Address	DIL Switch
	8 7 6 5 4 3 2 1
1	X X X X 0 0 0 0
2	X X X X 0 0 0 1

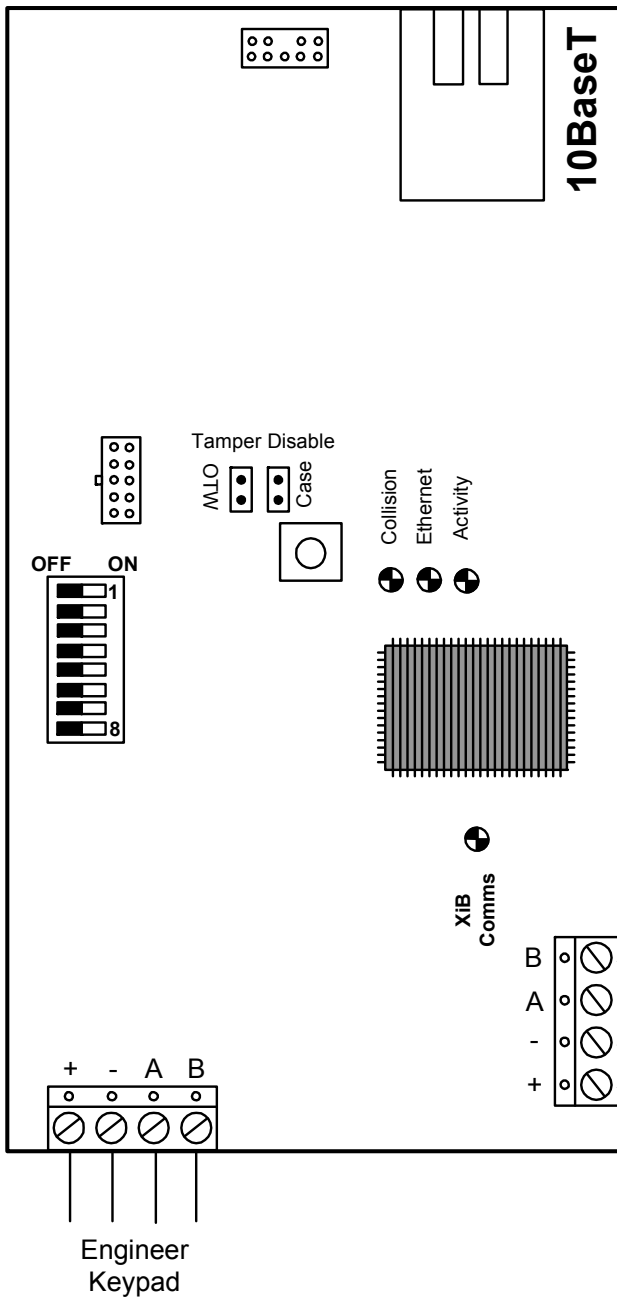
A serial module can be added at any time to a powered system but must be added to the system size before it will operate.

The function switches only apply to versions up to v3.20.

Function	DIL Switch
	8 7 6 5
Printer/PC	0 0 0 0
Printer	0 0 0 1
PC	0 0 1 0

The printer format is fixed at 1200 baud, no parity, 8 data bits and 1 stop bit. PC baud rate is 9600.

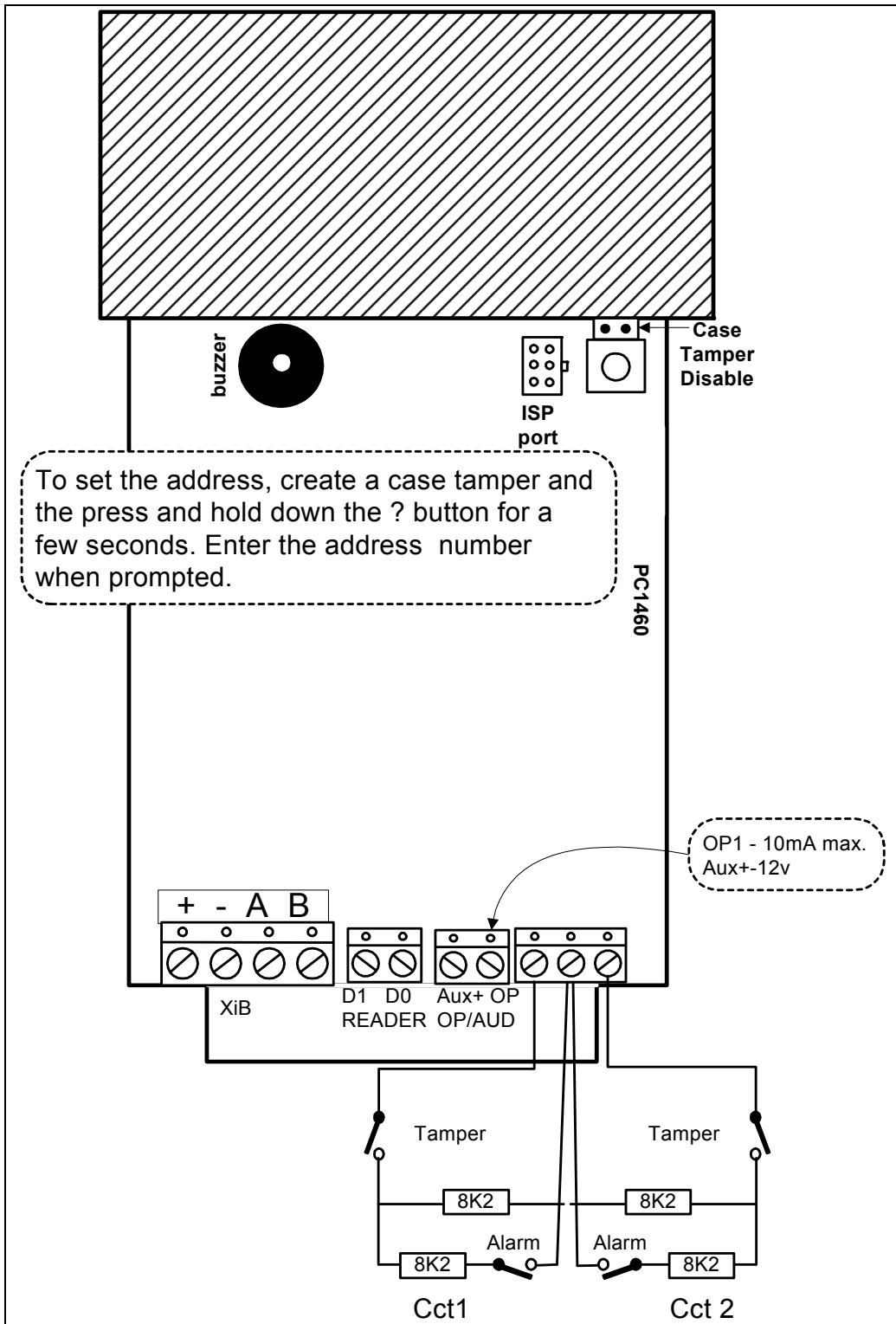
Data Comms Module



Address	DIL Switch
	8 7 6 5 4 3 2 1
1	0 0 0 0 0 0 0 0
2	0 0 0 0 0 0 0 1

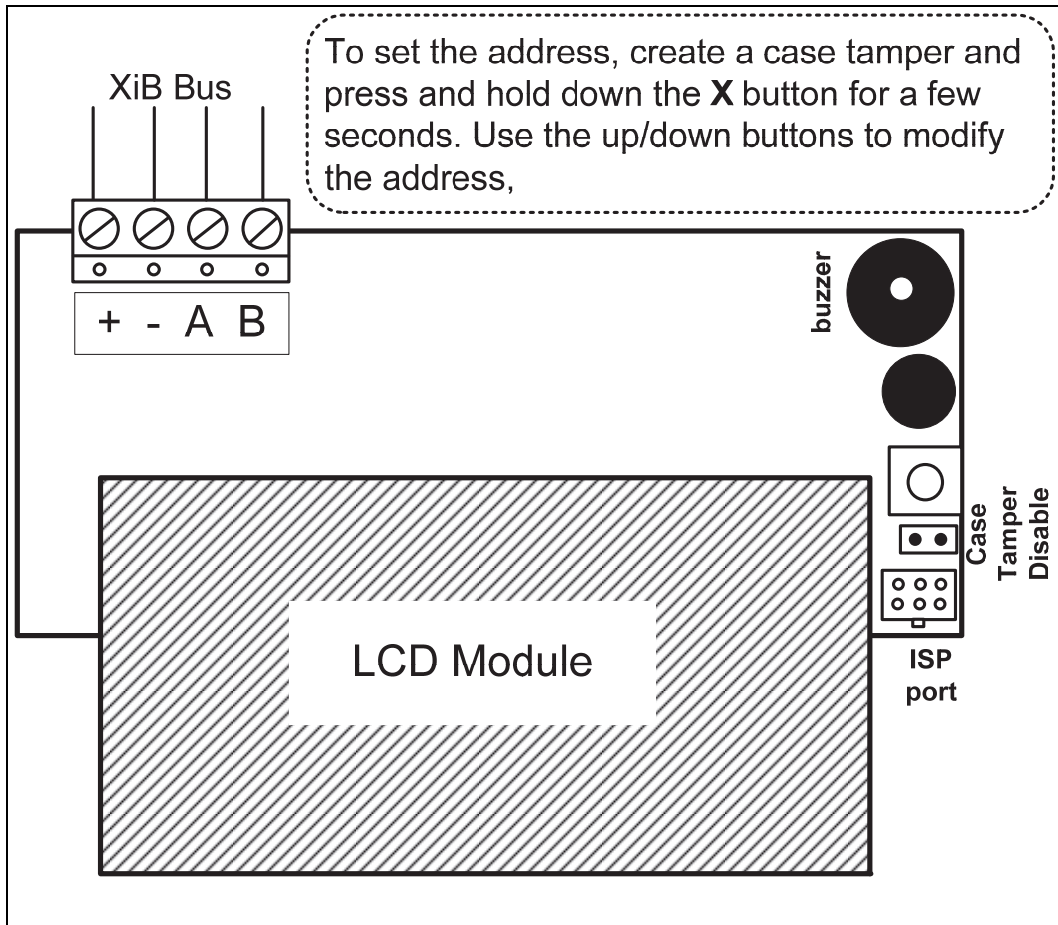
The data comms module address can be set to 1 or 2 only. If a serial module is connected to the system then the serial module and data comms module addresses must be unique.

Keypad



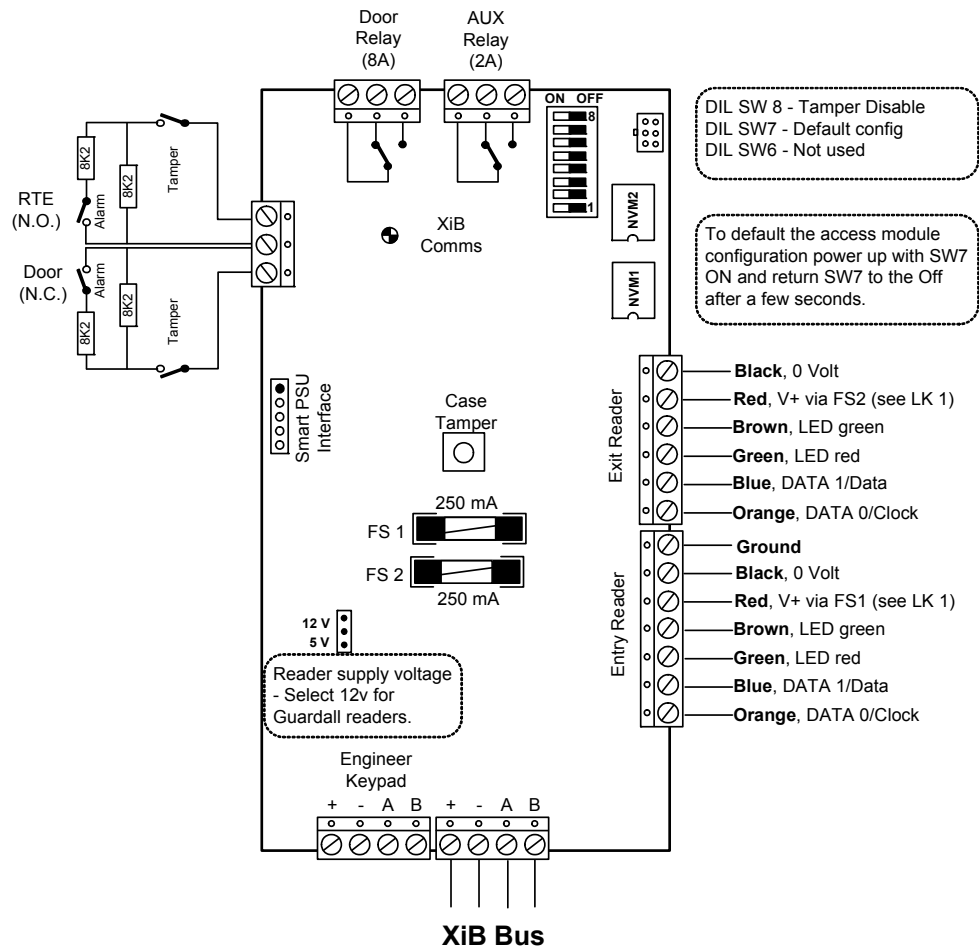
Mini Keypad

The mini LCD proximity keypad is supported from v4.20.



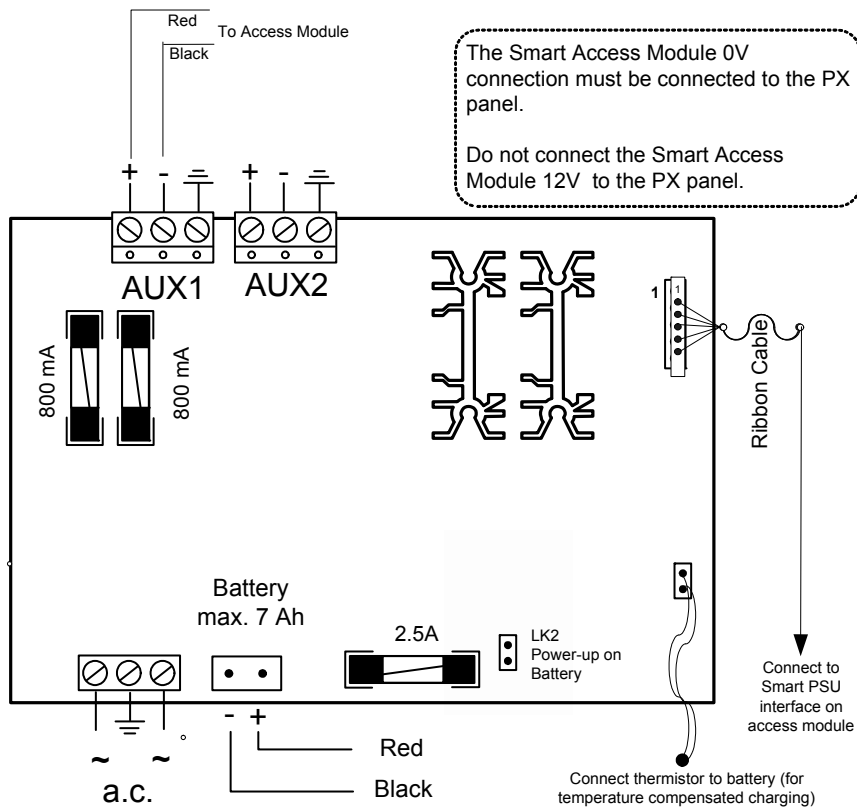
Access Module

Address	DIL Switch
	5 4 3 2 1
1	0 0 0 0 0
2	0 0 0 0 1
3	0 0 0 1 0
4	0 0 0 1 1
5	0 0 1 0 0
6	0 0 1 0 1
7	0 0 1 1 0
8	0 0 1 1 1
9	0 1 0 0 0
10	0 1 0 0 1
11	0 1 0 1 0
12	0 1 0 1 1
13	0 1 1 0 0
14	0 1 1 0 1
15	0 1 1 1 0
16	0 1 1 1 1
17	1 0 0 0 0
18	1 0 0 0 1
19	1 0 0 1 0
20	1 0 0 1 1
21	1 0 1 0 0
22	1 0 1 0 1
23	1 0 1 1 0
24	1 0 1 1 1
25	1 1 0 0 0
26	1 1 0 0 1
27	1 1 0 1 0
28	1 1 0 1 1
29	1 1 1 0 0
30	1 1 1 0 1
31	1 1 1 1 0
32	1 1 1 1 1



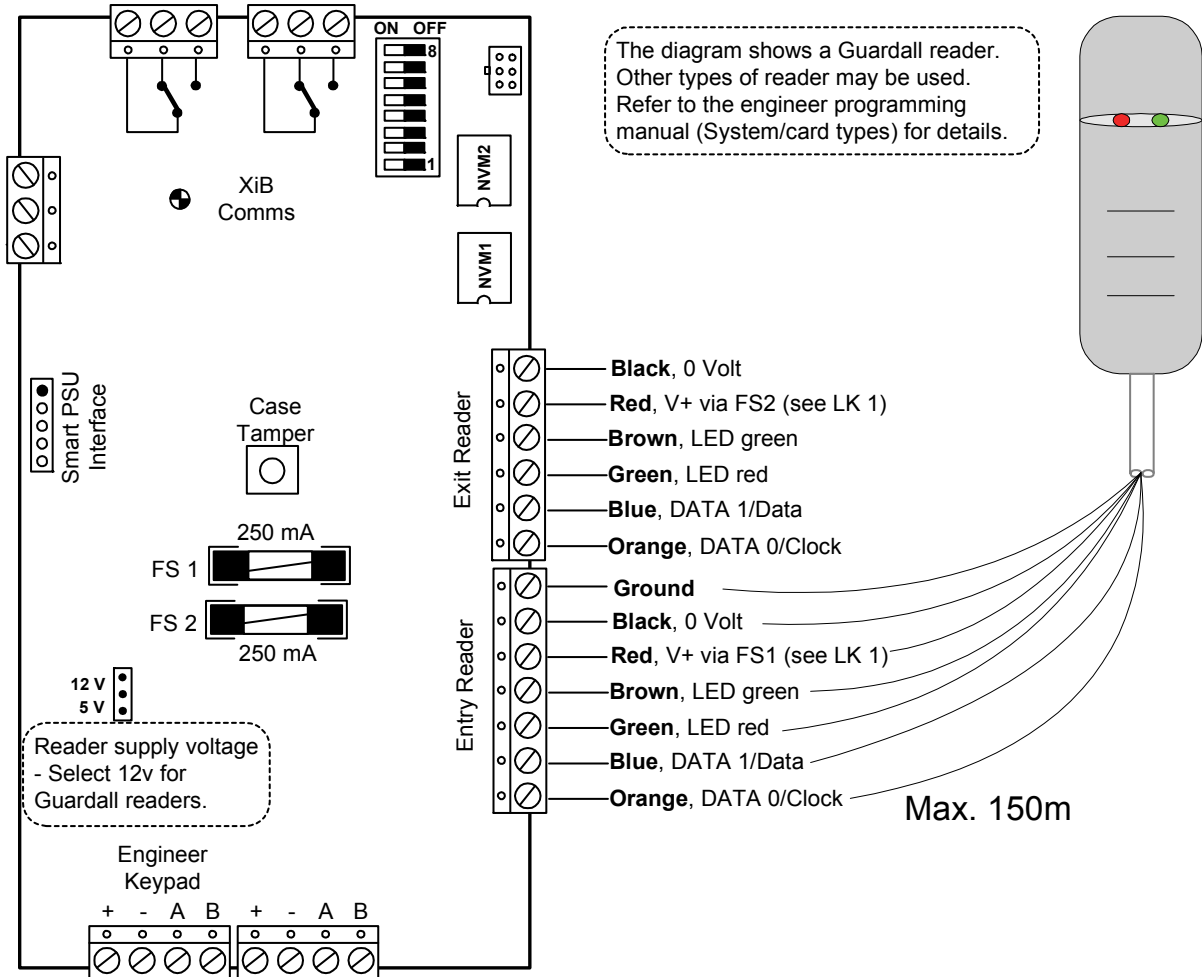
Access Module	Smart Access Module
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The smart access module includes a standard access module PCB and a power supply PCB. Only the power supply PCB is shown in the diagram.



Proximity Reader

Proximity Reader Access Module Connections



Proximity Reader	LEDs
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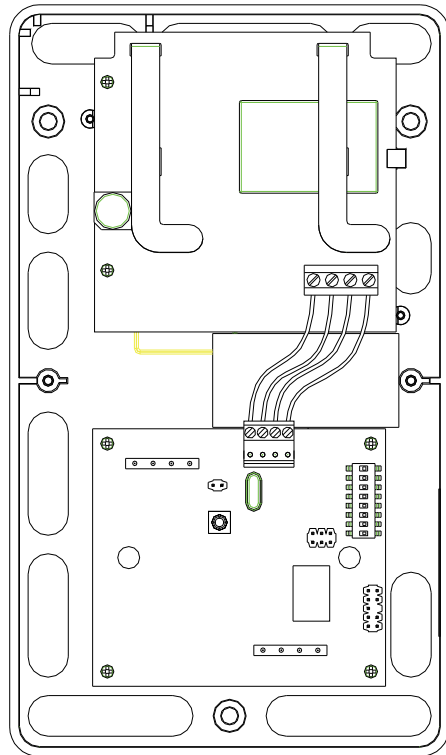
Function	Red LED	Green LED
Door LOCKED	ON	OFF
Door UNLOCKED	ON	ON
INVALID card, Access DENIED or Access ACCEPTED but door not opened.	Flash for approximately 2 seconds	OFF
Access ACCEPTED, Area not in alarm	ON	ON (when door open and locked, flash on for 1 second)
Access ACCEPTED, Area was in alarm	Flash for approximately 2 seconds	ON
Door FORCED Alarm	Flash	ON
Door TAMPER Alarm	Flash	ON
Door area set	OFF	blink for 10 secs, then goes to Door Locked
Door OPEN Alarm Start / Finish	Flash (4 sec's)	ON (4 sec's)
Door area setting	Slow flash on both LEDs	
Module logging data or undergoing configuration	Fast flash	OFF
Lock out (continuous)	Blink on both LEDs	

Radio Module

The radio module is fitted with 2 PCBs; a RF module and a serial interface for connection to the control panel XiB bus. The serial interface PCB is multi-function and for operation as a radio interface DIL switches 6 and 8 must be on and DIL switch 7 off. DIL switches 1-5 are used to select the radio module address. The diagram shows the Inovonics receiver module (W76067). The Visonic radio module (W76110) internal layout is similar. Refer to the serial module section for the connection details.

The radio module type must be programmed. Refer to the radio options in the engineer manual for more information.

Address	DIL Switch
	5 4 3 2 1
1	0 0 0 0 0
2	0 0 0 0 1
3	0 0 0 1 0
4	0 0 0 1 1
5	0 0 1 0 0
6	0 0 1 0 1
7	0 0 1 1 0
8	0 0 1 1 1
9	0 1 0 0 0
10	0 1 0 0 1
11	0 1 0 1 0
12	0 1 0 1 1
13	0 1 1 0 0
14	0 1 1 0 1
15	0 1 1 1 0
16	0 1 1 1 1
17	1 0 0 0 0
18	1 0 0 0 1
19	1 0 0 1 0
20	1 0 0 1 1
21	1 0 1 0 0
22	1 0 1 0 1
23	1 0 1 1 0
24	1 0 1 1 1
25	1 1 0 0 0
26	1 1 0 0 1
27	1 1 0 1 0
28	1 1 0 1 1
29	1 1 1 0 0
30	1 1 1 0 1
31	1 1 1 1 0
32	1 1 1 1 1



DIL switches 6-8 are factory set to the radio module function

Function	DIL Switch
Radio	8 7 6 1 0 1

Radio Repeater

A radio repeater(s) may be added to the system. Each radio repeater should be added as a transmitter (refer to the engineer manual for details).

Battery Disposal

Disposal of batteries should be according to the local laws and regulations of your region. Contact your local waste management office for information on battery recycling or disposal.

If you are not able to identify the applicable rules in your area, please check the instructions which will be available from the battery manufacturer.

PSTN/GSM/Dual Comms module

Statutory Requirements

Hereby Guardall, declares that the Dual Comms module and PSTN module is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

If you have any doubts concerning the suitability, connection or uses of this apparatus then consult a suitably qualified person before continuing.

SUITABILITY FOR USE

The apparatus has been designed to work on all European analogue networks. It provides the following facilities:

1. Alarm transmission and transmission/reception of configuration data.
2. Automatic Call Initiation.
3. Series connection.
4. Dial tone Detection
5. Automatic dialling using DTMF tones.
6. Automatic Call Answering.
7. Stored number dialling.
8. Timed Break Register Recall.

It is not suitable for connection to PABX systems or for use as an extension to a payphone.

The Dual comm module and the GSM module are fitted with a GSM engine which has been declared compliant with the essential requirements of Directive 1995/05/EC by the manufacturer Dia telecom Spa (Telit). The conformity assessment procedure referred to in Article 10 and detailed in Annex IV of Directive 1999/05/EC was carried out by a Notified Body, namely BABT, Walton-on-Thames, UK (Notified body number 0168).

Introduction

The Dual Comm module, GSM module and the PSTN module may be used with any Guardall control panel.

Feature	Implementation
Transmission	Voice and Data
Frequency Band	Dual Band EGSM900 and EGSM1800
Transmit Power	Class 4 (2W) for EGSM 900MHz Class 1 (1W) for EGSM 1800MHz
Data	9.6Kbps
Supported SIM card	3V cards

There are a number of important points to consider when using one of the new module types with an existing panel:

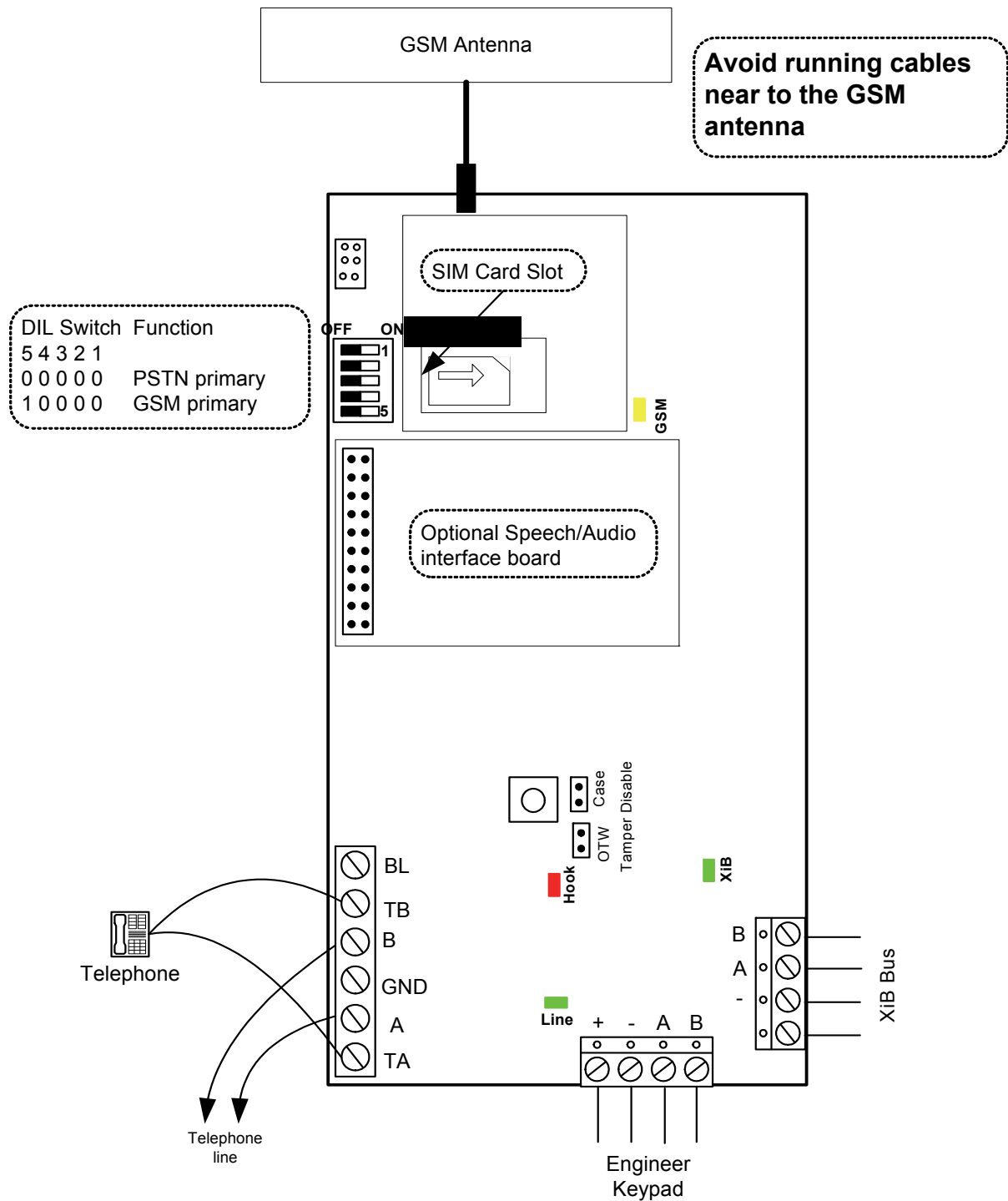
1. All previous communicators were designed for use within the panel case and consequently they were designed with no tamper switch. The GSM/Dual comm module is intended for use outside the panel case, and so needs a case tamper. The GSM/Dual comm module case tamper is recognised from panel v4. If the GSM/Dual comm module used with earlier panel versions it is recommended that line fault monitoring is enabled to act as a substitute for the tamper sensing.
2. The Dual comm module functions are programmed using the DIL switches. Future versions of the firmware will include additional menu options for GSM programmable functions.

The latest firmware release is V4.52c. This is necessary to enable older panel versions to recognise the module and allow access to the appropriate programming menus.

Installation

Special care is required when installing the GSM module or Dual Comm module;

1. Avoid placement on metal surfaces to ensure good radio performance.
2. To minimise GSM transmission interference, route **all** cables away from the GSM antenna.
3. If the system includes Audio Modules ensure that there is at least 3m between the Audio Module(s) and the GSM/Dual Comm module.
4. The maximum recommended XiB bus cable length between the power supply and the GSM/Dual Comm module is approximately 80m. This distance may be doubled if two cable cores are used for the power connections. This restriction is based on the peak current requirement of 180mA under poor signal conditions.
5. Insert a valid SIM card into the slot provided in the GSM engine. **SIM code password protection must be disabled.**



When power is applied to the system the GSM module will power up in 3 stages:

1. The XiB communications will start before the end of system settling time (as indicated on the keypad). During this phase the XiB-comms LED will flash rapidly (awaiting secondary PSU start-up)
2. The GSM engine will start up after about 20 seconds. During this phase the XiB-comms LED will flash approximately once per second.
3. Once powered up, the GSM engine will be configured automatically and will attempt to acquire a service connection. This phase may take several minutes and no GSM calls should be attempted during this phase.

LEDs

Function	Colour	State	Meaning
XiB Comms	Green	OFF	No power
		ON	Communication error
		Slow FLASH	Operating normally
		Quick FLASH	Active
Hook	Red	ON	Line seized
Line monitor	Green	ON	Valid Exchange voltage level present
GSM Status	Yellow	Quick flash	Network search
		Slow flash	Registered
		ON	Active call

Reporting Formats

The available reporting formats for each route is shown in the table.

Formats	Route		
	PSTN	GSM (audio)	GSM (data)
Contact ID	✓	✓	X
ADEMCO Fast/Superfast Format	✓	✓	X
SIA Level 3	✓	✓	X
CESA (French panel variants only)	✓	✓	X
Speech (if optional module fitted, v3.21 or later)	✓	✓	X
Audio (if optional module fitted)	✓	✓	X
PS/2 (GSR) - 1200 baud	✓	X	X
PS/2 (GSR) - 9600 baud	X	X	✓
SMS (v4.00 or later)	X	✓	✓

DIL Switches

To enable the Dual Comm module to be used with existing panels, the primary and secondary communicator routes are selected by DIL switch 5. DIL switches 1-4 are reserved for future use.

DIL Switch 5 4 3 2 1	Function
0 0 0 0 0	PSTN is primary route
1 0 0 0 0	GSM is primary route

The primary route is the normal route for all calls.

If the primary route is PSTN then;

- All calls in all formats will be routed over the PSTN network
- If there is a PSTN line fault then all calls will be routed over the GSM network (refer to the reporting formats table for details)

Note: If the call format is PS/2 and there is a PSTN line fault then the call will be made on the same number of GSM. This call will fail as the Windsor modem and GSM modem will use different telephone numbers.

If the primary route is GSM then;

- All calls in all formats will be routed over the GSM network
- If there is no GSM service available then all calls will be routed over the PSTN network (refer to the reporting formats table for details)

www.guardall.com

Part Number: 320994-F

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