



Commissioning guide

Contents

Introduction	3
Environmental	4
Handling precautions	4
Quick start guide for XPander site survey	5
Quick start guide for XPander Loop Interface	5
Installation	6
Menu - scrolling and selecting	6
Initial power up screen	7
Multiple Interfaces	7
Logging on interfaces	7
Log on procedure	7
Menu options	8
Menu Level: (1.0)	9
Menu Level: (1.2)	10
Menu Level: (1.3)	10
Menu Level: (1.4)	11
Menu Level: (1.5)	11
Menu Level: (1.6)	11
Menu Level: (2.0)	11
Menu Level: (3.0)	12
Menu Level: (4.0)	12
Menu Level: (4.2)	12
Menu Level: (4.3)	12
Menu Level: (4.4)	13
Menu Level: (5.0)	13
Menu Level: (5.1)	13
Menu Level: (5.2)	13
Menu Level: (5.3)	13
Appendix A	14
Appendix B	14
Appendix C	15
Appendix D	15
Appendix E	15
Appendix F	18

Introduction

XPander incorporates entirely new designs with respect to the wireless communication system. A Radio Interface is connected to the loop. It communicates with the control panel using the XP95 two-wire power and communications system. The interface communicates with the detection and alarm signalling devices by means of radio waves. A maximum of 5 interfaces is permitted for each site. For sites that require more than 5 interfaces please contact Apollo.

The radio bases and signalling devices are addressable and use a pre-set analogue value to report via the XP95 protocol. Apart from normal and fire the bases can send pre-set analogue values to indicate low battery, detector contaminated, detector tamper and low signal strength fault conditions.

- Up to 5 interfaces per site - contact Apollo for more
- Up to 31 devices per interface
- Loop-powered interface
- Wireless addresses seen by control panel as normal addresses
- Radio base with wireless circuitry and battery compartment
- Chamber designed to inhibit dirt penetration and thus reduce false alarms
- Automatic drift compensation with DirtAlert™ warning
- Algorithms for transient rejection
- FasTest™ reduces time taken to test detectors
- Remote test facility
- 5-year battery life (It is recommended that the battery is changed in year 4 of maintenance)
- Alkaline Durcaell Procell is the recommended battery type to use
- Modern styling

XPander detectors are supplied with a mounting base as a complete unit. The range comprises of the following products:

Description	Part Number
Optical detector with base	XPA-CB-12034-APO
Multisensor detector with base	XPA-CB-13032-APO
Heat detector A1R and base	XPA-CB-11170-APO
Heat detector CS and base	XPA-CB-11171-APO
Manual call point	XPA-MC-14006-APO
Red sounder with mounting base	XPA-CB-14001-APO
White sounder with mounting base	XPA-CB-14002-APO
Red sounder beacon with red mounting base	XPA-CB-14003-APO
Amber sounder beacon with white mounting base	XPA-CB-14004-APO
Clear sounder beacon with white sounder mounting base	XPA-CB-14005-APO
Site Survey Kit	XPA-TE-14010-APO
Single input/output unit	XPA-IN-14011-APO
Dual input/output unit	XPA-IN-14012-APO
Omni-directional aerial	XPA-AE-14008-APO
Directional aerial	XPA-AE-14009-APO
Weather resistant omni-directional aerial	XPA-AE-14014-APO
Weather resistant directional aerial	XPA-AE-14015-APO
Loop Interface	XPA-IN-14007-APO
White XPander XPERT card	29600-413
Red XPander XPERT card	29600-399

For spare parts/replacement parts see page 14.

Environmental

Packaging recyclable.

Disposing of batteries should be in accordance with local regulations.

Handling precautions

As with all electronics, care should be taken during handling. Avoid dropping any of the parts onto hard surfaces, as damage may occur to the case and internal circuitry.

All products should be kept in their packaging until they are due to be installed to minimise the risk of damage. Retain all packaging until the installation and commissioning is complete.

Observe anti-static precautions when handling all products.

To avoid risk of static discharges do not place static-sensitive devices on plastic surfaces.

Quick Start Guide for XPander Site Survey

1. Use the site survey tool to check the signal strength.	→	For detailed instructions see page 16
2. Record all the survey signal strengths on the site survey sheet.	→	For site survey sheet see page 18
3. Fit the interfaces - as per instructions in the quick start guide below.	→	See Quick Start Guide for XPander Loop Interface below
4. Log the devices on to the interface - as per instructions in the quick start guide below.	→	For detailed instructions see page 08
5. Check the signal strength for each logged on device and record on the site survey sheet.	→	For site survey sheet see page 18

Quick Start Guide for XPander Loop Interface

1. Select the interface number or ID (range 1-5).	→	For detailed instructions see page 07
2. Select channels following Appendix B and checklist on the inside of the unit.	→	For detailed instructions see page 14
3. Set the address for the system.	→	For detailed instructions see Installation Guide PP2280
4. Log on devices to the interface (for each interface).	→	For detailed instructions see page 08

Installation

Installation should be carried out in accordance with the radio survey and system design. Siting of the devices should be in strict accordance with the survey. Failure to do so could result in loss of performance.

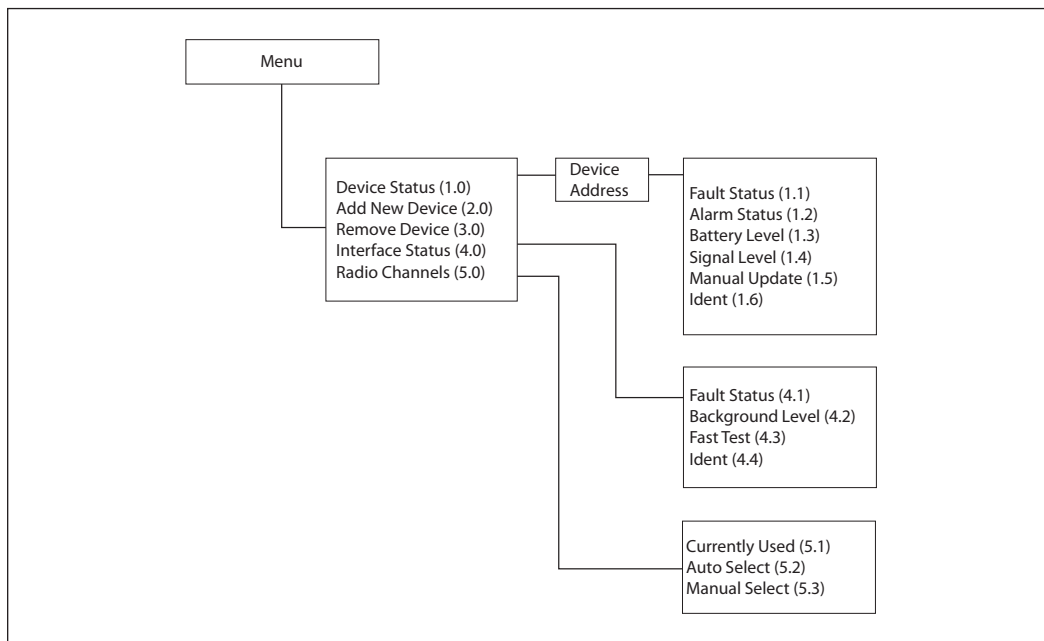
The log on procedure (page 6) along with a completed site survey sheet should be sufficient to obtain a stable working system, the site survey procedure insures all XPander devices will communicate correctly once installed. These sheets need to be completed and kept as commissioning and user documentation to comply with BS5839 - 1 section 2-27 and section 5-39 & 40

This guide provides information on features designed to help commission and troubleshoot a system.

Please note: Should building structure change the site survey will need to be repeated. The system will not comply to BS5839:2001 if the site survey is not carried out properly and all supporting paperwork completed (site survey sheet)

Menu - scrolling and selecting

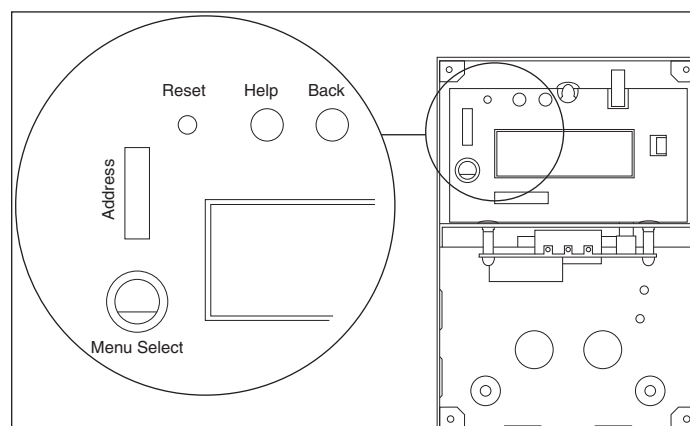
Selecting Menu Options



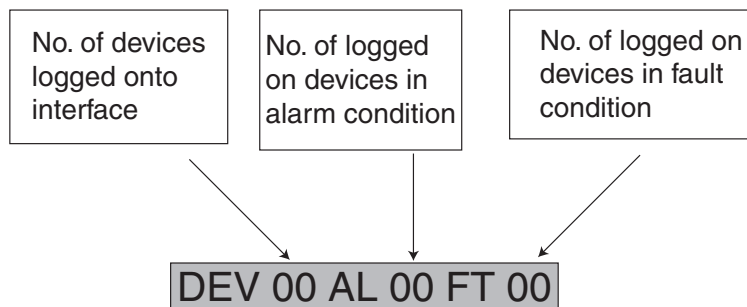
A rotary select switch is used for scrolling through the menu and selecting an option. Turn the select switch clockwise to scroll down the menu. Turn the switch anti-clockwise to scroll back up the menu. Press the select switch once to select an option.

The 'Back' button is used to return to the previous menu.

If a menu is selected and no further activity is detected, the menu will 'time out' and the interface will return to normal operating mode.



Initial power up screen



Multiple Interfaces

If more than 1 interface is being used refer to appendix B on page 14 before logging on the devices and complete the checklist on the lid. Interfaces are numbered from 1 to 5. This is not the loop address it is the frequency ID. For fault free operation the interfaces must have the channels set correctly. To do this the interfaces must be numbered such that the nearest interface to 1 is 2 and the nearest interface to 2 is 3 etc. Start at one end of the site plan and continue in this manner until all 5 have been labelled. Use the table in Appendix B on page 14 to set the channels on the interfaces.

Logging on interfaces

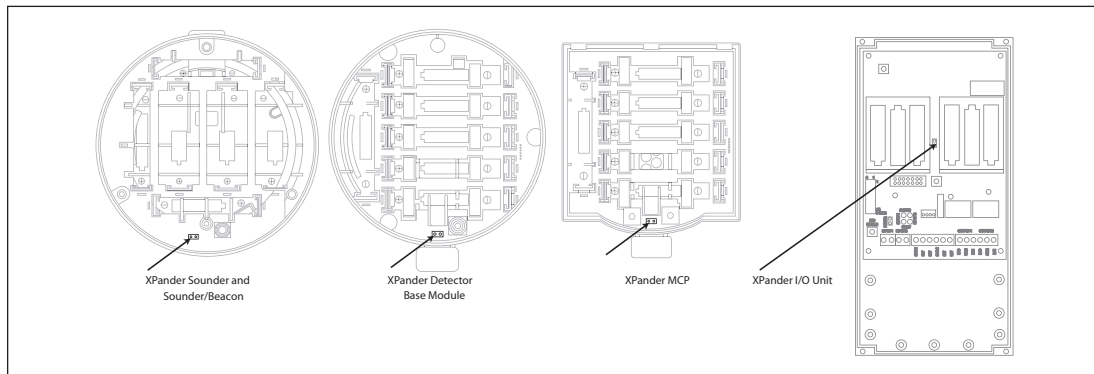
Up to 31 wireless detectors or alarm signalling devices may be assigned to a single interface. Prior to adding devices to the Interface batteries must be inserted, the power jumper positioned correctly and the mounting plates fitted. During the device log-on routine the interface will request confirmation of the device serial number. This is to be found on the side of the radio module. The XPERT address card must be fitted prior to assigning a device to the interface. In the case of sounders or sounder beacons the tone must be selected using the 5-segment DIL switch on the base of the sounder or sounder beacon.

The table below shows which XPander devices are compatible with which interface software to allow use of 31 devices. Please note that detector and Sounder/ Sounder beacon heads do not effect the 31 device compatibility.

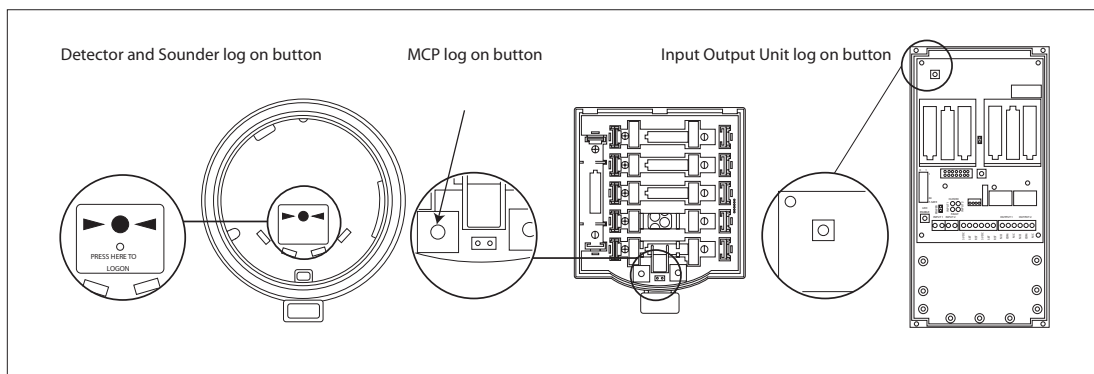
Description	Part Number	Loop Interface Rev number (15 devices)	Loop Interface Rev number (31 devices)
Interface Module with Isolator	XPA-IN-14007-APO	Up to 4A	From 7
Address Module Base	XPA-WB-10022-APO	Up to 2	From 4
Manual Call Point (integral address module)	XPA-MC-14006-APO	Up to 4	From 6
Sounder Mounting Base Red	XPA-SB-10023-APO	Up to 2	From 4
Sounder Mounting Base White	XPA-SB-10024-APO	Up to 2	From 4
XPander I/O Unit - Single	XPA-IN-14011-APO	N/A	From 1
XPander I/O Unit - Dual	XPA-IN-14012-APO	N/A	From 1

Log on procedure

Ensure batteries are installed correctly and fit battery jumper (shown below) across both header pins.



Push the rotary select switch on the interface and release. Turn until “add new device” is shown on the menu and push to select. On the device press the log on button (shown in below) for two seconds. A LED on the device will flash.



A five-figure code will be displayed on the interface similar to below. This is the XPander device’s unique ID.

A127D

Turn the rotary select switch to ‘Yes’ and push to select. The menu will return to ‘add new device’.

Check the device’s unique ID against the ID on the label of the product to ensure that it matches.

Repeat steps go to add more devices.

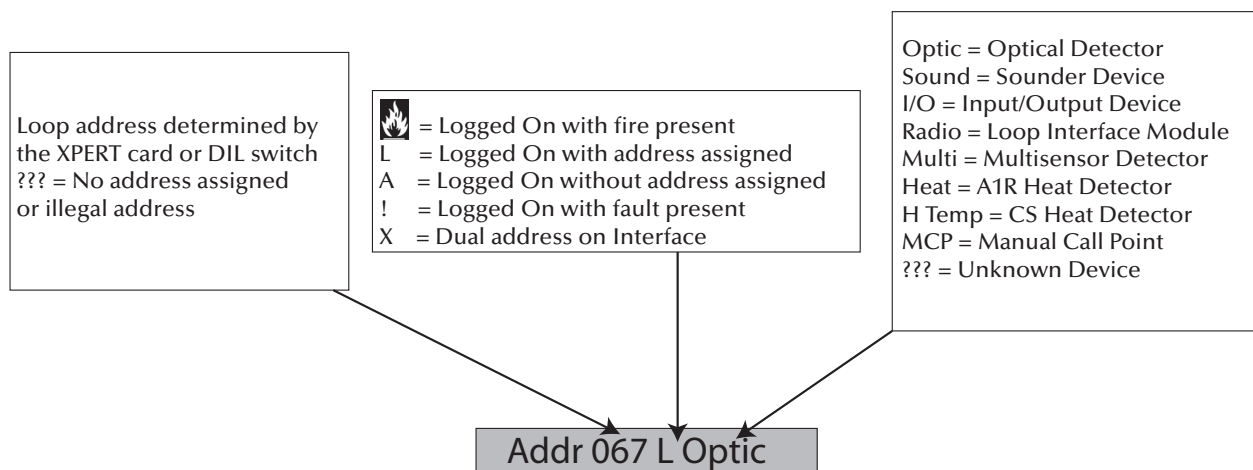
Press the ‘Back’ button on completion to return to the previous menu.

Menu options

Menu Level: (1.0)

Device Status
Add New Device
Remove Device
Interface Status
Radio Channels

This menu shows the status of logged on devices. The loop address as determined by the XPERT card (1-126), logged on status and the device type are displayed.



Fault Status (1.1)
Alarm Status* (1.2)
Battery Level (1.3)
Signal Level (1.4)
Manual Update (1.5)
Ident (1.6)

Further information on each device can be viewed by pressing then turning the Rotary Select Switch.

* Input status on Input/Output Unit

Menu Level (1.1)

Fault Status
Alarm Status
Battery Level
Signal Level
Manual Update
Ident

This menu shows detailed information on the fault status of the device. If multiple faults are present, these can be viewed by turning the rotary select switch.

For a full range of analogue values please see Appendix A on page 14

Menu Level: (1.2)

Fault Status
Alarm Status *
Battery Level
Signal Level
Manual Update
Ident

This menu shows the alarm status of the device.

* **Input status** on Input Output Unit - Displays the status of the monitored input(s). A switch input 'closed' condition is displayed as a logic '1'

For a full range of analogue values please see Appendix A on page 14

Menu Level: (1.3)

Fault Status
Alarm Status
Battery Level
Signal Level
Manual Update
Ident

This menu shows the status of the two battery packs in a device. Battery conditions are displayed as follows:

Displayed	Definition	Icon on LCD	Analogue value at panel
Pack 1 OK	Pack 1 battery voltage healthy	Full battery icon	25 (detectors) 16 (sounders and MCPs)
Pack 1 Warning*	Pack 1, 30 day warning	Half battery icon	7
Pack 1 Low	Pack 1, 7 day warning	Empty battery icon	7
Pack 1 Missing	No battery pack fitted	X	0
Pack 2 OK	Pack 2 battery voltage healthy	Full battery icon	25 (detectors) 16 (sounders and MCPs)
Pack 2 Warning*	Pack 2, 30 day warning	Half battery icon	7
Pack 2 Low	Pack 2, 7 day warning	Empty battery icon	7
Pack 2 Missing	No battery pack fitted	X	0

Recommended replacement batteries:

Alkaline Duracell Procell 1.5V AA (MN1500, LR6)

Alkaline Duracell Procell 1.5V C (MN1400, LR14) Sounders only

When replacing batteries, allow the device to power down for a period of two minutes before installing replacements.

Note: When replacement batteries are required all batteries must be replaced together.

* Batteries need to be changed as soon as possible (recommendation 7 days)

Menu Level: (1.4)

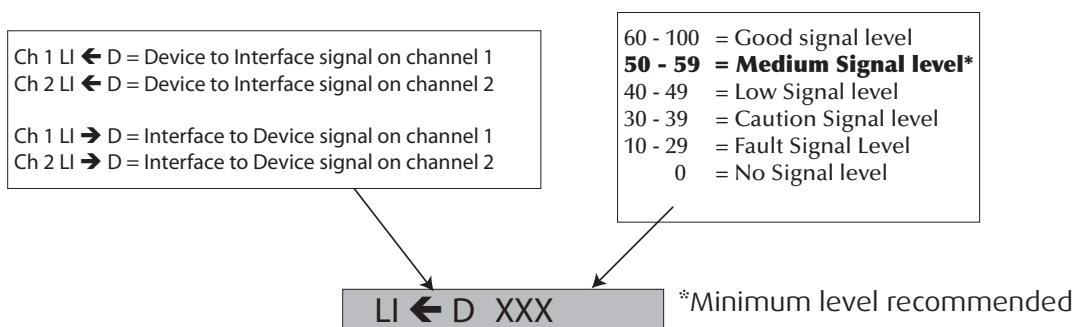
Fault Status
Alarm Status
Battery Level
Signal Level
Manual Update
Ident

This menu shows the status of the two signalling channels used by the loop interface and the communicating device. If more than one interface is used, please refer to Appendix B on page 14.

The received signal strength at the loop interface from the device is shown as LI ← D followed by a percentage indicating the signal strength. Similarly the received signal at the device is shown as LI → D followed by the signal strength.

If you have moved or re-installed a device, complete a manual update before checking the signal level.

The LI ← D level is updated every 300 seconds. The LI → D level is updated every 12 hours or when requested manually by selecting the "Manual Update" option described below.



Menu Level: (1.5)

Fault Status
Alarm Status
Battery Level
Signal Level
Manual Update
Ident

When selected, the signalling status of all devices is updated. The current status can then be viewed as described in the "signal level" menu.

Menu Level: (1.6)

Fault Status
Alarm Status
Battery Level
Signal Level
Manual Update
Ident

This menu shows the unique 5-digit identification number for the device. This may be recorded on site drawings or the radio survey document for maintenance purposes.

Menu Level: (2.0)

Device Status
Add New Device
Remove Device
Interface Status
Radio Channels

From this menu new or additional devices can be logged on to the interface up to 31 devices. (Log on procedure on page 7).

See page 6 for details of compatibility for XPander interfaces and devices.

Menu Level: (3.0)

Device Status
Add New Device
Remove Device
Interface Status
Radio Channels

This menu shows a list of devices logged on to the interface. To remove a device use the rotary select switch and press to confirm, this has to be done before the physically removing the device from the ceiling.

Warning – Once devices have been removed, they will no longer be able to signal an alarm. If the device is permanently removed this will also need to be removed from the control panel.

Menu Level: (4.0)

Device Status
Add New Device
Remove Device
Interface Status
Radio Channels

From this menu the status of the loop interface and background noise can be viewed.

Menu Level: (4.1)

Fault Status
Background Level
Fast Test
Ident

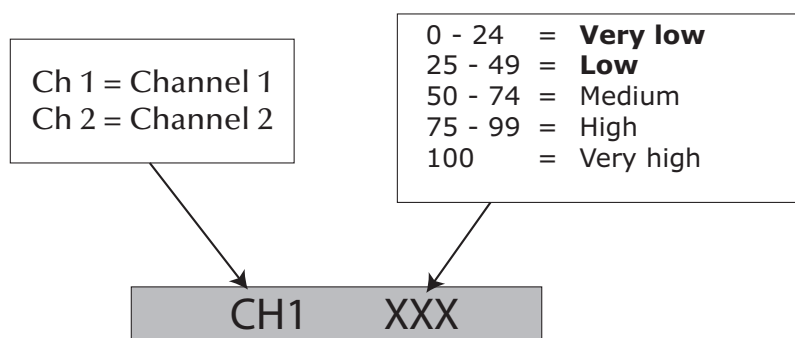
This menu shows detailed information on the fault status of the interface. If multiple faults are present they can be individually viewed by using the rotary select switch.

For a full range of analogue values please see Appendix A on page 14

Menu Level: (4.2)

Fault Status
Background Level
Fast Test
Ident

The background noise level on the two signalling channels can be viewed.



Menu Level: (4.3)

Fault Status
Background Level
Fast Test
Ident

XPander detectors incorporate algorithms to minimise unwanted alarms whilst maintaining a high level of protection. The Fast Test function reduces the number of detection samples required for an alarm condition therefore making it quicker to test detectors. When Fast Test is selected the device's LED will flash once a second. After a pre selected period of time the device will return to normal operating mode. This period applies to all detectors logged on to the interface. Once selected a count-down time is displayed. On receipt of an alarm from a detector, the timer resets to the period selected and resumes the count down. If no alarm is received, the interface and detectors return to their normal operating mode.

Menu Level: (4.4)

Fault Status
Background Level
Fast Test
Ident

This menu displays the unique identification number of the interface.

Menu Level: (5.0)

Device Status
Add New Device
Remove Device
Interface Status
Radio Channels

From this menu it is possible to view and/or select the two signalling channels manually from the 32 available. The default setting is automatic channel selection and the interface defaults to CH8 and CH26 for communication. The default setting should be altered if multiple interfaces are being used on site. A maximum of 5 interfaces can be used in any one site, if more is required please contact Apollo.

The menu options available will depend on whether devices are logged on to the interface. Manual channel select is only accessible when **no devices are logged on** the interface. If devices are logged on, only the 'Currently Used' option is displayed.

See appendix C for a full list of frequencies.

Menu Level: (5.1)

Currently Used
Auto Select
Manual Select

When selected the currently used frequencies for CH1 and CH2 are displayed. If more than 1 interface is being used refer to appendix B on page 13 before logging on the devices and ensure to follow the given instructions for the selection of the frequencies which is printed on the lid of the unit.

Menu Level: (5.2)

Currently Used
Auto Select
Manual Select

This does not detect radio communications from other XPander devices. It will scan for other sources of background noise. The auto selected channels should not be used when multiple interfaces are fitted, only the channels stated in Appendix B on page 14.

This function should not be used without consultation with Apollo.

Menu Level: (5.3)

Currently Used
Auto Select
Manual Select

Radio channels should be manually selected when more than one interface is installed on a system (see Multiple Interfaces on page 7). Channel information is shown on both the lid of the interface and in Appendix B.

Select 'First Channel' and scroll to the desired channel and enter. Repeat this procedure for 'Second Channel'. Channel selection must be carried before devices are logged on.

Note: Menu 5.2 and 5.3 are not available if devices are logged on to the interface.

Appendix A


The devices return an analogue value depending on their state. The table below shows these values and their definitions

AV	Definition
0	Battery pack A and B missing
1	Detector fault, sounder audio fault
2	Head missing
3	Sounder missing
4	Tamper, aerial tamper
5	Signal strength fault, background RSSI out of range - Interface
6	Not used
7	Battery fault 30 days, A and B
8-12	Not used
13	Signal strength poor
14	Signal strength low
15	Not used
16	Normal - MCP, sounder, loop interface, I/O unit
17-19	Not used
20	Signal strength medium - detector
21-24	Not used
25	Signal strength good - detector
26-34	Not used - detector
35	Head dirty detector
36-49	Not Used
50	Pre-alarm - detector
51-63	Not used
64	Alarm - MCP
65-84	Not used
85	Alarm - detector

Note: No response to polling indicates an RF comm failure

Appendix B

Multiple interfaces - channel selection

Please complete on commissioning 			
XPander Interfaces on Site	Primary Channel Selected	Secondary Channel Selected	Tick
1	Ch 01	Ch 18	
2	Ch 07	Ch 24	
3	Ch 13	Ch 30	
4	Ch 04	Ch 21	
5	Ch 10	Ch 27	
Q.1	If there is more than one XPander Interface on the site: have ALL the channels been set as above?		
Q.2	Has the XPander Interface been installed as per the survey and installation instructions, allowing two metres from electrical equipment and other XPander Interfaces?		
Q.3	Has the aerial been installed as per the survey and installation instructions, allowing 400mm from any metal object or other equipment?		
Q.4	Are ALL the device signal levels 50% or above?		
Q.5	Has the XPander site survey sheet been fully completed?		

Appendix C

Radio Channels

Ch1: 868.048 MHz	Ch9: 868.248 MHz	Ch17: 868.749 MHz	Ch25: 868.950 MHz
Ch2: 868.073 MHz	Ch10: 868.273 MHz	Ch18: 868.774 MHz	* Ch26: 868.975 MHz
Ch3: 868.098 MHz	Ch11: 868.298 MHz	Ch19: 868.800 MHz	Ch27: 869.000 MHz
Ch4: 868.123 MHz	Ch12: 868.323 MHz	Ch20: 868.825 MHz	Ch28: 869.025 MHz
Ch5: 868.148 MHz	Ch13: 868.349 MHz	Ch21: 868.850 MHz	Ch29: 869.050 MHz
Ch6: 868.173 MHz	Ch14: 868.374 MHz	Ch22: 868.875 MHz	Ch30: 869.075 MHz
Ch7: 868.198 MHz	Ch15: 868.399 MHz	Ch23: 868.900 MHz	Ch31: 869.100 MHz
* Ch8: 868.223 MHz	Ch16: 868.424 MHz	Ch24: 868.925 MHz	Ch32: 869.125 MHz

* Default channels on power up.

Appendix D

XPander spares

Description	Part Number
Optical detector	XPA-OP-12034-APO
Multisensor detector	XPA-OH-13023-APO
Heat detector A1R	XPA-HT-11170-APO
Heat detector CS	XPA-HT-11171-APO
Mounting base detector	XPA-WB-10022-APO
Red sounder	XPA-SO-14001-APO
White sounder	XPA-SO-14002-APO
Red sounder beacon	XPA-SN-14003-APO
Amber sounder beacon	XPA-SN-14004-APO
Clear sounder beacon	XPA-SN-14005-APO
Red sounder mounting base	XPA-SB-10023-APO
White sounder mounting base	XPA-SB-10024-APO
Site Survey Unit	29600-455
Battery charger	29600-456
Site Survey Controller	29600-457

Appendix E

Site Survey Instructions PP2323 - see next page

Appendix F

Radio Site Survey Sheet - see page 18

Introduction

Radio waves have very different characteristics to wired links and it is necessary to ensure that every possible source of attenuation of the radio signal is identified and fully considered in the design of the system.

It is therefore essential that a full site survey is carried out as part of the system design prior to any XPander devices being installed. This preparatory work will ensure that good signal integrity is achieved. The reliability of the data transmitted in the final system is determined by the site survey.

The RF Signal

The site survey kit (manufactured before 25/03/09), XPA-TE-14010-APO, comprises three parts,

Site Survey Tool	– 29600-457
Site Survey Interface	– 29600-455 (UK version, 2.5mm socket)
Battery Charger	– 29600-456 (UK version, 2.5mm socket)

The site survey kit (manufactured on or after 25/03/09), XPA-TE-14010-APO, comprises three parts,

Site Survey Tool	– 29600-457
Site Survey Interface	– 29600-475 (Multi-plug version, 5.5mm socket)
Battery Charger	– 29600-476 (Multi-plug version, 5.5mm socket)

Radio transmissions are sent from the Site Survey Interface to the Site Survey Tool, analysed and the strength of the signals displayed by the LED indicator.

The transmission radiates out in all directions. The radiated signal strength is stronger in the immediate vicinity of the Site Survey Interface and becomes weaker as the signal travels away.

The objective of the site survey is to ensure a consistently strong signal is received at the proposed position of the XPander field device. A weak signal may not always register; this will lead to unreliability in the final system.

Site Survey Instructions

1. Turn on the Site Survey Interface using the slide switch
2. Position the Site Survey Interface in the proposed location of the XPander interface
 - The minimum distance of metal objects from the interface is 400mm
 - The minimum distance to other electrical equipment e.g. computers, photocopiers, fax machines and other XPander interfaces is 2 metres (radius three dimensionally).
3. Switch on the Site Survey Tool by holding button one for 3 seconds
4. Press button three to select XPander survey mode, the red oval mode LED will light
 - The red oval mode LED must be illuminated prior to and at all times during signal testing
5. After 30 seconds the Site Survey Tool will begin to report signal strength using the LED display
 - The signal strength will be updated every 12 seconds. Each update will be signalled by a beep
6. Position the Site Survey Tool where the XPander device is to be fitted
 - The Site Survey Tool will now report the signal strength at this position
7. Record at least three signal strength readings
8. If two readings are 60% or above, the position of the XPander device is satisfactory
 - 60% is signalled, as shown on page 3, by at least two green LEDs
9. At this point record all information on the site survey sheet (PP2322) and move to the position of the next device

Notes:

These instructions are correct for ceiling heights less than 6m. For ceiling heights greater than 6m, the Site Survey Tool should be raised with special apparatus up to the likely position of the device to be fitted.

Button two is used to change the signal direction being reported.

When the signal direction indicator is on constantly the signal from the Site Survey Interface to the Site Survey Tool is being shown.

When the signal direction indicator is flashing, the signal from the Site Survey Tool to the Site Survey Interface is being shown.

It is not necessary to check both directions during the site survey; the unit should be left in the default (Site Survey Interface to Site Survey Tool) setting.

The indicator LEDs are blinking when the Site Survey Tool batteries are low.

The red LED will be illuminated whilst charging.

To switch the Site Survey Tool off hold button one for three seconds.

If not used the Site Survey Tool will automatically switch off after ten minutes.

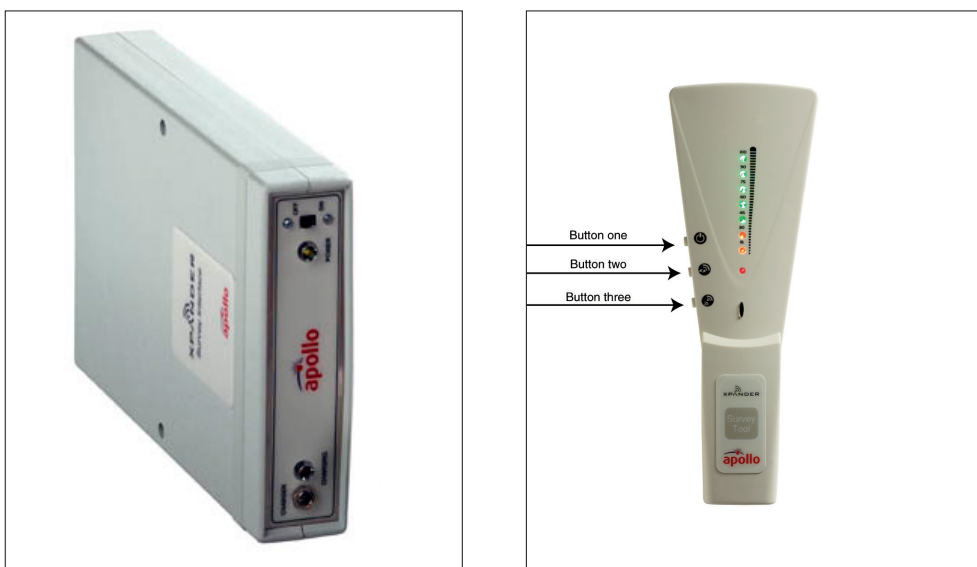


Fig 1 - Site Survey Interface and Site Survey Tool

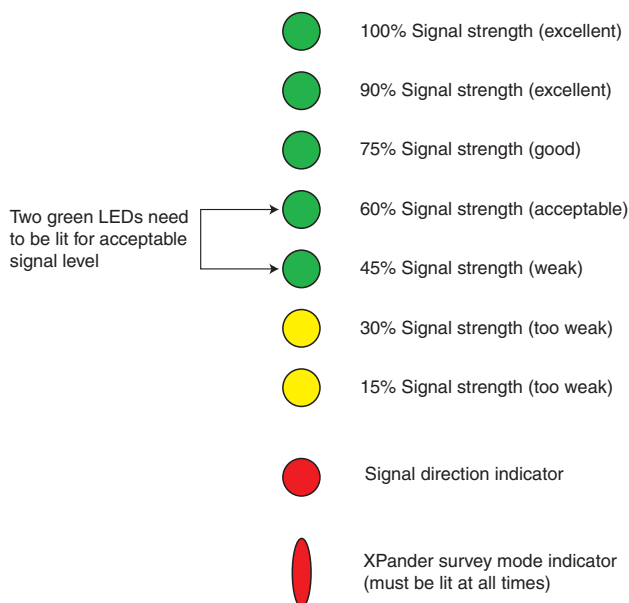


Fig 2 - Site Survey Tool LED indication

© Apollo Fire Detectors Limited 2008/JEB/TP



XPander Radio Site Survey Sheet

SHEET OF

(Copy this sheet for additional interfaces)

SITE NAME DATE

PANEL

INTERFACE NUMBER LOCATION

Device	Type (O,M,H,MCP,S,SB,I/O)	Loop address*	Location	Approx. distance from interface	AV*	Signal strength			
						Site Survey %	CH1 LI ← D*	CH2 LI ← D*	CH1 LI → D*
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									



Frequencies in use* CH1..... MHz CH2..... MHz

Background noise level* CH1..... % CH2..... %

** to be completed on installation*

Building and construction notes

Status of building at the time of survey

Notes

This sheet needs to be completed and kept as commissioning and user documentation to comply with BS 5839 - 1 section 2-27 and section 5-39 & 40

Approved for installation

YES	NO
-----	----

Name

Signature

