



4100ESi

Service and Upgrade Manual

LT0620
Issue 1.2

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The 4100ESi Fire Alarm System provides a configuration programming facility, which may be accessed through a programming computer using a "dongle". Because this programming facility allows the user to define in detail the operation of the 4100ESi System being customised, changes may be made by the user that prevent this installation from meeting statutory requirements.

The Company, therefore cannot accept any responsibility as to the suitability of the functions generated by the user using this programming facility.

READ AND SAVE THESE INSTRUCTIONS

Follow the instructions in this manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depends upon proper installation.

DO NOT INSTALL ANY SIMPLEX® PRODUCT THAT APPEARS DAMAGED



Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify your Simplex product supplier.

SAFETY HAZARD

The 4100ESi CPU Card includes a lithium battery. There is a very low danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ELECTRICAL HAZARD



Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or authorized agent of your local Simplex product supplier.



STATIC HAZARD

Static electricity can damage components. Therefore, handle as follows:

- Earth yourself with a suitable static strap or similar before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

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Under certain fibre optic application conditions, the optical output of this device may exceed eye safety limits. Do not use magnification (such as a microscope or other focusing equipment) when viewing the output of this device.

RADIO FREQUENCY ENERGY

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits defined in AS/NZS CISPR22:2010. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

SULFURIC ACID WARNING

The batteries contain sulfuric acid, which can cause severe burns to the skin and eyes and can destroy fabric. Replace any leaking or damaged battery while wearing appropriate protective gear. If you come in contact with sulfuric acid, immediately flush skin or eyes with water for 15 minutes and seek immediate medical attention.

SYSTEM REACCEPTANCE TEST AFTER SOFTWARE CHANGES

To ensure proper system operation, this product must be tested in accordance with AS 1670.1 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions, known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, should also be tested and proper system operation verified.

Software version compatibility

Verify 4100ESi System Programmer, Executive, and Slave Software compatibility when installing or replacing system components. Refer to the Solutions Bulletin SB11002 for more information.

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TrueAlarm analog smoke detection: 5,155,468; 5,173,683 and 5,543,777. IDNet and MAPNET II addressable communications; 4,796,025. TrueAlert addressable notification; 6,313,744 and 6,426,697. SmartSync horn/strobe control; 6,281,789.

Chapter 1. About this Manual

Basic 4100ESi Operation

The 4100ESi fire alarm panel has a large touch screen user interface that is organized into seven tabs. Each of these tabs presents a particular aspect of the system operation and the controls that are appropriate to that aspect.

The five tabs that you can use for the ordinary operation of the panel, such as managing alarms, faults, and other system events are straightforward to use. These operations are described in the 4100ESi Operator Manual and in the on-screen help, which can be activated by touching the bottom right corner of the touch screen.

For the most part, these tabs do not require any special operator access rights other than a key to open the outer door of the cabinet.

Service Operation

This Service Manual starts where the Operator Manual leaves off. It describes how to use the service facilities of the touch screen user interface, and the functions provided by external PC tools.

The Force Alarm tab provides a facility for creating alarms in detection zones for service testing purposes. Using this tab requires a higher level of access as test alarms may have unwanted effects in an operating panel. However, the tab operation remains straightforward.

The Service tab provides access to an extended menu of specialist functions, many of which are only visible to an operator who is logged in at a higher access level.

While service facilities are accessible using the Force Alarm and Service tabs, there are also several PC-based support tools which provide access to internal functions for system service and maintenance.

This manual also contains a section that covers the hardware changes required in order to upgrade existing 4100 systems to 4100ESi. The details of the software changes which are required for upgrade are fully covered in the 4100ESi Programming Manual.

Other Manuals for 4100ESi

- LT0617 4100ESi Operator Manual
- LT0618 4100ESi Installation Manual
- LT0619 4100ESi Programming Manual
- LT0432 4100ESi Australian Wiring Diagram

Printed copies of the Operator and Installation Manuals and Wiring Diagrams are supplied with each 4100ESi system. All of the 4100ESi manuals and other material are available from the Johnson Controls Fireplace website.

Chapter 2. Service and operations

Basic service and operations

This chapter covers the basic service actions: setting date and time, viewing system and card revisions, viewing alarm and fault history logs, and viewing and changing point status. All of these actions can be completed using the touch screen.

For the most part, these actions do not require any higher level access.

Setting the time and date

To set the system time and date, complete these steps:

1. Select the **Service** tab.
2. Tap **Clock - Set time & date?**
3. Enter the current date in the format DDMMYY using the numeric keypad to the right of the LCD. For days or months less than 10, use a leading 0. For example, 5th February 2016 is entered in the format 050216.
4. Tap **OK** to confirm.
5. Enter the current time (usually the next whole minute) as HHMM in 24 hour format. For example, 9:45am is entered as 0945; 9:45pm is entered as 21:45.
6. Tap **OK**.

Viewing the system versions and card status

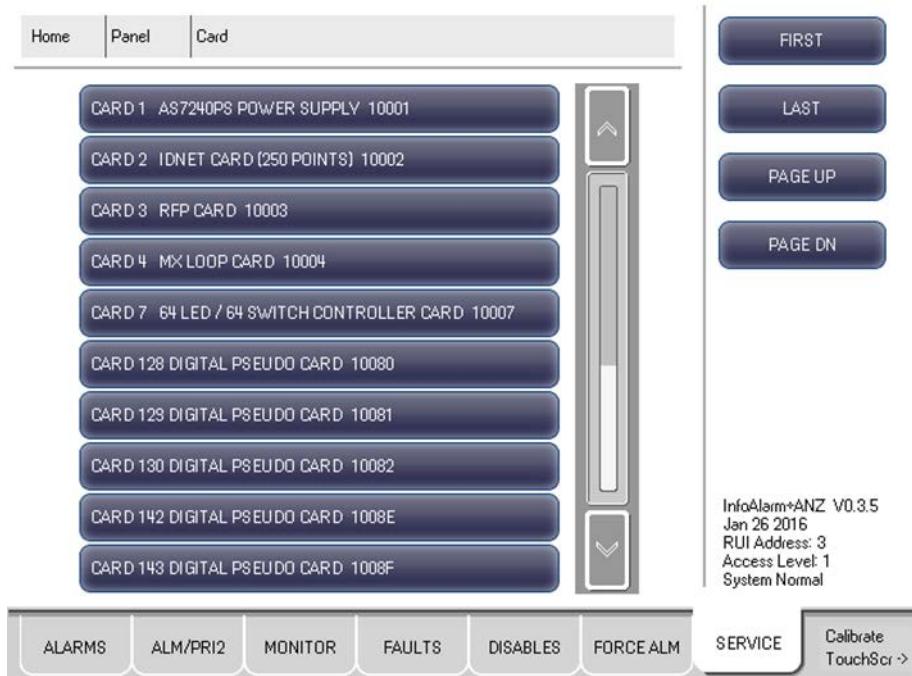
To view system versions and card status, complete these steps:

1. Select the **Service** tab.
2. Tap **Panel info: Stat & Revisions?**
3. Tap **Card - Show card status** and select the card to be viewed. The status list may take several seconds to display on the screen. The status list shows points associated with the card itself (not addressable MX/IDNet devices).
4. Tap **Panel info: Stat & Revisions?** and select the software item to be viewed.

Note:

The latest version numbers for 4100ESi software can be viewed on
www.tycosafetyproducts-anz.com

Figure 1: Service card status selection screen



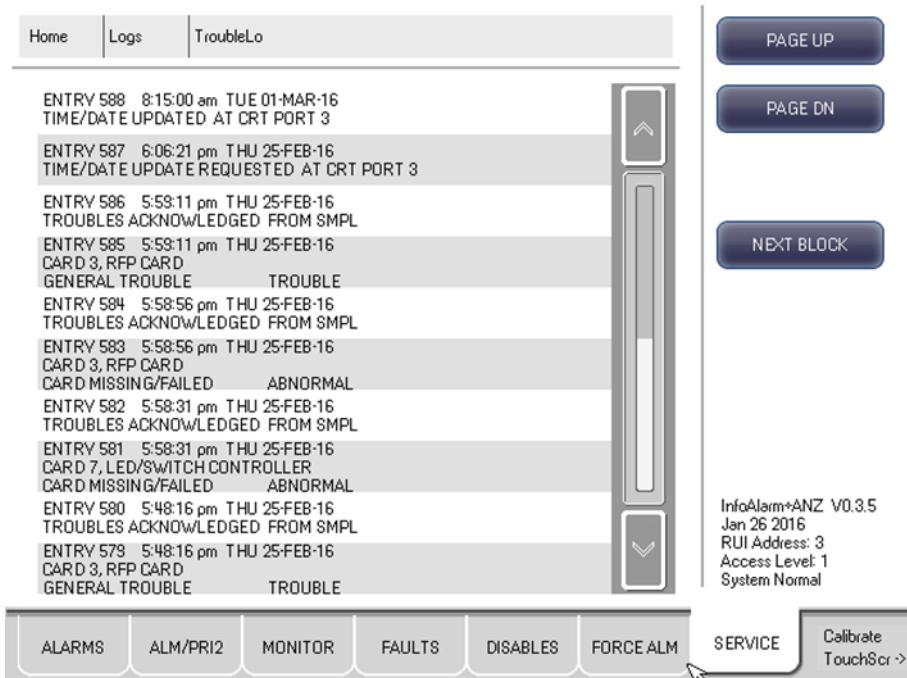
Viewing alarm and fault history

The 4100ESi maintains a history of the most recent alarm and fault events that have occurred.

To view the historical logs, complete the following steps:

1. Select the **Service** tab.
2. Tap **Logs - Historical logs?**
3. Tap the option for the type of history that you want to view. The history is presented as a list of events, with the most recent event at the top of the list. The list is divided into blocks of events.
4. Use the **Page Up** and **Page Dn** buttons to scroll through any block. Use **Next Block** to move onto the next block with older events, as displayed in Figure 2.

Figure 2: Historical logs



Note:

Blocks are ordered sequentially so that later blocks are chronologically older than the current block. Each block contains 20 log entries.

A list of events is displayed, with the most recent events displayed first.

Note:

History logs show the onset of an alarm or trouble condition. In general, the time that the condition is cleared is not recorded.

Listing zones and the contents of zones

To view information related to zones and their contents, follow these steps:

1. Select the **Service** tab.
2. Tap **List zones?**
3. Use the navigation keys to scroll through the list of zones. Only those zones containing points are displayed; empty zones are suppressed.
4. Select the zone you want to view from the list. The zone and the contained points are displayed.
5. Tap the zone or contained point to see detailed status about that item.

Ascertaining the mapping of points and zones

To view information related to zone lists and their contents, follow these steps:

1. Select the **Service** tab.
2. Tap **List zones?**
3. Use the navigation keys to scroll through the list of zones. Only the zones containing points are displayed; empty zones are suppressed.

4. Select the desired zone from the list. The zone and the contained points are displayed.
5. Tap the zone or contained point to see detailed status about that item.

Selecting points for status or control

Many operations which can be completed from the operator interface first require you to select the point on which you want to perform the operation. Points can be selected in two ways:

- Lists displayed on the ALM/PRI2, Monitor, Faults, or Disables tab. Points on the relevant tab can be selected from the touch screen.
- Using the List Points command on the Service tab.

Selecting points from the Service tab

The following choices of point types are available to be listed with the List points? command on the Service tab.

Table 1. Point types and descriptions

Prefix	Type of Points	Description
ZN	All ZN Zone Lists	Zones – groups of points for detection status display or output control. These will have names starting at ZN100.
SIG	All Signal Points	Output Points used (usually) as alarm or alert signaling (sounders or beacons).
AUX	All Auxiliary Relay Points	Point for auxiliary relay outputs, with no special characteristics.
FB	All Auxiliary Feedback Points	Point that reports ON/OFF status for feedback inputs, usually from clean contact inputs. These inputs are not supervised.
IO	All Inputs and Outputs of 24-Point I/O Card	Points that report input status or control outputs for the 24-Point I/O Card.
IDNET	All IDNet/MXPoints (by address)	IDNet or MXaddressable device points. Many of these device types contain multiple points.
P	All Digital Pseudo Points	Pseudo (virtual) points that are two state: on or off.
A	All Analogue Pseudo Points	Pseudo (virtual) points that have an analog value 0-65535.
L	All List Points	Lists: groups of any other types of point.
CARD	All Card Status Points	Points that report on slave card status.
SW	All Switch Status Points	Points that show the status of switches or push buttons on display modules connected to LED/switch controllers.
LED	All LED Points	Points that control LED display outputs on display modules connected to LED/switch controllers.
SYS	All System Points	Points that report the system status in the master.
ZN	All Zone Monitor Inputs	Points that report the status of inputs on zone monitor card for conventional detector circuits. These zones are not the same as zone lists – Monitor Zones have names starting at ZN1.

To list the points, complete the following steps:

1. On the **Service** tab, tap **List points?**
2. Select the type of point from the list. All points of that type will be shown.

Scroll through the list using the on-screen up/down arrows, page up/down buttons and first/last buttons, or by using the arrow keys on the keypad. It is also possible to jump to a specific point by entering its numeric address using the numeric keypad. For example, to jump to *MX*device M2-125-2, when the display is showing IDNet/*MX*points, type the number 2-125-2 on the numeric keypad (including dashes). See the **Selecting points for status or control** section for selecting a point and the description of what is shown.

Function/Numeric Keypad Shortcuts

For most menus available through the Service tab, if a numeric entry field is not shown, pressing the appropriate shortcut key will bring up the appropriate menu which lists points of that type. The point type names are overlaid onto the numeric keypad as shown in Figure 3. If no points exist for a given point type, then pressing the shortcut key for it will have no effect and the menu shown will not change.

Figure 3: Point type overlays



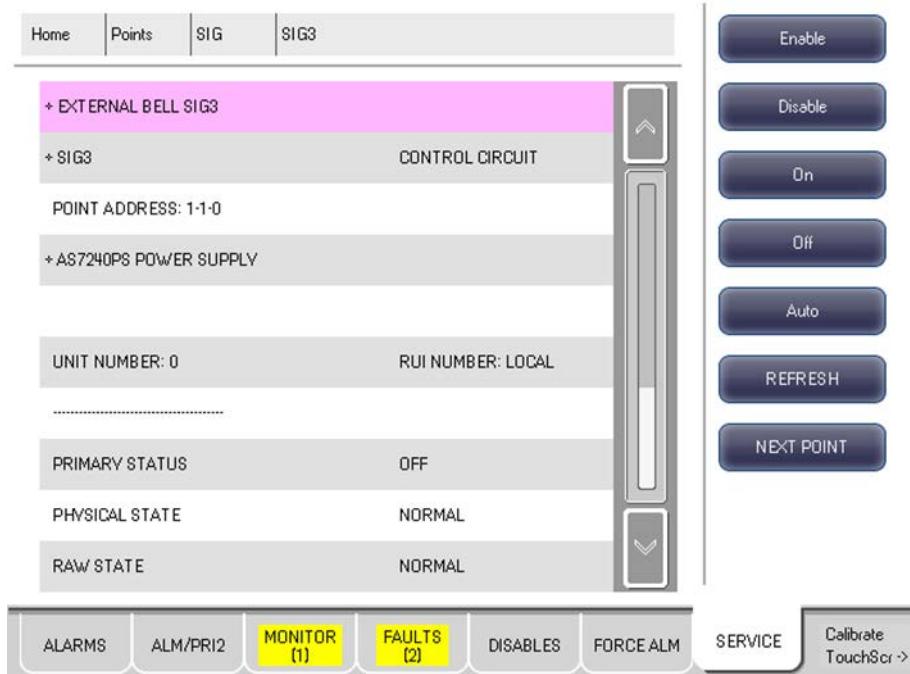
Table 2. Function/Numeric Keypad

Point Type Name	Description
ZONE	Zones
SIG	Signal points
AUX	Auxiliary relay points
FB	Feedback points
IDNet	<i>MX</i> , IDNet, Mapnet or VESDA point
P	Digital pseudo point
A	Analog pseudo point
L	List
NET	Network points
ADDR	Points based on a card address

Selecting a point

Selecting a point will bring up a list of the point information.

Figure 4: Example of selecting a point



On the right of the screen there are command actions that are specific to the type of point shown and the row that is selected. Rows that are preceded by + symbols present additional actions. Tap on the + symbol to display the additional actions.

Turning points on and off manually

For output control points, 'On' and 'Off' buttons are present.

During maintenance of the system, it may be necessary to turn the outputs (for example, notification devices and relays) on or off.

Turning off an output point isolates that output. When turned off, the output will not turn on, even if an alarm condition occurs that has been programmed to turn it on. After maintenance is completed, it is necessary to return the output to automatic control. Note that returning to automatic control does not restore the output to the desired state – this must be done before returning it to automatic control.

Note:

Returning to automatic control does not restore the output to the desired state. This must be done before returning it to automatic control.

Turning on an output point activates the output, even if there is no condition present that has been programmed to turn it on. Some control points are normally off, and may be turned on to perform a function. These must later be restored to "Off", not "auto".

The 'Off' button will turn off a control point and prevent the automatic override, thus causing it to remain OFF. This action will result in a system fault.

The 'On' button will manually turn a control point ON, and prevent automatic operation, causing it to remain ON. With the exception of pseudo points, this action will result in a system fault.

The 'Auto' button leaves a point in its current state (ON or OFF), but allows the system program to control it. AUTO is the normal state for all control points. A fault exists if any control point is taken out of the AUTO state.

Selecting ‘Disable’ will disable the point. The disabled point causes a disabled condition which is continually shown until the point is enabled again.

When a device is enabled, this is actioned immediately. When a device is enabled, and the system is not in alarm, the alarm outputs (including alarm devices and brigade signalling) are blocked from acting for 60 seconds.

If the enabled device unexpectedly goes into alarm during this time, it can be disabled from the alarm tab before the alarm outputs are activated.

Summary of Display-Only Attributes

Table 3 summarizes the attributes available for display. The attributes described in **Table 4** can be modified. An attribute is a current status or configuration of a device that can be viewed, or in some cases modified.

Table 3. Display-Only Attributes

Category	Attribute	Description
General	Point address and Zone number	Displays the point address and zone number of the selected point. If the status of the point is monitored frequently, record this address for use as a shortcut when subsequently selecting the point.
	Card Type and Point type	Displays the point type, which defines the specific function of the point, and the card type (for example, Class B Multi-Purpose Monitor Card).
	Present Status (Normal, Alarm, Fault)	The present status of the point – Normal, Alarm, or Fault – appears on the lower right section of the display after you select a point.
	Disconnect/Disable Status	Indicates whether the point has been manually disabled from the system.
	Class A Fault (applies to loop wiring cards: RUI, MXLoop, IDNet/MAPNET Loop)	Displays whether the Class A card is experiencing a fault somewhere in the wiring between the card and its devices.
	Relay status for Control or Signal Points	Displays the relay status for a control or signal point. Status reports as “Relay Status is ON” or “Relay Status is OFF”.
	Verification Tallies for AVF devices.	If the selected point is programmed for alarm verification, it displays the number of times the device has started, but not completed an alarm verification cycle.
	Coding Status for Coded Zones.	Not used in Australia.
	Control Priority for Relays	Allows you to view the control priority for a relay. The control priority is typically used with Custom Control.
	Feedback Point Status	Shows the status, ON or OFF, for a feedback point.
Analog	Counts for Lists	Indicates the number of points in a list.
	Present sensitivity selected	Displays the current sensitivity of the device.
	Average value	Displays the average value recorded by the sensor.
	Alarm value	Displays the value required to trigger an alarm.
	Current value (percent of alarm)	Displays the current (real time) value.
	Peak value (percent of alarm)	Displays the maximum value reported by the

		device as a percentage. Note that this is the maximum value reported since the last time this counter was cleared.
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Table 4. Summary of Modifiable Attributes

Attribute	Description
Card LED	Allows the state (ON or OFF) of the card LED to be toggled.
Device LED	Allows the state (ON or OFF) of an MXor IDNet device LED (typically a smoke detector) to be toggled ON or OFF. This can be very useful when two devices have been set to the same point address.
Control Priority Change	Allows the control priority (a priority level used with Custom Control) to be incremented or decremented. This option is available for all control points – relays, notification appliances, TrueAlarm devices with relays and sounders, and all digital pseudo points. The priority is a value from 0-15. Lower numbers mean higher priority.
Analog Pseudo Point Value and Status	Allows you to manually store a value for an analog pseudo point. The type of value stored depends on the point type of the pseudo point. For example if the point type is a counter, a counter value is stored. If the point type is timer, a timer value is stored.
Alarm Verification Tallies for Monitor Points (Clear)	Allows you to manually clear alarm verification tallies. This is useful when attempting to determine how frequently the system is going through the verification cycles. Dirty devices are probable contributors to frequent verification cycles.
Ground Fault Isolation Relay	Allows you to manually turn on and off the GFI relay on a card.
TrueAlarm Peak Analog Values	Allows you to clear the peak value of a TrueAlarm sensor.
Sensitivity (Alarm Threshold)	Allows you to set the value at which the device goes into alarm. The value can be any of the following. <ul style="list-style-type: none"> • Sensitivity of smoke detectors • Threshold of analog ZAMs • Temperature of heat detectors • Threshold of VESDA devices.

Routine service: AS 1851 testing requirements

The 4100ESi and its associated equipment must be tested at regular intervals. Test criteria, service intervals and record keeping requirements are specified in the standard AS 1851-2012 and amendments.

In addition to this, the 4100ESi automatically performs regular self-tests to ensure that the battery is connected and that it has a certain level of capacity.

It is anticipated that the features of the 4100ESi, as described in the Operator's Manual, will be sufficient to allow a service person to perform many of the requisite inspections and tests.

The following sections describe how service persons may perform some of the required tests, where the method may not be immediately obvious, or where special operation or features will be required. The references in the tables to "AS 1851 Item Number" refer to Tables 6.4.1.2 to 6.4.1.5 in the AS 1851-2012 standard.

Note:

This section is not intended to be used as a complete list of AS 1851 maintenance requirements, nor as a complete test schedule.

Attention is drawn to the notification requirements in AS 1851 Clause 1.5.6.1 on the finding of critical and non-critical defects during testing. A critical defect would include failures that made the system inoperative or incapable of warning the occupants of a building when a fire is detected.

Performing monthly tests

FIRE DETECTION AND ALARM SYSTEM, SPECIAL HAZARD SYSTEMS AND SMOKE HAZARD MANAGEMENT SYSTEMS

Table 5. Monthly Tests

AS 1851 Item No	Description	Action required and pass/fail criteria	Test Facility, Procedure, Notes
1.4	Fire Alarm	SIMULATE an alarm condition and confirm that all required common or general visual and audible indications operate and the external alarm is activated. Where the system is monitored ensure the alarm has activated the alarm signalling equipment. Where CIE is a sub-indicator panel, confirm that the alarm condition is indicated at the FIP.	Use the Force Alarm functionality as described in the Force zone alarms section. Failure of this test is a critical defect. Failure of the alarm relay should be treated as a critical defect – refer AS 1851-2012, Section 1.5.6.
1.5	Occupant warning system	SIMULATE an alarm and confirm the alarm initiates the occupant warning system including any visual warning devices (VWD).	Confirm occupant warning system is activated in Item 1.4.
1.6	Isolate/Disable	INITIATE an isolate/disable condition at the fire indicator panel and confirm that all required common or general visual and audible indications operate. Where the system is monitored, ensure the isolate is received by the monitoring service provider alarm signalling equipment. Where the panel is a SIP, confirm that the isolate/disable condition is indicated at the FIP as either a fault or isolate/disable.	Refer to LT0617 4100ESi Operator Manual section “Managing Disables”.
1.9	Baseline data documentation	Check that the 4100ESi configuration has not been changed.	Check job details as described in the Viewing configuration job details section.

Performing annual tests

Before proceeding with Annual Tests, check that the installed 4100ESi firmware is up to date (see the **Viewing the system versions and card status** section). If it is not, consider installing the current version of the firmware.

Also check that the site specific configuration details are up to date and present in the log book. Use the View Job Details functionality – see the **Viewing configuration job details** section. If these do not match the database most recently commissioned and recorded in the log book, ascertain why and correct the details as necessary.

FIRE DETECTION AND ALARM SYSTEM, SPECIAL HAZARD SYSTEMS AND SMOKE HAZARD SYSTEMS

Table 6. Annual Test

AS 1851 Item No	Description	Action required and pass/fail criteria	Test Facility, Procedure, Notes
3.5	Panel switches and keypads	TEST the operation of each control.	See the section on Keyboard test (AS 1851 section 3.5).
3.6	Visual indicators	TEST the operation of each visual indicator and alphanumeric displays.	Lamp Test. See the Checking the display / lamp test section.
3.7	Battery	MEASURE system quiescent and maximum alarm currents in accordance with Appendix F of AS 1851. Calculate the required battery capacity and CHECK the nominal capacity of the installed batteries is not less than the calculated capacity. Verify that the measured currents are the same as recorded in the baseline data.	The 4100ESi battery test functions do not meet the requirements of this test. A separate test method must be used. See the Power supply status and battery testing section.
3.8	Fire Detectors	TEST detectors as specified in Appendix G of AS 1851 and confirm correct alarm zone indication. Where the detectors are used as part of special hazards systems, 100% of the detectors shall be functionally tested yearly.	Detector sensitivity checking is described in Detector sensitivity test (AS 1851 Item 3.8) . Walk test functionality may be used to speed up testing of devices. See the Walk Test™ procedures section.
3.9	Audibility	TEST the occupant warning system and check the signals are distinctly audible in all areas of the building. NOTE: In order to reduce the disturbance to occupants, an acceptable means of conducting this test is to provide an audio signal other than the warning signal at a reduced sound pressure level. Where the FIP is connected to a sound system and intercom system for emergency purposes (AS 1670.4) or EWIS (AS 2220.2) test in accordance with Table 6.4.3.2.	If a T-GEN 50 is used to generate the warning signal, you can either select the low level test tone or play background music through the background music input.
3.15	Service life	Inspect detectors, equipment or other items having a defined service life and report where the service life is exceeded or will be exceeded before the next scheduled service.	See the CO date expiry check section for analogue addressable CO detectors. For conventional CO detectors, unless accurate records have been kept for the installed detectors (noting their location and manufacture date), these detectors will require manual inspection to determine their expiry date. Refer to the manufacturer's data.
3.18	Interfaced system initiation	Simulate alarm(s) to verify that each interface transmission path initiates the corresponding interfaced system(s) in accordance with the approved design.	Referring to the baseline data, check that a force alarm on each appropriate zone activates the required output device.

SMOKE HAZARD MANAGEMENT SYSTEMS—ADDITIONAL ACTIVITIES

CAUTION: TAKE PRECAUTIONS TO PREVENT UNACCEPTABLE VENTILATION SYSTEM CHANGES

Table 7. Smoke Management Systems - Additional Activities

AS 1851 Item No	Description	Action required and pass/fail criteria	Test Facility, Procedure, Notes
3.19	FFCP latching and reset	CHECK that after initiation by a signal from the FIP, the FFCP remains operating in the fire mode until reset by the reset switch on the FFCP.	Trigger the FFCP with a zone force alarm on the FIP. Then reset the FIP and check the FFCP is still operating in fire mode. Press FFCP fire mode reset to clear.
3.20	Manual override Controls	CHECK each manual override ON-AUTO-OFF control operates. Note: Manual override should function in normal mode and fire mode.	Check operation between the FFCP and the field equipment.
3.21	Airflow fault Indicator	CHECK the operation of the airflow fault indicator.	
3.22	Open-circuit fault Indicator	CHECK the operation of the air-handling equipment interconnecting cable open-circuit fault indicator.	
3.23	Closed-circuit fault indicator	CHECK the operation of the air-handling equipment interconnecting cable closed-circuit fault indicator.	
3.24	Electrical	CHECK the operation of the electricity phase-fail fault indicator.	
3.25	Fan-running Indicator	CHECK the operation of the fan-running indicator.	
3.26	Fan-stopped Indicator	CHECK the operation of the fan-stopped indicator.	
3.27	Fan fault indicator	CHECK the operation of the fan-fault indicator.	

Performing five-yearly tests

FIRE DETECTION AND ALARM SYSTEMS

Table 8. Five-Yearly Tests

AS 1851 Item No	Description	Action required and pass/fail criteria	Test Facility, Procedure, Notes
4.2	Supervised circuits	TEST each input and output supervised circuit for any condition that prevents the transmission of the required signal and ensure a fault is registered at the FIP.	Apply o/c and s/c faults on the field wiring where appropriate, and verify faults are generated at the FIP.
4.3	Fault	SIMULATE a circuit fault condition at the FIP and confirm that all required common or general visual and audible indications operate. Where such faults are monitored, ensure the fault has activated the alarm signalling equipment. Where the panel is an SIP, confirm that the fault condition is indicated at the FIP.	Force a device into trouble through the user interface or simply disconnect a wire (for example, the wire to the MCP on the front of the 4100ESi). For information about forcing individual devices into trouble, see the Force Device Alarm or Fault/Trouble section. A failure of the fault relay should be treated as a non-critical defect – refer to AS 1851-2012, Section 1.5.6.
4.5	Power supply Supervision	Where the system is monitored, REDUCE the CIE operating voltage to trigger a power supply supervision fault and CONFIRM that it is received by the monitoring service provider. Where the panel is an SIP or a distributed power supply, confirm that the power supply supervision fault condition is indicated at least as a fault at the FIP.	This test requires equipment external to the 4100ESi. See PSU supervision (AS 1851 Item 4.5) .
4.7	Interface and control test	CONDUCT a functional test with each system interface in accordance with the building's systems interface diagram and CHECK that each interfaced system responds to the signal in accordance with the approved design. Refer to Appendix D of AS 1851-2012.	Refer to the baseline data for details. Refer to Appendix D of AS 1851-2012.
4.9	Monitoring connection	Where the system is monitored, TEST that the loss of each of the monitoring links is indicated at the monitored site.	For networked systems break/short each communication line between a sub FIP to the main FIP and check that a fault is indicated at each FIP. If the FIP is fitted with an ASE, consult the monitoring company regarding testing the fault monitoring of the ASE's communication links.
4.10	Alarm verification Facility	TEST one detector of each type per circuit with alarm verification facility enabled to check that it functions in	To test AVF, put the detector into alarm using the appropriate test apparatus (for example, test

AS 1851 Item No	Description	Action required and pass/fail criteria	Test Facility, Procedure, Notes
		accordance with the approved design.	smoke/gas or Solo in-situ tester) and check the following: i) The detector's indicator turns on. ii) The indicator turns off for at least 5 seconds. iii) The indicator turns on again within 60 seconds and the FIP goes into alarm.

Battery load discharge testing (AS 1851 Item 3.7)

The 4100ESi Fire Alarm panel has no provision for load discharge testing of the battery at the levels required for yearly testing to AS 1851-2012.

A load discharge method separate from the panel must be arranged in order to meet this requirement. For example, apply an external test load to the battery and operate the 4100ESi with mains power off for 30 minutes. Check the battery voltage at the end of the test.

PSU supervision (AS 1851 Item 4.5)

The 4100ESi panel does not include built-in facilities to carry out this test. A suitably rated bench power supply connected to the 4100ESi battery terminals with the mains power turned off may be used instead.

Reducing the bench power supply output voltage to below the relevant battery voltage thresholds should permit observation of the PSU supervision signals.

Dropping the battery terminal voltage to below 24.2V will bring up a LOW BATTERY STATUS fault. Below 19V will bring up a LOW BATTERY CUTOUT fault. Finally, dropping the voltage below 17V will cause the 4100ESi to turn off completely.

Detector sensitivity test (AS 1851 Item 3.8)

Item 3.8 of AS 1851-2012 requires that the sensitivity of all smoke, CO and flame detectors is checked to ensure that each is within the required range.

For collective (conventional) smoke detectors, the detector must be tested using a calibrated test medium that can confirm the sensitivity of the detector for checking against the manufacturer's data or the listed sensitivity. If accredited test equipment is not available or suited to do this testing in the field, or it is preferred to not do the testing in the field, the detectors can be sent to a clean and calibrate service.

For analogue addressable smoke detectors on the 4100ESi, it is not necessary to test each detector with a calibrated medium to confirm its sensitivity as the 4100ESi has built-in functions that assist in doing this. The 4100ESi maintains a constant sensitivity for each detector, tracking any changes in the clean air value (with no smoke) as the detector ages or becomes contaminated by dust. If the detector's clean air value has shifted so far that 4100ESi cannot compensate any further, the detector is put into a Dirty status, indicating it needs cleaning or replacing. This sensitivity verification does not replace the need to test the detectors in-situ using an un-calibrated medium for a go/no-go test.

To satisfy the sensitivity test of analogue smoke detectors it is necessary to check:

1. Each detector is still programmed with its approved design sensitivity. Use the 4100ESi to view the configuration job details (see the [Viewing configuration job details](#) section) to confirm that the

configuration for the panel is the same as that most recently commissioned. If it is not, determine why. In all cases, check that the currently programmed sensitivity of each detector is as required. These are shown in the TrueAlarm Status Report which can be obtained using the IP File Transfer utility – see the [Starting the IP File Transfer Utility](#) section. The relevant fields of the report are described in Step 2 below.

In addition, for CO detectors, the TrueAlarm CO Service Report is available through the IP File Transfer utility.

2. Each detector has not reached, nor is close to reaching, its Dirty limit. The TrueAlarm Status Report produces a list of all programmed detector points and includes:
 - programmed sensitivity,
 - current device status,
 - is the device almost dirty,
 - the device's custom label.

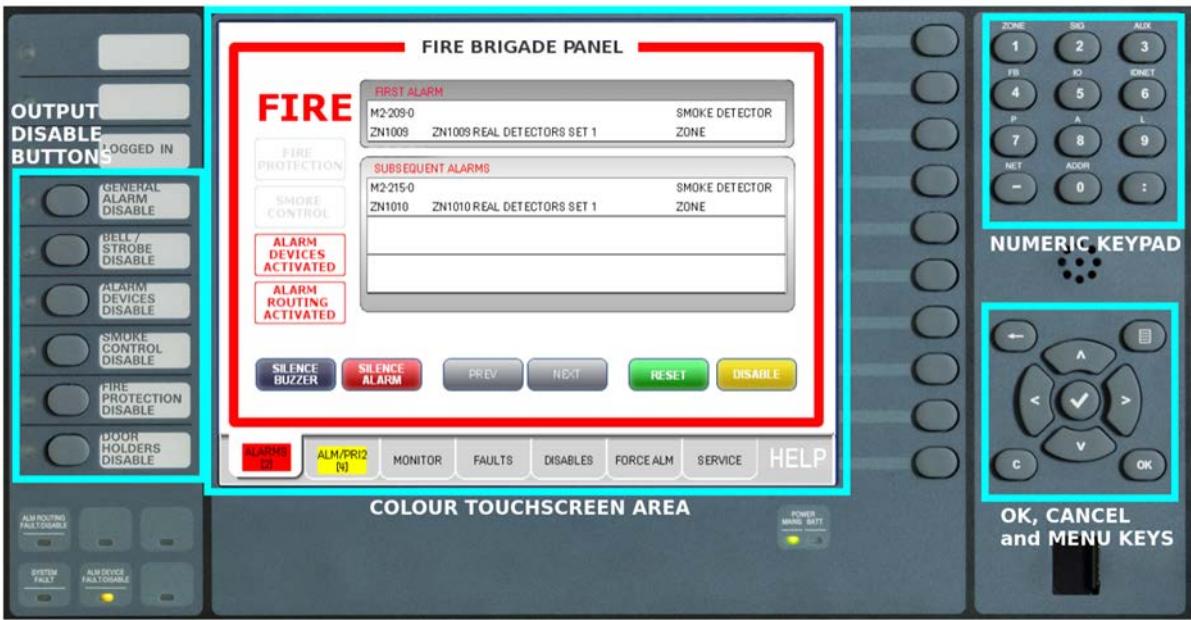
Upload this report from the 4100ESi to a PC and search the report for any detectors that are dirty ('DIRTY' appears in the "Device Status" column instead of 'NORMAL') or those where the 'Almost Dirty' field contains '*YES*. Replace the detectors with new or cleaned detectors and repeat the process to make sure all detectors are now well within range.

Detectors with CO sensors are listed in the TrueAlarm CO Service Report described in [Uploading a file or a report with the IP File Transfer utility](#). The only relevant field in this report is the "End of Life Date". If this is past the current date, the detector must be replaced. There is no marker or indication in this report that a detector has actually expired, but you will see "TBL" in the "State" field. Expired detectors will show an "EXPIRED" fault/trouble but this must be checked separately. A way to read the report may be to look for devices with "TBL" as the state, and then checking the "End of Life Date".

3. Each detector can generate an alarm condition. All detectors will need to be in-situ tested with a suitable method (for example, test gas) to ensure they can detect an alarm.

Keyboard test (AS 1851 section 3.5)

Figure 5: Keyboard test



To perform a keyboard test, follow these steps:

1. On the InfoAlarm+, go to the **Alarms** tab.
2. Whenever a button is pressed, the buzzer should sound – if it does not, the test has failed.
3. Push each of the keys on the numeric keypad in the following sequence:

0	1	2	3	4	5	6	7	8	9	-	:
---	---	---	---	---	---	---	---	---	---	---	---

4. Press all of the keys in the OK, Cancel and Menu keys area in succession as shown below. After pressing the Menu (☰) key, the **Service** tab will open. Tap the **Alarms** tab on the touch screen to return there.

<	Λ	>	V	←	✓	c	☰
---	---	---	---	---	---	---	---

5. Press the buttons to the immediate right of the touch screen. There is no action for all of these except for the one at the bottom. This brings up a help window on the touch screen. Press Close to close this window. If the touch screen hasn't been calibrated this will bring up the touch screen calibration option instead.
6. Now press each of the Output Disable Buttons to the immediate left of the touch screen. Each press will turn on the associated LEDs (some only momentarily if no zones are programmed to the function). Press the key again to turn the LED off.

Checking the display / lamp test

You can test the operation of the 4100ESi touch screen and indicators using the lamp test feature. You can access this from the Home menu of the Service tab – on the right hand side there is a control called Lamp test.

When pressed, the screen cycles through solid white, red, green, blue, and black colours, and all the indicators flash, including any zone indicators that are fitted. The output disable button indicators will flash two colours simultaneously, red and amber. The unmarked indicator at the top will flash red and green.

Confirming the address of MX/IDNet devices

To confirm the address of a detector, the LED of its point should be turned on.

1. Select the point of the detector as described in the [Selecting points for status or control](#) section.
2. From this list, select the second row of the point status.
3. Turn the device LED on and off with the **Device LED On** and **Device LED Off** controls.
4. By selecting the third row (*MXLOOP CARD*), the LED of the slave card that the device is connected to illuminates. The controls **Card LED On** and **Card LED Off** are shown.

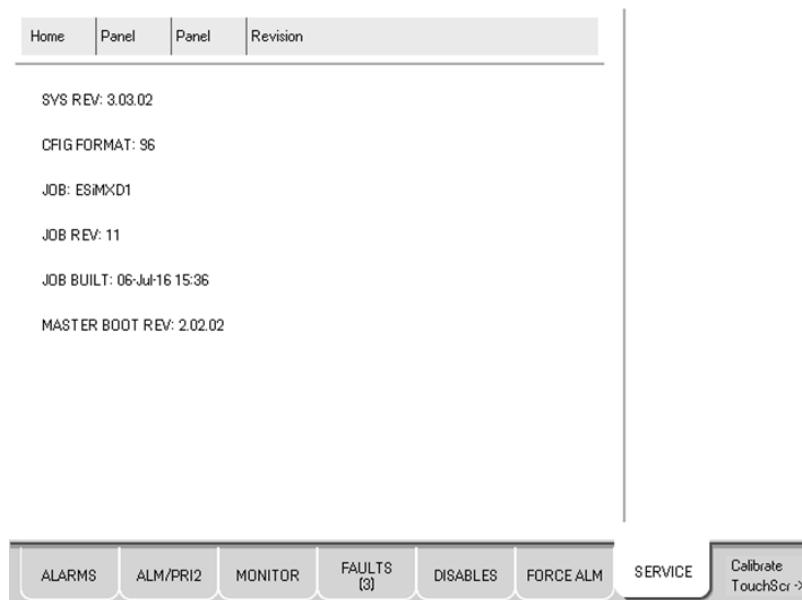
Viewing configuration job details

To view configuration job details, follow these steps:

1. Select the **Service** tab.
2. Tap **Panel info: Stat & Revisions?**
3. Tap **Panel info: Stat & Revisions?** again.

The following screen displays:

Figure 6: Viewing Panel info: Stat & Revisions



The Job, Job Rev, and Job Built fields uniquely identify a job and its revision. If these fields are different from when viewed previously, then a new configuration has been downloaded since.

Using Walk Test

See the [Walk testing](#) section of this manual.

Power supply status and battery testing

APS mains/battery fail operation

When the mains power fails, the Power LED (green) on the APS/LPS Controller shows a sequence of three short, three long, three short flashes, and the system is powered from the back-up batteries. A battery low fault is generated as the battery voltage drops below approximately 24.2V.

If the mains supply remains disconnected for a prolonged period, the battery voltage gradually drops to zero. Below a battery voltage of approximately 20V there is little capacity, and so the fall off will speed up. System operation is not defined at low voltages.

Batteries should be disconnected when their voltage drops too far, as over-discharging lead acid batteries reduces their recharge capacity and shortens their life. The APS/LPS Controller monitors the battery voltage and disconnects the batteries when the voltage drops below approximately 17V.

When the mains supply is restored, the system voltage returns to approximately 27V and the panel starts operating. The flattened batteries do not automatically connect and recharge if their voltage is below approximately 17.6V, so the system remains in Fault.

Fitting a mini-jumper or similar to Lk2 FORCE BATT CONN on the APS/LPS Controller forces the APS/LPS to reconnect the battery and commence charging. The link needs to remain connected until the battery voltage remains above 17.6V during the periodic Battery Presence test (every 30 seconds) so it does not register a battery disconnect voltage again.

Batteries that are over-discharged should be recharged, then disconnected from the panel and load tested to check that they have not been damaged, (for example, one or more cells could have "collapsed").

In the unlikely event that during power up the APS /LPS Controller fails to start properly (the power LED remains off, it does not communicate with the 4100ESi CPU, and is reported as missing), then disconnect the batteries, turn off mains power for 10 seconds, then power up again from mains. This should re-establish operation. If the batteries are very flat ($\approx 17V$) then use Lk2 to reconnect them and start charging.

Automatic tests

Battery connection test

Every 30 seconds, the battery is momentarily disconnected from the charger and the battery voltage measured. This is to ensure the battery is connected,

This applies whether or not an APS/LPS is configured as a charger. If the voltage drops (no battery), the battery disconnected fault is generated.

Battery capacity test (long-term)

For the long term battery capacity test, the 4100ESi panel disables the battery charger and operates off the battery for an hour (typically). If the battery voltage does not drop below the battery low threshold, the battery is deemed to be OK.

The day and time when this test runs is defined in the configuration. The default is for a one hour test on a Tuesday from 8:00 – 9:00am.

CO date expiry check

The 4100ESi panel can determine the manufacture date of each *MX*detector. Detectors which have CO sensors require servicing 10 years after manufacture as the CO cell has a limited lifespan.

When a detector's CO cell life has expired the panel will raise an "EXPIRED" fault for that detector's utility monitor point.

The TrueAlarm CO Report generates a list of all detectors with CO sensors and their end of life dates. This can be uploaded to a Windows PC using the IP File Transfer utility described in the [IP File Transfer Utility](#) section of this manual.

Printing reports

The following section describes report printing options and how to print a report.

Note:

Printers are connected to the 4100ESi through a Dual RS232 Interface Module (4100-6046). They must be programmed into the configuration.

To print a report, complete the following steps:

1. Select the **Service** tab.
2. Tap **Print reports?**

Note:

The Print log file to local printer item is not usable on the 4100ESi.

3. Selecting any of the reports listed in the menu will begin printing that report.
4. The **Print options?** item in the reports menu provides options to change the selected printer (if there is more than one) and to terminate an existing print job (if any).

Available reports

The system can generate any of the following reports:

Table 9. Available Reports

Report	Description
Alarm History Log Report	The report includes all information contained in the alarm history log – device custom label, time and date device entered alarm.
Fault History Log Report	The report includes all information contained in the fault history log – device custom label, type of fault, time and date device experienced trouble.
TrueAlarm Status Report	The report includes the following information for each point: <ul style="list-style-type: none">· Device Number· Custom Label· Current Sensitivity of the Point· Point Status: Normal, Fault, Alarm· Almost Dirty Status: Points which are almost dirty have an asterisk in this field to denote this.
TrueAlarm Service Report	The report includes the following information for each point: <ul style="list-style-type: none">· Device Number· Custom Label· Alarm Level (sensitivity level of the device)· Average Value (average of the current value over time)

Report	Description
	<ul style="list-style-type: none"> · Current Value (the current value of the device input or sensor) · Percent of Alarm: Shows the current value for the sensor. Value is shown as a percentage of 100 percent (alarm). For example, if the value shown is 9%, it means that the sensor is currently at 9% of the value required to trigger an alarm. · Peak Value: Shows the highest value that the sensor has reached. Value is shown as a percentage of 100 percent (alarm). For example, if the value shown is 9%, it means that the peak value experienced by the sensor was 9% of the value required to trigger an alarm. · Current State: Possible values include Normal, Fault, Dirty, Excessively Dirty, and Almost Dirty.
TrueAlarm CO Report	<p>The report includes the following information for all addressable detectors that contain a CO sensor:</p> <ul style="list-style-type: none"> · Device Number · Custom Label · Current Value · End of Life Date · State
Active List Report	<p>One type of Active List Report may be selected – devices currently in install mode.</p>
Alarm Verification Tallies	<p>Report of alarm verification tallies that is useful for conventional detectors with AVF enabled – shows those inputs that trigger an AVF cycle, but that did not actually enter alarm.</p>

Other reports shown in the user interface, but not listed above, are not relevant to the 4100ESi panel in Australia.

Force zone alarms

The forcing of zones into alarm is controlled from the Force ALM tab.

Zones currently forced into alarm will be shown in the list with TST/ALM beside them.

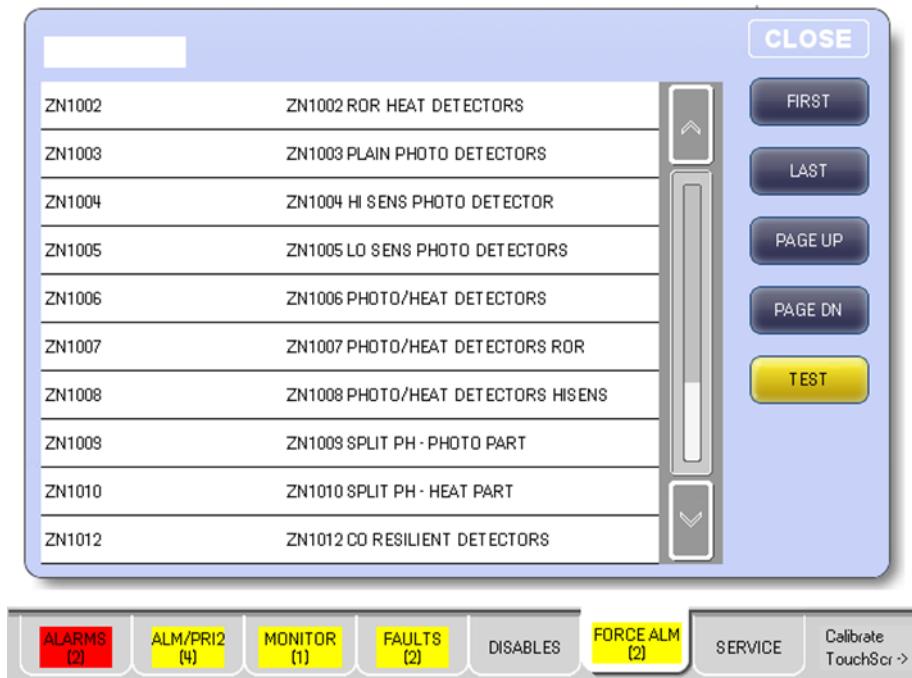
Performing a reset will clear all zones forced into alarm.

When a zone is forced into alarm, an alarm event will be created on the Alarms tab and all outputs mapped to the zone will be activated. Disabling the zone prior to the force alarm will still allow the mapped outputs to be activated (The Force Alarm facility will always produce a zone alarm, even if the zone is disabled.). Therefore the outputs should be disabled before forcing a zone into alarm.

Forcing a new zone into alarm

1. To force a zone into alarm, tap **New Test**. The window displayed in Figure 7 will appear:

Figure 7: New Test window



2. Select the zone to force into alarm and tap **Test**.
3. A warning appears indicating that this will cause an alarm – tap **OK**.

For information about forcing individual devices into alarm or trouble, see the **Force Device Alarm or Fault/Trouble** section.

Managing disables

You can manage system disables at the 4100ESi panel.

A disabled condition can occur when an operator takes a component out of service to prevent a nuisance alarm when maintenance is being carried out in an area, or if the component is faulty and is undergoing repair.

A disabled component will not show any alarms, faults, Priority2 or Monitor status. A disabled output will be forced off and will not activate under automatic or manual control.

Zone and point enable/disable

A zone can be enabled and disabled from the InfoAlarm+ display/keypad. Individual points such as smoke detectors and sounders can also be enabled and disabled. When an input point or zone is disabled, the point/zone is blocked from signalling an alarm to the fire brigade and other programmed outputs. When an output point or zone is disabled the associated output(s) are turned off. On the InfoAlarm+, the **Disables** tab shows a list of the currently disabled zones and points.

Note:

Certain types of system points cannot be disabled (for example pseudo points).

Input zone disable

When an input zone is disabled, all points that map to the zone are disabled. When an input zone is enabled all points that map to the zone are enabled.

When a point is disabled, the zones it maps to are automatically disabled if the zone has no enabled points mapping to it. For example, if the last enabled point mapping to a zone is disabled, then the zone is automatically disabled. When a point is enabled, the zones it maps to are automatically enabled if they were not already enabled.

Output zone disable

When an output zone is disabled, all output points that map to the zone are automatically disabled (turned off). When the output zone is enabled, the output points are enabled and may turn on (depending on the state of the system).

Enabling/disabling zones or points

Refer to the 4100ESi operator manual (LT0617) for instructions on enabling/disabling zones or points.

Hidden alarms

Occasionally, when a disabled alarm point is re-enabled, it goes into alarm immediately or shortly after. For example, when a call point is still operated or smoke is already present in a smoke detector. These pre-existing alarms cannot reliably be determined ahead of time. To prevent unwanted activation of alarm outputs from these hidden alarms, all alarm output groups are temporarily frozen for 60 seconds whenever any items are enabled. If multiple items are enabled, the period lasts 60 seconds after the last item is enabled. This frozen condition is indicated on the Monitor tab as a reminder. If any alarm event occurs during the 60 second frozen period, the Alarms tab turns red and the alarms are displayed as normal. However, none of the alarm output groups activate (although the Alarm Devices Activated indicator may be on). The 60 second period provides enough time to disable the alarm point on the Alarms tab and reset the alarm condition. When this is done, nothing happens when the 60 second frozen period lapses. The cause of the hidden alarm can then be investigated.

Note that during the 60 second freeze period, the status of the alarm output groups does not change, that is, these outputs remain on or off as they were at the start of the freeze period. When the 60 second freeze period ends, the state of the output groups is refreshed according to the current conditions.

Enabling points (alarm output groups freezing)

The following actions occur when enabling points:

- The alarm output group freeze period is triggered (or restarted).
- Alarm or Priority2 or Fault status becomes live again.
- Output devices resume their real status based on current conditions (unless they are part of the output groups).
- Alarm status for some detectors and devices may take several seconds to become active.
- If they do go into (unwanted) alarm, the output groups are frozen and will not activate for 60s.

Note:

Pseudo points cannot be disabled and their status will always be available.

Changing MX device addresses

Using the 850EMTK

Addresses can be changed with the 850EMT by plugging a detector onto the integrated base or for modules with the AUX cable included with the 850EMT. Refer to the 850EMT manual – LTC0586.

It is also possible to change the address of IR capable devices using the 850EMT when IR mode is enabled at the 4100ESi for a given *MX*loop – see the **Using IR for MX devices** section.

Using the InfoAlarm+ display

This option is only presented when there are MX loop cards in the system, and you are logged in at a higher access level.

To change a device address at the 4100ESi InfoAlarm+ display, follow these steps:

1. Select the **Service** tab.
2. Tap **Service / Diagnostics?**
3. Tap **Change address?**
4. Enter the Loop Channel number (1-30) and tap **OK**.
5. Enter the Old Device Address (1-250 or 255) and tap **OK**.
6. Enter the New Device Address (1-250) and tap **OK**.

The old device address must first be discovered as an extra device and appear as a fault. Attempting to change an address before this will result in failure.

The old device address must be 255 or a configured address. The new device address can only be one that is configured.

If the address change fails for reasons such as invalid channel address, extra device not detected, or unconfigured address, a window will appear showing “FAILED” or “ACTION NOT TAKEN”.

Otherwise the result is shown as text in the form “Changing <channel><old address> to <channel><new address>” with “Pass” or “Fail” at the end.

Using IR for MX devices

The 850EMT can be used to change the address or view the status of *MX*detectors using an Infrared communication link. This saves having to remove the detector from the base, especially if it is out of reach.

For instructions on using the 850EMT with IR refer to the 850EMT manual – LTC0586.

To enable or disable the IR link at the 4100ESi follow these steps:

1. Select the **Service** tab.
2. Tap **Service / Diagnostics?**
3. Tap **Change Infrared Data Link?**
4. Select the appropriate option to enable or disable the IR link.
5. Select the *MX*slave card for which you want to enable or disable the IR link.

When the IR link is enabled for a *MXloop* card, an Infrared Data Link fault will display for this slave. This holds the 4100ESi in an off-normal state while the IR link is enabled. It will clear when IR mode is disabled.

This option is only presented when there are MX loop cards in the system, and you are logged in at a higher access level.

Sounder (buzzer)

The loud buzzer will emit a sound on key presses, and when there is alarms or faults present.

The volume is automatically controlled by the door switch. The buzzer is, therefore, quieter when this is open.

Chapter 3. Fault finding

Introduction

A fault is failure of equipment or of field wiring, for example, open circuit, short circuit, hardware failure, device disconnected, cards not installed, unexpected software operation. Operator actions can also introduce a fault – this is usually to hold the 4100ESi in an abnormal state because a particular mode that alters panel operation has been entered, for example install mode or IR mode.

Note:

The 4100ESi on-screen will often use the terminology ‘trouble’ in place of ‘fault’ – they are equivalent terms.

Faults currently present can be viewed on the FAULTS tab – refer to Managing faults in LT0617: 4100ESi Operator Guide. To see a historical log of faults, see the [Viewing alarm and fault history](#) section. The log can be uploaded to a PC – see the [IP File Transfer Utility](#) section.

The onscreen help for the Faults tab lists possible causes of each fault. This can be accessed by pressing the lower right corner of the touch screen where the Help button is displayed, alternating with system date and time. Refer to Access the onscreen help in LT0617: 4100ESi Operator Guide for more details.

Fault sources can be points, cards, and system. CPU crash codes are displayed when a crash occurs.

If an earth fault is displayed or otherwise suspected, see the [Advanced Servicing](#)

[Using the Earth Fault Search feature](#) section to find the cause.

Sections in this chapter are:

- Card faults – faults related to operation of the slave cards or the addressable loop they interface with.
- Addressable device faults – faults with *MX*, IDNet, or MAPNET addressable detectors and modules.
- Power supply faults – faults and indications detected by the 4100ESi APS power supply.
- Crash codes – faults that present on-screen when the 4100ESi software has crashed.

Card faults

If the MAPNET, IDNET, or *MX*Loop card is in an ABNORMAL or FAULT state, instead of displaying all devices on that loop as NO ANSWER, they are displayed as NORMAL. This NORMAL indication reduces the number of faults when a loop is not working.

Checking card status

Important:

Ensure that the loop card status is NORMAL before beginning to fault find.

To confirm the loop card status is NORMAL, complete the following steps:

1. Select the **Service** tab.
2. Tap **Panel info: Stat & Revisions?**
3. Tap **Card - Show card status**, and then select the card to be viewed. The status list for some cards may take several seconds to display on the screen. This is normal.
4. Confirm that each of the statuses for the loop card are NORMAL (not ABNORMAL).

The IDNet Loop Voltage is approximately 24VDC normally, and 30VDC when the panel is in alarm.

The MAPNet Loop Voltage is approximately 36VDC at all times.

The *MXLoop* Voltage is between 20VDC and 40VDC.

Note:

IDNet, MAPNet, and *MXLoop* voltages are fluctuating DC because the Loop Voltage is modulated to transmit the data.

Card Status LEDs

All slave cards have a yellow LED which indicates that communication with the 4100ESi has failed. This is labelled Comm Loss, Fault LED, or Trouble depending on the card.

The *MXloop* card has the status LEDs as listed in **Table 10**. Listings of status LEDs for other cards may be found in the associated installation manual.

Table 10. MX Loop Card Status LEDs

LED Name	Interpretation	Coding	Colour
COMM Loss	On when the card is not communicating with the 4100ESi Central Processing Unit (CPU)	On steady during communications loss. Flashing in local mode	Yellow
Earth Fault	Earth fault trouble	On steady when earth fault is detected on the <i>MXloop</i> field wiring	Yellow
L Loop	<i>MXloop</i> communications left channel fault	On steady when no device response on left channel. Slow blink = open circuit loop; Fast blink = short circuit loop	Yellow
R Loop	<i>MXloop</i> communications right channel fault	On steady when no device response on left channel. Slow blink = open circuit loop; Fast blink = short circuit loop	Yellow
<i>MXDownload</i>	Service Mode and Download in progress	On steady for Service Mode and download in progress	Yellow
LPS Fault	Indicates loop power supply fault	On steady with loop power supply failure (Signal power)	Yellow
EMR Mode	LED is currently unused	LED is currently unused	Yellow

Possible faults

The following descriptions explain some of the possible card fault types that can be generated.

Card missing failed abnormal

This fault displays when the circuit card is not communicating correctly with the panel controller. The following are the possible causes for this status:

- The card is not installed.
- The card is not fitting correctly on the connector. If this is the cause, power down panel, clean the connectors and reinsert the card.
- The card is addressed incorrectly.
- The card DIP Switch is set incorrectly, dipswitch 1 is always in the ON position.
- Another card has the same address as this card.
- The card has failed.

Correct card abnormal

This fault displays when the incorrect type of card is addressed at this location. The following are the possible causes for this status:

- The incorrect card is installed in the panel.
- Two cards have the same address.

Short circuit abnormal

This fault displays when the addressable loop has a short circuit, or when the + and – wires are crossed over. The following are the possible causes for this status:

- There are no isolators installed on the loop.
- If the short is between the panel and the isolator, the loop does not operate. This may also display a channel fail.

To find the short circuit, check each pair of wires using a multimeter. If a short circuit cannot be detected using a multimeter, disconnect one side of the loop only and disconnect devices at half way points until the short circuit fault clears. This narrows down the fault location.

Note:

Reset the panel between each disconnection as this fault latches.

Class A abnormal, MX and IDNET

This fault displays when the *MX*, the IDNet addressable loop, or the RUI Bus has an open circuit, or a short circuit between isolators. The following are the possible causes for this status:

- There is an open circuit in the wiring loop.
- There is a bad connection at an addressable point (on addressable loop faults).

- There is a bad connection at a remote transponder or LCD Annunciator (for RUI Bus faults).
- There is a faulty addressable loop card or RUI card.

Check this fault by ‘looping out’ the A and B terminals on the RUI/MX/IDNet port to clear the fault. If the fault does not clear, check if the card is faulty.

Note:

Reset the panel between each disconnection as this fault latches.

Channel failure abnormal, MX and IDNET

This fault displays when the loop card cannot communicate with any device on the loop. All devices associated with this loop will indicate a ‘Normal’ state to prevent multiple faults on the display. The following are the possible causes for this status:

- The loop has a short circuit.
- The loop has an Earth fault.
- The loop is not connected or incorrectly connected.

Channel initialization abnormal

This fault displays at start-up with IDNet and MXloops and clears after two minutes. The following are other possible causes for this status:

- If the fault continually reappears, the loop length is too long, or too noisy. Contact your local Simplex branch for assistance.
- A faulty device is causing communication errors. Locate the faulty device, and remove it.

Extra device

This fault displays when a device is added to a loop without programming an address for the device at this location. The following are the possible causes for this status:

- The panel identifies a device or a card at an address that is not programmed in the panel. See the **Extra device, MX and IDNet** section.
- A card or a device is incorrectly addressed and displays “Points defined but not inserted”.

Addressable device faults

Possible Faults

The following descriptions explain some of the possible addressable device fault types that can be generated.

No answer

This fault displays when the device is not responding at the programmed address. The following are possible causes for this status:

- The device is not installed.

- The wiring to the device is disconnected or not terminated correctly.
- The addressable loop is not working correctly because the loop has an open or short circuit.
- The device is faulty, or the device has a faulty base.
- The device has not had its address programmed or is at a wrong address.

If the device LED is not flashing, check that the loop is powered at the device (20-40V for *MX*, 30V or more for IDNET).

Head missing (IDNET) or Device missing (*MX*)

The Head missing fault displays when the panel detects the IDNet base at the displayed address, but cannot detect the sensor head. The Device Missing fault displays when the panel cannot contact the *MX*detector. The following are possible causes for this status:

- The head is not installed.
- The head is not correctly attached to the base.
- The detector terminals on the base are loose.
- The head is faulty.
- The base is faulty.

For IDNet, if the base LED is flashing, check if the sensor head needs to be replaced. If the base LED is not flashing, adjust the terminal contacts to ensure they connect with the head. If this does not result in flashing LEDs, replace the base.

Wrong device

This fault displays when the panel receives a response from the displayed address that does not match the device type programmed to that address. The following are possible causes for this status:

- An incorrect device is installed at the address; for example, a relay with T-Sense is fitted instead of standard relay.
- An incorrect head is installed; for example a photo head instead of a heat head.
- The detector head is not making sufficient contact with base.

Retrieve the part number from the device, or use TrueStart Instrument (IDNet) or *MX*Loop Tester (*MX*) to scan the loop for all devices. Confirm that the device type matches the device type in the panel Programmer. If the devices match, replace the device, sensor, or base as necessary. If the devices do not match, change the device, or correct the entries in the Programmer.

Bad answer, *MX* and IDNet

This fault displays when the panel receives a response from the displayed address that does not match the device programmed to that address. The following are possible causes for this status:

- Two devices are programmed using the same address.
- The device or the wiring is damaged (for example, water).

- There is electrical interference.
- The loop is overloaded.

Remove the device or base at the known address and observe the fault displayed at the panel. If the fault clears, look for a duplicate address on the loop. If the fault changes to a “Wrong device” fault, find the device on the loop with the duplicate address. If the fault changes to “No answer”, replace the device or sensor.

Extra device, MX and IDNet

This fault displays when the panel has identified a device at an address that is not in the panel Programmer.

Note:

Only one fault is displayed even though there may be more than one extra device on the loop.

Fixing one extra device may display a new extra device fault.

Extra device faults take a longer time to appear, and longer to clear than other faults. The following are possible causes for the Extra device status:

- The device is not programmed in the panel Programmer.
- The device address is incorrect.
- The device has not been programmed with the required address. For example the IDNet address is 255, the MAPNet address is 0, or the *MX*address is 255.

Select the Extra device entry in the Historical Log that identifies the card number. Look at the next event and any subsequent ones, and observe the address of the extra device(s) – these entries are of the form CHANNEL: x DEVICE: y. If DEVICE=255 or 0, the device address has not been set. Set the address, and check for further extra device faults. If the device address is a number between 1 and 255, check that the same address is programmed in the panel programmer.

Output abnormal, IDNet

This fault displays when the output of a relay, a sounder, or an isolator base is not responding correctly. The following are possible causes for this status:

- There is a short circuit on the addressable loop and the Isolator Base cannot reset correctly. Correct the short circuit. Perform a warm restart of the panel – this reinitializes the isolator base.
- The 24 Volt supply to a sounder base or relay is not present. Check the wiring and the 24V fused distribution board in the panel.

Alarm verification tally exceeded

This fault displays to indicate a dirty detector in the field or conventional zone circuit that is programmed for alarm verification.

Note:

Check for previous faults, and note the time and date this fault occurred in the log book.

To clear the Alarm verification tally exceeded fault, complete the following steps:

1. Log in at Access Level 4.
2. Select P214 (Clear Alarm Verification Tallies).
3. Tap Force Point On.

4. Restart the panel.

Open Ckt Trouble

An input circuit or monitored output circuit has an open circuit condition on the external wiring. Inspect the wiring and end-of-line resistor.

Short Ckt Trouble

An input circuit or monitored output circuit has a short circuit condition on the external wiring. Inspect the wiring.

24V Power Trouble

24V Power Trouble shows for an addressable module that uses external power when the supply voltage has dropped outside the supported range. Most likely this is due to a wiring fault.

Out of Range

The device is returning values that are not considered valid. It probably has an internal fault.

Reference

Detector LED operation

Table 11. Detector LED operation.

Detector LED operation	Description
OFF.	The detector is not communicating with the Panel.
	Two detectors have the same address (IDNet).
	The head is not installed correctly (IDNet).
	The device is not wired correctly.
Flash.	The detector is communicating with the panel (<i>MX</i> and IDNet).
	The flash speed does not provide any information.
ON (Red)	The detector status is ALARM or FAULT.
	If a device head is not installed, this indicates an EXTRA DEVICE fault (IDNet).
	If multiple faults occur to the same detector, the detector LED latches on. To Reset the LED, move the IDNet Card DIP Switch 1 to the OFF position for 10 seconds, and then move it back to the ON position. Select the Service tab option using Access Level 4, and Reset the panel. Alternatively press the Reset button on the CPU card.
ON (Yellow)	The built-in isolator of the detector is activated (<i>MX</i>).

Addressable device DIP switch settings (IDNet)

Table 12. DIP switch settings

DIP switches are labelled 1 to 8, left to right	
Switch 1	1
Switch 2	2
Switch 3	4
Switch 5	8
Switch 6	16
Switch 7	32
Switch 8	128

Turn the switch ON to add the above number to the address. For example, address 10 = Switch 2 & 5 ON all others OFF, and address 105 = Switch 1, 4, 6 & 7 ON with all others OFF.

Devices are supplied with DIP switches set to 255.

The highest IDNet device address is 250, and the highest MAPNet device address is 127.

End of line resistors

The end of line resistor values required for addressable modules and cards are as in Table 13.

Table 13. Required end of line resistor values

Module	Description	End of Line Resistance
CIM800	Contact Input Module	200Ω
DDM800	Universal Fire and Gas Detector Module	4.7kΩ
DIM800	Detector Input Module	4.7kΩ
MIM800	Mini Input Module	200Ω
MIO800	Multiple Input/Output Module	330Ω
SNM800	Sounder Notification Module	27kΩ
4090-9001 / 4090-9051	Supervised IAM Current Limited	6.8kΩ 4.7kΩ & 1.8kΩ
4090-9101	Monitor ZAM	3.3kΩ
4090-9118	Relay IAM with T-Sense Current Limited	6.8kΩ 4.7kΩ & 1.8kΩ
4090-9120AU	6 Pt I/O Module Current Limited	6.8kΩ 4.7kΩ & 1.8kΩ
2190-9156	Mapnet Monitor ZAM	3.3kΩ
2190-9164	Mapnet Signal ZAM	10kΩ
4100 EWIS	WIPs	10kΩ
4100 8pt Monitor Card	Conventional Zone Card	3.3kΩ
4100 6 Signal Card	6 Signal Card	10kΩ
4100 24-pt IO Card	Pluggable Resistors on card	2.2kΩ Input 20Ω Output
4100-9848AU	SPC NAC on AS4428 PSU	10kΩ
4100-ME0504	APS NAC on AS7240 PSU	10kΩ
4100-ME0504	APS Input on AS7240 PSU	6.8kΩ

Power supply faults

The 4100ESi APS power supply status indicator LEDs are listed in Table 14. These will give fault indications if any faults are present.

Jumper links for the power supply are as listed in **Table 15**.

Table 14. APS power supply LEDS.

LED	Description
Power LED (green).	ON: normal. SOS: mains fail. Slow flash: force to use external battery charger.
Fault LED (yellow).	ON: COMMS fail. Short-long pulse: Internal wiring fault. Fast flash: battery missing fault. Flash: battery faulty (low, flat, fail, or short). OFF: normal.
Alarm relay LED (yellow).	ON: relay energised ON.
Fault relay LED (yellow).	OFF: relay de-energised.
Isolate relay LED (yellow).	
NAC1 LED (yellow).	OFF: normal. ON: normal, in reversed supervision mode. Fast flash: short circuit. Flash: open circuit. SOS: over current.
NAC2 LED (yellow).	Slow flash: 1500ms ON, 1500ms OFF.
NAC3 LED (yellow).	Flash 500ms ON, 500ms OFF. Fast flash: 250ms ON, 250ms OFF. Short-long pulse: 50ms ON, 50ms OFF, 850ms ON, 50ms OFF. SOS: 250ms ON, 250ms OFF, 250ms ON, 500ms OFF, 250ms ON, 500ms OFF, 1000ms ON, 500ms OFF, 10020ms ON, 500ms OFF, 250ms ON, 500ms OFF, 250ms ON, 500ms OFF, 3500ms OFF.

Table 15. APS power supply links

Link	Description
LK1 earth monitor.	Fit to enable earth fault monitoring.
LK2 force batt connection.	Fit to enable the battery connection switch even if the battery fails.

Crash codes

Crash codes are errors that are recorded by the 4100ESi executive software when it crashes and continued execution is no longer possible. They give an indication of what has caused the crash to occur for troubleshooting purposes.

Selected crash codes for the 4100ESi are listed in **Table 16**.

Crash codes can be defined using the following class designation:

- A CLASS E Crash indicates a possible defect in system hardware, or incompatible firmware revisions.
- A CLASS S Crash indicates a possible error in executive software. Check the system revision (see the **Viewing the system versions and card status section**) and contact your local Simplex branch.
- A CLASS P Crash indicates a possible problem in the job software programming. Incompatible job hardware and software is corrected by reprogramming the job information. This can occur during new software installations on a network (Crash Code 78). If it persists, contact your local Simplex branch.

Table 16. Selected 4100ESi Crash Codes

Crash Code	LCD display	Error	Information
00	CRASH_UNEXPECTED <CRASH UNEXPECTED> CLASS S CRASH	Unexpected crash due to possible bug in executive software (System PROM).	Call Technical Support immediately.
14	CRASH_INTERNAL_R AM_BAD <INTERNAL RAM ERROR> CLASS S CRASH	Internal RAM error.	
15	CRASH_EXTERNAL_R AM_BAD <EXTERNAL RAM ERROR> CLASS S CRASH	External RAM bad.	
30	CRASH_BAD_RAM <Bad or missing RAM chip> CLASS E CRASH	Bad System RAM Chip.	The RAM chip is defective, improperly inserted, or missing. There is not enough memory for the Job, or there is a bad RAM chip. The CFIG chip is blank.
31	CRASH_BAD_CODE <CODE Checksum Error> CLASS E CRASH	Code checksum error.	The system PROM is defective, NOT programmed, or inserted improperly. This occurs with Rev 4.02 and earlier, when used with the 8096BH microprocessor change indicator 'E.' Check the 9th character of the FPO number on U9. If it is 'E' a Rev 4.03, or higher system executive is required. Also see FSB-386R The CFIG format (Panel Programmer) used is incompatible with the panel EXEC installed.
32	CRASH_BAD_CONST <K_SEG checksum error> CLASS E CRASH K_SEG CHECKSUM ERROR	Code checksum error.	The system PROM U34 is defective, NOT programmed, NOT properly inserted, or missing. Error 32 can be caused by a defective, un-programmed or improperly inserted flash chip.
33	CRASH_BAD_CFIG <CFIG checksum error> CLASS E CRASH	CFIG checksum error.	The CFIG PROM is defective, not programmed, or inserted improperly. This can be caused by CFIG RAM selected by dipswitch SW1-2, but CFIG RAM is not installed in the U45 socket.
34	CRASH_CFIG_FMT	Invalid CFIG format.	Indicates that the CFIG

Crash Code	LCD display	Error	Information
	<Invalid CFIG Format> CLASS E CRASH		format number is incompatible with the version of executive software (System PROM). Check the programmer disk Rev number against the Rev number on the label of the System PROM. Update the System PROM to the current software Rev by burning a new system executive PROM.
39	CRASH_SMPL_CODE _OPCODE <Invalid CODE Operation> CLASS P CRASH	Invalid operation code exists in program.	An invalid operation code exists in the program.
62	CRASH_RAM_OVERLAP <Overlapping CFIG RAM> CLASS E CRASH	Overlapping CFIG RAM.	This indicates that the system RAM and the CFIG RAM addresses overlap. This can be caused by an improper version of the GEN_INFO.DAT file on the CC/Build and/or Runtime Disk.
66	CRASH_MSGLIB_FMT <MSGLIB Format Error> CLASS E CRASH	MSGLIB Format error.	Message library format number is incorrect for the system software revision. An incorrect MSGLIB on the programmer disk. Use same programmer version to burn upper and lower EXEC chips.
67	CRASH_SMALL_RAM <System RAM chip too small> CLASS E CRASH	System RAM chip is too small.	The amount of RAM installed in the Master Controller is too small for the job configuration. Replace the 256K RAM with 1MEG RAM chip on 4100 and 4020, or add an additional RAM Bank on 4100+ and UT. The panel did not have a RAM chip installed into U35. Remove the chip that had been placed into the CFIG RAM socket U45 and install in the system RAM socket U35.
73	CRASH_INVALID_MSGLIB_NUMBER <INVALID Msplib Number> CLASS S CRASH	INVALID Message Library Number.	INVALID Message Library Number.

Chapter 4. Advanced Service Function

Accessing advanced service functions

Logging on at higher user level

Critical service functions are available at higher access levels. A user access code or a PIN is required for access. The most useful access level is three for which the default passcode is 333.

To log on with a higher access level:

1. Select the **Service** tab.
2. Tap **Access**, then **Change access level?**
3. Tap **Login**, then **Login at new access level?**
4. Enter the appropriate access PIN using the numeric key pad to the right of the LCD screen. Press **OK**. The higher access level being active is shown by an indicator to the left of the LCD screen.

To log out from a higher access level, select the ‘Logout’ option.

Note:

Higher access levels are automatically reset to a lower access level after 10 minutes of inactivity.

Advanced Servicing

Using the Earth Fault Search feature

This section contains instructions on how to use the Earth Fault Search feature of the 4100ESi diagnostics menus.

Earth Fault Search is a diagnostic search of the external field wiring that assists in locating the circuits with the earth faults. An earth fault occurs when an electrical circuit is shorted to ground. Although most circuits operate adequately with a single earth fault, multiple earth faults can disable communications or blow fuses. Earth faults, therefore, must be located and repaired.

Earth Fault Search is conducted by the FIP. The diagnostic may be activated using the front panel interface of the service port.

The 4100ESi supports two types of Earth Fault Searches:

1. Location Search: Searches circuits at a location, such as a transponder or the main panel. For the purposes of Earth Fault Searching:
 - A location is composed of a group of slaves connected to the master through the internal communications bus.

- The main panel is defined as all slaves local to the Master CPU.
 - A transponder denotes all slaves associated with a single Transponder Interface Card (TIC slave).
2. IDNet Channel Search: Selectively enables channel isolators and repeaters to detect which segment of the channel wiring has a fault. Earth faults are detected by one of the following:
- For legacy 4100-3101 and 4100-3107 IDNet slaves only: a single designated power supply at a location. The power supply that detects the fault is designated by a jumper setting on the power supply slave. For any given unit, only one power supply should detect earth faults.
 - For the current IDNet2 and IDNet2+2 slave cards: these cards have independent earth fault monitoring of the IDNet loops.
 - Each 4009 IDNet NAC Extender on an IDNet channel.

Scope of the system earth monitoring

In general, the power supply has the instrumentation used to determine whether there is an earth fault. However, some slave cards have electrically isolated fielding wiring. Therefore those slave cards can complete their own earth fault monitoring and searches.

For RUI cabling, only the cabling in the FIP is monitored. RTUs with SPS or APS do not check RUI cabling for earth faults. The monitoring also applies to conventional monitor zones on 4100-5004 slaves, NACs and Power circuits on APS, SPS, or 4100-4321 Signal Card slaves, and also to FB inputs on relay cards or APS.

For 4100ESi systems that have been upgraded, the power supply monitors IDNet loops on legacy 4100-3101 and 4100-3107 IDNet slaves.

The IDNet2 and IDNet2+2 slave cards do their own earth fault monitoring of the loop wiring. As these cards provide electrical isolation, their earth is not common with that of the rest of the FIP. The *MX*Digital loop card also provides electrical isolation, and completes its own earth fault monitoring of the *MX*loop. For these cards, which do their own independent earth fault monitoring, any faults detected are reported separately to the general earth fault monitor.

The network card completes independent earth fault monitoring on wired media that is connected to its left port. These faults are reported separately to the general earth fault monitor.

General guidelines

Review the guidelines below before initiating an Earth Fault Search.

- The Detect Earth Fault jumper must be installed at each APS for earth fault detection to occur.
- Only one power supply per location is configured to detect earth faults.
- For more reliable earth fault searching:
 - Use IDNet channel isolators to isolate channel faults to a specific segment of channel wiring.
 - Set IDNet channel isolator addresses to the lowest IDNet device addresses, increasing with communication distance from the IDNet card.
- If an earth fault is suspected on the IDNet channel with multiple isolators, start an IDNet Channel Search before doing a Location Search. If the Location Search is done first, it may not yield the correct

location (this is a by-product of the extended amount of time required for the IDNet channel to initialize during a Location Search).

Note:

The 4009 IDNet NAC Extender has a common ground fault trouble that reports to the panel without running the Earth Fault Search.

Earth Fault Search detects only one fault at a time. Multiple faults require fixing the first fault and then repeating the search.

- The 4 100ESi panel suspends normal operation for the duration of the Earth Fault Search.
- During the search, all related troubles are suppressed and a single trouble pseudo-point is activated (P438 GROUND FAULT SEARCH ACTIVE).
- At the completion of the search, all slaves are restarted and normal panel operation resumes.
- Earth Fault Search is supported only by new 4 100ESi modules. 4 100 Legacy (slot format) modules are not supported, with the following exceptions:
 - MAPNET channel isolation, during location search.

Important:

The fire panel cannot provide fire protection during an Earth Fault Search.

Earth Fault Searching from the front panel

This section describes how to conduct an Earth Fault Search, from selecting the appropriate access code to correcting the fault.

The panel must be at the appropriate access level in order to run diagnostics. See the [Logging on at higher user level](#) sections for instructions.

Complete the following steps to start an Earth Fault Search:

1. Tap the **Service** tab on the InfoAlarm+.
2. Tap the **Service / Diagnostics?** menu. If this option is not shown, you are not logged on to the higher access level.
3. Tap **Earth fault search?** in the service menu.
4. Select a search type from the choices displayed in the next screen which include:
 - Location search
 - IDNet
 - LastResult

IDNET Channel search

If you select 'IDNet channel search', a list of available MX and IDNet channels to search is displayed.

1. Tap the selected MX or IDNet channel in the list to search.
2. Tap **Start control** to initiate the search.

Note:

The FIP suspends normal operation for the duration of the search.

Last Search Result

This option simply displays the last Earth Fault Search result. If there has been no search since the last system startup, or if the last search was aborted, the panel displays "RESULT NOT AVAILABLE."

Completing the search

When a Location or IDNet Channel Search completes, the following actions occur:

- All slaves automatically reset.
- The FIP turns off the Earth Fault Search trouble pseudo-point.
- The panel displays the specific fault information.

The panel can return only one Earth Fault Search result at a time. If another fault exists, it can be found only after the first fault is cleared. Faults will continue to appear, one by one, until each one has been found and corrected.

Important:

When you have found an earth fault and corrected it, it is recommended that you restart the system (warm- or cold-start). See [Restarting the Panel](#).

Search results

There are several types of results that can display at the end of an Earth Fault Search. This section covers all types of results.

Non-point faults

A non-point fault indicates a ground that cannot be traced to an addressable point (for example, a cable shield wiring fault).

Non-point faults can be displayed for each of the following items:

- Channel Output (IDNet Card; MAPNET Interface Card).
- RUI Channel (Master Controller Card).

Point faults

A point fault indicates a ground at a specific addressable point.

Point faults can be found at any point in the system that connects to field wiring.

Some IDNet channel point fault examples are illustrated below.

Fault not cleared. The message below shows that an IDNet channel that has been isolated for fault detection still has the earth fault:

CARD 2, IDNET CARD (250 POINTS)
M1, EARTH FAULT SEARCH FAULT CLEAR FAIL

Fault between channel output and first isolator. The message below shows a fault between the IDNet channel output and the first isolator on the line:

CARD 2, IDNET CARD (250 POINTS)	EARTH FAULT
M1, CHANNEL OUTPUT	

4009 IDNet NAC Extender/TrueAlert Addressable Controller faults. The message below shows a fault detected on the 4009 IDNet NAC Extender **before** the repeater connected to that circuit is turned on:

CARD 2, IDNET CARD (250 POINTS)	EARTH FAULT
M1-18, 4009A NAC	

Conversely, the following example shows a fault detected **after** the repeater connected to that circuit is turned on:

CARD 2, IDNET CARD (250 POINTS)	EARTH FAULT
M1-18, 4009A REPEATER	

IDNet isolator fault. The message below shows a fault detected after the IDNet isolator was turned on:

CARD 2, IDNET CARD (250 POINTS)	EARTH FAULT
M1-3, IDNET ISOLATOR	

Fault not found

If the message reads FAULT NOT FOUND (for a Location Earth Fault Search) or FAULT CLEAR FAIL (for an IDNet Channel Earth Fault Search), it means the search could not locate the fault, but it acknowledges that a fault exists.

This list demonstrates the main reasons why this message is displayed:

- There are one or more internal wiring earth(s) in the system.
- There are system defects (hardware or software, such as a failed isolation circuit).
- An intermittent earth exists in the system (it occurs inconsistently and is therefore difficult to track through diagnostics).
- The cable to the service port may be grounded through the remote PC's mains connection. Use an isolated plug adapter to the remote PC to get rid of the earth ground.
- The fault is on an auxiliary output that was excluded from the search.

Note:

In some of the above examples, the fault may need to be found manually and then corrected.

No fault

If the message reads NO FAULT, the IDNet channel search could not locate any earth faults on that channel.

Result not available

If the message reads RESULT NOT AVAILABLE, there is no result to view. This message comes up only when you have selected "Last Search Result" on the menu.

Walk testing

Walk Test™

Walk Test™ is a software-based function and is programmed to meet individual customer requirements. The system will pulse the alarm devices for alarm conditions, then reset. The signals will sound steady for four seconds to indicate fault conditions, and then reset. A silent Walk Test™ may be performed (no signals will sound) and logging of events may be selected.

The auto reset/auto-acknowledge operation allows for one-man testing without the need for someone at the main control panel to acknowledge and reset the system. The Walk Test™ mode also bypasses many of the delays that are inherent to the normal reset procedure, thereby allowing for a faster test. The automatic reset (five second power drop) only occurs on the zone that comes in after a configurable time delay (default = 15 seconds). This delay can be optimally set (with the programming unit) for the time it should take for a zone to clear (for example magnet versus smoke tester).

WalkTest™ by group

The 4 100ESi will support up to eight Walk Test™ groups. This allows the building to be divided into smaller portions for the Walk Test™, and allows the rest of the building to be protected by the fire alarm panel. Each group has a list of output circuits which activate when selected.

If you select the Walk Test™ by group mode, a system fault will be reported to remind you that the Walk Test™ is enabled.

Whenever a Walk Test™ group is aborted, manually or automatically, the panel will sound the abort signal (three sets of two short pulses) to indicate that group is going back into service. If a control point in the list is already active (because of an abnormal condition), it is not used to signal the abort.

The group is placed into normal operation 60 seconds after the abort signal is heard. This delay protects against an unwanted alarm should an automatic abort occur while a device is being tested.

The system is programmed by default to perform the Walk Test™ without sounding audible signals. (See sections: **Silent Walk Test** and **Audible/Silent Signalling (Silent Walk Test™ Selection)**. The Walk Test™ will not activate any point which is disabled. Therefore, you have the ability to manually exclude any point from the test. (See **Turning points on and off manually**).

You may enable the logging of Walk Test™ events, which allows each zone with an abnormal condition to be time tagged and added to the fault log. This is beneficial when a 100% silent Walk Test™, without visuals, is required. When testing the devices, use the alarm LED on the smoke detector, or a simple delay, to know when to continue to the next device. After test completion, check the log to verify that all zones activated the correct number of times and in the correct order.

Zone coding options

The system supports two types of audible signalling to indicate an alarm condition on a zone. By default, "zone coding" is used. This code matches the "ZONE" number associated with that point. The zone code is only used the first time a zone is reported. For subsequent alarms on the same zone, a single "0 CODE" (two short pulses) is used. Examples of Zone Coding are shown below in **Table 17**.

Table 17. Examples of Zone Coding

Zone	Code
Zone 3 (three long pulses)	— — —
Zone 12 (one long, pause, two long pulses)	— — — — —
Zone 20 (two long and two short pulses)	— — — — — —
Zone 102 (one long, two short, and two long pulses)	— — — — — — — —

Note:

Zero Code = two short pulses.

Zone coding can be disabled independently for each of the eight Walk Test™ groups, Group 0 through Group 7, using the InfoAlarm+. When zone coding is disabled, a "0" code is always used, even for the first alarm. This method of testing is more appropriate for maintenance testing, when all wiring is verified.

When a control point is pulsed by Walk Test™, it is done without affecting the priority of that point regardless of its present value. This guarantees that Walk Test™ does not interfere with any required SMPL (software) operations during a real alarm.

IDNet or MXsignalling devices sound the zone code, with the first digit being the channel number, followed by the device's address number. Example M1-1 sounds a 1, 1 code. M4-123 sounds a 4, 1, 2, 3 code.

No zone coding will be emitted through sounders connected to EWIS, T-Gen, or BOWS devices.

Silent Walk Test

The control points activated (pulsed) during Walk Test™ are determined by the contents of the control lists which are configured when programmed. Several options are available when configuring a silent Walk Test™ control list.

1. No audible signals present in the control list.
2. Disable the audible control points from the front panel, one at a time.
3. Use the 'Signalling' control item when in the Walk Test™ menu. If 'Signalling' is set to 'Silent', none of the points in the control list will code (see **Audible/Silent Signalling (Silent Walk Test™ Selection)**).

Walk Test operation

When the 4100ESi system is placed in Walk Test™ mode, any zone in the active Walk Test™ group(s) can be tested in any order. If zone coding is enabled, there is an advantage in testing all devices within one zone before going on to the next zone.

You should simulate an alarm and fault condition for each device being tested. If you are using an audible or visual indication, wait for it to clear before you test the next device. Otherwise, wait for an appropriate amount of time (based on the system reset delay) before moving on to the next device. The LED on a smoke detector helps you in this area because it indicates when the alarm is sensed, and when the detector resets. If zone coding is enabled, verify that the code heard or seen is correct.

Walk Test™ features

Abort Audible and Delay on Reactivation

Whenever a Walk Test™ group is aborted, either manually or automatically, the control list sounds the abort signal “TESTING COMPLETED” (or 0-0-0) to indicate that the group is going back into service. If a control point in the list is already active, possibly because another alarm has come in, the “TESTING COMPLETED” message will play before the alarm message. The group is put back into normal operating service 60 seconds after the abort signal is heard (if there are signals in the control list). This delay protects against an unwanted alarm should an auto abort occur while a device is tested.

Active/Not Active

The Status control item in the WalkTest menu on the InfoAlarm+ is used to toggle ON and OFF the currently selected Walk Test™ group. All groups are initially inactive at system start-up. Any number of groups can be enabled at any one time. When a Walk Test™ group is enabled, its associated fault pseudo point is turned ON and must be acknowledged. If multiple Walk Test™ groups are required, press the fault acknowledge key after all Walk Test™ groups are selected.

Auto Abort on Alarm

When an alarm is detected from a zone that is not in the active Walk Test™ group, all normal control functions take place and the active Walk Test™ group is aborted. When a non-audio Walk Test™ is aborted, the system sounds a zero code three times. If an audio Walk Test™ is aborted, the system announces “TESTING COMPLETED” over the speaker circuits for the Walk Test™ group under test.

Auto Abort on Time-Out

If there has been no activity within an active Walk Test™ group for eight hours, the system aborts the Walk Test™ automatically.

Control List

A Control List is a point list that contains those control points (signals and/or relays) that are to be activated by a Walk Test™ group. By default, this list is initially filled by the system for Group 0, and includes all signal, visual, or coded control points.

Delay Before Reset

The programmer has the ability to set a Reset Time Delay. The delay time period starts after a zone alarm is detected and runs until the detector is reset. The length of the delay may be from 15 to 60 seconds, and may be adjusted depending on the method used to simulate an alarm. A longer value is desired if smoke is used to bring in each detector. By default, the delay is set to 15 seconds.

Logging Option (Log/No Log)

By default, the system enables the logging of Walk Test™ events. When logging is enabled, each zone that comes into alarm or fault is time-tagged and added to the Historical Fault Log. This is very beneficial in cases where a 100% silent test is required. When testing, remember to record the identity and order of the devices tested. When the Walk Test™ is finished, compare this record with the Historical Fault Log and verify that all zones activated correctly. The ‘Logging’ control item in the ‘WalkTest’ menu on the InfoAlarm+ is used to enable/disable the logging of Walk Test™ events to the Historical Fault Log. By default, logging is enabled.

If the system is configured for a printer and the PRINT REPORT option is selected, the Historical Fault Log is printed on the system printer.

Monitor Zone List

A Monitor Zone List is a point list that contains those detection points within a defined area of a building. This list is initially filled by the system for the first group, and includes all detection points. It can be edited using the tag list feature of the 4100ESi Programming Unit. An empty list signifies that a Walk Test™ group is not used. The programmer has the option of changing the label of this point list so that it is more meaningful for panel operation. You cannot have the same zone in more than one Walk Test™ group.

Programmer Configuration

Walk Test™ is a configured feature that is best programmed in the field with the 4100ESi Programming Unit. By default, Walk Test™ is protected at Access level 3. The access level required to enable your Walk Test™ is shown on the Programmer's Report. Walk Test™ groups are selected from the LCD Main Menu. Selecting Walk Test™ on the Main menu brings up the Walk Test™ configuration screen which lists the set-up for the Walk Test™ groups.

Audible/Silent Signalling (Silent Walk Test™ Selection)

The 'Signaling' control item in the 'WalkTest' menu is used to change between audible signalling and silent signalling (Silent Walk Test™). By default, the Silent Walk Test™ is enabled.

System Fault

The Walk Test™ has the ability to test signal circuits for fault (that is, open/short) conditions. This is accomplished by using the Walk Test™ output lists (L50 through L57) as the input lists for signal fault conditions.

For example, if a signal circuit fault occurs on a point in Walk Test™ output list L50 (Group 0), and Walk Test™ Group 0 is enabled, the Walk Test™ fault code will play on all signal/speaker circuits in Walk Test™ list L50. Note that the signal fault is not inhibited. An actual fault condition will occur at the operator interface, but will be logged as a Walk Test™ fault for that signal. This fault automatically clears when the signal circuit is returned to normal in a Global Acknowledge system. In an Individual Acknowledge system, Point P4 (FORCE GLOBAL ACKNOWLEDGE) must be turned ON before performing a signal circuit Walk Test™. If Walk Test™ is not enabled for the group containing the signal circuit that is in fault, the fault condition passes through without playing the Walk Test™ code.

Fault Audible

When a zone fault is detected, the Walk Test™ signals sound continuously for four seconds.

Zone Code/Zero Code

The Coding control item in the WalkTest menu on the InfoAlarm+ is used to select Zone Coding or Zero Coding. By default, Zone Coding is enabled.

Walk Test™ procedures

Entering Walk Test mode

Walk Test™ is enabled through the InfoAlarm+. Walk Test™ is passcode protected. The Walk Test™ menu will not appear unless the operator is at the proper access level. See Logging on at higher user level.

When the passcode has been entered, you may enter the Walk Test™ mode by performing the following procedures.

1. Tap the **Service** tab.
2. Tap the **Service / Diagnostics?** menu item (if this isn't available, you are not logged in at the access level required).
3. Tap the **WalkTest** menu item.

The menu items control the following functions:

- Walktest Group – the currently selected Walk Test™ group (0 to 7 may be defined in the programmer). When a group with no configured points is entered, the selected group will not change – no error message is displayed.

The other menu items show the status of and control settings for this group. Multiple Walk Test™ groups can be turned on at the same time. A group is not deactivated because it is not the one currently displayed on the InfoAlarm+.

- Status – controls whether the Walk Test™ mode is 'On' or 'Off' for the current group.
- Logging – enables (Log) or disables (NoLog) logging of Walk Test™ events for the current group. Walk Test™ events are logged into the Historical Fault log if selected. By default, logging is enabled.
- Coding – controls whether Zone coding or Zero coding is used for the current group. By default, zone coding is enabled. In Zone Coding a PNIS code for the tested zone is played (for example, Zone 12 is code 1-2). In Zero Coding, two quick pulses (code 0) are heard. In both cases, when a fault is reported from a zone, the signal circuits turn ON for 4 seconds.
- Signalling – is used to control whether signalling for the current group is Silent or Audible. By default signalling is silent. Silent Walk Test™ is used in conjunction with the logging function when audible signals might disturb the building occupants.

Exiting Walk Test mode

When the Walk Test™ completes, exit from the Walk Test™ mode by entering the WalkTest menu as described in the **Entering Walk Test mode** section and turning the 'Status' for all enabled Walk Test™ groups to 'Off'.

You can log out of higher level access used for the Walk Test mode.

System malfunction

Call your local SIMPLEX agent for all malfunctions. You can also request a qualified SIMPLEX technician to assist you with installation, testing and troubleshooting the system.

Device Testing

Force Device Alarm or Fault/Trouble

This service menu option is only available when there are MX loop cards in the panel.

To force point states, you must be logged in at access level 3 or higher – see the **Logging on at higher user level** for instructions sections.

1. Tap the **Service** tab.

2. Tap **Service / Diagnostics?**
3. Tap **Force Alarm or Trouble?**
4. To force a point into alarm, tap **Force Alarm**. Tap **Force Trouble** to force it into fault / trouble.

After you make the selection, the InfoAlarm+ will present three screens asking for the card address, point address, and sub point address to identify the point to force.

The required card address is the physical slave card address configured on the card's address DIP switch, not the logical loop address that is used on other screens.

To identify the physical address:

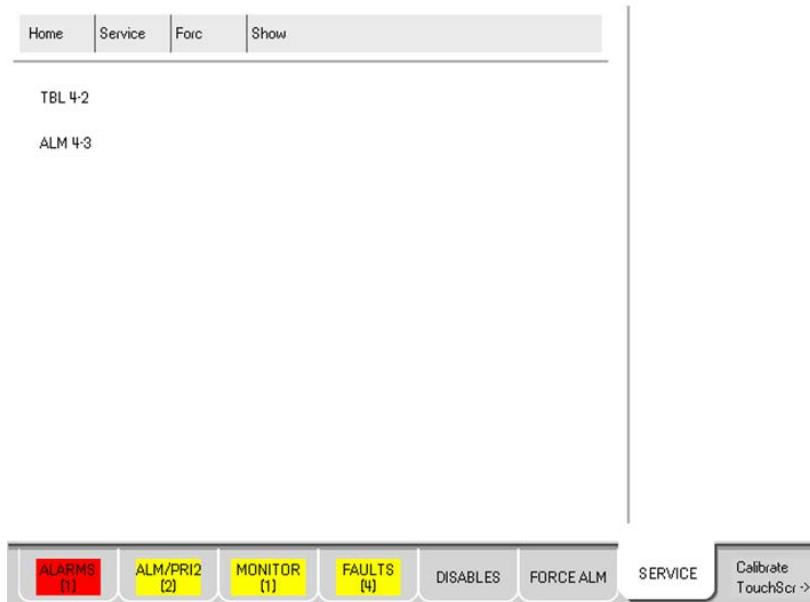
1. Tap the **Service** tab,
2. Tap **Panel**.
3. Tap **Cards**. The physical addresses for all slave cards will then be displayed.

If forcing an alarm, a warning is displayed explaining that this action will cause an alarm. Press Continue to proceed.

A message is displayed confirming that forcing the point has been successful. If a message such as "Operation Invalid for Point" or "Action not Taken" is displayed, the wrong address has been provided or the point type does not support the operation.

To view which points are currently forced, select Show Forced Points from the menu used for forcing point states. The screen in Figure 8 displays:

Figure 8: Show Forced Points



The prefix ALM will appear with a list of Alarm forced points while the prefix TBL will appear with a list of trouble forced points.

On the Faults tab, points forced into a fault state are identified as Forced Trouble.

A system reset, such as that performed with the Alarms tab while alarms are present, will clear points forced into alarm.

A hardware reset, which is performed when no alarms are present in the system, is required to clear points forced into trouble.

Producing a test zone alarm is covered in the Force zone alarms section of this manual.

MX Commissioning Mode

In normal operation, MX photoelectric detectors (850P, 850PH, and 850PC) and CO detectors (850PC) have processing algorithms for rejecting nuisance alarms that add delays when doing commissioning testing of these detectors. For MX Loop Cards with slave version MXDLoopAU_2.01.05 or later, turning on service point P462 IDNET CO/ALL MX ALGORITHMS DISABLED will disable these algorithms. Older MX card versions can be updated, if necessary, as described in [Software](#).

To disable the processing algorithms, complete the following steps:

1. On the **Service** tab, select **List Points, P Pseudo**.
2. Enter 462.
3. Confirm that this point has the correct label.
4. Tap **OK**.
5. Tap **ON**. Turning this point on disables the algorithms.

Note:

- A pin code for Level 4 access is required to complete these steps.
- P462 will show as a **Simplex Service Mode (0-6-7)** point fault while it is turned on. Remember to turn it off when the necessary testing is complete. To turn off P462, a warm start of the CPU is needed. See [Restarting the Panel](#).

Other Functions on the Service tab

Hardware Reset

A hardware reset may be performed from the Alarm tab (if there are no alarms), the Fault tab, the Monitor tab, or the ALM/PRI2 tab. This will clear latched faults and conditions (including physically latched alarms, for example, DDM800 conventional circuits). A system reset only resets alarms. A Hardware Reset does not require any special access level.

Restarting the Panel

To perform a panel restart you need to be logged in at a higher access level – see the [Logging on at higher user level](#) section.

1. On the **Service** tab, select **Service / Diagnostics?**
2. Tap **Restart panel?**
3. In the next menu select either a cold or warm restart.

Note: A cold restart is equivalent to power-on. A warm restart retains more data.

4. After selection, confirm the action by tapping **Yes**.

NAC (Notification Appliance Circuit) Mis-Wire Tests

This test checks that the wiring at the NAC terminals has not accidentally been split across two adjacent NACs.

To perform the NAC mis-wire test, you must log in at a higher access level – see the [Logging on at higher user level](#) section.

1. Tap the **Service** tab.
2. Tap **Service / Diagnostics?**
3. Tap **NAC mis-wire testing?**
4. Choose whether to test all slaves or just one.

It may take some time for the test of the slave card(s) to return a result. After 20 seconds of waiting, a message may be shown that receiving data has timed out. If this occurs, it is recommended that you continue to wait.

Troubles will be reported if mis-wiring is found.

Note:

The SPS supports the NAC mis-wire test, but the newer APS/LPS does not support this test.

Duplicate Device Search

A Duplicate Device Search will cause a specific IDNet or *MXLoop* Card to check each address for duplicate addressed (wrongly addressed) devices.

To perform a duplicate device search you must log in at a higher access level – see the [Logging on at higher user level](#) section.

1. Tap the **Service** tab,
2. Tap **Service / Diagnostics?**
3. Tap **Duplicate device search?**
4. Choose whether to turn the search On or Off. Select the slave card on which the device search is to be conducted.

This search is applicable to both IDNet and *MXloops*.

When the search is active, both a global trouble and slave card trouble will be present. The slave card trouble may disappear when the search is complete, but to remove the global trouble the search must be explicitly turned off.

Brigade Signalling Testing

Three zone lists are defined in the default template that allow brigade signalling testing without affecting the rest of the fire panel operation.

Select the desired zone in the Service tab, tap “List Zones”, scroll down to the desired output zone or enter the zone number on the numeric keypad. Select the zone to see the zone and its contents. Select the specific zone

to see the detailed zone status. Turn on all of the devices in the zone by pressing On. This will require logging on at a higher access level.

When the test is complete, turn off all of the devices that are in the zone by the same means. Then press Auto to return the zone to automatic control. All the devices in the zone will be in Fault until this last step is completed.

Table 18. Brigade Signalling Output Zone lists and Description

Zone List Number	Description
ZN1504	Brigade Alarm
ZN1505	Brigade Fault
ZN1506	Brigade Disable

Configuring the 4100ESi display

You can configure the 4100ESi to set the screen brightness, set the screen saver timeout, and so on.

1. Tap the **Service** tab.
2. Tap **Local display setup**.
3. Select the display option from the list that you want to configure.

WARNING:

You should not have to use this menu for normal operation of the panel. Be aware that you can adversely affect the usability of the user interface by selecting inappropriate settings in this menu.

The options are:

1. Set InfoAlarm+ Address - this allows the slave address of the InfoAlarm+ to be displayed or changed. Note that the address can also be changed on the InfoAlarm+ start up screen before communications with the ES master have been established.
2. Set Screen Brightness - the backlight of the InfoAlarm+ can be set to high, medium or low brightness. The brightness is also affected by system activity, with high brightness being selected when there are alarm conditions present. These changes in brightness from system conditions will over-ride brightness settings on this screen.
3. Restart InfoAlarm+ - in some instances, it may be necessary to force the InfoAlarm+ to restart itself. This may be used as a means of forcing the status displays to be refreshed from the ES master, in case that these have become confused due to some unexpected occurrence in the ES master or the InfoAlarm+. The InfoAlarm+ will be unusable for several minutes while it shuts down and restarts.
4. Set Screensaver Timeout - this timeout is for the backlight of the InfoAlarm+ to be turned off when the system has been normal for a set period of time (no alarms, monitor conditions, faults or disables). The current timeout is displayed, and a new value can be set in seconds, up to a maximum of 3600 (one hour). When the display is blacked out, touching it will wake it up, or when an alarm or fault condition occurs. The factory default setting is 0, that is, never time out.
5. Set Local Printer - the local printer port in the InfoAlarm+ is not currently supported. These settings have no effect.

Chapter 5. Install Mode

Using Install Mode

During the installation and commissioning of the 4100ESi panel, some internal modules or external devices may not yet be connected, or may not be in a normal state.

With the final configuration loaded in the 4100ESi, every uninstalled, missing or off-normal device will display a fault. Therefore, during the installation/commissioning phases, many faults from missing devices can be present, making it difficult to work with the faults from installed devices.

Install Mode provides a way to hide irrelevant faults from devices that are not yet installed or are off-normal for known reasons but which are not of immediate interest.

Any internal module or external device can be added to the Install Mode list, using the front panel interface. If there is any device in the Install Mode list, there will be a supervisory indication shown on the Monitor tab called "Install Mode Active". However, the devices in the Install Mode list will not produce any individual or collective fault indications, even if they are missing or faulty. All individual device faults are hidden behind the single Install Mode Active supervisory indication. Similarly, devices and points in the Install Mode list will not generate Alarms or Priority2 or Supervisory indications.

Since the devices and points in the Install Mode list represent system resources which are not currently available, the Brigade Disable Routing outputs are activated when there is anything in the Install Mode list, in the same way as for any disabled points.

As modules and devices are added to the system and normalised, they can be removed from the Install Mode list. When the system is fully commissioned, the Install Mode list should be empty.

Adding a single device to Install Mode

Individual devices can be added to the Install Mode list. This requires being logged in at Level 3. See [Logging on at higher user level](#).

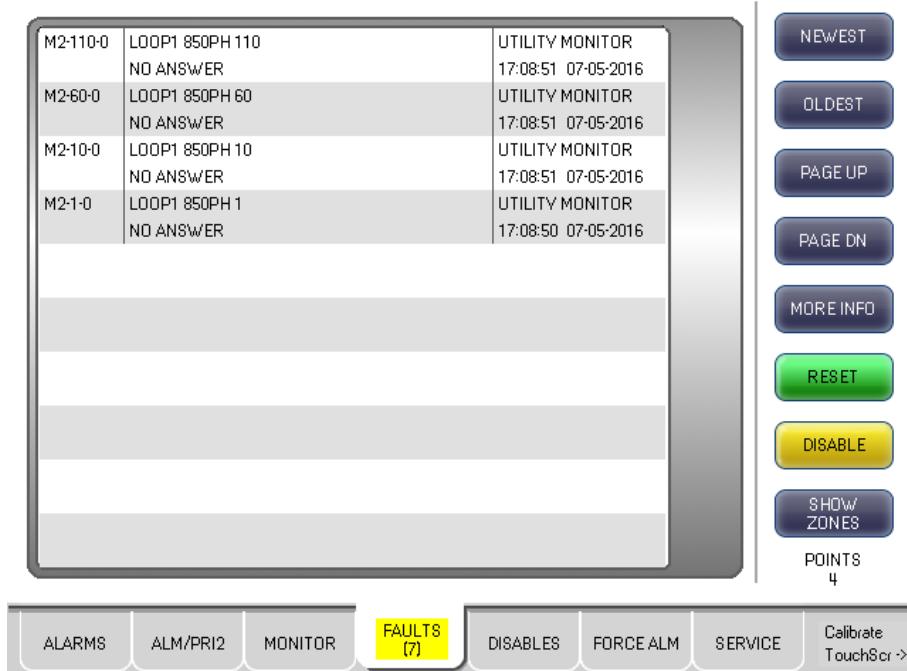
1. Tap the **Faults** tab.
2. Tap the fault you want to highlight.
3. Tap **More information**.
4. Tap the **Card status** option.
5. Tap the Install Add key that appears.

This adds this point to the Install Mode list. A login prompt may be displayed if the user is not logged in at level 3 or higher. In the Monitor tab, a supervisory entry for the Install Mode Active is displayed in the list.

Adding multiple devices to Install Mode

Where there are multiple missing devices and all are producing faults, as in Figure 9, you can add these to the Install Mode list in bulk. This requires you to log in at Level 3. See [Logging on at higher user level](#).

Figure 9: Fault list with Multiple Missing Devices



To add multiple devices to the Install Mode list, complete the following steps:

1. Tap the **Service** tab.
2. Tap the **Service/Diagnostic?** menu item.
3. Tap **View/change install mode?** menu item.
4. In the **Install Mode** menu, tap **Add Missing devices to mode?**

All devices with a status of Missing will be added to the Install Mode list.

Viewing devices in Install Mode

The contents of the Install Mode list can be viewed with the **View/modify install list?** option of the Install Mode menu. To view these menu selections:

1. Tap the **Service** tab.
2. Tap the **Service/Diagnostic?** menu item.
3. Tap **View/change install mode?** menu item.
4. Tap **View/modify install list?**

Viewing this menu does not require a higher level log in.

The Install Mode display shows a list of devices and modules, with their current status. Tapping an item in the list will provide more information about its status.

Removing devices from Install Mode

To be able to remove either individual or multiple devices from the Install Mode list, ensure that you are logged in at Level 3.

Removing Individual Devices from Install Mode

To remove individual devices from Install mode, complete the following steps:

1. Tap the **Service** tab.
2. Tap **Service/Diagnostic?**
3. Tap **View/change install mode?**
4. Tap **View/modify install list?**
5. Select the device you want to remove from the Install Mode list.
6. Move the highlight to the CARD STATUS or DEVICE STATUS line.
7. Use the **Install Remove** key, which appears, to remove the device from the Install Mode list.

If the device is still in fault, the system fault count will increase and the Fault tab indicator will flash for a new fault.

Removing multiple points from Install Mode

To remove multiple points from Install Mode, complete the following steps:

1. Tap the **Service** tab.
2. Tap **View/change install mode?** menu item.

You can choose to remove all devices in the Install Mode list that are now normal, using the **Remove all Normal points?** option. Any devices in fault will remain in the Install Mode list.

If all devices in the Install Mode list are normal, the list is empty, and this action will also clear the Install Mode supervisory condition.

You can also choose to remove all devices from the Install Mode list, regardless of their status, using the **Remove All points?** option. Note that this may result in a large number of new fault indications if faulty devices are present.

Managing the Install Mode list from the Service Port

General

A similar range of Install Mode actions can be done from the Service Port. This may be convenient when using the Building Network Interface Card or similar remote access facility to avoid excessive travel around a large or difficult access site.

See [Chapter 7](#) for more detail about use of the Service Port.

Viewing the Install Mode list

At the command prompt, enter LIST I. This will list all the devices and points currently in the Install Mode list. This does not require any higher level of log in.

- LIST I

M2-5

850P SENSN

SMOKE DETECTOR

IMODE

Adding or removing a single device from Install Mode

This will require a Level 3 login. Use the LOG command (see the LOG*IN section).

To add a single point, enter IMODE *point_name* ON

To remove a single point, enter IMODE *point_name* OFF. For example:

- IMODE M2-5 OFF

Adding or removing a group of devices from Install Mode

This will require a Level 3 login.

Missing or Open Circuit devices can be added to Install Mode as follows:

At the command prompt, enter IMODE MISSING or IMODE MISS to add missing devices.

At the prompt, enter IMODE OPEN to add open circuit devices (with EOLRs missing or incorrect).

To remove all devices in the Normal state, enter IMODE NORM OFF.

To remove all devices (and empty the Install Mode list), enter IMODE ALL OFF.

Chapter 6. Upgrading Older Systems to 4100ESi

General

One of the strengths of the Simplex 4100 product line is that most existing systems can be upgraded to make use of new features and functionality, while still being able to work with old hardware and detectors and other devices. The 4100ESi is no exception to this.

The following sections detail the upgrade options for the range of installed systems that are likely to be found in Australia.

There are two key requirements for an upgraded system to be able to use a 4100ESi configuration:

1. The master controller card must be a 566-714 NXP type, with Ethernet port and Compact Flash card.
2. The user interface must be an InfoAlarm+ colour touchscreen – OR –
The panel does not have a user interface, for example, a data gathering panel (DGP).

The upgrade process ensures that these key parts can be fitted to the system being upgraded.

Note that an AS7240.4 power supply is supplied in new 4100ESi systems, but it is not necessary to change the existing SPS power supply in an upgraded 4100U or 4100ES system, if it is currently working satisfactorily.

The 4100ESi InfoAlarm+ touchscreen provides full indication and control of zone and point status, and is a complete Fire Brigade Panel according to AS 4428.3:2010. However, existing 4100U/4100ES LED/switch indicators and controls can be reused for alternative indication of zone status, if this suits a particular installation. Note that these indicators and switches are not listed for use as a formal Fire Brigade Panel to AS 4428.3.

Upgrading 4100 Systems in Classic Cabinets to 4100ESi

The classic cabinet is not mechanically compatible with any of the 4100ESi InfoAlarm+ colour touchscreen doors available.

If the panel must be upgraded to 4100ESi so that it has an AS4428.3 compliant user interface for use by brigade personnel, the classic cabinet must be replaced with a new 19 in. rack cabinet containing the 4100ESi system.

The 4100ESi base panel must contain:

- New CPU card bay (to replace the 4100 classic CPU).
- APS power supply bay (to replace the 4100 classic power supply card).
- PDI 64/64 controller cards (allowing for one extra that was on the PSU card).
- 4100-5004 zone monitor card if the classic panel PSU zone card option was used.

- Signal card or relay card if the classic panel PSU signal card option was used. The APS has 3 NAC outputs which may be sufficient to replace the 4100-4321 signal card. The APS also has three brigade signalling relay outputs plus one other uncommitted relay output, which may be sufficient to replace the 4100-3003 relay card.
- InfoAlarm+ display
- PDI LED switch modules, if the panel requires controls other than zone disable/enable.

Note:

4100ESi panel zone disable/enable operation is done through the InfoAlarm+ display.

Note that most or all of the slave cards and motherboards in the classic cabinet can be transferred to the new cabinet and will be compatible with the 4100ESi master.

If this system is a DGP networked to a 4100ESi head panel, then there is no user interface and the InfoAlarm+ is not required. The panel can be converted to 4100ESi simply by upgrading the CPU card to 4100ES. However, unless the system needs to make use of new facilities available as 4100ESi, there is no actual requirement to upgrade the DGP.

Upgrading 4100+ or 4100A Systems in Simplex Cabinets to 4100ESi

Like the classic cabinet in the previous section, the Simplex cabinet is not mechanically compatible with any of the 4100ESi InfoAlarm+ colour touchscreen doors available.

If the panel must be upgraded to 4100ESi so that it has an AS4428.3 compliant user interface for use by brigade personnel, then this must be done by replacing the classic cabinet with a new 19 in. rack cabinet containing the 4100ESi system.

The 4100ESi base panel must contain:

- New CPU card bay (to replace the 4100+ / 4100A CPU).
- New LPS power supply (to replace the 4100-0157 PSU).
- InfoAlarm+ display.
- New 64/64 controller cards (replace Legacy 64/64 controllers)
- New PDI LED switch modules to replace Legacy toggle switches and controls.

Note:

Zone control can be done through the InfoAlarm display, so these may not be required.

- New AS1668 controls (4100-ME0456) to replace the legacy AS1668 toggle switch controls.

Note:

Most or all of the slave cards and motherboards in the classic cabinet can be transferred to the new cabinet and will be compatible with the 4100ESi master.

If this system is a DGP networked to a 4100ESi head panel, there is no user interface and the InfoAlarm+ is not required. The panel can be converted to 4100ESi simply by upgrading the CPU card to 4100ES.

If the DGP is to use MX loops, it should be replaced as it must also include an APS PSU and 4100ES CPU. The legacy 4100-0157 PSU cannot be used to power the MX loop cards.

However, unless the system needs to use the new facilities available as 4100ESi, there is no requirement to upgrade the DGP.

Upgrading 4100U-S1 Systems to 4100ESi

There is no change required to the existing cabinet or field wiring.

Required parts

This upgrade requires three items:

- 4100-7158 4100ES CPU kit (4100U-S1 only).
- 4100-SX0184 InfoAlarm+ door.
- 4100-KT0568 Upgrade trim panel.

Overview

The LCD door is replaced with the InfoAlarm+ touchscreen.

In 4100U-S1, the CPU board is upgraded to 4100ES.

The trim plate is replaced with one suited to the larger size of the InfoAlarm+ touchscreen.

The SPS power supply and other cards in the system do not require any changes.

Note:

If adding MX loop cards, you must also add an APS power supply to power the loop cards.

Replacement Procedure

1. Remove the trim panel from the 4100U-S1 or 4100ES-S1. This part will be replaced with the 4100-KT0568 upgrade trim panel.
2. Power the system down: remove AC power from the PSU and remove the red lead from the positive battery terminal.
3. Open the 2x40 LCD door.
4. Unplug the 40 way LCD FRC from the front edge of the CPU board.
5. Unplug the 10 way service port FRC from the front edge of the CPU board.
6. Disconnect the earth looms from the LCD door.
7. Unclip the old LCD door from the top bay and remove it.
8. Configure the links on the upgrade 4100ES CPU card as follows:
 - P1 should be in Position 1 – 2, or not fitted
 - P3 should be in the ON position
9. Remove the old 4100U CPU card. Fit the upgrade (4100ES) CPU card in its place.
10. Remove the card restraint bar in the top bay. Replace this with the card restraint bar supplied with the upgrade InfoAlarm+ door. See [Figure 10](#).
11. Fit the upgrade InfoAlarm+ door to the top bay. Carefully, check that it closes correctly, without clashing with any cards in the bay, and that the new restraint bar is fitted correctly.

12. Connect the InfoAlarm+ door to the bay, as shown in Figure 11:

- Connect the earth lead at the right side of the InfoAlarm+ door to the bay side in place of the old earth lead.
- Connect the Ethernet lead from the InfoAlarm+ door to the Ethernet port on the bottom edge of the new CPU board.
- Connect the 4 way power/comms lead from the InfoAlarm+ door to an unused socket on the CPU motherboard (any of P4, P5 or P6).
- Apply the mains to the power supply, and check that the cards power up correctly. When this is confirmed, reconnect the battery.

13. Note that the system will not operate correctly until the new site specific software is loaded into the new CPU card.

14. Fit the new trim panel and fasten it. All the necessary updates to system software and job files can be made through the Ethernet service port on the InfoAlarm+ door.

Figure 10: Removing the old card restraint bar from the CPU bay (left)

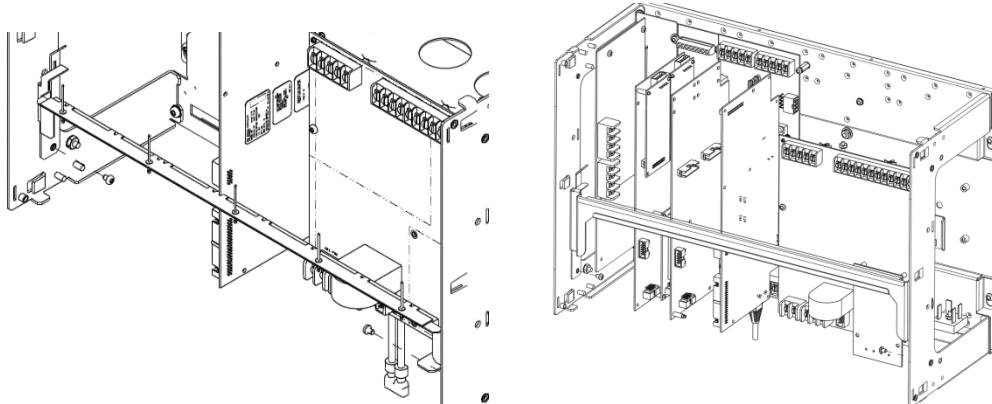
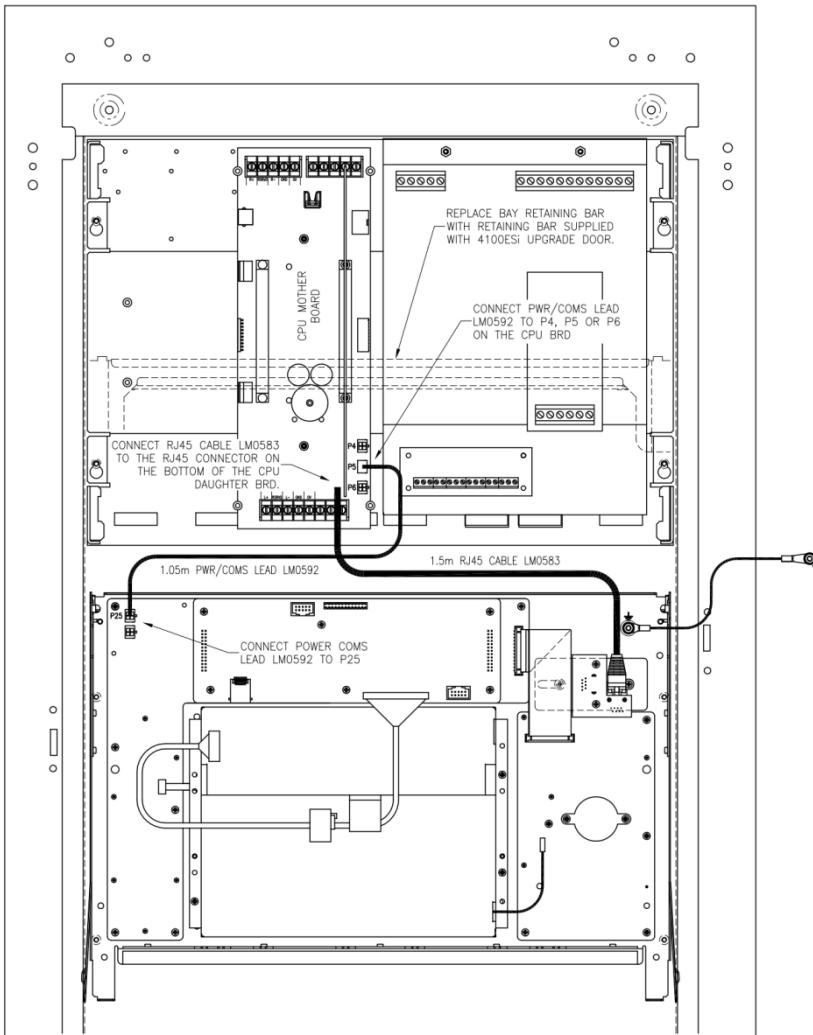


Figure 11: Connecting the new InfoAlarm+ display door to the CPU bay



The configuration must be upgraded to the current 4100ES revision and converted to a 4100ESi job type. The procedure for doing this is explained in more detail below.

Upgrading Other 4100U Systems to 4100ESi

There is no change required to the existing cabinet internals or field wiring. Some of the display doors must be replaced, as described in this section.

Note:

The configuration of the system needs to be reviewed to ensure that the first bay of LED switches can be replaced with an InfoAlarm+. In general, any zone LED/switch controls and indications should be removed, and zone control done through the InfoAlarm+ display for compliance with AS4428.3:2010.

Required parts

This upgrade requires three items:

- 4100-7158 4100ES CPU kit,
- 4100-SX0184 InfoAlarm+ door,
- FZ9032 4U blank panel, black

Overview

The LCD door is replaced with a blank panel.

The topmost zone indicator/control door is replaced with the InfoAlarm+ touchscreen.

The CPU board is upgraded to 4100ES.

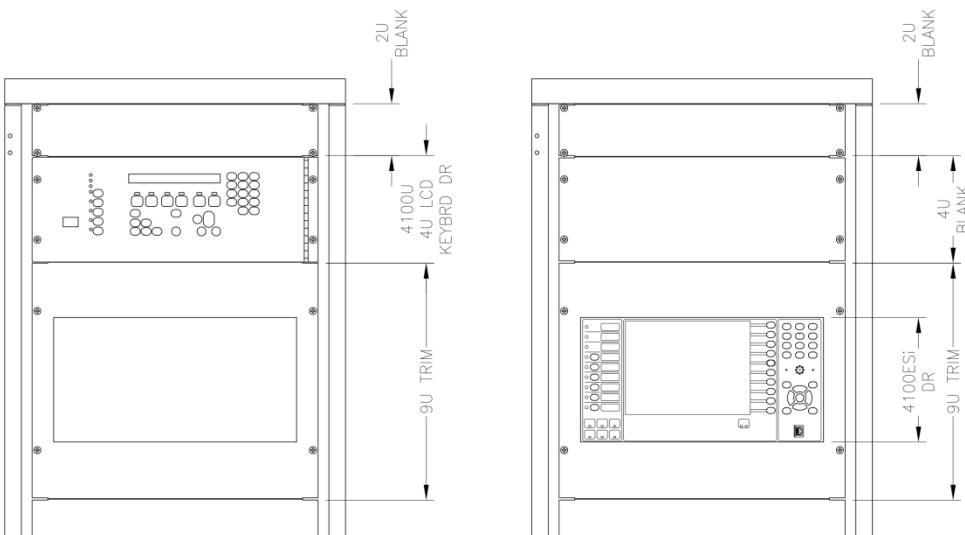
Note:

If adding MX loop cards, you must also add an APS power supply to power the loop cards.

SPS Power Supply

The SPS power supply and other cards in the system do not require any changes.

Figure 12: Face layout of the panel before (left) and after (right) the 4100ESi upgrade

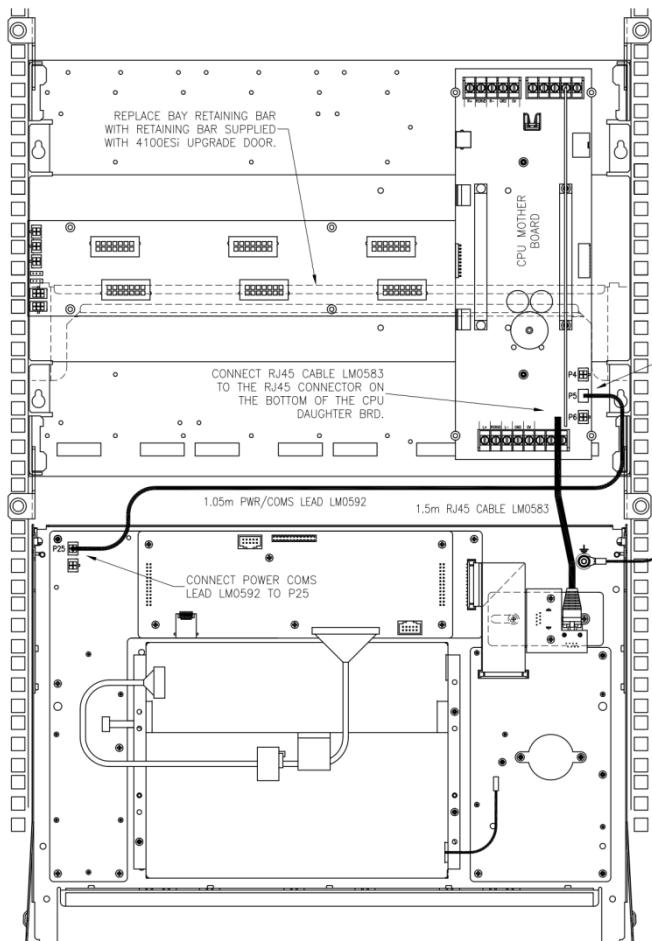


Replacement Procedure

1. Power the system down: switch off AC power, and disconnect the system battery.
2. Remove the 9U trim plate from the topmost zone indicator/control door.
3. Open the zone indicator door, and disconnect the 40 way FRC and 10 way FRC from the front edge of the CPU board in this bay.
4. Remove the 4U LCD door above the zone indicator door.
5. Unplug the 4 way power/comms lead from the zone indicator door where it connects to the PDI back plane or other internal connection.
6. Disconnect the earth looms from the zone indicator door.
7. Unclip and remove the zone indicator door.
8. Configure the links on the upgrade (4100ES) CPU card as follows:
 - P1 should be in Position 12, or not fitted.
 - P3 should be in the ON position.

9. Remove the old 4100U CPU card. Fit the upgrade 4100ES CPU card in its place.
10. Remove the card restraint bar from the top bay. Replace with the card restraint bar supplied with the upgrade InfoAlarm+ door. See the **SPS Power Supply** section and **Figure 12** for details.
11. Fit the upgrade InfoAlarm+ door to the bay. Carefully check that it closes correctly, without clashing with any cards in the bay, and that the new restraint bar is fitted correctly. Connect the earth leads between the new InfoAlarm door and the bay sides.
12. Connect the InfoAlarm+ door to the bay, as shown in **Figure 13**.
 - Connect the earth lead at the right side of the InfoAlarm+ door to the bay side in place of the old earth lead.
 - Connect the Ethernet lead from the InfoAlarm+ door to the Ethernet port on the bottom edge of the new CPU board.
 - Connect the 4 way power/comms lead from the InfoAlarm+ door to an unused socket on the CPU motherboard (any of P4, P5 or P6) or on the PDI backplane (P2 or P3).

Figure 13: Connecting the new InfoAlarm+ display door to the CPU bay



13. Apply the mains to the power supply, and check that the cards power up correctly. When this is confirmed, reconnect the battery.

Note:

The system will not operate correctly until the new site specific software is loaded into the new CPU card.

14. Fit the FZ9032 4U blank panel in place of the 4U LCD door that was removed in an earlier step.
15. Refit the 9U trim panel over the InfoAlarm+ door and fasten it. All the necessary updates to system software and job files can be made through the Ethernet service port on the InfoAlarm+ door.

The configuration must be upgraded to the current 4100ES revision and converted to a 4100ESi job type. The procedure for doing this is explained in more detail below.

Upgrading 4100ES-S1 Systems to 4100ESi

There is no change required to the existing cabinet or field wiring, and the 4100ES system already has a 566-719 NXP controller.

Required parts

This upgrade requires two items:

- 4100-SX0184 InfoAlarm+ door
- 4100-KT0568 Upgrade trim panel

Overview

The LCD door is replaced with the InfoAlarm+ touchscreen.

The trim plate is replaced with one suited to the larger size of the InfoAlarm+ touchscreen.

The SPS power supply and other cards in the system do not require any changes.

Note:

If adding MX loop cards, you must also add an APS power supply to power the loop cards.

Replacement Procedure

1. Remove the trim panel from the 4100ES-S1. This part will be replaced with the 4100-KT0568 upgrade trim panel.
2. Power the system down: remove AC power from the PSU and remove the red lead from the positive battery terminal.
3. Open the 2x40 LCD door.
4. Unplug the 40 way LCD FRC from the front edge of the CPU board.
5. Unplug the Ethernet cable from the bottom edge of the CPU card.
6. Disconnect the earth looms from the LCD door.
7. Unclip the old LCD door from the top bay and remove it.
8. Remove the card restraint bar in top bay. Replace with the card restraint bar supplied with the upgrade InfoAlarm+ door. See in the 4100U-S1 section.

9. Fit the upgrade InfoAlarm+ door to the top bay. Carefully, check that it closes correctly, without clashing with any cards in the bay, and that the new restraint bar is fitted correctly.
 10. Connect the InfoAlarm+ door to the bay, as shown in Figure 11 in the 4100U-S1 section:
 - Connect the earth lead at the right side of the InfoAlarm+ door to the bay side in place of the old earth lead.
 - Connect the Ethernet lead from the InfoAlarm+ door to the Ethernet port on the bottom edge of the new CPU board.
 - Connect the 4 way power/comms lead from the InfoAlarm+ door to an unused socket on the CPU motherboard (any of P4, P5 or P6).
 11. Apply the mains to the power supply, and check that the cards power up correctly. When this is confirmed, reconnect the battery.
- Note:**
- The system will not operate correctly until the new site specific software is loaded into the new CPU card.
12. Fit the new trim panel and fasten it. All necessary updates to system software and job files can be made through the Ethernet service port on the InfoAlarm+ door.

The configuration must be upgraded to the current 4100ES revision and converted to a 4100ESi job type. The procedure for doing this is explained in more detail below.

Upgrading 4100ES Systems with InfoAlarm to 4100ESi

There is no change required to the existing cabinet or field wiring, and the 4100ES system already has a 566-719 NXP controller.

Note:

Any remote 4100-FUI InfoAlarm units must also be removed and replaced with InfoAlarm+ remote fire brigade panels (FP1048), network panels, or 2 x 40 character LCD displays 4603-9101. The 4100-FUI does not work in 4100ESi jobs.

Required parts:

This upgrade requires two items:

- 4100-ME0510K 7U InfoAlarm+ door
- FZ9032 4U blank panel, black

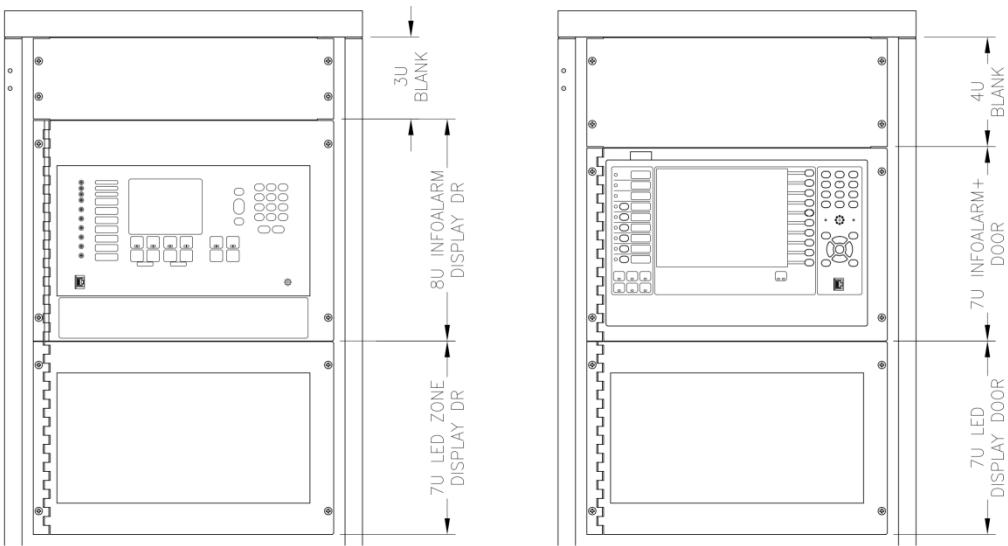
Overview

The 8U InfoAlarm door is replaced with the 4100-ME0510K 7U InfoAlarm+ door.

The 3U blank panel at the top of the cabinet is replaced with the FZ9032 4U blank panel to fill the gap.

The SPS power supply and other cards in the system do not require any changes.

Figure 14: Face layout of the panel before (left) and after (right) the 4100ESi upgrade



Replacement Procedure:

1. Power the system down: remove AC power from the PSU and remove the red lead from the positive battery terminal.
2. Disconnect the 8U InfoAlarm door from the bay:
 - Disconnect the earth loom from the internal bay side.
 - Disconnect the Ethernet lead from the bottom edge of the CPU board.
 - Disconnect the 4 way power/comms lead from wherever it is connected inside the bay.
3. Unfasten and remove the 8U InfoAlarm door.
4. Unfasten and remove the 3U blank panel at the top of the cabinet. Fit the 4U blank panel in its place. This will require the lower pair of the cage nuts to be moved down three holes.
5. Fit the 7U InfoAlarm+ upgrade door in place and fasten it on its left side. This will require the upper pair of cage nuts to be moved down three holes.
6. Connect the 7U InfoAlarm+ door to the bay using the same connection points that the old InfoAlarm door was connected to.
7. Apply the mains to the power supply, and check that the cards power up correctly. When this is confirmed, reconnect the battery.

Note:

The system will not operate correctly until the new site specific software is loaded into the new CPU card.

8. Close and fasten the InfoAlarm+ door. All the necessary updates to system software and job files can be made through the Ethernet service port on the InfoAlarm+ door.

The configuration must be upgraded to the current 4100ES revision and converted to a 4100ESi job type. The procedure for doing this is explained in more detail below.

Converting the System Configuration to 4100ESi

Overview

An existing 4100U or 4100ES configuration can be upgraded to a 4100ESi job through this process. This conversion process requires an ES Programmer of version 3.04.03 or later, and access to a current version of the 4100ESi template package SF0513. Both of these software tools are available from the Johnson Controls Fireplace website, or from your Simplex dealer.

This is only a summary of the process for general information. For full details of the procedure, refer to LT0619 4100ESi Programming Manual.

Hardware Conflicts

Before it can be converted, the old job file must be checked for conflicts and these must be removed. Any 4100-FUI InfoAlarm units must be removed from the configuration. These units will not work in 4100ESi jobs. All other commonly used hardware from AS4428 4100U/4100ES jobs is compatible with 4100ESi jobs.

Other Conflicts

Any custom control in Program groups 3, 4 and 5 will be deleted during the conversion process, as these are required for 4100ESi specific custom control. Since these are normally used for specific AS4428 functionality which is being replaced, this should not be a problem.

Program group 6 will also be used when upgrading to 4100ESi. Any site specific equations in this group must be moved to another group.

Conversion to 4100ESi Job

The prepared 4100U or 4100ES job file is upgraded to the intended version of ES Programmer by opening it and saving it.

The ES Programmer has a new tool called, Convert to 4100ESi, which converts the job type.

The Convert to 4100ESi tool ensures the following:

- All hardware and addressable devices are retained unchanged.
- Zone lists are added, each with an alarm test point.
- Addressable devices that were in the AS4428 zones 1 to 100 (lists L261 to L360) are transferred to the corresponding zone lists ZN1001 to ZN1100.
- The custom control equations for AS4428 operation in Programs 3, 4 and 5 are all removed.

Adding AS7240 Requirements

The remainder of the AS7240 requirements are added using the contents of the 4100ESi upgrade package, part code SF0513. This is installed as part of the 4100ESi templates package SF0505.

The zone lists in the converted job will have default labels which will almost certainly require customising. Detectors and other devices in zones in a 4100ESi system do not require the zone name to be part of the device label; these labels also may require updates.

If custom control in the old job makes reference to specific status points in the AS4428 job, these points will probably have changed their function in the converted job, and equivalent status points will have to be identified and the custom control changed.

Full details of the AS7240 facilities available in the 4100ESi job type can be found in LT0619 4100ESi Programming Manual.

Networking Older Panels to 4100ESi

The following details should be noted when upgrading an older 4100 panel to 4100ESi:

- 4100ESi point information can be sent to a 4100ES or 4100ESi panel version 3.07.02 or later. Older 4100 panels on a network that need to receive 4100ESi point information must be upgraded to 4100ES or 4100ESi using one of the available upgrade kits.

Older panels such as 4100, 4100A, 4100U, or 4100ES systems, with IDNet and MAPNET devices can send their point information to 4100ESi nodes without any problems.

- Virtual zones from 4100A nodes cannot be networked to a 4100ESi node. The 4100ESi will not be able to display or control these zones. Instead the 4100A panel's individual points can be networked to a 4100ESi and remapped into 4100ESi zones.

Refer to LT0619 4100ESi Programming Manual for more details.

Upgrading a 4100-5004 8 Monitor Card to a 4100-5013 8 Zone/Relay Card

If changing a 4100-5004 8 Monitor Card to a 4100-5013 8 Zone/Relay Card, the following considerations need to be made.

- The 4100-5013 is a single-block PDI card, so a spare PDI position is needed.
- The existing detector types need to be checked for compatibility with the 4100-5013.

Note: The existing 3.3 k Ω EOL is supported by the 4100-5013.

- The configuration of the panel needs to be changed to add the 4100-5013 and program the inputs as required.

Chapter 7. Service port

The service port functionality is for advanced users. It features a command set that allows the 4100ESi status to be interrogated and various run-time settings changed.

A telnet connection is made to access the service port. The Simplex programming software includes the TeraTerm telnet client for this purpose.

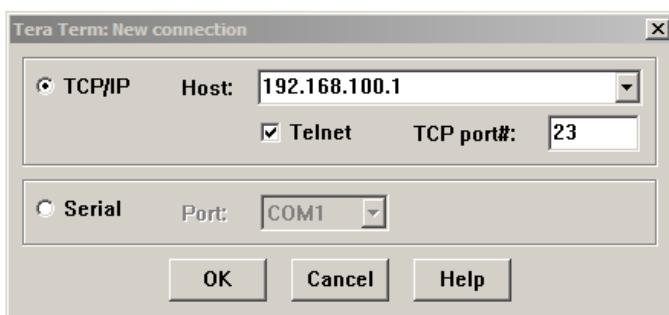
The service port can be used to retrieve reports from the 4100ESi using the IP File Transfer utility.

It is recommended that some data is captured over the service port before new hardware is added to the 4100ESi to document the current state of the panel.

Connecting to the service terminal

1. Connect an Ethernet cable from the Ethernet port of your computer to the 4100ESi service Ethernet Port on the front of the InfoAlarm+ door (download the port connection on the operators interface panel).
2. Start TeraTerm (inside Simplex > ES Panel Ver X.XX.XX start folder).
3. Set as shown in Figure 15:

Figure 15: Tera Term: New Connection



Common service terminal commands and examples

All available commands

Table 19. Available Commands

Commands	Functions
HELP	Type in HELP then the topic title to get help on that topic
CTIME	Set and display the system time and date in Computer format
CLIST	Returns the current point status
REV	Returns 4100U system – slave – or hardware card revision
TERM	Sets the current terminal flags
ACK	Acknowledge a single point or a group of points
SET	Manipulate the status and/or priority of a point

Commands	Functions
DIS	Disable/enable points in the system
LOGIN	Puts the port in the passcode entry mode
RES	Warm or cold start the system
Ctrl D	System Reset
SH	Shows ports, topology, nodes, counts or cards
PRINT	Outputs a report through a printer
TYPE	Outputs a report to this port
CLEAR	Clears Alarm or Trouble log, Tallies or Peak Analog value
DIAG	Network diagnostic functions
WALK	Initiates or stops walktest
SWAP	Swaps the alternate job configuration data with the primary
SYS*DIAG	Runs a system diagnostic function
IMODE	Adds or removes device from install mode list
SMPL	View or log SMPL equation information

HELP

Commands

Help is available for the following commands/topics:

COMMANDS:

```
-----  
CT*IME      CL*IST      REV*ISION      TERM*INAL      T*IME        A*CK  
S*ET        BYP*ASS     DIS*ABLE       DISARM        HELP         LOG*IN  
RES*TART    SH*OW       L*IST          PRINT         TYPE         SELECT  
CLEAR       DIAG*NOSTIC  WALK*TEST     CS*HOW        TIC*MODE     SWAP  
SYS*DIAG    CHD*IAG    SCC            IMODE        CHA*NGEADDR  FORCE  
SMPL        /P
```

TOPICS:

LOCAL

An * denotes the minimum number of letters to be typed. In the help screens, an item surrounded by square brackets "[]" is optional.

Topics

REV

help rev

This command returns the 4100 system software revision, the revision and name of the specific job configuration (CFIG), and hardware card type information (if available).

The available options are: A, ALL, HW.

A - Display job activation information after job revision information
 All - All slave revisions
 HW - All supported slave HW card types

Examples of REV are shown below:

Rev

```
SYS REV: 7.00.02 CFIG FORMAT: 71 JOB: 92A1004A REV: 7      24-NOV-93 10:19
Rev All
```

```
Card 1 : System Power Supply <SPS> 3.02
Card 2 : IDNet <250 Points>3.02
Card 3 : Not Supported           (RS232 Board)
```

```
Card 4 : Expansion Power Supply <XPS> 3.02
Card 5 : Analog Audio Controller 1.05
Card 6 : Flex 50 <25v> Audio Amplifer 2.02
```

REVHW

```
Card 1 : 9EH SPS_Bank    System Power Supply (SPS)
Card 2 : 9EH SPS_Bank    System Power Supply (SPS)
Card 3 : -      -      -
Card 4 : 8AH XPS          Expansion Power Supply (XPS)
Card 5 : F5H Audio_ANA Analog Audio Controller
Card 6 : F2H Audio_AMP   Flex 50 (25v) Audio Amplifer
Card 7 : -      -      -
```

TERM*INAL

help term

This command sets the current terminal flags. The flags are set in parameter order such that a flag can be negated later in the command line. The special flag DEFAULT sets all flags to their default based on port type. Typing TERM by itself returns a list of the current status of each flag. The first line returned is the protocol format number. Typing the letters "NO" preceding a flag-name clears the flag named.

Input Format: TERM*INAL [<option>], [<option>],

Valid parameters:

<option>	DEFAULT	[NO]PROTOCOL	[NO]ECHO
[NO]LOGGING	[NO]STATUS	[NO]BPREFIX	[NO]APREFIX
[NO]SUPV	[NO]BELLS	[NO]HSHAKE	[NO]POLL
[NO]ATTRIB	[NO]LF		

Note:

If terminal mode stops displaying all information or events, enter "TERM DEFAULT". This will set all the parameters back to default.

ACK

help ack

This command allows the user to acknowledge a single point or a group of points. If only "ACK" is specified, the highest priority abnormal point is acknowledged. If "ACK <point><qual>" is specified, the ack qualifier determines what state is actually acknowledged for that point. If no qualifier is selected, all abnormal states are acknowledged for that point. "ACK" may be followed directly by F, P, S, or T. In an "INDIVIDUAL ACK" system, this form of the command will "ACK" the first unacked point in the appropriate system list. In a "GLOBAL ACK" system, this form of the command will "ACK" all unacked points in the appropriate system list.

Input Format: A*CK [<point>][<qual>]

Valid parameters:

point	Standard point ID
qual	F=fire; P=pri2; S=supv; T=tbl A=ACK pri state if abnormal.

A T (Acknowledge all Troubles if a Global System)

S*ET

help s

This command allows the user to manipulate the status and/or priority of a control point or modify the value of an analog pseudo point.

Input Format: S*ET <point><value>

Valid parameters:

<point> Standard point ID

<value> Depending on point type

Control, Digital, Analog sensor, List pseudo points:

<state> [PRI=<pri>]

<state>

ON Set point to the ON state

OFF Set point to the OFF state

PRI=<pri> Just change the control priority

ROR=n Change Rate of Rise to n

SENS=n Change Sensitivity to n

CHL=n Change audio channel to n

PRI= Change priority also

<pri> P=use port pri; #=Pri(2-15)

M=manual override

A=Automatic (clears override trouble)

Analog pseudo points:

Analog value (0-65535)

Set Sig3 ON

Signal Circuit ON

Use this to isolate a zone by entering Set P601 (Zone 1) On. To de-isolate, enter Set P601 Off.

DIS*ABLE

- help dis

This command allows the user to disable/enable points in the system.

Input Format: DIS*ABLE <PID>[<state>]

Valid parameters:

<point> Standard point ID

<state> Desired disable state

<blank> Disable ON (default)

ON Disable the point

OFF Enable the point

DIS M1-1 ON

9:38:50 am THU 25-DEC-03 Number of local system points' troubles

Value = 1 ON

9:38:50 am THU 25-DEC-03 M1-1 Smoke Detector above SPS

Smoke Detector Disable Trouble

9:38:50 am THU 25-DEC-03 Unacknowledged Trouble Exists

Utility Point ON

DIS M1-1 OFF

9:38:50 am THU 25-DEC-03 Number of local system points' troubles

Value = 65535 ON

9:38:50 am THU 25-DEC-03 M1-1Smoke Detector above SPS

Smoke Detector Enabled Acked

9:38:50 am THU 25-DEC-03 M1-1Smoke Detector above SPS

Smoke Detector Normal

LOG*IN

- help log

This command puts the port in passcode entry mode. The user is then expected to type a password. If an incorrect passcode is typed, an error message "ERROR... INVALID PASSCODE" is returned followed by a prompt and the user must log in again.

Input Format: LOG*IN
Output Format: Enter your passcode or ENTER to logout >
Input Format: <XXXX> -"X" Denotes a passcode character
Output Format: Enter your passcode or ENTER to logout >
 ACCESS GRANTED
 ERROR...INVALID PASSCODE

LOGIN

Enter your Passcode or ENTER to Logout
(Password is not displayed as you type)
ACCESS GRANTED

RES*TART

help res

This command allows the user to perform a cold or warm restart of the master controller. A warm restart is performed if no parameter is entered. Must login at Level 4

Input Format: RES*TART [<qual>]

Valid parameters:

<qual> COLD = Perform a complete re-initialization.
 WARM = Perform a re-initialization except for the logs, time
 and date, verification tallys, and disable states.

SH*OW

- help sh

This command may be followed by a <point> or a <keyword> as described below:

Input Format: SH*OW <point> <qual>

Valid parameters:

point Standard point ID
qual P*OINTS qualifier will show points within a list

Input Format: SH*OW <keyword>

Valid parameters:

keyword	PORTS	-Lists all ports configured. User port is marked by an asterisk.
	TOP*OLOGY	-Shows loop topology.
	NODES	-Lists all nodes in the network.
	COUNTS	-Shows system list counts.
	CARDS	-Lists all cards in the panel.
	GALIST	-Lists all group activation lists on the panel.
	GALIST <lpid>	-Lists all members of <lpid> group activation list.

SH CARDS

CARD 1 SYSTEM POWER SUPPLY
CARD 2 IDNET CARD (250 POINTS)
CARD 3 2120/RS232 INTERFACE CARD
CARD 4 EXPANSION POWER SUPPLY
CARD 5 ANALOG AUDIO CONTROLLER
CARD 6 FLEX 50 AMPLIFIER
CARD 7 64 LED / 64 SWITCH CONTROLLER CARD
CARD 128 DIGITAL PSEUDO CARD
CARD 129 DIGITAL PSEUDO CARD
CARD 130 DIGITAL PSEUDO CARD
CARD 144 ANALOG PSEUDO CARD
CARD 145 ANALOG PSEUDO CARD
CARD 160 POINT LISTS CARD
CARD 161 POINT LISTS CARD
CARD 175 TRUEALERT ZONE

SH COUNTS

FIRE = 2 **PRIORITY2** = 0 **SUPERVISORY** = 0 **TROUBLE** = 5

SH PORTS

Port 1 CRT80U
Port 2 COMMAND*

SH CARDSTATUS <n>

```
- sh cardstatus 1
CARD 1, SYSTEM POWER SUPPLY
SYSTEM POWER SUPPLY
UNIT NUMBER: 0 RUI NUMBER: LOCAL
-----
POINT ADDRESS: 1-0-0
CARD INSERTED NORMAL
POINT ADDRESS: 1-0-1
CORRECT CARD NORMAL
POINT ADDRESS: 1-0-2
A/C FAILURE NORMAL
POINT ADDRESS: 1-0-3
POSITIVE EARTH GROUND NORMAL
POINT ADDRESS: 1-0-4
NEGATIVE EARTH GROUND NORMAL
POINT ADDRESS: 1-0-5
CITY CIRCUIT 2 NORMAL
POINT ADDRESS: 1-0-6
LOW BATTERY CUTOUT NORMAL
POINT ADDRESS: 1-0-7
CITY CIRCUIT 1 NORMAL
POINT ADDRESS: 1-0-8
LOW BATTERY STATUS NORMAL
POINT ADDRESS: 1-0-9
DEPLETED/MISSING BATTERY NORMAL
POINT ADDRESS: 1-0-10
BATTERY CHARGER NORMAL
POINT ADDRESS: 1-0-11
EXPANSION SIGNAL POWER NORMAL
POINT ADDRESS: 1-0-12
POWER SUPPLY OVERCURRENT NORMAL
POINT ADDRESS: 1-0-13
BROADCAST FAILURE NORMAL
```

```

POINT ADDRESS: 1-0-14
NAC MISWIRE                               NORMAL
POINT ADDRESS: 1-0-15
HARDWARE CONFIGURATION                   NORMAL
POINT ADDRESS: 1-0-16
INCOMPATIBLE SLAVE REVISION             NORMAL
POINT ADDRESS: 1-0-17
System Voltage: 28.77 Volts
POINT ADDRESS: 1-0-18
Power Supply Current: 1.20 Amps
POINT ADDRESS: 1-0-19
Battery Voltage: 27.28 Volts
POINT ADDRESS: 1-0-20
Battery Charger Voltage: 27.30 Volts
POINT ADDRESS: 1-0-21
Battery Charger Current: 0.00 Amps

```

SH <list/zone> POINTS

```

- sh zn1001 points
ZN1001 TEST ALARM
FIRE ALARM POINT           NORMAL
P3584                      PRIORITY = 9

```

L*IST

- help list

This command returns the current logical point status for the point ID requested in an easy to read format. LIST <point> returns all "abnormal/on" statuses for the point specified. LIST <point> <qual> returns only the specific status specified by <qual> for the point specified by <point>. LIST <qual> returns all "abnormal/on" statuses of the category specified by <qual>. LIST A is not allowed. Each status is returned in a short one line format. Bypassed points are listed if disarmed.

Input Format: L*IST [<point>] [<qual>]

Valid parameters:

point	Standard point ID
qual A	-Primary status
	F -Fire
	P -Pri2
	S -Supervisory
	T -Trouble
	U -Utility
	C -Control
	D -Disable trouble
	B -Bypass/Disarmed
	I -Install mode

LIST M1-1 (IF M1-1 IS IN ALARM)

M1-1	SMOKE DETECTOR ABOVE SPS	SMOKE DETECTOR	FIRE*
------	--------------------------	----------------	-------

LIST M1-1 (IF M1-1 IS IN TROUBLE)

M1-1	SMOKE DETECTOR ABOVE SPS	SMOKE DETECTOR	TRBL*
------	--------------------------	----------------	-------

LIST M1-1 A (IF M1-1 IS IN NOT IN ALARM)

M1-1	SMOKE DETECTOR ABOVE SPS	SMOKE DETECTOR	NORM
------	--------------------------	----------------	------

LIST M1-1 S

% Error 4: Qualifier Invalid for Point

LIST I

M2-50 LOOP1 850PH 50

UTILITY MONITOR

IMODE

TYPE

help type

This command causes reports to be output to this port in the same manner as is now possible via the front panel or the CRT menus.

Input Format: TYPE <arg>

Valid parameters:

arg ALOG -Sends Alarm Historical Log out this port.
 TLOG -Sends Trouble Historical Log out this port.
 TASTAT*US -Sends TrueAlarm Status Report out this port.
 TASERV*ICE -Sends TrueAlarm Service Report out this port.

TYPE ALOG

Service Port

Page 1

Report 1 : Alarm Historical Log

8:42:06 am FRI 26-DEC-03

SMOKE DETECTOR TEST AB

CLEAR

- help clear

This command clears one of the following: a) Alarm Historical Log or b) Trouble Historical Log or c) Alarm Verification Tallies or d) Peak Analog Values depending on the argument passed. User must be logged in at the appropriate access level to use this command.

Input Format: CLEAR <arg>

Valid parameters:

arg	ALOG	-Clears the Alarm Historical Log.
	TLOG	-Clears the Trouble Historical Log.
	TALLY <PID>	-Clears Alarm Verification Tally for point <PID>.
	PEAK <PID>	-Clears Peak Analog Value for point <PID>.

DIAG*NOSTIC

- help diag

This set of commands allows the user to perform network diagnostic functions and to view diagnostic information. The user must log in at the appropriate level to perform the functions.

DIAGNOSTIC by itself elicits a data dump of the diagnostic data kept at the local node. DIAGNOSTIC followed by a number elicits a data dump of the diagnostic data kept locally for the node specified. DIAGNOSTIC followed by a keyword performs actions pertinent to the keyword. Multiple keywords may be typed in the same input line separated by spaces. If an error occurs on the input line, none of the actions are performed and an appropriate error message is returned.

The following list provides an example of each command syntax:

```
DIAG*NOSTIC
DIAG*NOSTIC <n>
DIAG*NOSTIC LOG [<TLOG><PR*INTER>]
DIAG*NOSTIC [NO]CON*TROL
DIAG*NOSTIC [NO]RET*RIES
DIAG*NOSTIC [NO]REC*EIVE
DIAG*NOSTIC [NO]TRO*UBLES
DIAG*NOSTIC [NO]MES*SAGES [qual]
DIAG*NOSTIC RES*ET [<qual>]
DIAG*NOSTIC DIR*ECTION
DIAG*NOSTIC [NO]REP*EATER [<qual>]
DIAG*NOSTIC S*TOP
DIAG*NOSTIC [NO]REL*AY
DIAG*NOSTIC CLEAR TAL*LIES
```

SYS*DIAG

- help sys

This command runs a system diagnostic function. It takes a command parameter which specifies which diagnostic to run.

Input Format: SYSDIAG <diagnostic function> [<qual>]<CR>
<diagnostic function> One of the following diagnostic functions
<qual> An additional qualifier associated with some commands
EFS [<qual1>][<qual2>] perform one of the ground search operation
where qual1 = slave card address to search
qual1=M[X] perform ground search on IDNet Channel X.
qual2= E*XCL (default option) exclude AUX Power during the search.
qual2=I*NCL include AUX Power during the search
If <qual1> and <qual2> are not specified, show the last search result.
NAC*TEST <qual> Instructs one or ALL of the following slaves to perform a NAC
miswiring test
<qual> <RUI card address>
where the RUI card address has a card type of one of the following
System Power Supply (SPS)
Expansion Power Supply (XPS)
Remote Power Supply (RPS)
If the ALL qualifier is specified, the test is performed on ALL applicable slave
cards.
[NO]EFL Earth Fault Latch - enables/or disables (NOEFL) the latching of earth
faults in the panel
EARTHS Displays the state of the latched earth statuses in the panel. It
displays the earth statuses for
1) SPS/XPS/RPS
2) Mapnet/IDNet
3) TrueAlert cards

```
HWRESET Hardware reset - allows clearing of Class A faults
Output format: (NACTEST)
CARD <RUI Address>, <card description>
NAC MISWIRING FAULT
CHECK SIGs n1,n2,...,n8
<prompt>
Output format: (EFL)
<prompt>
```

- SYSDIAG NAC ALL

```
CARD 1 SYSTEM POWER SUPPLY
No miswires found
CARD 4 EXPANSION POWER SUPPLY
No miswires found
```

IMODE

- help imode

This command allows the user to temporarily place points in install mode. Install mode is similar to disable in that the point will no longer trigger an event (Fire, Trouble, etc.) when it changes state. Individual points (such as M2-5), or groups of points (such as all missing devices) may be added to the install mode list. When a point is added to the install mode list, it is removed from the trouble list.

The following syntax is used to add points to the install mode list:

```
imode [PID | point name | miss*ing devices | open* circuits] [on]
Note: ON is the default.
```

Examples:

- imode 3-8
- imode M2-7
- imode missing devices
- imode open circuits

The following syntax is used to remove points from the install mode list:

```
imode [PID | point name | norm*al | all*] off
```

Examples:

- imode 3-8 off
- imode M2-7 off
- imode normal off
- imode all off

SMPL

- help smpl

This command is used to view or log SMPL equation information.

Valid parameters:

- LOG - enable logging or view logging status at the current port
- NOLOG - disable logging at the current port
- SHOW - show equation status and content

The SMPL LOG command with no parameter will return the current logging status.

The SMPL LOG/NOLOG command accepts one parameter (CHANGE, TRIG, or DEFAULT).

CHANGE - Enable/Disable logging of all changes to equation status.

TRIG - Enable/Disable logging of any equations that have been triggered.

An equation is triggered when there is a change in state to point on the equation input.

DEFAULT - Enable/Disable logging of default program equations. NOLOG DEFAULT will filter default equations from the CHANGE and TRIG logging.

In the example below, logging is enabled for all changes in equation state.

- SMPL LOG CHANGE

The SMPL SHOW command accepts an equation identifier and an optional parameter.

The equation identifier has the form 'Program-Equation' (e.g. 0-3).

A wildcard character may be used for the Program or Equation.

When the wildcard character is used, only the equation status is shown.

The optional TRUE/FALSE parameter may be specified to filter the output.

Examples:

- smpl show 3-9

Equation 3-9 status is FALSE

[INPUT]

STATUS ON

P11 UNACKNOWLEDGED FIRE ALARM EXISTS

AND STATUS ON

L256 BRIGADE CALL ALARM LIST

AND STATUS ON

P512 A ZONE ALARM LED IS FLASHING

[END INPUTS]

[OUTPUTS]

FLASH SLOW

0-5-11 Master's I/O Control LED 11

[END OUTPUTS]

- smpl show *-* true

Equation 0-7 status is TRUE

Equation 0-11 status is TRUE

Equation 0-12 status is TRUE

Equation 0-38 status is TRUE

Equation 0-55 status is TRUE

Equation 0-58 status is TRUE

Equation 0-61 status is TRUE

- smpl log change

- 12:34:55 am MON 01-JAN-07 F3200 GIL ISOLATED

ISOLATE MONITOR ABNORMAL

12:08:38 pm TUE 12-JUN-12 UNACKNOWLEDGED ISOLATE EXISTS

UTILITY POINT ON

12:08:38 pm TUE 12-JUN-12 Equation 0-10 TRUE

12:08:38 pm TUE 12-JUN-12 Equation 0-56 TRUE

12:08:38 pm TUE 12-JUN-12 Equation 3-2 TRUE

12:08:39 pm TUE 12-JUN-12 CITY SUPV/OPT RELAY 2

AUXILIARY RELAY ON

12:34:56 am MON 01-JAN-07 F3200 GIL ISOLATED

ISOLATE MONITOR NORMAL ACKED

12:08:39 pm TUE 12-JUN-12 UNACKNOWLEDGED ISOLATE EXISTS

UTILITY POINT OFF

12:08:39 pm TUE 12-JUN-12 Equation 0-10 FALSE

12:08:39 pm TUE 12-JUN-12 Equation 0-56 FALSE

12:08:39 pm TUE 12-JUN-12 Equation 3-2 FALSE

12:08:40 pm TUE 12-JUN-12 CITY SUPV/OPT RELAY 2

AUXILIARY RELAY OFF

Recommended Capture before Adding Hardware to a 4100ESi Panel

1. List (this captures all abnormal states that exist on the FIP.)
2. REV (captures panel revision details)
3. LT (List Trouble 5 - this captures just troubles)
4. Use SH CARDSTATUS n to get details of card faults. (Not Available on 4100+ but this info can be accessed through the front panel)
5. Type Tlog (you will lose all logs on cold start so get a copy before)

6. Type Alog (you will lose all logs on cold start so get a copy before, as you can see in the example this can reveal any odd behavior the panel has had prior to upgrade)
7. SH CARDS (this gets a complete report of what is installed)
8. SH CARDSTATUS 1 (1 being the PSU, this will give you a record of current draw before upgrade)

1.-Rev

SYS REV: 1.02.03 CFIG FORMAT: 66 JOB: 4100UGIL REV: 127 12-Mar-12 10:17
2.-I

0-7-4	Master Output - City Trouble Relay	City Circuit TBL	ON
AUX4	SYSTEM FAULT AUX4	AUXILIARY POWER	ON
1-12-0	CITY TBL/OPT RELAY 3 AUXILIARY RELAY	ON	
4-0-8	CARD 4, 4120 NETWORK INTERFACE	ON	
1:1	COMMON TROUBLE POINT FOR NODE: 1	NODE MISSING	FLT
6-0-0	CARD 6, RFP CARD ON		
6-0-0	CARD 6, RFP CARD ON		
6-0-0	CARD 6, RFP CARD FLT		
9-0-9	CARD 9, TRANSPONDER INTERFACE	ON	
P16	SMPL PROGRAM 0 - SYSTEM DEFAULT	UTILITY POINTON	
P19	SMPL PROGRAM 3 - USER CUSTOM CONTROL	UTILITY POINT	ON
P23	SMPL PROGRAM 7 - USER CUSTOM CONTROL	UTILITY POINT	ON
P49	SYSTEM AT ACCESS LEVEL 1 OR GREATER	UTILITY POINT	ON
P146	EMPTY AUDIO SERVICE QUEUE	UTILITY POINT	ON
P213	4120 NETWORK CARD CONFIGURED	UTILITY POINT	ON
P243	MODEM DISABLE/ENABLE UTILITY POINT	ON	
P247	AHJ OVERRIDE ACTIVE UTILITY POINT	ON	
P369	BATTERY CHARGER CONTROL	UTILITY POINT	ON
P450	AC IS NOT THE ONLY FAULT	UTILITY POINTON	
P478	INHIBIT DEVICE TROUBLES WHILE DISABLED	UTILITY POINT ON	
P492	ETHERNET SERVICE PORT CONNECTION ACTIVE	UTILITY POINT	ON
P1501	FAN 1 STOP UTILITY POINT	ON	
P1504	FAN 2 STOP UTILITY POINT	ON	
A2	NUMBER OF SYSTEM FAULTS	VALUE = 2	ON
A5	NUMBER OF OLD (UNCLEARED) FAULTS	VALUE = 2	ON
A12	CURRENT ACCESS LEVEL VALUE = 1	ON	
A13	ACCESS LEVEL TIMEOUT VALUE = 600	ON	
A15	SYSTEM RESET WINDOW TIMER SETPOINT	VALUE = 30	ON
A19	FIRE ALARM CLEAR DELAY TIMER SETPOINT	VALUE = 25	ON
A25	FIRE ALARM CUTOUT TIMER SETPOINT	VALUE = 60	ON
A41	WALK TEST ABORT TIMEOUT SETPOINT	VALUE = 28800	ON
A42	WALK TEST REACTIVATE DELAY SETPOINT	VALUE = 60	ON
A43	MONITOR ZONE ENABLE DELAY SETPOINT	VALUE = 60	ON
A44	CODED INPUT TIMEOUT SETPOINT	VALUE = 10	ON
A45	OFF TIME AFTER PNIS (NON-CONT.) CODES	VALUE = 5	ON
A89	PHONE CALLBACK TIMER SETPOINT	VALUE = 10	ON
A90	PHONE TIMEOUT TIMER SETPOINT	VALUE = 10	ON
A107	MASTER MIKE'S PRETONE SETPOINT	VALUE = 5	ON
A109	REMOTE MIKE 1'S PRETONE SETPOINT	VALUE = 5	ON
A111	REMOTE MIKE 2'S PRETONE SETPOINT	VALUE = 5	ON
A121	KEYPAD INACTIVITY TIMEOUT SETPOINT	VALUE = 1200	ON
A125	PRI2 RESET WINDOW TIMER SETPOINT	VALUE = 5	ON
A131	SUPERVISION DELAY SETPOINT CHL1	VALUE = 10	ON
A132	SUPERVISION DELAY SETPOINT CHL2	VALUE = 10	ON
A133	SUPERVISION NOT ACTIVE DELAY SETPOINT	VALUE = 180	ON
A160	REMOTE MIKE 3'S PRETONE SETPOINT	VALUE = 5	ON
A162	REMOTE MIKE 4'S PRETONE SETPOINT	VALUE = 5	ON
A164	REMOTE MIKE 5'S PRETONE SETPOINT	VALUE = 5	ON
A234	SILENCE CHANNEL 1 TIMER	VALUE = 4	ON
A235	SILENCE CHANNEL 2 TIMER	VALUE = 4	ON
A239	LOCAL AUDIO DELAY SETPOINT	VALUE = 0	ON
A240	SILENCE CHANNEL 1 TIMER SETPOINT	VALUE = 3	ON
A241	SILENCE CHANNEL 2 TIMER SETPOINT	VALUE = 3	ON
A243	AC FAILURE DELAY TIMER SETPOINT	VALUE = 0	ON

```
A254      DISABLE IDNET CO ALGORITHMS TMR SETPOINT  VALUE = 28800      ON
A417      CUSTOM CONTROL - TIMER                      VALUE = 60        ON
```

3.-lt

```
1:1      COMMON TROUBLE POINT FOR NODE: 1          NODE MISSING
          FLT
6-0-0      CARD 6, RFP CARD                      FLT
```

4.-sh cardstatus 6

```
CARD 6, RFP CARD
RFP CARD
Fui Unit
UNIT NUMBER: 1 RUI NUMBER: LOCAL
-----
POINT ADDRESS: 6-0-0
CARD MISSING/FAILED          ABNORMAL
POINT ADDRESS: 6-0-1
CORRECT CARD                 NORMAL
POINT ADDRESS: 6-0-2
Configuration Mismatch       NORMAL
POINT ADDRESS: 6-0-3
    GENERAL FAULT            NORMAL
POINT ADDRESS: 6-0-4
-
```

5.- type tlog

Service Port

Page 1

Report 2 : Fault Historical Log 12:15:14 pm TUE 12-JUN-12

```
ENTRY 1  8:43:00 pm SUN 10-JUN-12 HISTORICAL LOG CLEARED AT CRT PORT 4
ENTRY 2  8:49:48 pm SUN 10-JUN-12 LEVEL=4 AT CRT PORT 4 BY OPERATOR 4
ENTRY 3  8:49:48 pm SUN 10-JUN-12 Simplex Service Mode
          System being serviced, FAULT
ENTRY 4  8:56:43 pm SUN 10-JUN-12 1-2 MULTISENSOR PHOTO
          FIRE MONITOR ZONE          HEAD MISSING
ENTRY 5  8:56:47 pm SUN 10-JUN-12 FAULTS ACKNOWLEDGED AT MAIN PANEL
ENTRY 6  7:51:28 pm SAT 31-MAR-07 F3200 GIL ISOLATED
          ISOLATE MONITOR          ABNORMAL
ENTRY 7  9:05:55 pm SUN 10-JUN-12 COMMON TROUBLE POINT FOR NODE: 4
          NODE MISSING              FAULT
ENTRY 8  9:06:20 pm SUN 10-JUN-12 FAULTS ACKNOWLEDGED AT MAIN PANEL
ENTRY 9  9:06:20 pm SUN 10-JUN-12 EXTERNAL ACK REQUESTS SENT AT MAIN PANEL
ENTRY 10 9:06:37 pm SUN 10-JUN-12 WARM START
          FAULT POINT             ABNORMAL
ENTRY 11 9:07:14 pm SUN 10-JUN-12 CARD 6, RFP CARD
          CARD MISSING/FAILED      ABNORMAL
Press RETURN for next Screen OR CTRL-X to abort
REPORT HAS BEEN TERMINATED
-
```

6. type alog

Service Port

Page 1

Report 1 : Alarm Historical Log

12:15:27 pm TUE 12-JUN-12

ENTRY 1 ERROR: 64 Watchdog Hit - PANEL 8F 00-FF-DC PD = 28B6
PC = 101DAC
B6
ENTRY 2 ERROR: 0 UNEXPECTED CRASH 80 00-FF-00 PD = 28B6
PC = 100838
94
ENTRY 3 4:52:17 pm THU 26-APR-12 SYSTEM RESET REQUESTED AT MAIN PANEL
ENTRY 4 ERROR: 64 Watchdog Hit - PANEL 8F 00-FF-DC PD = 28B6
PC = 101DAC
B6
ENTRY 5 ERROR: 0 UNEXPECTED CRASH 80 00-FF-00 PD = 28B6
PC = 100838
94
ENTRY 6 4:53:29 pm THU 17-MAY-12 ALARM SILENCE REQUESTED AT CRT PORT 2
ENTRY 7 4:53:35 pm THU 17-MAY-12 SYSTEM RESET REQUESTED AT CRT PORT 2
ENTRY 8 4:28:17 pm TUE 22-MAY-12 SYSTEM RESET REQUESTED AT MAIN PANEL
ENTRY 9 6:49:01 pm SAT 24-MAR-07 F3200 GIL ALARM
FIRE MONITOR ZONE DATA NOT AVAILABLE
ENTRY 10 10:01:51 pm MON 26-MAR-07 F3200 GIL ALARM
FIRE MONITOR ZONE FIRE ALARM
ENTRY 11 9:00:08 pm SUN 10-JUN-12 1-8 BREAK GLASS ALARM
PULL STATION FIRE ALARM
ENTRY 12 9:00:15 pm SUN 10-JUN-12 FIRE ALARMS ACKNOWLEDGED AT MAIN PANEL
ENTRY 13 9:01:02 pm SUN 10-JUN-12 SYSTEM RESET REQUESTED AT MAIN PANEL
ENTRY 14 9:04:59 pm SUN 10-JUN-12 SYSTEM RESET REQUESTED AT MAIN PANEL
ALARM HISTORICAL LOG REPORT COMPLETED

Press RETURN for next Screen OR CTRL-X to abort

-

7.- sh cards

CARD 1 SYSTEM POWER SUPPLY
CARD 2 IDNET CARD (250 POINTS)
CARD 3 64 LED / 64 SWITCH CONTROLLER CARD
CARD 4 NETWORK INTERFACE CARD
CARD 5 2120/RS232 INTERFACE CARD
CARD 6 RFP CARD
CARD 7 2120/RS232 INTERFACE CARD
CARD 9 TRANSPONDER INTERFACE
CARD 12 BUILDING NETWORK INTERFACE CARD
CARD 128 DIGITAL PSEUDO CARD
CARD 129 DIGITAL PSEUDO CARD
CARD 130 DIGITAL PSEUDO CARD
CARD 131 DIGITAL PSEUDO CARD
CARD 132 DIGITAL PSEUDO CARD
CARD 133 DIGITAL PSEUDO CARD
CARD 134 DIGITAL PSEUDO CARD
CARD 135 DIGITAL PSEUDO CARD
CARD 144 ANALOG PSEUDO CARD
CARD 145 ANALOG PSEUDO CARD
CARD 146 ANALOG PSEUDO CARD
CARD 160 POINT LISTS CARD
CARD 161 POINT LISTS CARD
CARD 162 POINT LISTS CARD
CARD 175 TRUEALERT ZONE

8.- sh cardstatus 1

CARD 1, SYSTEM POWER SUPPLY
SYSTEM POWER SUPPLY

UNIT NUMBER: 0 RUI NUMBER: LOCAL

POINT ADDRESS: 1-0-0 NORMAL
CARD INSERTED NORMAL
POINT ADDRESS: 1-0-1 NORMAL
CORRECT CARD NORMAL
POINT ADDRESS: 1-0-2
A/C FAILURE NORMAL
POINT ADDRESS: 1-0-3
POSITIVE EARTH GROUND NORMAL
POINT ADDRESS: 1-0-4
NEGATIVE EARTH GROUND NORMAL
POINT ADDRESS: 1-0-5
CITY CIRCUIT 2 NORMAL
POINT ADDRESS: 1-0-6
LOW BATTERY CUTOUT NORMAL
POINT ADDRESS: 1-0-7
CITY CIRCUIT 1 NORMAL
POINT ADDRESS: 1-0-8
LOW BATTERY STATUS NORMAL
POINT ADDRESS: 1-0-9
DEPLETED/MISSING BATTERY NORMAL
POINT ADDRESS: 1-0-10
BATTERY CHARGER NORMAL
POINT ADDRESS: 1-0-11
EXPANSION SIGNAL POWER NORMAL
POINT ADDRESS: 1-0-12
POWER SUPPLY OVERCURRENT NORMAL
POINT ADDRESS: 1-0-13
BROADCAST FAILURE NORMAL
POINT ADDRESS: 1-0-14
NAC MISWIRE NORMAL
POINT ADDRESS: 1-0-15
HARDWARE CONFIGURATION NORMAL
POINT ADDRESS: 1-0-16
INCOMPATIBLE SLAVE REVISION NORMAL
POINT ADDRESS: 1-0-17
System Voltage: 28.77 Volts
POINT ADDRESS: 1-0-18
Power Supply Current: 1.20 Amps
POINT ADDRESS: 1-0-19
Battery Voltage: 27.29 Volts
POINT ADDRESS: 1-0-20
Battery Charger Voltage: 27.28 Volts
POINT ADDRESS: 1-0-21
Battery Charger Current: 0.00 Amps

Printing or uploading a report using the Ethernet Port

The IP File Transfer Utility must be used on a PC for uploading reports. See Starting the IP File Transfer Utility for information about using this utility.

Uploading a file or a report with the IP File Transfer utility

1. Click the **Upload/Reports** tab.
2. Select the type of file you want to upload by clicking on the radio button next to the item.

3. Choose one of the following:

- Panel Configuration/ Job

Job Associated with CFIG (SDB4100U): The file that is uploaded is an image of the original programmer job file, which does not need an “unbuild.” The file is uploaded to its default location (this usually defaults to C:\4100UJOBS\JobName\Jobname . SDB4100U).

- Panel Logs

Upload either the Alarm Log or the Trouble (Fault) Log from the 4100ESi to the PC.

- Reports

- TrueAlert Report: provides information such as Point ID, Device Type and Candela rating for all TrueAlert devices.

- TrueAlarm Status Report: A report providing the following information for each detector:

- Device Number

- Custom Label

- Current Sensitivity of the Point

- Point Status: Normal, Trouble, Alarm

- Almost Dirty Status: Points that are almost dirty have an asterisk in this field to denote this status.

- TrueAlarm Service Report: lists the following information for each detector point:

- Device Number

- Custom Label

- Alarm Level (sensitivity level of the device)

- Average Value

- Current Value

- Percentage of Alarm: Shows the current value for the sensor. Value is shown as a percentage (alarm). For example, if the value shown is 9%, it means that the sensor is currently at 9% of the value required to trigger an alarm.

- Peak Value: Shows the highest value that the sensor has reached. Value is shown as a percentage (alarm). For example, if the value shown is 9%, it means that the peak value experienced by the sensor was 9% of the value required to trigger an alarm.

- Current State: Possible values include Normal, Trouble, Dirty, Excessively Dirty, and Almost Dirty.

- TrueAlarm CO Service Report: This report provides the following information regarding the CO detector points:

Device Number (on the network)

Custom Label (custom description of device)

Current Device Value (in PPM)

End-of-Life Date

Device Status (Normal, Trouble)

TrueNAC Reports are not relevant in Australian 4100ESi.

4. Use the File name box to select the directory on your PC where the report file will be saved.
5. Click **Upload** to start the upload.

This tab also has options for uploading all 4100ESi reports. The reports are uploaded to the “reports” subdirectory of the current job directory. The report file is given a descriptive name, appended with the current date, for example, `AlarmLog_2010_3_11.txt`.

Chapter 8. Software

General

Most of the internal system modules in the 4100ESi panel are controlled by software. Many of these modules have the ability for this software to be updated in an installed system. This can be done to gain access to new facilities or to address problems that have been discovered.

This chapter describes the tools and procedures that are necessary to do these updates.

Software updates

Equipment needed

For everything except the InfoAlarm+, the following items are required for updating the software installed in a slave card or ES master:

- Personal Computer running Microsoft Windows, with an unused Ethernet LAN port. The PC may be connected to the company LAN through wireless or another Ethernet port, without any problems.
- An appropriate version of Simplex ES Programmer installed on the PC.
- A Simplex programming key (Part Number 741-727), if the panel configuration must be changed. This is not required for file download to the panel or command line operation.
- The necessary .bin binary or .txt configuration files for download. See the **Software files** section for details.

The InfoAlarm+ is programmed through a different connection and separate software is required for that. This is described in the **InfoAlarm+ Field Updater** section.

Installing the PC download software

1. Install the ES Programmer package on the PC if it is not already installed. Contact Johnson Controls to obtain a current version, if necessary.
2. The ES Programmer can be used to inspect or change a configuration only if there is a Simplex programming dongle connected to the PC. If there is no programming dongle available, contact Johnson Controls to arrange for one to be supplied.
3. A programming dongle is NOT required to use the IP File Transfer utility associated with the ES Programmer if this is launched from its own shortcut in the Windows Start directory.

IP File Transfer Utility

The ES IP file transfer operates exclusively over the Ethernet service port of the 4100ESi panel.

The IP File Transfer works in three stages:

1. The file(s) are downloaded from the PC to the Compact Flash module on the NXP CPU board in the panel.
2. The panel is restarted, and the CPU bootloader copies the changed files into the operating flash memory in the master (called activation).

Note:

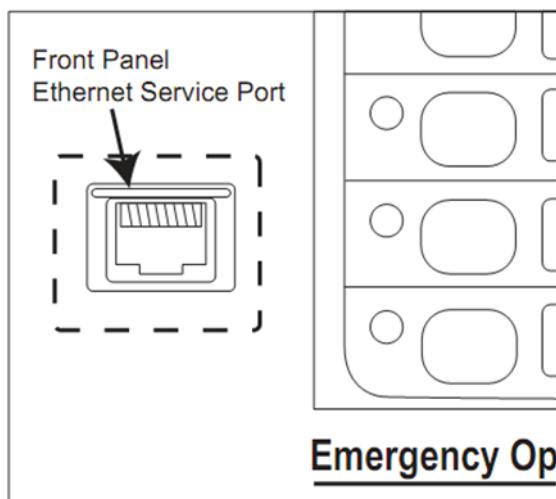
The host PC may report temporary problems with the Ethernet connection while the panel is restarting – this is normal and should resolve itself.

3. New Slave Exec files are downloaded from the compact flash by the master and transferred over the panel's internal RUI bus to the slave card when the system is running. This is a relatively slow process.

Connection to the 4100ESi

Connect the PC's Ethernet port to the front panel service port connector as seen in [Figure 16](#) with a standard straight Ethernet cable. If this front panel connection is not available, you can plug directly into the CPU Card connector J1 (bottom edge of the CPU).

[Figure 16: Connecting to 4100ESi Service Port](#)



Generally, the PC should be connected to the panel when the panel is started, so that the IP communications layer can initialise properly. The IP File Transfer utility can be started before or after the connection is made.

Starting the IP File Transfer Utility

The ES Panel IP File Transfer utility can be started from within the ES Panel Programmer or in the toolbar of the programmer window.

From the Windows Start Menu, select the Simplex programs folder. Select the ES programmer folder, and within this folder, select the version of the ES Programmer that matches the system you are working with. A list of programs appears. Click on IP File Transfer.

From within the ES Programmer, click on the Transfer icon at top of the Programmer window . This will open the associated IP File Transfer utility for that programmer.

If you are prompted for a panel to connect to, select the local panel (highlighted in bold text).

Checking the Ethernet setting on the PC

By default, the IP File Transfer window opens in the Download tab.

If the Ethernet connection to the panel is in place and initialised correctly, the Panel connection will show Local(192.168.100.1) at the top of the window.

If not, check the status of the PC's Ethernet port in Windows using Network Properties, or the **ipconfig** utility at a command prompt as shown below. It should have an IP address in the range 192.168.100.x.

```
C:\ >ipconfig
Windows IP Configuration
..other Ethernet adapter connections..
Ethernet adapter Local Area Connection 4:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . : 192.168.100.53
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :
```

If the IP address is not in this range, renew the IP address using the **ipconfig /renew** command:

```
C:\>ipconfig /renew
Windows IP Configuration
..other Ethernet adapter connections..
Ethernet adapter Local Area Connection 4:
    Connection-specific DNS Suffix  . :
    IP Address. . . . . : 192.168.100.53
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :
```

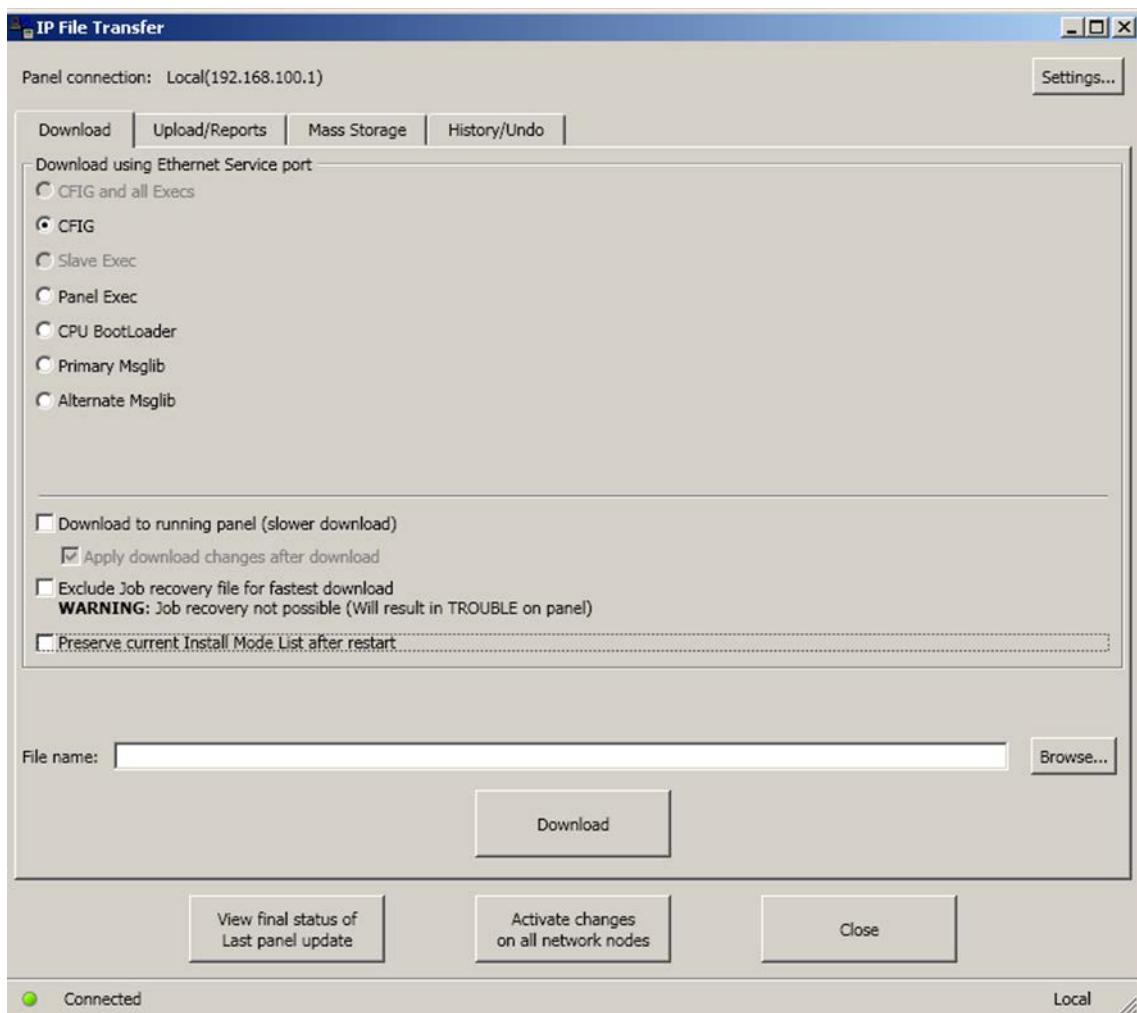
If the PC is connected to the panel after the panel is running, this is usually not a problem.

As the PC is connected and disconnected from 4100ESi panels during the progress of testing, Windows may become confused as to the actual state of the Ethernet connection. It may be necessary to use the **ipconfig /renew** command in Windows from time to time to forcibly restore this state.

Download tab options

By default the IP File Transfer window will open to the Download tab. This tab presents a range of options for the type of file you want to download to the connected panel:

Figure 17: Downloading a software feature



To download a software feature, select the type of file. The options include:

- CFIG – this is the built site-specific job configuration file, set up using the ES Programmer.
- Slave Exec – slave exec files can be downloaded to specific intelligent slave modules. Occasionally changes to the functionality of a slave module may require you to download a new slave exec file. (For example, a change to the *MXLoop Card* may be necessary to provide support for the new *MX* device types.) Some of the following Australian 4100ESi modules are some of the “intelligent” slave devices that can be updated with a new slave exec:
 - Australian Power Supply (APS/LPS)
 - *MXLoop Card*
 - IDNet Module (IDNET2AU or IDNETAU or IDNet+AU)
 - Transponder Interface Card (TIC)
- Panel Exec (ES) – the Panel Exec file is the “operating system” that runs on the 4100ESi CPU. Occasionally changes to the functionality of the operating system may require that a new Panel Exec file be downloaded.

- CPU Bootloader (CPUBoot) – a special CPU exec responsible for starting the panel operation at power-on or restart.
- CFIG and all Execs – is a combination of CFIG, Panel, and Slave Exec downloads as described above, for completely updating a 4100ESi panel.
- Primary Msglib (Msglib) – Not required with 4100ESi.
- Alternate Msglib (Msglib) – Not required with 4100ESi.

Note:

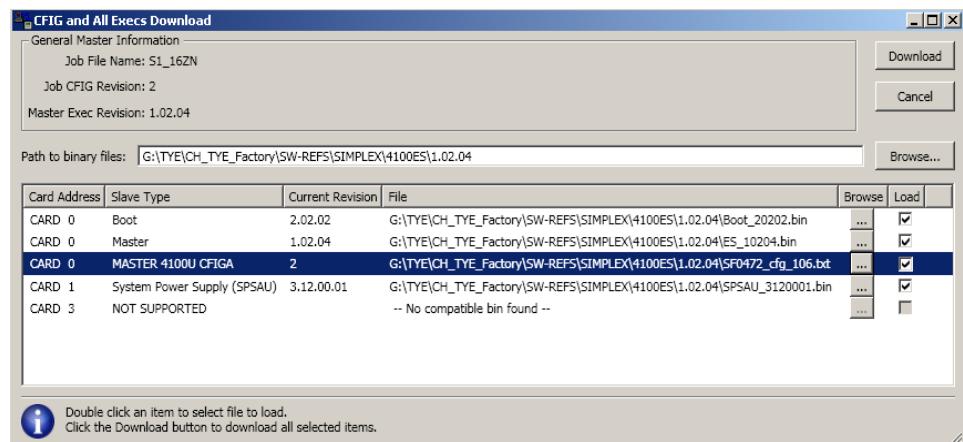
A 4100ESi will have the Panel Exec installed at the factory. To make a new system operational, you will only need to load the site-specific CFIG.

Loading Configuration and All Execs

This is the most convenient option for updating a system needing a number of new execs. It allows a bulk download of all the useful files, and the download can proceed without further attention.

1. Select the CFIG and all Execs option on the **Download** tab.
2. Click **Browse** and select the required CFIG file (.txt) in the file window. Click **Open**.
3. Click **Download** to go to the next stage of file selection.
4. The program presents a list of items (configuration file and slave and master exec files) that can be downloaded to the connected panel.
5. Click **Browse**. Use the **Browse for Folder** window to locate the folder containing the CPU/Slave Bin files that you can download. This is usually located under C:\4100UBIN
6. The File Transfer program should automatically identify which binary files can be matched with the hardware in the connected panel.
7. You can tick the boxes for the items you want to download if you want to be selective about which items will be updated. See [Figure 18](#).

Figure 18: Selecting Items for Download



Note:

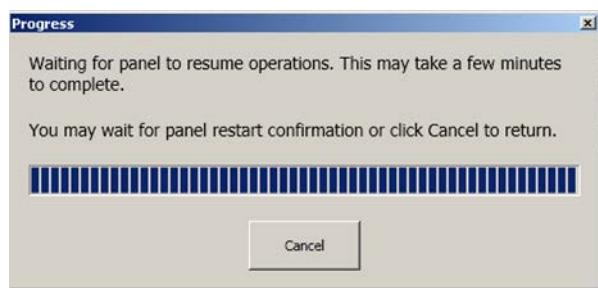
This example includes a 4100-1288 display controller slave (Card 3) which cannot be updated by a file download, hence it is marked as "not supported". This is normal.

8. Click **Download**.

There is no user intervention for the subsequent stages. The following actions will occur:

- During the download to the panel's Compact Flash, you will see a progress bar showing overall progress of download.
- When the download is complete, the panel will activate the downloaded files one by one. This may require (automatic) panel restarts.
- During a restart, the dialogue box in Figure 19 appears, and the Ethernet port connected to the panel may report loss of signal. This is normal.

Figure 19: Progress of download



The progress of activation is shown in the Activation Status screen.

Completed files are shown green, and the current file being activated is shown blue.

This stage does not require any user action.

When all the new files are activated, click Close to return to the main Download tab.

Loading a new configuration

If the panel exec version has been updated, the panel may be in an unstable state with repeated restarts due to incompatible configuration version. Loading a compatible configuration will resolve this, and make subsequent updates proceed more easily.

1. Select CFG as the download type.
2. Click **Browse**, select the appropriate .txt file in the File window, and click **Open**.
3. Click **Download** to start the transfer.

The download and activation process follows the same steps as shown in the previous sections.

Loading CPU Bootloader

Occasionally, the CPU bootloader must be updated separately.

1. In the **Download** tab, select the **CPU BootLoader** option.
2. Click **Browse**, select the corresponding .bin file containing the bootloader, and click **Open**.

3. Click **Download** to start the process.

When the file is downloaded to the panel (compact flash), and the CPU has restarted, there is an activation phase where the file is transferred to the working memory. On completion, the Current Status in Activation Status window displays as complete.

Loading Panel Exec

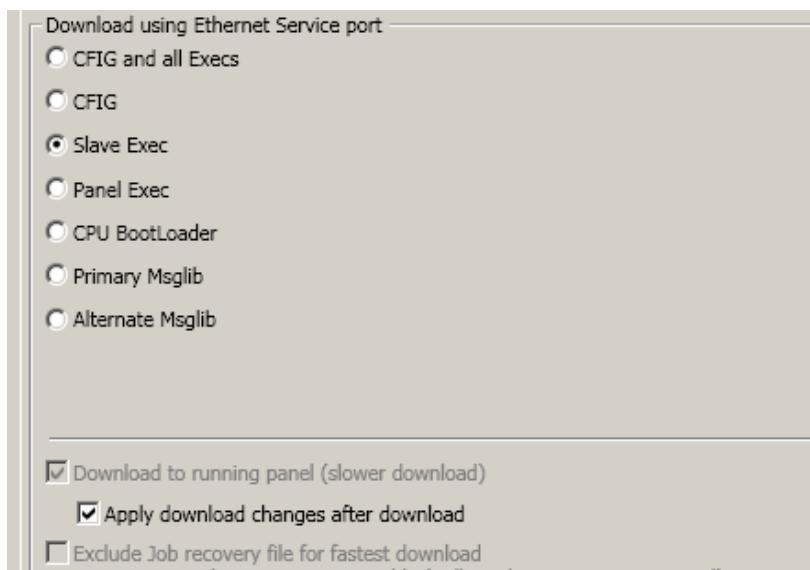
1. In the **Download** tab, select the **Panel Exec (CPU Exec)** option.
2. Click **Browse**, select the corresponding .bin file containing the panel exec, and click **Open**.
3. Click **Download** to start the process.

The progress and activation screens are similar to those in previous sections.

Loading Slave Card Software

This may be required for specific Australian versions of 4100ESi slave firmware, especially the APS or *MXLoop* Card.

Figure 20: Loading the Slave Card Software



1. Select **Download to running panel** otherwise the Slave Exec option is not available.
2. Click **Browse**, select the appropriate .bin file or files for the slave cards in the File window, and click **Open**.

Note:

Multiple slave cards of the same type or different types can be updated at a time, if required.

3. Click **Download** to start the transfer.

The program checks and presents a list of cards in the connected panel that could be updated by the .bin files selected in the previous step.

4. Tick the check boxes for the slave card(s) from the list that should be updated, and click **Download** to start.

After the download to the panel (to the compact flash), the Activation Status window shows the update progress for each of the slave cards selected for update.

This is usually a slower process than updates to the CPU card.

When the slave execs are downloaded and activation is started, the status window can be closed, and downloads to another panel started, if needed.

The activation status can be rechecked by reconnecting to this panel and clicking **View Final Status of Last Panel Update** on the main File Transfer window.

Software files

The exec files for the 4100ESi are distributed as a single Windows PC program with a file name like **SFxxxx_ALLBINAU_1.02.03.exe**.

The SFxxxx part is the local part number for identification, ALLBINAU shows that it has the Australian-specific binaries, and 1.02.03 would refer to release version 1.02.03.

When run, this program will create a directory on the local PC named **C:\4100UBIN\Rev1.02.03AU**, and copy all the relevant system files into it.

In the newly created directory, the system files will have names similar to those in [Table 20](#).

Table 20. System File

System File name	What it is
CpuBoot_x.xx.xx.bin	4100ESi CPU bootloader
ES_xxxxx.bin	4100ESi CPU exec
TIC_xxx.bin	Transponder Interface Card (TIC) slave exec
BNIC_x.xx.xx.bin	Building Network Interface Card (BNIC) slave exec
EBOOT_x.xx.xx.bin	BNIC boot loader
EOS_x.xx.xx.bin	BNIC operating system
MXDLoopAU_xxxx.bin	MXDigital Loop Card slave exec
APS_xxxx.bin	APS/LPS power supply slave exec
XSIG_xxxx.bin	Expansion Signal Card slave exec
IDNet2AU_xxxx.bin	IDNet2 AU slave exec
SPSAU_xxxxx.bin	SPS AU slave exec (only useful in upgraded systems)
IDNETAU_xxxxx.bin	IDNet AU slave exec (only useful in upgraded systems)
IDNETPLUSAU_xxxxx.bin	IDNet+ AU slave exec (only useful in upgraded systems)
FUI_xxxx.bin	US InfoAlarm slave exec (not for 4100ESi)
FUIBoot_xxxx.bin	US InfoAlarm bootloader (not for 4100ESi)

Note:

The version numbers of different system files will differ. The overall release version number is determined by the ES_xxxx.bin file, for example, ES_10203 for the 1.02.03 system version.

The IP File Transfer utility will default to searching the C:\4100UBIN directories for binary files.

Mass Storage tab

Using this tab, you can copy files between the panel's Compact Flash memory card and the PC's disc. These files are quite distinct from the files used by the 4100ESi for normal operation.

Using Mass Storage

1. Click the **Mass Storage** tab.
 - The upper portion of the window shows files in the panel's Compact Flash.
 - The lower portion of the window shows files on the PC.
2. Click **Copy FROM PC** to copy a selected file from the PC to the panel, or click **Copy TO PC** to copy a selected file from the panel to the PC.

Making a copy of the entire Compact Flash (including 4100ESi system files):

- Click **Create Image of Compact Flash** to copy the entire content of the Compact Flash to a .zip file on the PC.

Restoring a previously saved Compact Flash contents to the 4100ESi panel:

- Click the **Restore Image to Compact Flash** tab, and select the Compact Flash image file you want to restore to the 4100ESi.

History/Undo tab

When new files are downloaded to the 4100ESi, a copy or snapshot of the panel state is stored in the Compact Flash module – within a limit of 1 GB available memory. You can view a list of these historical states in the History Undo tab.

By selecting a snapshot from the list, you can see an overview of what differences there may be between an historical state and the current system state (changes to Slave Execs, Panel Execs, and CFIG).

Comparing States

1. Select the revision you want to restore from the top window of the **History/Undo** tab.
2. Click the revision of the job file you want to compare with the active revision. If you want to use another revision instead of the active revision as the basis for comparison, select this revision and click **Select Compare Base File**.
3. The bottom half of the screen highlights the differences between the two job revisions.
4. Verify what has changed between revisions at a high level.

Restoring an earlier revision of the job file to the panel

1. Select the revision you want to restore from the top window of the **History/Undo** tab. You can be selective about which parts of the revision that you want to have restored. Uncheck the items that you do not want to be restored.
2. Click **Restore Panel to Selected Setup**.

Uploading a job to your PC and performing a full compare

1. Click **Upload Jobs and Full Compare**.
2. This uploads the file to the PC and launches the database compare tool that comes with the ES Programmer.

InfoAlarm+ Field Updater

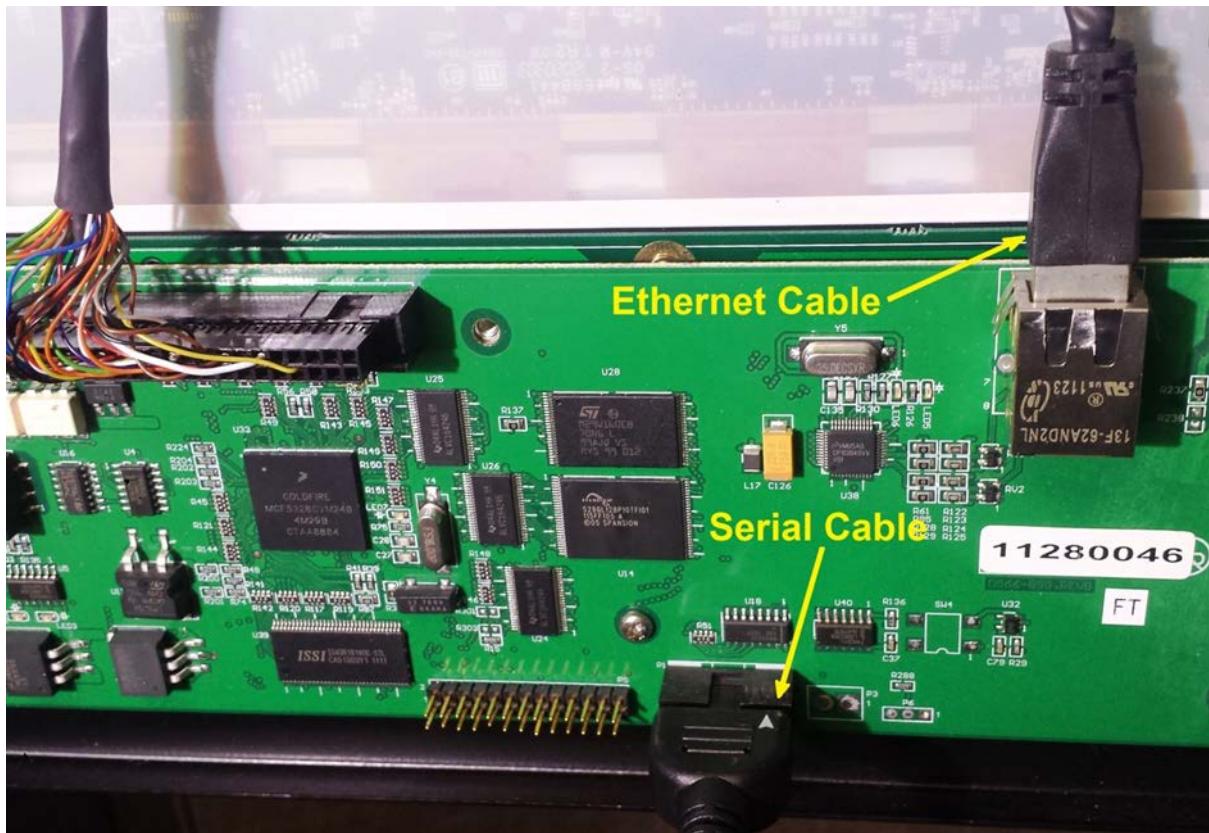
The InfoAlarm+ software consists of three parts: the boot loader, the Linux kernel, and the root file system in which the InfoAlarm+ software resides. This guide covers how to upgrade the Linux kernel and the root file system, as the boot loader cannot be changed in the field.

Tools

- 1 x 733-994 Simplex Serial Download Cable
- 1 x Ethernet CAT5 Cable (straight or change-over)
- 1 x Upgrade Tool installed on a Windows PC (Win 7, 8 or 10) with 1 Serial COM port (USB, built-in, or through a port Extender) and an Ethernet port.

InfoAlarm+ Connection

Figure 21: InfoAlarm+Connection



1. Open the 7U door containing the InfoAlarm+ colour display.
2. Connect the serial download cable to the PC's COM port and to the P1 10-way connector on the InfoAlarm+ Controller Board (see Figure 21).

3. Connect the Ethernet cable to the PC's Ethernet port and J3 Ethernet port on the InfoAlarm+ Controller Board (see [Figure 21](#)).

PC Setup

1. Obtain the InfoAlarm+ Upgrade Tool installation package. This is a single executable file that has a name such as SF0498_IAPlusUpgradeInstaller_x.x.exe (where x.x is the version number). This software package is available from the Johnson Controls Fireplace website or from your Simplex dealer.
2. Run the IAPlusUpgradeInstaller_x.x.exe. A welcome window will display.
3. Click **Next**.
4. Select the **Create a desktop icon** option if you want a shortcut on desktop.

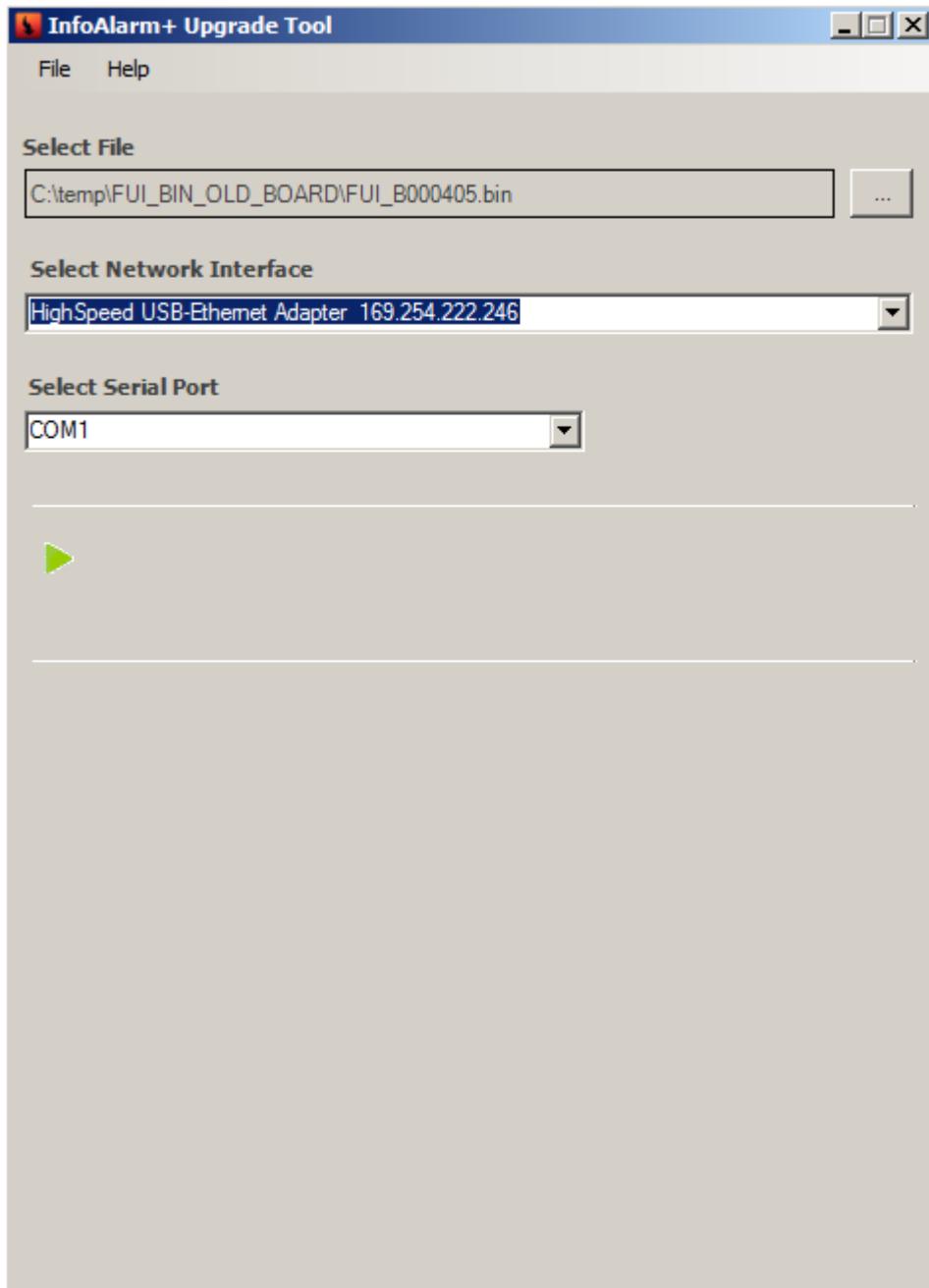
The InfoAlarm+ Upgrade Tool icon will show on the Start Menu in the Simplex folder if the installation is successful.

The InfoAlarm+ image file (FUI_xxxx.bin) will also be copied to the same folder as the application.

Upgrading the Software

Run the Upgrade Tool. The application will then launch.

Figure 22: InfoAlarm+Upgrade Tool



The provided image file (`FUI_B000405.bin` in Figure 22) will be selected automatically. This file contains both the Linux kernel and the Root file system. Click the button to open up a file selection window to allow you to select a different image file if this is necessary.

5. Make the following checks:

- The Network Interface selector box is set to the network interface that is connected to the InfoAlarm+. If there is only Ethernet interface on the PC, this will be the one. Ensure that the selection is not set to Wireless Adapter.
- The COM port selector box is set to the serial interface that is connected to the InfoAlarm+.

If the Ethernet Controller or correct COM port is not shown, close the Updater app, plug in the Ethernet cable to the InfoAlarm or USB serial adapter (if one is being used), and run the Updater again.

Note:

If the Ethernet connection is not made to the InfoAlarm+ correctly, or the InfoAlarm+ is not powered up, the Ethernet Controller may not display in the Network selector box.

6. Click the Start Control (green arrow) to begin the download process.

The Updater will complete the following actions:

- Check that the contents of the new firmware file are correct.
- Check the serial connection to the InfoAlarm+. An error will be shown in the log window if the updater cannot communicate with the InfoAlarm+.
- Send a command to restart the InfoAlarm+ (the screen will go blank and show the boot loader details, and the buzzer will turn on).

The update process should then proceed automatically with the status shown in the Updater window and in the log window.

The update process can be cancelled by clicking the Stop red arrow which appears.

After approximately six minutes the process will complete and the InfoAlarm+ will restart with the new firmware version.

7. Check the new version is shown on the Startup screen.
8. Calibrate the touchscreen. Press the bottom of the 10 grey buttons to the right edge of the touch screen. The touchscreen will show a “+” in the top left corner of the screen. Touch the centre of this cross. The cross will move clockwise around the other corners of the screen; for each corner touch the centre of the cross. When this is done, touchscreen will work correctly with the 4100ESi display. The screen calibration can be repeated if a mistake is made; press the bottom grey button to restart the procedure.

Note:

The InfoAlarm+ address will be set to 3 by default after the software upgrade. If this address does not match the configuration, use the keypad to enter the correct InfoAlarm+ address.

After a software update, the InfoAlarm+ will have lost any internal reference files for points and zones downloaded from the ES master. These will be reloaded from the ES master automatically, which may take several minutes. When these files are reloaded, the InfoAlarm+ will restart and resume normal operation.

Appendix A Checking the system wiring

This appendix contains instructions on how to use a volt/ohm meter to check the field wiring to the 4100ESi.

Using the Volt/Ohm Meter

When using the volt/ohm meter to check each circuit, ensure that :

- power is not applied to the 4100ESi fire alarm panel and that all internal panel wiring is properly connected, including terminal blocks and LED/switch module ribbon cables.
- the earth stud is used in the control panel as the earth connection for all measurements to ground.
- the wires for each circuit are disconnected from the 4100ESi terminals before testing it.

Note:

Measuring resistances between 4100ESi terminals or to ground will give meaningless results.

Procedure

1. At the 4100ESi panel, disconnect the wires for each circuit from the terminals before testing it. If it is a Class A (loop) type of circuit, (for example, an *MX*loop), ensure that both ends of the loop are disconnected from the 4100ESi.
2. Check each circuit for extraneous voltage by setting the volt/ohm meter to a 300VAC range. Place the meter probes so that the black probe is on the “-” wire and the red probe is on the “+” wire. Meter readings must show less than 1V.
3. Set the volt/ohm meter to a 60VDC range and repeat step 2. The meter must read less than 0.5V.
4. Set the volt/ohm meter to OHMS and place the meter probes as described in step 2. Check the circuits using the resistance measurements in Table D-1. Locate and correct any abnormal conditions at this time.

Note:

If the reading indicates an open circuit in a detector circuit, make sure the smoke detector heads are properly mounted and seated. The circuit may also be open if smoke detector power is not present, and if separately powered 4-wire devices are used.

5. Repeat steps 1-4 for all field wiring, to verify that each circuit is free of grounds and extraneous voltages.

Meter Readings

Table 21. Meter Readings

Circuit Type	Meter Reading
Class B (spur) Detector Circuit	
From zone + to zone - (each zone).	3.3kΩ (EOLR).
From zone + to ground.	Open circuit.
From zone - to ground.	Open circuit.
Class B (spur) Notification Appliance Circuit (each signal circuit)	
From + to ground.	Open circuit.
From - to ground.	Open circuit.
Resistance across circuit:	
· In one direction.	10kΩ (EOLR).
· In the opposite direction.	Low resistance (Load).
Class A (loop) Notification Appliance Circuit (each signal circuit)	
From + to ground.	Open circuit.
From - to ground.	Open circuit.
From + OUT to + IN.	Less than 50Ω.
From - OUT to - IN.	Less than 50Ω.
Resistance across circuit:	
In one direction.	Open circuit.
In opposite direction.	Low resistance (Load).
Shielding	
Shield to ground.	Open circuit.
Shield to -.	Open circuit.
Shield to +.	Open circuit.
MAPNET/IDNet Loops	
From MX/IDNet/MAPNET + to ground.	Open circuit.
From MX/IDNet/MAPNET - to ground.	Open circuit.
Note: Measuring from MAPNET/IDNet B+ to A+, or B- to A- reads as an open circuit due to the channel isolators in the loop.	
MXLoops	
From MX+ one end to MX+ other end of the loop.	Less than 75Ω.
From MX- one end to MX- other end of the loop.	Open circuit, loop isolators are open.
From MX+ to MX- one end of the loop.	Open circuit.
From MX+ to MX- other end of the loop.	Open circuit.

Appendix B PSU

Power supply and battery capacity calculations

Power Supply

Part of the system design includes calculating that the quiescent load and the alarm load are each less than the rating of the power supply.

Note:

The quiescent load includes devices such as door holders that are normally energized, but are switched off during alarm.

Each APS/LPS can provide 7A of current spread across all system loads. This leaves a reserve to meet the battery charging requirements of 3.5A. Refer to AS 1670.1:2018 Section 3.15.4 for a definition of the loads to be calculated.

Battery Capacity

Battery capacity requirements are specified in AS 1670.1:2018 Section 3.15.6.

Calculate the quiescent load (I_q) and alarm load (I_a) from the currents listed in the specifications for each of the modules and equipment used in the panel and system. Follow the example in AS 1670.1:2018 Appendix C.

Note:

The system current for both quiescent and alarm conditions can be viewed on the touchscreen by use of the System Current value listed as part of the Card Status for each power supply (add up each power supply current).

Appendix C Ordering codes

Spare part order codes

Table 22. Spare Part Order Codes

Possible markings on the part	Description	Order code for replacement spare part
CPU Card and Motherboard		
0566719 578-643	4100ES NXP CPU Upgrade Kit.	4100-7158K
566-227	4100ES/4100U CPU Motherboard only.	742-516
Front display doors and display modules		
ME0510	INFOALARM+ 7U Door, AU Spare.	4100-ME0510K
None	7U ZONE LED Door Empty Spare.	4100-KT0549K
4100-1288 566-060 741-206	64/64 LED/Switch Controller and mounting frame (1st controller in a bay).	4100-1288
566-060 741-206	64/64 LED/Switch Controller (2nd controller in a bay).	4100-1289
4100-1277 742-983	8 Red and 8 Yellow LED Module.	4100-1277
4100-1280 742-509	8 Pushbutton 8 Red LED Module.	4100-1280
4100-1284 742-407	8/16 Push Button/Red-Green LED Module.	4100-1284
4100-1282 742-408	8/16 Push Button/Red-Yellow LED Module.	4100-1282
4100-1281 742-508	8 Pushbutton 8 Yellow LED Module.	4100-1281
1976-149 PA1029	4 x AS1668 Control Module.	4100-ME0456
4100-1279	Single Blank Display Cover.	4100-1279

742-519	(4100ES or 4100U).	
4100-1287AU	24 Switch/24 LED AS 1668 Module.	4100-1287AU
Internal slave modules		
4100-6077	MXDigital Loop Card.	4100-6077AU
4100-6077LIM	MXDigital Loop Card with integral loop isolators.	4100-6077LIM
562-789	4100 24 Point Graphic I/O PCB with standard motherboard.	4100-0302K
562-789	4100 24 Point Graphic I/O PCB with relay motherboard.	4100-3024K
566-403	4100 8 point Aux Relay PCB (PDI/flat).	4100-3206
566-401	4100 4 point Aux Relay PCB (PDI/flat).	4100-3204
565-226	4100 8 Zone Monitor / Security PCB (5004 Card).	4100-5004K
565-452	4100 6 Circuit Signal PCB.	4100-4321K
565-453	4100 6 Circuit Signal PCB-current model.	4100-4321K
565-217	4100 RUI PCB.	4100-0304K
565-415	4100 RS232 Modem Ready PCB.	4100-6046
565-744, 4100-6046V	4100 VESDA High Level Interface Card.	4100-6046V
566-035	4100ES Basic TIC Module.	4100-0620
566-044 741-754 742-146 SF0373	IDNet Module for PDI bus (250 points)- Australian Software.	4100-3101AU obsolete
566-675 742-146	IDNet+ Module for PDI bus (4 loops, 246 points) - Australian Software.	4100-3107AU obsolete
None	IDNet2 Module for PDI bus (2 loops 246 points) - Australian Software.	4100-3109AU
None	IDNet2 Module for PDI bus (4 loops 246 points) - Australian Software.	4100-3111AU
562-976	4100 Mapnet II Transceiver Board.	4100-0110K
565-158	4100 Mapnet Quad Isolator PCB.	4100-0111K

ME0455 1976-99 PA0987	Legacy Adaptor bracket.	4100-KT0496
None	BACPac Ethernet Portal.	4100-6069
566-355	Fire Panel Internet Interface Module (SafeLINC).	4100-6079K
566-1189	8 Zone/Relay Module.	4100-5013
Power supply parts		
ME0504	AS7240 APS Power Supply (bay mounting).	ME0504K
ME0508	AS7240 LPS Power Supply (gearplate mounting).	ME0508K
4100-9848AU	Australian XSPS Power Supply (AS4428).	4100-9848AU
002-109	Australian SPS fuse board.	4100-KT0448
566-058	Alarm Relay Module for SPS (AS4482).	4100-6033
ME0470	5A Auxiliary Power Supply bay mounting (AS4428).	4100-ME0470
Tone generator parts		
PA1120	T-Gen2 60 W Tone Generator.	FP1115
PA1121	T-Gen2 120 W Tone Generator.	FP1116
PA0766 T-GEN 50, 4100-0766K	T-GEN 50 on legacy mounting bracket.	4100-0766K
None	T-GEN 50, Rotary Switch, no bracket.	ME0460
None	T-GEN/4100U PA MIC with extended lead.	ME0490
Networking modules		
565-407 565-516 4100-6014	4100 Modular Network Interface card.	4100-6078
565-413	4100 RS485 Wired Media Module.	4100-6056
565-261	4100 Fibre Optic Media Module.	4100-6057
4100-6072 743-716	Fibre Optic MODEM Left port Single Mode.	4100-6072

4100-6073 743-717	Fibre Optic MODEM Right port Single Mode.	4100-6073
566-1198	Single-Mode Left Media Card.	4100-6301
566-1197	Single-Mode Right Media Card.	4100-6302
566-1200	Multi-Mode Left Media Card.	4100-6303
566-1199	Multi-Mode Right Media Card.	4100-6304
Looms, bays and wiring parts		
734-008	2 ft 4 way PDI Bay to PDI Bay Harness.	734-008
734-075	8 ft 4 way PDI Cabinet to PDI Cabinet Harness.	734-075
Possible markings on the part	Description	Order code for replacement spare part
Looms, bays and wiring parts		
733-996	LPS to PDI backplane loom.	733-996
734-301 4100-0642	Bay to bay Signal Power link.	734-301
LM0317	Signal Power link - cabinet to cabinet or short PDI to short PDI backplane.	LM0317
733-542	96 in. 8 way Legacy Cabinet to Legacy Cabinet Harness.	733-542
733-952	SPS to Alarm Relay board Harness.	733-952
733-996	SPS to CPU Motherboard Harness.	733-996
734-078	TIC to Legacy Card Power/Comms Harness.	734-078
None	Expansion Bay (PDI) for 19 in. Cabinet (new style rear mount).	4100-KT0446
None	Legacy motherboard mounting kit.	4100-KT0468
None	Ferrite Bead single.	740-836
None	Ferrite Beads (set of three).	4100-5129



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Issue 1.2