INSTALLING V3.XX AS4428.1 SOFTWARE IN AS1603.4 F3200/NDU

F3200/NDU V3.XX software can be installed in a panel that was previously running V2.XX or earlier software. This may be done for a number of reasons.

1. To make the panel fully AS4428.1 compliant - in which case a new front panel with a new Controller board must be fitted as well.

2. To upgrade the software to give AS4428.1 operation but retain the old AS1603.4 type keypad. This may be done on network systems so that all panels are running AS4428.1 type software even though some have the older AS1603.4 keypad and front panel.

3. To upgrade the software to get some of its new features.   V3.XX software has some new features that V2.XX software does not have.

In all cases, the database from the existing panel can be used in the new panel but will need modification and programming of the new features that were not present in the older software. If the panel is to be fully AS4428.1 compliant then it must have separate relay outputs for the Warning System and External Bell. Any available relay outputs can be used for these, but they must be supervised. The ancillary 3 relay is most suitable for the Warning System because it supports wiring to multiple alerting devices.

To do this programming an understanding of the operation of the Warning System and External Bell in the V3.XX software is necessary. This is covered in the following Section "Operation of Warning System and External Bell" and in the F3200 AS4428.1 Programming Manual LT0256.

It is also necessary to understand the existing panel configuration (unless the panel is being completely reconfigured), by printing its database and checking the output logic programming, the zone programming (which outputs zones map to) and the relay programming. If the output logic uses the BEL or BLI then these will need to be reprogrammed as these tokens have been deleted in V3.XX (a System Fault will occur if they are found by V3.XX software).

In the following steps the menu keystrokes to get to a particular command are identified as, for example, (Menu ► 2). This means from the base programming menu (which shows "Programming 1: Access code 2: Text 3: Global Data etc") press the ► (AlarmTest) key followed by the 2 key.

The main differences in the database programming between V2.XX and V3.XX F3200/NDU software are listed below.

1. When upgrading to V3.XX software the "keypad type" and "legacy bells" options need to be programmed.

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The keypad type can be programmed (Menu ► 1) as either 1603.4 (old type) or AS4428.1 (new type) to match the keyboard installed. The legacy bells can be programmed as (Menu ► 2) 1:Warning System 2:External Bell 3:None. For Australian operation this is usually set to option 2 External Bell. Legacy Bells is explained later in this document.

2. For an AS4428.1 compliant panel, the alarm text names should be
   Smoke, Heat, FSW, MCP, VMD, PSW, SPR, SIP, flame
   instead of
   Smoke, Heat, FSW, Manual, Valve, PSW, SPKLR

   These are programmed using the text programming menu (Menu 2 5).

3. An AS1603.4 keypad has a Brigade Test key, and when V3.XX software is installed this key may still be used to do a Brigade Test. V3.XX provides another mechanism for doing a Brigade Test. Pressing the TEST key at the base display, then on a network system selecting option 1:Local system, then pressing and holding the "6" key for 2 seconds will initiate a Brigade Test.

   For brigade test there is a programmable option (Menu 3 ► 1) which selects whether the brigade alarm relay is to be activated by a brigade test. This should be disabled if it is not needed.

4. The programmable option "Bells on for an FFCIF alarm" is no longer available with V3.XX software. The FFA token can be included in the equation for EBA to activate the External Bell when there is any alarm in the FF alarm list.

5. Type 2 FF operation is no longer available.

6. There are new battery tests and battery/mains/charger monitoring options that may not have been available in earlier software. These are :

   Battery connection test
   Hourly 90 second battery test
   Daily 40 minute battery test
   Battery low monitoring
   Charger high/low fault signalling
   Mains fail signalling fault after 8 hours.

   These options are accessed via Menu 3 ► ► 3, and all but the last option need to be enabled to comply with AS4428.1.

   If the daily 40 minute battery test is enabled then it is essential that the battery test resistors R52/R53 on the MAF module be removed.

7. Equations for the Warning System and the External Bell need to be entered (Menu 4 4 ► ►). By default they are as follows, but may need to be changed for specific installations.

AR2 = EBO
AR3 = WSO
WSA = ZWA + WST + ITA
EBA = ZBA + EBT
WSF = AR3F
EBF = AR2F

It is necessary to determine how the various outputs in the system will be used before these equations can be entered. This will depend on whether the system is being made fully AS4428.1 compliant or not, and what the previous configuration was. If the Warning System is not going to be used then the equations for WSA and WSF do not need to be entered.

8. The mapping of zones to ANC 1 relay, Warning System, and the External Bell needs to be thoroughly checked.

   Zones mapped to ANC 1, ANC 2, and ANC 3 become mapped to ANC 1, Warning System, and External Bell, respectively, when the 3.XX software is installed. I.e. a zone which previously mapped to ANC 2 will now be mapped to the Warning System (which by default uses ANC 3) and a zone previously mapped to ANC 3 becomes mapped to the External Bell (which by default uses ANC 2).

   Therefore on upgrading it is likely that the output wiring from ANC 2 and ANC 3 will need swapping over and changes made to the wiring to allow supervision.

   If the ANC 2 relay is not going to be used for either the Warning System or the External Bell, but is still required to operate for an alarm on zones that were previously mapped to it, then those zones will need to have their mapping to the Warning System removed (unless they also need to operate the Warning System) and a logic equation should be entered to drive ANC 2 directly from the zone alarms, or from the ALM token if the ANC 2 relay should operate for any MAF alarm.

   Similarly with the ANC 3 relay, some systems may need to remove the mapping of zones to the External Bell (these are zones which previously mapped to ANC 3) and enter a logic equation for AR3.

   If the ANC 3 relay is actually used to drive the External Bell then the zones which previously mapped to ANC 3 will have become mapped to the External Bell and this can be left unchanged, but it will be necessary to enter an equation for the External Bell to drive AR3 e.g. AR3 = EBO + EBT

9. The Ancillary 1, 2, 3 relays and module relays can be configured as latching/non latching; mapped to maf; isolatable/non-isolatable etc and they can all be configured with a text name.

   Refer to Isolating/De-isolating/Testing Warning System/ External Bell for an explanation of why a relay might need to be made non-isolatable. For AS4428.1 compliant systems, the Warning System and External Bell outputs must be supervised.

10. Mapping of the Warning System/ External Bell to MAF.
    It is recommended that these be enabled (Menu 4 5 2) so that fault and isolate conditions are signalled to a monitoring centre.

11. The BEL/BLI logic tokens are no longer valid and a system fault will occur until these tokens are removed/ replaced in the output logic. The equivalent tokens in V3.XX software are EBO and EBS if the Bells in the previous configuration corresponds to the External Bell and WSO/WSS if the Bells corresponds to the Warning System.

12. Network systems.
    For network systems the following parameters may need to be programmed.

    "Receive Warning System silence"
    "Send Warning System isolate as network silence"
    "Receive External Bell silence"
    "Send External Bell isolate as network silence"

    These parameters correspond to the following V2.XX software parameters.

    "Allow net bells control"
    "Send bell Iso as net silence"
    "Allow receive net bells silence"

    The "Allow net bells control" parameter is no longer used with V3.XX software, because a corresponding mechanism is provided with output logic equations where the RWA and RBA tokens can be used.

OPERATION OF WARNING SYSTEM/EXTERNAL BELL

AS4428.1 introduces two new concepts – the Warning System and the External Bell.

The purpose of the Warning System is to evacuate people from the building when an alarm occurs, and the purpose of the External Bell is to allow the Fire Brigade to locate the fire panel where an alarm has occurred. In an AS4428.1 F3200 system usually the Ancillary 3 relay (Bells) is used for the Warning System and the Ancillary 2 relay is used for the External Bell. The Ancillary 1 relay is free to be used for any desired purpose and by default, operates for an alarm on any zone. The Ancillary 3 relay has different supervision to the others and can supervise multiple connections, so it is used for the Warning System. The External Bell normally has only a single bell connected.

Two zones have been created for the Warning System (Zone 198) and External Bell (Zone 199) so that their status may be displayed and controlled, locally or across a network.

The operation and fault indication of the Warning System and External Bell are determined by output logic.

New Output Logic Destinations

Five new output logic destinations have been added in V3.XX (Menu 4 4 ► ►) to allow control of the Warning System, External Bell and the Sounder.

EBA   Activates the External Bell. This state is shown on Zone 199 and is ANDed with NOT EBS internally to create EBO.

EBF   Generates fault state on the External Bell (Zone 199).

SNA   A change from False to True will activate the sounder on the Controller Module. Pressing any key will silence the sounder. SNA must go False then True again to restart the sounder.

WSA   Activates the Warning System. This state is shown on Zone 198 and is ANDed with NOT WSS internally to create WSO.

WSF   Generates a fault state on the Warning System (Zone 198).

Logic equations must be entered for these to generate the required action.

New Output Logic Tokens

To enable a wide range of functions to be programmed, a number of new logic tokens have been created.

EBF   True when the External Bell is in fault (i.e. the equation for EBF is true) and the External Bell is not locally isolated.

EBO   True when the External Bell is activated and not isolated or silenced, i.e. when the equation for EBA is true and EBS is false.

EBS   True when the local External Bell is locally isolated or silenced by an External Bell silence state received from the network.

EBT   True when the local External Bell is tested by a test command at the local panel or by a test command received from a remote network panel.

FFA   True when there are one or more events in the FF alarm list.

ITA   True for 2 seconds when there is an alarm on a non-isolated zone in In-Situ test mode and it is mapped to the Warning System.

RBA   True when an "External Bell" alarm state is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled. If the remote panel is an F3200 then it will send an " External Bell alarm state" onto the network when it has a non-isolated zone mapped to the External Bell in alarm (i.e. when its ZBA token is true).

RMA   True when a MAF alarm state is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled.

RTE   True if another panel on the network has Trial Evac asserted and the remote panel appears in the SID list of this panel and has "use MAF relay data" enabled.

RWA   True when a "Warning System alarm state" is received from a network panel that appears in the SID list of this panel and has "use MAF relay data" enabled. If the remote panel is an F3200 then it will send a "Warning System alarm state" onto the network when it has a non-isolated zone mapped to the Warning System in alarm (i.e. when its ZWA token is true).

WSF   True when the Warning System is in fault (i.e. the equation for WSF is true) and the Warning System is not isolated.

WSO   True when the Warning System is activated and not isolated or silenced, i.e. when the equation for WSA is true and WSS is false.

WSS   True when the Warning System is isolated, or silenced by a Warning System silence state received from the network, or (for NZ operation) silenced by a local Silence Alarms keyswitch.

WST   True when the Warning System is tested by a test command at the local panel or by a test command received from a remote network panel.

ZBA   True when there is an alarm on a local non-isolated zone mapped to the External Bell.

ZWA   True when there is an alarm on a local non-isolated zone mapped to the Warning System.

Default Logic Equations

The default equations that are created on initialisation of a V3.XX system are:

EBA = ZBA + EBT
WSA = ZWA + WST + ITA
AR2 = EBO
AR3 = WSO
EBF = AR2F
WSF = AR3F

As these don't exist on an upgrade it is necessary to program them or something similar. These equations are explained below.

1. Output logic determines which physical outputs operate when the Warning System or External Bell are operated. The default equations for this are :

    AR2 = EBO
    AR3 = WSO

    The Ancillary 2 relay operates when the External Bell is operated (i.e. activated and not isolated). The Ancillary 3 relay operates when the Warning System is operated (i.e. activated and not isolated). These equations can be modified if necessary. Other outputs can be operated when the Warning System/ External Bell is activated by setting up equations to drive them.
    For example R1 = WSO will result in module relay 1 being operated when the Warning System is operated.

2. Output logic determines which conditions cause the Warning System or External Bell to be activated. The default equations for this are :

    WSA = ZWA + WST + ITA
    EBA = ZBA + EBT

    The Warning System is activated by alarm on any non-isolated zone mapped to the Warning System (ZWA), or by a test of the Warning System (WST), or by an alarm on a zone in In-Situ test mode that is mapped to the Warning System (ITA).

    The External Bell is activated by alarm on any non-isolated zone mapped to the External Bell (ZBA), or by a test of the External Bell (EBT).

    These equations can be modified so that the Warning System or External Bell can be activated as desired. When the equation for WSA becomes true, the Warning System is activated, the logic token WSO becomes true (if the Warning System is not isolated), and the outputs driven by the WSO token will be operated unless the Warning System is isolated. When the equation for EBA becomes true, the External Bell is activated, the logic token EBO becomes true (if the External Bell is not isolated) and the outputs driven by the EBO token will be operated unless the External Bell is isolated.

    Network systems that need the local Warning System to be activated for alarms on other panels can include the RWA token (see below for further information on the RWA token).

    WSA = ZWA + WST + ITA + RWA

Network systems that need the local External Bell to be activated for alarms on other panels can include the RBA token (see below for further information on the RBA token).

EBA = ZBA + EBT + RBA

The RMA and FFA tokens may also be needed in some situations.

3. Output logic determines which conditions cause the Warning System or External Bell to be in fault. The default equations for this are :

WSF = AR3F
EBF = AR2F
When a supervision fault occurs on any of the outputs driven by the warning system, the Warning System must signal fault and this is achieved with a logic equation. Similarly with the External Bell. The equation for WSF must be modified to include supervision faults of all the outputs controlled by the Warning System. Similarly with the External Bell and the equation for EBF. When the equation for WSF is true, a brigade fault will be signalled if the Warning System is mapped to the MAF and the Warning System is not isolated. When the equation for EBF is true, a brigade fault will be signalled if the External Bell is mapped to the MAF and the External Bell is not isolated.

MAPPING ZONES TO WARNING SYSTEM/EXTERNAL BELL /ANCILLARY RELAY 1

Any alarm zone can be programmed to map to each of Ancillary 1 Relay, Warning System or External Bell. This is done with the "configure zone" menu, which is also used to select whether a zone maps to the MAF, is latching/non latching, and which LED it drives.
For a zone mapped to the warning system, the ZWA token will become true when there is an alarm on the zone and the zone is non-isolated.

For a zone mapped to the external bell, the ZBA token will become true when there is an alarm on the zone and the zone is non-isolated.

For a zone mapped to the Ancillary 1 relay, the relay is operated when there is an alarm on the zone and the zone is non-isolated UNLESS the Ancillary 1 relay is driven from a logic equation. If the Ancillary 1 relay is driven from a logic equation e.g. AR1 = ALM, then the mapping of zones to the Ancillary 1 relay is ignored.

ISOLATING /DE-ISOLATING /TESTING WARNING SYSTEM / EXTERNAL BELL

The Warning System and External Bell can be isolated, de-isolated and tested. When the Warning System is isolated the WSO token is always false and hence any outputs driven by the Warning System will not be operated. The WSS token is true when the Warning System is isolated (or silenced).

Similarly with the External Bell, the EBO token is always false when the External Bell is isolated and the EBS token is true.

Depending on programming, the physical relays that are driven by the Warning System or External Bell can themselves be isolated so that the relay will not operate when the WSO or EBO token becomes true. If the Ancillary 3 relay is isolated and the Warning System is de-isolated, the Warning System isolate LED will be off but the common isolate LED will be on and the Isolate total on the LCD base display will be non-zero. The zone used to display the Warning System status (zone 198) does not indicate when any of the physical outputs driven by the Warning System are themselves isolated. Similarly with the External Bell. To avoid this the physical Ancillary outputs can be programmed so that they are not isolatable.

By default, the Ancillary 2 and Ancillary 3 relays cannot be isolated or tested but this can be changed with programming. The configure Module relay /Ancillary relay menu is used to select whether an individual relay can be isolated or tested. This menu is also used to select whether a relay has supervision enabled, is mapped to the MAF, and is latching /non latching.

MAPPING THE WARNING SYSTEM, EXTERNAL BELL AND RELAYS TO THE MAF

The Warning System and External Bell can be programmed to map or not map to the MAF. If the Warning System is mapped to the MAF, then:

- When a fault occurs on the Warning System (i.e. the equation for WSF is true), a fault is signalled to the Brigade unless the Warning System is isolated.

- Isolating the Warning System will cause the Brigade Isolate relay to operate.

Similarly for the External Bell. The Warning System and External Bell are mapped to the MAF by default.

The Configure Relays menu is used to select the mapping to MAF of Warning System, External Bell and relays. By default, all ancillary and module relays have supervision enabled, are non latching and are mapped to the MAF. If a relay is programmed as latching and a supervision fault occurs on it, then the fault state latches on that relay and a reset command must be applied to that relay to clear the latched fault state after the physical fault has been cleared. Faults do not latch on the Warning System or External Bell themselves.

RECALLING THE STATUS OF WARNING SYSTEM / EXTERNAL BELL

The status of the Warning System can be displayed by recalling zone 198, and the External Bell with zone 199. The zone status display shows whether the Warning System/ External Bell are activated, isolated, in fault, or silenced over the network.

ISOLATING/ DE-ISOLATING RELAYS WITH OUTPUT LOGIC

Output logic equations can be used to isolate or de-isolate zones. Because the Warning System (zone 198), External Bell (zone 199), module relays (zones 65 to 128) and Ancillary relays (zones 194,195,196) each have their own unique zone number, they can be isolated or de-isolated with output logic using the appropriate zone number.

WARNING SYSTEM /EXTERNAL BELL WITH NETWORKED SYSTEMS

When two or more F3200s or NDUs are networked together, the Warning System and External Bell can be activated due to an alarm on another panel and can be silenced due to an isolate state on another panel, depending on programming. This allows the Warning System or External Bell to be silenced at multiple selected panels (or all panels) with a single command at one panel. Each panel has its own Warning System and External Bell isolate status, but in addition, the Warning System /External Bell can be inhibited (silenced) when the Warning System /External Bell are isolated at another panel on the network.

1. NETWORK WARNING SYSTEM /EXTERNAL BELL ISOLATION

On F3200/NDU there are two parameters which affect the operation of Warning System isolate on a network system and are accessed through the network programming "MAF" menu option (Menu 4 7 3 ►). These are :

"Receive Warning System silence"   - enable/disable
"Send Warning System isolate as network silence"   - enable/ disable

Similarly with the External Bell there are two parameters (Menu 4 7 3 ► ►) :

"Receive External Bell silence"   - enable/disable
"Send External Bell isolate as network silence"   - enable/ disable

These parameters are disabled by default. If the "Send Warning System isolate as network silence" parameter is enabled, then when the Warning System is isolated the panel will send a Warning System silence state to other panels on the network. Panels on the network that have "Receive Warning System Silence" enabled will use the Warning System silence state to inhibit their Warning System outputs (by forcing the WSO token to be false). The receiving panel must be programmed to use the MAF status of the sending panel. I.e. the sending panel must be in the SID list of the receiving panel and have "Use MAF relay data" enabled.

Similarly with the External Bell and the parameters "Receive External Bell silence" and "Send External Bell isolate as network silence".

When the Warning System is locally isolated, the Warning System isolate LED is on steady. When the Warning System is inhibited due to a Warning System silence state received from another panel on the network, the Warning System isolate LED flashes at 1 Hz and this overrides the steady LED state shown for local isolation.

Both these states are indicated on a recall of Zone 198.

Similarly with the External Bell Isolate LED and Zone 199.

2.   **WARNING SYSTEM /EXTERNAL BELL ACTIVATION FOR NETWORK ALARM.**

When an alarm occurs at a panel that causes the Warning System to be activated, (i.e. the equation for WSA is true), this condition is sent onto the network as a Warning System alarm state. It is not inhibited by Warning System isolate at the sending panel. A panel that receives the Warning System alarm state can use it to activate its own Warning System by including the "RWA" token in the equation for WSA. The receiving panel must also have the sending panel in its SID list and have "Use MAF relay data" enabled. The RWA token is not inhibited by Warning System isolate at the sending or receiving panels.

Similarly with the External Bell. When an alarm occurs at a panel that causes the External Bell to be activated (i.e. the equation for EBA is true), this condition is sent onto the network as an External Bell alarm state. The RBA token is true when an External Bell alarm state is received from any panel that appears in the SID list and has "Use MAF relay data" enabled.

The RMA token may sometimes be needed instead of the RWA or EBA tokens. The RMA token is true when a MAF alarm state is received from any panel that appears in the SID list and has "Use MAF relay data" enabled. In many cases, all zones will map to the MAF, the Warning System and the External Bell, so RMA, RWA and RBA are the same.

The FFA token may also be useful. It is true whenever there is an alarm in the FF alarm list, regardless of where the alarm came from.

LEGACY BELLS

Legacy Bells is a concept introduced into V3.XX to allow a panel with V3.XX to inter-operate across a network with a panel with V2.XX software.

Principally, the Legacy Bells setting determines which of External Bell, Warning System, or neither, corresponds to the AS1603.4 Bells facility.

A panel with V3.XX software and an AS1603.4 keyboard uses the Legacy Bells setting to determine whether the Bells Isolate button and LED correspond to the External Bell, the Warning System, or nothing.

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A networked panel with V3.XX software (either keyboard type) uses the Legacy Bells setting to map the External Bell, the Warning System, or neither, to the Bells functions when it communicates with an AS1603.4 panel (e.g. F3200/NDU with V2.XX software).

If a Bells Isolate command is received from an AS1603.4 panel (this is identified in the MAF Status message) then this will be mapped by the V3.XX panel to the Warning System, the External Bell, or rejected, according to the Legacy Bells setting. Similarly an External Bell command or a Warning System command, whichever is the Legacy Bells setting, will be translated into a Bells Command when these are sent to an AS1603.4 panel.

The V3.XX F3200/NDU will transmit a "MAF Alarm with no Bells" in its MAF status if any MAF-mapped zone is in alarm. It will also include "MAF Alarm" in its MAF Status if the Zone in alarm is mapped to the Warning System and this is the Legacy Bells setting, similarly for the External Bell being the setting. This functionality matches an AS1603.4 panel on the network.

The V3.XX F3200/NDU also maps a MAF alarm received from an AS1603.4 panel (in its SID list with "use MAF relay data" enabled) into the RWA or RBA token according to the Legacy Bells setting. The appropriate token can then be used to activate the required output if operation like an AS1603.4 panel is desired, i.e. turning the bells on when an alarm is received.

An NDU with V3.XX in NZ mode will automatically map its Trial Evacuation and Silence Alarms states to the Warning System irrespective of the Legacy Bells setting.