

Comfort Compliance with BS 8243

This application describes how Comfort can be configured to comply with the BSI Standard BS8243:2010 - "Installation and Configuration of Intruder and Holdup alarm systems designed to generate confirmed alarm conditions" for the purpose of signalling to an ARC (Alarm Receiving Centre). This should be read in conjunction with the document Comfort compliance with EN50131/PD6662

Comfort Compliance Statement

Comfort CP9000 is capable of compliance with BS8243:2010 using Ultra or Optimum (firmware 7.036 and above) and RedCARE or CSL DualCom Signalling to the ARC (Alarm Receiving Centre) provided that the instructions contained in this document are followed. Comfort's built-in Contact ID dialing method is currently non-compliant with the requirements of BS8243. All communications systems that require a Police URN (Unique Reference Number) will need to conform to BS 8243.

Overview of BS8243:2010

BS8243:2010 requires that a confirmed alarm activation can only occur when two separate and independent detectors have been activated within a pre-determined time window (Minimum 30 to maximum 60 minutes). Detectors include any alarm sensor including PIRs, magnetic contacts, tamper etc. On the first alarm activation, an unconfirmed intruder event is signalled to the ARC. A tamper alarm should signal a Tamper alarm to the ARC instead of an unconfirmed alarm (BS8243 H.7.1). If a second (confirmed) event occurs within the confirm time window a confirmed alarm is signalled to the ARC. If, however, no second alarm condition occurs, the unconfirmed alarm condition will be restored at the end of the confirm time window and the restore will be signalled to the ARC. Any subsequent alarm event will be considered to be a first alarm activation and will signal as an intruder event. In the event of a single alarm condition occurring (a non-confirmed alarm) if, at the end of the confirm time window, the detector which activated the alarm remains open, then it will be automatically omitted "Inhibited" from the system and a signal indicating that a zone has been Inhibited is signalled to the ARC. In the event of a non-confirmed alarm being cancelled before the expiry of the confirm time window then the intruder condition is restored on entry of the user code and the alarm restoral is signalled to the ARC. Comfort Alert Type Zones cause Alert Alarms instead of Intruder Alarms, and a different Alert zone triggered within 30-60 mins is required to cause a Confirmed Intruder Alarm

5.4 Design, installation and configuration of Sequential confirmation I&HAs

5.4.1.1 Criteria for sequentially confirmed alarm conditions

1. At least two separate alarm conditions are reported, each originating from an independent detector, within the confirmation time
2. The two detectors must be: EITHER of different technologies (Dual technology PIRs are considered two different technologies so two can have overlapping coverage) OR (if they are of the same technology) the two detectors must not have overlapping areas of coverage.

The detectors must have separate outputs and be connected to separate zones in the control panel. The confirmation time, ie the time between the first activation and the 2nd, must be from 30 to 60 minutes. Where both detectors are movement detectors, further rules apply under the following section:

5.4.2 Configuration of movement detectors that may offer a sequentially confirmed alarm

The key points from this section are as follows;

Where any two movement sensors are used (single technology or dual technology) and they do not have overlapping areas of coverage, they should be located far enough apart to minimise the possibility of false alarms. (NSI suggests 2.5m) In the case of two movement detectors, with any overlapping areas of coverage, at least one must be a dual-technology detector. The overlapping areas of coverage should be at the far end of the field of view, to minimise the overlapping coverage areas and thus, the likelihood of false alarms. Again these detectors should be mounted "some distance apart"

Two separate dual-technology movement detectors with overlapping areas of coverage are allowed, providing the above criteria is met.

5.4.4 Configurations not regarded as offering a sequentially confirmed alarm

This section describes other configurations that are not acceptable under the BS8243 policy.

These are basically as follows:

- A "double knock" configuration
- A dual-technology detector
- Two (or more) detectors or devices of the same type with overlapping areas of coverage including: -
 - ✓ Two vibration sensors
 - ✓ Two glass break sensors
 - ✓ Two foil-on-glass detectors
 - ✓ Two door contacts fitted to the same door
 - ✓ Two audio monitoring devices
 - ✓ Two video motion detection devices
 - ✓ Two or more detectors responding to changes in atmospheric pressure

6.3 Methods of Completion of Setting

The setting procedure to Away Mode is split into 2 distinct steps; from within the premises and the final step ends it from outside.

1. The setting to away mode is initiated by pressing the AWAY key at the keypad, or using a Digital Key (PACE)
2. The setting to Away Mode is terminated by closing the Final Door or by the locking of a Shunt Lock, or by pressing the button of a Comfort Door Station (Exit Terminator)

Shunt Lock fitted to the final exit door

This is a combined door lock and built in keyswitch. Setting the system should be a 2 step process. First initiate the Away arming process at the keypad, and exit and lock the door to complete arming. There should also be a contact installed on the entry door as Immediate so that any forced entry can be detected. Similarly unlocking the door should unset the system (see methods of Unsetting). The Lock switch contacts should be programmed as Normally Open Switch or Normally Closed Switch. The Zone On Response should be programmed to the Exit Terminator action. The Zone Off Response should be programmed to disarm the system

Push button switch mounted outside the supervised premises

A doorbell or door station push button can act as an Exit Terminator. Away Arming Method must be set to Exit Terminator. First initiate the Away arming at the keypad The entry door must be closed and all zones closed before the Doorbell button is pressed to complete the arming

Protective switch (Door Contact) on the final exit door

This is the normal means of arming. The entry door zone should be assigned as Entry Door Zone Type.

Digital Key fob

A digital key can be used to initiate the setting to away mode. The final setting is to be completed by the closing of the Exit Door.

6.4 Methods of Unsetting

6.4.2 (a) Unlocking the Initial Entry door unsets the Alarm System

This is in conjunction with using the shunt lock to complete setting the system described above. There is no entry door or entry route. All internal zones are alert alarm zones in the set state. Forcing open the entry door should generate an Unconfirmed alarm. Activation of a further detection device should cause a confirmed alarm. The programming is described in the section using Shunt Lock to complete the setting. Comfort is Compliant with this method

6.4.3. Unlocking the Initial Entry door disables all means of confirmation

The purpose of this method is to have a shunt lock to be used to unlock the door but the door contact to start an entry delay and for the system to be unset by entering code on the keypad. Once the entry door is opened, no confirmed alarm can be generated to the ARC. Thus, although Comfort can cater for this, the method in 6.4.2 is preferable if a shunt lock is to be installed.

6.4.4. Opening the Initial Entry door disables all means of confirmation

This is the traditional set up with an entry route and a PIN being entered at a keypad to unset the system. Once the entry door is opened there can be no confirmed alarm signals sent to the ARC.

Comfort can comply with this method by checking the option "Entry Alert Disables confirmation" in Modules and Settings (now called "Entry Alert No CMS")

6.4.5 Completion of unsetting is achieved using a Digital Key

This allows the user to unset the system before entering the premises or to initiate the entry time by opening the entry door and to complete the unsetting of the system using a portable ACE (Ancillary Control Equipment), for example a key fob or proximity card. A sequential confirmed alarm is possible if detectors not in the entry route are activated. If the entry time expires before the system is disarmed, an unconfirmed alarm should occur,

In accordance with EN500131-1 when alarm conditions occur during the unsetting procedure, they should not be notified for a minimum of 30 seconds after they occur or until the entry time has expired. A confirmed alarm should then be generated.

If the entry time expires and a minimum of 30 seconds has completed, a confirmed alarm is notified immediately

If a detector is activated after expiry of the entry time, a sequential confirmed alarm is activated immediately overriding the 30 seconds minimum

The IAS should be configured so that there is a timed entry procedure

and when the initial entry door is opened, notification of any alarm is delayed until expiry of the overall entry time.

Comfort is Compliant with this method using a compliant 3rd party ACE

Uncheck the option "Entry Alert Disables confirmation" in Modules and Settings

Note: Once the entry time has expired without the unsetting being completed, any alarm activations will contribute to the confirmed alarm condition if within the Time Window

6.4.6 Unsetting is carried out in conjunction with the ARC

This option is not discussed in this application.

Hold-Up Alarms (HUA)

4.2.2 Hold-up Alarm Systems

Holdup Alarm systems (HAS) Confirmation can be by one or more of the following methods

1. Audio
2. Visual
3. Sequential
4. Telephone

5.4.1.2 Criteria for Sequentially confirmed Holdup Alarm System (HAS)

For an alarm (Panic) to be considered as sequential,

1. 2 separate HD alarms to be generated or
2. A multi-action Hold-Up (HD) eg press and hold

The hold-up confirmation time should be 8 hours to 20 hours

Sequential confirmation of Hold-up alarm systems is not implemented currently in Comfort.

H.3.2 Combination of HUA and Tamper

A combination of Hold-up and Tamper alarm is considered a Sequential confirmed alarm

Tamper Alarms

H.7.1 Processing of Tamper

A tamper alarm should generate a separate Tamper signal only. The ARC should treat a Tamper signal as an unconfirmed alarm. A tamper alarm followed by an unconfirmed alarm should result in a confirmed alarm.

If a confirmed alarm is generated by a tamper condition, the tamper condition should be notified, as required by BS EN 50131-1:2006+A1 in addition to the confirmed alarm.

A tamper alarm followed by a confirmed alarm should be considered as a confirmed intrusion alarm.

Immediate Zones

The 1st Intruder alarm causes the Unconfirmed alarm output to be turned on. It also starts an ALERT timer (based on the Alert Time setting of 30 to 60 minutes). If a 2nd alarm zone is activated within the alert time, the Confirmed alarm output is also turned on. If the timer expires without a Confirmed alarm the Unconfirmed alarm output is turned off. If the unconfirmed alarm times out, and the original zone remains open, the zone is bypassed or inhibited and the Inhibit Output is turned on to indicate to the ARC that a zone is inhibited.

Alert Zone Types

When an alert zone is triggered, it does not cause an immediate Intruder Alarm, instead goes into Alert state and turns on the Unconfirmed alarm output. It also starts an ALERT timer (based on the Alert Time setting of 30 to 60 minutes). If another Alert or perimeter or immediate zone is triggered within the alert time, then a full Intruder Alarm is triggered and the Confirmed Output is turned on.

If the timer expires without a Confirmed alarm the Unconfirmed alarm output is turned off. If the unconfirmed alarm times out, and the original zone remains open, the zone is bypassed or inhibited and the Inhibit Output is turned on to indicate to the ARC that a zone is inhibited.

Both Alert and Immediate zones can cause unconfirmed alarms which start a confirmation timer. The difference is in the siren behaviour for alert zones. Alert zones do not turn on the siren.

Setting and Unsetting Means

Comfort may be programmed to comply with BS8243:2010 for the following two methods ;

1. Shunt Lock to complete setting to and to unset the system
2. ACE complete the setting and to disarm the system.

The other alternative, ie for the Entry door to start entry delay but not able to generate a confirmed alarm can also be programmed but is not considered in this application as it may not meet the insurers requirements.

Shunt Lock for Setting/Unsetting

In this scenario, a shunt lock is used to complete the setting to Away Mode when the final door is locked as well as to unset the system when the door is unlocked.

To set to away mode, the keypad Away Button is pressed to initiate. Any open zones are announced on the speaker and displayed on the LCD in sequence. When all open zones are closed the keypad announces "Please Exit". Exit from the entry door and close the entry door. Lock the door to complete the away arming process. The system will not arm if the door is not locked. Keypad will announce "Away Mode".

To set to Night or Day Mode, press the Night or Day button on the keypad.. Any open zones are announced. It is not necessary to lock the door to set to night mode

Unlocking the Entry door will unset the system when it is set. Forcing open the entry door will cause an (unconfirmed) alarm and not start an entry delay. In Night Mode, the system can be unset by entering the user code on the keypad.

The Front Door Zone is named FrontDoor(Lock) programmed as zone type 2, but with Cancel Entry Delay Response so opening the door will cause an immediate Unconfirmed alarm.

The Door Lock Zone is a Switch Normally Open Zone Type. The On Response (Lock) is Exit Terminator and Off Response is Unset.

ACE for Setting/Unsetting

An ACE or keyfob is used for unsetting and optionally for setting in this configuration. A 3rd party device must be used. Separate Set and Unset Zones are provided in the configuration, but a single zone with Set/Unset Responses can also be programmed. When an ACE is used, it is assumed that the shunt lock will not be used. Hence the Door Lock zone is not used. The Entry Door zone FrontDoor(ACE) in this case is identical to the Zone setting in the case of Shunt Lock except that opening the door when the system is armed will start an entry delay

Ace Low Battery dry contact should be connected to a spare channel on the REDCARE STU to be reported as Low Battery .This will report Low battery Alarm to the ARC. Ensure that the output from the ACE low battery is a latching signal which restores when the battery condition is restored.

Zone Settings for Shunt Lock and ACE

The same configuration cclx file contains both zone settings for Shunt Lock and ACE for setting and unsetting.

Zones	Shunt Lock	ACE
Entry Door	Use Entry Door (Lock) - Causes Unconfirmed alarm when Set.	Use Entry Door(ACE) Starts Entry Delay when set
Shunt Lock	Use Door Lock Zone	Dont use Door Lock Zone - set to NullZone Type
ACE -set	KeyArm-ACE zone not used - Set to Null Zone Type	KeyArm-Ace Zone for final set
ACE -Unset	KeyOff-ACE zone not used - Set to Null Zone Type	KeyOFF-Ace Zone for unset

Unused zones in each configuration should be set to Null Zone Type.

Entry Door zones have different settings for each configuration.

Entry Time-Out (Annexe G)

The following requirements are stated in Figure G1 to G4

G.1 Entry timeout before expiry of minimum 30 seconds operation of indicator or warning device

If a non-entry path detector is activated during the entry delay, a remote notification delay of minimum 30 seconds is started. At the end of the notification delay, unconfirmed and confirmed alarms are notified

G.2 Entry timeout after expiry of minimum 30 seconds operation of indicator or warning device

If a non-entry path detector is activated during the entry delay, a remote notification delay of minimum 30 seconds is started. If the notification delay expires before the end

of entry delay the notification is delayed until the end of the entry delay At the end of the entry delay, unconfirmed and confirmed alarms are notified

G.3 Entry timeout before expiry of minimum 30 seconds operation of indicator or warning device (WD) (second detector before end of 30 seconds delay)

If the notification delay 30 secs minimum is started and 2 non entry detectors occur during the delay, the 2nd non entry path detector shod terminate the notification and entry delays and the unconfirmed and confirmed alarms should be notified

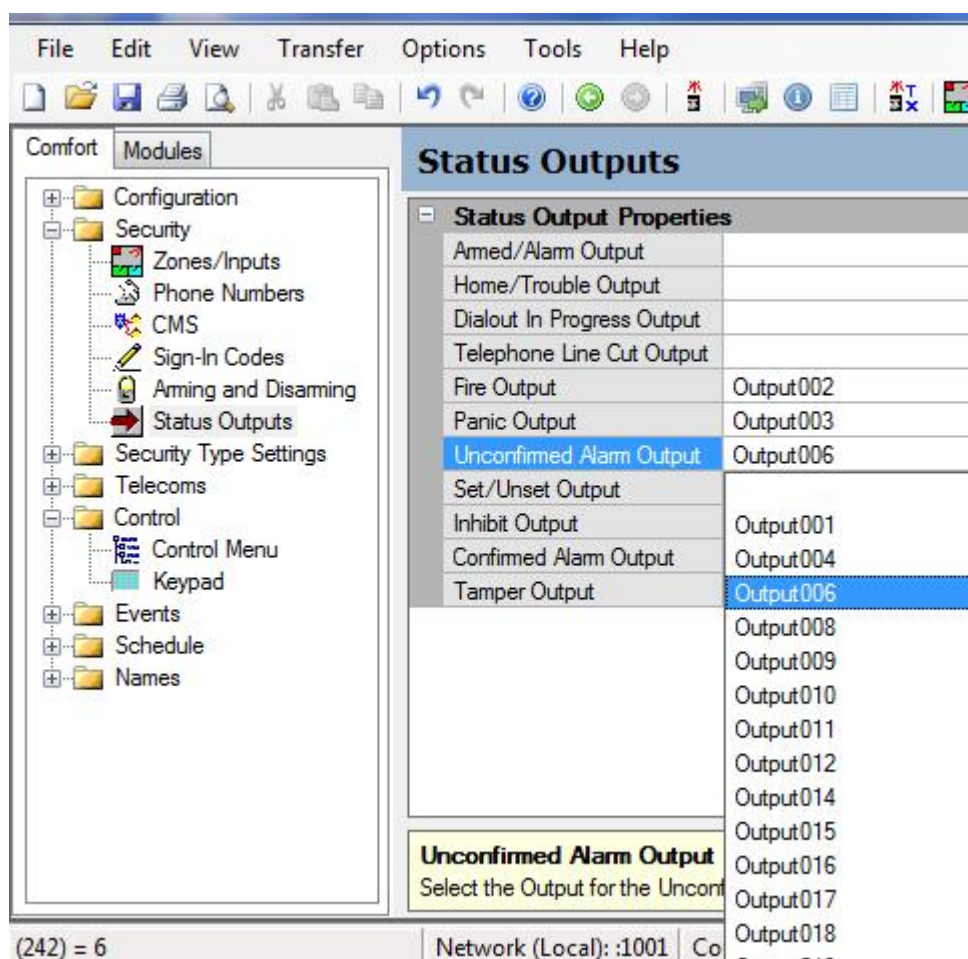
Figure G.4 Intruder alarm before entry and detector of the entry route during entry

If intruder alarm starts before entry alert, causing an uncnfirmed alarm ie confirmation alert timer is running eg 30 minutes, if non entry path detector is activated within entry delay, the notification delay is not started. Confirmed alarm is notified at the end of entry delay

Comfort Compliance with BS8243

Support for BS8243 is implemented in Comfigurator 3.7.x and above with Comfort minimum fiirmware 7.037 and above

The Status > Outputs to assign Outputs to Panic, Fire, Unconfirmed alarm, Confirmed alarm, Inhibit, Set/Unset for Redcare so that it is not necessary to program Responses to control the outputs.

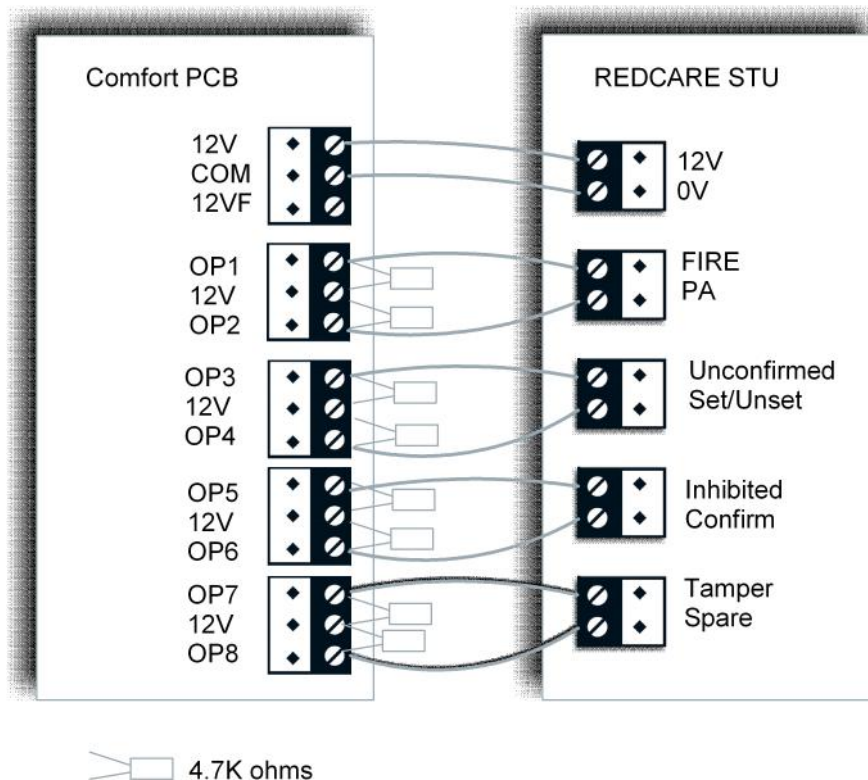


Each of these events can assign an Output to be set and reset based on the event and restore. If the Alarm Output is set to 0 or 255 or an invalid output then there will be no effect

Comfort Connections to Digital Communicators

Comfort Outputs are open-collector, ie the terminals outputs are open circuit when off, and pull to ground when turned on (ie negative-applied outputs). The load is connected between the Output terminal and the centre +12V terminal. The Comfort 12V output supplies the 12V voltage for the STU.

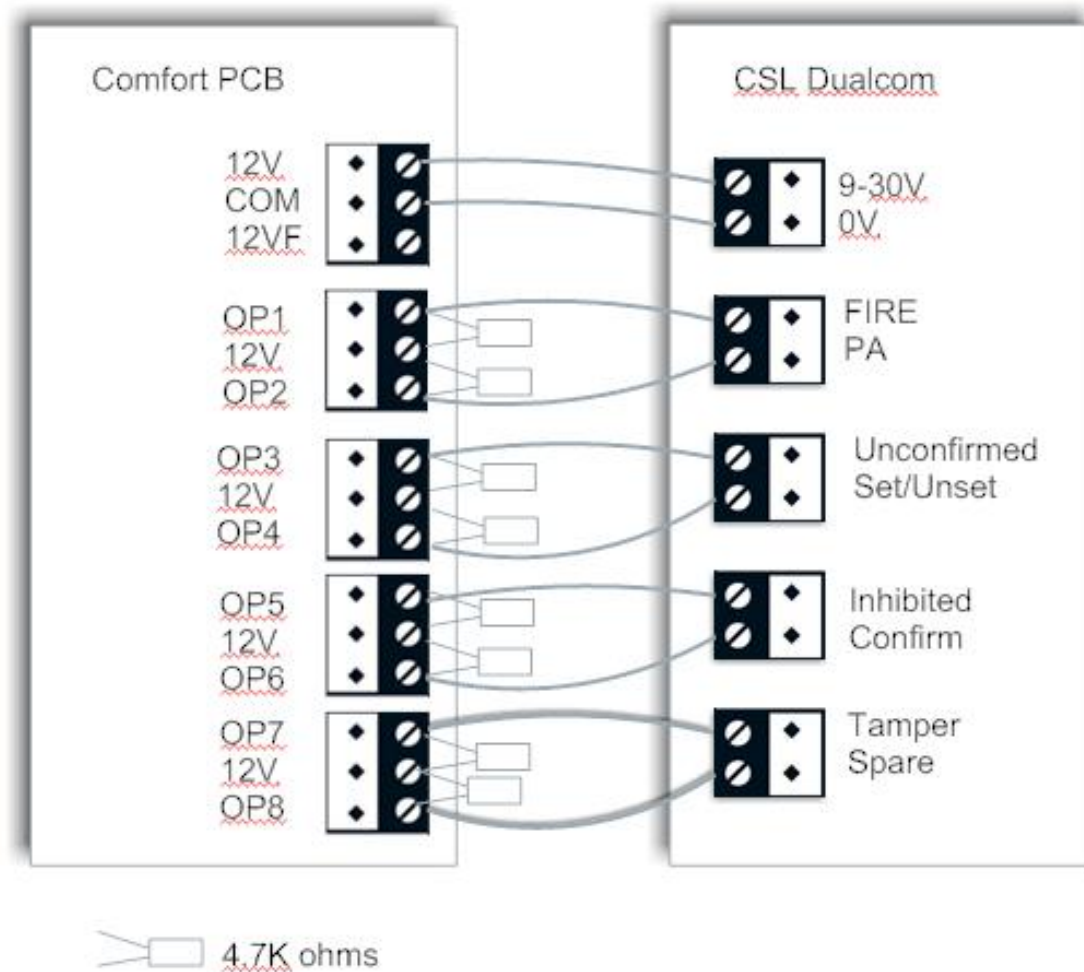
Comfort to REDCARE



Comfort Connection to STU

A 4K7 pull-up resistor may be connected between +12V and the output if required to pull up the signal to the STU

Comfort to CSL Dualcom



Comfort Output Connection to CSL Dualcom

A 4K7 pull-up resistor is required to be connected between +12V and the Comfort output to pull up the signal to the communicator. CSL Dualcom has a 100K pulldown resistor on each input. The Dualcom triggering should be "Positive Removed".

Operation of Comfort Status Outputs

The Outputs will operate as follows;

Fire

A Fire Alarm Type activation turns on the Fire output. A zone must be assigned to one of the Fire Normally closed zone type. The Fire Output is reset by disarming the alarm and not by restoral of the Fire zone.

Hold-up (Panic)

A Panic Alarm Type activation turns on the PA Output. A zone must be assigned to the Panic Zone Type. The PA output is reset by disarming the alarm and not by restoral of the panic zone. The two key combination on the keypad (F and Away) will turn on the Panic output

Unconfirmed Alarm

The 1st alarm activation turns on the Unconfirmed (Burglar) alarm output. This output remains on for the alert time duration (30 to 60 minutes). This delay duration is determined by the Alert Time programmed in Configuration > Modules and Settings >

Alert Time. Alert or Perimeter Zone Types will also cause an Unconfirmed alarm BUT it is not necessary to use Alert or Perimeter zone types. If the timer expires without a confirmed alarm or the system is disarmed, the output is turned off. If a second active zone is detected during the Alert Time, the confirmed alarm output is also set. If the timer expires, and the zone which caused the unconfirmed alarm is still open, the Inhibit output will turn on (see below)

Open/Close

The Set Output is turned on when the security system is armed and turned off when the security system is disarmed.

Inhibit

The Inhibit Output is turned on when a zone which caused the unconfirmed alarm is still open when the confirmation timer expires

Confirmed Alarm

A sequential confirmed alarm will turn on the Confirmed alarm output. The output is turned off by disarming the system.

Tamper

The Tamper Output is activated by a tamper alarm as an unconfirmed alarm. A combination of a tamper alarm and an unconfirmed Intruder alarm is considered a sequential confirmed alarm (H.3.1) The tamper output is restored when the tamper condition is restored provided the system is unset at that time. If the tamper condition is restored while the system is armed, the Tamper output is restored when the system is unset.

Alert Time

This means Confirmation Time in BS8243. Set 30 to 60 minutes to comply with BS8243

The screenshot shows the 'Modules and Settings' window in the Comfort II ULTRA software. The left sidebar lists various configuration modules, with 'Modules and Settings' selected. The main window displays a list of settings, including 'Show Alarms' (Yes), 'Allow Low Battery Arm' (No), 'Require Engineer Code To Write Configuration' (No), 'Detect Battery Disconnected' (No), 'Entry Alert Disable Confirmed Alarm (BS8243)' (No), 'Unused Bit 6' (No), and 'Unused Bit 7' (No). Under the 'Miscellaneous Settings' section, 'Alert Time (minutes)' is highlighted and set to 30. Other settings include 'Battery Test Interval (hours)' at 24, 'Battery Test Duration (minutes)' at 2, 'Zone Auto-Shunt Count' at 3, 'Time Adjust' at 0, 'Line Cut Timer (seconds)' at 60, 'Siren Delay (minutes)' at 3, and 'Zone Off Word' set to 'Off'. A status bar at the bottom left shows '[1703] = 30'.

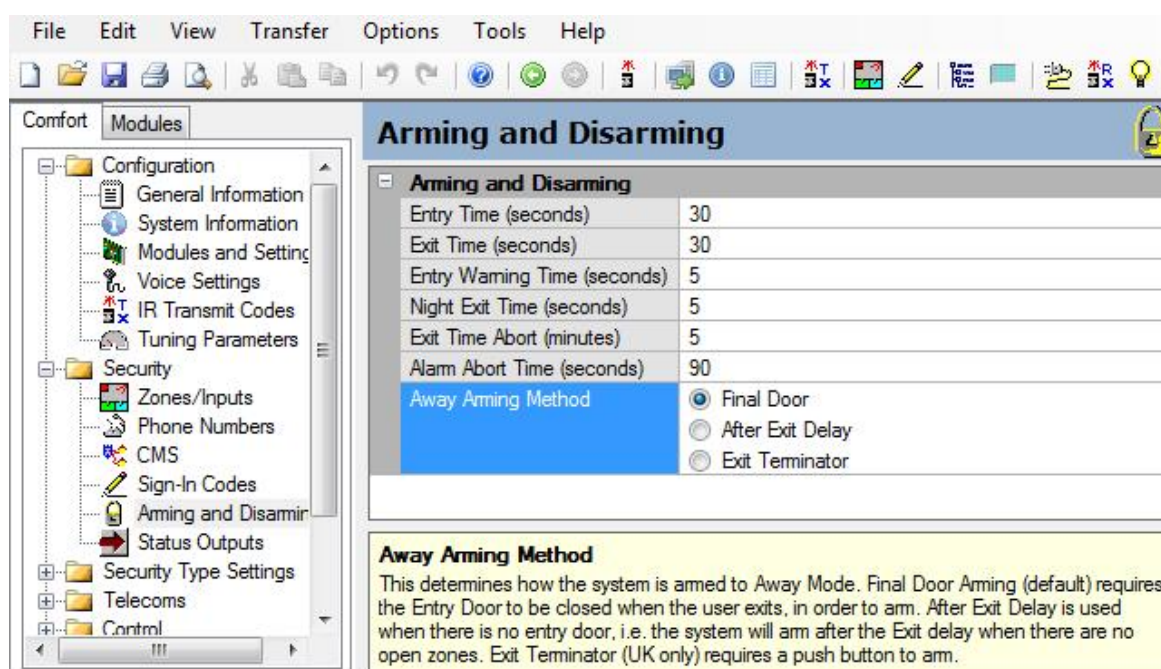
Setting	Value
Show Alarms	☒ Yes
Allow Low Battery Arm	☐ No
Require Engineer Code To Write Configuration	☐ No
Detect Battery Disconnected	☐ No
Entry Alert Disable Confirmed Alarm (BS8243)	☐ No
Unused Bit 6	☐ No
Unused Bit 7	☐ No
Miscellaneous Settings	
Battery Test Interval (hours)	24
Battery Test Duration (minutes)	2
Zone Auto-Shunt Count	3
Time Adjust	0
Alert Time (minutes)	30
Line Cut Timer (seconds)	60
Siren Delay (minutes)	3
Zone Off Word	Off
Word List	English Residential

Alert Time (minutes)
When a Perimeter or Alert Zone is triggered, the system goes into Alert Mode. If another Alert Zone is triggered during this time, a confirmed Intruder Alarm is activated. This parameter specifies the duration of the alert time.

[1703] = 30 Network (Local): :1001 Comfort II ULTRA English Residential FileSystem: 34

Away Arm Method

Away Arm Method = Final door or Exit terminator. This applies for arming to AWAY mode only. If Final Door is selected, the Entry Door must be used to exit the premises. If Exit Terminator is selected, the Door Station call button acts as Exit Terminator button to complete the Away arming of the system

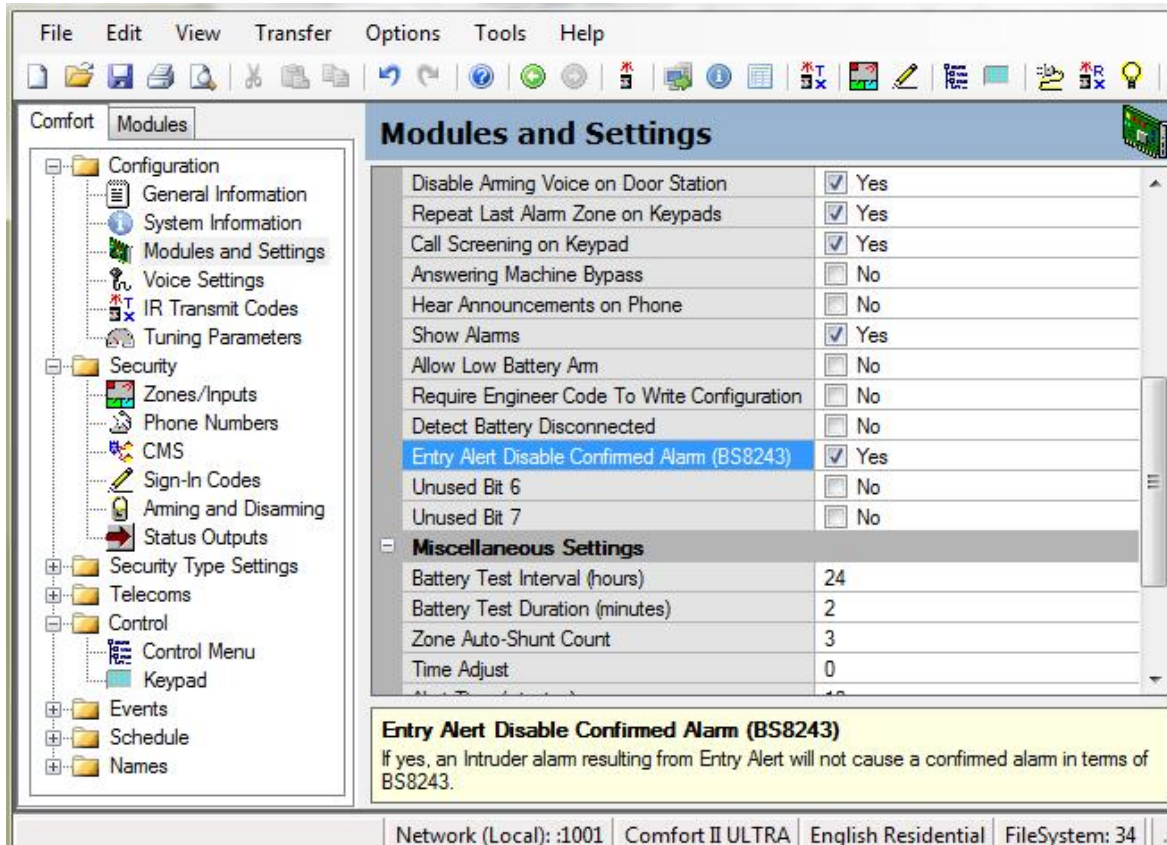


Notification Delay on Entry Alert

When the entry delay expires without the system being disarmed, an intruder alarm occurs. This is treated as an Unconfirmed alarm, ie the Unconfirmed alarm output is set. If there is a deviation from the entry path, a Notification delay of 30 seconds is started (fixed delay in Comfort). The unconfirmed and confirmed alarm outputs are set when the later of entry time and Notification timer expires (BS8243 Figure G1 and G2). If there are 2 deviations from the entry path, both unconfirmed and confirmed alarm outputs are set immediately (BS8243 Fig G3). If an unconfirmed alarm occurs before entry, a deviation from entry path will cause both unconfirmed and confirmed alarm outputs to be set (BS8243 Fig G4). However the alarm behaviour and timing of Comfort during this time remains unchanged, except for the behaviour of the alarm outputs.

Unsetting by Keypad

If a keypad is used to unset the system, opening the entry door should disable all means of confirmation (section 6.4.4). Comfort complies with this method by means of the checkbox “Entry Alert Disables Confirmed alarm (BS8243)” as shown below.

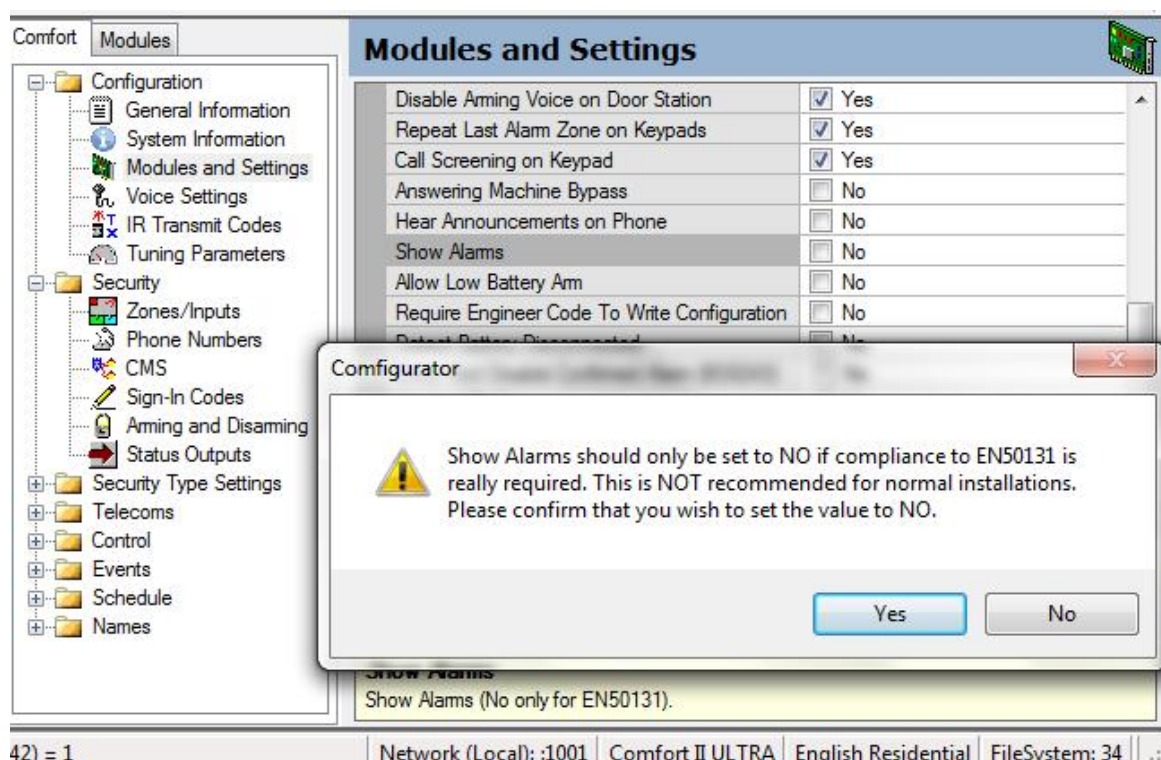


If option “Entry Alert Disables confirmation” in Modules and Settings is checked entry alert will prevent the Confirmed alarm output from switching on. It is recommended to have a shunt lock to unset the alarm before entry to comply with BS8243 section 6.4.3

Show Alarms

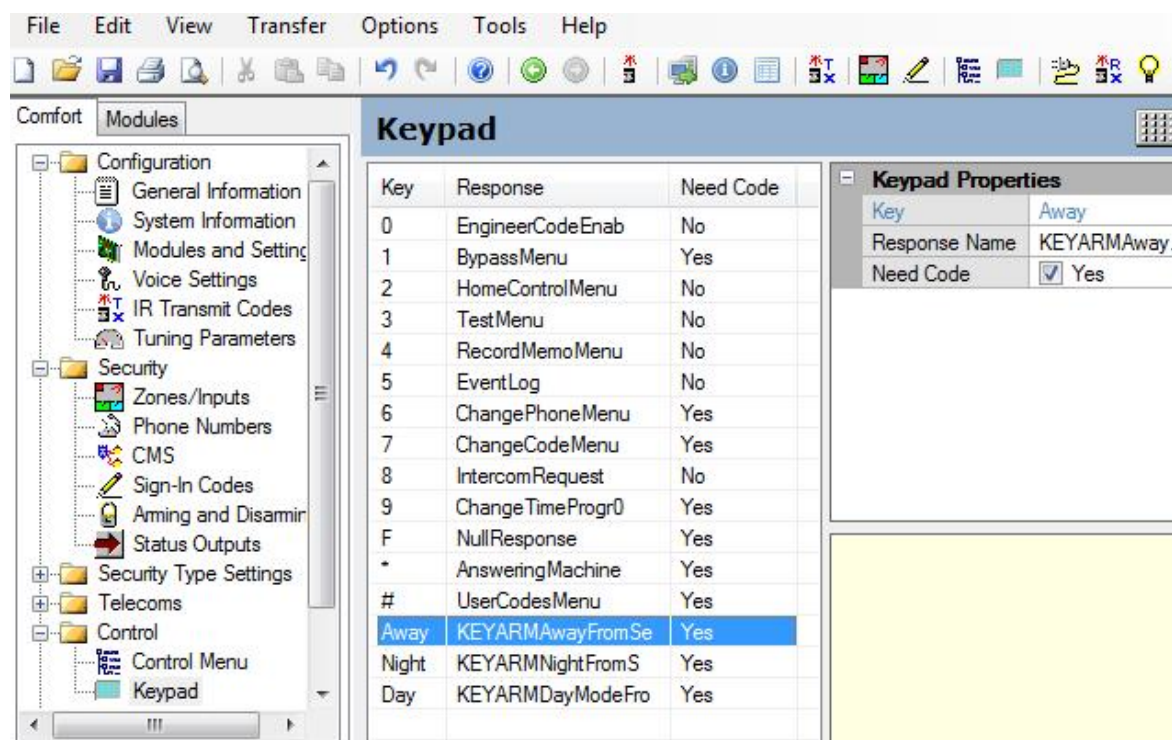
Show alarms = off. This means that keypads LCD display and led indicators shall turn off after 30 seconds. (EN50131-1)

When the Show Alarms box is unchecked, a message will pop up as shown below. Select Yes to proceed. “Show Alarms” should be enabled if it is not required to comply with EN50131.



Keypad Arm Keys

For Control > Keypad, check "Need Code" on Away, Night, Day keys so System is set at Access level 2 (EN50131-1 Table 2). This means that the keypad Away, Night and Day keypad Keys when pressed will ask for the user code before allowing the system to be armed.



Tamper Alarm is not heard on the external bellbox when system is unset, and is heard on the external Bellbox when set (EN50131-1 Table 7)

Document History

27 June 2012 - Started Draft

13 Dec 2012 - added Firmware Notes

23 March 2013 - further expansion

10 August 2013 - added instructions for Configurator

31 August 2017 - added connections to CSL Dualcom