Dated: 16 July 2010
To: All NACOSS Gold and Systems Silver approved companies and applicants for NACOSS Gold and Systems Silver approval

TECHNICAL BULLETIN No. 0015

Guidance on the implementation of BS EN 50131-1:2006 +A1:2009
Alarm systems – Intrusion and hold-up systems – Part 1: System requirements
(Supersedes prEN 50131-1: 2004)

OVERVIEW

The existing scheme for the application of European Standards for Intrusion (Intruder) and Hold-up Alarm Systems (I&HASs) is given in PD 6662: 2004 (as amended in 2006).

PD 6662: 2004 lists the standards that need to be complied with and one of the standards is draft European Standard prEN 50131-1: 2004 ("the present prEN").

The new scheme for I&HASs is given in PD 6662: 2010 and this PD requires compliance with European Standard BS EN 50131-1: 2006 +A1: 2009 ("the new EN"). Please refer to the new EN for full details of the requirements.

This Technical Bulletin gives guidance on the MAIN CHANGES between the present prEN and the new EN. These changes apply when I&HASs are installed to PD 6662: 2010. Section 1 on pages 2, 3 and 4 gives a summary of the changes. Section 2, starting on page 5, gives further details about the changes.

Installing I&HASs to PD 6662: 2010 involves much more than the changes relating to the new EN. Therefore, please refer to NSI Technical Bulletin 0013 for more details about the changes and information about the two-year transition from PD 6662: 2004 to PD 6662: 2010, which began on 31 May 2010.

Please also refer to further NSI Technical Bulletins for details of the changes due to some of the other standards called-up by PD 6662: 2010 (for example BS 8243 and DD 263).

STATUS OF BS EN 50131-1: 2006 +A1: 2009

BS EN 50131-1: 2006 +A1: 2009 needs to be met when I&HASs are installed to PD 6662: 2010. This is as well as meeting the other standards called-up by PD 6662: 2010.

SECTION 1 – SUMMARY OF THE CHANGES (SEE PAGES 2, 3 AND 4)

This section summarises the changes that are brought into effect by the new EN.

Please go to **Section 2** starting on page 5 if you want to read further details about the changes.

Clause 7.3 – environmental class III

Use class III (or class IV) components indoors if they may be exposed to extreme environmental conditions (for example in loading bays).

Clause 8.1.4 – recognition of faults

If there is a requirement for more than one alarm transmission system (ATS), ensure that the I&HAS recognises a fault on whichever ATS the fault occurs on.

Clause 8.3.1 – preventing access at level 3

If the I&HAS is configured so that you can gain access at level 3 without being permitted to do so by a level 2 user, ensure that the customer has agreed to this in writing. This also applies under the present prEN.

Clause 8.3.1 – add/delete level 2 users & codes

Level 2 (as well as level 3) users are permitted to add/delete level 2 users & codes.

Clause 8.3.2 – authorisation

The numbers of differs required for mechanical (physical) keys have changed compared to the present prEN, but they are unchanged compared to NSI Technical Bulletin 0001 and therefore there is no overall change. See **Section 2** for further details.

Clause 8.3.4 – setting indication

It is optional under the new EN to have a setting indication during the setting procedure.

However, it is mandatory under 6.3 of DD 243: 2004 and 6.3 of BS 8243: 2010 to have at least one internal audible indication during the setting procedure.

Clause 8.3.5 – prevention of setting

A warning device fault must prevent setting in grades 2, 3 and 4.

Clause 8.3.6 – overriding prevention of setting

A level 2 user is permitted to override a warning device fault in grade 2. A level 3 user (but not a level 2 user) is permitted to override a warning device fault in grades 3 and 4.

Clause 8.3.7 – completion of setting indication

There must be a time limited completion of setting indication to show that the I&HAS or part thereof has changed to a set state and this indication should be of sufficient duration to

enable a user to ascertain the status of the I&HAS. This is not a new requirement, but is included here for clarity alongside other requirements for indication.

Clause 8.3.8.2 – completion of unsetting indication

There must be a time limited completion of unsetting indication, which must not be indicated for more than 30 seconds.

Clause 8.3.8.2 – alarm condition occurring during unsetting

When an intruder alarm condition occurs during the unsetting procedure (for example by straying off the entry route) the alarm condition must be notified by a warning device or indicated at the supervised premises.

When remote notification is included in the intruder alarm system, the alarm condition must NOT be remotely notified (to an alarm receiving centre) until the indicator or warning device has functioned for a minimum of 30 seconds AND the entry timer has expired.

Further details can be found in BS 8243: 2010 in relation to alarm confirmation.

Clause 8.3.9 – restoring

A level 3 user is permitted to restore all conditions in all grades of I&HAS.

A level 2 user is permitted to restore all conditions in all grades of I&HAS except that a level 2 user is not permitted to restore a tamper condition in grades 3 and 4 or a fault condition in grades 3 and 4 unless the fault is a prime power source fault (such as a mains supply fault) or an alarm transmission system (ATS) fault.

Clause 8.3.10 - inhibit

Access level 3 users are permitted to have access to the means of inhibiting.

Clause 8.4 – processing

In grade 2 (as well as in grades 3 and 4), in the set condition, a fault signal must be remotely notified as a fault.

Clause 8.7.2 – tamper detection of junction boxes

It is optional under the new EN for junction boxes in grade 2 to have means to detect opening by normal means whereas such detection is mandatory under the present prEN. NSI decided some time ago (see NSI Technical Bulletin 0001) not to “mark down” I&HASs for lack of tamper detection on junction boxes and this continued until 1 April 2007 when tamper detection on junction boxes was required in grades 3 and 4 (see NSI circular letter 030/06). Therefore there is now no change in practice to the requirements for junction boxes.

Clause 8.7.2 – tamper detection of wired I&HAS components

In grades 3 and 4, under the new EN, all wired (cabled) components (apart from junction boxes in grade 3 and opening contacts in grade 3) must have means to detect removal from mounting (“rear tamper”).

Clause 8.7.3 – monitoring of substitution

It is mandatory in grade 4 to generate a tamper signal if the substitution of any I&HAS component is detected when the I&HAS is in either the set or the unset condition.

See also 8.10 – events to be recorded.

Clause 8.8.3 – monitoring of interconnections

The requirements for monitoring interconnections do not apply to portable hold-up devices and portable ancillary control equipment (such as digital keys and the like).

Clause 8.10 – event recording

Remote means of recording must comply with the requirements of Table 21 of the new EN. See **Section 2** for further details.

Clause 8.10 – events to be recorded

It is mandatory in grade 2 (as well as in grades 3 and 4) to record (in the event log) any overriding by users of conditions that have prevented setting.

It is mandatory in grade 4 to record (in the event log) the detection of substitution of any I&HAS component.

Clause 9.1 – power supply

Power supplies must comply with BS EN 50131-6: 2008 at the appropriate grade and environmental class.

Clause 9.2 – alternative power supply

The alternative power supply needs to be able to power the I&HAS for the required amount of time, including the generation of all mandatory indications and notifications resulting from the processing of TWO separate intruder alarm signals.

The required standby times are unchanged. See **Section 2** for further details.

Clause 12.1 – electromagnetic compatibility

The electromagnetic compatibility performance requirements for I&HAS components are described in EN 61000-6-3 and EN 50130-4.

Clause 13 – electrical safety

An I&HAS component must provide protection against electrical shock and consequential hazards by achieving compliance with the requirements of EN 60950-1 or EN 60065.

Clause 15 – marking and identification

All I&HAS components complying with a 50131 standard must be correctly marked. See **Section 2** for further details.

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SECTION 2 – FURTHER DETAILS ABOUT THE CHANGES

Further details about the changes brought into effect by the new EN are given below according the relevant clause number.

Actual text from the new EN is reproduced in **bold text**. *Further guidance or comment about the requirements is given in italics.*

Please refer to the new EN for full details of the requirements.

Clause 7.3 – environmental class III – outdoor – sheltered or indoor extreme conditions

Environmental influences normally experienced out of doors when I&HAS components are not fully exposed to the weather or indoors where environmental conditions are extreme.

The change to the standard relates to the addition of the words "or indoors where environmental conditions are extreme" and points to the need to use class III (or class IV) components indoors if they may be exposed to extreme environmental conditions.

Clause 8.1.4 – recognition of faults – table 1

Where an I&HAS is required by its grade and notification option to have more than one alarm transmission system (ATS), a fault on any ATS must be recognised.

This requirement applies to I&HASs that meet notification option C in grades 2, 3 or 4 (see Table 10 of the new EN). The requirement means that the I&HAS must be able to recognise a fault on whichever ATS the fault occurs on.

There is already a requirement in E.1.1 of Annex E of PD 6662: 2004 for a detectable fault on any alarm transmission system be to be indicated on the control and indicating equipment (CIE), but the requirement in the new EN is underlining the need for the I&HAS to be able to recognise a fault in the first place.

Clause 8.3.1 – preventing access at level 3

The new EN gives two options, a) and b), for preventing access at level 3. The text of the new EN relating to these options reads as follows:

Access at level 3 shall be prevented unless either

a) access has been permitted by a user with level 2 access, or

b) in Grades 1, 2 and 3 I&HAS, access at level 3 may be provided without authorisation by a level 2 user providing

1) the user to be given access at level 3 is at the supervised premises and accesses the CIE locally, and

2) the I&HAS is unset; and

3) in Grade 1 I&HAS notification is given by a warning device when the access at level 3 is granted,

4) in Grades 2 and 3 I&HAS notification is given by a warning device and remotely, i.e. by an ATS, when the access at level 3 is granted.

Comments about option a):

Option a) already applies under the present prEN and continues under the new EN. In strict terms option a) is saying that a level 3 user is not permitted access to the I&HAS until a level 2 user has permitted such access.

A.3 of Annex A of PD 6662: 2010 states:

> ***NOTE BS EN 50131-1 does not specify how long level 2 authorization may remain active or that it is required individually each time that level 3 access is required. There is thus no time limit, and level 2 authorization may remain in force until manually removed (see BS EN 50131-3: 2009, 8.3.1).***
>
> **If level 2 authorization remains available until manually reset, written agreement is needed to confirm that the customer has agreed to this, in addition to the electronic authorization.**

If the I&HAS is configured so that you can gain access at level 3 without being permitted to do so by a level 2 user, ensure that the customer has agreed to this in writing. This applies under the present prEN and under the new EN.

Comments about option b):

Option b) is not available under the present prEN, but is permitted under the new EN.

You do not need written agreement from the customer if you configure the I&HAS in accordance with option b). However, due to the notification requirements you may wish to discuss this option with the customer before using it.

If you choose option b) in grade 2, option X, we suggest that you should follow b) 3) and give notification by a warning device when the access at level 3 is granted.

Clause 8.3.1 – add/delete level 2 users & codes

Level 2 and level 3 users are permitted to add/delete level 2 users & codes.

Only level 3 users are permitted to add/delete level 2 users & codes under the present prEN.

Clause 8.3.2 – authorisation

The authorisation code requirements are given in Table 3 of the new EN.

Table 3 is reproduced below for ease of reference.

Table 3 – Authorisation code requirements

Access levels 2, 3, & 4	Grade 1 differs	Grade 2 differs	Grade 3 differs	Grade 4 differs
Logical key	1 000	10 000	100 000	1 000 000
Mechanical key	300	3 000	15 000	50 000
NOTE Reference to mechanical and logical keys in the above table does not exclude the use of other means of authorisation, e.g. biometrics.				

The number of differs is in effect the number of variations that are possible with a particular type of key.

The differs required for mechanical keys (formerly called physical keys) have been lowered compared to the present prEN. However, NSI adopted the new EN requirements some time ago (see NSI Technical Bulletin 0001) and therefore there is no change in practice.

Examples of logical keys include PIN codes (see immediately below), digital keys and biometric keys.

- *1,000 differs are achieved using a three digit PIN code (0 – 999 inclusive)*
- *10,000 differs are achieved using a four PIN code (0 – 9,999 inclusive)*
- *100,000 differs are achieved using a five digit PIN code (0 – 99,999 inclusive)*
- *1,000,000 differs are achieved using a six digit PIN code (0 – 999,999 inclusive)*

Examples of digital keys include magnetic card, electronic token or similar, provided these keys have the required number of differs according to the grade of the I&HAS.

Examples of biometric keys include finger print or iris recognition, provided these keys are equivalent of the required number of differs according to the grade of the I&HAS.

Clause 8.3.4 – setting

No further guidance given.

Clause 8.3.5 – prevention of setting

A warning device fault must prevent setting in grades 2, 3 and 4.

Under PD 6662: 2010, warning devices must comply with BS EN 50131-4 according to the grade of the I&HAS and therefore certain warning devices will have the ability to generate fault signals.

Clause 8.3.6 – overriding prevention of setting

No further guidance given.

Clause 8.3.7 – completion of setting indication

No further guidance given.

Clause 8.3.8.2 – completion of unsetting indication

There must be a time limited completion of unsetting indication, which must not be indicated for more than 30 seconds.

For example there could be an LED indication at the keypad that lasts for no more than 30 seconds after unsetting has been completed.

Note: The ceasing of an audible indication to leave permanent silence is not a time limited indication. There has to be a distinct indication of limited duration.

Clause 8.3.8.2 – alarm condition occurring during unsetting

No further guidance given.

Clause 8.3.9 – restoring

Table 6 of the new EN has been extended to cover more conditions and goes further than is already provided for in Table E.2 of Annex E of PD 6662: 2004.

Table 6 is reproduced below for ease of reference.

Table 6 - Restoring

Conditions	Grade 1	Grade 2	Grade 3	Grade 4
Intruder	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
Hold-up	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
Tamper	Access level 2 or 3	Access level 2 or 3	Access level 3	Access level 3
Fault [a]	Access level 2 or 3	Access level 2 or 3	Access level 3	Access level 3
Prime power source fault	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
ATS fault	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
Masking	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
Significant reduction of range	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3	Access level 2 or 3
[a] Except prime power source and ATS faults.				

Clause 8.3.10 - inhibit

I&HAS may include the means necessary to inhibit the functioning of individual groups of functions. Access to the means of inhibiting shall be restricted to users with access levels 2 or 3.

Under the present prEN access to means of inhibiting is restricted to access level 2 users.

Clause 8.4 – processing

In grade 2 in the set condition (as well as in grades 3 and 4) a fault signal must be remotely notified as a fault (see Table 7 of the new EN).

Under the present prEN (in grade 2 in the set condition) a fault signal may be sent to the ARC as either an intruder signal or a fault signal. However, if the I&HAS complies with DD 243: 2004 or BS 8243: 2010 the fault signal must be sent to the ARC as a fault signal so as to help minimize false alarms. So there is no change in relation to I&HASs complying with DD 243 or BS 8243.

Clause 8.4 – indications

There are five new rows in Table 8 of the new EN reflecting the need to provide certain indications.

To illustrate the changes, the following Table shows the new rows only.

Part of Table 8 – Indication

Indications	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**
Detector alarm condition indicator (see 8.5.4)	M	M	M	M
Setting (see 8.3.4) [b]	Op	Op	Op	Op
Completion of setting (see 8.3.7) [b]	M	M	M	M
Entry indication (see 8.3.8.2) [b & c]	M	M	M	M
Completion of unsetting (see 8.3.8.2) [b & c]	M	M	M	M
Key: M = Mandatory Op = Optional				
[b] These indications are time limited.				
[c] These indications are mandatory only when the optional unsetting procedure described in 8.3.8.2 is used.				

Detector alarm condition indicator:

Intrusion detectors which include processing capability must include individual means of indication of alarm conditions (see 8.5.4 of the new EN and the present prEN). These individual alarm conditions must be indicated at the CIE or ACE.

C.1 of Annex C of PD 6662: 2010 (and also E.6 of Annex E of PD 6662: 2004) states:

> **For the purposes of this UK scheme, detectors which include processing capability are deemed to include, but are not necessarily restricted to, the following devices: microwave Doppler detectors; ultrasonic Doppler detectors; standing wave ultrasonic detectors; acoustic detectors; passive infra-red detectors; pressure differential detectors; capacity volume detectors; vibration detectors; beam interruption detectors; capacity proximity detectors; breaking glass detectors and seismic detectors.**

Therefore these kinds of detector need to include individual means of indication of alarm conditions.

Clause 8.5.2 – availability of indications

There are four new rows in Table 9 of the new EN. To illustrate the changes, the Table below shows the new rows only.

Part of Table 9 – Indications available during set and unset status at access level 1

Indications	Grade 1		Grade 2		Grade 3		Grade 4	
	Set	Unset	Set	Unset	Set	Unset	Set	Unset
Setting (see 8.3.4) [a]	NA	Op	NA	Op	NA	Op	NA	Op
Completion of setting (see 8.3.7) [a]	M	NA	M	NA	M	NA	M	NA
Entry indication (see 8.3.8.2) [a & b]	M	NA	M	NA	M	NA	M	NA
Completion of unsetting (see 8.3.8.2) [a & b]	NA	M	NA	M	NA	M	NA	M
Key: Op = Optional NP = Not Permitted NA = Not Applicable M = Mandatory								
[a] These indications are time limited.								
[b] These indications are mandatory only when the optional unsetting procedure described in 8.3.8.2 is used.								

Clause 8.7.2 – tamper detection

No further guidance given.

Clause 8.7.3 – monitoring of substitution

No further guidance given.

Clause 8.8.3 – monitoring of interconnections

No further guidance given.

Clause 8.10 – event recording

Remote means of recording must comply with the requirements of Table 21 of the new EN. For ease of reference, Table 21 is reproduced below:

Table 21 – Event recording - Memory

Capacity & endurance	Grade 1	Grade 2	Grade 3	Grade 4
Memory capacity – Minimum number of events	Op	250 events	500 events	1000 events
Minimum endurance of memory after I&HAS power failure	Op	30 days	30 days	30 Days
Key: Op – Optional.				

Clause 8.10 – events to be recorded

No further guidance given.

Clause 9.1 – power supply

Power supplies must comply with BS EN 50131-6: 2008 at the appropriate grade and environmental class.

Section 3.2 of PD 6662: 2010 calls for compliance with BS EN 50131-6: 2008.

Clause 9.2 – alternative power supply

The alternative power supply needs to be able to power the I&HAS for the required amount of time, including the generation of all mandatory indications and notifications resulting from the processing of TWO separate intruder alarm signals.

The required times are given in Table B.1 of B.4 of Annex B of PD 6662: 2010 and are unchanged compared to Table E.1 of E.2 of Annex E of PD 6662: 2004.

The relevant Table from the PD 6662: 2010 is reproduced below for ease of reference:

Table B.1 – Duration of alternative power supply

Types of power supply	Grade 1 h	Grade 2 h	Grade 3 h	Grade 4 h
Type A	12	12	24 *	24 *
Type B	24	24	120	120

Type A: A prime power source (for example the mains supply) and an alternative power source recharged by an I&HAS (for example a rechargeable battery, automatically recharged by an I&HAS).

Type B: A prime power source (for example the mains supply) and an alternative power source NOT recharged by an I&HAS (for example a battery, NOT automatically recharged by an I&HAS).

* May be halved to 12 hours in grades 3 and 4 when individual prime power source faults are notified remotely.

Clause 12.1 – electromagnetic compatibility

The electromagnetic compatibility performance requirements for I&HAS components are described in EN 61000-6-3 and EN 50130-4.

The present prEN refers to EN 50081-1 instead of EN 61000-6-3.

Clause 13 – electrical safety

An I&HAS component must provide protection against electrical shock and consequential hazards by achieving compliance with the requirements of EN 60950-1 or EN 60065.

The present prEN refers to EN 60950 instead of EN 60950-1.

Clause 15 – marking and identification

Components complying with a BS EN or DD CLC/TS standard in the 50131 series need to be marked in accordance with the new EN (see 4.2 of PD 6662: 2010).

The following text is reproduced from clause 15 of the new EN:

All I&HAS components must be marked with the following:

- **name of manufacturer or supplier**
- **type**
- **date of manufacture or batch number or serial number**
- **standard to which the component claims compliance**
- **security grade**
- **environmental class**

The marking must be legible, durable and unambiguous.

When space for marking of an I&HAS component is limited, codes may be used providing these are described in the associated component documentation.

When insufficient space is available for codes the component shall include means of identification which allows cross reference to documentation providing the required information.

The change of requirement in relation to the new EN is that marking now includes the "standard to which the component claims compliance".

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