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BSI Standards Publication

Alarm systems — Intrusion and hold-up systems

Part 12: Methods and requirements for setting and unsetting of Intruder Alarm Systems (IAS)

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National foreword

This Published Document is the UK implementation of CLC/TS 50131-12:2016.

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European foreword

This document (CLC/TS 50131-12:2016) has been prepared by CLC/TC 79 "Alarm systems".

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Introduction

Unwanted alarms have been a significant problem for response authorities throughout Europe. A significant proportion of these are attributed to “operator error” during the entry and exit procedures. Recommendations are therefore made for the selection of methods of setting and unsetting an Intrusion Alarm System (IAS) that will minimize such errors.

1 Scope

This Technical Specification provides recommendations for those methods of setting and unsetting an Intrusion Alarm System (IAS) complying with EN 50131-1 that will reduce unwanted alarms arising from “operator error” in setting and unsetting the IAS and provide confidence that the conditions in which the system is installed are conducive to system reliability during the “set” period.

This document details optional methods by which these goals may be achieved, either in isolation, or in conjunction with verification methods.

These recommendations should be incorporated into the respective standards in the EN 50131 series.

This Technical Specification also provides (in Annex A) recommendations for equipment and (in Annex C) associated test requirements, in order to permit the manufacture of standardized equipment to provide the functionality needed by an IAS to meet these recommendations.

NOTE This standard includes requirements that are additional to those in EN 50131-1 which are relevant when the respective method of setting and unsetting is implemented.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50131-1:2006, *Alarm systems — Intrusion and hold-up systems — Part 1: System requirements*

CLC/TS 50131-2-10:2014, *Alarm systems — Intrusion and hold-up systems — Part 2-10: Intrusion detectors — Lock state contacts (magnetic)*

EN 50131-3:2009, *Alarm systems — Intrusion and hold-up systems — Part 3: Control and indicating equipment*

FprEN 50131-5-3:2016, *Alarm systems — Intrusion systems — Part 5-3: Requirements for interconnections equipment using radio frequency techniques*

CLC/TS 50131-9:2014, *Alarm systems — Intrusion and hold-up systems — Part 9: Alarm verification — Methods and principles*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
unverified alarm
intruder or hold-up alarm that has not yet been sequentially, visually or audibly verified

[SOURCE: CLC/TS 50131-9: 2014, 3.1.14]

3.2
verified alarm
alarm considered genuine as a result of the use of alarm verification

[SOURCE: CLC/TS 50131-9: 2014, 3.1.16]

3.3
lock state monitoring device
apparatus which monitors the bolt position of a locking device, e.g. a bolt contact or a lock state contact as described in CLC/TS 50131-2-10

3.4
blocking function
logical function which prevents entry to the protected premises during the set state of the IAS.

Note 1 to entry: This function can be integrated in any device, e.g. lock, CIE (see Annex B).

3.5
blocking element
physical device which secures the entry door and is used in conjunction with blocking function

Note 1 to entry: See Annex B.

4 Methods of setting and unsetting

4.1 General

The methods of setting and unsetting described may be used as complementary to alarm verification technology (CLC/TS 50131-9) or as stand-alone methods of minimizing unwanted alarms arising from errors during setting and unsetting of an IAS.

In general, methods of setting and unsetting may be selected in any combination to suit the requirements of the specific alarm system installation. However, the “coerciveness” principle (4.2.3 and 4.3.4) should be considered as a single coherent set of recommendations covering both setting and unsetting.

If setting or unsetting is carried out by a combination of methods of authorization, the requirements of EN 50131-3:2009, 8.3.2.3 apply.

NOTE IAS should provide means to implement at least one of the methods of setting described in 4.2 and at least one of the methods of unsetting described in 4.3.

4.2 Methods of setting

4.2.1 General

Consideration should be given to the provision of an indication to the user and/or notification to the ARC if an attempt to set the IAS is not completed within the pre-determined time.

Completion of setting procedures should not rely solely on actions within the supervised premises (for example, simple timed exit procedure), but should require a specific action external to the supervised premises). Suitable methods include those given in 4.2.2 to 4.2.5.

4.2.2 The setting procedure is carried out from outside the supervised premises

The setting procedure shall comply with EN 50131-1:2006, 8.3.5. This may be achieved by mechanical or electronic means, or by provision of an indication such that the user is aware that the system is prevented from setting. An indication of completion of setting required by EN 50131-1:2006, 8.3.7 which can be perceived outside the supervised premises shall be provided

4.2.3 The setting procedure is carried out from outside the supervised premises incorporating additional measures to ensure the integrity of the IAS.

NOTE This describes the “coerciveness” principle, known in Germany as “Zwangsläufigkeit.”.

The setting procedure shall follow the recommendations of 4.2.2 with the following additional requirements:

a) all applicable requirements of EN 50131-1:2006, Table 4 shall apply in all grades of system;

b) for IAS with non-specific (e.g. wire-free) interconnections, no interference may be present in any shared interconnection for longer than 30 s;

c) for IAS with non-specific or wire-free interconnections, setting shall be permitted only if signals or messages have been received from all system components within 100 s;

d) the lock state monitoring devices are in a locked condition;

e) blocking shall be achieved by using blocking function and element as specified in A.2;

f) no configuration is in progress which could influence the operation of the IAS;

g) no remote diagnostic process is in progress which could influence the operation of the IAS.

On completion of setting and before the set indication is enabled, a mechanism shall be activated by the IAS, preventing unlocking of the designated entry door before the IAS is unset.

The last unset operation shall be completed and the IAS clear before a new setting operation can be commenced.

Where the opening of a window is detected the lock state shall also be monitored. Setting is permitted only when the window is closed and locked.

4.2.4 Setting is carried out by a 2-stage process

The setting procedure shall be started by a user action and be completed by a positive action outside of the supervised premises. Suitable methods of completion include:

a) the action of closing the final exit door;

   EXAMPLE Response to closing of switch mounted on the door.

   The CIE shall include a function to prevent spurious activation from any exit route detector from affecting the setting procedure (e.g. whilst a detector is stabilizing).

b) the action of locking the door (e.g. response to contacted lock);

c) a separate user action at the supervised premises to confirm successful closure of final exit door (e.g. operation of push button or other device).

There shall be an indication that the setting procedure has commenced. (see EN 50131-3:2009, 8.3.3.2).

An indication of completion of setting as required by EN 50131-1:2006, 8.3.7, which can be perceived outside the supervised premises, shall be provided.

4.2.5 Setting is carried out in conjunction with the ARC

Setting shall be carried out in accordance with an agreed secure procedure. As a minimum, this should include:

a) appropriate measures to prevent setting the system with persons inside the supervised premises;

b) exchange of authorization information at least equivalent to EN 50131-1:2006, 8.3.2.

The indication of completion of setting required by EN 50131-1:2006, 8.3.7 shall be communicated to the system user.

4.3 Methods of unsetting

4.3.1 General

The entry procedure should be designed to avoid the possibility of a user error resulting in an unwanted alarm condition. Suitable methods include those given in 4.3.2 to 4.3.9.

4.3.2 Forced unsetting by unlocking

The action of unlocking the designated entry door shall automatically unset the IAS.

4.3.3 Access to the supervised premises is prevented whilst the IAS is set

It shall not be possible to open the designated entry door until the IAS has been unset.

4.3.4 Access to the supervised premises is prevented whilst the IAS is set (using the coerciveness principle)

It shall not be possible to open the designated entry door until the IAS has been unset and means shall be provided additional to the door locking function to prevent entry into the supervised premises.

This method shall be used if setting is carried out as per 4.2.3.

4.3.5 Access to the supervised premises is prevented unless any verification facility (as defined in CLC/TS 50131-9) has been disabled

a) The verification facility shall be disabled by the action of unlocking the designated entry door.

OR

b) The verification facility shall be disabled by the action of opening the designated entry door.

Option b) should be used only for very low risks and with the express consent of the client in view of the absence of any response in the event that the door is forced.

4.3.6 Unsetting by means of a timed entry procedure

The requirements of EN 50131-1:2006, 8.3.7 b) and 8.3.8.2 shall apply.

4.3.7 Unsetting by means of a timed entry procedure with verification facility (as defined in CLC/TS 50131-9)

The requirements of 4.3.6 and CLC/TS 50131-9 apply. The requirements of EN 50131-1:2006, 8.3.8.2 apply also to the notification of verification.

4.3.8 Unsetting by means of a timed entry procedure with verification facility (as defined in CLC/TS 50131-9) and use of digital key

The requirements of 4.3.7 apply. Unsetting shall only be achieved with a single action of a digital key.

NOTE In the event of an alarm being notified (locally or remotely) alternative means of unsetting can be used (e.g. PIN-code).

4.3.9 Unsetting is carried out in conjunction with the ARC

Unsetting shall be carried out in accordance with an agreed secure procedure. As a minimum, this should include the exchange of authorization information at least equivalent to EN 50131-1:2006, 8.3.2.

An indication of completion of unsetting equivalent to that described by EN 50131-1:2006, 8.3.8.2 shall be communicated to the system user.

5 Documentation

The system design proposal (see CLC/TS 50131-7, 7.3) and the system “as–fitted” document (see CLC/TS 50131-7, 10.7) shall include a description of the Set and Unset methods used.

Annex A
(normative)

Equipment specifications

A.1 Control and indicating equipment

CIE intended for use in systems designed to comply with this Technical Specification, and for which compliance with this specification is claimed shall provide the functionality for at least one method of setting and at least one method of unsetting, as described in Clause 4. If method 4.2.3 is supported for setting, the method of unsetting in line with 4.3.4 shall be provided.

In conjunction with 4.2.3, the CIE shall provide an output for the control of the means to prevent access to the supervised premises. Test requirements for CIE including this functionality are included in Annex B.

The associated documentation shall include details of which methods are supported, along with details of any specific programming required to enable them.

A.2 Function to prevent access to the supervised premises during set state

A.2.1 General

The function to prevent access to the supervised premises during set state shall be provided by using a combination of a blocking function and blocking element. These may be integrated as one component or be stand-alone.

A.2.2 Blocking function

The blocking function has to deliver a signal or message showing the state of the blocking element. Unblocking of the blocking element can only be initiated by unsetting the IAS.

NOTE A possibility for an emergency operation, however, is admitted (e.g. external power supply of the operational voltage).

A.2.3 Blocking element

The blocking element has to keep the door secured unless a unblock control signal or message is received from the blocking function.

It shall not be possible to operate or to compromise the blocking element from the outside of the protected premises.

A.2.4 Holding force

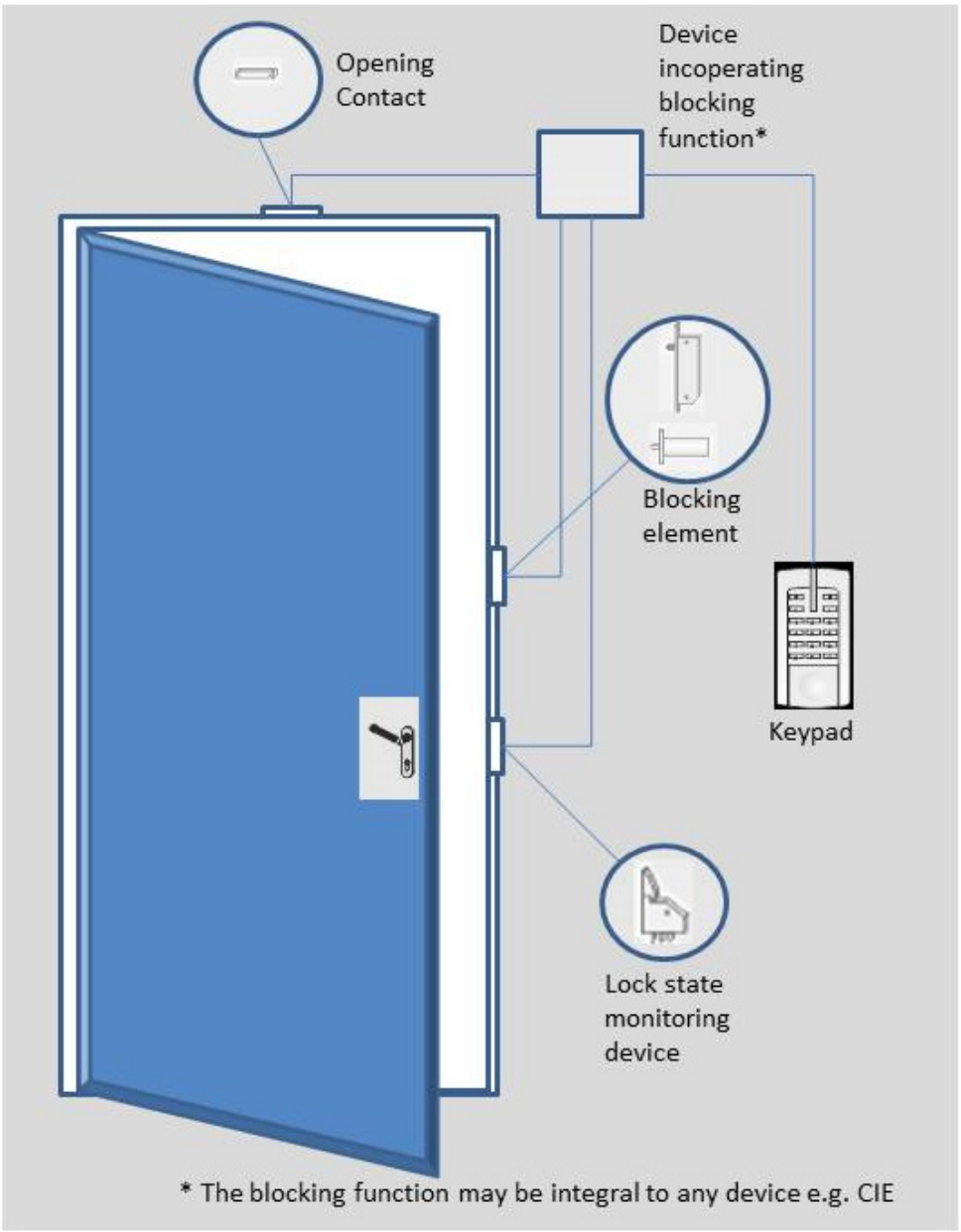
Blocking Element shall be designed such that entries/access from outside of the protected premises cannot be unlocked by normal operation (e.g. operation of the door handle). They shall provide a holding force of at least 1,0 kN in the proper installed status.

A blocking element should be deactivated in the presence of a fire alarm condition.

Annex B
(informative)

Schematic example for entry door

Schematic example for entry door with coerciveness functionality with blocking function and blocking device(s).



Annex C
(normative)

Equipment test procedures

C.1 General

The following tests are additional to EN 50131-3 and apply to all CIE providing relevant options intended to meet the recommendations of this specification.

Unless otherwise stated, clause numbers apply to those in this document.

C.2 Methods of setting (4.2)

CIE should be tested in accordance with Table C.1 for those methods of setting for which support is claimed.

Table C.1 — CIE Tests for methods of setting

Step	Test condition	Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
	CIE to be configured in accordance with manufacturer's instructions to achieve method under test			
	4.2.2 The setting procedure is carried out from outside the supervised premises			
1				Document whether prevention of setting is achieved by mechanical or electronical means or by indication only.
2	IAS unset	Perform test of EN 50131-3:2009,11.7.2	Record results as per EN 50131-3:2009, 11.7.2	Check that setting is prevented or indication functions correctly.
	4.2.3 The setting procedure is carried out from outside the supervised premises incorporating additional measures to ensure the integrity of the IAS.			
	Tests as per 4.2.2 apply			
3	IAS unset with no conditions preventing setting of the IAS	for IAS with wire-free RF interconnections conduct the test for detection of interference specified in FprEN 50131-5-3:2016, when interference is detected, attempt to set.	Record any indications.	Confirm that the system will not set.

Step	Test condition		Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
4	IAS unset with no conditions preventing setting of the IAS		For IAS with non-specific or wire-free interconnections prevent the communication of signals/messages from one IAS component such that a signal or message has not been received from it for over 100s. Attempt to set.	Record any indications.	Confirm that the system will not set.
5	IAS unset with no conditions preventing setting of the IAS		Perform a remote diagnostic check or configuration change. Whilst remote access is in progress attempt to set.	Record any indications.	Confirm that the system will not set.
6	IAS unset with no conditions preventing setting of the IAS		Input to the CIE corresponding to the lock state monitoring device or bolt contact in the unlocked condition. Attempt to set.	Record any indications.	Confirm that the system will not set.
7	IAS unset with no conditions preventing setting of the IAS		Input to the CIE corresponding to the lock state monitoring device or bolt contact in the locked condition. Attempt to set.	Record any indications	Check if the blocking element has changed to a secure state
8	Repeat step 7.		Simulate the blocking element not changing to the secured state. Attempt to set the system	Record any indications.	Confirm that the system will not set.
9	When system is set.			Check output to blocking element.	Confirm output to blocking element operates to hold designated entry door secured until system unset.
	4.2.4 Setting is carried out by a 2-stage process				
10			For each configurable method of completion of setting:		Document which methods of completion of setting are configurable at the CIE.
11	IAS Unset		Commence setting. Take no other action.	Record any indications.	Confirm that the IAS does not set if the completion of setting method is not activated.

Step	Test condition		Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
12			For each configurable method of completion of setting: Commence setting then activate the completion of setting method.	Record any indications.	Confirm that the IAS sets.
	4.2.5 Setting is carried out in conjunction with the ARC				
13	IAS Unset with a cause of prevention of setting present		Attempt to set remotely by the method employed by an ARC.	Record any local or remote indications.	Confirm that the system will not set.
14	IAS unset with no conditions preventing setting of the IAS		Attempt to set remotely by the method employed by an ARC.	Record any local or remote indications.	Confirm that the system sets and that an indication of set is available remotely that can be communicated to a system user.

C.3 Methods of unsetting (subclause 4.3)

CIE should be tested in accordance with Table C.2 for those methods of unsetting for which support is claimed.

Table C.2 — CIE Tests for methods of unsetting

Step	Test condition	Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
	CIE to be configured in accordance with manufacturer's instructions to achieve method under test			
4.3.2. Forced unsetting by unlocking				
	Configure the CIE such a lock mechanism can provide input to the CIE			
1	IAS Set	Simulate opening of the door without unlocking.	Record any indications.	Confirm that an alarm condition is generated (providing verification configuration does not prevent this, see CLC/TS 50131-9).
2	IAS Set	Simulate unlocking the door.	Record any indications.	Confirm that the IAS unsets.
4.3.3 Access to the supervised premises is prevented whilst the IAS is set				
	The test equipment should enable observation of whether the CIE prevents access to the supervised premises			
1	IAS Set			Confirm that the access to the supervised premises would be prevented.
2	IAS Set	Unset the IAS	Record any indications	Confirm that the system is unset and that access to the supervised premises is possible.
4.3.4 Access to the supervised premises is prevented whilst the IAS is set (using the principle of "coerciveness")				
1	Configure the EUT such that the state of the blocking element can be determined.			
2	IAS Set			Confirm that the blocking element is in the secure state.

Step	Test condition	Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
3	IAS Set	Unset the IAS		Confirm that the system is unset and that the blocking element is then in the insecure state.
4.3.5 Access to the supervised premises is prevented unless any verification facility (as defined in CLC/TS 50131-9) has been disabled				
a) Unlocking entry door disables verification				
	Configure the CIE such that a lock mechanism can provide input to the CIE and with a suitable method of alarm verification (see CLC/TS 50131-9)			
4	IAS Set	Simulate opening of the door without unlocking. Generate a second alarm in accordance with the method of verification.	Record any indications	Confirm that an alarm condition and verified alarm condition occur
5	IAS Set	Simulate unlocking the door. Do not open the door. Generate two alarm conditions in accordance with the method of verification.	Record any indications.	Confirm that only an unverified alarm condition occurs.
6	IAS Set	Simulate unlocking the door. Open the door. Generate alarm conditions in accordance with the method of verification.	Record any indications.	Confirm that only an unverified alarm condition occurs.
7	IAS Set	Simulate unlocking the door. Open the door. Unset the alarm using the designated method	Record any indications.	Confirm that the IAS unsets and no alarm conditions occur
b) Opening entry door disables verification				

Step	Test condition	Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
8	IAS Set	Open the door. Generate alarm conditions in accordance with the method of verification that would otherwise result in a verified alarm.	Record any indications.	Confirm that only an unverified alarm condition occurs.
4.3.6 Unsetting by means of a timed entry procedure				
	Covered by EN 50131-3:2009, 11.7.4			
4.3.7 Unsetting by means of a timed entry procedure with verification facility (as defined in CLC/TS 50131-9)				
	Covered by CLC/TS 50131-9:2014, Annex B			
4.3.8 Unsetting by means of a timed entry procedure with verification facility (as defined in CLC/TS 50131-9) and use of digital key				
	Tests in EN 50131-3 and CLC/TS 50131-9 shall be completed prior to testing.			
9	IAS Set	Open entry door. Attempt to use methods of unsetting other than digital key.	Record indications	Confirm IAS does not unset with use of methods other than digital key
10	IAS Set	Open entry door Generate an alarm condition (eg simulate activation of detector not on entry route, or expiry of entry time) Attempt to use methods of unsetting other than digital key.	Record results	IAS is permitted to be unset under these conditions.

Step	Test condition	Test procedure	Measurement	Pass/fail criteria (in addition to requirements of EN 50131-3)
11	IAS Set	Open entry door. Attempt to unset using single action of digital key.	Record indications	Confirm IAS unsets.
4.3.9 Unsetting is carried out in conjunction with the ARC				
	IAS Set	Attempt to unset remotely by the method employed by an ARC.	Record any local or remote indications.	Confirm that the system unsets and that an indication of unset is available remotely that can be communicated to a system user.

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