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INTERNATIONAL STANDARD

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Alarm and electronic security systems — Social alarm systems — Part 3: Local unit and controller (Standards.iteh.ai)

Systèmes d'alarme et de sécurité électroniques – Systèmes d'alarme sociale – Partie 3: Unité locale et contrôle ur 73595469ec2e/iec-62851-3-2014





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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Alarm and electronic security systems RSocial alarm systems – Part 3: Local unit and controller dards.iteh.ai)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ALARM AND ELECTRONIC SECURITY SYSTEMS – SOCIAL ALARM SYSTEMS –

Part 3: Local unit and controller

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This first edition is based on EN 50134-3:2012.

The text of this standard is based on the following documents:

FDIS	Report on voting	
79/458/FDIS	79/469/RVD	

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62851 series, published under the general title *Alarm and electronic security systems* – *Social alarm systems*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
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INTRODUCTION

This standard is part of the IEC 62851 series of International Standards and Technical Specifications "Alarm and electronic security systems – Social alarms systems", written to include the following parts:

- Part 1: System requirements
- Part 2: Trigger devices
- Part 3: Local unit and controller
- Part 5: Interconnections and communications
- Part 7: Application guidelines (under consideration)

A social alarm system provides 24 hours facilities for alarm triggering, identification, signal transmission, alarm reception, logging and 2-way speech communication, to provide reassurance and assistance for people living at home or at places under surveillance and considered to be at risk.

A social alarm system is comprised of a number of system parts which can be configured in different ways to provide this functionality.

A user can request assistance by the use of a manually activated trigger device resulting in an alarm triggering signal. In certain cases, alarm triggering signals can be generated by automatic trigger devices. A local unit or controller receives the alarm triggering signal, switching from the normal to the alarm condition and indicating this to the user (some systems use an optional pre-alarm condition that allows the user to reset the alarm for a short period of time).

The controller normally transmits the alarm condition to an Alarm Receiving Centre (ARC) via the alarm transmission system. The ARC can either be local to the controller or remote from the controller. The ARC has the facility to identify the local unit, alarm type and to then establish two-way speech communication between the alarm recipient and the user. The alarm recipient provides reassurance to the user and directs assistance where appropriate.

In some cases, the alarm may be diverted to an alarm recipient using a personal receiver. In this case, the alarm is identified to the alarm recipient and a two-way speech communication path established to the user and receipt of the alarm acknowledged to the controller. In all cases, the system records the time, date, location and type of alarm.

The system is designed to detect and report fault conditions affecting the transmission of alarms. In some cases, temporary disconnection of a local unit is possible to minimize faults or prevent alarms triggered inadvertently affecting the correct operation of the system.

ALARM AND ELECTRONIC SECURITY SYSTEMS – SOCIAL ALARM SYSTEMS –

Part 3: Local unit and controller

1 Scope

This part of IEC 62851 specifies the minimum requirements and tests for local units and controllers forming part of a social alarm system.

This International Standard applies to local units and controllers that receive an alarm triggering signal from manually or automatically activated trigger devices and convert this into an alarm signal for transmission to the alarm receiving centre or an alarm recipient.

The local unit and controller may be either separate units or integrated into one unit.

The design should also take into consideration situations where the user may be unable to send an alarm, or where an unwanted alarm may be sent, due to technical malfunctions or poor ergonomic design.

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2 Normative references

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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 datest aiedition to further creferenced 4 document (including any amendments) applies.

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IEC 60068-1:1988, Environmental testing – Part 1: General and guidance

IEC 60529, Degrees of protection provided by enclosures (IP Code)

IEC 62599-1:2010, Alarm systems – Part 1: Environmental test methods

IEC 62599-2:2010, Alarm systems – Part 2: Electromagnetic compatibility – Immunity requirements for components of fire and security alarm systems

IEC 62851-1, Alarm and electronic security systems – Social alarm systems – Part 1: System requirements

IEC 62851-2, Alarm and electronic security systems – Social alarm systems – Part 2: Trigger devices

ISO 3741, Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Precision methods for reverberation test rooms

ETSI EN 300 220-1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW – Part 1: Technical characteristics and test methods

ETSI EN 300 440-1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range – Part 1: Technical characteristics and test methods

ETSI EN 301 406, Digital Enhanced Cordless Telecommunications (DECT); Harmonized EN for Digital Enhanced Cordless Telecommunications (DECT) covering the essential requirements under article 3.2 of the R&TTE Directive; Generic radio

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62851-1, as well as the following apply.

3.1

activity monitoring trigger device

alarm device that operates automatically when a routine activity of the user, being monitored by a trigger device, is modified within a specified period

3.2

alarm transmission equipment

equipment which is primarily for the transmission of alarm and fault signals from the local unit and controller to the alarm receiving centre or the alarm recipient and which may be integral to the local unit and controller

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3.3

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temporary and deliberate disconnection of a local unit to prevent alarm or fault transmission to the controller or the alarm receiving centre 851-3:2014

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disconnection indication

disconnection condition

indication of the disconnection condition

3.5

3.4

fixed trigger device

trigger device in a fixed position

3.6

interconnections

transmission system that provides the communication between trigger devices and local unit and controller

3.7

portable trigger device

trigger device carried by the user and providing wire-free communication

3.8

pre-alarm warning indication

indication at the local unit that the local unit is in the pre-alarm condition

3.9

reassurance indication

indication provided locally in alarm condition in order to verify to the user that the local unit has received the alarm triggering signal

3.10

reset

return to the normal condition where only one alarm triggering signal has been received

3.11

two-way speech

speech communication originating at either end of the connection and received by the other

4 Functional requirements

4.1 General

Unless otherwise noted the following requirements of this standard are the same for a local unit and a controller:

- a) if an optional function is implemented the related requirement shall be fulfilled;
- b) the local unit and controller shall be protected against environmental influences by a box or a cabinet of suitable mechanical strength, which shall be classified to at least IP30 and IP32 for where it is intended for table top use as specified in IEC 60529;
 - NOTE 1 If the controller is installed in a separate protected and locked room, the requirement is not applicable.
- c) all visual indicators described in 4.2.6 and manual controls described in 4.2.7 for a local unit or combined local unit and controller shall be contained in one mechanical unit and their purpose shall be clearly indicated;
 - NOTE 2 If the controller is a separate unit all manual controls and visual indications related to the function or facility of the controller is contained in the separate controller.
- d) the local unit and controller shall be suitable for use in its intended environment and as a minimum shall satisfy the tests specified in 5.7 to meet the requirements for environmental class 1.

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4.2 Detailed functional requirements

4.2.1 General

The functions of a local unit and controller are divided into the following groups:

- power source,
- inputs,
- two-way speech communication,
- signal processing,
- indications,
- operating controls,
- outputs for external indications or controls (optional),
- interconnections,
- alarm transmission.

Where an alarm system consists of a local unit and a controller with separate alarm transmission equipment and / or separate radio transceiver equipment, the requirements for the local unit and controller shall apply to the related separate equipment, to the extent that those requirements are applicable to the intended functionality of the additional equipment.

4.2.2 Power source

4.2.2.1 Primary power source

The conditions under which requirements concerning the primary power source have to be tested are the following:

- a) the local unit or controller shall have a visual indication that it is operating using the primary power source and is in the normal condition;
- b) if the primary source of power is a battery, it shall be capable of supplying power to the local unit and controller for a minimum of 12 months of normal operation, including a minimum of one alarm transmission and two-way-speech communication per day for a minimum of 1 min. Additionally the local unit and controller shall be capable of indicating a battery low fault warning signal at the local unit and controller, and transmitting a fault signal to the alarm receiving centre or an alarm recipient automatically for a minimum of seven days.

4.2.2.2 Secondary supply input

Where the primary power source is mains power or the alarm transmission system then:

- a) if the primary power source is interrupted the local unit and controller shall automatically be switched to the secondary power source without any interruption to the operation of the device:
- b) in the case of failure of the primary power source,
 - 1) power to the local unit and controller shall be maintained by a secondary power source;
 - the secondary power source shall be capable of supplying power to the local unit and controller for a minimum of 24 h in normal condition, including a minimum of half an hour of alarm condition during which alarm transmission and two-way speech communication occurs, d. itch a catalog/standards/sist/cc6eeb2a-47fa-447b-bdb7-
 - 3) the local unit and controller shall be capable of indicating a battery low fault warning signal at the local unit and controller, and transmitting it to the alarm receiving centre or an alarm recipient automatically;
 - 4) the battery low fault warning signal shall be generated no less than two hours before there shall be insufficient power to operate the unit as required in 4.2.2.2, items b) 2) and b) 3):
- c) if the secondary power source is a rechargeable battery a fully discharged battery shall be recharged to a minimum of 80 % of its nominal capacity within 24 h and to its rated capacity within another 48 h.

4.2.3 Inputs – Input signals from trigger devices

- a) The input signals from trigger devices are transmitted to the local unit and controller via cable and/or wire-free transmission. Such signals shall be stored in the local unit and controller, indicated and transmitted to the alarm receiving centre or an alarm recipient in accordance with the functional requirements of this standard.
- b) For wire free trigger devices using a radio interconnection, without managed spectrum access only radio frequencies dedicated to social alarm systems shall be used for the transmission of alarm and fault conditions.

4.2.4 Two-way speech communication

4.2.4.1 General

The testing conditions under which requirements concerning the two-way speech communication are the following:

a) there shall be a two-way speech communication facility between the local unit and controller and the ARC or the alarm recipient;

- b) the two-way speech communication shall require no manual operation at the local unit;
- c) the part of the local unit and controller which is used to provide two-way speech communication shall fulfil the requirements specified in 4.2.4.2 and 4.2.4.3.

The test methods to be used for the verification of conformance with these requirements are given in the normative Annex C.

4.2.4.2 Loudspeaker output of the local unit

The requirements concerning the loudspeaker output of the local unit are the following:

- a) the local unit shall be capable of delivering an A-weighted sound power level of not less than 90 dB re 1 pW, with less than 10 % harmonic distortion;
- b) the output shall be adjustable to less than 70 dB re 1 pW;
- c) the frequency response shall be within the limits shown in Table 1.

Table 1 – Limits of frequency response

Frequency band	Upper limit	Lower limit
315 Hz to 630 Hz	+5 dB	-10 dB at 315 Hz increasing linearly with the logarithm of the frequency to -5 dB at 630 Hz
630 Hz to 3 150 Hz	+5 dB	–5 dB

4.2.4.3 Microphone input of the local unit

The requirements concerning the microphone input of the local unit are the following:

- a) If the local unit and controller is connected to an lanalogue PSTN or equivalent leased line transmission system then it shall be capable of delivering an analogue output signal to the alarm transmission system of (-15 ±3) dBW into a reference impedance ZR with less than 10 % harmonic distortion when the microphone is exposed to a sound pressure level of 60 dB re 20 μPa.
- b) If the local unit and controller is designed for connection to other alarm transmission systems, then it shall output to the alarm transmission a signal representing 100 % of the local unit and controller's maximum output when the microphone is exposed to a sound pressure level of 90 dB re 20 μ Pa.
- c) The frequency response shall be within $\pm\,5\,\,\text{dB}$ in the frequency range of 315 Hz to 3,15 kHz.

4.2.5 Signal processing

4.2.5.1 General

Requirements concerning the signal processing are the following:

- a) the processing of an alarm triggering signal shall comply with the requirements to function, indication and timing as shown in the Figure A.1 of Annex A and described in 4.2.5.2 and 4.2.5.3;
- b) if a manually selectable condition can inhibit the sending of an alarm signal it shall not be possible to select this condition without the use of a tool, key or code;
- c) in the event of more than one signal, none of the signals that have not already been processed shall be lost;
- d) alarm signals shall have priority over all other signals;
- e) where the controller is designed for use with more than one local unit, it shall have:
 - 1) the facility to support more than one concurrent alarm transmission session;

2) sufficient capacity to process, route and manage the number of concurrent alarm transmission sessions for which it is rated without deterioration in respect of the performance of the controller against the requirements in this standard or delays in the transmission of speech between a local unit and the ARC.

4.2.5.2 Pre-alarm condition

This subclause is optional.

Requirements concerning the pre-alarm condition are the following:

- a) the indication of the pre-alarm condition shall be given and cancellation of the pre-alarm warning signal shall be possible in accordance with 4.2.6.2 and 4.2.6.3 respectively;
- b) the pre-alarm condition shall be initiated after the reception of an alarm triggering signal;
- c) if this condition is not cancelled within the pre-alarm condition period the local unit and controller shall change its state to the alarm condition in accordance with 4.2.5.3, item b).

4.2.5.3 Alarm condition

Requirements concerning the alarm conditions are the following:

- a) if the pre-alarm function is not implemented, the alarm condition shall be initiated not more than 10 s after the trigger device has been activated;
- b) if pre-alarm condition is implemented, the alarm condition shall be initiated not more than 10 s after the pre-alarm condition period has elapsed provided by the condition of the condition of
- c) during the alarm condition the local unit and controller shall:
 - 1) automatically initiate the alarm transmission system to transmit the alarm signal to the alarm receiving centre or an alarm recipient,
 - 2) transmit a signal to the alarm receiving centre or an alarm recipient containing information identifying the acate of the alert and/or the trigger device that has activated:
- d) for inputs from specified trigger devices the local unit and controller shall provide the option to disable the facility to:
 - 1) give audible and visible indications locally as a reassurance signal in accordance with 4.2.6.3.
 - 2) provide a two-way speech communication with the alarm receiving centre or the alarm recipient;
- e) the alarm condition shall be reset from the alarm receiving centre or by an alarm recipient.

4.2.5.4 Fault condition

Requirements concerning the fault conditions are the following:

a) Types of fault

The local unit and controller shall detect and distinguish the following faults:

- Type A: Fault in the primary power source where this is mains power or the alarm transmission system;
- Type B: Discharge of any battery (primary or secondary source of power) below the battery low voltage level as specified by the manufacturer;
- Type C: Battery low warning signal received from fixed or portable trigger devices;
- Type D: Disconnections or short circuits of the cable interconnections between the local unit and controller and a fixed trigger device and/or a radio transceiver unit;

NOTE The fault in the interconnections can be indicated and transmitted to the alarm receiving centre or an alarm recipient as an alarm signal if it is not possible to distinguish between a fault and an alarm condition.

- Type E: Fault in the cable interconnections which prevents the local unit and controller from meeting the requirements of this standard;
- Type F: The presence of a continuous radio signal for a minimum of 30 s that may inhibit the reception of an alarm triggering signal from a trigger device;
- Type G: Disconnection of the local unit and/or controller from the alarm transmission system for a minimum of 60 s or a fault in the alarm transmission equipment.

b) Time intervals

The time intervals from the time the fault occurs until it is indicated locally or transmission to the alarm receiving centre or an alarm recipient has been initiated shall be in accordance with the requirements of Table 2.

Table 2 - Permissible time intervals by different types of fault

	Type of fault	T_{F1}	T_{F2}			
	Α	≤ 120 s to 3 h	≤ 10 s for visual indication and ≤ 3 h for audible indication			
	В	≤ 120 s	≤ 10 s			
	С	≤ (T _{PAC} + 120) s	N/A			
D		≤ (T _{PAC} + 120) s	N/A			
	E	≤ 120 s	≤ 10 s			
	F	≤ 120 s	≤ 10 s			
	g ileh S	STANDAWAD PREV	≤ 10 s			
Key		(standards.iteh.ai)				
<i>T</i> _{F1} :	Permissible time interval between the occurrence of fault condition and until initiation of the alarm transmission system for transmission of the fault to the alarm receiving centre or an alarm recipient occurs					
T _{F2} :	https://standards.iteh.ai/catalog/standards/sist/cc6eeb2a-47fa-447b-bdb7- Permissible time interval between the occurrence of fault condition and until local indication occurs.					
T_{PAC} :	Pre-alarm condition period in s.					
N/A:	Not applicable.					

c) Detailed requirements

The local unit and controller shall provide:

- 1) transmission of a signal dedicated to a fault type A, B and C, to the alarm receiving centre or an alarm recipient;
- 2) transmission of other faults by a minimum of a common fault signal to the alarm receiving centre or an alarm recipient;
- 3) audible and visible indication locally of the types of fault in accordance with 4.2.6.4;
- 4) a fault indication until transmission has taken place to an alarm receiving centre or an alarm recipient, and/or until the service personnel have identified the type of failure even though the cause of the fault has ceased;
- 5) in the case of fault type A return to the normal condition from the fault condition if the fault in the primary power source where this is mains power or the alarm transmission system is rectified prior to transmission of a fault signal to the alarm receiving centre or an alarm recipient.

4.2.5.5 Disconnection condition

This subclause is optional.

Requirements concerning the disconnection condition are the following:

a) Types of disconnection