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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Alarm and electronic security systems – Social alarm systems – Part 5: Interconnections and communications

Systèmes d'alarme et de sécurité électroniques – Systèmes d'alarme sociale – Partie 5: Liaisons et communications

IEC 62851-5:2014-04(en-fr)

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ALARM AND ELECTRONIC SECURITY SYSTEMS – SOCIAL ALARM SYSTEMS –

Part 5: Interconnections and communications

FOREWORD

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International Standard IEC 62851-5 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This first edition is based on EN 50134-5:2005.

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

FDIS	Report on voting
79/459/FDIS	79/470/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- withdrawn,
- replaced by a revised edition, or
- amended.

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 5: Interconnections and communications

1 Scope

This part of IEC 62851 specifies the minimum requirements for the interconnections and communications within a social alarm system.

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.

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

IEC 62851-3:2014, *Alarm and electronic security systems – Social alarm system – Part 3: Local unit and controller*

EN 50136-1-1:1998, *Alarms systems – Alarm transmission systems and equipment – Part 1-1: General requirements for alarm transmission systems*

EN 50136-2-1:1998, *Alarm systems – Alarm transmission systems and equipment – Part 2-1: General requirements for alarm transmission equipment*

EN 50136-2-2:1998, *Alarm systems – Alarm transmission systems and equipment – Part 2-2: Requirements for equipment used in systems using dedicated alarm paths*

EN 50136-2-3:1998, *Alarm systems – Alarm transmission systems and equipment – Part 2-3: Requirements for equipment used in systems with digital communicators using the public switched telephone network*

EN 50136-2-4:1998, *Alarm systems – Alarm transmission systems and equipment – Part 2-4: Requirements for equipment used in systems with voice communicators using the public switched telephone network*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
fault reporting time
maximum interval from the time a fault occurs in the interconnection until the transmission of a fault signal is initiated by the controller

3.1.2
interconnections
transmission system that provides the communication between trigger devices and local unit and controller

3.1.3
pre-alarm warning indication
indication at the local unit that the local unit is in the pre-alarm condition

3.1.4
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

3.1.5
reference impedance
Z_R
a complex impedance made up of 270 Ω in series with a parallel combination of 750 Ω and 150 nF

3.2 Abbreviations

For the purposes of this document, the following abbreviations apply.

CCIR International Radio Consultative Committee
CCITT International Telegraph & Telephone Consultative Committee
CEPT Conference of European Posts & Telecommunications
DTMF Dual tone multi-frequency
EMC Electromagnetic compatibility
ETSI European Telecommunications Standardisation Institute
FSK Frequency shift keying
PSTN Public switched telephone network

4 General requirements

Equipment and systems shall meet appropriate local, national and international requirements and regulations for attachment to, establishment and termination of connection and transmission via public telephone and data networks (including the PSTN) and/or the regulations for transmission via the use of radio, power distribution systems or cable distribution systems.

5 Interconnections

5.1 General requirements

The list below gives the general requirements for interconnections and communication applied to a social alarm system:

a) Interconnections in a social alarm system can use one or both of the transmission types in Table 1.

Table 1 – Transmission types

Transmission type	Examples
Wired	Leased lines/fixed wired connections/optical fibre link
Wire free	Radio network/cellular system, infra red

b) The interconnection in a social alarm system shall have an availability that fulfils the requirement set out in EN 50136-1-1:1998, Table 4, class A3.

NOTE 1 Method of determining availability is described in 7.2.

c) 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.

NOTE 2 For wire free interconnections the availability of the interconnection is monitored not the availability or the correct functioning of the trigger device.

5.2 Requirements for two-way speech communication

See IEC 62851-3:2014, 4.2.4.

6 Communications

6.1 General requirements

6.1.1 General

The alarm transmission system path in a social alarm system shall fulfil the requirements in Table 2.

Table 2 – General communication requirements for a social alarm system

Requirement	EN 50136-1-1:1998	
	Table/Subclause	Class
Transmission time	Table 1	D3
Maximum time	Table 2	M3
Reporting time – Combined local unit & controller	Table 3	T1
Reporting time – Separate local unit & controller	Table 3	T2
Availability	Table 4	A1
Signalling security – Substitution security	Subclause 6.5.1	S0
Signalling security – Information security	Subclause 6.5.2	I0

NOTE The transmission time in a social alarm transmission system is the time measured from when the local unit and controller enters the alarm condition until the alarm condition is reported at the alarm receiving centre transceiver to the annunciation equipment.

6.1.2 Environmental requirements

The EMC and environmental requirements as described in IEC 62851-3 shall apply for the alarm transceiver in a social alarm system.

NOTE An alarm system transceiver at the user's premises in a social alarm system is an integral part of the local unit and controller.

6.1.3 Access levels

The access levels described in EN 50136-2-1 shall apply to a social alarm system. However, for access level 3 in a social alarm system, communication of local or remote access to parameters affecting the system configuration to the ARC is not a system requirement.

6.2 Non-dedicated paths

The alarm transmission equipment in a social alarm system connected to the PSTN shall comply with the requirements in EN 50136-2-3. For social alarm systems 5.3.1 and 5.3.5 of EN 50136-2-3:1998 shall not apply. Equipment shall be tested in accordance with the requirements of EN 50134-3.

NOTE Alarm and fault signals can be transmitted digitally to an ARC in a social alarm system e.g. using DTMF or FSK signalling technologies.

6.3 Dedicated paths

If the system uses a dedicated path then the requirements in EN 50136-2-2 shall apply. Equipment shall be tested in accordance with the requirements of IEC 62851-3.

6.4 Voice communicators

If the system transmits the alarm or fault signal using a voice communicator then the requirements in EN 50136-2-4 for type 3 voice communicators shall apply. Where repeat attempts to transmit are made no more than one call to each available number shall be made before an attempt is made to call the ARC subject to the total transmission time not exceeding the maximum permissible time in Table 2. Equipment shall be tested in accordance with the requirements of IEC 62851-3.

7 Tests

7.1 Determining availability

In a social alarm system it is not possible to test or measure availability of the interconnection. This subclause describes how to calculate the availability of the interconnection in a social alarm system using records of faults and performance verification over a specified period time.

7.2 Method for determining availability

The list below gives the method for determining availability:

a) records of faults shall include those affecting redundant paths or equipment, where these are required to comply with specified class of availability and where no service was lost;

b) the records of all faults and all performance verification tests carried out on the interconnections in a social alarm system shall be used to determine the availability of the interconnection;

c) for each occasion when the system is unavailable the duration of the fault shall be determined and a fault time calculated as follows:

$$FT = (DF + TR) \times NA \quad \text{(min)}$$

where

FT is the fault time in minutes;

DF is the duration in minutes from when the fault was identified to when the fault cleared;

TR is the maximum fault reporting time in minutes for the appropriate class;

NA is the number of connected local units where service is affected.