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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Alarm and electronic security systems RD PREVIEW Part 5-2: Alarm transmission systems – Requirements for supervised premises transceiver (SPT)

Systèmes d'alarme et de sécurité électroniques Partie 5-2: Systèmes de transmission d'alarme -- Exigences pour les transmetteurs des locaux surveillés (SPT)





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NORME INTERNATIONALE

Alarm and electronic security systems RD PREVIEW Part 5-2: Alarm transmission systems - Requirements for supervised premises transceiver (SPT)

IEC 60839-5-2:2016

Systèmes d'alarme/et de sécurité électroniques 76-fa7f-47ce-9b21-Partie 5-2: Systèmes de transmission d'alarme - Exigences pour les transmetteurs des locaux surveillés (SPT)

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTRICAL COMMISSION

ALARM AND ELECTRONIC SECURITY SYSTEMS -

Part 5-2: Alarm transmission systems – Requirements for supervised premises transceiver (SPT)

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International Standard IEC 60839-5-2 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This international standard is based on EN 50136-2:2013.

The second edition cancels and replaces the first edition published 1991. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) updates to reflect the current technological state of art (IP networks);
- b) harmonization with the ATS categories introduced in IEC 60839-5-1:2014;
- c) introduction of test requirements.

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

CDV	Report on voting				
79/463/CDV	79/514/RVC				

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 60839 series, published under the general title *Alarm and electronic security 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>IEC 60839-5-2:2016</u> https://standards.iteh.ai/catalog/standards/sist/8b4dbc76-fa7f-47ce-9b21b2e98fecb9d0/iec-60839-5-2-2016

INTRODUCTION

The object of this part of IEC 60839 is to specify the general requirements for the performance, reliability, resilience and security of alarm transmission systems and to ensure their suitability for use with different types of alarm systems and annunciation equipment.

An alarm transmission system may use any type of transmission network.

When the ATS functions are integrated into an alarm system or annunciation equipment the requirements of this standard apply.

The intended users of this international standard include alarm transmission service providers, alarm receiving centre operators, fire departments, insurance companies, telecommunication network operators, internet service providers, equipment manufacturers, alarm companies, end users and others.

The IEC 60839-5 series consists of the following parts, under the general title Alarm and electronic security systems:

- Part 5-1: Alarm transmission systems General requirements;
- Part 5-2: Alarm transmission systems Requirements for supervised premises transceiver (SPT);
- Part 5-3: Alarm transmission systems Requirements for receiving centre transceiver (RCT); iTeh STANDARD PREVIEW
- Part 5-41: (under evaluation) (standards.iteh.ai)
- Part $5-5^{1}$: (under evaluation),
- Part 5-6¹: (under evaluation); IEC 60839-5-2:2016
- Part 5-7: (place/holden)dards.iteh.ai/catalog/standards/sist/8b4dbc76-fa7f-47ce-9b21b2e98fecb9d0/jec-60839-5-2-2016

¹ The former IEC 60839-5 series (1991) is being reviewed by an ad-hoc group set-up at the TC 79 meeting in Milano in October 2013. This ad-hoc group is in charge of evaluating the relevance / obsolescence of IEC 60839-5-4, IEC 60839-5-5 and IEC 60839-5-6 developed in 1991 and advise TC 79 on their future.

ALARM AND ELECTRONIC SECURITY SYSTEMS -

Part 5-2: Alarm transmission systems – Requirements for supervised premises transceiver (SPT)

1 Scope

This part of IEC 60839-5 specifies the general equipment requirements for the performance, reliability, resilience, security and safety characteristics of supervised premises transceiver (SPT) installed in supervised premises and used in alarm transmission systems (ATS). A supervised premises transceiver can be a stand-alone device or an integrated part of an alarm system.

These requirements also apply to the SPT sharing means of interconnection, control, communication and power supplies with other applications.

The alarm transmission system requirements and classifications are defined within IEC 60839-5-1. Different types of alarm systems may in addition to alarm messages also send other types of messages, e.g. fault messages and status messages. The term alarm is used in this broad sense throughout the document. Additional requirements for the connection of specific types of alarm systems are given in the relevant international standards.

Because the SPT can be applied in different applications (e.g. I&HAS, fire and social alarm systems), requirements for the SPT, additional to those of this international standard, may be specified in separate application specific documents.016

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This international standard specifies the irrequirements is specific to alarm transmission. Application specific requirements for the connection of the SPT to specific types of alarm systems are given in the IEC 60839-5 series for I&HAS, and the EN 54 series for fire. For other SPT applications, see the relevant national or international standards.

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 60839-5-1:2014, Alarm and electronic security systems – Part 5-1: Alarm transmission systems – General requirements

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

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

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60839-5-1, as well as the following, apply.

3.1.1

alternative power source

power source capable of powering the SPT for a predetermined time when a prime power source is unavailable

3.1.2

indication

information (in audible, visual or any other form) about the state of the SPT, RCT and/or ATS

3.1.3

logical access

access to SPT data (e.g. configuration, status, software)

3.1.4

local access

access to the SPT from within the protected premises where physical access is required before logical access can be achieved

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3.1.5

remote access

access to the SPT not requiring physical access

3.1.6

prime power source support an SPT under normal operating conditions

3.2 Abbreviations

For the purposes of this document, the **Ifollowing abbrev**iations apply:

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- AE Annunciation equipment2e98fecb9d0/iec-60839-5-2-2016
- AS Alarm system
- ATP Alarm transmission path
- ATS Alarm transmission system
- CIE Control and indicating equipment
- EMC Electromagnetic compatibility
- GND Ground
- GPRS General packet radio services
- I&HAS Intruder and hold-up alarm systems
- NTP Network time protocol
- RCT Receiving centre transceiver
- SPT Supervised premises transceiver

4 General requirements

4.1 General

Where appropriate, equipment shall comply with local, national and international requirements and regulations for connection and transmission via public or private networks.

Requirements in this standard shall be considered as a minimum. As the SPT is used together with or integrated in associated alarm systems, the requirements of the specific applications or related standards shall apply.

- 8 -

Specific applications may require additional testing of the SPT. If such characteristics for a non-alarm application are provided and are submitted for testing, they shall be specified by the manufacturer at the time of testing.

4.2 SPT classification

This standard defines SPT requirements. For some specific characteristics also, a classification system or measuring scale is introduced. For the purpose of SPT classification, reference is made to the ATS categories in IEC 60839-5-1. The SPT shall be labelled with each category or range of categories that it can be applied to.

If a custom category (category C) is defined then the requirements corresponding to Tables 1, 2 and 3 shall also be defined.

5 **Functional requirements**

5.1 General

The SPT shall be able to receive alarms from one or more ASs and transmit the alarm to one or more RCTs via one or more ATPs within the requirements of the appropriate ATS category.

5.2 Access levels

This standard specifies four levels of access that categorise the ability of users to gain logical access to the SPT functions. STANDARD

Physical access requirements may be defined in the relevant application specific standards.

IEC 60839-5-2:2016

Access levels are defined as follows: https://standards.iten.ai/catalog/standards/sist/8b4dbc76-fa7f-47ce-9b21-

- access to functions, indications and notifications available to any individual Level 1: without authentication;
- Level 2: access to information about the operational status of the SPT. Access level 2 may also allow access to basic functional tests and the management of other access level 2 users:
- Level 3: maintenance and commissioning functions, access in order to affect the SPT configuration including the addition, removal or replacement of components and other operations that directly, or indirectly, may influence the functions of the SPT;
- Level 4: access to update the software and read-only functions.

Access to level 2, 3 and level 4 functions shall require authorisation with a key.

Access at level 3 should be authorised by a user with level 2 access. Access at level 4 should be authorised by a user with level 3 access. This may be achieved by a one-time authorisation as part of a service level agreement.

Access at levels 2, 3 and 4 may be achieved by providing authorisation, equivalent to 1 000 000 different keys .

Where it is possible to attempt to gain access more than 3 times in a 60-second period the SPT shall have the ability to delay repeated attempts. After the third attempt, each further attempt shall be prevented for a minimum of 90 s.

Where factory default keys are provided, it shall not be possible to complete the SPT commissioning without first changing these keys e.g. during installation. It shall not be possible to read any key that provides authorisation for access at levels 2, 3 or 4.

5.3 Remote access

Remote access to the SPT shall meet at least the same information security requirements that are required for alarm transmission as defined in IEC 60839-5-1 for the appropriate category.

5.4 Uploading and downloading of software and firmware

Where upload and download functions are provided, the upload and download of software to a SPT is only allowed to be performed by users with appropriate access level, as defined in 5.2.

The software to be replaced by a software download shall be stored. If there is a loss of connection or another transmission fault disrupts the download, the last fully functional software version shall be restored, and the SPT shall work as before the unsuccessful download.

EXAMPLE Procedure of a download: download the software, check and validate the download, activate the downloaded software.

5.5 Storage of parameters

A power cycle or a boot up sequence shall not result in the loss of any site specific data. The SPT shall return to normal operation.

5.6 ATS and ATP fault reporting to the AS

Where the SPT is required to report an ATS and/or ATP failure to the AS as per IEC 60839-5-1:2014, Table 5, this shall take place within the reporting times shown in IEC 60839-5-1:2014, Table 3. (standards.iteh.ai)

For an ATS with more than one ATP, <u>las long as service</u> is not lost, a single path line fault may be held by the <u>SPT</u> for a period that is agreed between the interested parties until it is released to the AS. <u>b2e98fecb9d0/iec-60839-5-2-2016</u>

Where an AS includes the ability to display the status of each ATP the SPT may be configured to pass individual ATP failures to the AS within the reporting times shown in IEC 60839-5-1:2014, Table 3.

The manufacturer's documentation should define the process for the reporting of ATS faults to the AS.

5.7 Interface to the AS

The connections to the AS shall be monitored in accordance with IEC 60839-5-1.

The maximum time to detect and generate an interface failure shall meet the requirements of the associated application and shall not exceed the ATS reporting time of the appropriate category as specified in IEC 60839-5-1:2014, Table 3.

To allow compatibility of equipment from different manufacturers, this standard specifies two electrical interfaces:

- a parallel interface between AS and SPT, see Clause A.1;
- a serial interface between AS and SPT, see Clause A.2.

This does not exclude the use of any other type of interface to the AS, provided that the specific requirements of this standard are met.

The manufacturer shall state in the associated documentation which type(s) of interface(s) to the AS is/are provided.

5.8 Monitoring of the transmission network interface(s) – Fault reporting

If required by the ATS category, the SPT shall be configured to detect the failure of a transmission network interface and generate an ATP fault to the AS.

The manufacturer's documentation shall describe the process for monitoring and reporting the network interface fault to the AS.

NOTE 1 The message generated by the SPT can indicate either an ATP fault or an interface fault.

Where required, transmission network interface faults shall be reported within the time specified in IEC 60839-5-1:2014, Table 3.

For dual path category (Dx) ATSs, a fault on one of the transmission network interfaces shall be reported to the RCT over the remaining ATP within the time specified in IEC 60839-5-1.

NOTE 2 An SPT network interface fault provides indication of a path fault.

Monitoring the state of a transmission network interface should not be used to monitor the state of an associated ATP.

NOTE 3 An ATP can be in a failed state whilst the associated network interface is in an operational state.

5.9 Power supply for the SPT

The SPT may be powered by the associated AS power supply (dedicated or shared) or by an integral SPT power supply.

(standards.iteh.ai)

Where an integral SPT power supply is used, it shall meet the requirements of the most demanding associated AS. <u>IEC 60839-5-2:2016</u>

https://standards.iteh.ai/catalog/standards/sist/8b4dbc76-fa7f-47ce-9b21b2e98fecb9d0/iec-60839-5-2-2016

5.10 Event logging

A logging function for all categories of SPT, except SP1 and DP1, shall be provided for the purposes of providing an audit trail and problem resolution.

Dependent upon the ATS category where the SPT is applied, the events specified in Table 1 shall be recorded in the SPT.

The means used to record the events shall be protected against the accidental or deliberate deletion or alteration of the contents.

The means of recording events shall be non-volatile and have a capacity complying with the requirements of Table 2. When the event recorder reaches maximum capacity, further events may cause the oldest events to be erased.

The log shall record, in addition to the event, the time and date at which the event occurred. The timing resolution shall be a minimum of 1 s and it shall be accurate to the coordinated universal time within \pm 5 s.

The SPT shall provide a means to adjust the date and time.

Event optimisation is permitted, provided that all diverse events are recorded and that the first and the last repeated identical sequence of events in a 12 h period are recorded. Where this is done the number of repetitions needs to be recorded.

When required by Table 1, the logging of access to the SPT shall include user identification.

The inclusion of requirements to record events in Table 1 does not imply a requirement to provide the associated function.

Number	Event	Events to be recorded									
Number	Event	SP1	SP2	SP3	SP4	SP5	SP6	DP1	DP2	DP3	DP4
1	Alarm message from and to the AS	Ор	М	М	М	М	М	Ор	М	М	М
2	Positive alarm message acknowledgement from the RCT	Ор	М	М	М	М	М	Ор	М	М	М
3	Negative alarm message acknowledgement or timeout on alarm message acknowledgement from the RCT		Μ	Μ	Μ	М	Μ	Ор	Μ	М	Μ
4	SPT primary power source failure and restore	Ор	М	М	М	М	М	Ор	М	М	М
5	SPT alternative power source failure and restore ^a	Ор	М	М	М	М	М	Ор	М	М	М
6	AS to SPT interconnection failure and restore	Ор	М	М	М	М	М	Ор	М	М	М
7	ATP failure and restore	Ор		RM	P ¶R]	E₩I	EMA	7 Ор	М	М	М
8	ATS failure and restore	aPd	a⁴d	s.Mt	e M.a	i) ^M	М	Ор	М	М	М
9	SPT – transmission network interface failure and restore	Op IEC	M 60839-	M 5-2:201	м 6	М	М	Ор	М	М	М
10	Changes to the configuration of a the SPT b2e	/catalog 98fecb9	/standar d0/iec-	ds/sist/8 50839-:	3b4dbc7 5-2-201	6- 6 7f-6	47 <mark>ce</mark> -9t	21 ₀ p	М	М	М
11	Power-up or reset	Ор	М	М	М	М	М	Ор	М	М	М
12	Any change to software	Ор	М	М	М	М	М	Ор	М	М	М
13	Manual changes to the date and time	Ор	М	М	М	М	М	Ор	М	М	М
14	Access to the SPT at level 2, 3 or 4	Ор	М	М	М	М	М	Ор	М	М	М
Key											
Op = optional											
M = mandatory											
NOTE Logging requirements for primary and alternative power supply only apply if the SPT has its own integral											
power supply.											

Table 1 – Event recording classification – Events to be recorded

^a It is only required to report alternative power source failures if such alternative power source is required by the associated application standard.

Where the SPT is an integrated part of an AS the log may be shared with the AS.

Capacity and endurance	SP1	SP2	SP3	SP4	SP5	SP6	DP1	DP2	DP3	DP4
SPT memory capacity – Minimum number of events	-	250	1 000	1 000	1 000	1 000	-	250	1 000	1 000
Minimum endurance of memory after SPT power failure in days	_	30	30	30	30	30	_	30	30	30

Table 2 – Event recording classification – Memory capacity and endurance

Where the SPT is an integrated part of an AS the log may be shared provided that the memory capacity and endurance for SPT events meet the requirements of Table 2.

Operation 6

6.1 Modes of acknowledgement operation

6.1.1 General

Two modes of operation are permitted:

- a) store-and-forward; iTeh STANDARD PREVIEW

The manufacturer shall declare in the product documentation which of the two modes are supported.

IEC 60839-5-2:2016

Store-and forward operation requirements b4dbc76-fa7f-47ce-9b21-6.1.2

98fecb9d0/iec-60839-5-2-2016

When an alarm is received from the AS, the SPT shall secure the alarm and provide acknowledgment of the correct receipt of the alarm to the AS.

If the store-and-forward operation is used, all alarm messages shall include a date and time stamp that is accurate to the resolution specified in 5.10.

Securing the alarm shall be achieved by storing the alarm in the SPT's non-volatile memory, to secure alarms during a power failure or other ATS failure; stored alarms shall be transmitted when the fault condition clears.

The secured message shall be transmitted from the SPT to the RCT.

The reception of an acknowledgement from the RCT shall not be forwarded to the AS, since the AS has already received an acknowledgement from the SPT.

NOTE The loss of an alarm message is regarded as a worse situation than sending a delayed message.

6.1.3 Pass-through operation requirements

When an alarm is received from the AS the SPT shall forward the alarm to the RCT.

The SPT shall not acknowledge the alarm to the AS before receiving an acknowledgement from the RCT. When the SPT receives an acknowledgement from the RCT, the acknowledgement shall be forwarded to the AS.

A pass-through operation may be used in systems where the application requires receipt of acknowledgement from the AE.