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Alarmni sistemi - Sistemi za javljanje vloma - 5-1. del: Povezave - Zahteve za žične povezave za I&HAS opremo nameščeno v nadzorovanih prostorih

Alarm systems - Intrusion systems - Part 5-1: Interconnections - Requirements for wired Interconnection for I&HAS equipments located in supervised premises

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Alarm systems - Intrusion systems - Part 5-1: Interconnections - Requirements for wired Interconnection for I&HAS equipments located in supervised premises

Alarmanlagen - Einbruch- und Überfallmeldeanlagen - Teil 5-1: Verbindungen - Anforderungen an leitungsgebundene Verbindungen für EMA/ÜMA Einrichtungen in überwachten Objekten

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Contents

European foreword

This document (CLC/TS 50131-5-1:2021) has been prepared by CLC/TC 79 “Alarm systems”.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Introduction

The wired interconnection forms the link between I&HAS components to transfer information and, where appropriate, power, as required for reliable system operation.

The transfer of information may be by means of signals or messages as appropriate to the I&HAS and its security grade.

Selection of the type of interconnection media and its installation can affect the reliability and grade of the I&HAS.

Interconnections may be dedicated to a single I&HAS (specific interconnections) or shared with one or more alarm or other systems (non-specific interconnections). The relative priorities of the different systems are determined according to EN 50398-1.

1 Scope

This document applies to interconnections between intrusion and hold-up alarm system components using specific or non-specific wired interconnections (e.g. between SPT and CIE). The interconnected components are located within the supervised premises, or mounted on the outside of the supervised premises (e.g. external warning devices).

This document does not apply to interconnections between components located within the same enclosure, or to interconnections between parts of an I&HAS component if covered by the relevant product standard. This document does not define the physical requirements of the interconnection media.

This document is expected to be used in conjunction with the other parts of the EN 50131 series that define the functional requirements of the equipment regardless of the interconnection technique used.

Where monitoring of the functionality of the interconnections is undertaken by an interconnected component, this is defined in the relevant product standard in the EN 50131 series. If a component standard indicates that an interconnection will be monitored, then this document determines the monitored conditions applicable to the interconnection.

NOTE 1 For example, if there is no requirement in a detector standard to monitor a remote indication of detection input, this document does not apply to that particular interconnection.

Requirements for the monitoring of the functionality of power connections between I&HAS components are defined in the relevant product standard and are not included within this document.

This document defines the terms used in the field of intrusion and hold-up alarm equipment using such interconnections and includes the requirements relevant to the equipment interfaces.

Wired interconnection media can include metallic single stranded insulated cable, metallic multi-stranded insulated cable, and fibre optic cable. These cables can comprise single or multiple cores.

NOTE 2 Interconnections using RF techniques (i.e. wire free interconnections) are dealt with by EN 50131-5-3.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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, *Alarm systems - Intrusion and hold-up systems - Part 1: System requirements*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50131-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1.1
core
physical element within the wired interconnection media that carries the signal, message or power

Note 1 to entry: There is no requirement that a core should consist of a metallic element.

3.1.2
interconnection degradation
intentional or unintentional change to the characteristics of the wired interconnection media which could prevent the ability to pass signals or messages from the source to the destination

EXAMPLE due to changes in resistance or opacity

3.1.3
interconnection unavailability
when conditions are such that an interconnection meeting the integrity requirements cannot convey I&HAS system signals or messages

EXAMPLE When an I&HAS shares a BUS system with other applications and that other application has taken permanent control of the BUS.

3.1.4
loss of a message
message that has not been received within the expected time (as defined in the message protocol), or has been received but is not readable

3.1.5
modification
intentional or unintentional alteration, substitution, addition, deletion or loss of a message or signal, which could prevent the correct operation of an I&HAS

3.1.6
supplementary components
components of other applications which may be combined or integrated within the I&HAS providing the performance of the I&HAS or any of its components is not adversely influenced

3.1.7
supplementary functions
other functions of I&HAS components that do not affect the correct detection, processing or notification function of an I&HAS

EXAMPLE non-mandatory indications

3.1.8
wired interconnection
physical means by which messages and/or signal and/or power are communicated between components

3.1.9
wired interconnection media
physical media by which signals or messages and/or power are conveyed which may comprise single or multiple cores within an outer sheath

3.2 Abbreviations

EUT Equipment Under Test

4 Requirements

4.1 General

4.1.1 Introduction

Wired interconnections shall be suitable for the purpose and designed to provide a reliable means of

communication and/or power between I&HAS components.

A wired interconnection shall be available when needed to convey signals or messages and/or power between components, or between physically separate (i.e. housed in different enclosures) parts of a single component (e.g. CIE) during all states of the system: unset, setting, set, un-setting.

Selection of the type of interconnection media and its installation can affect the reliability and security grade of the I&HAS and should be made in accordance with the I&HAS components manufacturers' specifications and the principles contained in TS50131-7.

NOTE For clarity, Annex A contains a summary of interconnection requirements for each interconnection type.

4.1.2 Interconnection Integrity

4.1.2.1 General

The following requirements relate to the physical integrity of the interconnection between the I&HAS components.

4.1.2.2 Signal based interconnections

Signal-based interconnections shall be monitored such that any of the conditions identified in Table 1 will be detected and processed within 10 s of the condition occurring.

Table 1 — Integrity monitoring of wired signal-based interconnections

Conditions:	**G1**		**G2**		**G3**		**G4**	
	Set [c]	**Unset** [c]	**Set** [c]	**Unset** [c]	**Set** [c]	**Unset** [c]	**Set** [c]	**Unset** [c]
Cut of all cores [a]	M	Op	M	M [d]	M	M[d]	M	M
Cut of any one core [a]	Op	Op	M	M [b,d]	M	M[d]	M	M
Short all cores [a]	Op	Op	Op	Op	M	M[d]	M	M
Short of any pair of cores [a]	Op	Op	Op	Op	M	M[d]	M	M
Key: M = Mandatory, Op = Optional								
[a] This refers to only those cores used to pass the signal between any two system components. [b] Only mandatory for the tamper core(s). [c] In Table 1, Setting is treated as a system in the Unset state, and Unsetting is treated as a system in the Set state [d] Optional during UNSET, but not during SETTING, for components installed in systems meeting the requirements of EN 50131–1 "Monitoring of interconnections (Coerciveness Principle)"								

4.1.2.3 Message based interconnections

Message-based interconnections shall be monitored such that any of the conditions identified in Table 2 that result in loss of communication will be detected within 10 s of the condition occurring.

Compliance may be demonstrated either by electrical tests or by the monitoring of the receipt of messages provided that the 10 s requirement is met.

NOTE Monitoring of wired interconnections in message-based systems is applicable in all system states; unset, setting, set, unsetting.