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Alarmni sistemi - Sistemi za javljanje vloma in ropa - 6 del: Napajalniki

Alarm systems - Intrusion and hold-up systems - Part 6: Power supplies

Alarmanlagen - Einbruch- und Überfallmeldeanlagen - Teil 6: Energieversorgungen

Systèmes d'alarme - Systèmes d'alarme contre l'intrusion et les hold-up - Partie 6: Alimentation

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ICS:

13.310	Varstvo pred kriminalom	Protection against crime
13.320	Alarmni in opozorilni sistemi	Alarm and warning systems

SIST EN 50131-6:2018 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Alarm systems - Intrusion and hold-up systems - Part 6: Power supplies

Systèmes d'alarme - Systèmes d'alarme contre l'intrusion et les hold-up - Partie 6: Alimentation

Alarmanlagen - Einbruch- und Überfallmeldeanlagen - Teil 6: Energieversorgungen

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50131-6:2017) has been prepared by CLC/TC 79 “Alarm systems”.

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-09-18
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2020-09-18

This document supersedes EN 50131-6:2008.

The revision is to make the document less technology specific and more inclusive of the different types of power supplies found in I&HAS and the different types of technologies that are, and can be, employed within a power supply. It will make the document easier to use and more clearly applicable to the range of PSU configurations to be found in I&HAS.

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

This European Standard deals with power supplies (PS) of intrusion and hold-up alarm systems (I&HAS) installed in buildings. It includes devices that are installed inside or outside of the supervised premises and mounted in indoor or outdoor environments.

The PS may be fully contained in its own housing or it may be integrated with other components within an I&HAS, e.g. the control and indicating equipment (CIE).

An I&HAS may use one or more PS.

1 Scope

This European Standard specifies the requirements, performance criteria and testing procedures for PS to be used as part of Intrusion and Hold up Alarm Systems. The PS will either be an integral part of an I&HAS component or stand-alone. The control functions of the PS may be incorporated as part of the PS device, or may be provided by another I&HAS component, e.g. a CIE.

This European Standard is not applicable when the PS requirements for I&HAS components are included within the relevant product standard.

The requirements correspond to each of the four security grades given in the European Standard EN 50131-1, *Alarm Systems – Intrusion and Hold-Up Systems – Part 1: System requirements*. Requirements are also given for four environmental classes covering applications in indoor and outdoor locations.

This standard covers:

a) mandatory functions which will be provided on all PS; and

b) optional functions which may be provided.

This European Standard does not deal with requirements for compliance with EC regulatory Directives, such as the EMC Directive, Low Voltage Directive, etc. except that it specifies the equipment operating conditions and reduced functional test for EMC susceptibility testing as required by EN 50130-4.

Other functions associated with I&HAS not specified in this standard may be provided. Such functions will not affect the requirements of any mandatory or optional functions.

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 50130-4, *Alarm systems - Part 4: Electromagnetic compatibility - Product family standard: Immunity requirements for components of fire, intruder, hold up, CCTV, access control and social alarm systems*

EN 50130-5, *Alarm systems - Part 5: Environmental test methods*

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

EN 60068-2-14:2009, *Environmental testing - Part 2-14: Tests - Test N: Change of temperature (IEC 60068-2-14:2009)*

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

EN 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) (IEC 62262)*

3 Terms, definitions and abbreviations

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

3.1 Terms and definitions

3.1.1
alternative power source
power source capable of powering the I&HAS for a predetermined time when the prime power source is unavailable

3.1.2
APS operating period
period during which the APS is supporting an I&HAS when the EPS has been lost

3.1.3
charged state
charge state of a rechargeable SD having at least the rated minimum energy level at the start of the APS operating period

3.1.4
deep discharge protection
protection which avoids damage to the SD when the level of discharge is beyond the level specified by the SD manufacturer

3.1.5
external power source
power source for types A and B PS, which is external to the I&HAS and which may be non-continuous

3.1.6
independent power output
individual power output to the I&HAS having its own protection against short circuit and overload and not dedicated to an I&HAS component with which the PS is integrated

3.1.7
integrated PS
PS that is integrated with another I&HAS component, usually within the same housing, and having at least one power output that is dedicated solely to that other component, separate from any independent power output, for example a PS integrated with a CIE

3.1.8
low output voltage
voltage below the minimum power output voltage

3.1.9
maximum power output voltage
maximum rated voltage of the PS at each independent power output as specified by the PS manufacturer under normal operating conditions

3.1.10
minimum power output voltage
minimum rated voltage of the PS at each independent power output as specified by the PS manufacturer under normal operating conditions

3.1.11
normal operating condition
conditions applying when the PS is mounted according to the PS manufacturer's instructions, within the range of the designated environmental class, the applied load being within the rated output, the

SD having sufficient charge to maintain the minimum power output voltage and for PS type A and PS type B, any applied and available EPS being within specified range

Note 1 to entry: Normal operating condition of a PS includes the APS operating period.

3.1.12
open by normal means
opening of the equipment housing by the procedure defined by the manufacturer

3.1.13
over-voltage protection
protection of the PS output against excessive high output voltage due to failure of one or more PS components under normal operating conditions

3.1.14
power output
output of an integrated PS dedicated to the integrated component

3.1.15
power supply
device that stores, provides and also modifies or isolates (electrical) power for an I&HAS or part thereof, comprising of a PU and SD as a minimum

3.1.16
power unit
device that provides and also modifies or isolates (electrical) power for an I&HAS or part thereof and for the SD if required

3.1.17
power unit failure
condition of the PU where it cannot supply the rated output and/or for a PS type A cannot recharge the SD

3.1.18
prime power source
power used to support an I&HAS under normal operating conditions

Note 1 to entry: The prime power source does not support the I&HAS during the APS operating period.

3.1.19
principal prime power source
energy source capable of supporting the I&HAS for extended periods

3.1.20
rated output
total continuous output current that can be supplied by the PS to the I&HAS through its independent power outputs and to any integrated component under normal operating conditions

3.1.21
ripple
variation of the voltage at the independent power outputs resulting from components of the EPS or artefacts introduced by the operation of the PU, e.g. switching circuit

3.1.22
standby period
period during which the alternative power source is capable of supporting an I&HAS

3.1.23
storage device
device which stores energy, e.g. a battery

3.1.24
storage device – failure
condition of the SD where it cannot supply the rated output of the PS at the minimum power output voltage in the event of loss of EPS

3.1.25
storage device low residual energy
condition specified by the PS manufacturer which indicates that the SD is nearly discharged

3.1.26
supplementary prime power source
energy source independent of the PPPS capable of supporting an I&HAS for extended periods,, without affecting the standby period of the alternative power source

3.2 Abbreviations

APS	Alternative Power Source
CIE	Control and Indicating Equipment
EPS	External Power Source
I&HAS	Intruder and Hold-up Alarm System
PPPS	Principal Prime Power Source
PPS	Prime Power Source
PS	Power Supply
PU	Power Unit
SD	Storage Device
SPPS	Supplementary Prime Power Source
ac	alternating current
dc	direct current

4 Functional requirements

4.1 PS configurations

The PS may be configured as:

(i) standalone, with independent power outputs connected to the I&HAS, Figure 1 a);

(ii) integrated with at least one other I&HAS component, with independent power outputs connected to the I&HAS, and having at least one power output dedicated to the integrated component, Figure 1 b);

(iii) integrated with at least one other I&HAS component, but with no independent power outputs connected to other components of the I&HAS, Figure 1 c).

For PS in configuration (iii), where there are no product specific requirements for the functionality and performance of the PS defined within the relevant EN 50131 series product standard for the integrated component, the requirements of this European Standard shall apply.

Fig. 1 a) Standalone PS

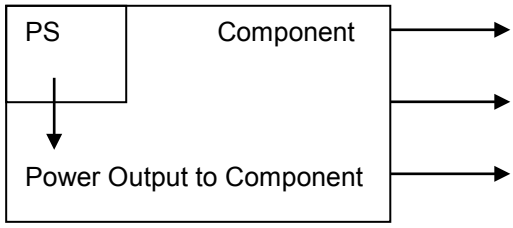

Fig. 1 b) Integrated PS with Independent Power Outputs to I&HAS

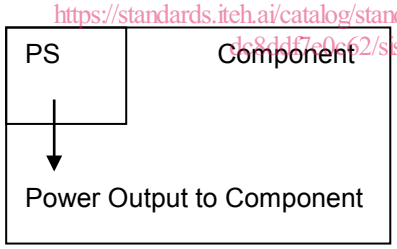

Fig. 1 c) Integrated PS with NO Independent Power Outputs to I&HAS

Figure 1 — Power Supply Configurations

4.2 General requirements

The PS provides power for the components of an I&HAS derived from the prime power source.

The prime power source will normally be available to power the I&HAS for extended periods.

There are three types of PS which are independent of security grade and independent of the PS configuration. These PS types are defined in EN 50131-1 and illustrated in Figure 2.

One or more PS may be used to meet the I&HAS standby requirements as specified in EN 50131-1.

For PS types A and B (see Figure 2):

— the EPS is the prime power source;

— the EPS is derived from either the principal prime power source or the supplementary prime power source;

— the PPPS is the normal continuously available external source of power for the I&HAS, for example the public mains supply;

— the SPPS provides an external back-up source of power in the event of loss of PPPS, for example a standby generator;

— there is no requirement for the I&HAS to differentiate between the PPPS and SPPS as the source of the EPS;

— an alternative power source provides a back-up source of power to the I&HAS components in the event of loss of the EPS;

— the APS is derived from a SD which is housed within the PS.

NOTE 1 The PPPS may be a local source of power, for example a generator, with the SPPS provided by the public mains electricity supply.

NOTE 2 The EPS may have a voltage and frequency other than that of the public mains electricity supply, for example as provided from a low voltage battery bank.

For PS type C, the prime power source is derived from a SD which is housed within the PS.

A PS type A shall recharge the SD automatically from the EPS when the EPS is present, and maintain it in a charged state.

NOTE There is no requirement for the charging to be continuous to maintain the SD in its charged state.

Where the SD in a PS type B is rechargeable, recharging of the SD shall be from an energy source other than the EPS. This energy source may be non-continuous, e.g. derived from solar radiation.

A fault on one independent power output of a PS will have no impact upon the functionality of any other independent power output.

Each independent power output may have provision for more than one connection.

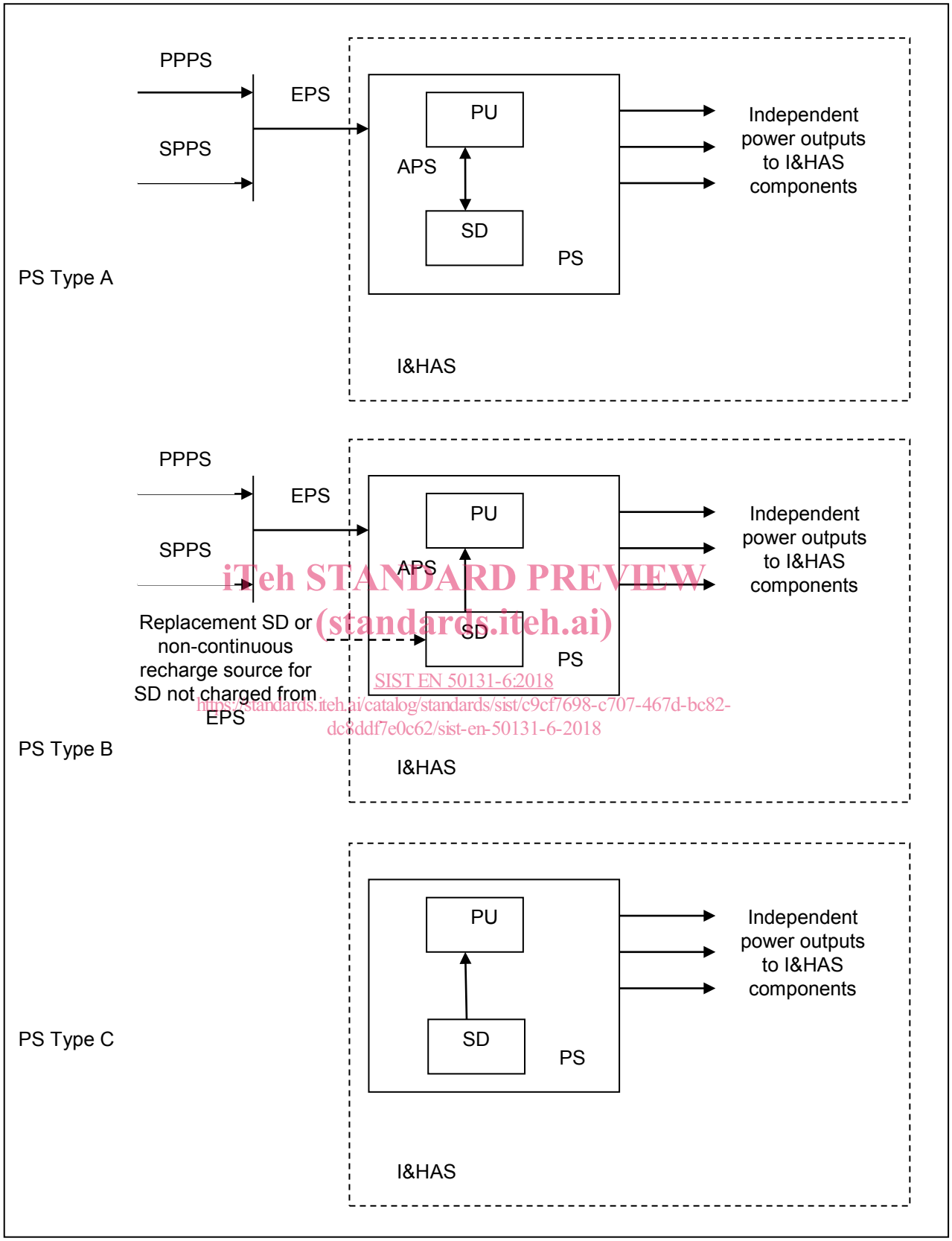

Figure 2 — Power Supply Types

Depending upon the security grade and PS type, the PS shall have the functionality as defined in Table 1.

If a function is provided that is optional for a particular grade and a claim of compliance is made, it shall meet the applicable requirements for the grade for which compliance is claimed (if any are given). If there are no specifications for the optional function at the grade in question, the requirements for any higher grade (as identified by the PS manufacturer) shall apply.

Table 1 — Power Supply Functions

Function	Grade	PS Type		
		A	B	C
Detection of Loss of EPS	1 – 4	M	M	N/A
Detection of Storage Device Low Residual Energy	1 – 4	M	M	M
Detection of Storage Device – Failure	1 – 2	Op	Op	N/A
	3 – 4	M	Op	N/A
Detection of Low Output Voltage	1 – 2	Op	Op	N/A
	3 – 4	M	M	N/A
Detection of Power Unit failure	1 – 2	Op	Op	N/A
	3 – 4	M	M	N/A
Over-voltage Protection	1 – 2	Op	Op	Op
	3 – 4	M	M	Op
Short circuit protection	1 – 4	M	M	M
Overload protection	1 – 4	M	M	M
SD Deep Discharge protection [a]	1 – 2	Op	Op	N/A
	3 – 4	M	M	N/A
Test On Demand	1 – 3	Op	Op	N/A
	4	M	Op	N/A
Tamper Security	1 – 4	M	M	M
M = Mandatory Op = Optional N/A = Not Applicable				
[a] Where the SD is rechargeable and Deep Discharge will damage the SD				

4.3 Monitoring of PS

4.3.1 General

The PS shall generate fault signals or messages for communication to the CIE according to Table 2.

Monitoring signals or messages shall be fail safe such that total loss of function of the PS will be recognized as a fault condition by the I&HAS.

For integrated PS with configurations (ii) and (iii), the fault signals or messages may be communicated to the CIE via the integrated component.