

Alarm systems — Intrusion systems —

Part 6: Power supplies

The European Standard EN 50131-6:1997, with the incorporation of its amendment A1:1999, has the status of a British Standard

ICS 13.310

National foreword

This British Standard is the English language version of EN 50131-6:1997, incorporating amendment A1.

The UK participation in its preparation was entrusted to Technical Committee GW/1, Electronic security systems, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

Additional information. There is a discrepancy between this Part of BS EN 50131 and BS EN 50131-1 in that the “standby battery requirements” specified in this Part (see Table 2) and that specified in Part 1 (see Table 16) are conflicting. For grades 3 and 4, Table 2 in this Part requires a standby of 24 h, whereas Table 16 of Part 1 requires a standby of 60 h. In view of the response times required to meet UK police regulations, the committee responsible considers the standby times in BS EN 50131-6 to be more appropriate for the UK market.

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Page	Issue	Page	Issue
Front cover	2	5 and 6	original
Inside front cover	2	7	2
a	1	8	original
b	blank	9	original
1 and 2	original	10 to 24	original
3	2	Inside back cover	original
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English version

Alarm systems — Intrusion systems — Part 6: Power supplies

Systèmes d'alarme —
Systèmes d'alarme intrusion —
Partie 6: Alimentation

Alarmanlagen —
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Teil 6: Energieversorgungen

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European Committee for Electrotechnical Standardization
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Foreword

This European Standard was prepared by Technical Committee TC 79, Alarm systems.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 50131-6 on 1996-12-09.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1998-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) —

EN 50131 will consist of the following parts under the general title *Alarm systems — Intrusion systems*:

- *Part 1: General requirements*;
- *Part 2-x: Intrusion detectors*;
- *Part 3: Control and indicating equipment*;
- *Part 4: Warning devices*;
- *Part 6: Power supplies*;
- *Part 7: Application guidelines*.

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Introduction

This standard deals with power supplies (PS) of intruder alarm systems (IAS) installed in buildings. It also includes requirements for externally mounted PS, related to those components of a system installed in a building which are normally mounted on the external structure of a building.

EXAMPLE Ancillary control equipment or warning devices.

1 Scope

This standard specifies requirements, testing procedures and performance criteria for PS for use in intrusion detection and hold-up-alarm systems in buildings.

This standard covers mandatory functions which shall be provided on all PS and optional functions with requirements which may be provided.

Other functions associated with intrusion detection and hold-up-alarm not specified in this standard may be provided. Such functions shall not affect the requirements of any mandatory or optional functions.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of this European Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

EN 50081-1:1992, *Electromagnetic compatibility — Generic emission standard — Part 1: Residential, commercial and light industry*.

EN 50102:1995, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*.

EN 50130-4:1995, *Alarm systems — Part 4: Electromagnetic compatibility — Product family standard — Immunity requirements for components of fire, intruder and social alarm systems*.

EN 50131-1:1997, *Alarm systems — Intrusion systems — Part 1: General requirements*.

EN 60086, *Primary batteries*.

EN 60086-1:1997, *Primary batteries — Part 1: General*. (IEC 60086-1:1996)

EN 60086-2:1997, *Primary batteries — Part 2: Specification sheet*. (IEC 60086-2:1997)

EN 60529:1991, *Degrees of protection provided by enclosures (IP code)*. (IEC 60529:1989)

EN 60950:1992, *Safety of information technology equipment*. (IEC 60950:1991, modified)

IEC 60068-1:1988, *Environmental testing — Part 1: General and guidance*. + A1:1992 (harmonized as EN 60068-1:1994)

IEC 60068-2-1:1990, *Environmental testing — Part 2: Tests — Tests A: Cold*. + A1:1993 + A2:1994 (harmonized as EN 60068-2-1:1993 + A1:1993 + A2:1994)

IEC 60068-2-2:1974, *Environmental testing — Part 2: Tests — Tests B: Dry heat*. + IEC 60068-2-2A:1976 (harmonized as EN 60068-2-2:1993)

IEC 60068-2-3:1969, *Environmental testing — Part 2: Tests — Test Ca: Damp heat, steady state*. + A1:1984 (harmonized as HD 323.2.3 S2:1987)

IEC 60068-2-6:1982, *Environmental testing — Part 2: Tests — Test Fc and guidance: Vibration (sinusoidal)*. + A1:1983 + A2:1985 (harmonized as HD 323.2.6 S2:1988)

IEC 60068-2-18:1989, *Environmental testing — Part 2: Tests — Test R and guidance: Water*.

IEC 60068-2-30:1980, *Environmental testing — Part 2: Tests — Test Db and guidance: Damp heat, cyclic (12 + 12 hours)*. + A1:1985 (harmonized as HD 323.2.30 S3:1988)

IEC 60068-2-52:1984, *Environmental testing — Part 2: Tests — Test Kb: Salt mist, cyclic (sodium chloride solution)*. (harmonized as HD 323.2.52 S1:1987)

IEC 60068-2-56:1988, *Environmental testing — Part 2: Tests — Test Cb: Damp heat, steady state, primarily for equipment*. (harmonized as HD 323.2.56 S1:1990)

EN 60065:1993, *Safety requirements for mains operated electronic and related apparatus for household and similar general use*. (IEC 65:1985 + A1:1997 + A2:1989 + A3:1992, modified)

3 Definitions and abbreviations

3.1 Definitions

For the purpose of this standard, the following definitions apply:

3.1.1

alternative power source (APS)

power source capable of powering the system for a predetermined time when a PPS is unavailable

3.1.2

deep discharge protection

protection which avoids damage to the storage device when the level of discharge is beyond the level defined in the manufacturer's specification for storage devices

3.1.3

external power source (EPS)

energy supply external to the intruder alarm system, which may be non-continuous, used as the prime power source in type A and type B systems

3.1.4

independent power outputs

power supply having more than one power output, each output having its own protection against short circuit and overload (e.g. fuses); each output can have multiple terminals

3.1.5

low output voltage

voltage below the minimum power output voltage

3.1.6

low voltage from storage device

voltage specified by the manufacturer which indicates the storage device is nearly discharged

3.1.7

maximum power output voltage

maximum rated output voltage of the PS as specified by the manufacturer under normal operating conditions

3.1.8

minimum power output voltage

minimum rated output voltage of the PS as specified by the manufacturer under normal operating conditions

3.1.9

normal operative condition

conditions applying when the PS is mounted according to the manufacturer's instructions, within the range of the designated environmental class; the applied PS and the load shall be within the manufacturer's specified range and the SD shall be no less than 80 % capacity

3.1.10

over-voltage protection

protection of the power supply and/or connected equipment against excessive output voltage, including the open circuit voltage

3.1.11

power output

output of the power supply which supplies energy to the intruder alarm system

3.1.12

power unit (PU)

device that provides and also modifies or isolates (electrical) power for an intruder alarm system or part thereof, and for the storage device if required

3.1.13

power supply (PS)

device that stores, provides and also modifies or isolates (electrical) power for an alarm system or part thereof; the two basic parts of a PS are the power unit (PU) and the storage device (e.g. battery)

3.1.14

power supply fault

any event in the power supply which interrupts or degrades the energy supplied to the intruder alarm system or degrades the performance of the PS to bring it outside the requirements of this standard (e.g. low voltage, high voltage, battery disconnected, battery short circuited)

3.1.15

prime power source (PPS)

power source used to support the intruder alarm system or part thereof under normal operating conditions

3.1.16

ripple

periodic voltage superimposed onto the d.c. output voltage at mains power frequency or inverter frequency and related harmonics

3.1.17

standby period

defined time for which a power supply shall supply energy to the components of the intruder alarm system in the event of failure of the EPS

3.1.18

storage device (SD)

device which stores energy (e.g. a battery)

3.1.19

storage failure

inability of the storage device to maintain the output voltage above the minimum value, in the event of a failure of the EPS

3.2 Abbreviations

For the purposes of this European Standard the following abbreviations are used:

APS	Alternative Power Source
CIE	Control and Indicating Equipment
EPS	External Power Source
IAS	Intruder Alarm System
PPS	Prime Power Source
PS	Power Supply
PU	Power Unit
SD	Storage Device

4 Functional requirements

4.1 General

The PS shall supply power to the CIE and other components of an IAS continuously.

The requirements of a PS are divided into four security grades. A PS fulfils the requirements if it includes all mandatory functions of the respective grade.

The manufacturer is free to provide the defined options. However, if specified options are included the PS shall meet the functional requirements. The mandatory and optional functions shall comply with the environmental tests of clause 8.

The power supply shall be either an integral part of a system component or stand alone.

There are three types of PS which are independent of the grade.

These are shown in Figure 1.

a) Type A

The power is supplied by an EPS (e.g. mains power) and, in case of failure, by a rechargeable storage device (e.g. battery) that is automatically recharged from the EPS.

b) Type B

The power is supplied by an EPS (e.g. mains power) and, in case of failure, by a storage device that is not automatically recharged from the EPS (e.g. lithium cell).

c) Type C

The power is supplied only by a storage device, which is the PPS in this case.

In PS types A and B, no current shall be drawn from the storage device under normal operating conditions when the EPS is present, except during a battery test operation, where present.

4.2 Monitoring of PS

Monitoring shall be provided to indicate the continuity of energy provided by the power supply.

4.2.1 Monitoring of PS type A and type B

PS monitoring signals shall be provided which give an indication at the CIE. Monitoring signals shall be fail-safe, such that total loss of function in the PS will generate a fault condition.

An EPS fault signal shall be generated within 10 s after the disconnection of the EPS. When the EPS is reconnected the fault signal shall be restored within 10 s.

An APS fault signal shall be generated within 10 s if one of the following conditions occurs (in accordance with Table 1):

- i) low voltage storage device: the storage device voltage falls below the value indicated by the manufacturer;
- ii) storage device failure.

4.2.2 Monitoring of PS type C

In PS type C the storage device shall be monitored for low voltage.

Primary cells used in type C PS shall comply with the requirements of EN 60086, except where technically different types are specified.

A "low voltage storage device" shall be provided when the storage device voltage falls below a voltage level specified by the manufacturer. This voltage shall be greater than the minimum power output voltage.