

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Alarm systems – Intrusion and hold-up systems –
Part 8: Security fog device/systems
(standards.iteh.ai)

Systèmes d'alarme – Systèmes d'alarme contre l'intrusion et les hold-up –
Partie 8: Systèmes/dispositifs générateurs de fumée

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**ALARM SYSTEMS –
INTRUSION AND HOLD-UP SYSTEMS –**

Part 8: Security fog device/systems

FOREWORD

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This International Standard IEC 62642-8 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This standard is based on EN 50131-8 (2009).

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

FDIS	Report on voting
79/327/FDIS	79/336/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 of the IEC 62642 series can be found, under the general title *Alarm systems – Intrusion and hold-up systems*, on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability result 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

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INTRODUCTION

This part 8 of the IEC 62642 series of standards gives requirements for security fog device/systems used in intrusion and hold-up alarm systems. The other parts of this series of standards are as follows:

- Part 1 System requirements
- Part 2-2 Intrusion detectors – Passive infrared detectors
- Part 2-3 Intrusion detectors – Microwave detectors
- Part 2-4 Intrusion detectors – Combined passive infrared / microwave detectors
- Part 2-5 Intrusion detectors – Combined passive infrared / ultrasonic detectors
- Part 2-6 Intrusion detectors – Opening contacts (magnetic)
- Part 2-71 Intrusion detectors – Glass break detectors – Acoustic
- Part 2-72 Intrusion detectors – Glass break detectors – Passive
- Part 2-73 Intrusion detectors – Glass break detectors – Active
- Part 3 Control and indicating equipment
- Part 4 Warning devices
- Part 5-3 Interconnections – Requirements for equipment using radio frequency techniques
- Part 6 Power supplies
- Part 7 Application guidelines
- Part 8 Security fog devices/systems

This International Standard applies to a security fog system that is part of an Intruder and Hold-up Alarm System (I&HAS) and is used both as a security deterrent device for building security and as a crime reduction device for the protection of people

This International Standard is intended to assist insurers, intruder alarm companies, customers and the police in understanding the principles and specification of a security fog system.

The purpose of a security fog system is to reduce the visibility in a protected area by the use of a non-toxic fog in order to form a barrier between the criminal and the criminal's intended target.

This International Standard is not intended to cover standalone or mobile security fog systems.

This International Standard has been designed to be flexible enough to encourage and encompass future developments in the field of security fog systems.

ALARM SYSTEMS – INTRUSION AND HOLD-UP SYSTEMS –

Part 8: Security fog device/systems

1 Scope

This part of the IEC 62642 series specifies the requirements for security fog systems as a part of an I&HAS. It covers application and performance and also gives the necessary tests and trials to ensure efficiency and reliability of such obscuration devices.

This International Standard also gives guidance on the criteria for design, installation, operation and maintenance of security fog systems.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*

IEC 61000-6-3:2006, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 62599-1:2010, *Alarm systems – Part 1: Environmental test methods*

IEC 62599-2:2010, *Alarm systems – Part 2: Electromagnetic compatibility – Immunity requirements for components of fire and security alarm systems*

IEC 62642-1:2010, *Alarm systems – Intrusion and hold-up systems – Part 1: System requirements*

IEC 62642-5-3, *Alarm systems – Intrusion and hold-up systems – Part 5-3 : Interconnections – Requirements for equipment using radio frequency techniques*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62642-1, as well as the following apply.

3.1.1

confirmed intrusion

signals or messages emanating from two or more independent intrusion detectors indicating there is a high probability that a genuine intrusion or genuine attempted intrusion has occurred within a specified timeframe

3.1.2

obscuration

the reduction in visibility as a result of the activation of a security fog system

3.1.3**protected area**

the designated space the security fog system is designed to restrict the visibility in when operated

3.1.4**security fog system**

device (or a series of separate independent components that make up a device) or system within tamper resistance housing(s), that, when activated, produces a dense artificial fog, from a consumable, to reduce visibility in the protected area

3.1.5**verification**

the process whereby the security fog system will only operate once the Intruder Alarm System (IAS) has operated and a detection device in the area of the security fog system has triggered or an Hold-up Alarm System (HAS) has been operated

3.1.6**wet fog**

aggregation of water droplets that may result from incomplete atomisation of the fogging agent causing a direct spray or spatter from the fog ejection nozzle. This may also result from poor atomisation of the fogging agent causing individual fog particle size to be too large

NOTE The large particles may fall down and settle on level surfaces as a greasy residue.

3.2 Abbreviations

For the purposes of this document, the abbreviations given in IEC 62642-1 and the following apply.

EMC	Electromagnetic compatibility
IK	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IP	Ingress protection classification
LEA	Law Enforcement Authority (police or governmental body that responds to activations from security systems)

4 Environmental**4.1 Environmental classification**

The security fog system shall meet, as a minimum, Environmental Class II (Indoor – General: environmental influences normally experienced indoors when the temperature is not well maintained) in accordance with IEC 62642-1.

EXAMPLE In corridors, halls or staircases and where condensation can occur on windows and in unheated storage areas or warehouses where heating is intermittent.

NOTE Temperatures may be expected to vary between $-10\text{ }^{\circ}\text{C}$ and $+40\text{ }^{\circ}\text{C}$ with the average relative humidity of approximately 75 % non-condensing.

4.2 Environmental tests

For all operations, the security fog system shall not activate, generate tamper, fault or other signals or messages when subject to the specific range of environmental and EMC conditions and shall continue to function normally.

The following Class II level environmental tests from IEC 62599-1 shall be applicable when testing the security fog system:

- a) Clause 8: dry heat (operational);
- b) Clause 10: cold test (operational);
- c) Clause 14: damp heat, cyclic (operational);
- d) Clause 17: sulphur dioxide (SO₂) (endurance);
- e) Clause 20: impact (operational);
- f) Clause 22: vibration sinusoidal (operational);
- g) Clause 23: vibration sinusoidal (endurance);

and for electromagnetic compatibility, immunity (operational), see IEC 62599-2.

5 Access levels

The access levels used in this standard shall be as stated in 8.3.1 of IEC 62642-1, except for access level 2. Access level 2 “user” shall not be able to access the security fog system.

6 Regulation requirements

6.1 General

The security fog system shall operate to the following minimum relevant International regulations.

6.2 Electrical safety

The electrical (safety) construction of the security fog system shall comply with IEC 60065.

6.3 Safety data sheets

The transport, storage and handling of consumables, shall comply with the requirements stated on the safety data sheets.

6.4 EMC requirements

The security fog system shall meet the EMC conditions and the severity levels defined in IEC 61000-6-3 and IEC 62599-2.

6.5 Warning signs

As a minimum security fog device/system warning signs shall be positioned on the normal entry point(s) to the building (International safety signs, Directive 92/58/EEC [1]¹). See Annex B.

6.6 Pressure vessels

Any security fog system that contains pressure vessels shall be transportation and its usage shall meet the current industry safety requirements (see Directive 97/23/EC, Article 3 [2]).

¹ Figures in square brackets refer to the Bibliography.

7 Device/system parameters

7.1 Performance

The security fog system shall meet the following minimum performance:

- Reduction of visibility to 1 m within 60 s in a minimum volume of 150 m³ and maintaining obscuration for a period of 10 min in an un-vented room (performance tests shown in Annex A).

The performance of the security fog system shall be detailed as shown in Annex A.

7.2 Battery backup requirement

The battery backup requirements of a security fog system cannot achieve compliance of IEC 62642-1 due to the amount of energy used to power the security fog system.

As a general requirement, a security fog system shall be capable of a single full system operation for a period within one hour after mains fail.

A single full system operation shall be defined by the manufacturer in the security fog system specification.

7.3 IP/IK rating

All component parts shall be housed in an enclosure meeting the following requirements:

- a) IP rating of IP20;
- b) IK rating of IK08.

7.4 Wire free interconnections

If wire free interconnections are used then the requirements shall meet IEC 62642-5-3.

8 General requirements

8.1 Tamper

All material parts and components of the security fog system shall be inside (a) secure, tamper-resistant outer case(s). The opening by normal means of access to the outer case(s) shall create an (a tamper message or signal) alarm condition.

The security fog system shall not eject fog on an individual tamper signal or message if the I&HAS is in the unset condition.

8.2 Fog neutralisation

A security fog system shall not be damaged or neutralised by the phenomenon (fog) it is supposed to produce.

8.3 Discharge nozzle

8.3.1 Nozzle protection

The discharge nozzle shall be protected to avoid any risk of injury with the security fog system in standby mode.

8.3.2 Nozzle blocked

If the discharge nozzle becomes blocked, then it shall not cause a hazard.

8.4 Fog eject limiter

The security fog system shall incorporate a method for limiting the quantity of ejected fog in order to reduce the possibility of damaging residue.

8.5 Heating unit

The temperature of the heating unit shall be fully monitored and controlled to ensure that it remains within manufacturer's parameters.

8.6 Overheating

The heater unit shall be fitted with a thermal cut off device to prevent overheating outside the manufacturers' parameters. When the thermal cut off operates it shall require a reset by an authorised technician.

8.7 Accidental triggering

The security fog system shall not be able to be triggered by an unset I&HAS, but the security fog system can be triggered by a set HAS if so configured.

8.8 Isolation of the security fog system

There shall be a means of isolating the security fog system from the CIE to avoid a maintenance technician triggering the security fog system during routine maintenance.

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8.9 Fixings

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Fixings/mountings shall be appropriate to prevent unauthorised removal or tamper.

9 Operational requirements

9.1 Communication

The security fog system shall be capable of communicating with the host I&HAS.

9.1.1 Minimum information to be communicated

- a) INPUTS into the security fog system:
 - 1) set/unset,
 - 2) trigger,
 - 3) verification.
- b) OUTPUTS from the security fog system:
 - 1) security fog system active,
 - 2) tamper,
 - 3) low battery charge (if applicable),
 - 4) mains fail,
 - 5) no consumables,
 - 6) incorrect temperature.

NOTE For outputs b) 3) to b) 6), a single signal or message may represent these conditions.

9.1.2 Non-critical faults

There are non-critical faults such as low consumables, etc. These may be transmitted as a separate signal or message.

9.1.3 Optional signals

Additional inputs/outputs may be provided (e.g. fire alarm inhibit).

9.2 Fault monitoring

The security fog system shall be monitored so that a fault (see 9.1) will generate a signal or message, which shall be transmitted back to the host I&HAS.

9.3 Power failure

A power failure shall not lead to the triggering of the security fog system.

If a power failure occurs, the security fog system shall send a signal or message to the I&HAS within 2 min, and where an ATS exists for remote notification at the I&HAS, immediately notification to the ARC shall occur.

9.4 Efficacy

The security fog system shall produce fog that provides obscuration within the protected area according to the manufacturer's specification.

9.5 Non-toxicity

The manufacturer shall provide proof that the consumables and the emitted fog do not present a toxic hazard to persons in normal use and manufacturers specified fluid life-time bearing in mind the use of the security fog system. This assessment shall be carried out by a accredited laboratory in the relevant field and shall include the following minimum elements:

- a) identification for the product tested;
- b) bibliographical research;
- c) a chromatographic test assessing all the components, including gaseous components;
- d) the laboratory's conclusions.

9.6 Residue

The security fog system used in accordance with the manufacturer's instructions shall not result in damaging residue in the area of use.

10 Consumables

10.1 Replenishment

The consumables used in security fog systems shall be replaced/replenished by the manufacturer/installer in accordance with manufacturer's instructions.

10.2 Formulation

All formulations for all fluids and propellants shall be recorded and maintained by original equipment manufacturer.

10.3 Traceability

All consumables shall be identifiable and traceable back to the security fog system manufacturer.

11 Marking

The security fog system shall be marked in accordance with IEC 62642-1 and statutory requirements.

12 Documentation

The following minimum documentation shall be available:

- a) user instructions;
- b) installation instructions;
- c) maintenance instructions;
- d) a safety data sheet on all consumables;
- e) security fog system warning signs.

13 Design, installation, operation and maintenance (informative)

Guidance information for installers and maintainers on the design, installation, operation and maintenance is shown in Annex C.

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