

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Alarm and electronic security systems –
Part 5-1: Alarm transmission systems – General requirements**

**Systèmes d'alarme et de sécurité électroniques –
Partie 5-1: Systèmes de transmission d'alarme – Exigences générales**



THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 60839-5-1

Edition 2.0 2014-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Alarm and electronic security systems –
Part 5-1: Alarm transmission systems – General requirements**

**Systèmes d'alarme et de sécurité électroniques –
Partie 5-1: Systèmes de transmission d'alarme – Exigences générales**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 13.320

ISBN 978-2-8322-1789-4

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Terms, definitions and abbreviations	7
3.1 Terms and definitions	7
3.2 Abbreviations	12
4 General	13
5 General requirements	13
5.1 ATS configuration	13
5.2 ATS categories	13
5.2.1 General	13
5.2.2 Custom category	14
5.3 Applicable network standards	14
6 System requirements	14
6.1 General	14
6.2 Transmission link requirements	14
6.2.1 General	14
6.2.2 Transmission links shared with other applications	15
6.2.3 Transmission network equipment	15
6.2.4 ATSN capacity	15
6.2.5 Denial of service	15
6.3 Performance	16
6.3.1 General	16
6.3.2 Transmission time	16
6.3.3 Monitoring of interconnections	17
6.4 Securing of messages in the alarm transmission system	19
6.5 Alarm transmission acknowledgement	19
6.6 ATS generated alarms	19
6.7 Availability	20
6.7.1 General	20
6.7.2 Redundancy/duplication	20
6.7.3 ATS unavailability	20
6.7.4 Duration of faults	20
6.7.5 ATS availability recording	20
6.7.6 ATSN availability	21
6.8 Security	21
6.8.1 General security requirements	21
6.8.2 Substitution security	22
6.8.3 Information security	22
7 Verification of performance	22
7.1 General	22
7.2 Performance verification of an ATS	22
7.3 ATSN performance	22
7.4 Transmission time	23

7.5	Verification interval	23
7.6	Availability	23
7.6.1	Records	23
7.6.2	Inspection of records	24
7.6.3	Calculations	24
8	Documentation	25
Annex A (informative)	ATS configurations examples	27
Annex B (informative)	Availability examples	29
Annex C (informative)	Verification of performance	30
C.1	General	30
C.2	Set-up configuration	30
C.3	System evaluation and functional verification	30
C.4	Functional verification	31
Annex D (normative)	Classes for category C	32
Bibliography		34
Figure 1	– Logical representation of an ATS	26
Figure A.1	– Example of a simple single path alarm transmission system	27
Figure A.2	– Example of a simple dual path alarm transmission system	27
Figure A.3	– Example of a dual path alarm transmission system	28
Figure C.1	– Block diagram	30
Table 1	– ATS configuration	14
Table 2	– Transmission time	17
Table 3	– Maximum reporting time	18
Table 4	– RCT to AE alarm reporting	19
Table 5	– SPT to AS alarm reporting	19
Table 6	– ATS availability recording	21
Table 7	– ATSN availability	21
Table 8	– SPT substitution security requirements	22
Table 9	– Information security requirements	22
Table C.1	– Verification results table	31
Table D.1	– Transmission time classification	32
Table D.2	– Transmission time, maximum values	32
Table D.3	– Reporting time classification	32
Table D.4	– Availability classification	32
Table D.5	– Substitution security	32
Table D.6	– Information security	33

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ALARM AND ELECTRONIC SECURITY SYSTEMS –**Part 5-1: Alarm transmission systems –
General requirements****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60839-5-1 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This international standard is based on EN 50136-1:2012.

This 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) The previous version was published 24 years ago, techniques and constraints have been widely changed since that time. Although covering the same subject the contents of the new IEC 60839-5-1 are widely different and there is no constructive issues in trying to find similarities and differences between both versions.

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

FDIS	Report on voting
79/479/FDIS	79/490/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 in the IEC 60839 series, published under the general title *Alarm and electronic security systems*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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.