

STN	Priemyselné komunikačné siete Koexistencia bezdrôtových systémov Časť 2: Manažérstvo koexistencie	STN EN IEC 62657-2 18 4020
------------	--	--

Industrial networks - Coexistence of wireless systems - Part 2: Coexistence management

Táto norma obsahuje anglickú verziu európskej normy.

This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/25

Obsahuje: EN IEC 62657-2:2025, IEC 62657-2:2025

Oznámením tejto normy sa od 30.04.2028 ruší
STN EN IEC 62657-2 (18 4020) z októbra 2022

140638



Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii
v znení neskorších predpisov.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 62657-2

April 2025

ICS 25.040.40; 33.040; 35.100

Supersedes EN IEC 62657-2:2022

English Version

**Industrial networks - Coexistence of wireless systems - Part 2:
Coexistence management
(IEC 62657-2:2025)**

Réseaux industriels - Coexistence des systèmes sans fil -
Partie 2: Gestion de coexistence
(IEC 62657-2:2025)

Industrielle Kommunikationsnetze - Koexistenz von
Funksystemen - Teil 2: Koexistenzmanagement
(IEC 62657-2:2025)

This European Standard was approved by CENELEC on 2025-03-21. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62657-2:2025 (E)**European foreword**

The text of document 65C/1329/FDIS, future edition 4 of IEC 62657-2, prepared by SC 65C "Industrial networks" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62657-2:2025.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2026-04-30 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2028-04-30 document have to be withdrawn

This document supersedes EN IEC 62657-2:2022 and all of its amendments and corrigenda (if any).

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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62657-2:2025 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 62591:2016	NOTE	Approved as EN 62591:2016 (not modified)
IEC 62601	NOTE	Approved as EN 62601
IEC 62734:2014	NOTE	Approved as EN 62734:2015 (not modified)
IEC 61784-1 series	NOTE	Approved as EN IEC 61784-1 series
IEC 61784-2 series	NOTE	Approved as EN IEC 61784-2 series
IEC 60050 series	NOTE	Approved as EN IEC 60050 series ¹
IEC 62890:2020	NOTE	Approved as EN IEC 62890:2020 (not modified)
IEC 61918:2018	NOTE	Approved as EN IEC 61918:2018 (not modified) +A11:2019
IEC 61158-2:2023	NOTE	Approved as EN IEC 61158-2:2023 (not modified)
IEC 61360 series	NOTE	Approved as EN 61360 series

¹ Under preparation. Stage at the time of publication: prEN IEC 60050 series.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62443	series	Security for industrial automation and control systems	EN IEC 62443	series
IEC 62657-1	2017	Industrial communication networks - Wireless communication networks - Part 1: Wireless communication requirements and spectrum considerations	EN 62657-1	2017
IEC 62657-3	2022	Industrial communication networks - Coexistence of wireless systems - Formal description of the automated coexistence management and application guidance	EN IEC 62657-3	2022
IEC 62657-4	2025	Industrial networks - Coexistence of wireless systems - Part 4: Coexistence management with central coordination of wireless applications	EN IEC 62657-4	2025



IEC 62657-2

Edition 4.0 2025-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial networks – Coexistence of wireless systems –
Part 2: Coexistence management**

**Réseaux industriels – Coexistence des systèmes sans fil –
Partie 2: Gestion de coexistence**

**THIS PUBLICATION IS COPYRIGHT PROTECTED****Copyright © 2025 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 Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
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 corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform

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 once a month by email.

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: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

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.

Recherche de publications IEC -**webstore.iec.ch/advsearchform**

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 une fois par mois par email.

Service Clients - webstore.iec.ch/csc

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

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 62657-2

Edition 4.0 2025-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial networks – Coexistence of wireless systems –
Part 2: Coexistence management**

**Réseaux industriels – Coexistence des systèmes sans fil –
Partie 2: Gestion de coexistence**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 25.040.40, 33.040, 35.100

ISBN 978-2-8327-0193-5

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.....	7
INTRODUCTION.....	9
1 Scope.....	11
2 Normative references	11
3 Terms, definitions, abbreviated terms and conventions	12
3.1 Terms and definitions.....	12
3.2 Abbreviated terms.....	27
3.3 Conventions.....	28
4 Coexistence concept in industrial automation	28
4.1 Overview.....	28
4.2 Objective	30
4.3 Necessity to implement a coexistence management.....	32
4.4 Interference potential.....	33
4.5 Ancillary conditions.....	35
4.6 Requirements to wireless devices for support of coexistence management.....	36
4.7 Concepts	36
4.7.1 Manual coexistence management.....	36
4.7.2 Automated non-collaborative coexistence management.....	37
4.7.3 Automated collaborative coexistence management.....	37
4.8 Best practices to achieve coexistence.....	38
4.9 Coexistence conceptual model.....	40
4.10 Coexistence management and selection of a wireless solution.....	42
4.11 Coexistence management system.....	44
5 Coexistence management parameters	44
5.1 General.....	44
5.1.1 Definition and usage of parameters	44
5.1.2 Physical link	44
5.2 Adjacent channel selectivity	45
5.3 Antenna gain	45
5.4 Antenna radiation pattern.....	45
5.5 Antenna type	45
5.6 Communication availability.....	46
5.7 Communication reliability	46
5.8 Bit rate of physical link.....	46
5.9 Blocked frequency list.....	46
5.10 Centre frequency	46
5.11 Area of operation	47
5.12 Communication load	47
5.13 Cut-off frequency	49
5.14 Data throughput.....	50
5.15 Distance between wireless devices.....	50
5.16 Duty cycle.....	51
5.17 Dwell time.....	53
5.18 Equivalent isotropic radiated power.....	54
5.19 Equivalent radiated power.....	54
5.20 Frequency band.....	54

5.21	Frequency bandwidth	54
5.22	Frequency channel	55
5.23	Frequency hopping sequence	55
5.24	Future expansion plan	56
5.25	Geographical dimension of the plant	56
5.26	Infrastructure device	56
5.27	Initiation of data transmission	56
5.28	Interference type	56
5.29	Intervisibility	57
5.30	ISM application	57
5.31	Length of user data per transfer interval	57
5.32	Limitation from neighbours of the plant	57
5.33	Maximum number of retransmissions	57
5.34	Mechanism for adaptivity	58
5.35	Medium access control mechanism	58
5.36	Medium utilization factor	58
5.37	Message	59
5.38	Modulation	59
5.39	Natural environmental condition	59
5.40	Network topology	59
5.41	Number of consecutive lost messages	60
5.42	Object movement	60
5.43	Operating time between failures	60
5.44	Message loss ratio	60
5.45	Position of wireless devices	61
5.46	Power spectral density	61
5.47	Purpose of the automation application	62
5.48	Receiver blocking	62
5.49	Receiver maximum input level	62
5.50	Receiver sensitivity	62
5.51	Regional radio regulations	62
5.52	Relative movement	63
5.53	Response time	63
5.54	Security level	63
5.55	Spatial coverage of the wireless communication system	64
5.56	Spatial extent of the application	64
5.57	Spurious response	64
5.58	Survival time	64
5.59	Total radiated power	64
5.60	Transfer interval	64
5.61	Transmission gap	65
5.62	Transmission time	66
5.63	Transmitter output power	69
5.64	Transmitter sequence	69
5.65	Transmitter spectral mask	71
5.66	Update time	71
5.67	Wireless device density	72
5.68	Wireless device type information	72
5.69	Wireless communication solution density	73

5.70	Wireless technology or standard	73
6	Coexistence management information structures	73
6.1	General.....	73
6.2	General plant characteristic	75
6.2.1	General	75
6.2.2	General plant characteristic	75
6.2.3	Passive environmental influences	76
6.2.4	Active environmental influences.....	76
6.3	Application communication requirements	77
6.3.1	Overview	77
6.3.2	Requirements influencing the characteristic of wireless solutions	78
6.3.3	Performance requirements.....	79
6.4	Wireless system type and wireless device type	79
6.4.1	Overview	79
6.4.2	Wireless system type	80
6.4.3	Wireless device type	80
6.5	Wireless solution	83
6.5.1	Overview	83
6.5.2	Wireless system solution	83
6.5.3	Wireless device solution	84
6.6	Application related characteristic parameters	85
6.7	Radio environment related performance parameters	86
6.8	Wireless communication solution related performance parameters.....	87
7	Coexistence management process	88
7.1	General.....	88
7.1.1	Overview	88
7.1.2	Documentation	89
7.1.3	Suitable documentation method	90
7.1.4	Application of tools	91
7.2	Establishment of a coexistence management system	91
7.2.1	Nomination of a coexistence manager	91
7.2.2	Responsibility of a coexistence manager	92
7.2.3	Support by wireless experts.....	92
7.2.4	Training	92
7.3	Maintaining coexistence management system	93
7.4	Phases of a coexistence management process	93
7.4.1	Investigation phase.....	93
7.4.2	Planning phase.....	96
7.4.3	Implementation phase.....	98
7.4.4	Operation phase	99
8	Coexistence parameter templates.....	101
Annex A (normative)	Parameter usage in the IEC 62657 series	108
A.1	General.....	108
A.2	Outline of the IEC 62657 series	108
A.3	Parameter usage in coexistence management process in IEC 62657-2	108
A.4	Parameters usage among the IEC 62657 series.....	111
Bibliography		113

Figure 1 – Issues of consideration	31
Figure 2 – Applications using frequency spectrum	31
Figure 3 – Progression of expense to achieve coexistence corresponding to the application classes	36
Figure 4 – Separation of wireless systems according to frequency and time	39
Figure 5 – Coexistence conceptual model.....	41
Figure 6 – Flow chart of the coexistence conceptual model.....	42
Figure 7 – Selection of a wireless system in the coexistence management process	43
Figure 8 – Communication load in case of two wireless devices	48
Figure 9 – Communication load in the case of several wireless devices	49
Figure 10 – Cut-off frequencies derived from maximum power level	50
Figure 11 – Distance of the wireless devices	51
Figure 12 – Duty cycle	52
Figure 13 – Maximum dwell time	53
Figure 14 – Power spectral density of an IEEE Std.802.15.4 system.....	61
Figure 15 – Communication cycle, application event interval and machine cycle	65
Figure 16 – Transmission gap.....	66
Figure 17 – Example of the density functions of transmission time	67
Figure 18 – Example of the distribution functions of transmission time	68
Figure 19 – Transmitter sequence.....	70
Figure 20 – Transmitter spectral mask of an IEEE Std.802.15.4 system.....	71
Figure 21 – Example of distribution functions of the update time	72
Figure 22 – Principle for use of coexistence parameters	75
Figure 23 – Parameters to describe the general plant characteristic	75
Figure 24 – Parameters to describe application communication requirements	78
Figure 25 – Parameters to describe wireless system type and device type.....	79
Figure 26 – Example of power spectral density and transmitter spectral mask	81
Figure 27 – Example of medium utilization in time and frequency.....	82
Figure 28 – Parameters to describe a wireless communication solution	83
Figure 29 – Planning of a wireless system in the coexistence management process	97
Figure 30 – Implementation and operation of a wireless system in the coexistence management process.....	100
Figure A.1 – Usage of parameters in IEC 62657-2	109
Figure A.2 – Parameter usage among the IEC 62657 series	111
Table 1 – Example of a classification of application communication requirements	30
Table 2 – Application profile dependent observation time values.....	52
Table 3 – Parameter options for frequency channel	55
Table 4 – Hierarchy of the characteristic parameters	74
Table 5 – List of parameters used to describe the general plant characteristic	76
Table 6 – List of parameters used to describe the passive environmental influences.....	76
Table 7 – List of parameters used to describe the active environmental influences	76
Table 8 – List of parameters used to describe the interference type	77

Table 9 – List of parameters used to describe the requirements influencing the characteristic of wireless solutions	78
Table 10 – List of characteristic parameters	79
Table 11 – List of parameters used to describe the wireless system type	80
Table 12 – List of parameters used to describe the transmitter of a wireless device type 82	82
Table 13 – List of parameters used to describe the receiver of a wireless device type	83
Table 14 – List of parameters used to describe a wireless solution	84
Table 15 – List of general parameters used to describe the wireless device solution	84
Table 16 – List of parameters used to describe the transmitter of a wireless device solution	85
Table 17 – List of parameters used to describe the receiver of a wireless device solution	85
Table 18 – List of relevant characteristic parameters of wireless solutions	86
Table 19 – List of relevant statistical values of characteristic parameters	86
Table 20 – List of radio environment related performance parameters	87
Table 21 – List of wireless communication solution related performance parameters	88
Table 22 – Template used to describe the general plant characteristic	102
Table 23 – Template used to describe the application communication requirements	103
Table 24 – Template used to describe the wireless system type	104
Table 25 – Template used to describe a wireless device type	104
Table 26 – Template used to describe the wireless system solution	105
Table 27 – Template used to describe a wireless device solution	106
Table 28 – Template used to describe the relevant characteristic parameters of wireless solutions	106
Table 29 – Template used to describe the relevant statistical values of characteristic parameters	107
Table 30 – Template used to describe an interference type	107
Table A.1 – Example for parameters usage in coexistence management process	110

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL NETWORKS –
COEXISTENCE OF WIRELESS SYSTEMS –****Part 2: Coexistence management****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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62657-2 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2022. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) alignment of some definitions and specifications of coexistence parameters in order to facilitate their future inclusion in the IEC Common Data Dictionary (IEC CDD) maintained by the IEC;

- b) alignment of some definitions and specifications to be consistent with the new IEC 62657-3 and IEC 62657-4;
- c) edition 3 of this document was published in June 2022. Some comments were made in the last development stages of this document asking for explanations on how the parts of the IEC 62657 series were structured and how they were related to each other. Resolution of these comments was deferred until a next edition, which means this edition.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65C/1329/FDIS	65C/1337/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all the parts of the IEC 62657 series, under the general title *Industrial networks – Coexistence of wireless systems*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

The overall market for wireless communication solutions spans a range of diverse applications, with differing performance and functional requirements. Within this overall market, the industrial automation domain could include:

- process automation, covering for example the following industry branches:
 - oil and gas, refining,
 - chemical,
 - pharmaceutical,
 - mining,
 - pulp and paper,
 - water and wastewater,
 - steel,
- electric power such as:
 - power generation (for example wind turbine),
 - power transmission and distribution (grid),
- factory automation, covering for example the following industry branches:
 - food and beverage,
 - automotive,
 - machinery,
 - semiconductor.

Industrial automation requirements for wireless communication systems are different from those of, for example, the telecommunications, commercial and consumer markets. These industrial automation requirements are identified and provided in IEC 62657-1.

Industrial premises can contain a variety of wireless communication technologies and other sources of radio emissions.

This document is intended for designers and persons responsible for production and process plants, system integrators and mechanical engineers having to integrate and start up wireless systems in machines and plants, and producers of industrial wireless solutions. In particular, it is intended to motivate the exchange of information between automation and radio engineers.

Many wireless industrial automation applications are also located in physical environments over which the operator/owner can exert control, that is, within a physical facility where the presence and operation of all radio emitting devices are under the control of a single entity. This allows wireless management strategies to be employed which are not feasible for equipment installed in public or other unmanaged areas.

In industrial automation, many different wireless communication systems can operate in the same premises. Examples of these communication systems are IEC 62591 [1]¹ (WirelessHART^{®2}), IEC 62601 [2] (WIA-PA) and IEC 62734 [3] (ISA100.11a). All these communication systems use IEEE 802.15.4 [4] for the process automation applications. Other examples of wireless communication systems are specified in the IEC 61784-1 series [5] and IEC 61784-2 series [6] CP that use IEEE 802.11 [7] and IEEE 802.15.1 [8] for factory automation applications. Different to wired fieldbuses, the wireless communication devices can interfere with others on the same premises or environment, disturbing each other. Other sources of radio energy in these bands, often at high energy levels, include radiated process heating, plastic welding, plasma lamps, and microwave irradiation devices.

Clearly, without a means to manage the coexistence of these varied emitters, it would be problematic to ensure that wireless systems meet the time-criticality and other performance requirements of industrial automation.

This document describes the management of independent radio sources that use the same transmission medium. The management within a wireless communication system is not the subject of this document. It is assumed that the standard of a wireless system regulates it, for example by a medium access control mechanism.

The IEC 62657 series has four parts:

- Part 1: Wireless communication requirements and spectrum considerations,
- Part 2: Coexistence management,
- Part 3: Formal description of the automated coexistence management and application guidance,
- Part 4: Coexistence management with central coordination of wireless applications.

IEC 62657-1 provides general requirements for industrial automation and spectrum considerations that are the basis for industrial communication solutions. This document specifies the coexistence management of wireless devices to ensure predictable performance. It is intended to facilitate harmonization of future adjustments to international, national, and local regulations.

This document provides the coexistence management concept and process. Based on the coexistence management process, a predictable assuredness of coexistence can be achieved for a given spectrum with certain application requirements. This document describes principles to manage the potential mutual interference that could occur due to the operation of multiple wireless devices in a plant.

This document provides guidance to the users of wireless systems on selection and proper use of wireless systems. To provide suitable wireless devices to the market, it also serves vendors in describing the behaviours of wireless devices to build wireless systems matching the application requirements.

This document is based on analyses of a number of International Standards, which focus on specific technologies. The intention of this document is not to invent new parameters but to use already defined ones and to be technology independent.

¹ Numbers in square brackets refer to the Bibliography.

² WirelessHART[®] is the registered trade name of the FieldComm Group, see www.fieldcommgroup.org. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

INDUSTRIAL NETWORKS – COEXISTENCE OF WIRELESS SYSTEMS –

Part 2: Coexistence management

1 Scope

This part of IEC 62657

- specifies the fundamental assumptions, concepts, parameters, and procedures for wireless communication coexistence;
- specifies coexistence parameters and how they are used in an application requiring wireless coexistence;
- provides guidelines, requirements, and best practices for wireless communication's availability and performance in an industrial automation plant; it covers the life-cycle of wireless communication coexistence;
- helps the work of all persons involved with the relevant responsibilities to cope with the critical aspects at each phase of life-cycle of the wireless communication coexistence management in an industrial automation plant. Life-cycle aspects include: planning, design, installation, implementation, operation, maintenance, administration and training;
- provides a common point of reference for wireless communication coexistence for industrial automation sites as a homogeneous guideline to help the users assess and gauge their plant efforts;
- deals with the operational aspects of wireless communication coexistence regarding both the static human/tool-organization and the dynamic network self-organization.

This document provides a major contribution to national and regional regulations by supporting to fulfil the requirements using coexistence management.

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.

IEC 62443 (all parts), *Security for industrial automation and control systems*

IEC 62657-1:2017, *Industrial communication networks – Wireless communication networks – Wireless communication requirements and spectrum considerations*

IEC 62657-3:2022, *Industrial networks – Coexistence of wireless systems – Part 3: Formal description of the automated coexistence management and application guidance*

IEC 62657-4:—, *Industrial networks – Coexistence of wireless systems – Part 4: Coexistence management with central coordination of wireless applications*³

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

³ Under preparation. Stage at the time of publication: IEC/FDIS 62657-4:2024.