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**Industrijska komunikacijska omrežja za avtomatizacijo z visoko razpoložljivostjo -
3. del: Protokol vzporedne redundance (PRP) in brezprehodna zanka z visoko
razpoložljivostjo (HSR) (IEC 62439-3:2016)**

Industrial communication networks - High availability automation networks - Part 3:
Parallel Redundancy Protocol (PRP) and High-availability Seamless Redundancy (HSR)
(IEC 62439-3:2016)

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Industrielle Kommunikationsnetze - Hochverfügbare Automatisierungsnetze - Teil 3:
Parallelredundanz-Protokoll (PRP) und nahtloser Hochverfügbarkeits-Ring (HSR) (IEC
62439-3:2016)

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Réseaux industriels de communication - Réseaux d'automatisme à haute disponibilité -
Partie 3 : Protocole de redondance parallèle (PRP) et redondance transparente de haute
disponibilité (HSR) (IEC 62439-3:2016)

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(IEC 62439-3:2016)

Industrielle Kommunikationsnetze - Hochverfügbare Automatisierungsnetze - Teil 3: Parallelredundanz-Protokoll (PRP) und nahtloser Hochverfügbarkeits-Ring (HSR)
(IEC 62439-3:2016)

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EN IEC 62439-3:2018 (E)**European foreword**

The text of document 65C/834/FDIS, future edition 3 of IEC 62439-3, prepared by IEC Subcommittee 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 62439-3:2018.

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		SIST EN IEC 62439-3:2018
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IEC 61850 (all parts)	NOTE	Harmonized as EN 61850 (all parts).
IEC 61850-8-1	NOTE	Harmonized as EN 61850-8-1 (not modified).
IEC 61850-9-2	NOTE	Harmonized as EN 61850-9-2 (not modified).
IEC 62439-6	NOTE	Harmonized as EN 62439-6 (not modified).
IEC 62439-7	NOTE	Harmonized as EN 62439-7 (not modified).

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.

Publication	Year	Title	EN/HD	Year
IEC 60050-191	-	International Electrotechnical Vocabulary - Chapter 191: Dependability and quality of service	-	-
IEC 61588	2009	Precision clock synchronization protocol for networked measurement and control systems	-	-
IEC 62439-1	-	Industrial communication networks - High availability automation networks - Part 1: General concepts and calculation methods	EN 62439-1	-
IEC TR 61850-90-4	2013	Communication networks and systems for power utility automation - Part 90-4: Network engineering guidelines	-	-
ISO/IEC/IEEE 8802-3	2014	Standard for Ethernet	-	-
IEC/IEEE 61850-9-3	-	Communication networks and systems for power utility automation - Part 9-3: Precision time protocol profile for power utility automation	-	-
IEEE 802.1D	2004	IEEE Standard for local and metropolitan area networks - Media Access Control (MAC) Bridges	-	-
IEEE 802.1Q	2014	IEEE Standard for Local and metropolitan area networks - Bridges and Bridged Networks	-	-
IETF RFC 2578	-	Structure of Management Information Version 2 (SMIPv2), April 1999, http://tools.ietf.org/html/rfc2578	-	-
IETF RFC 3418	-	Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)	-	-

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**Industrial communication networks – High availability automation networks –
Part 3: Parallel Redundancy Protocol (PRP) and High-availability Seamless
Redundancy (HSR)**

**Réseaux de communication industriels – Réseaux d'automatisme à haute
disponibilité –
Partie 3: Protocole de redondance en parallèle (PRP) et redondance transparente
de haute disponibilité (HSR)**

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**INDUSTRIAL COMMUNICATION NETWORKS –
HIGH AVAILABILITY AUTOMATION NETWORKS –****Part 3: Parallel Redundancy Protocol (PRP) and
High-availability Seamless Redundancy (HSR)**

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.
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International Standard IEC 62439-3 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This third edition cancels and replaces the second edition published in 2012. This edition constitutes a technical revision.

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

- a) technical corrections and extension of specifications;
- b) consideration of IEC 61588 clock synchronization with end-to-end delay measurement alongside the existing peer-to-peer delay measurement in PRP.

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

FDIS	Report on voting
65C/834/FDIS	65C/841/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.

This International Standard is to be read in conjunction with IEC 62439-1.

A list of all parts in the IEC 62439 series, published under the general title *Industrial communication networks – High availability automation networks*, can be found on the IEC website.

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

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