

STN P	System nabíjania elektrických vozidiel Časť 3-4: Zariadenia na napájanie elektrických vozidiel jednosmerným prúdom, kde ochrana spočíva v dvojitej alebo zosilnenej izolácii Všeobecné definície a požiadavky na komunikáciu CANopen	STN P CLC IEC/TS 61851-3-4 34 1590
------------------	---	--

Electric vehicles conductive charging system - Part 3-4: DC EV supply equipment where protection relies on double or reinforced insulation - General definitions and requirements for CANopen communication

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. 03/24

Obsahuje: CLC IEC/TS 61851-3-4:2023, IEC TS 61851-3-4:2023

138444



TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CLC IEC/TS 61851-3-4

December 2023

ICS 43.120

English Version

**Electric vehicles conductive charging system - Part 3-4: DC EV
supply equipment where protection relies on double or reinforced
insulation - General definitions and requirements for CANopen
communication
(IEC/TS 61851-3-4:2023)**

Système de charge conductive pour véhicules électriques -
Partie 3-4 : Exigences relatives aux véhicules électriques
légers - Définitions générales relatives à la communication
(IEC/TS 61851-3-4:2023)

Konduktive Ladesysteme für Elektrofahrzeuge - Teil 3-4:
Gleichstrom-Versorgungseinrichtungen für
Elektrofahrzeuge mit Schutzwirkung durch doppelte oder
verstärkte Isolierung - Allgemeine Definitionen und
Anforderungen für CANopen Kommunikation
(IEC/TS 61851-3-4:2023)

This Technical Specification was approved by CENELEC on 2023-12-04.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

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

CLC IEC/TS 61851-3-4:2023 (E)**European foreword**

This document (CLC IEC/TS 61851-3-4:2023) consists of the text of IEC/TS 61851-3-4:2023, prepared by IEC/TC 69 "Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks".

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.

This document has been prepared under a standardization request addressed to CENELEC by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

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 Technical Specification IEC/TS 61851-3-4:2023 was approved by CENELEC as a European Technical Specification without any modification.

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

IEC 60309 series	NOTE	Approved as EN IEC 60309 series
IEC 60364-7-722:2018	NOTE	Approved as HD 60364-7-722:2018
IEC 60990:2016	NOTE	Approved as EN 60990:2016 (not modified)
ISO 18246:2023	NOTE	Approved as EN ISO 18246:2023 (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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60309	series	Plugs, fixed or portable socket-outlets and appliance inlets for industrial purposes	EN IEC 60309	series
IEC 60364	series	Low-voltage electrical installations	HD 60364	series
IEC 60884	series	Plugs and socket-outlets for household and similar purposes	-	-
IEC 61850	series	Communication networks and systems for power utility automation	EN 61850	series
IEC/TS 61851-3-1	2023	Electric vehicles conductive charging system - Part 3-1: DC EV supply equipment where protection relies on double or reinforced insulation - General rules and requirements for stationary equipment	-	-
IEC/TS 61851-3-5	2023	Electric vehicles conductive charging system - Part 3-5: DC EV supply equipment where protection relies on double or reinforced insulation - Pre-defined communication parameters and general application objects	-	-
IEC/TS 61851-3-6	2023	Electric vehicles conductive charging system - Part 3-6: DC EV supply equipment where protection relies on double or reinforced insulation - Voltage converter unit communication	-	-
IEC/TS 61851-3-7	2023	Electric vehicles conductive charging system - Part 3-7: DC EV supply equipment where protection relies on double or reinforced insulation - Battery system communication	-	-
IEC/TS 62196-4	2022	Plugs, socket-outlets, vehicle connectors and vehicles inlet - Conductive charging of electric vehicles - Part 4: Dimensional compatibility and interchangeability requirements for DC pin and contact-tube accessories for class II or class III applications	-	-

CLC IEC/TS 61851-3-4:2023 (E)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO/IEC 646	1991	Information technology - ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 14443	series	Cards and security devices for personal identification - Contactless proximity objects	-	-
ISO/IEC 18092	2013	Information technology - Telecommunications and information exchange between systems - Near Field Communication - Interface and Protocol (NFCIP-1)	-	-
ISO 11898-2	2016	Road vehicles - Controller area network (CAN) - Part 2: High-speed medium access unit	-	-
ISO 11898-5	2007	Road vehicles - Controller area network (CAN) - Part 5: High-speed medium access unit with low-power mode	-	-
ISO 11898-6	2013	Road vehicles - Controller area network (CAN) - Part 6: High-speed medium access unit with selective wake-up functionality	-	-
CiA 302-1	2009	CANopen additional application layer functions - Part 1: General definitions	-	-
CiA 302-2	2009	CANopen additional application layer functions - Part 2: Network management	-	-
CiA 302-3	2010	CANopen additional application layer functions - Part 3: Configuration and program download	-	-
CiA 305	2013	CANopen layer setting services (LSS) and protocols	-	-
		Industrial communications subsystem based on ISO 11898 (CAN) for controller-device interfaces - Part 4: CANopen	EN 50325-4	2002
		Secondary lithium batteries for light EV (electric vehicle) applications - Part 1: General safety requirements and test methods	EN 50604-1	2016



IEC TS 61851-3-4

Edition 1.0 2023-07

TECHNICAL SPECIFICATION



**Electric vehicles conductive charging system –
Part 3-4: DC EV supply equipment where protection relies on double or
reinforced insulation – General definitions and requirements for CANopen
communication**



**THIS PUBLICATION IS COPYRIGHT PROTECTED****Copyright © 2023 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.

IEC Secretariat
3, rue de Varembe
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. 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 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.



IEC TS 61851-3-4

Edition 1.0 2023-07

TECHNICAL SPECIFICATION



**Electric vehicles conductive charging system –
Part 3-4: DC EV supply equipment where protection relies on double or
reinforced insulation – General definitions and requirements for CANopen
communication**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 43.120

ISBN 978-2-8322-5730-2

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	8
INTRODUCTION.....	10
1 Scope.....	12
2 Normative references	12
3 Terms and definitions	13
4 Symbols and abbreviated terms.....	16
5 General conditions for the tests	17
6 Physical layer specification.....	18
6.1 General.....	18
6.2 Medium access unit	18
6.3 Transmission rates.....	18
6.4 Node-ID assignment	18
6.5 Network topology	19
6.6 Gateway	19
7 Error handling.....	19
7.1 General.....	19
7.2 Enhancement of the emergency message handling.....	19
7.3 Pre-defined error field	21
7.4 Error behaviour.....	21
7.5 Additional error codes	22
8 Operating principles	23
8.1 General.....	23
8.2 Functional description	23
8.2.1 General	23
8.2.2 Voltages, currents, loads	23
8.2.3 Activating of the energy management system (EMS)	24
8.2.4 Connection and disconnection of devices	25
8.2.5 "Sleep"	25
8.3 Use case specific definitions for EMSs in EVs.....	25
8.3.1 General	25
8.3.2 EMS in operation	25
8.3.3 Design and implementation for EV supply system configurations Types "A-F".....	26
8.4 Virtual architecture of the EMS	31
8.4.1 General	31
8.4.2 Standard virtual EMS control network	31
8.4.3 General application object (GAO)	32
8.4.4 Energy management system controller (EMSC)	33
8.4.5 Voltage converter unit (VCU)	33
8.4.6 Battery system.....	33
8.4.7 Security unit (optional).....	34
8.4.8 Manufacturer-specific virtual devices (optional)	34
9 Finite state automaton (device modelling).....	34
9.1 General.....	34
9.2 EMS finite state automaton (FSA)	35
9.2.1 State definition	35

9.2.2	Transitions of the EMS FSA.....	37
10	General CANopen communication capabilities in EMSs.....	38
10.1	Network management.....	38
10.2	SDO communication.....	39
10.3	PDO communication.....	39
10.4	Bootloader.....	39
10.4.1	General.....	39
10.4.2	Bootloader mode.....	39
10.4.3	Starting and stopping the application program.....	40
10.4.4	Application program file format.....	41
10.4.5	Error management.....	45
11	Representation of analogue values.....	45
11.1	General.....	45
11.2	Representation of generic analogue values.....	45
11.2.1	Percent.....	45
11.2.2	Temperature.....	45
11.2.3	Temperature rate (ΔT).....	45
11.2.4	Time (days).....	45
11.2.5	Time (minutes).....	45
11.2.6	Time (milliseconds).....	45
11.3	Electrical-related analogue value representation.....	46
11.3.1	Current.....	46
11.3.2	Electric charge.....	46
11.3.3	Electric charge (for statistical purposes).....	46
11.3.4	Electric charge rate.....	46
11.3.5	Energy power (for statistical purposes).....	46
11.3.6	Energy power.....	46
11.3.7	Frequency.....	46
11.3.8	Power.....	46
11.3.9	Power factor.....	46
11.3.10	Resistor.....	46
11.3.11	Voltage.....	46
11.4	Mechanical-related analogue value representation (optional).....	46
11.4.1	Angle/circular position.....	46
11.4.2	Distance (long).....	47
11.4.3	Distance (short).....	47
11.4.4	Force.....	47
11.4.5	Rotational speed.....	47
11.4.6	Revolutions.....	47
11.4.7	Torque.....	47
11.4.8	Velocity.....	47
11.5	Optical-related analogue value representation – Colour/brightness.....	47
Annex A (informative)	System architecture and use cases.....	48
A.1	General.....	48
A.2	Application profile for EMS.....	48
A.2.1	General.....	48
A.2.2	Maximum possible devices on a virtual EMS control network.....	48
A.2.3	Minimum virtual EMS control network.....	49
A.3	General application object.....	50

A.3.1	General	50
A.3.2	Motor control unit.....	50
A.3.3	Load monitoring unit	50
A.3.4	Generator unit	51
A.3.5	Load unit	51
A.3.6	HMI unit.....	51
A.3.7	Sensor unit	51
A.3.8	Gateway	51
A.3.9	IEC 61850 gateway	51
A.4	Use cases (informative)	51
A.4.1	EV use case	51
A.4.2	Stationary use case	52
Annex B	(normative) Energy management system controller (EMSC).....	55
B.1	General.....	55
B.2	Object dictionary	55
B.2.1	General	55
B.2.2	NMT communication objects	55
B.2.3	Produced application objects	56
B.2.4	Consumed application objects	59
B.3	Tasks of an EMSC	64
B.3.1	General	64
B.3.2	Start-up	65
B.3.3	Compatibility check.....	65
B.3.4	Releasing devices	65
B.3.5	"Sleep"- mode.....	66
Annex C	(informative) Implementation guidelines.....	67
C.1	General.....	67
C.2	Timings.....	67
C.2.1	General	67
C.2.2	Start up	67
C.3	Master handling	67
C.3.1	General	67
C.3.2	Detecting master availability	67
C.3.3	EMSC SDO handling	67
C.4	Design of voltage converter unit communication for EVs	68
C.4.1	Use cases.....	68
C.4.2	Recommended power transfer protocol.....	69
Annex D	(normative) Power management via "sleep"	79
D.1	General.....	79
D.2	Operation principles	79
D.2.1	General	79
D.2.2	Pre-conditions	79
D.2.3	Finite state automaton for power management.....	79
D.3	Services.....	81
D.3.1	General	81
D.3.2	Service "query sleep objection" and "sleep objection"	81
D.3.3	Service Set "sleep"	82
D.3.4	Service "wake-up"	83
D.3.5	Service "request sleep"	84

D.4	Protocols	84
D.4.1	Protocol "query sleep objection"	84
D.4.2	Protocol "sleep objection"	84
D.4.3	Protocol set "sleep"	85
D.4.4	Protocol "wake-up"	85
D.4.5	Protocol "request sleep"	87
D.5	Power management timing – Sleep/wake-up	87
D.6	Miscellaneous timing values	88
Annex E	(informative) Handling of multiple energy loads/sources	89
E.1	General	89
E.2	Consecutive power transfer to battery systems without power loss	89
E.3	Parallel charge and discharge	90
Annex F	(normative) Communication connector	92
F.1	General	92
F.2	Configuration of 4-II for configuration type B	92
F.3	NFC description	93
F.4	Communication connector	98
Annex G	(informative) Orientation	100
G.1	General	100
G.2	Orientation definitions for pedal driven EVs	100
G.3	Orientations for non- pedal driven EV applications	100
Bibliography	102
Figure 1	– Protocol emergency write for energy management applications	20
Figure 2	– EV supply system cConfiguration type A	27
Figure 3	– EV supply system configuration type B	28
Figure 4	– EV supply system cConfiguration type C	29
Figure 5	– EV supply system configuration type D	29
Figure 6	– EV supply sytem configuration type E	30
Figure 7	– EV supply system configuration type F	30
Figure 8	– Conversion device for configuration type C	31
Figure 9	– Virtual standard architecture of the EMS	32
Figure 10	– Remote and local control	35
Figure 11	– EMS FSA	37
Figure 12	– Flow chart for switching between bootloader mode and application	40
Figure 13	– Application program	41
Figure 14	– Program identifier 1	41
Figure 15	– Program identifier 2	41
Figure 16	– Program identifier 3	42
Figure 17	– Program identifier 4	42
Figure 18	– Program identifier 5	42
Figure 19	– Example for program identifier handling	43
Figure 20	– Object structure	47
Figure A.1	– Virtual maximum architecture of the EMS	49
Figure A.2	– Virtual minimum architecture of the EMS	50

Figure A.3 – EMS application in EV	52
Figure A.4 – Typically stationary photovoltaic hybrid off-grid application	53
Figure A.5 – Use case according to self-consumption regulation	54
Figure B.1 – Value structure	56
Figure B.2 – Object structure	57
Figure B.3 – Value structure	58
Figure B.4 – Value structure	64
Figure C.1 – Voltage converter unit used as power supply for EV	69
Figure C.2 – Sequence diagram for startup of the connection	70
Figure C.3 – Sequence diagram "New device connected"	71
Figure C.4 – Preparation of the power transfer procedure	72
Figure C.5 – Configuration of limitations	75
Figure C.6 – Start up procedure for initiate power transfer	76
Figure C.7 – Power transfer in progress	78
Figure D.1 – Power management FSA	80
Figure D.2 – "Sleep" inhibited by objection	82
Figure D.3 – Transition into "sleep" without objection	82
Figure D.4 – Execution of "query sleep objection" service for a device in "sleep"	83
Figure D.5 – Execution of "wake-up" service	83
Figure D.6 – Execution of "request sleep" service	84
Figure D.7 – Protocol "query sleep objection"	84
Figure D.8 – Protocol "sleep objection"	85
Figure D.9 – Protocol set "sleep"	85
Figure D.10 – Protocol "wake-up"	86
Figure D.11 – Protocol "wake-up"	86
Figure D.12 – Protocol "request sleep"	87
Figure D.13 – "Query sleep objection" protocol timing	87
Figure F.1 – Configuration 4-II communication only	93
Figure F.2 – Position of NFC	95
Figure F.3 – Latching device	96
Figure F.4 – Position of NFC in vehicle inlet and socket-outlet according to IEC TS 62169-4:2019 sheet 4-II	97
Figure F.5 – Overview	97
Figure F.6 – Communication connector details	98
Figure F.7 – Overview of communication connector	99
Figure G.1 – Orientation definition for EVs	100
Figure G.2 – Position of axes relative to orientation	101
Table 1 – DRI EV supply equipment and external device node-ID assignment	19
Table 2 – Value definition for EMCY message	21
Table 3 – Additional error codes	22
Table 4 – State description	36
Table 5 – Events and actions	38

Table 6 – Value definition	44
Table B.1 – Value definition	56
Table B.2 – Object description	57
Table B.3 – Entry description	57
Table B.4 – Value definition EV type	57
Table B.5 – Value definition speed	58
Table B.6 – Object description	58
Table B.7 – Entry description	58
Table B.8 – Value definition	59
Table B.9 – Object description	59
Table B.10 – Entry description	59
Table B.11 – Value definition	60
Table B.12 – Object description	60
Table B.13 – Entry description	61
Table B.14 – Value definition	62
Table B.15 – Object description	62
Table B.16 – Entry description	63
Table B.17 – Value definition	64
Table B.18 – Object description	64
Table B.19 – Entry description	64
Table B.20 – Compatibility check	65
Table C.1 – Data transfer from battery system to VCU's	73
Table C.2 – Additional parameters relevant for power transfer process	73
Table C.3 – Additional parameters relevant for power transfer process	73
Table C.4 – Most important parameters for limiting	74
Table C.5 – Limit calculation for battery systems	75
Table C.6 – Data transfer from battery to VCUs	77
Table C.7 – Data transfer from VCUs to the battery	77
Table D.1 – State description	80
Table D.2 – Events and actions	81
Table D.3 – Timing values for "query sleep objection"	87
Table D.4 – Timing values for "sleep" wait time	88
Table D.5 – Miscellaneous timing values	88
Table E.1 – Example for battery system switching procedure	90
Table E.2 – Example for battery system handling in parallel	91
Table F.1 – NDEF message	94
Table F.2 – NFC description	94

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC VEHICLES CONDUCTIVE CHARGING SYSTEM –**Part 3-4: DC EV supply equipment where protection relies
on double or reinforced insulation – General definitions and
requirements for CANopen communication**

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.

IEC TS 61851-3-4 has been prepared by IEC technical committee 69: Electrical power/energy transfer systems for electrically propelled road vehicles and industrial trucks. It is a Technical Specification.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
69/650/DTS	69/671/RVDTS
	69/671A/RVDTS

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 Technical Specification 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.

In this document, the following print types are used:

- requirements: in roman type;
- notes: in small roman type;
- **text formatted in bold and using mixed capital and underline are used as state names and are not to be translated.**

A list of all parts in the IEC 61851 series, published under the general title *Electric vehicles conductive charging system*, 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,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This document is published in separate parts according to the following structure:

IEC TS 61851-3-1, *Electric vehicles conductive charging system – Part 3-1: DC EV supply equipment where protection relies on double or reinforced insulation – General rules and requirements for stationary equipment*

IEC TS 61851-3-2, *Electric vehicles conductive charging system – Part 3-2: r DC EV supply equipment where protection relies on double or reinforced insulation – Portable and mobile DRI EV supply equipment*

IEC TS 61851-3-4, *Electric vehicles conductive charging system – Part 3-4:DC EV supply equipment where protection relies on double or reinforced insulation – General definitions and requirements for CANopen communication*

IEC TS 61851-3-5, *Electric vehicles conductive charging system – Part 3-5:DC EV supply equipment where protection relies on double or reinforced insulation – Pre-defined communication parameters and general application objects*

IEC TS 61851-3-6, *Electric vehicles conductive charging system – Part 3-6:DC EV supply equipment where protection relies on double or reinforced insulation – Voltage converter unit communication*

IEC TS 61851-3-7, *Electric vehicles conductive charging system – Part 3-7:DC EV supply equipment where protection relies on double or reinforced insulation – Battery system communication*

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent. IEC takes no position concerning the evidence, validity, and scope of this patent right.

The holder of this patent right has assured IEC that s/he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from the patent database available at patents.iec.ch.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those in the patent database. IEC shall not be held responsible for identifying any or all such patent rights.

IEC takes no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured the IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with IEC. Information may be obtained from:

- EnergyBus e.V.: Koskauerstrasse 100, 07922 Tanna, Germany.
- Unicorn Energy GmbH: Universitaetspark 1/1, 73525 Schwaebisch Gmuend, Germany.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. IEC shall not be held responsible for identifying any or all such patent rights.

ISO (www.iso.org/patents) and IEC (<http://patents.iec.ch>) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

ELECTRIC VEHICLES CONDUCTIVE CHARGING SYSTEM –

Part 3-4: DC EV supply equipment where protection relies on double or reinforced insulation – General definitions and requirements for CANopen communication

1 Scope

This part of IEC 61851, which is a Technical Specification, applies to CANopen communication for the conductive transfer of electric power between the supply network and an electric road vehicle or a removable rechargeable energy storage system (RESS) or on-board rechargeable energy storage systems (RESS) of an electric road vehicle.

The energy management system (EMS) for control of power transfer between battery systems and voltage converter units (VCU) provides the communication for all devices that can take part in energy management control.

The basic application profile for energy management systems (EMS) consists of IEC TS 61851-3-4, IEC TS 61851-3-5, IEC TS 61851-3-6, IEC TS 61851-3-7.

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 60309 (all parts), *Plugs, socket-outlets and couplers for industrial purposes*

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60884 (all parts), *Plugs and socket-outlets for household and similar purposes*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*

IEC TS 61851-3-1:2023, *Electric vehicles conductive charging system – Part 3-1 DC EV supply equipment where protection relies on double or reinforced insulation – AC and DC conductive power supply systems*

IEC TS 61851-3-5:2023, *Electric vehicles conductive charging system – Part 3-5: DC EV supply equipment where protection relies on double or reinforced insulation – Pre-defined communication parameters and general application objects*

IEC TS 61851-3-6:2023, *Electric vehicles conductive charging system – Part 3-6: DC EV supply equipment where protection relies on double or reinforced insulation – Voltage converter unit communication*

IEC TS 61851-3-7:2023, *Electric vehicles conductive charging system – Part 3-7: DC EV supply equipment where protection relies on double or reinforced insulation – Battery system communication*

IEC TS 61851-3-4:2023 © IEC 2023 – 13 –

IEC TS 62196-4: *Plugs, socket-outlets, vehicle connectors and vehicles inlet – Conductive charging of electric vehicles – Part 4: Dimensional compatibility and interchangeability requirements for DC pin and contact-tube accessories for class II or class III applications*¹

ISO/IEC 646:1991, *Information technology – ISO 7-bit coded character set for information interchange*

ISO/IEC 14443 (all parts), *Identification cards — Contactless integrated circuit(s) cards — Proximity cards*

ISO/IEC 18092:2013, *Information technology – Telecommunications and information exchange between systems – Near Field Communication – Interface and Protocol (NFCIP-1)*

ISO 11898-2:2016, *Road vehicles – Controller area network (CAN) – Part 2: High speed medium access unit*

ISO 11898-5:2007, *Road vehicles – Controller area network (CAN) – Part 5: High speed medium access unit with low-power mode*

ISO 11898-6:2013, *Road vehicles – Controller area network (CAN) – Part 6: High speed medium access unit with selective wake-up functionality*

CiA 302-1:2009, *CANopen additional application layer functions – Part 1: General definitions (available at www.can-cia.org)*

CiA 302-2:2009, *CANopen additional application layer functions – Part 2: Network management (available at www.can-cia.org)*

CiA 302-3:2010, *CANopen additional application layer functions – Part 3: Configuration and program download (available at www.can-cia.org)*

CiA 305:2013, *CANopen layer setting services (LSS) and protocols (available at www.can-cia.org)*

EN 50325-4:2002, *Industrial communications subsystem based on ISO 11898 (CAN) for controller- device interfaces – Part 4: CANopen*

EN 50604-1:2016, *Secondary lithium batteries for light EV (electric vehicle) applications – Part 1: General safety requirements and test methods*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN